

GENERAL NOTES – ELECTRICAL:

1. THE SCOPE OF WORK FOR THIS PROJECT SHALL CONSIST OF INSTALLING NEW HIGHWAY LIGHTING, NEW TRAFFIC SIGNAL SYSTEMS WITH APPURTENANCES, EMERGENCY OPTICAL PREEMPTION SYSTEM, DISCONNECTING AND REMOVAL OF EXISTING TRAFFIC SIGNAL SYSTEMS AND STREET LIGHTING SYSTEMS, AND INTERFACING BETWEEN NEW AND EXISTING SYSTEMS.
2. THE CONTRACTOR IS REMINDED OF THE REQUIREMENTS OF SUBSECTION 108.01 – SUBLETTING OF CONTRACT, WHICH REQUIRES WITH HIM TO PERFORM WORK ACCOUNTING TO NOT LESS THAN 50 PERCENT OF THE TOTAL CONTRACT COST LESS DUCTIBLE ITEMS. NON-COMPLIANCE WITH THIS SUBSECTION MAY BE GROUNDS FOR REJECTION OF BID.
3. THE CONTRACTOR ATTENTION IS DIRECTED TO THE FOLLOWING SECTIONS OF THE SPECIAL PROVISIONS:
SUBSECTION 107.13 – PUBLIC CONVENIENCE AND SAFETY.
SUBSECTION 107.21 – CONTRACTOR'S RESPONSIBILITY FOR PROPERTY AND SERVICES.
SECTION 645 – TRAFFIC CONTROL.
4. ALL NECESSARY PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS OWN COST.
5. THE CONTRACTOR SHALL BE OBTAINED WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAW (DOSH).
6. LOCATIONS OF EXISTING UNDERGROUND STRUCTURES AND UTILITIES SUCH AS PIPELINES, CONDUIT 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.
7. ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE FOLLOWING CONSTRUCTION STANDARDS AND SPECIFICATIONS:
- a. GENERAL ORDER NO.6 AND NO. 10 UTILITIES COMMISSION, STATE OF HAWAII, CURRENT EDITION.
- b. CONSTRUCTION STANDARD OF DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII.
- c. CURRENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF HAWAII.
- d. STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.
- e. CURRENT STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.
- f. CONSTRUCTION STANDARDS AND SPECIFICATION OF HAWAIIAN TELCOM.
- g. CONSTRUCTION STANDARDS AND SPECIFICATIONS OF THE HAWAII ELECTRIC LIGHT COMPANY.
8. IT IS NOT THE INTENT OF THE PLANS AND SPECIFICATIONS TO INDICATE THAT ALL EXISTING UTILITIES ARE SHOWN THE PLANS. THE INFORMATION OF THE EXISTING UTILITIES ARE BASED ON AVAILABLE PLANS. 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 TIME 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 DUCTS. PLUG ALL DUCTS WITH NON-CORRODIBLE PLUGS MANUFACTURED FOR THIS PURPOSE.
11. CONTRACTOR SHALL LAYOUT THE LOCATION OF PULLBOXES, STANDARDS, PEDESTRIAN PEDESTALS, CONTROL BOXES AND CABINETS FOR THE ENGINEER'S ACCEPTANCE PRIOR TO INSTALLATION.

TRAFFIC SIGNAL NOTES:

1. ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE COMPLETELY WIRED IN THE CABINET AND SHALL CONTROL THE TRAFFIC SIGNAL AS CALLED FOR IN THE PLANS.
2. THE LOOP DETECTOR AMPLIFIER UNITS SUPPLIED FOR THIS PROJECT SHALL BE CAPABLE OF OPERATING THE LOOP DETECTOR CONFIGURATIONS SHOWN ON THE PLANS.
3. RESTORATION OF EXISTING PAVEMENTS AND IMPROVEMENTS OF UN-AVOIDABLE DAMAGE SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT ITEMS. RESTORATION SHALL BE EQUAL OR BETTER THAN ORIGINAL CONDITION.
4. ALL THE TRAFFIC SIGNAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES STREET AND HIGHWAY," FEDERAL HIGHWAY ADMINISTRATION (1988) AND AMENDMENTS.
5. MAINTENANCE OF THE TRAFFIC THROUGH THE CONSTRUCTION AREA SHALL BE IN ACCORDANCE WITH PART VI OF THE "MANUAL ON THE UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" FEDERAL HIGHWAY ADMINISTRATION (1988) AND AS SPECIFIED IN THE SPECIAL PROVISIONS. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE BARRICADES, BLINKERS, CONSTRUCTION SIGNALS, ETC., FOR THE SAFETY OF THE MOTORING PUBLIC.
6. PEAK TRAFFIC HOURS ARE BETWEEN 6:00 A.M. TO 8:30 P.M. AND 3:30 P.M. TO 6:00 P.M.
7. THE CONTRACTOR SHALL PROVIDE OFF-DUTY OFFICER(S) TO CONTROL THE FLOW OF TRAFFIC AS REQUIRED BY THE ENGINEER.

8. SHOULD ANY DEFECT BE ENCOUNTERED DURING THE WARRANTY PERIOD, THE CONTRACTOR WILL BE NOTIFIED AND SHALL PROMPTLY CORRECT SUCH DEFECT. SERVICE CALL (BY FACTORY QUALIFIED REPRESENTATIVE) DURING THE WARRANTY PERIOD FOR THE REPAIRS OR OTHER MAINTENANCE SHALL BE ANSWERED IMMEDIATELY AND SHALL BE DONE AT NO EXPENSE WHATSOEVER TO THE STATE.

9. EXISTING PULLBOXES SHALL BE REMOVED AND EXISTING CONDUITS SHALL BE PLUGGED WITH CONCRETE.

HAWAIIAN TELCOM CONSTRUCTION/DESIGN NOTES:

1. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
2. THE CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT AND TONING REQUEST FROM HAWAIIAN TELCOM'S EXCAVATION PERMIT SECTION, LOCATED 3239 UALENA STREET, THIRD FLOOR, TWO WEEKS PRIOR TO THE START OF CONSTRUCTION. HOURS OF BUSINESS ARE 8:00 A.M. TO 11:00 A.M. AND 12:00 P.M. TO 3:30 P.M. MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS.
3. PRIOR TO THE EXCAVATION OF THE DUCTLINE, THE CONTRACTOR SHALL REQUEST HAWAIIAN TELCOM TO LOCATE EXISTING DUCTLINE WHENEVER REQUIRED. FOR UNDERGROUND CABLE LOCATING AND MARKING, FIVE (5) WORKING DAYS ADVANCE NOTICE AS REQUIRED. THREE (3) WORKING DAYS ADVANCE NOTICE IS REQUIRED FOR ANY INSPECTION BY A DESIGNATED REPRESENTATIVE.
4. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION AND SHALL MAINTAIN PROPER CLEARANCES WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HAWAIIAN TELCOM FACILITIES. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE LIABLE FOR ANY DAMAGES TO HAWAIIAN TELCOM FACILITIES. ANY DAMAGES SHALL BE REPORTED IMMEDIATELY TO HAWAIIAN TELCOM'S REPAIR SECTION AT #611 (24 HOURS) OR TO THE EXCAVATION PERMIT SECTION AT 840-1444 (NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY, EXCEPT HOLIDAYS). AS A RESULT OF HIS OPERATIONS, ADJUSTMENTS TO THE NEW DUCTLINE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROVIDE THE REQUIRED CLEARANCES.
5. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. A HAWAIIAN TELCOM INSPECTOR OR DESIGNATED REPRESENTATIVE IS REQUIRED TO BE AT ANY JOB SITE WHENEVER THERE WILL BE BREAKAGE INTO OR ENTRY INTO ANY STRUCTURE THAT CONTAIN HAWAIIAN TELCOM FACILITIES. TEMPORARY CABLE AND DUCT SUPPORTS SHALL BE PROVIDED WHEREVER NECESSARY.
6. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. A HAWAIIAN TELCOM INSPECTOR OR DESIGNATED REPRESENTATIVE IS REQUIRED TO BE AT ANY JOB SITE WHENEVER THERE WILL BE A BREAKAGE INTO OR ENTRY INTO ANY STRUCTURE THAT CONTAIN VERIZON HAWAII FACILITIES. TEMPORARY CABLE AND CUT SUPPORTS SHALL BE PROVIDED WHEREVER NECESSARY.
7. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE "HAWAIIAN TELCOM STANDARD SPECIFICATIONS FOR PLACING UNDERGROUND TELEPHONE SYSTEMS" DATED MARCH 1999. ALL SUBSEQUENT AMENDMENTS AND ADDITIONS, AND ALL OTHER PERTINENT STANDARDS FOR TELEPHONE CONSTRUCTION. CONTRACTOR SHALL FAMILIARIZE HIS PERSONNEL BY OBTAINING APPLICABLE SPECIFICATIONS.
8. WHEN EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN TELCOM'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR SHALL:
- a. SHEET AND/OR BRACE THE EXCAVATION TO PREVENT SLIDES, CAVE-INS OR SETTLEMENTS TO ENSURE NO MOVEMENT OF HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
- b. PROTECT EXISTING STRUCTURE AND/OR FACILITIES, BEAMS, STRUTS OR UNDER PINNING WHILE EXCAVATING BENEATH THEM TO ENSURE NO MOVEMENT OF HAWAIIAN TELCOM'S STRUCTURES OR FACILITIES.
9. THE CONTRACTOR SHALL BRACE ALL POLES OR LIGHT STANDARDS NEAR THE NEW DUCTLINE, MANHOLE, OR HANDHOLE DURING HIS OPERATIONS.
10. THE CONTRACTOR SHALL SAW-CUT A.C. PAVEMENT AND CONCRETE GUTTER WHEREVER NEW MANHOLES, HANDHOLES, OR DUCTLINES ARE TO BE PLACED AND SHALL RESTORE TO EXISTING OR BETTER CONDITION.
11. THE CONTRACTOR SHALL COMPLY WITH THE POLICY ADOPTED BY THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII, CONCERNING THE REPLACEMENT OF CONCRETE SIDEWALKS AFTER EXCAVATION WORK.
12. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTH OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.
13. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATIONS AND DEPTHS.
14. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE COST OF SUPPLEMENTARY MEASURES, WHICH WILL BE REQUIRED BY THE COUNTY, SHALL BE BORNE BY THE CONTRACTOR.
15. THE CONTRACTOR SHALL PUMP MANHOLES DRY DURING FINAL INSPECTION.
16. THE CONTRACTOR SHALL NOTIFY HAWAIIAN TELCOM INSPECTOR 24 HOURS PRIOR TO THE POURING OF CONCRETE OR BACKFILLING.

17. WHEN CONNECTION MANHOLE WALLS, ALL EXISTING REINFORCING BARS SHALL BE LEFT INTACT. DUCTS SHALL BE ADJUSTED IN TEH FILED IN ORDER TO CLEAR REINFORCING.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL REQUIRED LINES AND GRADES AND SHALL PRESERVE ALL BENCH MARKS AND WORKING OINTS NECESSARY TO LAY OUT THE WORK CORRECTLY. THE NEW DUCTLINE SHALL BE ADJUSTED BY THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE DETAILS AS DESCRIBED IN THE PLANS.

19. MINIMUM CONCRETE STRENGTH SHALL BE:
- FOR DUCTLINE 2500 psi AT 28 DAYS
- FOR MANHOLE 3000 psi AT 28 DAYS OR AS SPECIFIED IN DESIGN NOTES

20. BENDS IN THE DUCT ALIGNMENT, DUE TO CHANGES IN GRADE SHALL HAVE MINIMUM RADIUS OF 25 FEET. ALL 90 DEGREE C-BENDS AT A POLE OR AT THE BUILDING FLOOR SLAB PENETRATION, SHALL HAVE A BEND RADIUS OF TEN TIMES THE DIAMETER OF THE DUCT OR GREATER.

21. AFTER DUCTLINE HAS BEEN COMPLETED, A MANDREL WITH A SQUARE FRONT NOT LESS THAN 12" LONG AND HAVING A DIAMETER OF 1/4" LESS THAN THE INSIDE DIAMETER OF THE DUCT, SHALL BE PULLED THROUGH EACH DUCT AFTER WHICH A BRUSH WITH STIFF BRISTLES SHALL BE PULLED THROUGH TO MAKE CERTAIN THAT NO PARTICLES OF EARTH, SAND OR GRAVEL HAVE BEEN LEFT INSIDE. DUCTS SHALL BE COMPLETEY DRY AND CLEAN.

22. ALL DUCTS AND CONDUITS SHALL HAVE AN 1800# POLYESTER MULE-TAPE (NEPTCO, WP1800P, HAWAIIAN TELCOM MATERIAL CODE NO. 571154) INSTALLED THROUGHOUT ITS ENTIRE LENGTH, ALL DUCTS SHALL BE CAPPED TO PREVENT ENTRY OF FOREIGN MATERIAL DURING CONSTRUCTION AND AT THE END OF INSTALLATION.

ELECTRICAL CONTRACTOR'S CATV NOTES:

1. THE CONTRACTOR SHALL PROCURE AND PAY FOR ALL LICENSES AND PERMITS AND SHALL GIVE ALL NOTICES NECESSARY AND INCIDENT TO THE DUE AND LAWFUL PROSECUTION OF THE WORK.
2. THE LOCATIONS OF EXISTING UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THEIR LOCATIONS AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THESE UTILITIES AS A RESULT OF HIS OPERATIONS. ADJUSTMENT TO THE NEW DUCTLINE ALIGNMENT, IF REQUIRED, SHALL BE MADE TO PROVIDE THE REQUIRED CLEARANCES.
3. PRIOR TO THE EXCAVATION OF THE DUCTLINE, THE CONTRACTOR SHALL REQUEST THAT OCEANIC TIME WARNER CABLE COMPANY TO LOCATE EXISTING DUCTLINE WHEREVER REQUIRED.
4. THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTION NOT TO DAMAGE EXISTING CABLES OR DUCTS. ANY WORK INVOLVING EXISTING CABLES OR DUCTS SHALL BE DONE IN THE PRESENCE OF THE OCEANIC TIME WARNER CABLE COMPANY INSPECTOR OR HIS REPRESENTATIVE.
5. THE CONTRACTOR SHALL NOTIFY THE OCEANIC TIME WARNER CABLE COMPANY INSPECTOR 48 HOURS PRIOR TO THE POURING OF CONCRETE OR BACKFILLING.
6. WHEREVER CONNECTIONS TO EXISTING UTILITIES ARE SHOWN OF THE PLANS, THE CONTRACTOR SHALL EXPOSED THE EXISTING LINES PRIOR TO EXCAVATION OF THE MAIN TRENCHES TO VERIFY THEIR LOCATIONS AND DEPTHS.
7. CONTRACTOR SHALL PROVIDE ALL MATERIALS AND FURNISH ALL LABOR AND EQUIPEMNT NECESSARY TO INSTALL THE DUCTLINE PLACE COMPLETE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL REQUIRED LINES AND GRADES AND SHALL PRESERVE ALL BENCH MARKS AND WORKING POINTS NECESSARY TO LAY OUT THE WORK CORRECTLY. THE NEW DUCTLINE SHALL BE ADJUSTED BY THE CONTRACTOR TO SUIT THE EXISTING CONDITIONS AND THE DETAILS AS DESCRIBED IN THE PLANS.
9. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE OF HAWAII, DEPARTMENT OF HEALTH.
10. THE LOCATION OF CATV FACILITIES SHOWN ON PLANS ARE EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AS TO ITS ACTUAL FIXED LOCATION. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING CLOSE PROXIMITY OF CATV FACILITIES.
11. THE CONTRACTOR SHALL OBTAIN EXCAVATION PERMIT CLEARANCE FROM OCEANIC TIME WARNER CABLE ENGINEERING SECTION LOCATED AT 331-4925
12. FOR ANY FIELD ASSISTANCE OR VERIFICATION OF CATV FACILITIES, THE CONTRACTOR SHALL CALL THE TECHNICAL OPERATIONS CENTER AT 331-4925
13. ANY WORK REQUIRED TO RELOCATED CATV FACILITIES SHALL BE DONE BY OCEANIC TIME WARNER CABLE AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION REQUIREMENTS AND ASSOCIATED COSTS.
14. ANY DAMAGE TO OCEANIC TIME WARNER FACILITIES SHALL BE REPORTED TO OCEANIC TIME WARNER REPAIR DISPATCH DEPARTMENT AT 331-4925 OR 331-49217.
15. THE CONTRACTOR SHALL TUNNEL UNDER EXISTING CONCRETE CURB AND GUTTER AS NECESSARY TO EXTEND CONDUIT INTO EXISTING CATV PULLBOX AND INTO THE PROPOSED POWER SUPPLY PULLBOX.
16. ALL EXISTING IMPROVEMENTS THAT ARE DISTURBED DURING THE CONSTRUCTION PHASE SHALL BE RESTORED TO ITS ORIGINAL OR BETTER CONDITION AT NO COST TO THE STATE IN ACCORDANCE WITH STATE'S STANDARDS.
17. AT LOCATIONS WHERE EXISTING CATV PULLBOX REPLACEMENTS PROPOSED, THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTION NOT TO DAMAGE THE EXISTING CABLES IN THE PULLBOX. ALL DAMAGES TO EXISTING CABLES SHALL BE REPAIRED BY OCEANIC TIME WARNER CABLE AND PAID FOR BY THE CONTRACTOR.



This work was prepared by me or under my supervision.
Exp. 04-30-10
Clayton C. Y. Pang
Electrical Engineer

18. COORDINATE ALL PENETRATIONS OF TELEPHONE PULLBOXES FOR OCEANIC TIME WARNER CABLEVISION WITH HAWAIIAN TELCOM'S INSPECTOR.
19. SMOOTH FINISH INSIDE WALL OF EXISTING PULLBOXES AND HANDHOLES TO ITS ORIGINAL OR BETTER CONDITION.
20. THE CONTRACTOR SHALL INSTALL NEPTCO WP1800 MULETAPE OR APPROVED EQUAL IN ALL DUCTLINES, LEAVE MULETAPE IN PLACE FOR FUTURE USE AS A PULL OR FISH LINE, UNLESS OTHERWISE NOTED. REFERENCE HAWAIIAN TELCOM MATERIAL CODE NO. 571154. DUCTS SHALL BE CAPPED TO PREVENT ENTRY OF FOREIGN MATERIAL DURING CONSTRUCTION AND AT COMPLETION OF INSTALLATION.
21. THE CONTRACTOR SHALL PLACE MULE TAPE THROUGHOUT PROJET, AND SECURE IN MANHOLES, HANDHOLES, AND PULLBOXES.
22. PENETRATION INTO PULLBOXES IF NECESSARY TO BE FROM FACTORY INSTALLED OPENING OR FROM BRICKS POSITION. PENETRATION FROM PULLBOX WALLS IS NOT ACCEPTABLE.
23. A MINIMUM OF TWO (2) PRECAST MUST BE USED ON ALL 2' x 4' OR 2' x 6' PULLBOXES.
24. TWO MINIMUM LAYERS OF BRICKS TO BE USED SHALL ALWAYS BE AT LEASE ONE LAYER LOWER THAN THE LOWEST DUCT ENTERING THE PULLBOX. AT NO TIME HOWEVER, SHALL THERE BE LESS THAN TWO (2) LAYERS OF BRICKS ON EACH INSTALLATION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

General Construction Notes

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

Date: Oct. 2007

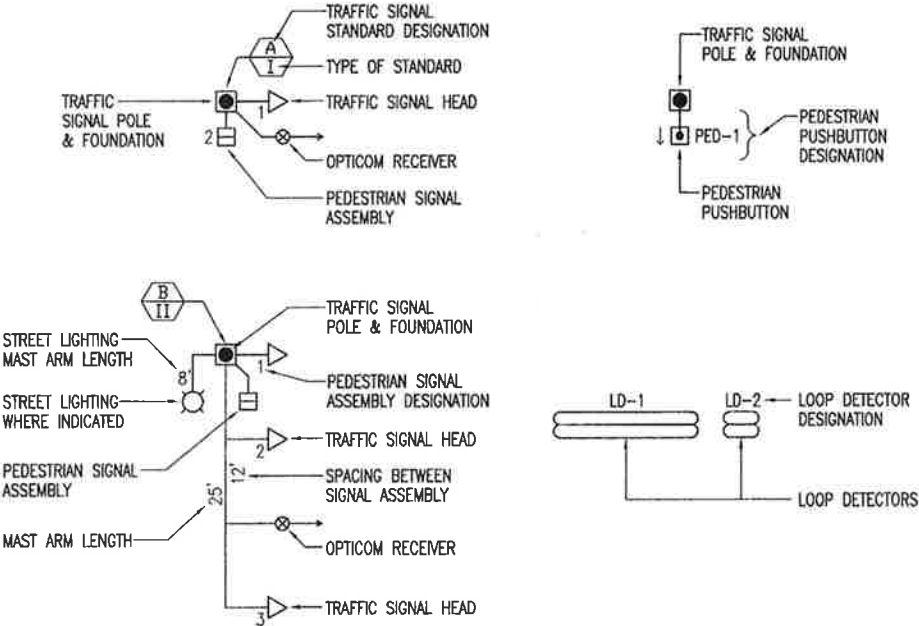
SHEET No. E-1 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	253	315

NOTES FOR CONSTRUCTION:

- CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN STATE RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE CURRENT 1994 "HAWAII STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND PUBLIC CONSTRUCTION," AND THE "SPECIFICATION FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS," OF THE STATE HIGHWAYS DIVISION.
- ALL LANES SHALL BE OPENED TO TRAFFIC DURING MORNING PEAK HOURS FROM 5:00 A.M. TO 8:30 A.M. AND THE AFTERNOON PEAK HOURS FROM 3:00 P.M. TO 6:00 P.M. AND DURING NON-WORKING HOURS EXCEPT AS SPECIFIED IN SPECIFICATIONS SECTION 645--TRAFFIC CONTROL.
- THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION AND FOR THE CONVENIENCE AND SAFETY OF PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAII GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, PART IV - TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS". IF LANE CLOSURES ARE REQUIRED DURING CONSTRUCTION, A TRAFFIC CONTROL PLAN SHALL BE INCORPORATED INTO THE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.
- NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN HIGHWAY RIGHTS-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.
- COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE SPECIFICATIONS FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS AND AS DIRECTED BY THE STATE'S HIGHWAY DISTRICT ENGINEER.
- PRIOR TO COMMENCING TRENCH EXCAVATION WORK, THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE NEW CENTERLINE OF UTILITY TRENCH AND THAT SUCH INFORMATION SHALL BE USED IN THE VERIFICATION OF RESTORING THE ROADWAY TO ITS ORIGINAL CONDITION. A COPY OF THE PROFILE SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.
- THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADEQUATE, SAFE, NON-SKID BRIDGING MATERIAL OVER TRENCH, INCLUDING SHORING, WHEN TRENCHING IN PAVEMENT AREAS TO HANDLE ALL TYPES OF VEHICULAR TRAFFIC.
- NO TRENCH SHALL BE OPENED IN ADVANCE OF THE INSTALLED AND TESTED PIPE, AND/OR DUCTLINE MORE THAN THE LENGTH DIRECTED BY THE STATE'S HIGHWAY DISTRICT ENGINEER.
- LONGITUDINAL DRAINAGE ALONG THE HIGHWAY SHALL BE MAINTAINED.
- PAVEMENT STRIPPING WHERE REQUIRED SHALL BE DONE BY CONTRACTOR.
- ALL REGULATORY, GUIDE AND CONSTRUCTION SIGNS AND BARRICADES SHALL BE OF HIGH INTENSITY REFLECTIVE SHEETING.
- THE CONTRACTOR SHALL SAWCUT THE PAVEMENT PRIOR TO COMMENCING TRENCH OR ROADWAY EXCAVATION WORK.
- THE CONTRACTOR SHALL PLACE A "NOTICE TO MOTORISTS" ANNOUNCEMENT IN THE TWO MAJOR DAILY NEWSPAPERS FOR AT LEAST THREE CONSECUTIVE DAYS, ONE WEEK PRIOR TO START OF CONSTRUCTION. THE NOTICE SHALL BE PREPARED IN ACCORDANCE WITH STATE DOT HIGHWAYS DIVISION STANDARDS AND SUBMITTED TO THE CONSTRUCTION AND MAINTENANCE BRANCH FOR APPROVAL AT LEAST FOUR (4) WEEKS BEFORE PUBLISHING IN THE NEWSPAPER. THE NOTICE SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING INFORMATION:
 - DATE ON WHICH THE CLOSURE SHALL START.
 - THE NUMBER OF DAYS OF THE CLOSURE
 - THE HOUR AND DAYS OF WORK
 - A DIAGRAM OF THE AFFECTED ROADWAY
- WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITION OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.
- THE CONTRACTOR SHALL REFERENCE TO THE SATISFACTION OF THE DISTRICT ENGINEER, ALL EXISTING TRAFFIC SIGNS, POSTS AND PAVEMENT MARKINGS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ALL TRAFFIC SIGNS, POSTS AND MARKINGS DISTURBED BY HIS ACTIVITIES, UNLESS DIRECTED OTHERWISE BY THE DISTRICT ENGINEER OR HIS REPRESENTATIVE.
- THE CONTRACTOR SHALL EXERCISE CARE WHEN EXCAVATING IN EXISTING UTILITY AREA. DAMAGES TO EXISTING FACILITIES SHALL BE IMMEDIATELY REPORTED TO THE RESPECTIVE UTILITY COMPANIES, CITY OR STATE AGENCY. THE REPAIR WORK SHALL BE DONE AT THE CONTRACTOR'S EXPENSE.
- THE USE OF STEEL PLATES OVER OPEN TRENCHES SHALL NOT BE ALLOWED EXCEPT FOR TEMPORARY USE TO RE-ROUTE TRAFFIC DURING CONSTRUCTION.
- ALL TRENCHES IN TRAFFIC LANES MUST BE COMPACTED AND PROVIDED WITH COVER FOR TRAFFIC USE.

LEGEND



ABBREVIATIONS:

A	AMPERE
AC	ALTERNATING CURRENT
AIC	ALTERNATING INTERRUPTING CURRENT
C	CONDUIT
CAB	CABINET
CL	CENTERLINE
CMU	CONCRETE MASONRY UNIT
DWG	DRAWING
ELEC	ELECTRIC, ELECTRICAL
ENCL	ENCLOSURE
EP	ELECTRICAL PRIMARY
EQPT	EQUIPMENT
ES	ELECTRICAL SECONDARY
EX, EXIST	EXISTING
GND	GROUND
HELCO	HAWAIIAN ELECTRIC LIGHT COMPANY
HH	HANDHOLE
HITCO	GTE-HAWAIIAN TELEPHONE COMPANY (HAWAII TELECOM)
KVA	KILO-VOLT AMPERE
KWH	KILO-WATT HOUR
MIN	MINIMUM
MISC	MANHOLE
MH	MANHOLE
N	NEUTRAL
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
OH	OVERHEAD
P	POLE
PB	PANELBOARD, PULLBOX
PFB	PROVISIONS FOR FUTURE BREAKER
PH	PHASE
PB	ALTERNATING INTERRUPTING CURRENT
PFB	CONDUIT
PL	PROPERTY LINE
PVC	RIGID NON-METALLIC CONDUIT (SCH. 40 PVC UNLESS OTHERWISE INDICATED)
RSC	RIGID STEEL CONDUIT
R/W	RIGHT OF WAY
SLPB	STREET LIGHT PULLBOX
T, TEL	TELEPHONE
TSPB	TRAFFIC SIGNAL PULLBOX
TYP	TYPICAL
UG	UNDERGROUND
V	VOLTS
W	WIRES(S)
WHM	WATT-HOUR METER
WP	WEATHERPROOF

ELECTRICAL SYMBOL LIST

EXISTING	NEW	
[C]	[C]	TRAFFIC SIGNAL CONTROLLER AND CABINET.
[I]	[I]	UN-INTERRUPTIBLE POWER SUPPLY.
[M]	[M]	ELECTRIC METERING EQUIPMENT.
[H]	[H]	TRAFFIC SIGNAL HEAD WITH 12" LENS.
[S]	[S]	TYPE I TRAFFIC SIGNAL STANDARD (HEAD ASSEMBLY AS SPECIFIED).
[S]	[S]	TYPE II TRAFFIC SIGNAL STANDARD WITH MAST ARM (MAST ARM LENGTH, SIGNAL HEAD SPACING, AND HEAD AS SPECIFIED).
[S]	[S]	TYPE III TRAFFIC SIGNAL STANDARD WITH MAST ARM (MAST ARM LENGTH, SIGNAL HEAD SPACING HEAD AS SPECIFIED) AND STREET LIGHTING STANDARD.
[P]	[P]	TRAFFIC SIGNAL PULLBOX, TYPE "A".
[P]	[P]	TRAFFIC SIGNAL PULLBOX, TYPE "B".
[P]	[P]	TRAFFIC SIGNAL PULLBOX, TYPE "C".
[L]	[L]	LOOP DETECTOR.
[O]	[O]	OPTICOM RECEIVER.
[B]	[B]	TRAFFIC SIGNAL HEAD WITH BACK PLATE.
[C]	[C]	COUNTDOWN PEDESTRIAN SIGNAL HEADS.
[P]	[P]	TRAFFIC SIGNAL PEDESTRIAN PUSHBUTTON STATION.
[L]	[L]	STREET LIGHTING STANDARD WITH POLE, LUMINAIRE, AND CONCRETE BASE.
[S]	[S]	TYPE III TRAFFIC SIGNAL STANDARD WITH MAST ARM (MAST ARM LENGTH, SIGNAL HEAD SPACING AND HEAD AS SPECIFIED) AND STREET LIGHTING
[C]	[C]	WOOD POLE OR STEEL POLES AS DESIGNATED.
[E]	[E]	RACEWAY, CONCEALED BELOW FINISH GRADE.
[E]	[E]	OVERHEAD ELECTRIC LINES.
[T]	[T]	TRAFFIC SIGNAL RACEWAY.
[S]	[S]	STREET LIGHT RACEWAY.
[T]	[T]	TELEPHONE RACEWAY.
[D]	[D]	DETAIL INDICATOR
[A]	[A]	DETAIL SECTION INDICATOR
[A]	[A]	NOTE INDICATOR

NOTE: 1. CONTRACTOR'S ATTENTION IS CALLED IN NOTE NO.18, CURB RAMP, AND SIDEWALK NOTES ON SHEET 59b.



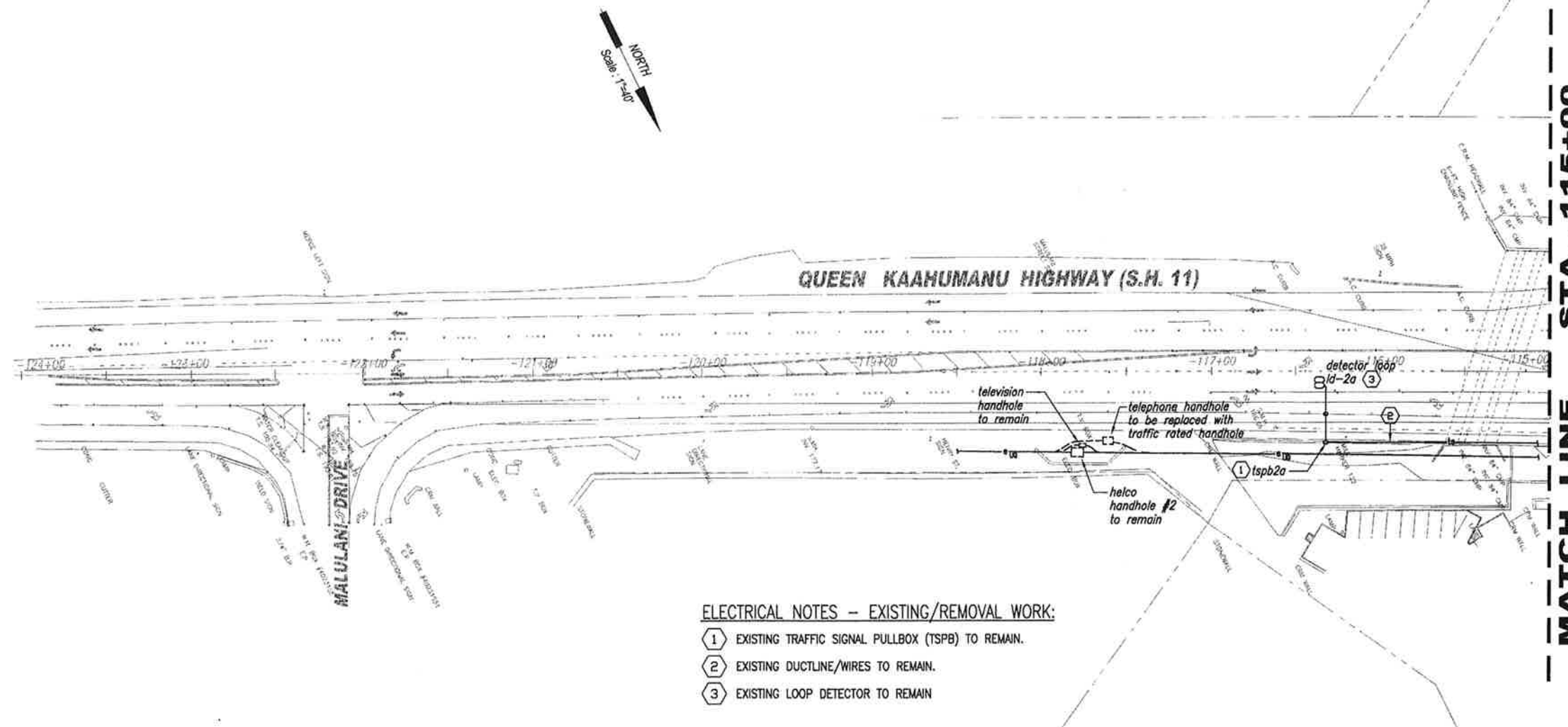
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**Electrical Symbol List,
Abbreviations & Legend**

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	254	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO REMAIN.
- 2 EXISTING DUCTLINE/WIRES TO REMAIN.
- 3 EXISTING LOOP DETECTOR TO REMAIN

1 ELECTRICAL PLAN - STA. -122+00 TO STA. -115+00 (EXISTING/REMOVAL WORK)
 E-3 SCALE: 1" = 40'-0"



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 Exp. 04-30-10
Clayton C. Y. Pang
 Electrical Engineer

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

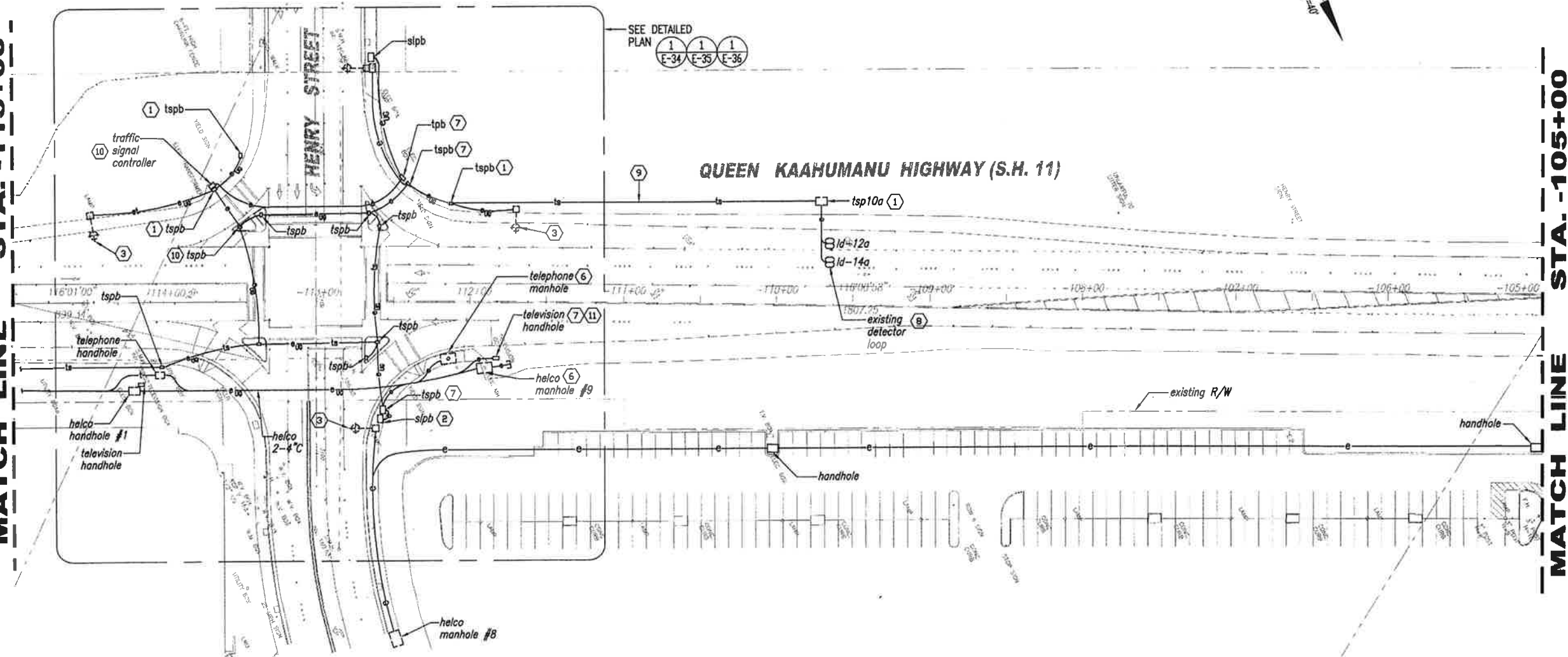
STA. -122+00 TO STA. -115+00

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
 Date: Oct. 2007

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	255	315

STA. -115+00 -
MATCH LINE

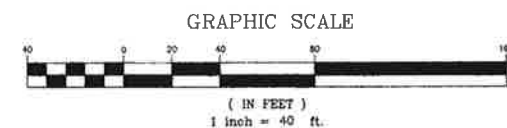


STA. -105+00
MATCH LINE

1 ELECTRICAL PLAN - STA. -115+00 TO STA. -105+00 (EXISTING/REMOVAL WORK)
E-4 SCALE: 1" = 40'-0"

ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

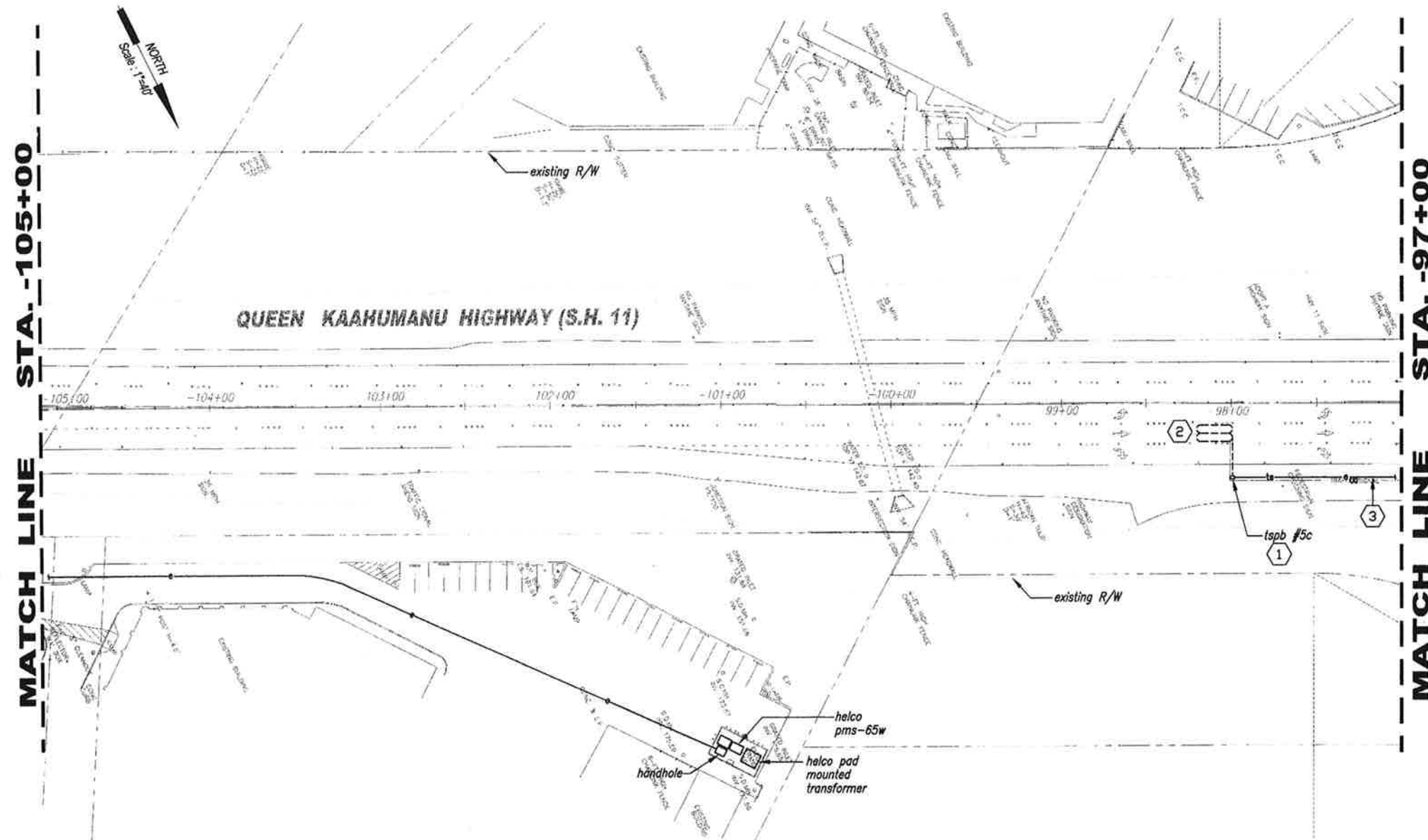
- | | |
|--|---|
| 1 EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO REMAIN. | 6 RECONSTRUCT EXISTING MANHOLE COVER ELEVATION FLUSH WITH NEW PAVEMENT. |
| 2 RECONSTRUCT EXISTING STREET LIGHT PULLBOX COVER TO BE FLUSH WITH NEW PAVEMENT. | 7 RECONSTRUCT EXISTING HANDHOLE FRAME AND COVER BE FLUSH WITH NEW PAVEMENT. |
| 3 DISCONNECT AND REMOVE EXISTING STREET LIGHTING LUMINAIRE. CONCRETE BASE TO BE DEMOLISHED. POLE AND LUMINAIRE TO STATE. | 8 EXISTING LOOP DETECTOR TO REMAIN. |
| 4 EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE. | 9 EXISTING DUCTLINE/WIRE TO REMAIN. |
| 5 EXISTING STREET LIGHT UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE. | 10 EXISTING TRAFFIC SIGNAL CONTROLLER TO BE REPLACED. |
| | 11 RECONSTRUCT EXISTING CATV HANDHOLE TO TRAFFIC BEARING TYPE |



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Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. -115+00 TO STA. -105+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007
SHEET No. E-4 OF 64 SHEETS

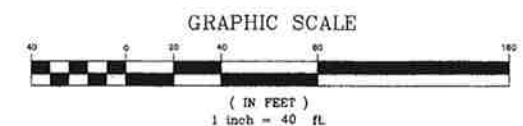
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	256	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- (1) EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- (2) EXISTING DETECTOR LOOP TO BE ABANDONED.
- (3) EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.

1
E-5 **ELECTRICAL PLAN - STA. -105+00 TO STA. -97+00 (EXISTING/REMOVAL WORK)**
SCALE: 1" = 40'-0"



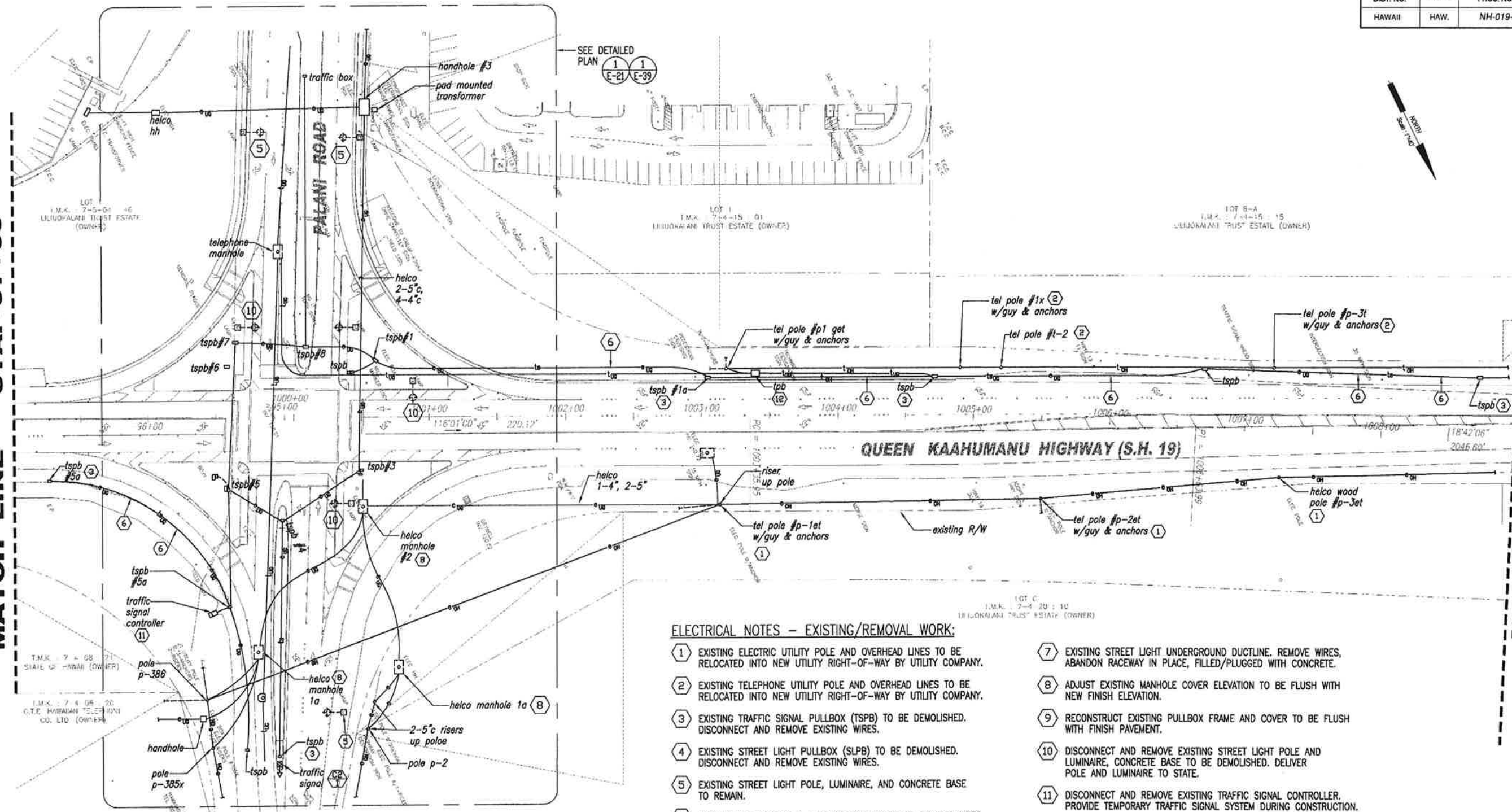
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Exp. 04-30-10
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. -105+00 TO STA. -97+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-5 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	257	315

MATCH LINE STA. -97+00

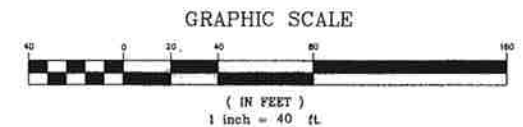
MATCH LINE STA. 1009+00



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- ① EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- ② EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- ③ EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- ④ EXISTING STREET LIGHT PULLBOX (SLPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- ⑤ EXISTING STREET LIGHT POLE, LUMINAIRE, AND CONCRETE BASE TO REMAIN.
- ⑥ EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- ⑦ EXISTING STREET LIGHT UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- ⑧ ADJUST EXISTING MANHOLE COVER ELEVATION TO BE FLUSH WITH NEW FINISH ELEVATION.
- ⑨ RECONSTRUCT EXISTING PULLBOX FRAME AND COVER TO BE FLUSH WITH FINISH PAVEMENT.
- ⑩ DISCONNECT AND REMOVE EXISTING STREET LIGHT POLE AND LUMINAIRE, CONCRETE BASE TO BE DEMOLISHED. DELIVER POLE AND LUMINAIRE TO STATE.
- ⑪ DISCONNECT AND REMOVE EXISTING TRAFFIC SIGNAL CONTROLLER. PROVIDE TEMPORARY TRAFFIC SIGNAL SYSTEM DURING CONSTRUCTION.
- ⑫ EXISTING TELEPHONE PULLBOX TO BE REMOVED. VERIFY WITH HAWAIIAN TELCOM.

1 ELECTRICAL PLAN - STA. -97+00 TO STA. 1009+00 (EXISTING/REMOVAL WORK)
E-6 SCALE: 1" = 40'-0"



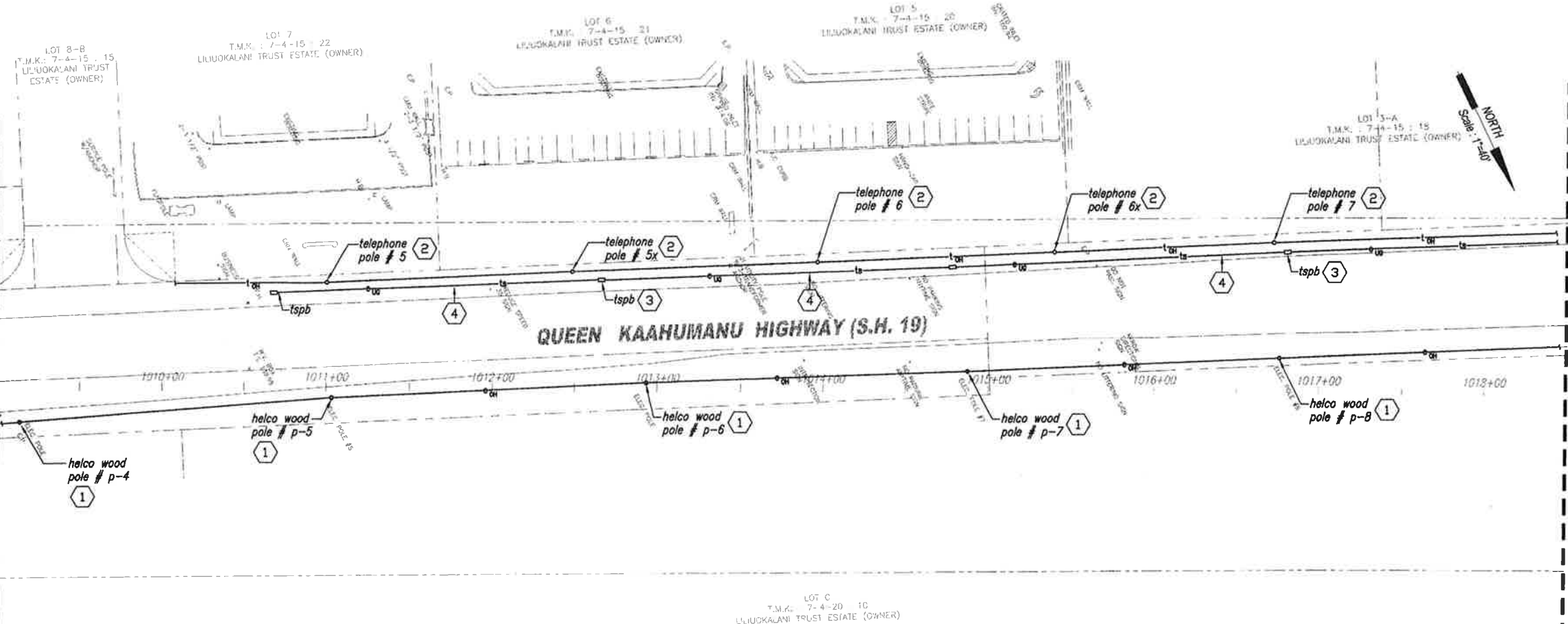
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Clayton G. Y. Paik
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. -97+00 TO STA. 1009+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-6 OF 84 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	258	315

MATCH LINE STA. 1009+00

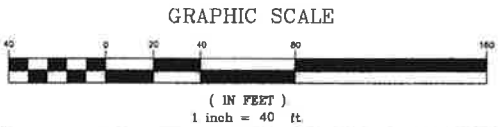
STA. 1018+50 MATCH LINE



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED BY UTILITY COMPANY WITH NEW R/W.
- 2 EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- 3 EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- 4 EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRE, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.

1 ELECTRICAL PLAN - STA. 1009+00 TO STA. 1018+50 (EXISTING/REMOVAL WORK)
E-7 SCALE: 1" = 40'-0"



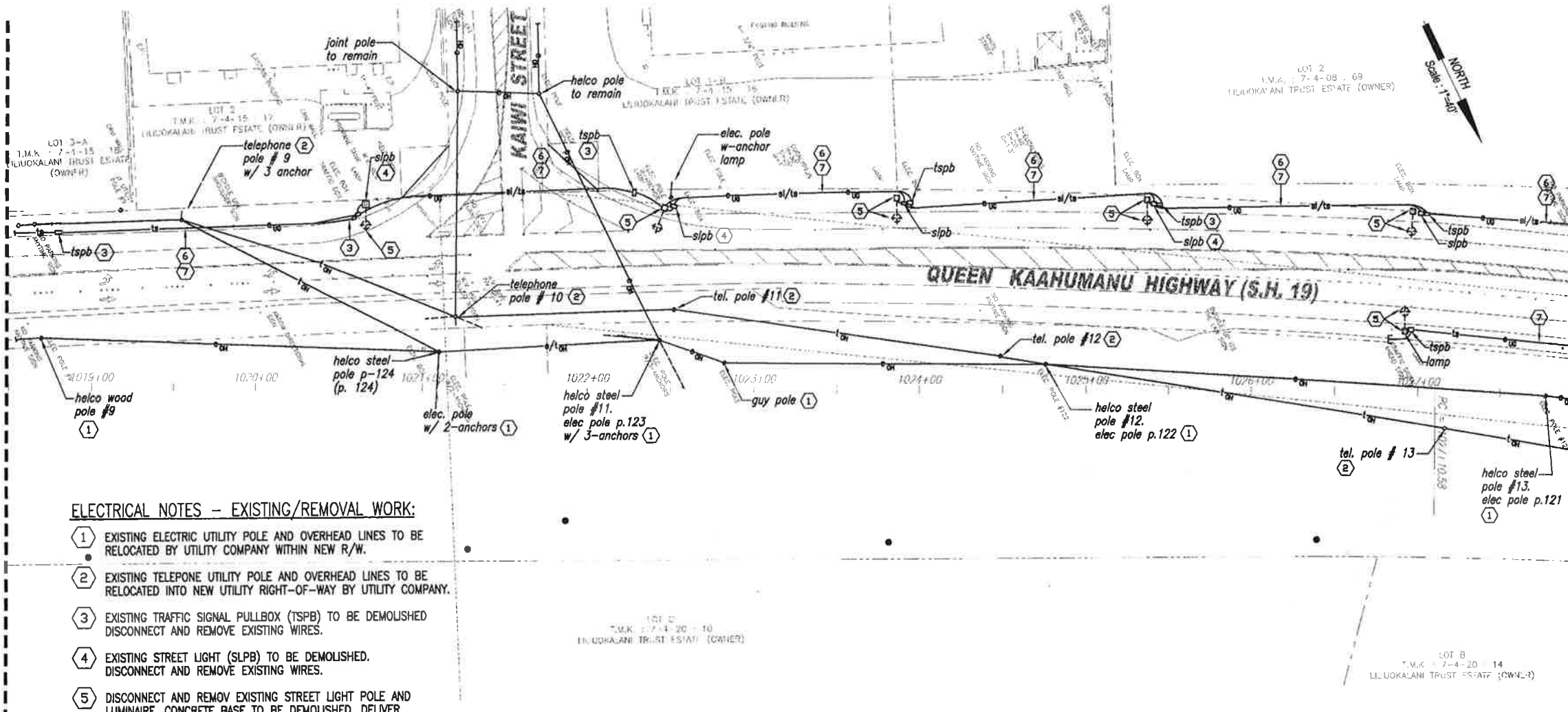
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Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1009+00 TO STA. 1018+50
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-7 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	259	315

STA. 1018+50

MATCH LINE



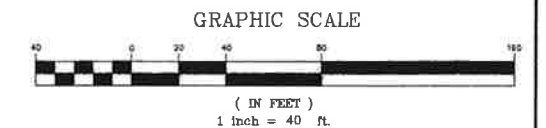
STA. 1028+00

MATCH LINE

ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED BY UTILITY COMPANY WITHIN NEW R/W.
- EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED DISCONNECT AND REMOVE EXISTING WIRES.
- EXISTING STREET LIGHT (SLPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- DISCONNECT AND REMOVE EXISTING STREET LIGHT POLE AND LUMINAIRE. CONCRETE BASE TO BE DEMOLISHED. DELIVER POLE AND LUMINAIRE TO STATE.
- EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- EXISTING STREET LIGHT UNDERGROUP DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.

1 ELECTRICAL PLAN - STA. 1018 +50 TO STA. 1028+00 (EXISTING/REMOVAL WORK)
E-8 SCALE: 1" = 40'-0"

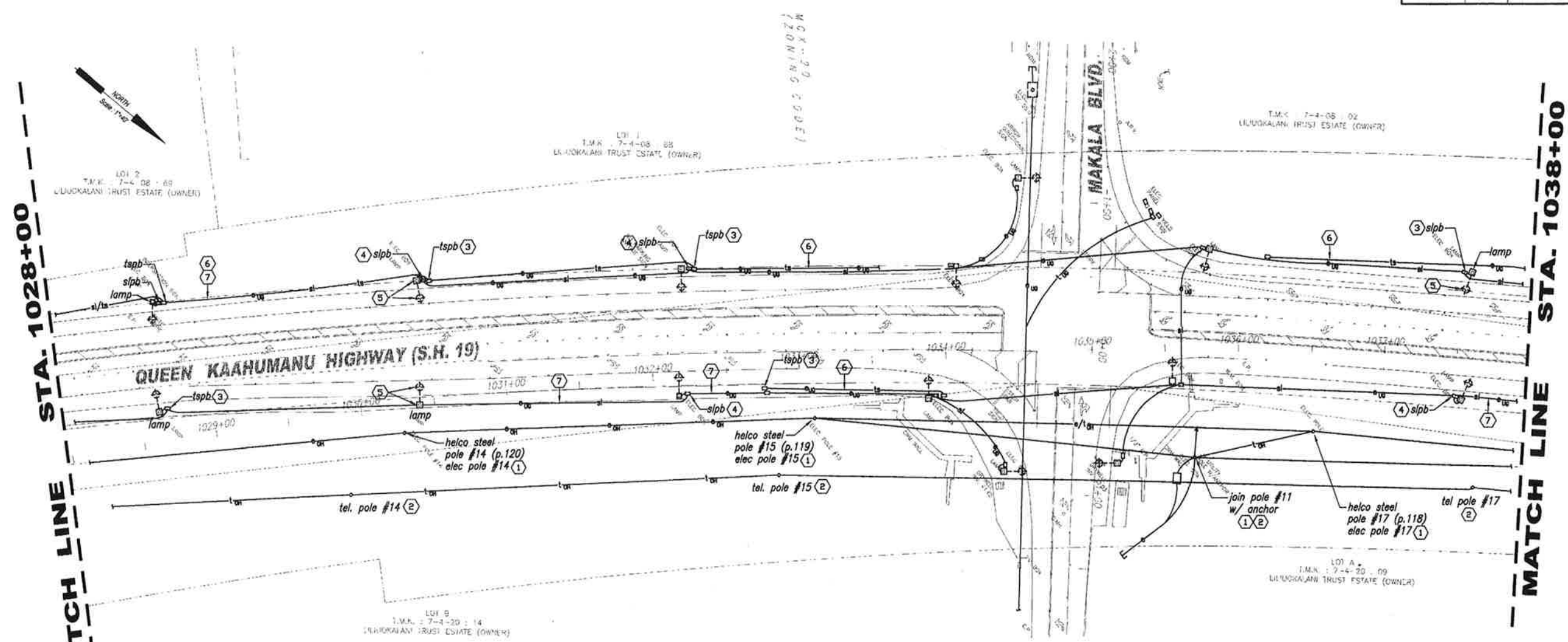


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Chapman
Electrical Hawaii, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1018+50 TO STA. 1028+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-8 OF 64 SHEETS

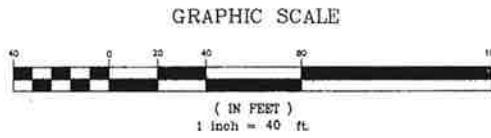
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	260	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED BY UTILITY COMPANY WITHIN NEW R/W.
- 2 EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- 3 EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED DISCONNECT AND REMOVE EXISTING WIRES.
- 4 EXISTING STREET LIGHT (SLPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- 5 DISCONNECT AND REMOVE EXISTING STREET LIGHT POLE AND LUMINAIRE. CONCRETE BASE TO BE DEMOLISHED. DELIVER POLE AND LUMINAIRE TO STATE.
- 6 EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- 7 EXISTING STREET LIGHT UNDERGROUP DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.

1 ELECTRICAL PLAN - STA. 1028+00 TO STA. 1038+00 (EXISTING/REMOVAL WORK)
E-9 SCALE: 1" = 40'-0"

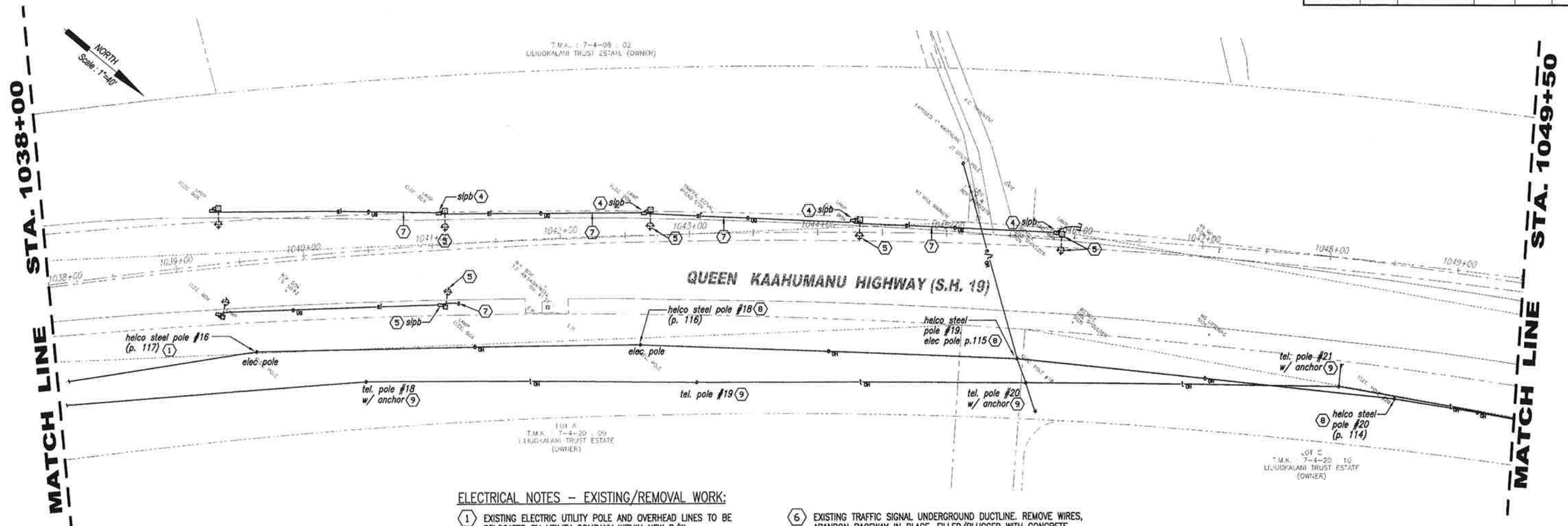


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Clayton G. Y. Paig
 Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1028+00 TO STA. 1038+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-9 OF 64 SHEETS

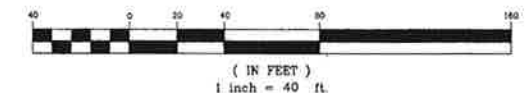
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	261	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED BY UTILITY COMPANY WITHIN NEW R/W.
- 2 EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- 3 EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED DISCONNECT AND REMOVE EXISTING WIRES.
- 4 EXISTING STREET LIGHT (SLPB) TO BE DEMOLISHED. DISCONNECT AND REMOVE EXISTING WIRES.
- 5 DISCONNECT AND REMOVE EXISTING STREET LIGHT POLE AND LUMINAIRE. CONCRETE BASE TO BE DEMOLISHED. DELIVER POLE AND LUMINAIRE TO STATE.
- 6 EXISTING TRAFFIC SIGNAL UNDERGROUND DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- 7 EXISTING STREET LIGHT UNDERGROUP DUCTLINE. REMOVE WIRES, ABANDON RACEWAY IN PLACE, FILLED/PLUGGED WITH CONCRETE.
- 8 EXISTING ELECTRIC UTILITY POLE TO REMAIN.
- 9 EXISTING TELEPHONE POLE AND LINE TO REMAIN.

1 ELECTRICAL PLAN - STA. 1038+00 TO STA. 1049+50 (EXISTING/REMOVAL WORK)
E-10 SCALE: 1" = 40'-0"



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Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

STA. 1038+00 TO STA. 1049+50

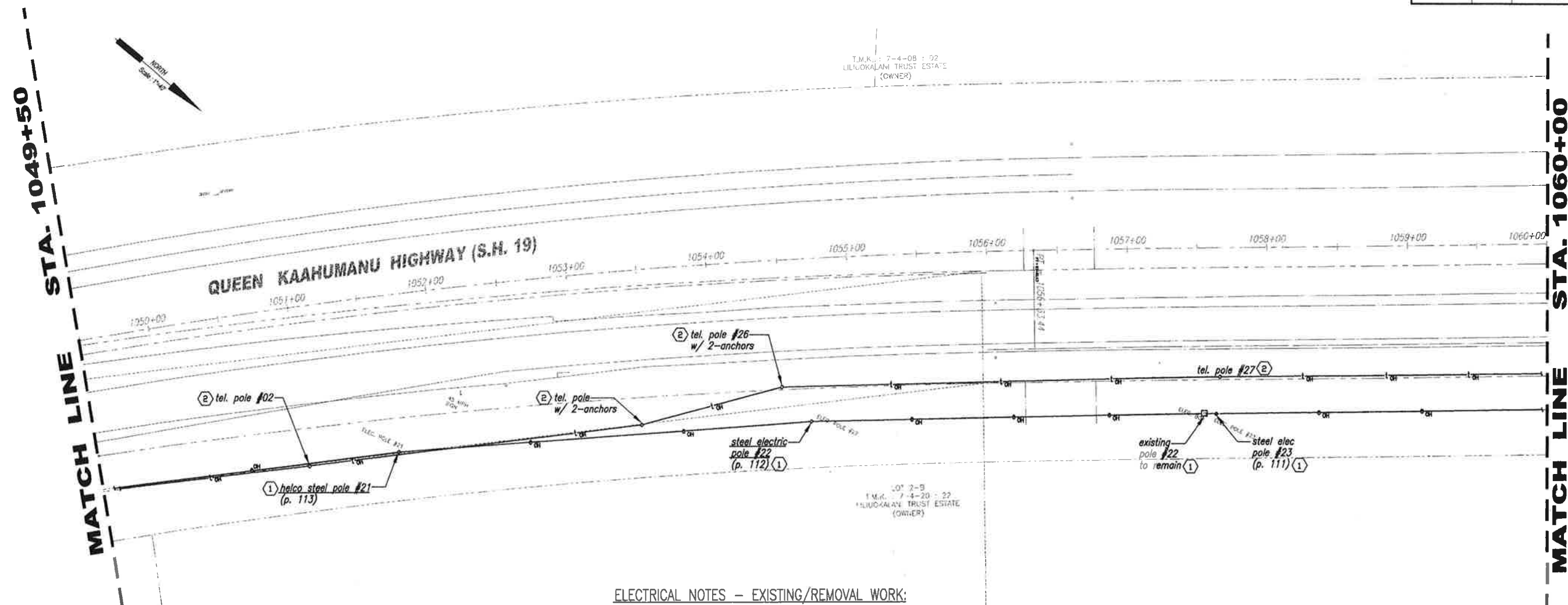
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

Date: Oct. 2007

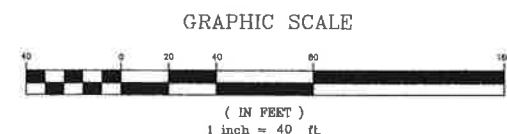
SHEET No. E-10 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	262	315



- ELECTRICAL NOTES - EXISTING/REMOVAL WORK:
- ① EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
 - ② EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO REMAIN.
 - ③ EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW RIGHT-OF-WAY BY UTILITY COMPANY.

1 ELECTRICAL PLAN - STA. 1049+50 TO STA. 1060+00 (EXISTING/REMOVAL WORK)
E-11 SCALE: 1" = 40'-0"

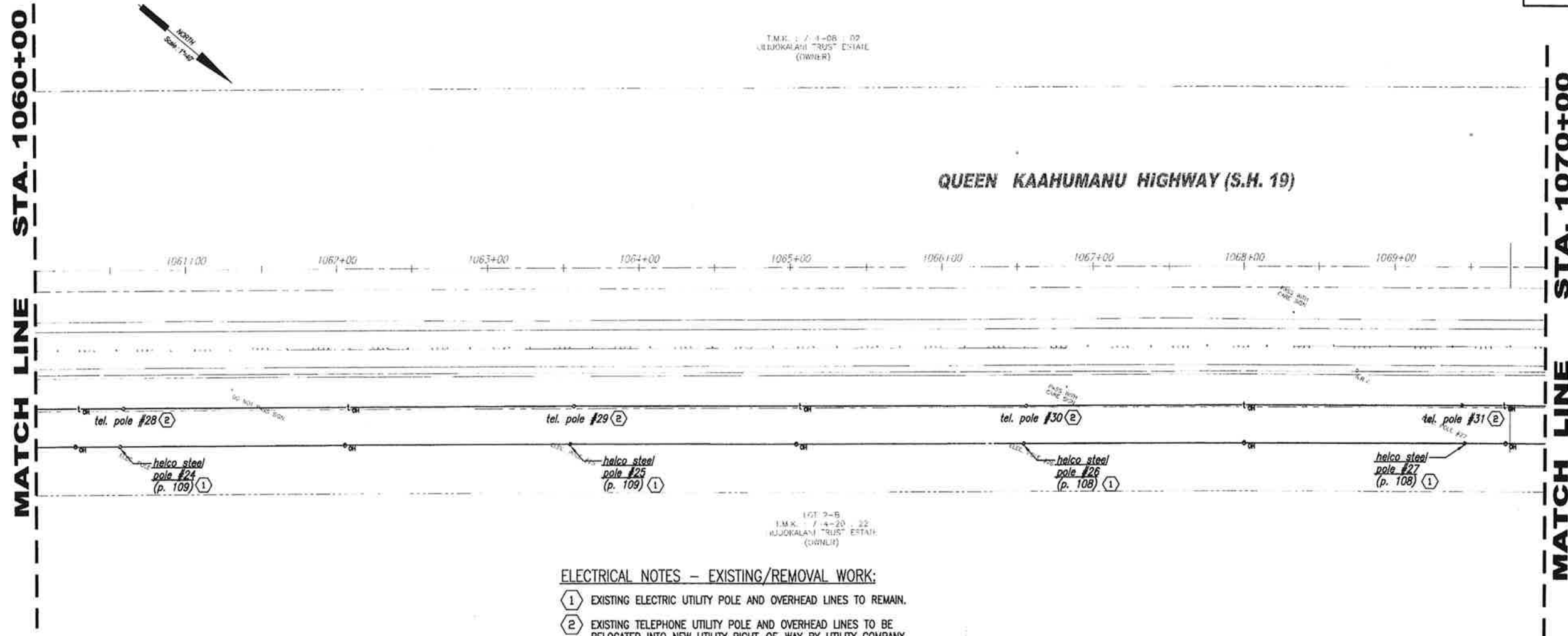


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Exp. 04-30-10
Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1049+50 TO STA. 1060+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-11 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	263	315

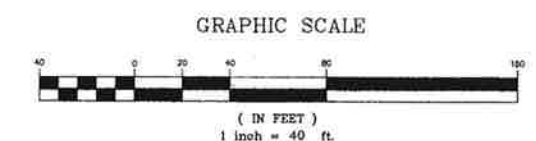
QUEEN KAAHUMANU HIGHWAY (S.H. 19)



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- 2 EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.

1 ELECTRICAL PLAN - STA. 1060+00 TO STA. 1070+00 (EXISTING/REMOVAL WORK)
E-12 SCALE: 1" = 40'-0"



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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

STA. 1060+00 TO STA. 1070+00

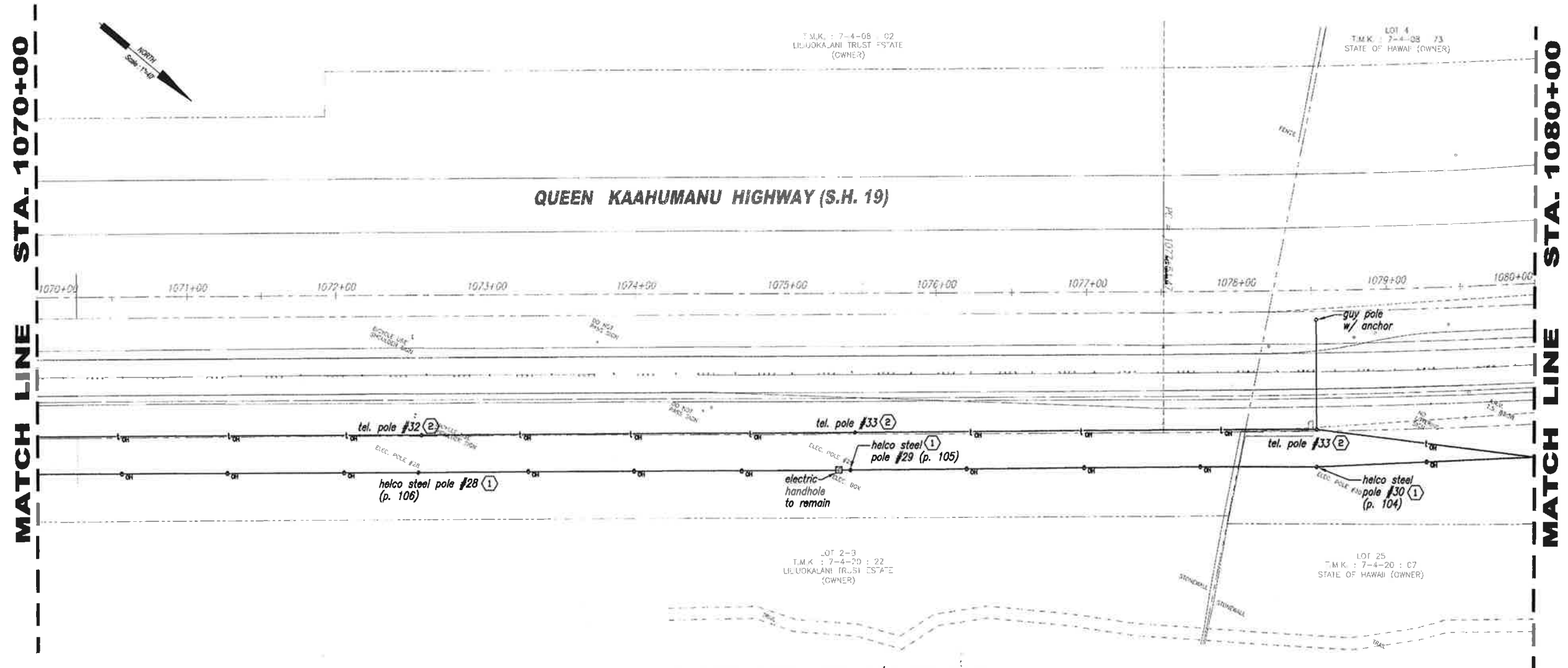
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

Date: Oct. 2007

SHEET No. E-12 OF 64 SHEETS

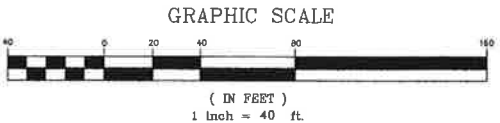
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	264	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- 2 EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.

1 ELECTRICAL PLAN - STA. 1070+00 TO STA. 1080+00 (EXISTING/REMOVAL WORK)
E-13 SCALE: 1" = 40'-0"



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Clayton G. Y. Paig
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

STA. 1070+00 TO STA. 1080+00

**QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I**

Federal Aid Project No. NH-019-1(20)

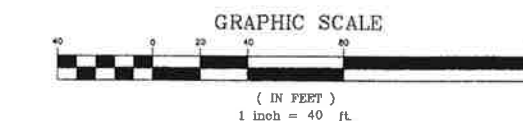
Date: Oct. 2007

SHEET No. E-13 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	265	315

ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO BE RELOCATED INTO NEW UTILITY RIGHT-OF-WAY BY UTILITY COMPANY.
- EXISTING WOOD POLE, BRACKET, STREET LIGHT LUMINAIRE AND OVERHEAD WIRING TO BE REMOVED.
- EXISTING POLE, LUMINAIRE AND CONCRETE BASE TO BE REMOVED.
- REMOVE EXISTING ELECTRICAL EQUIPMENT TO BE RELOCATED BY HELCO, REMOVE CONCRETE PAD AND DUCTS.
- EXISTING HANDHOLE TO BE REMOVED.
- EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- EXISTING TELEPHONE UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- EXISTING TELEPHONE PULLBOX TO BE REMOVED. CONNECT EXISTING DUCTS AT OPPOSITE SIDES OF HANDHOLE TO BE CONTINUOUS. COMPLETE CONNECTION ONE AT A TIME UNDER VERIZON SUPERVISION.
- EXISTING TELEPHONE PULLBOX TO BE REPLACED WITH NEW. EXTEND EXISTING 2-2°C FROM PULLBOX TO VERIZON RISER POLE.
- ARRANGE FOR REMOVAL OF OVERHEAD ELECTRIC SECONDARY WITH HELCO.
- CUT AND LOCATE EXIST 3-5°C ELEC. CONNECT NEW 3-5°C.



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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

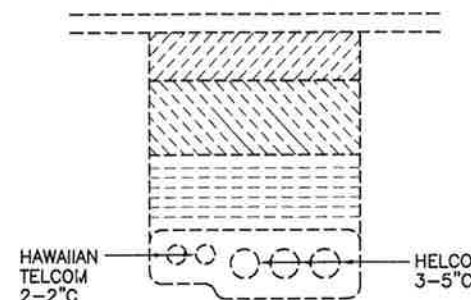
STA. 1080+00 TO STA. 1089+50

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

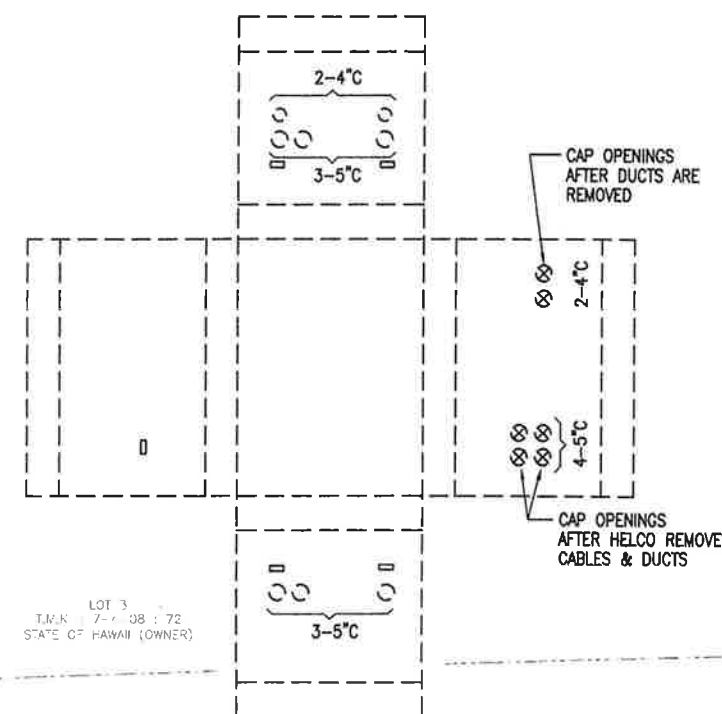
Federal Aid Project No. NH-019-1(20)

Date: Oct. 2007

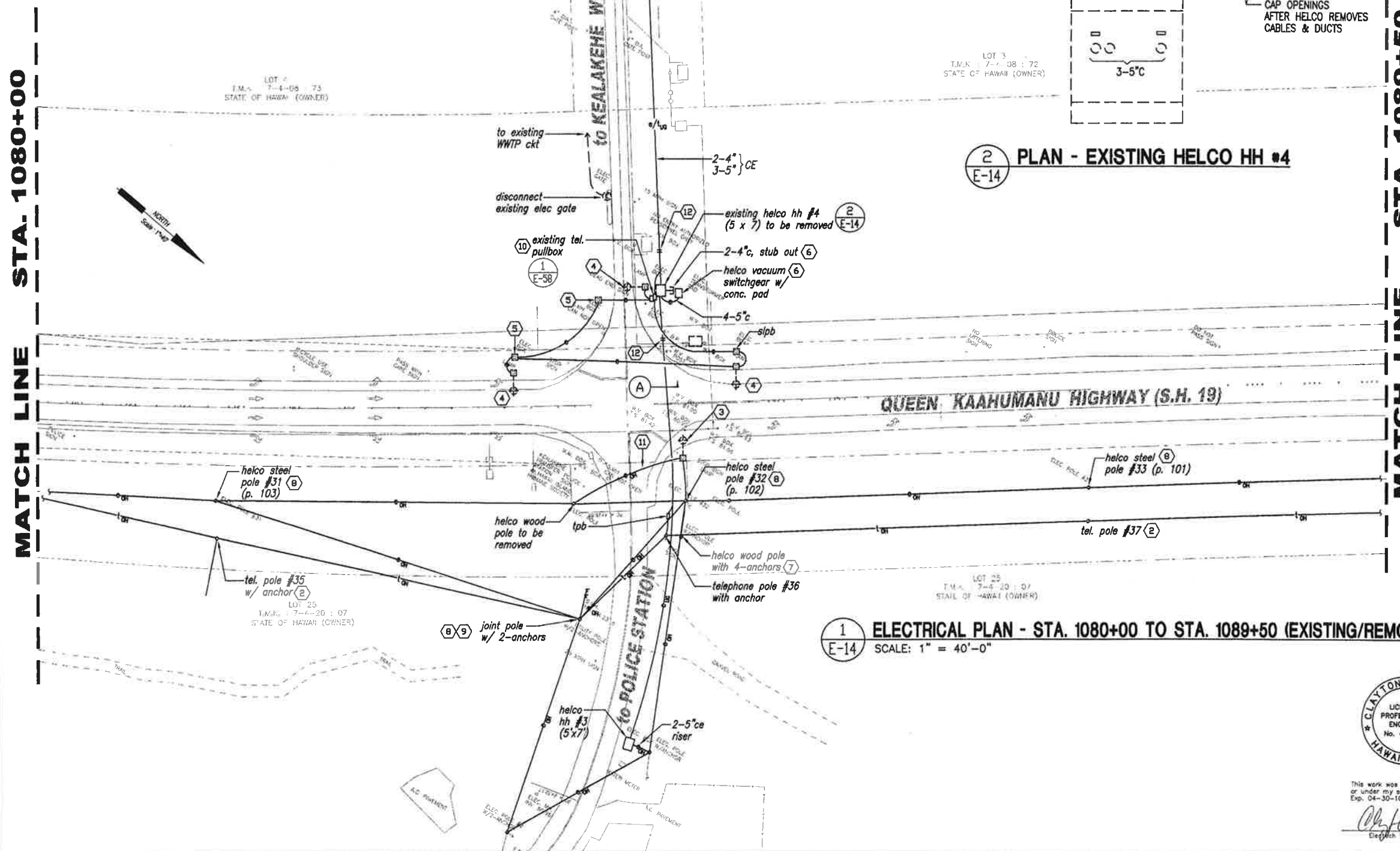
SHEET No. E-14 OF 84 SHEETS



SECTION A (EXISTING)



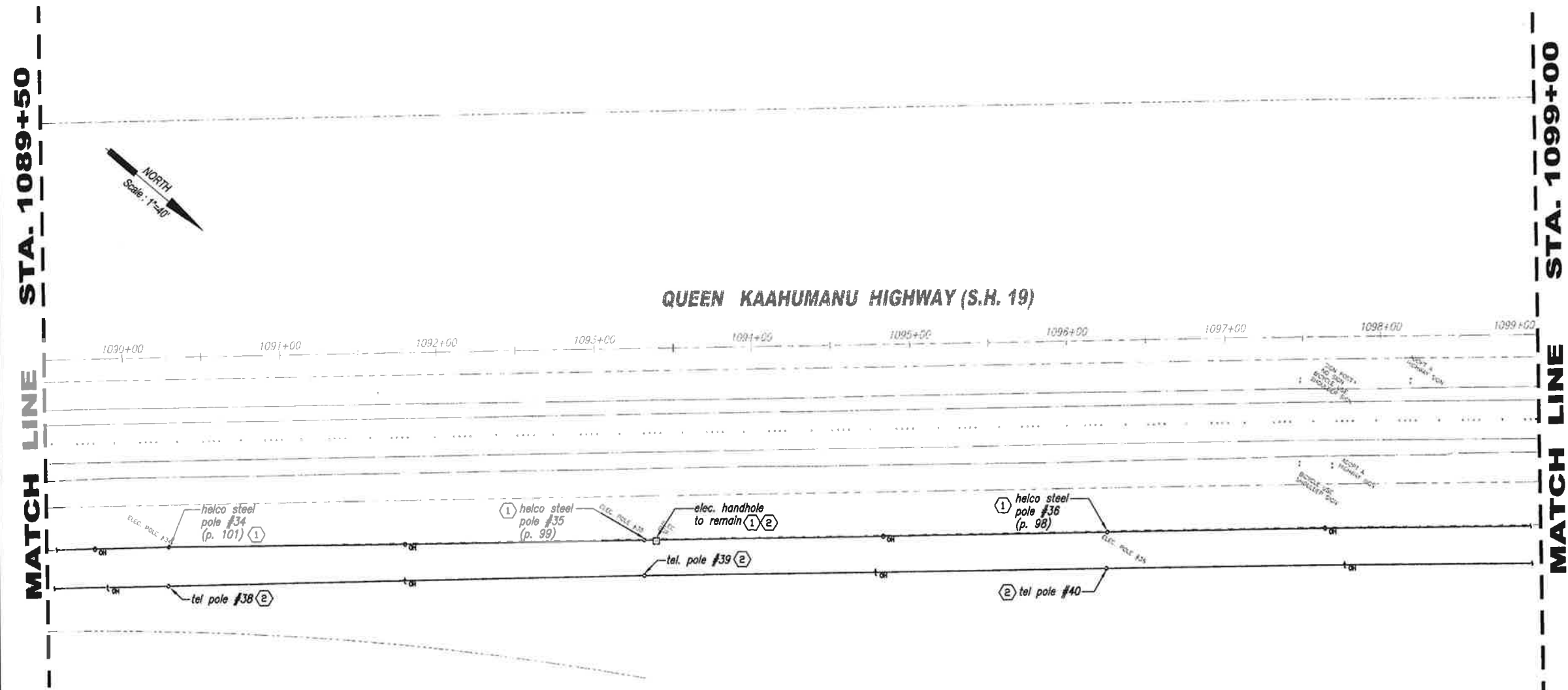
2 PLAN - EXISTING HELCO HH #4



1 ELECTRICAL PLAN - STA. 1080+00 TO STA. 1089+50 (EXISTING/REMOVAL WORK)

SCALE: 1" = 40'-0"

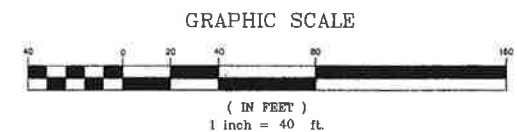
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	266	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- (1) EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- (2) EXISTING TELEPHONE OVERHEAD LINES TO REMAIN.

1
E-15 ELECTRICAL PLAN - STA. 1089+50 TO STA. 1099+00 (EXISTING/REMOVAL WORK)
SCALE: 1" = 40'-0"



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Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (EXISTING/REMOVAL WORK)

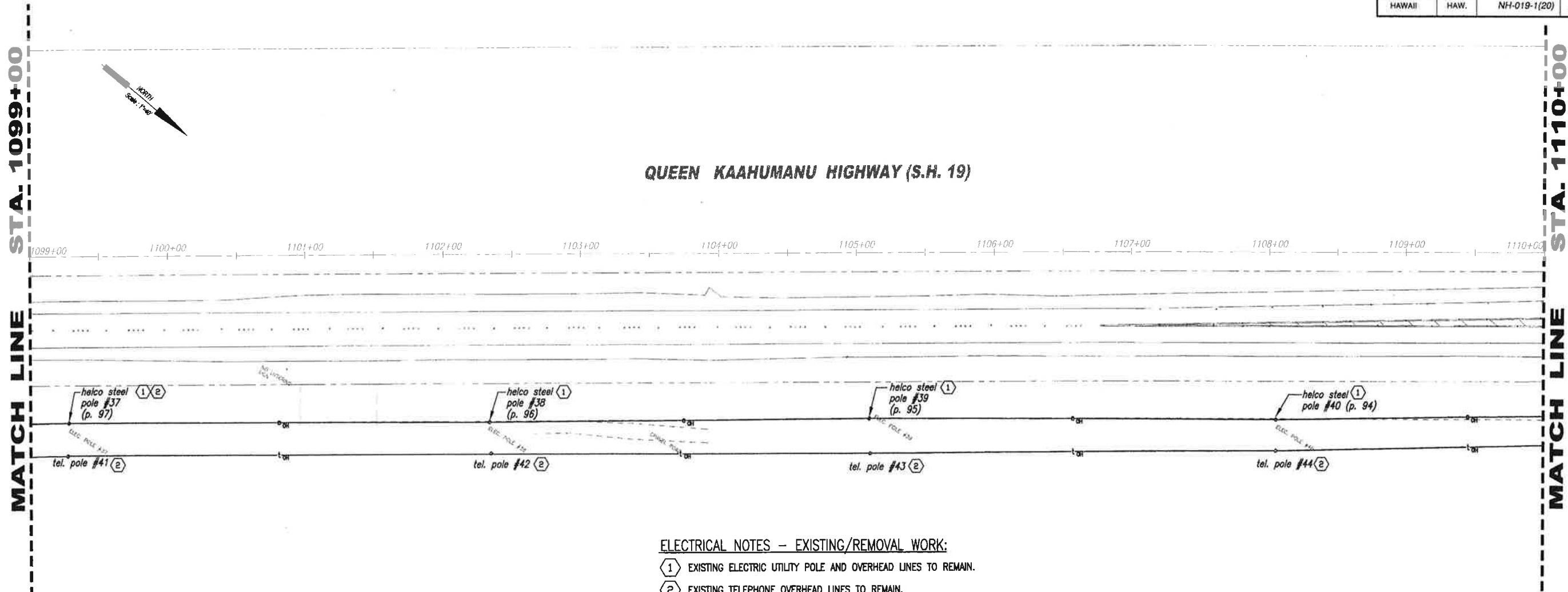
STA. 1089+50 TO STA. 1099+00

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-15 OF 64 SHEETS

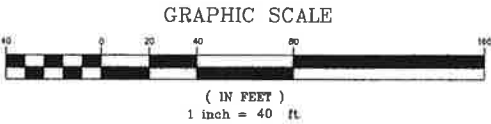
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	267	315



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- 1 EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- 2 EXISTING TELEPHONE OVERHEAD LINES TO REMAIN.

1 ELECTRICAL PLAN - STA. 1099+00 TO STA. 1110+00 (EXISTING/REMOVAL WORK)
E-16 SCALE: 1" = 40'-0"

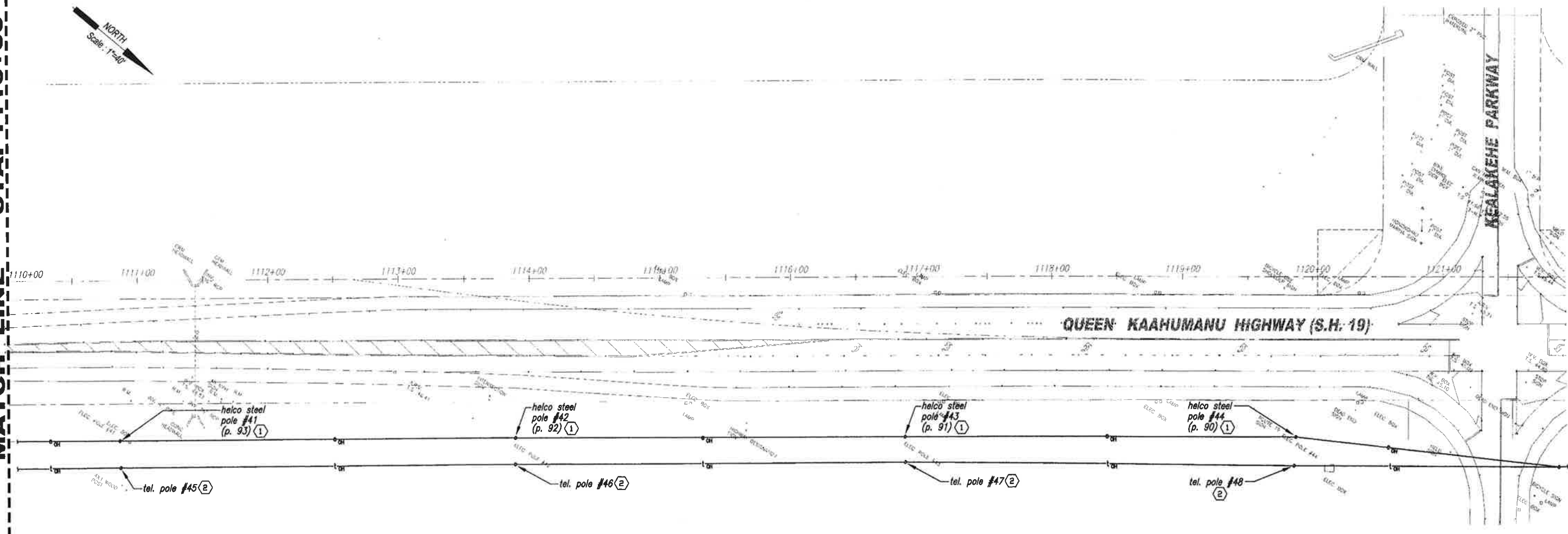


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Exp. 04-30-10
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1099+00 TO STA. 1110+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-16 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	268	315

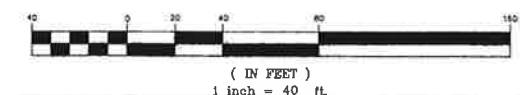
MATCH LINE STA. 1110+00



ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- (1) EXISTING ELECTRIC UTILITY POLE AND OVERHEAD LINES TO REMAIN.
- (2) EXISTING TELEPHONE OVERHEAD LINES TO REMAIN.

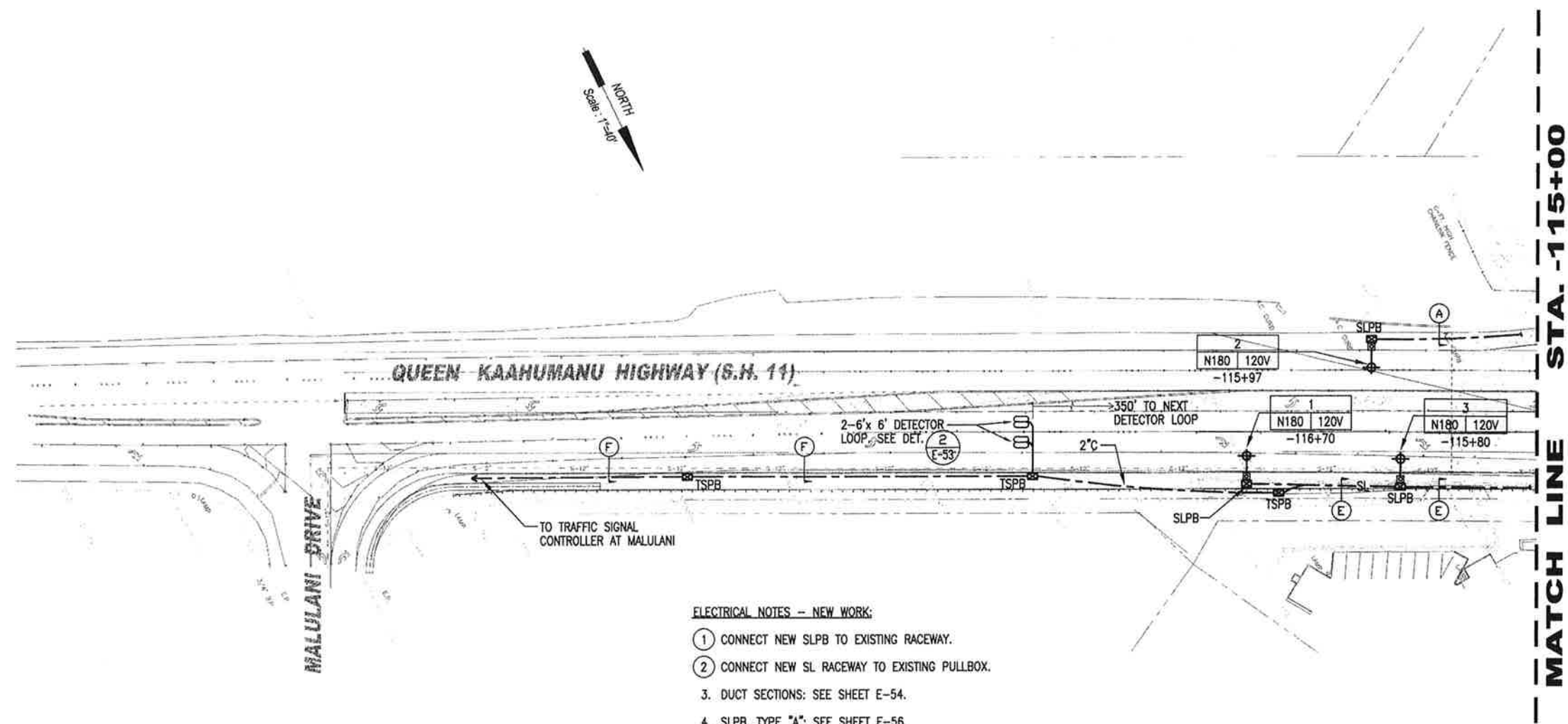
1 ELECTRICAL PLAN - STA. 1110+00 TO STA. 1121+00 (EXISTING/REMOVAL WORK)
E-17 SCALE: 1" = 40'-0"



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Exp. 04-30-10
Clayton C. Y. Paik
Electech Hawaii, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
STA. 1110+00 TO STA. 1121+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-17 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	269	315

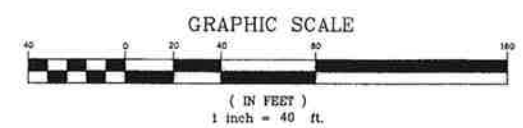


- ELECTRICAL NOTES -- NEW WORK:
1. CONNECT NEW SLPB TO EXISTING RACEWAY.
 2. CONNECT NEW SL RACEWAY TO EXISTING PULLBOX.
 3. DUCT SECTIONS: SEE SHEET E-54.
 4. SLPB, TYPE "A": SEE SHEET E-56.
 5. STREET LIGHT STANDARD: SEE SHEET E-54.

1
E-18 ELECTRICAL PLAN - STA. -122+00 TO STA. -115+00 (NEW WORK)
SCALE: 1" = 40'-0"



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Clayton C. Y. Pang
Electrical Engineer

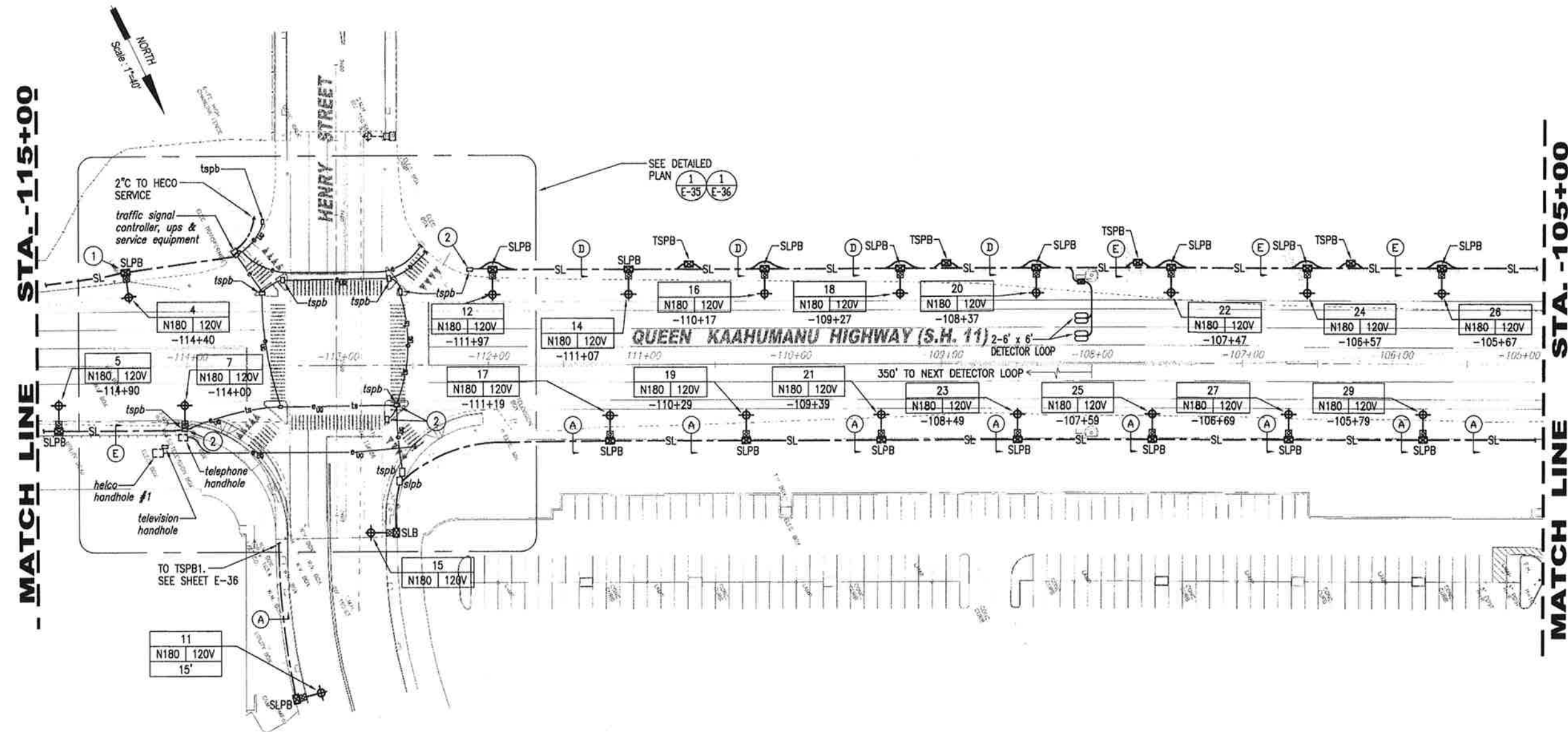


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

STA. -122+00 TO STA. -115+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-18 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	270	315



ELECTRICAL NOTES - NEW WORK:

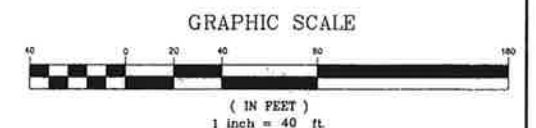
1. CONNECT NEW SLPB TO EXISTING RACEWAY.
2. CONNECT NEW SL RACEWAY TO EXISTING PULLBOX.
3. DUCT SECTIONS: SEE SHEET E-54.
4. SLPB, TYPE "A": SEE SHEET E-56.
5. STREET LIGHT STANDARD: SEE SHEET E-54.
6. TRAFFIC SIGNAL CONTROLLER, UPS & SERVICE EQUIPMENT: SEE SHEET E-55.

1 **ELECTRICAL PLAN - STA. -115+00 TO STA. -105+00 (NEW WORK)**
 SCALE: 1" = 40'-0"



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Clayton C. Y. Pang
 Electrical Engineer



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 ELECTRICAL PLAN (NEW WORK)

STA. -115+00 TO STA. -105+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
 Federal Aid Project No. NH-019-1(20)
 Date: Dec. 2007

SHEET No. E-19 OF 64 SHEETS

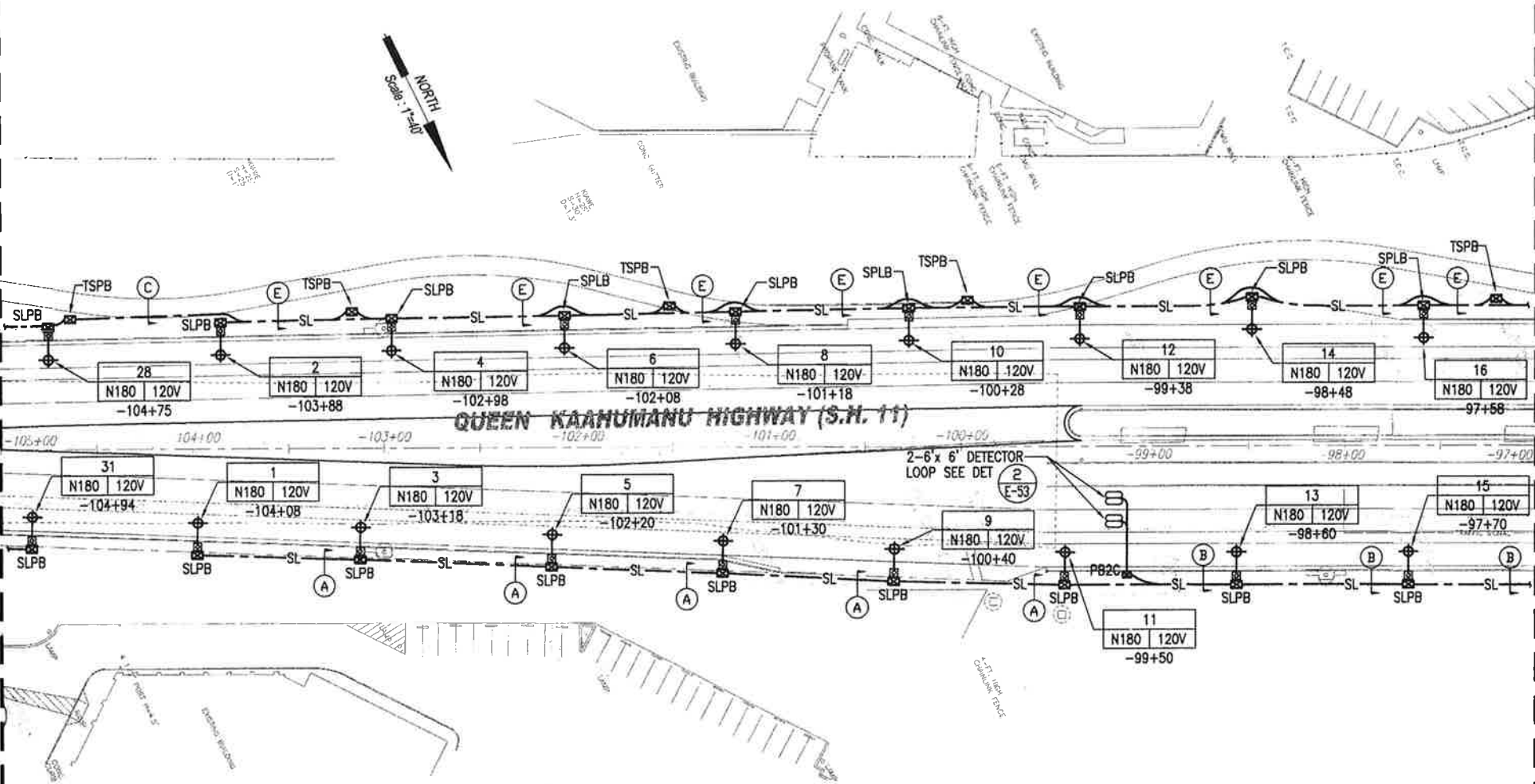
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	271	315

STA. -105+00

MATCH LINE

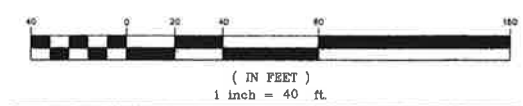
STA. -97+00

MATCH LINE



- ELECTRICAL NOTES -- NEW WORK:
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET: E-54.

1
E-20 ELECTRICAL PLAN - STA. -105+00 TO STA. -97+00 (NEW WORK)
SCALE: 1" = 40'-0"



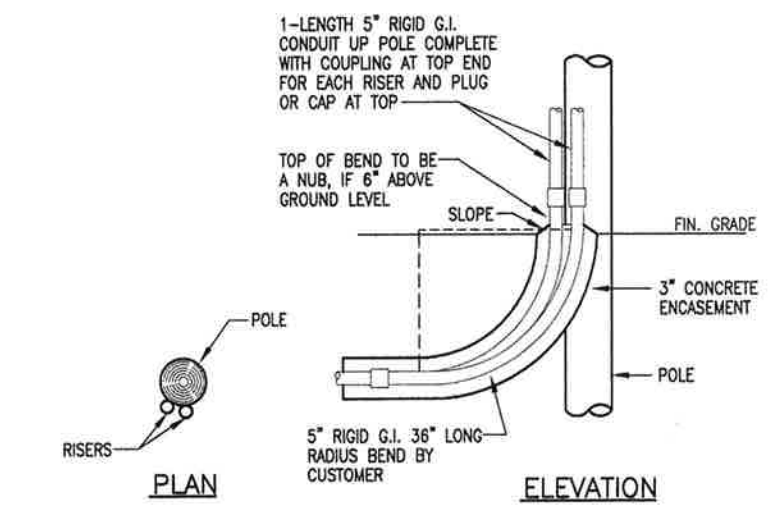
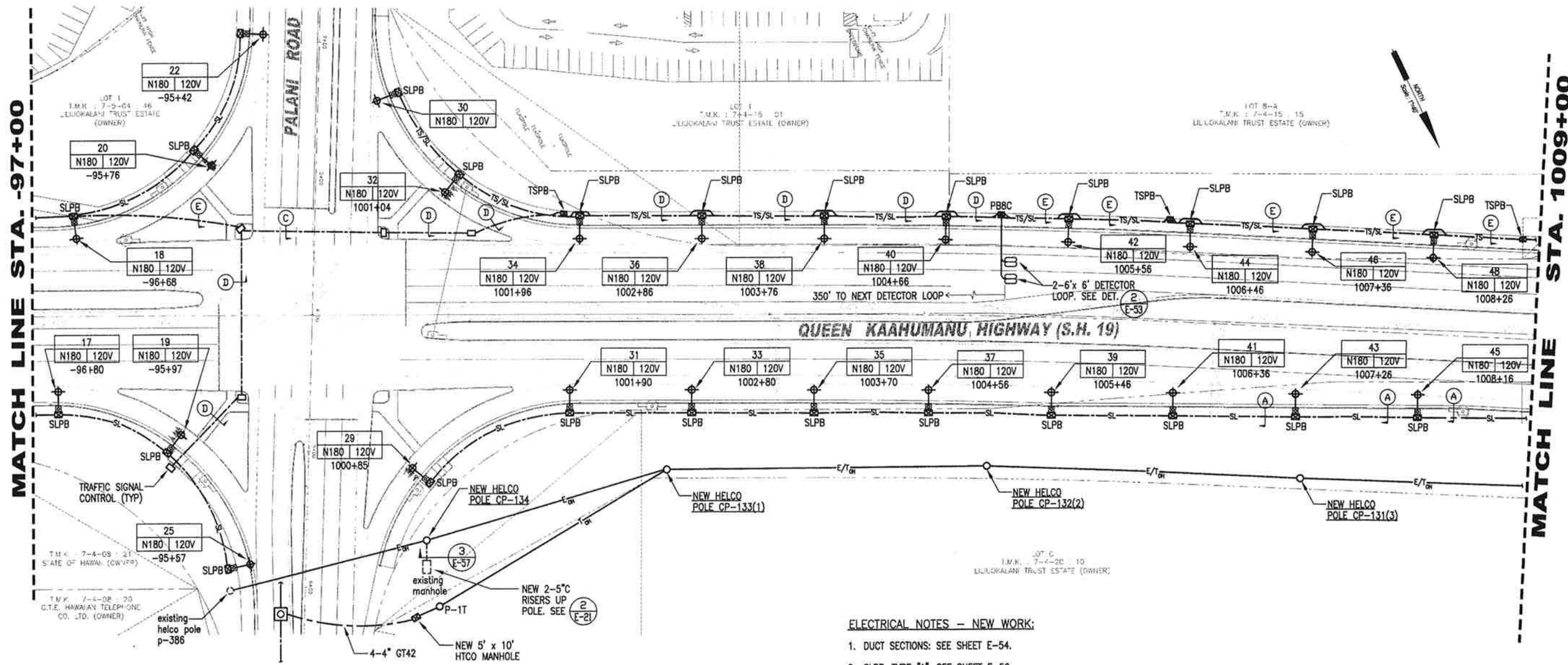
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Exp. 04-30-10
Clayton C. Y. Paig
Electrical Engineer, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

STA. -105+00 TO STA. -97+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

SHEET No. E-20 OF 64 SHEETS

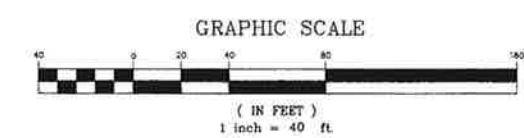
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	272	315



2
E-21
TYPICAL RISER DETAIL
NOT TO SCALE

- ELECTRICAL NOTES - NEW WORK:
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET E-54.

1
E-21
ELECTRICAL PLAN - STA. -97+00 TO STA. 1009+00 (NEW WORK)
SCALE: 1" = 40'-0"



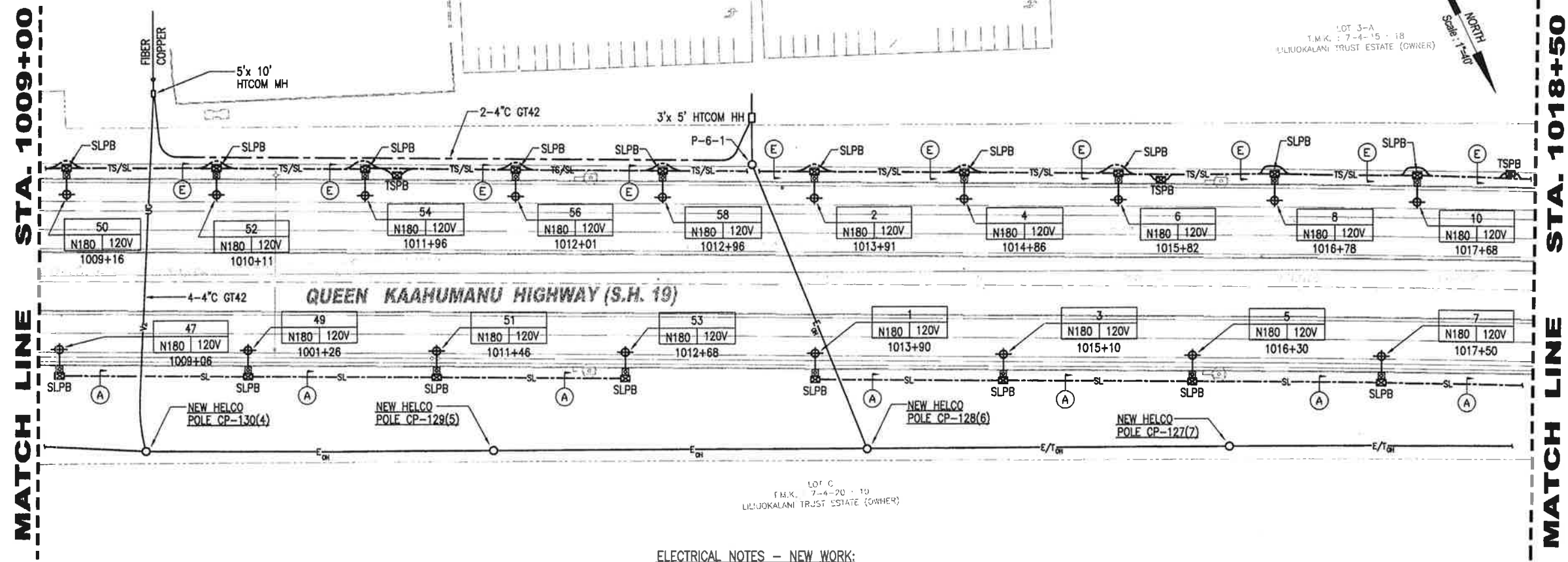
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Exp. 04-30-10
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

STA. -97+00 TO STA. 1009+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

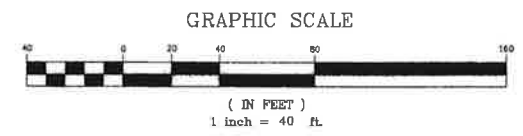
SHEET No. E-21 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	273	315



- ELECTRICAL NOTES - NEW WORK:
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET: E-54.

1
E-22 ELECTRICAL PLAN - STA. 1009+00 TO STA. 1018+50 (NEW WORK)
SCALE: 1" = 40'-0"

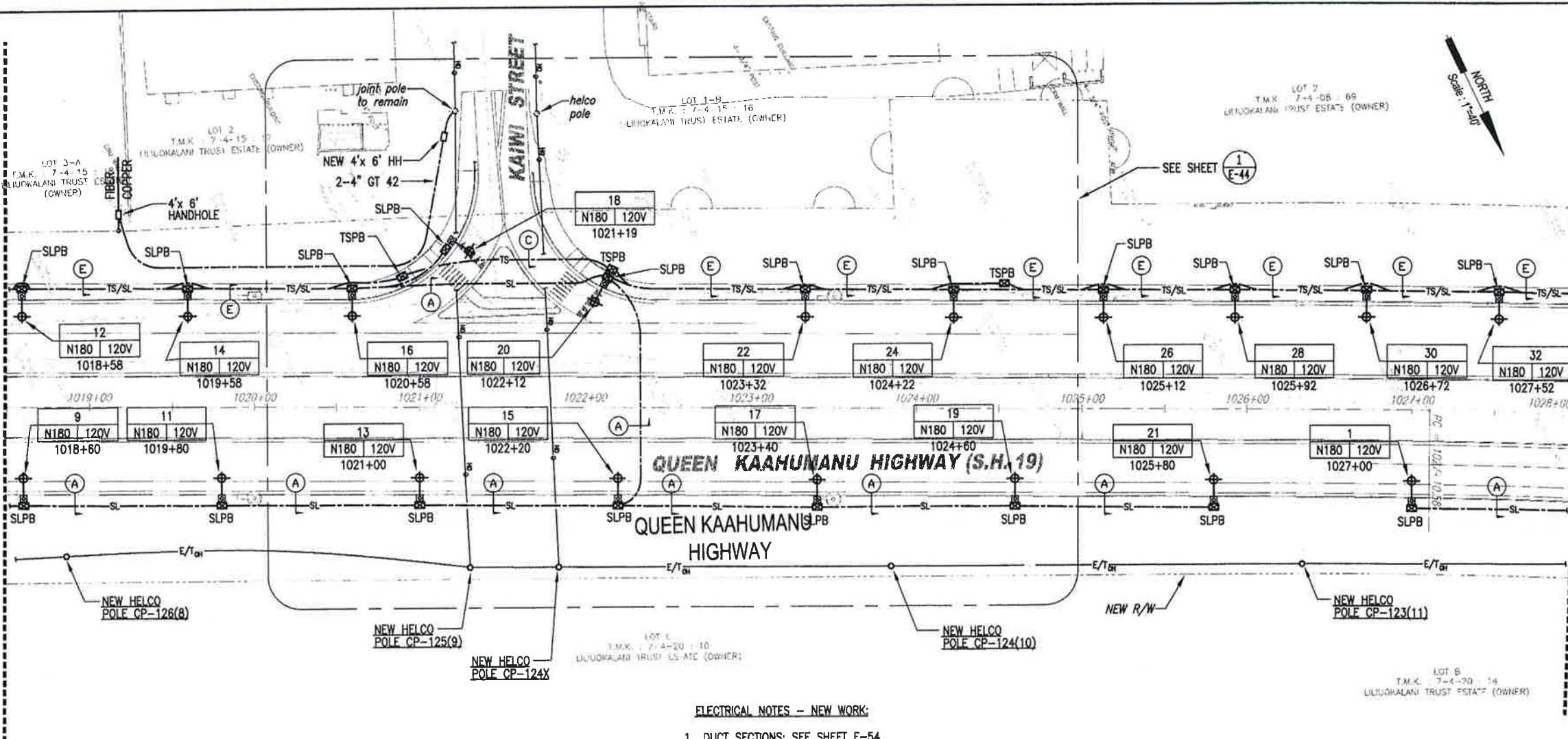


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Exp. 04-30-10
Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
STA. 1009+00 TO STA. 1018+50
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-22 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	274	315

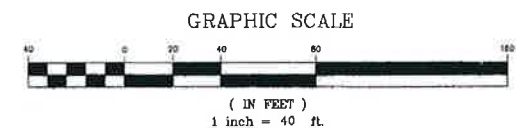
MATCH LINE STA. 1018+50



STA. 1028+00 MATCH LINE

- ELECTRICAL NOTES -- NEW WORK:
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET: E-54.

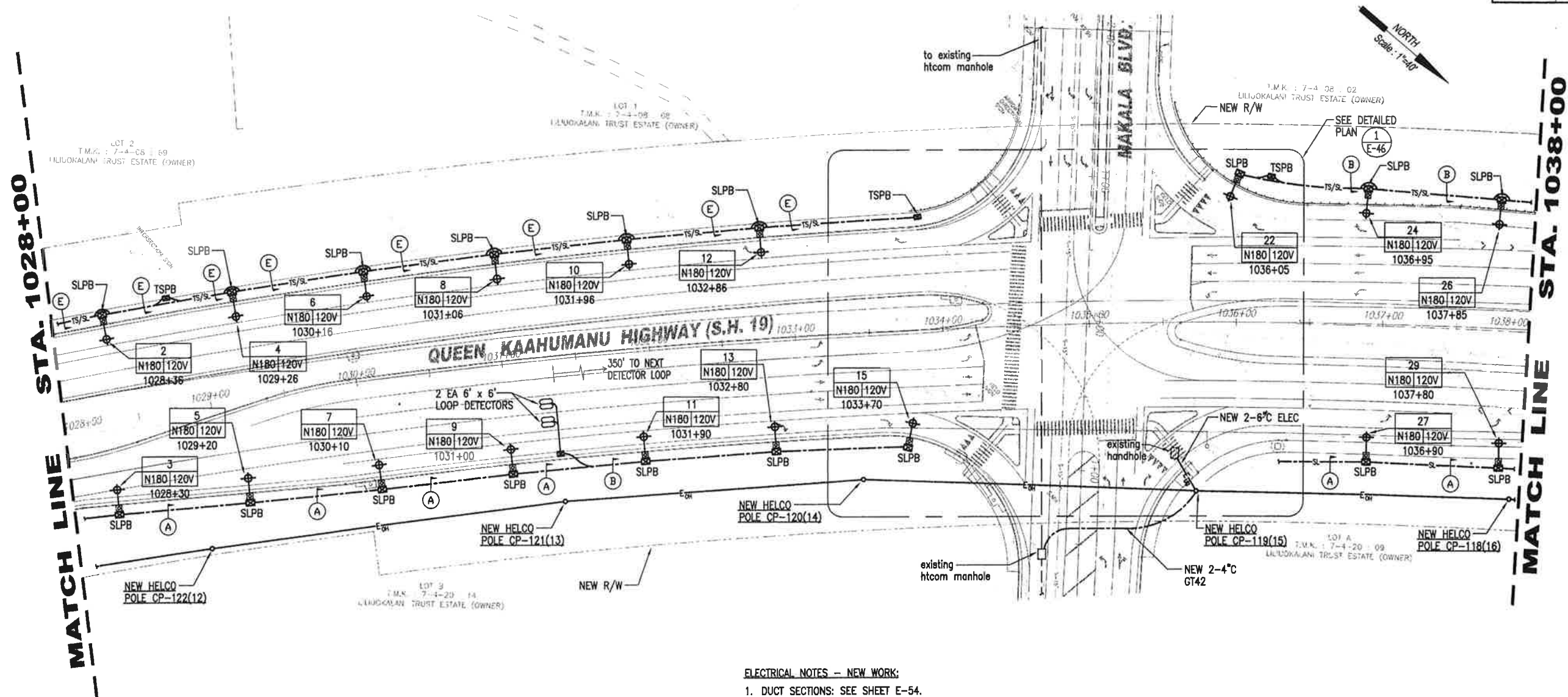
1 ELECTRICAL PLAN - STA. 1018+50 TO STA. 1028+00 (NEW WORK)
E-23 SCALE: 1" = 40'-0"



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Clayton C.Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
STA. 1018+50 TO STA. 1028+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-23 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	275	315



ELECTRICAL NOTES - NEW WORK:

1. DUCT SECTIONS: SEE SHEET E-54.
2. SLPB, TYPE "A": SEE SHEET E-56.
3. STREET LIGHT STANDARD: SEE SHEET: E-54.

1 ELECTRICAL PLAN - STA. 1028+00 TO STA. 1038+00 (NEW WORK)
E-24 SCALE: 1" = 40'-0"

GRAPHIC SCALE



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Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

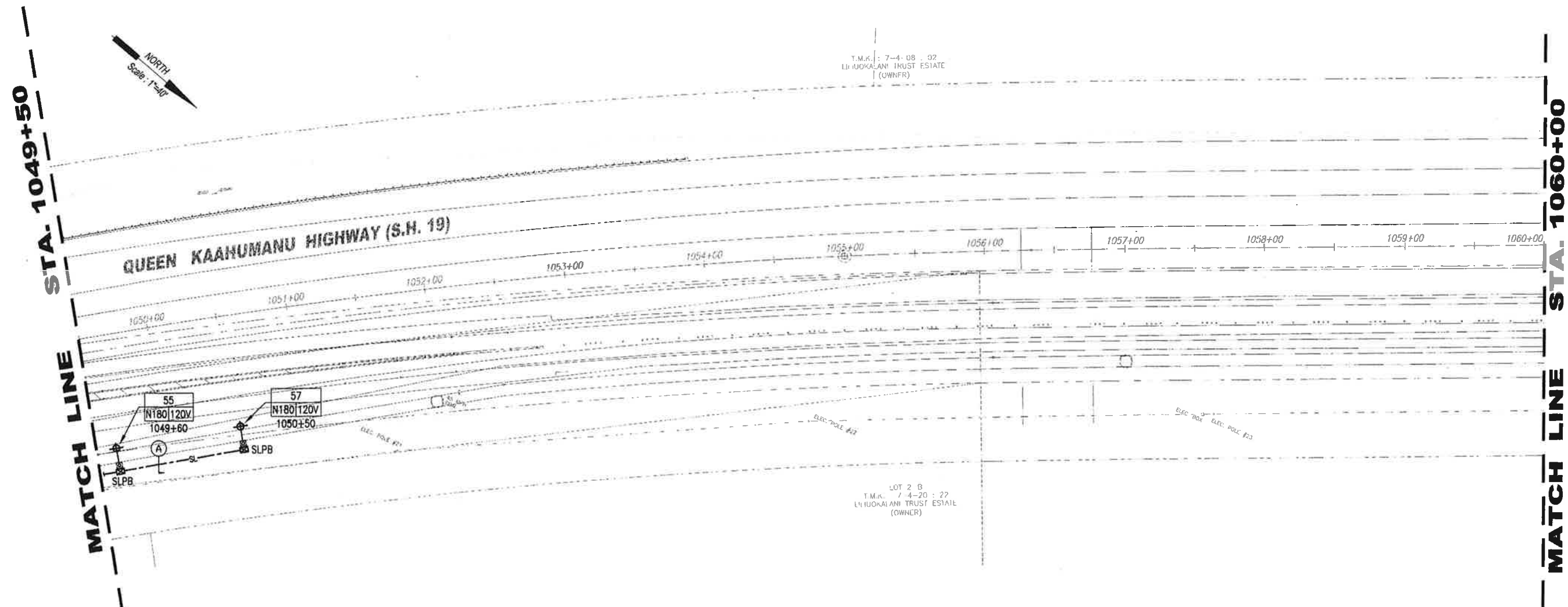
STA. 1028+00 TO STA. 1038+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

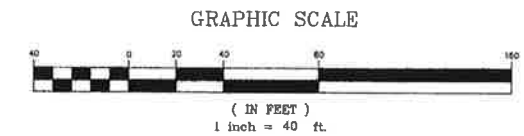
Date: Mar. 2008

SHEET No. E-24 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	277	315



1
E-26 ELECTRICAL PLAN - STA. 1049+50 TO STA. 1060+00 (NEW WORK)
SCALE: 1" = 40'-0"



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Clayton C. Y. Paio
Electrical Engineer

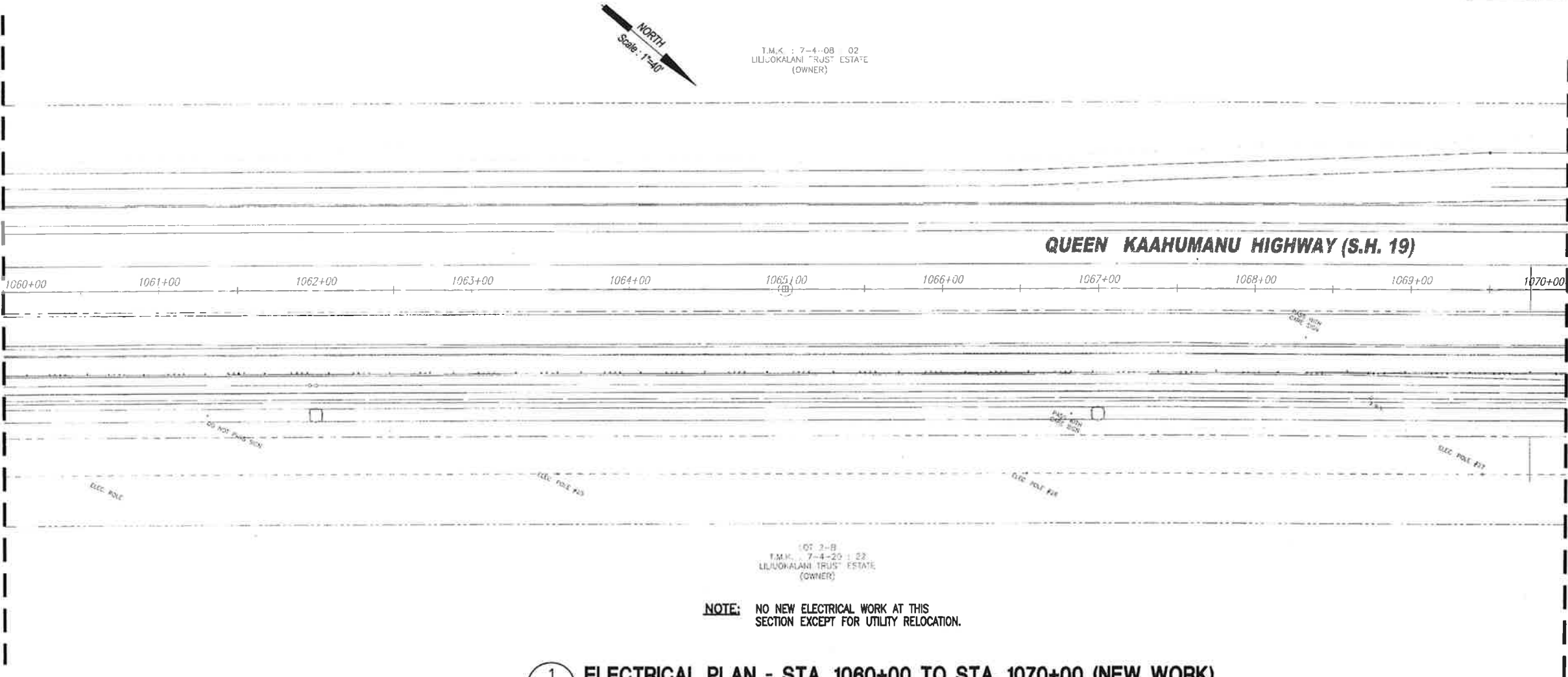
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

STA. 1049+50 TO STA. 1060+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

SHEET No. E-26 OF 64 SHEETS

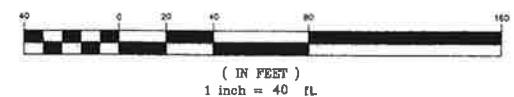
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	278	315

MATCH LINE STA. 1060+00



STA. 1070+00 MATCH LINE

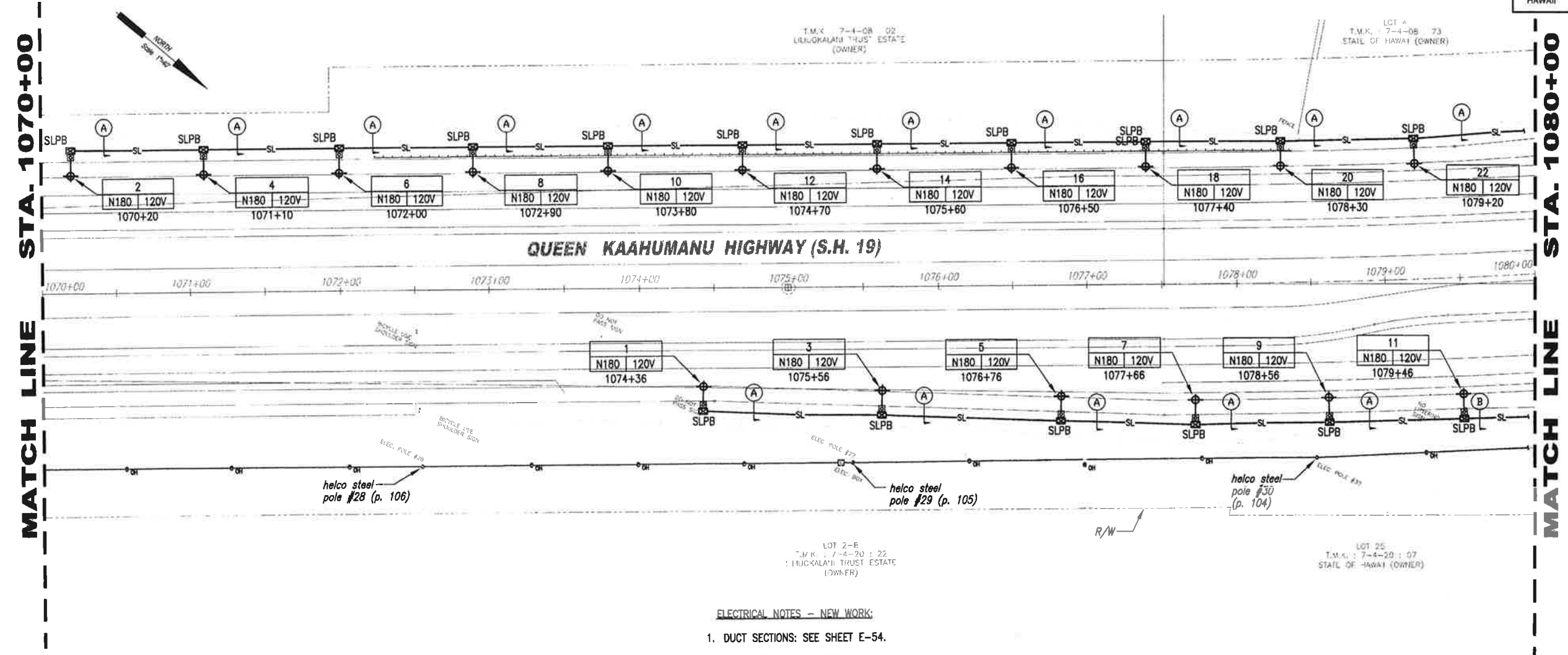
1
E-27 ELECTRICAL PLAN - STA. 1060+00 TO STA. 1070+00 (NEW WORK)
SCALE: 1" = 40'-0"



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Exp. 04-30-10
Clayton C. Y. Pang
Electech Hawaii, Inc.

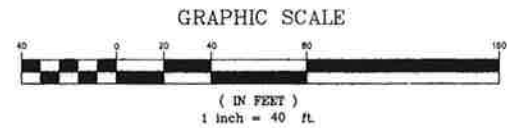
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
STA. 1060+00 TO STA. 1070+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-27 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	279	315



- ELECTRICAL NOTES - NEW WORK:**
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET: E-54.

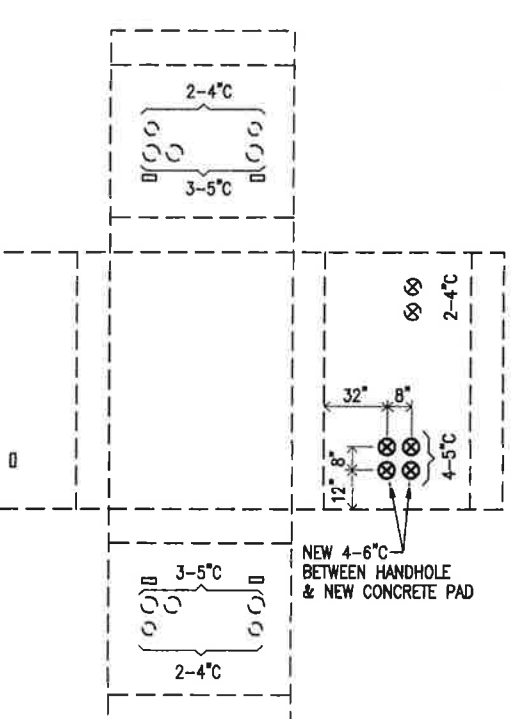
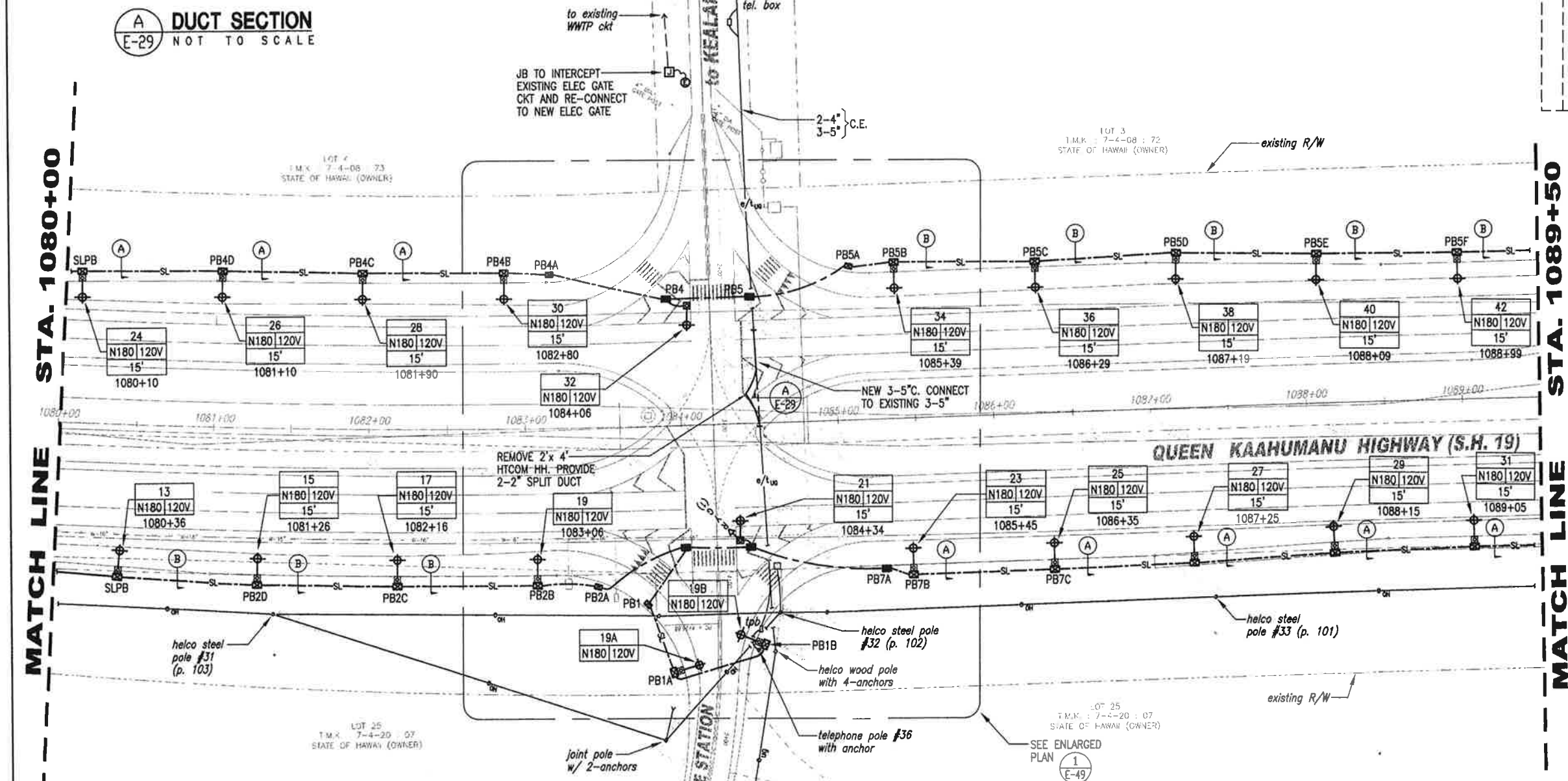
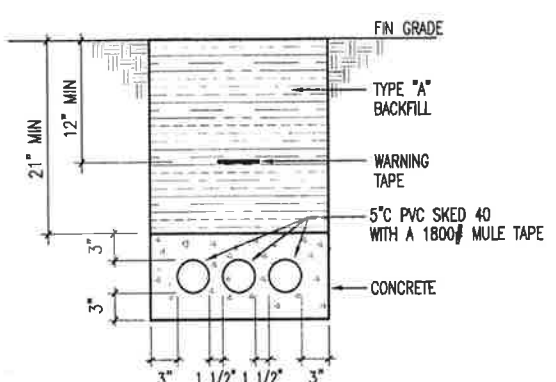
1 ELECTRICAL PLAN - STA. 1070+00 TO STA. 1080+00 (NEW WORK)
 E-28 SCALE: 1" = 40'-0"



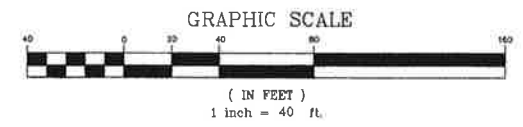
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 Exp. 04-30-10
Clayton C. Y. Pang
 Electrical Engineer

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 ELECTRICAL PLAN (NEW WORK)
 STA. 1070+00 TO STA. 1080+00
 QUEEN KAAHUMANU HIGHWAY WIDENING
 HENRY ST. to KEALAKEHE PKWY - PHASE I
 Federal Aid Project No. NH-019-1(20)
 Date: Dec. 2007
 SHEET No. E-28 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	280	315



2 PLAN - EXISTING HELCO HH #5



- ELECTRICAL NOTES - NEW WORK:**
1. DUCT SECTIONS: SEE SHEET E-54.
 2. SLPB, TYPE "A": SEE SHEET E-56.
 3. STREET LIGHT STANDARD: SEE SHEET: E-54.

1 ELECTRICAL PLAN - STA. 1080+00 TO STA. 1089+50 (NEW WORK)
E-29 SCALE: 1" = 40'-0"



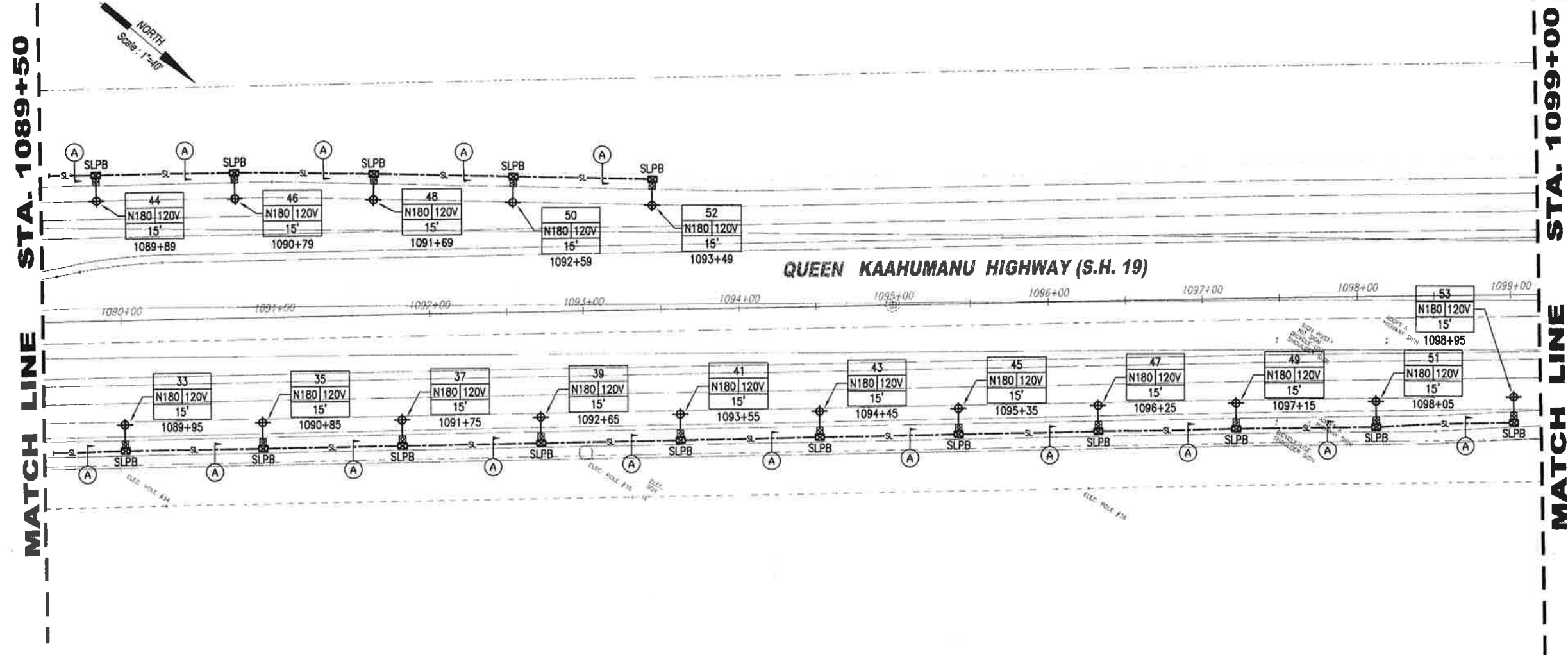
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Exp. 04-30-10
Clayton C. Y. Pao
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

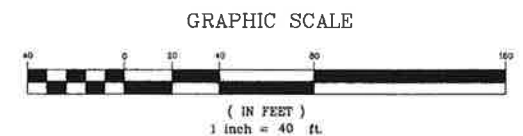
STA. 1080+00 TO STA. 1089+50
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

SHEET No. E-29 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	281	315



1
E-30 ELECTRICAL PLAN - STA. 1089+50 TO STA. 1099+00 (NEW WORK)
SCALE: 1" = 40'-0"



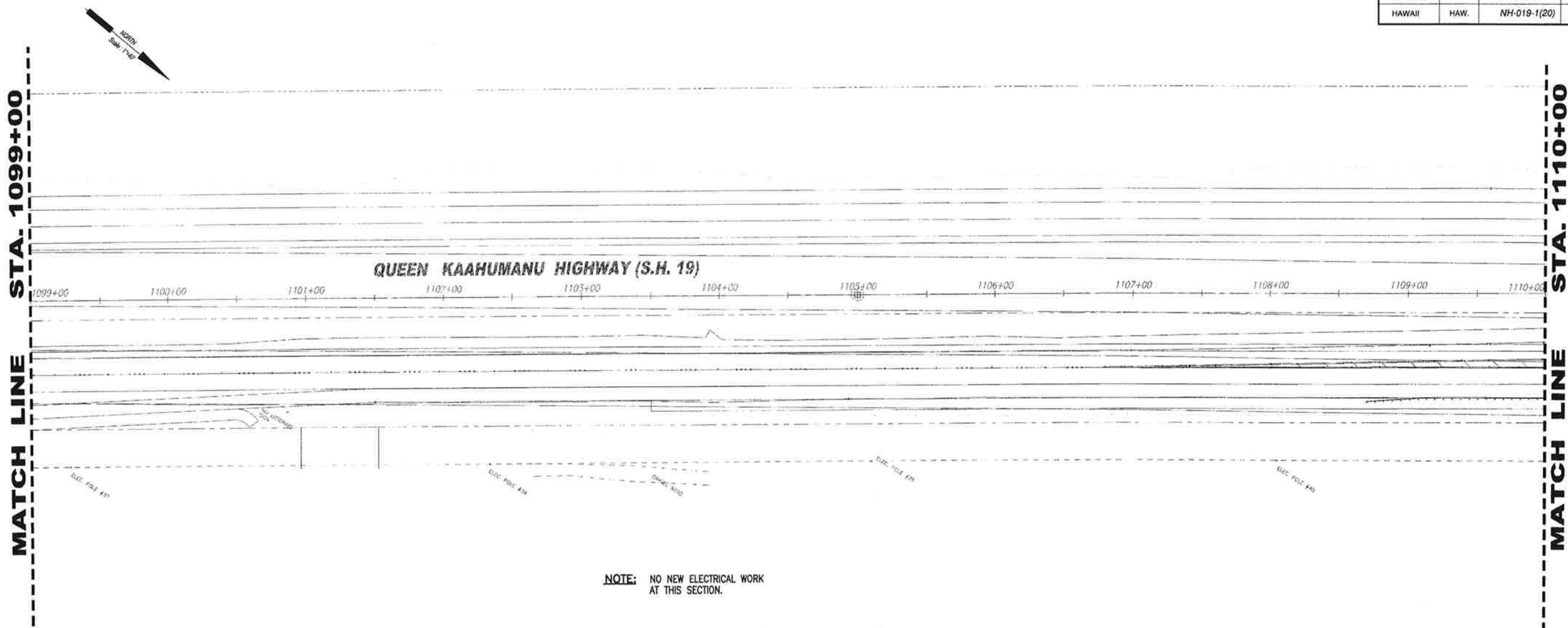
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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
STA. 1089+50 TO STA. 1099+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

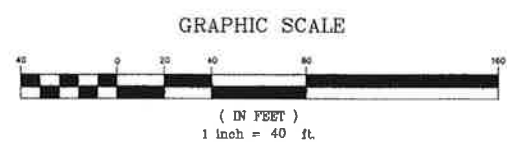
SHEET No. E-30 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	282	315



NOTE: NO NEW ELECTRICAL WORK AT THIS SECTION.

1
E-31 ELECTRICAL PLAN - STA. 1099+00 TO STA. 1110+00 (NEW WORK)
SCALE: 1" = 40'-0"



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Clayton C. Y. Pang
Electrical Engineer

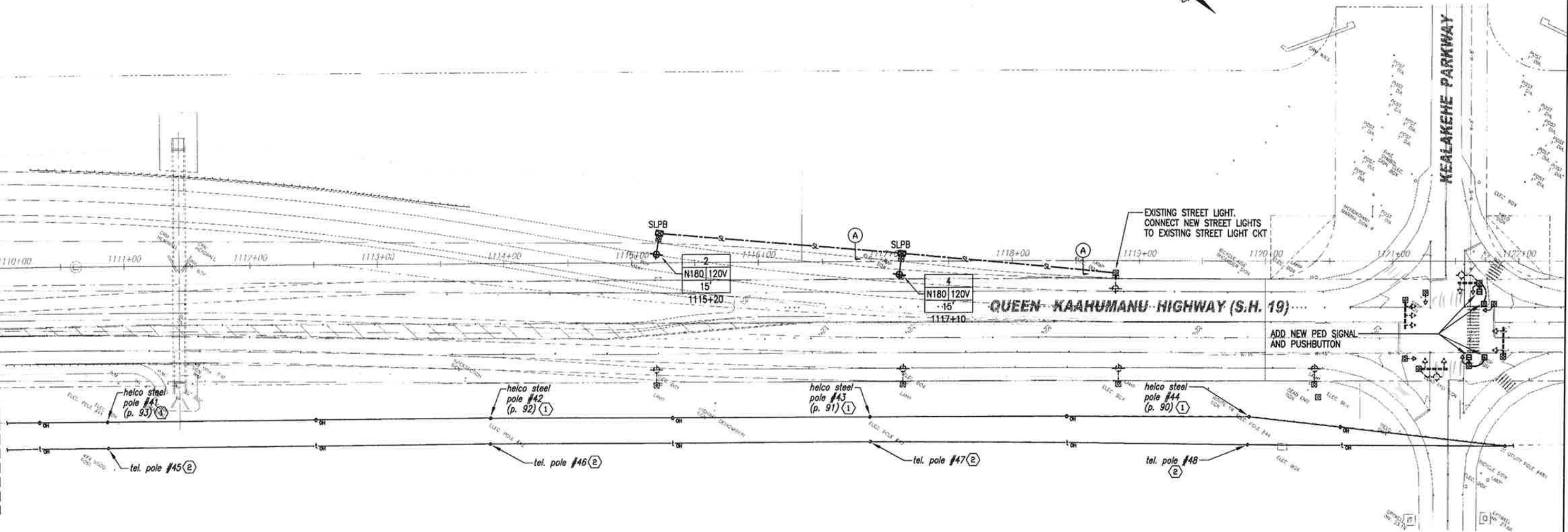
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

STA. 1099+00 TO STA. 1110+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	283	315



MATCH LINE STA. 1110+00



1 ELECTRICAL PLAN - STA. 1110+00 TO STA. 1121+00 (NEW WORK)
E-32 SCALE: 1" = 40'-0"

GRAPHIC SCALE



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Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
STA. 1110+00 TO STA. 1121+00
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008
SHEET No. E-32 OF 64 SHEETS

DUCTLINE SCHEDULE (EXISTING)

A	CONDUIT	CABLE	I	CONDUIT	CABLE	Q	CONDUIT	CABLE
	2"	2-#4/0, #4 GRD.		2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14
	2"	3-#1/0 S.L.		1"	2(2-#16) PED		1"	8(2-#16) PED
B	CONDUIT	CABLE	J	CONDUIT	CABLE	R	CONDUIT	CABLE
	2"	TEL SERVICE		2"	26/C #14 & 9/C #14		2"	2(2-#16) VEH.
	2"	TEL		1"	2(2-#16) PED		1 1/2"	14-#14
C	CONDUIT	CABLE	K	CONDUIT	CABLE	S	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		1 1/2"	14-#14
	1"	4(2-#16) PED		1"	4(2-#16) PED		2"	2(2-#16) PED
D	CONDUIT	CABLE	L	CONDUIT	CABLE	T	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		1"	2-#10 S.L.
	1"	4(2-#16) PED		1"	4(2-#16) PED		1 1/2"	SPARE
E	CONDUIT	CABLE	M	CONDUIT	CABLE	U	CONDUIT	CABLE
	2"	3(2-#16) VEH.		2"	26/C #14 & 9/C #14		2"	3(2-#16) VEH.
	1"	(2-#10) S.L.		1"	4(2-#16) PED		1"	2-#10 S.L.
F	CONDUIT	CABLE	N	CONDUIT	CABLE	V	CONDUIT	CABLE
	2"	2-#8, 1-#10 G.		2"	26/C #14 & 9/C #14		1 1/2"	9-#14
	1 1/2"	SPARE		1"	4(2-#16) PED		1"	2-#10 S.L.
G	CONDUIT	CABLE	O	CONDUIT	CABLE	W	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		1 1/2"	14-#14
	1"	2-#16 PED		1"	4(2-#16) PED		1"	2-#10 S.L.
H	CONDUIT	CABLE	P	CONDUIT	CABLE	X	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		2"	2-#16 PED
	1"	2(2-#16) PED		1"	4(2-#16) PED		1"	2-#10 S.L.
I	CONDUIT	CABLE	Q	CONDUIT	CABLE	Y	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		2"	3(2-#16) VEH.
	1"	2(2-#16) PED		1"	4(2-#16) PED		1"	2-#10 S.L.
J	CONDUIT	CABLE	R	CONDUIT	CABLE	Z	CONDUIT	CABLE
	2"	26/C #14 & 9/C #14		2"	26/C #14 & 9/C #14		1"	2-#10 S.L.
	1"	2(2-#16) PED		1"	4(2-#16) PED			

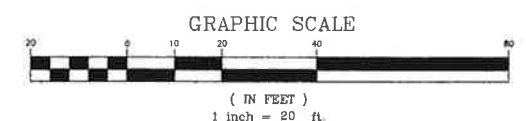
ELECTRICAL NOTE:

- 1 ADD 2-#16 VEH TO EXISTING DUCTLINE

1 ELECTRICAL PLAN - HENRY STREET INTERSECTION (EXISTING/REMOVAL) E-33 SCALE: 1" = 20'-0"

ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- | | | |
|--|--|--|
| 1 EXISTING PULLBOX TO REMAIN, ADJUST FRAME & COVER. | 6 EXISTING TSPB TO BE REPLACED WITH NEW LARGER TSPB. | 11 EXISTING PEDESTRIAN PUSHBUTTON, POLE AND WIRING TO REMAIN. |
| 2 EXISTING TSPB TO BE DEMOLISHED, REMOVE WIRES. | 7 REMOVE EXISTING LOOP DETECTOR WIRES. | 12 EXISTING DUCTLINE TO BE ABANDONED, REMOVE WIRES. |
| 3 EXISTING PEDESTRIAN PUSHBUTTON STANDARD TO REMAIN. | 8 EXISTING TRAFFIC SIGNAL STANDARD TO REMAIN. | 13 EXISTING LOOP DETECTORS TO REMAIN. |
| 4 EXISTING TRAFFIC SIGNAL STANDARD TYPE I TO BE REMOVED, AND RELOCATED, REMOVE WIRES, DEMOLISH BASE. | 9 EXISTING TRAFFIC SIGNAL STANDARD TYPE III TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRES, DEMOLISH BASE. | 14 EXISTING STREET LIGHT STANDARD AND PULLBOX TO REMAIN, ADJUST FRAME & COVER. |
| 5 EXISTING STREET LIGHT STANDARD TO BE REMOVED. REMOVE WIRES, DEMOLISH BASE. | 10 EXISTING PEDESTRIAN PUSHBUTTON, POLE AND WIRING TO BE REMOVED, AND RETURN TO COUNTY. DEMOLISH BASE. | 15 EXISTING LOOP DETECTOR GROOVE TO BE FILLED AND ABANDONED. |
| | | 16 EXISTING DUCTLINE TO BE REFUSE, REMOVE WIRES. |



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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL)

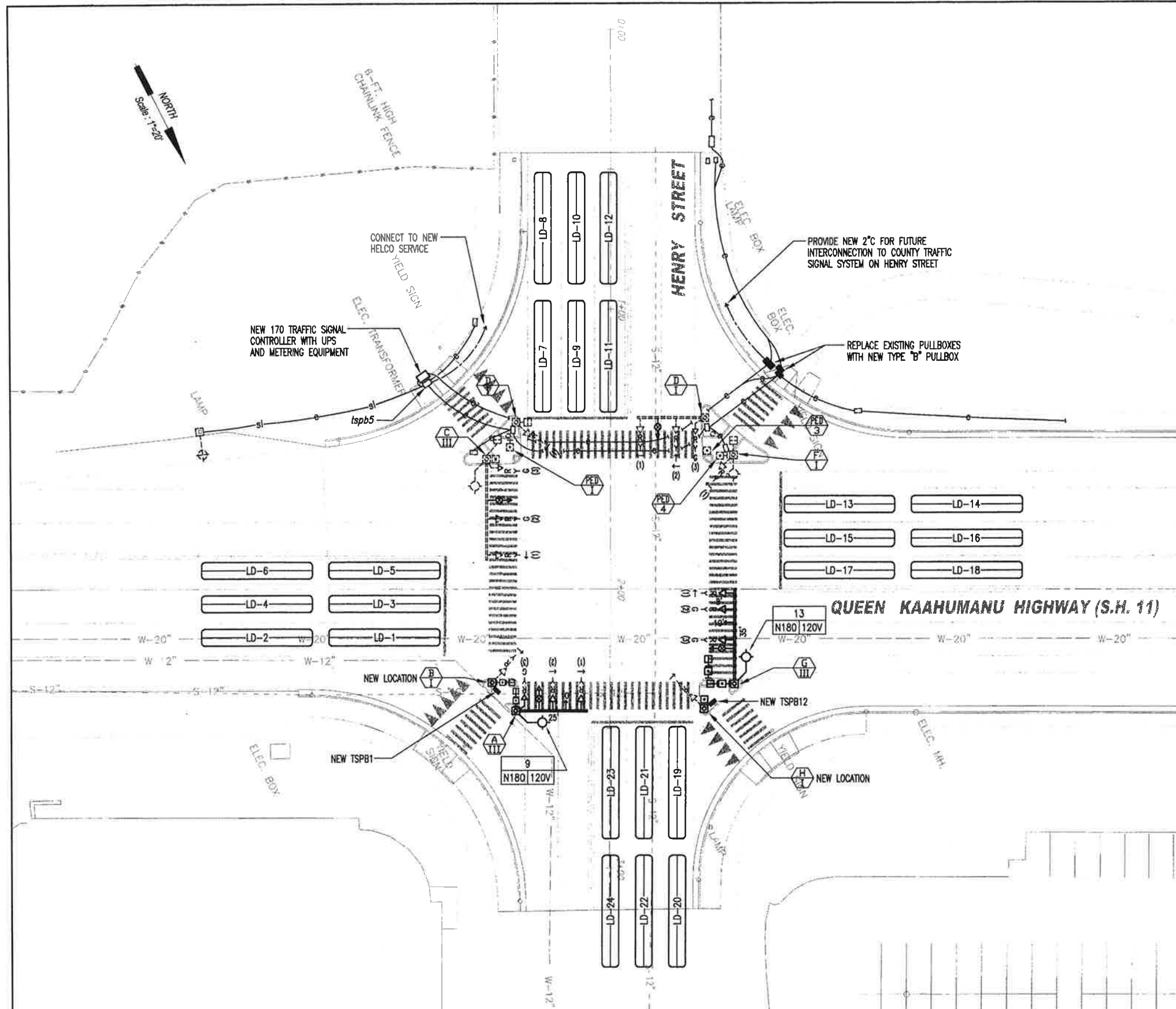
HENRY STREET INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

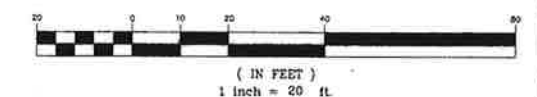
Date: Oct. 2007

SHEET No. E-33 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	286	315



1
E-35
ELECTRICAL PLAN - HENRY STREET INTERSECTION (NEW EQUIPMENT)
SCALE: 1" = 20'-0"



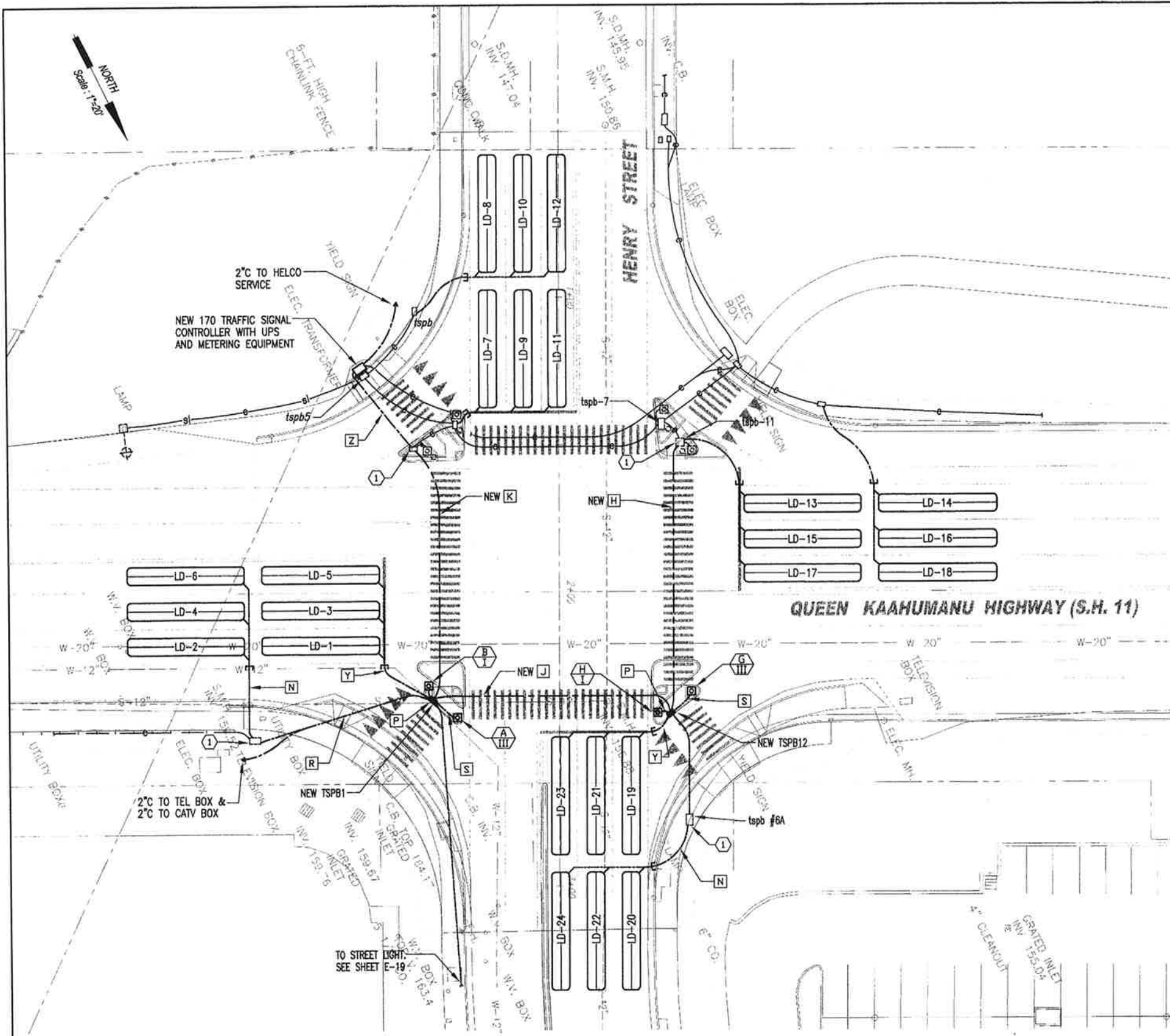
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Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW EQUIPMENT)
HENRY STREET INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008
SHEET No. E-35 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	287	315

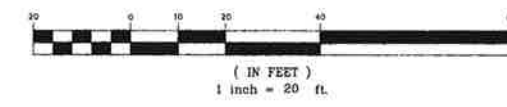
DUCTLINE SCHEDULE (NEW)

E CONDUIT	CABLE	N CONDUIT	CABLE
2"	3(2-#16) VEH.	2"	3(2-#16) VEH.
H CONDUIT	CABLE	P CONDUIT	CABLE
2"	26/C #14 & 9/C #14	2"	6-#14
2"	4(2-#16) PED	1"	2-#16 PED
2"	6(2-#16) VEH.	R CONDUIT	CABLE
2"	2-#10 S.L.	2"	6(2-#16) VEH.
2"	VIDEO/PRE-EMPT	2"	TELEPHONE
2"	SPARE	2"	CATV
J CONDUIT	CABLE	2"	2-#10 S.L.
2"	26/C #14 & 9/C #14	S CONDUIT	CABLE
2"	4(2-#16) PED	2"	14-#14
2"	12(2-#16) VEH.	2"	1(2-#16) PED
2"	2-#10 S.L.	2"	2-#10 S.L.
2"	SPARE	2"	PRE-EMPT
2"	VIDEO/PRE-EMPT		
K CONDUIT	CABLE	Y CONDUIT	CABLE
2"	26/C #14 & 9/C #14	2"	3(2-#16) VEH.
2"	6(2-#16) PED	Z CONDUIT	CABLE
2"	18(2-#16) VEH.	2"	TELEPHONE
2"	2-#10 S.L.	2"	CATV
2"	VIDEO/PRE-EMPT	2"	26/C #14 & 9/C #14
2"	TELEPHONE	2"	4(2-#16) PED
2"	CATV	2"	12(2-#16) VEH.
2"	SPARE	2"	2-#10 S.L.
		2"	PRE-EMPT
		2"	SPARE



ELECTRICAL NOTES:
 1 STUB NEW DUCTS INTO EXISTING PULLBOX.

1 ELECTRICAL PLAN - HENRY STREET INTERSECTION (NEW DUCTLINE)
 E-36 SCALE: 1" = 20'-0"

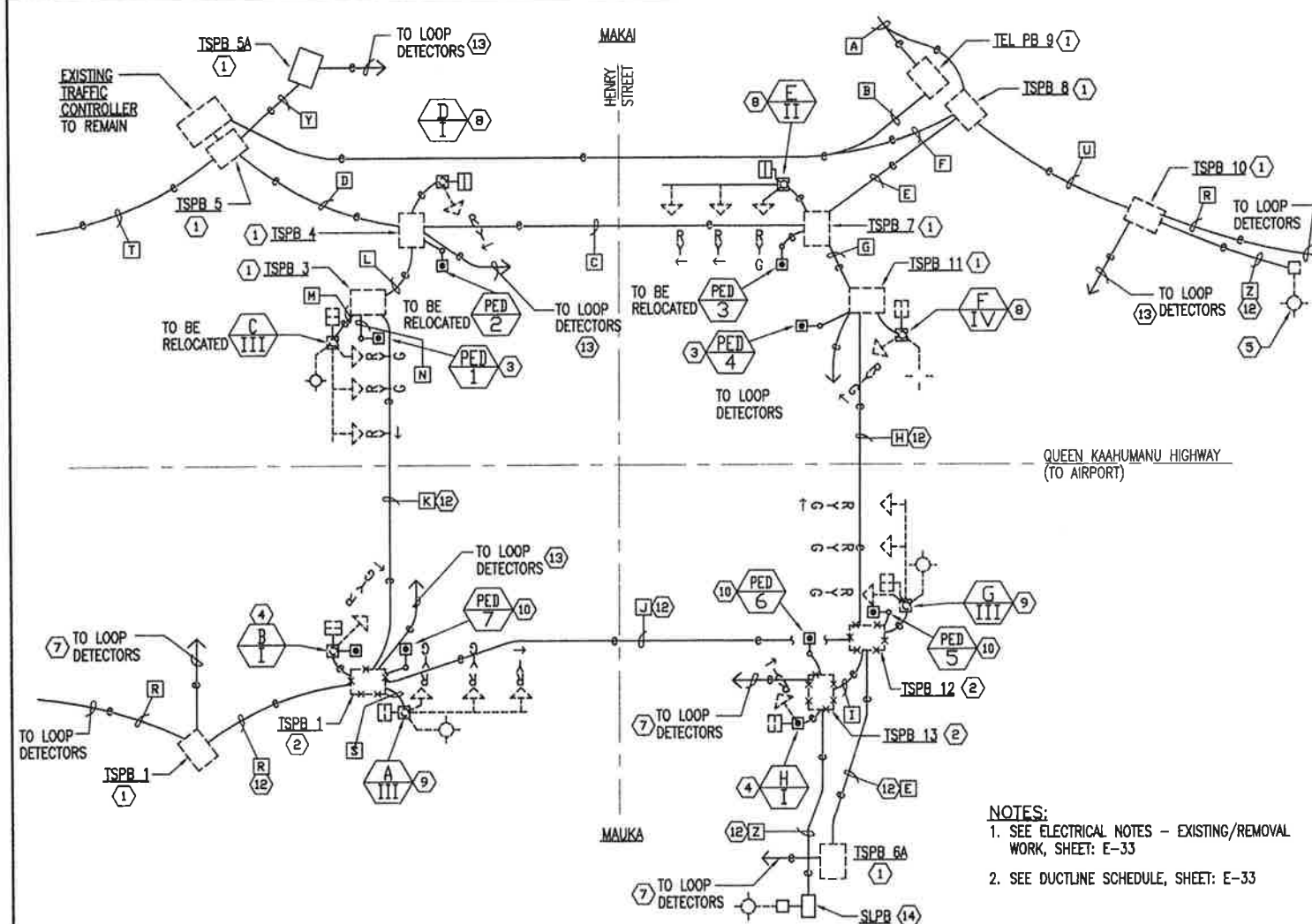


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Clayton C. Y. Pang
 Electrical Engineer

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 ELECTRICAL PLAN (NEW DUCTLINE)
HENRY STREET INTERSECTION
 QUEEN KAAHUMANU HIGHWAY WIDENING
 HENRY ST. to KEALAKEHE PKWY - PHASE I
 Federal Aid Project No. NH-019-1(20)
 Date: Mar. 2008

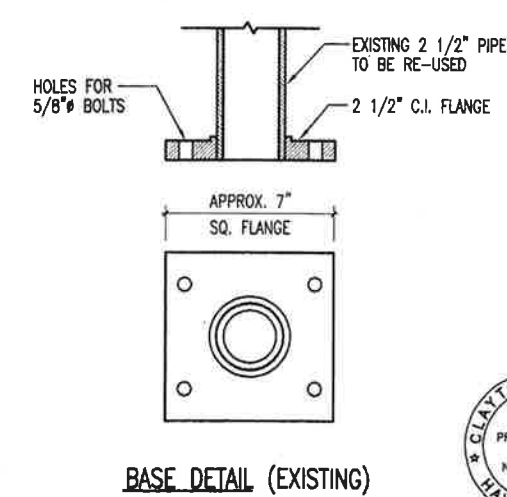
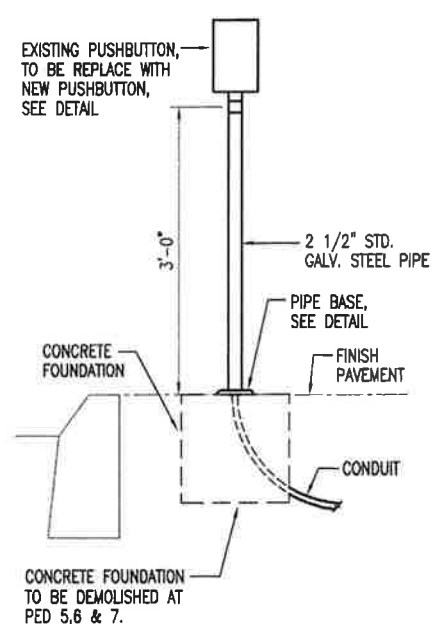
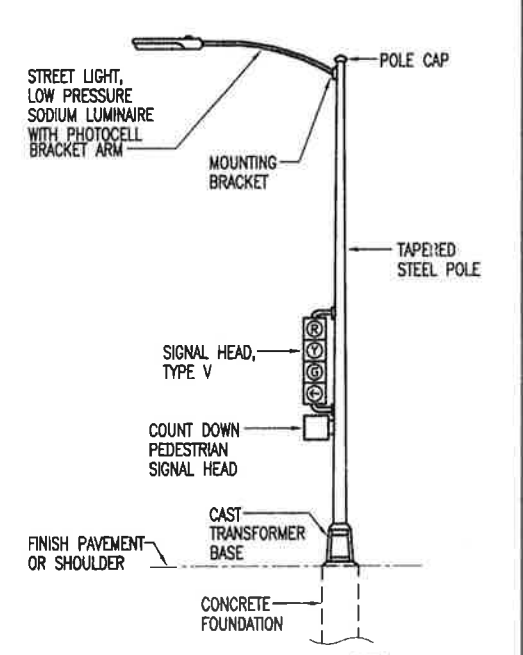
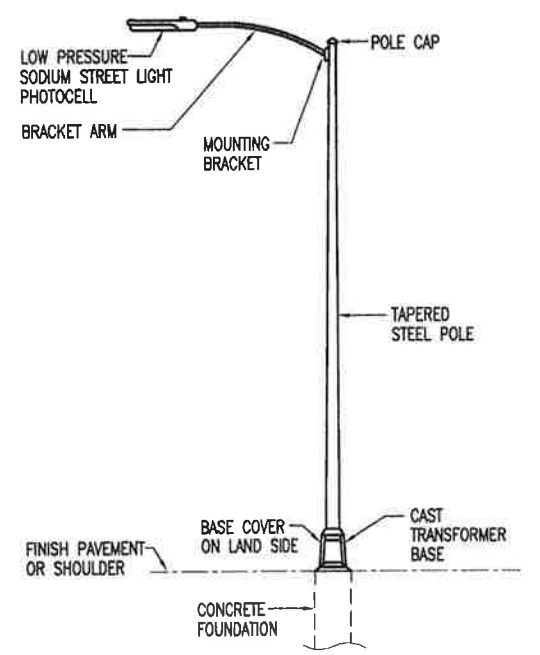
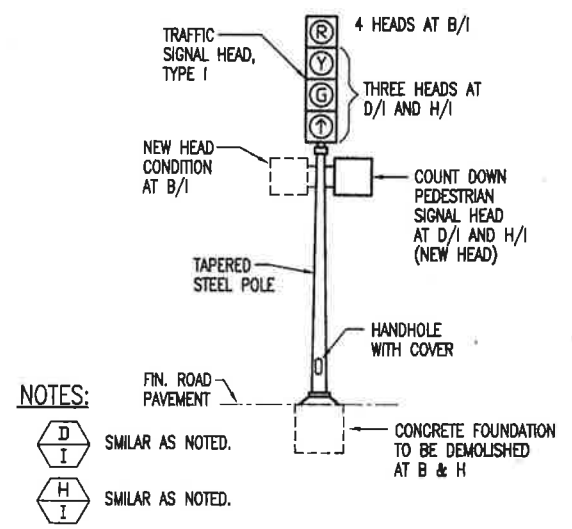
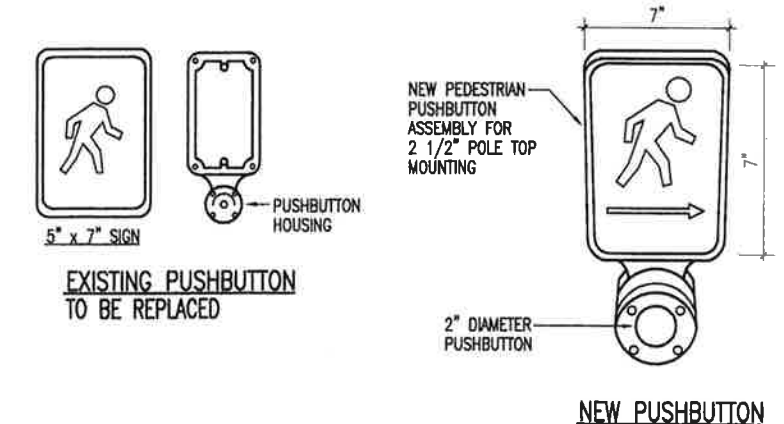
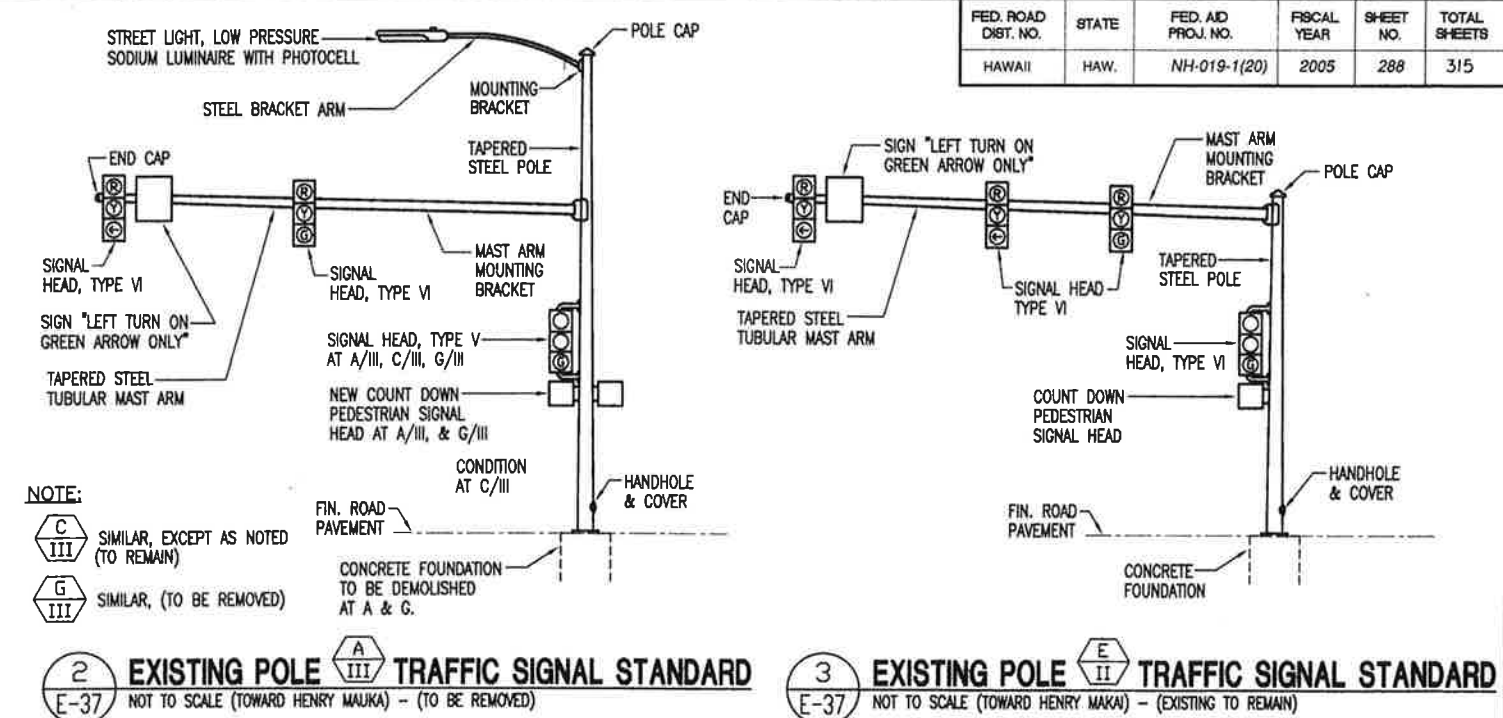
SHEET No. E-36 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	288	315



1 EXISTING TRAFFIC SIGNAL CONNECTION DIAGRAM - HENRY STREET AND QUEEN KAAHUMANU HIGHWAY INTERSECTION
E-37 NOT TO SCALE

NOTES:
1. SEE ELECTRICAL NOTES - EXISTING/REMOVAL WORK, SHEET: E-33
2. SEE DUCTLINE SCHEDULE, SHEET: E-33



CLAYTON C. Y. PAID
LICENSED PROFESSIONAL ENGINEER
No. 4145-E
HAWAII, U.S.A.

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Exp. 04-30-10

Chyong
Electrical Engineer

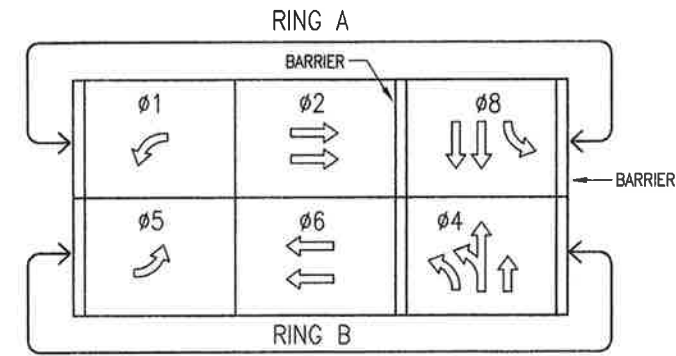
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Existing Traffic Control Diagram & Miscellaneous Details (Henry Street)

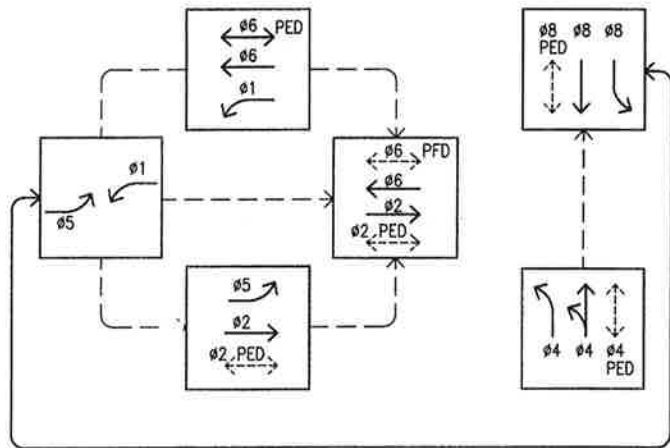
**QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I**

Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

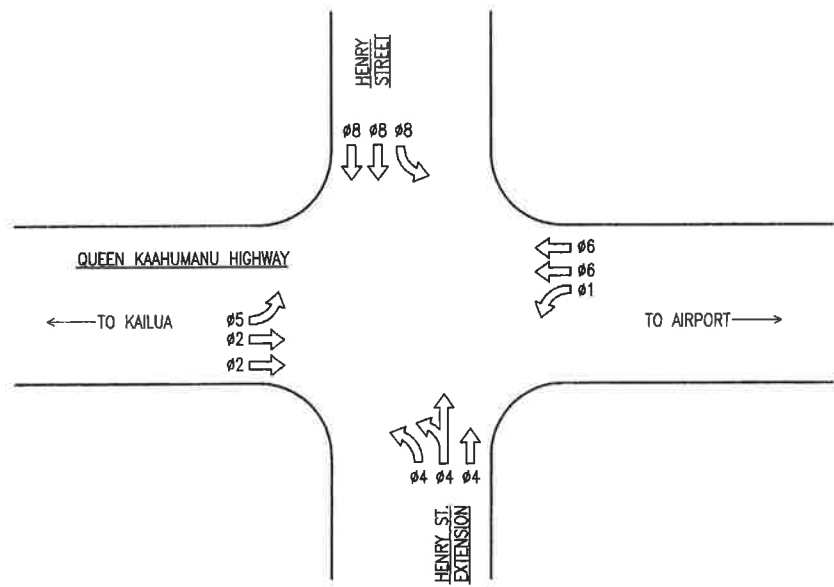
SHEET No. E-37 OF 64 SHEETS



1 CONTROLLER PHASE ASSIGNMENT
E-38 NOT TO SCALE



3 PHASE DIAGRAM
E-38 (EXISTING SYSTEM SHOWN)



2 PHASE PLAN - HENRY STREET INTERSECTION
E-38 NOT TO SCALE

LEGEND:
R = RED
Y = YELLOW
G = GREEN
← = ARROW
POLE NO. A - 2 - III
SIGNAL HEAD SIGNAL HEAD MOUNTING TYPE

					SIGNAL HEAD TYPE
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)		12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (LED SIGNAL ASSEMBLY)		DESCRIPTION
G-2-VI (a) G-3-VI (a) A-3-V (a)		G-1-VI (b) A-1-VI (b)	A-2-VI (b)		POLE LETTER - SIGNAL HEAD NUMBER - MOUNTING TYPE

- (a) PROVIDE BACK PLATE FOR SIGNAL HEAD.
(b) PROGRAMMED VISIBILITY SIGNAL HEAD.
* WITH R10.5 SIGN
- NOTES: 1. PROVIDE ADHESIVE TYPE II OBJECT MARKERS ON ALL POLE STANDARDS. INSTALL TWO (2) MARKERS PER STANDARD.
2. ALL SIGNAL HEADS SHALL BE L.E.D. TYPE.

4 TRAFFIC SIGNAL TYPE, LOCATION AND MOUNTING SCHEDULE
E-38 NOT TO SCALE



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Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

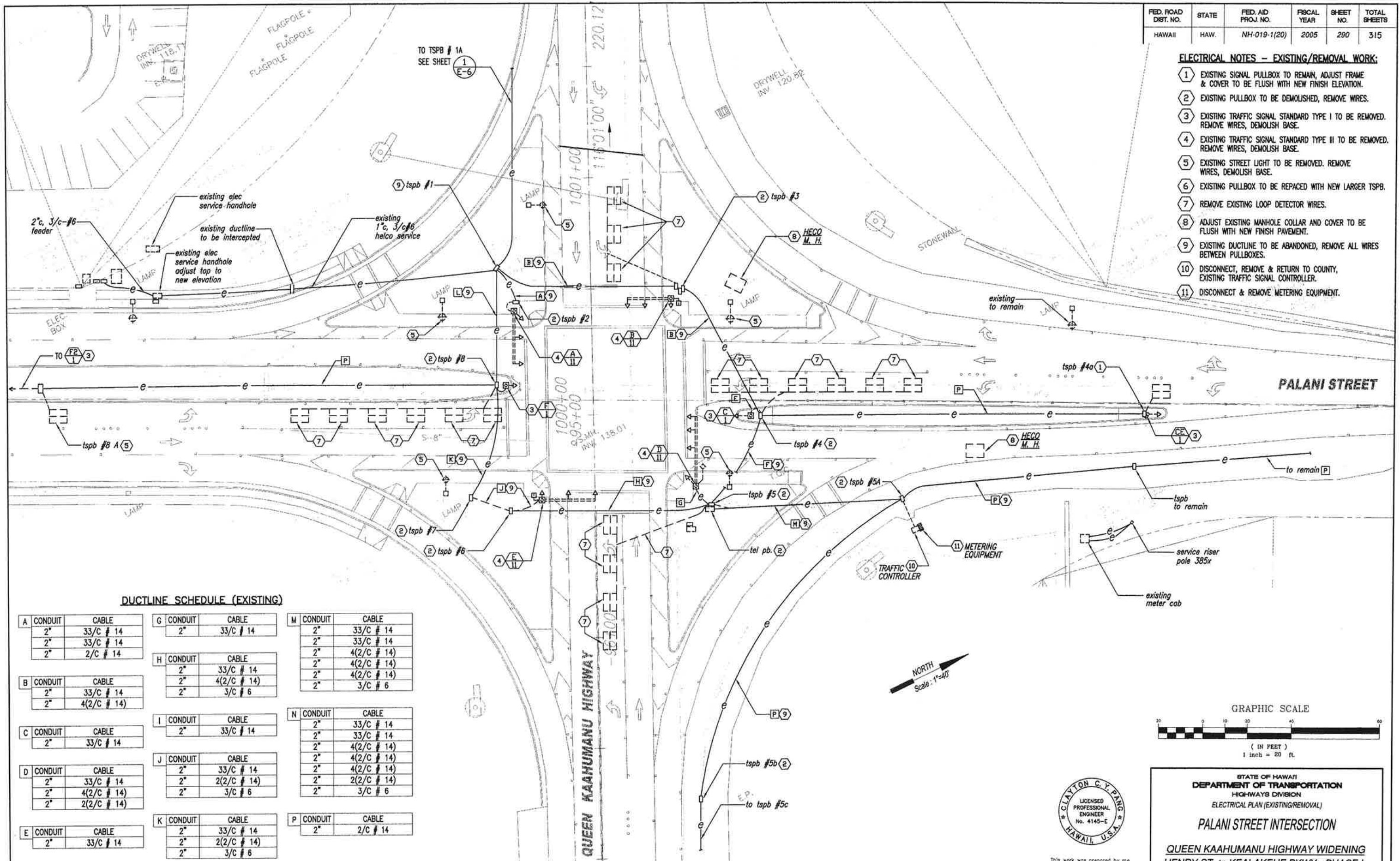
Henry Street Intersection Diagram
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

SHEET No. E-38 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	290	315

ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- EXISTING SIGNAL PULLBOX TO REMAIN, ADJUST FRAME & COVER TO BE FLUSH WITH NEW FINISH ELEVATION.
- EXISTING PULLBOX TO BE DEMOLISHED, REMOVE WIRES.
- EXISTING TRAFFIC SIGNAL STANDARD TYPE I TO BE REMOVED. REMOVE WIRES, DEMOLISH BASE.
- EXISTING TRAFFIC SIGNAL STANDARD TYPE III TO BE REMOVED. REMOVE WIRES, DEMOLISH BASE.
- EXISTING STREET LIGHT TO BE REMOVED. REMOVE WIRES, DEMOLISH BASE.
- EXISTING PULLBOX TO BE REPLACED WITH NEW LARGER TSPB.
- REMOVE EXISTING LOOP DETECTOR WIRES.
- ADJUST EXISTING MANHOLE COLLAR AND COVER TO BE FLUSH WITH NEW FINISH PAVEMENT.
- EXISTING DUCTLINE TO BE ABANDONED, REMOVE ALL WIRES BETWEEN PULLBOXES.
- DISCONNECT, REMOVE & RETURN TO COUNTY, EXISTING TRAFFIC SIGNAL CONTROLLER.
- DISCONNECT & REMOVE METERING EQUIPMENT.



DUCTLINE SCHEDULE (EXISTING)

A CONDUIT	CABLE	G CONDUIT	CABLE	M CONDUIT	CABLE
2"	33/C # 14	2"	33/C # 14	2"	33/C # 14
2"	33/C # 14			2"	4(2/C # 14)
2"	2/C # 14	H CONDUIT	CABLE	2"	4(2/C # 14)
		2"	33/C # 14	2"	4(2/C # 14)
		2"	4(2/C # 14)	2"	3/C # 6
B CONDUIT	CABLE				
2"	33/C # 14	I CONDUIT	CABLE	N CONDUIT	CABLE
2"	4(2/C # 14)	2"	33/C # 14	2"	33/C # 14
				2"	4(2/C # 14)
C CONDUIT	CABLE	J CONDUIT	CABLE	2"	4(2/C # 14)
2"	33/C # 14	2"	33/C # 14	2"	4(2/C # 14)
		2"	2(2/C # 14)	2"	2(2/C # 14)
D CONDUIT	CABLE	2"	3/C # 6	2"	3/C # 6
2"	33/C # 14				
2"	4(2/C # 14)	K CONDUIT	CABLE	P CONDUIT	CABLE
2"	2(2/C # 14)	2"	33/C # 14	2"	2/C # 14
		2"	2(2/C # 14)		
E CONDUIT	CABLE	2"	3/C # 6		
2"	33/C # 14	L CONDUIT	CABLE		
		2"	33/C # 14		
F CONDUIT	CABLE	2"	3/C # 6		
2"	33/C # 14				
2"	4(2/C # 14)				
2"	2(2/C # 14)				

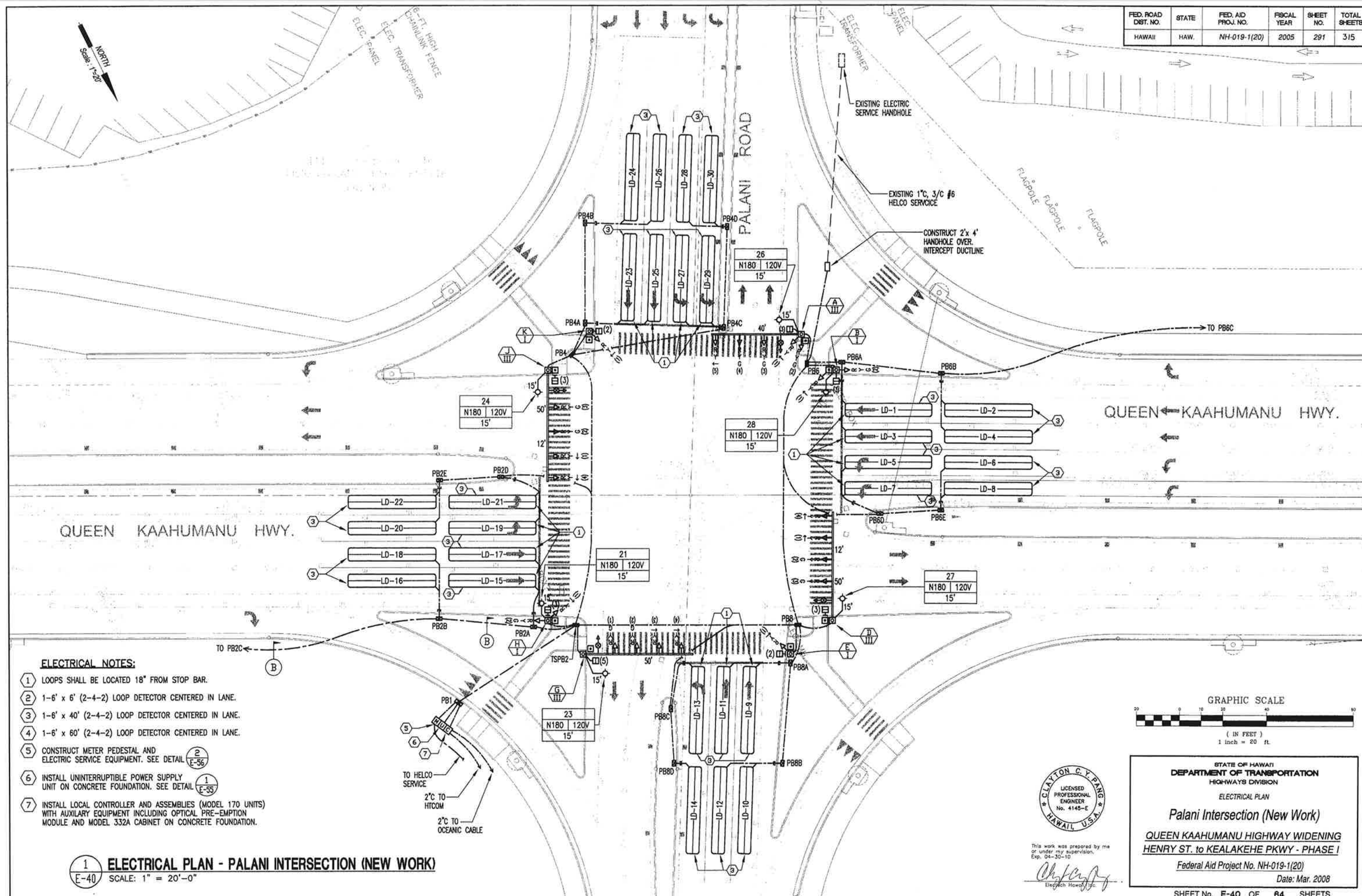
1 **ELECTRICAL PLAN - PALANI INTERSECTION (EXISTING/REMOVAL)**
 E-39 SCALE: 1" = 20'-0"



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 Exp. 04-30-10
 Electrical Engineer

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 ELECTRICAL PLAN (EXISTING/REMOVAL)
PALANI STREET INTERSECTION
 QUEEN KAAHUMANU HIGHWAY WIDENING
 HENRY ST. to KEALAKEHE PKWY - PHASE I
 Federal Aid Project No. NH-019-1(20)
 Date: Oct. 2007
 SHEET No. E-39 OF 64 SHEETS

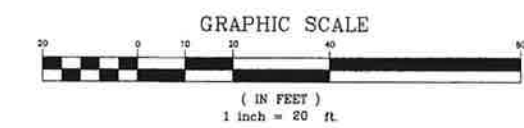
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	291	315



ELECTRICAL NOTES:

- 1 LOOPS SHALL BE LOCATED 18" FROM STOP BAR.
- 2 1-6' x 6' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 3 1-6' x 40' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 4 1-6' x 60' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 5 CONSTRUCT METER PEDESTAL AND ELECTRIC SERVICE EQUIPMENT. SEE DETAIL ²/_{E-56}
- 6 INSTALL UNINTERRUPTIBLE POWER SUPPLY UNIT ON CONCRETE FOUNDATION. SEE DETAIL ¹/_{E-55}
- 7 INSTALL LOCAL CONTROLLER AND ASSEMBLIES (MODEL 170 UNITS) WITH AUXILIARY EQUIPMENT INCLUDING OPTICAL PRE-EMPTION MODULE AND MODEL 332A CABINET ON CONCRETE FOUNDATION.

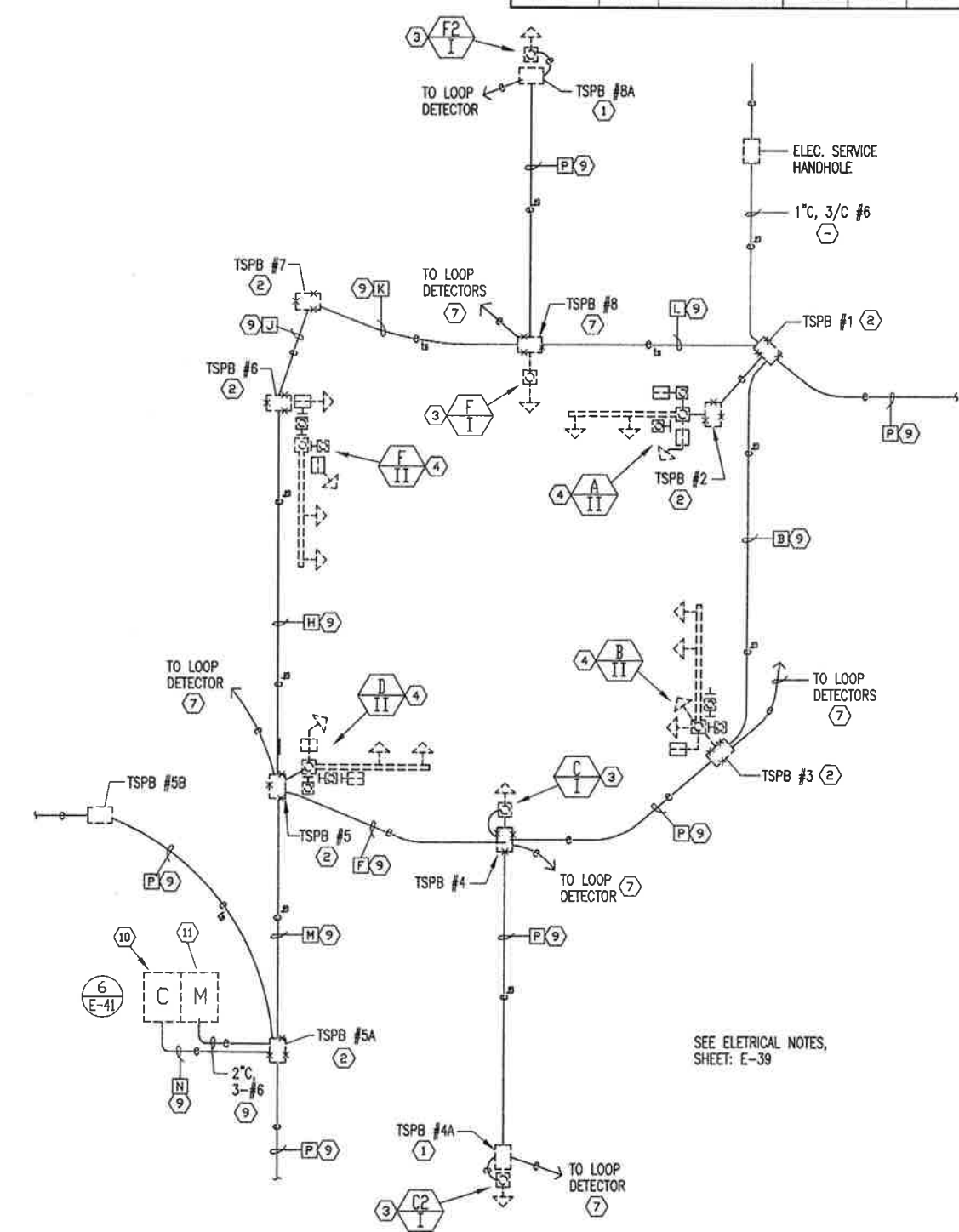
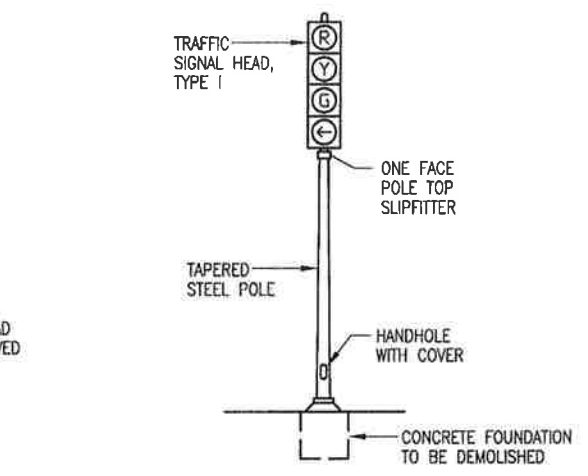
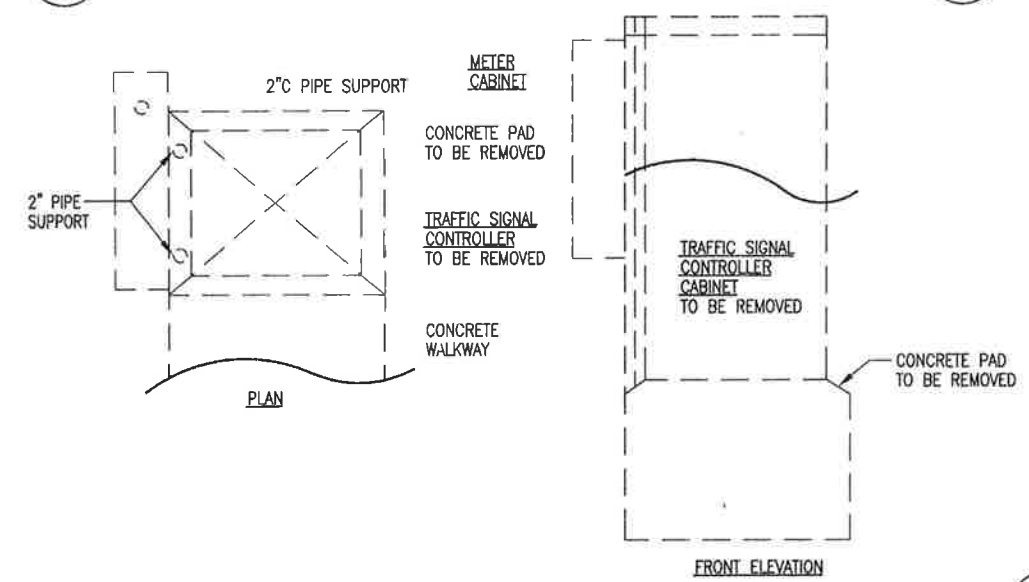
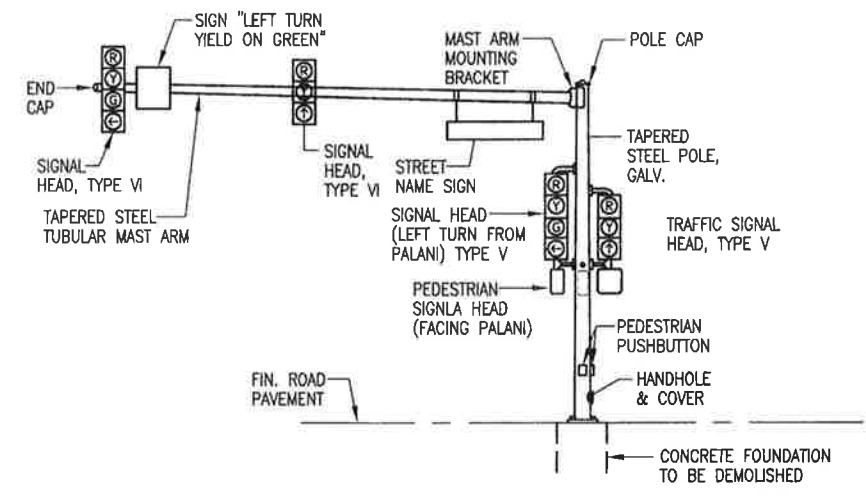
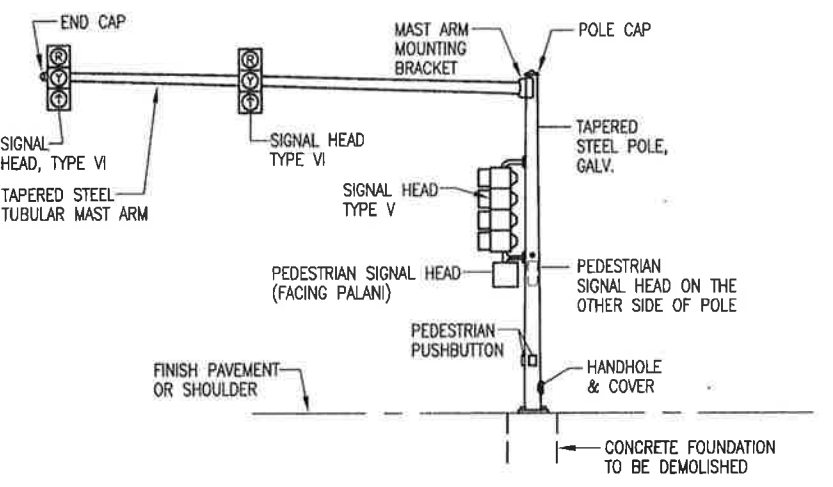
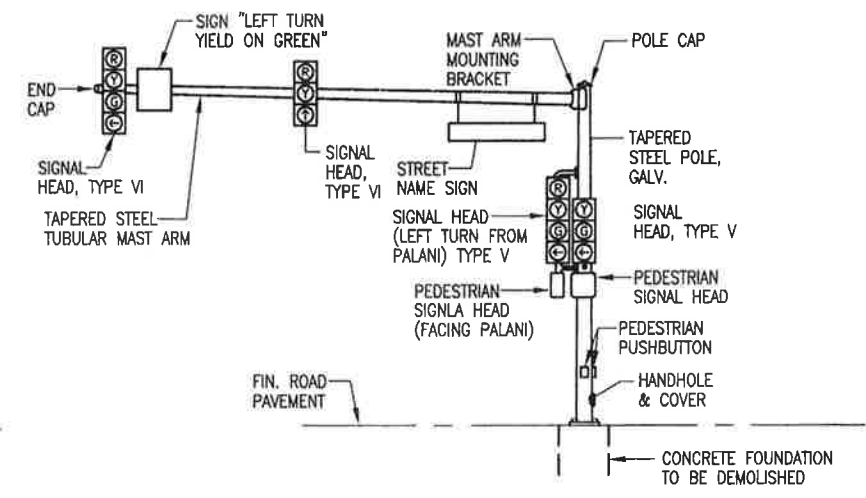
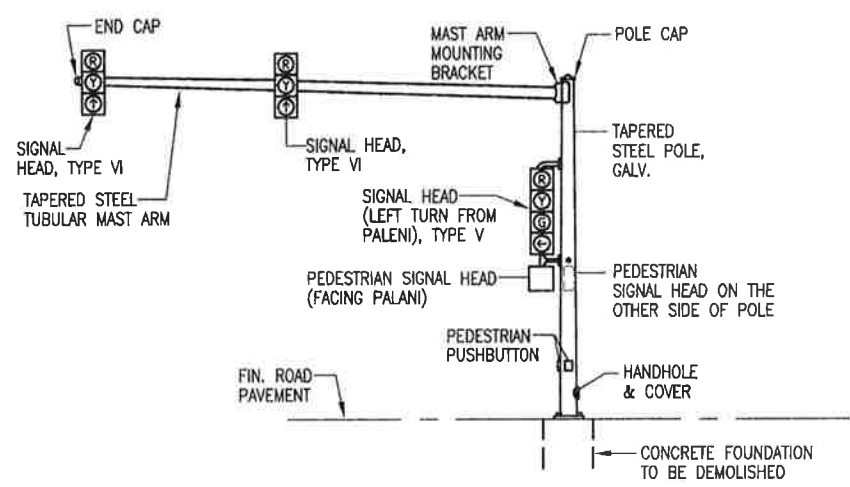
1 ELECTRICAL PLAN - PALANI INTERSECTION (NEW WORK)
E-40 SCALE: 1" = 20'-0"



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Exp. 04-30-10
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN
Palani Intersection (New Work)
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008
SHEET No. E-40 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	292	315



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**Existing Traffic Signal Standard,
Details - Palani Street Intersection**

**QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I**

Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

CONDUIT/CABLE SCHEDULE														
FROM	TO	MAIN CONTROLLER		SIGNAL CONTROL		DETECTORS				OPTICOM		STREET LIGHTS		REMARKS
		CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT		CONDUCTOR		CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	
		2" C	1-26/C #14 9/C #14	2" C	4/C #14 COLOR CODED	2" C PEDESTRIAN	2" C VEHICLE	2/C #16 PEDESTRIAN	2/C #16 VEHICLE	2" C	3/C #20	2" C	3-#10 2-#10 GND	
CONTROL	PB1	1	1	-	-	1	1	4	23	1	4	1	1	2" C, 12 PR #14 INTERCONNECT CABLE FROM MAWALA TO MAWALA
PB1	PB2	1	1	-	-	1	1	4	23	1	4	1	1	
PB2	PB2A	-	-	-	-	-	1	-	4	-	-	-	-	
PB2	PB2D	1	1	-	-	-	-	-	2	1	1	-	-	
PB2A	PB2B	-	-	-	-	-	1	-	4	-	-	-	-	
PB8	E	-	-	1	2	1	-	1	-	-	-	-	-	
PB2D	F	-	-	1	2	-	-	-	-	1	1	1	1	
PB2	G	-	-	1	5	1	-	1	-	1	1	1	1	
PB2	PB4	1	1	-	-	1	1	2	4	1	1	1	1	
PB2	H	-	-	1	3	1	-	1	-	-	-	1	1	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PB4	K	-	-	1	2	1	-	1	-	-	-	-	-	
PB4	PB4A	-	-	-	-	-	1	6	-	-	-	-	-	
PB4	J	-	-	1	5	1	-	1	-	1	1	1	1	
PB4	PB5	1	1	-	-	-	-	-	-	1	1	-	-	1
PB5	L	-	-	1	2	-	-	-	-	1	1	-	-	
PB5	PB6	1	1	-	-	-	-	-	-	-	-	-	-	1
PB6	PB6A	-	-	-	-	-	1	-	4	-	-	-	-	
PB6A	PB6B	-	-	-	-	-	1	-	4	-	-	-	-	
PB6	A	-	-	1	6	1	-	1	-	-	-	1	1	
PB6	PB8	1	1	-	-	1	1	2	6	-	-	1	1	1
PB6	B	-	-	1	3	1	-	1	-	-	-	1	1	
PB6B	PB6C	-	-	-	-	-	1	-	2	-	-	-	-	
PB6	PB6D	-	-	-	-	-	1	-	2	-	-	-	-	
PB8	D	-	-	1	5	1	-	1	-	1	1	1	1	
PB8	PB8A	-	-	-	-	-	1	-	2	-	-	-	-	
PB8A	PB8B	-	-	-	-	-	1	-	2	-	-	-	-	
PB8	PB2	1	1	-	-	1	1	3	9	1	2	1	1	1
PB8	PB6C	-	-	-	-	-	1	-	-	-	-	-	-	
PB8C	PB8D	-	-	-	-	-	1	-	1	-	-	-	-	
PB2B	PB2C	-	-	-	-	-	1	-	2	-	-	-	-	
PB2	PB2D	-	-	-	-	-	1	-	2	-	-	-	-	
PB2D	PB2E	-	-	-	-	-	1	-	2	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PB6D	PB6E	-	-	-	-	-	1	-	2	-	-	-	-	
PB4	PB4A	-	-	-	-	-	1	-	2	-	-	-	-	
PB4A	PB4B	-	-	-	-	-	1	-	2	-	-	-	-	
PB4	PB4C	-	-	-	-	-	1	-	2	-	-	-	-	
PB4C	PB4D	-	-	-	-	-	1	-	2	-	-	-	-	
METER	PB-1											1		1" C
UTILITY POLE	METER													2" C, 3#2, 1#8 GRD
METER	UPS													2" C, 3#4, 1#8 GRD
UPS	CONT													2" C, 3#4, 1#8 GRD
UTILITY POLE	CONT													2" C, HTCOM COMM
CABLE	CONT													2" C, OCEANIC COMM

LEGEND:
R = RED
Y = YELLOW
G = GREEN
← = ARROW
* = FIBER OPTIC
A - 2 - III
POLE NO. SIGNAL HEAD
SIGNAL HEAD MOUNTING TYPE

					SIGNAL HEAD TYPE
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY) PROGRAMMED VISIBILITY		COUNT DOWN TYPE WITH VISORS	DESCRIPTION
A-2-V B-2-V D-3-VI (a) D-2-VI (a) H-2-V J-3-VI (a) J-2-VI (a) A-3-V (a) G-2-VI (a) G-3-V (a)	A-1-V B-1-V E-1-I H-1-V K-1-I	D-1-VI (b) J-1-VI (b) A-5-VI (b) G-3-VI (b) G-4-VI (b) G-1-VI A-1-VI D-4-VI (b) J-4-VI (b)		A-4 B-3-VII D-3-VII E-2-VII G-4 H-3-VII J-3-VII K-2-VII	POLE LETTER - SIGNAL HEAD NUMBER - MOUNTING TYPE

(a) PROVIDE BACK PLATE FOR SIGNAL HEAD.
(b) PROGRAMMED VISIBILITY SIGNAL HEAD.

NOTE: PROVIDE ADHESIVE TYPE II OBJECT MARKERS ON ALL POLE STANDARDS. INSTALL TWO (2) MARKERS PER STANDARD. ALL SIGNAL HEADS SHALL BE L.E.D. TYPE INCLUDING PROGRAM VISIBILITY.

1
E-42
TRAFFIC SIGNAL TYPE, LOCATION AND MOUNTING SCHEDULE
NOT TO SCALE



This work was prepared by me or under my supervision.
Date: 04-30-10
Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

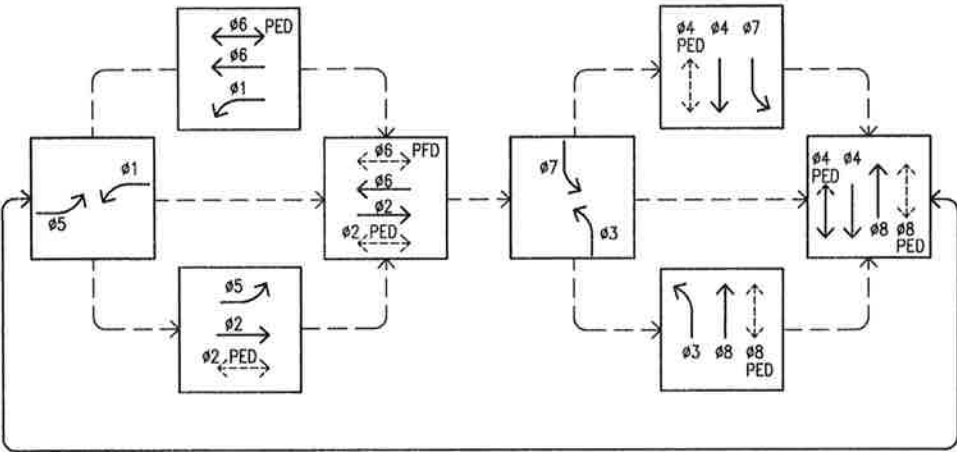
Traffic Signal Schedule, Conduit Cable Schedule
- Palani Street Intersection

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

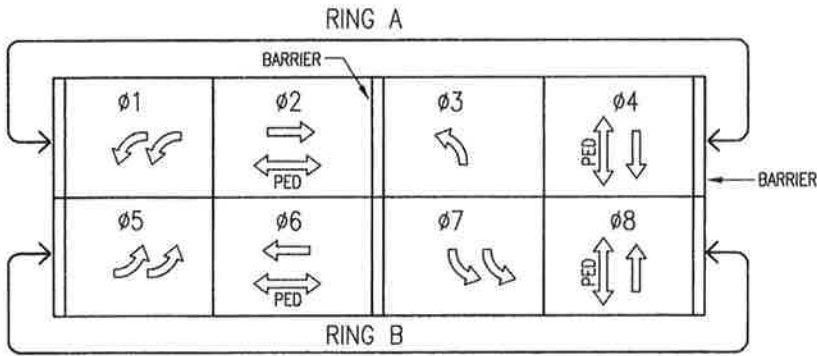
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

SHEET No. E-42 OF 64 SHEETS

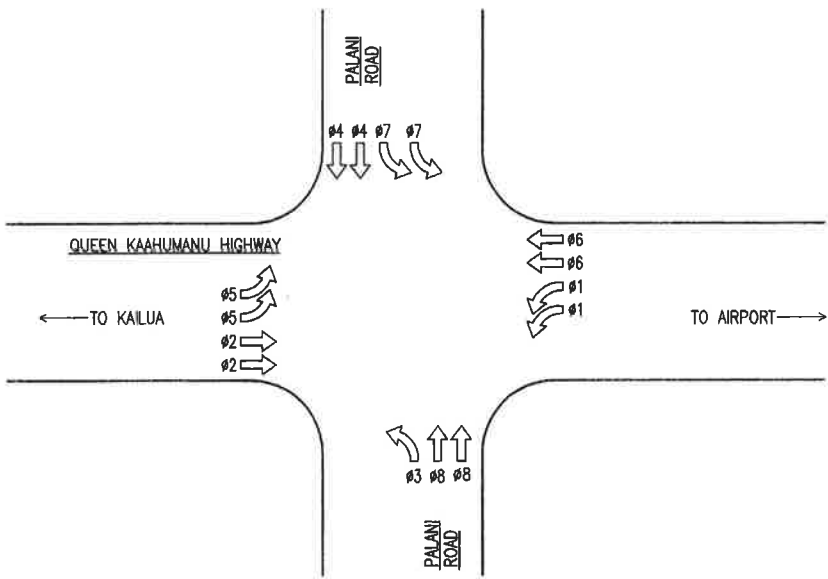
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	294	315



1 PHASE DIAGRAM
E-43 NOT TO SCALE



2 CONTROLLER PHASE ASSIGNMENT
E-43 NOT TO SCALE



3 PHASE PLAN - PALANI INTERSECTION
E-43 NOT TO SCALE



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Exp. 04-30-10
Clayton C. Y. Pang
Engineer, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Phase Diagram, Controller Phase Assignment,
Phase Plan - Palani Street Intersection

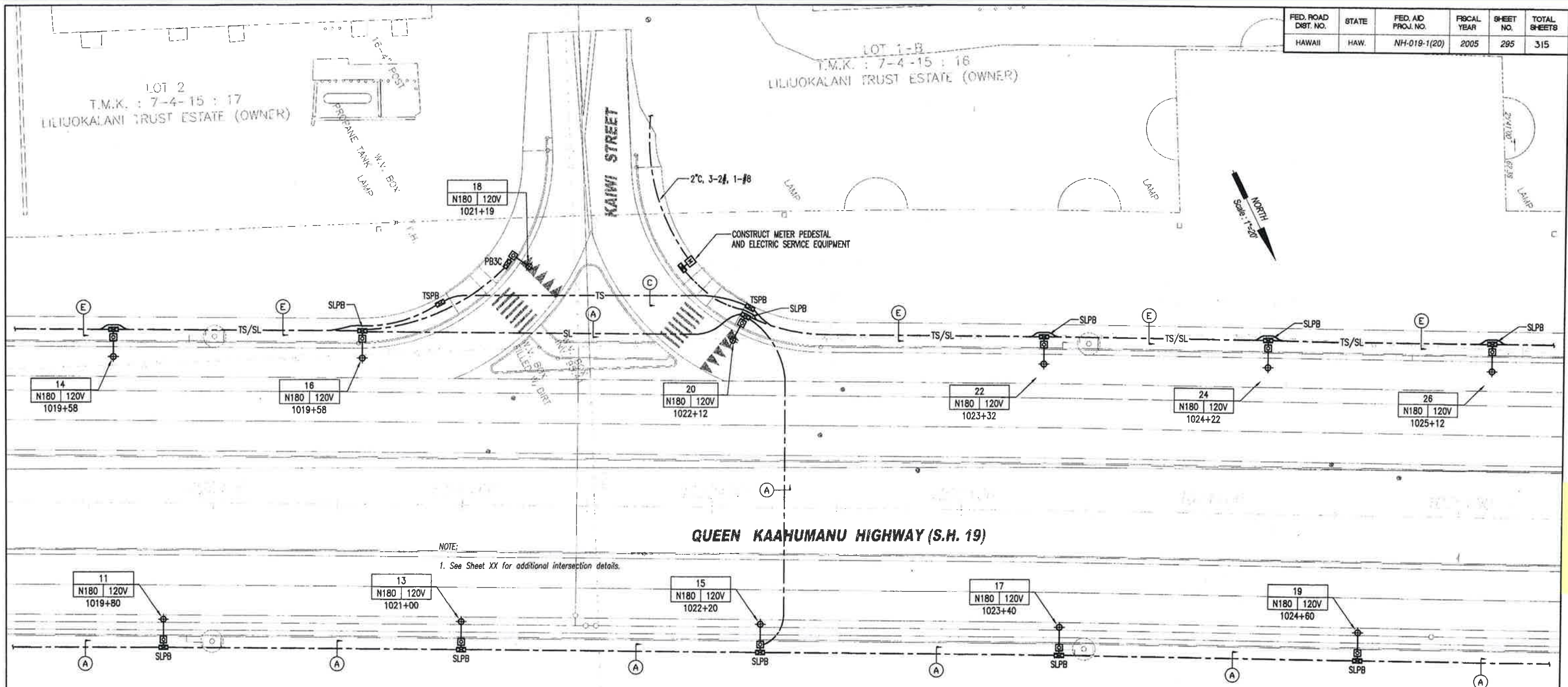
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

Date: Oct. 2007

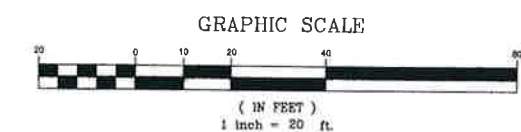
SHEET No. E-43 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	295	315



ELECTRICAL PLAN - KAIWI INTERSECTION (NEW WORK)
SCALE: 1" = 20'-0"

NOTE: 1. See Sheet XX for additional intersection details.



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Exp. 04-30-10

Charles H. H. H. H.
Charles H. H. H. H.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
KAIWI INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

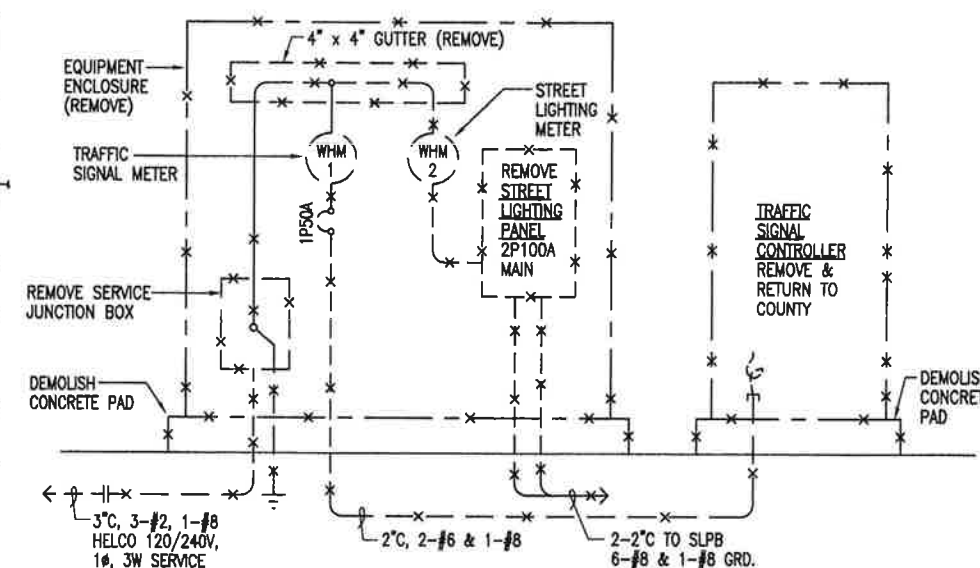
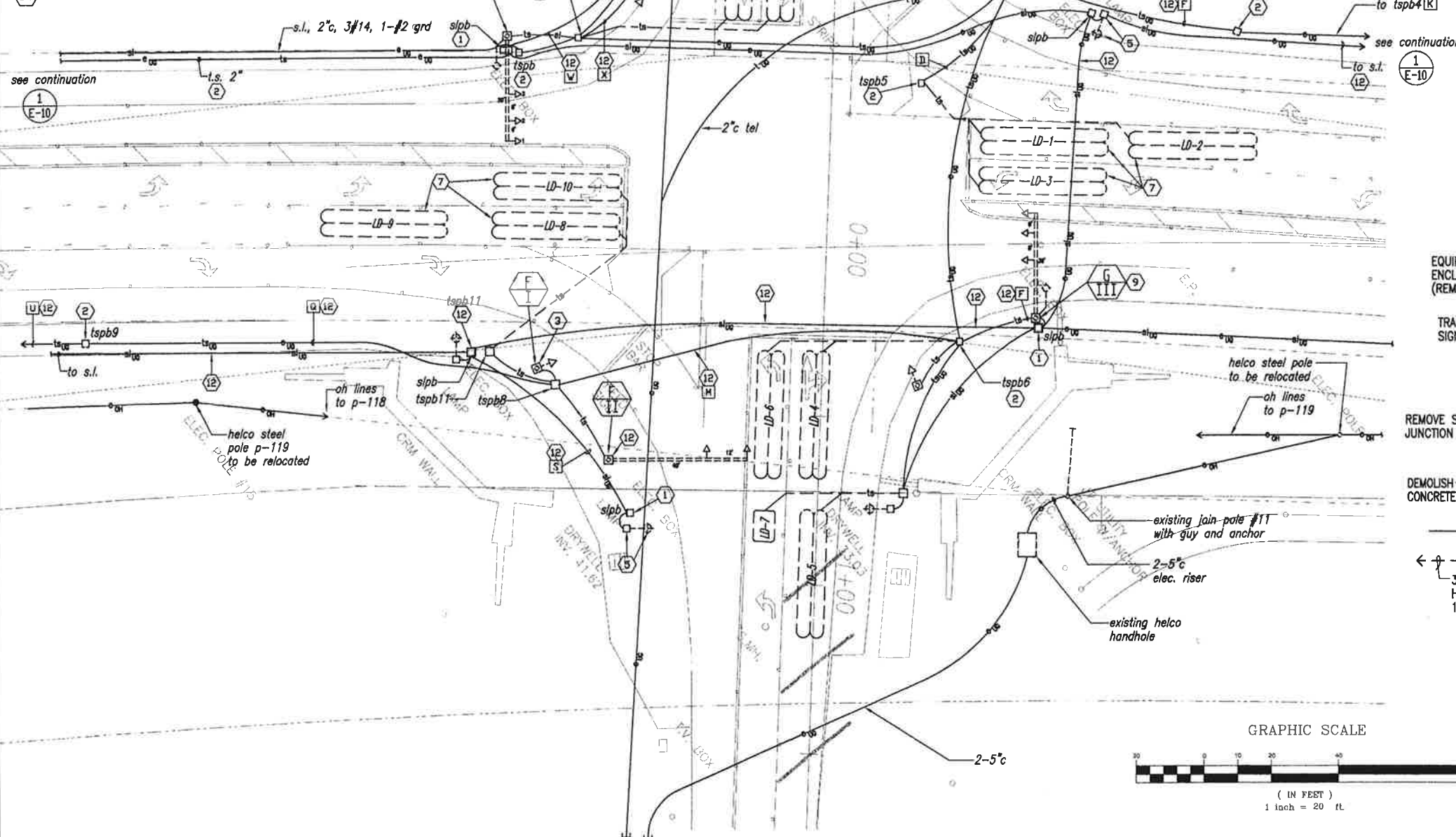
ELECTRICAL NOTES - EXISTING/REMOVAL WORK:

- EXISTING STREET LIGHT PULLBOX (SLPB) TO BE DEMOLISHED. REMOVE WIRES, ABANDON DUCT.
- EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED, REMOVE WIRES, ABANDON DUCT.
- EXISTING TRAFFIC SIGNAL STANDARD TYPE I TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
- EXISTING TRAFFIC SIGNAL STANDARD TYPE II TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
- EXISTING STREET LIGHT STANDARD TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRES, DEMOLISH BASE.
- EXISTING METER CAB TO BE REMOVED AND DISPOSED OF. REMOVE WIRE, DEMOLISH BASE.
- SAWCUT EXISTING LOOP DETECTOR WIRE, COMPLETELY THROUGH EVERY 15'.
- EXISTING TRAFFIC SIGNAL CONTROLLER TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRES, DEMOLISH BASE.
- EXISTING TRAFFIC SIGNAL STANDARD TYPE III TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
- EXISTING WIRES TO BE REMOVED FROM DUCTS. ABANDON DUCTS.
- EXISTING PEDESTRIAN PUSHBUTTON, POLE AND WIRING TO REMAIN.
- EXISTING DUCTLINE TO BE ABANDONED, REMOVE WIRES.
- EXISTING LOOP DETECTORS TO REMAIN.
- EXISTING STREET LIGHT STANDARD AND PULLBOX TO REMAIN.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	296	315

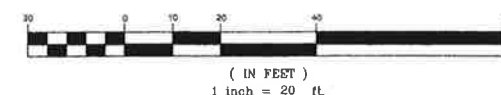
DUCTLINE SCHEDULE (EXISTING/REMOVAL)

A CONDUIT 3"	CABLE 3-#2, 1-#8	H CONDUIT 2"	CABLE 26/C #14 & 9/C #14 2-1 1/2" SPARE 2" 6(2-#16) VEH.	P CONDUIT 1 1/2"	CABLE 6-#14
B CONDUIT 2"	CABLE 3-#2, 1-#8	I CONDUIT 2"	CABLE 26/C #14 & 9/C #14 2-1 1/2" SPARE 2" 3(2-#16) VEH. 1" SPARE	Q CONDUIT 2"	CABLE 2-#16 VEH.
C CONDUIT 2"	CABLE HTCO	J CONDUIT 1 1/2"	CABLE 4-#14	R CONDUIT 1 1/2"	CABLE SPARE 2-#16 VEH.
D CONDUIT 2"	CABLE 26/C #14 & 9/C #14 1 1/2" PED 2" 12(2-#16) VEH. 2" FUTURE INTERCONNECT 1 1/2" SPARE	K CONDUIT 2"	CABLE 4-#14 SPARE	S CONDUIT 1 1/2"	CABLE 10-#14
E CONDUIT 1 1/2"	CABLE 10-#14	L CONDUIT 2"	CABLE SPARE	T CONDUIT 1 1/2"	CABLE 4-#14
F CONDUIT 2"	CABLE 2-#16 VEH. SPARE	M CONDUIT 2"	CABLE 26/C #14 & 9/C #14 2-1 1/2" SPARE 2" 3(2-#16) VEH. 1" SPARE	U CONDUIT 2"	CABLE 2-#16 VEH.
G CONDUIT 2"	CABLE 2(2-#16) VEH. 1 1/2" SPARE	N CONDUIT 1 1/2"	CABLE 12-#14	V CONDUIT 2	CABLE 2(2-#16) VEH.
				W CONDUIT 1 1/2"	CABLE 12-#14
				X CONDUIT 1 1/2"	CABLE 6-#14



2 ONE LINE DIAGRAM (EXISTING/REMOVAL WORK)
E-45 NOT TO SCALE

GRAPHIC SCALE



1 ELECTRICAL PLAN - MAKALA INTERSECTION (EXISTING/REMOVAL WORK)
E-45 SCALE: 1" = 20' - 0"

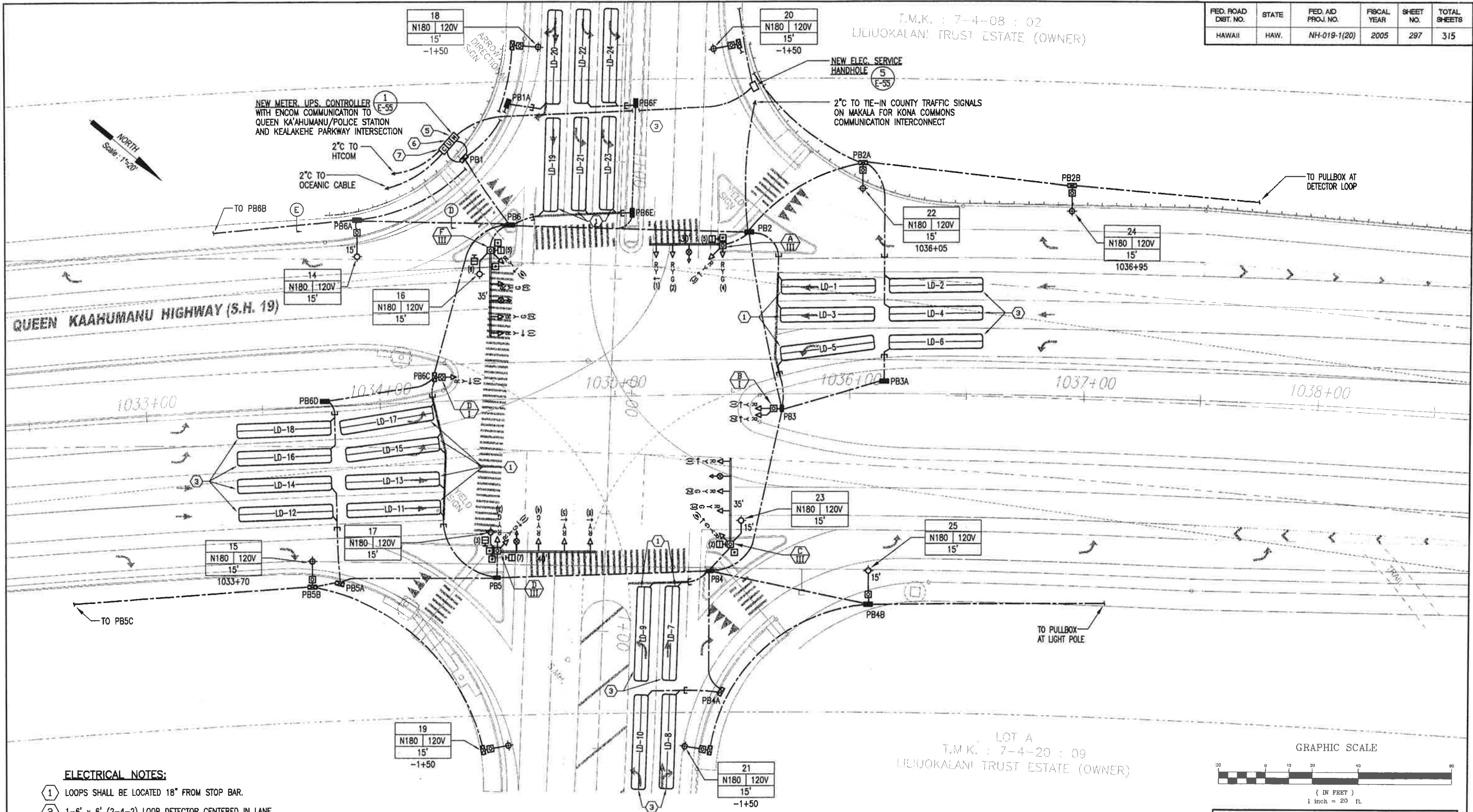


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Exp. 04-30-10
Clayton C. Y. Peng
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (EXISTING/REMOVAL WORK)
MAKALA INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-45 OF 84 SHEETS

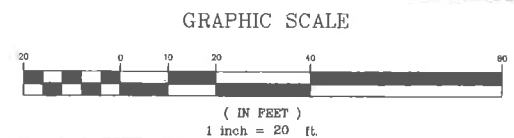
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	297	315



ELECTRICAL NOTES:

- 1 LOOPS SHALL BE LOCATED 18" FROM STOP BAR.
- 2 1-6' x 6' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 3 1-6' x 40' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 4 1-6' x 60' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 5 CONSTRUCT METER PEDESTAL AND ELECTRIC SERVICE EQUIPMENT CENTERED IN LANE. SEE DETAIL 2 E-55
- 6 INSTALL UN-INTERRUPTIBLE POWER SUPPLY UNIT ON CONCRETE FOUNDATION. SEE DETAIL 1 E-55
- 7 INSTALL LOCAL CONTROLLER AND ASSEMBLIES (MODEL 170 UNITS) WITH AUXILIARY EQUIPMENT INCLUDING OPTICAL PRE-EMPTION MODULE AND MODEL 332A CABINET ON CONCRETE FOUNDATION. SEE DETAIL 1 E-55

1 ELECTRICAL PLAN - MAKALA INTERSECTION (NEW WORK) E-46 SCALE: 1" = 20'-0"



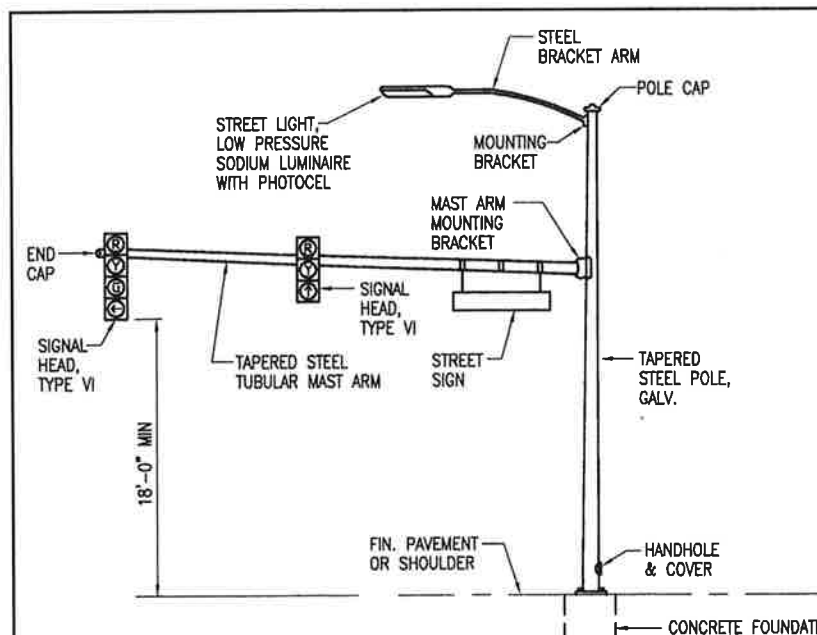
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Exp. 04-30-10
Clayton C. Y. Paig
Electrical Engineer, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)

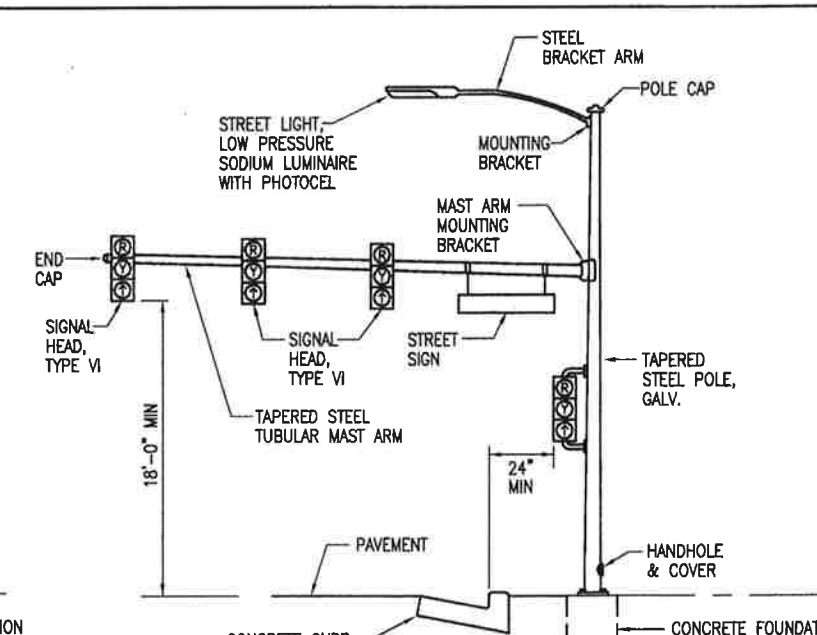
MAKALA INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

SHEET No. E-46 OF 64 SHEETS

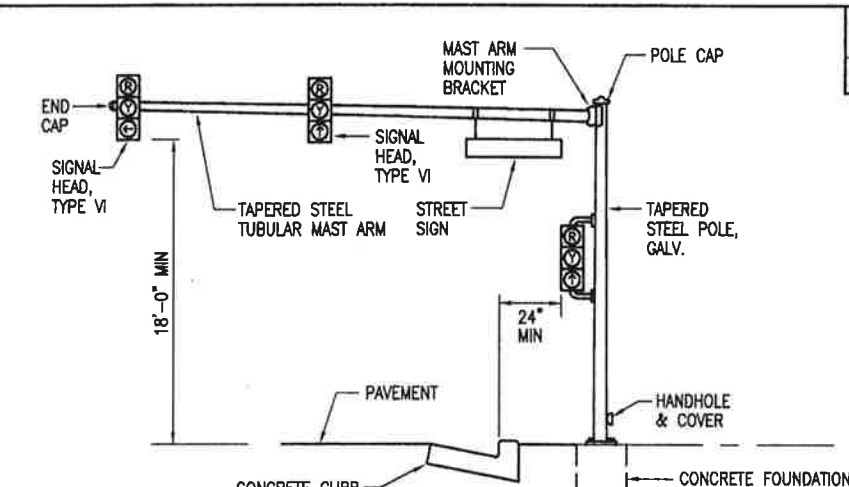
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	298	315



1 EXISTING POLE TRAFFIC SIGNAL STANDARD
E-47 NOT TO SCALE

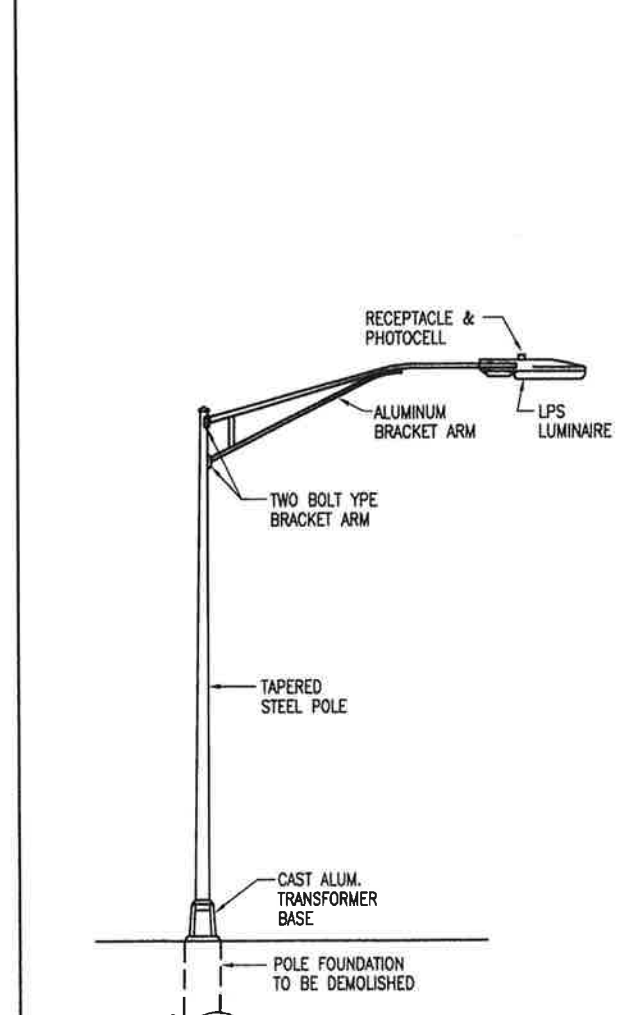


2 EXISTING POLE TRAFFIC SIGNAL STANDARD
E-47 NOT TO SCALE

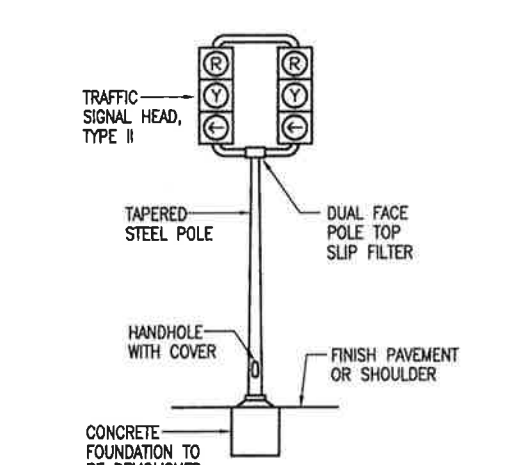


3 EXISTING POLE TRAFFIC SIGNAL STANDARD
E-47 NOT TO SCALE

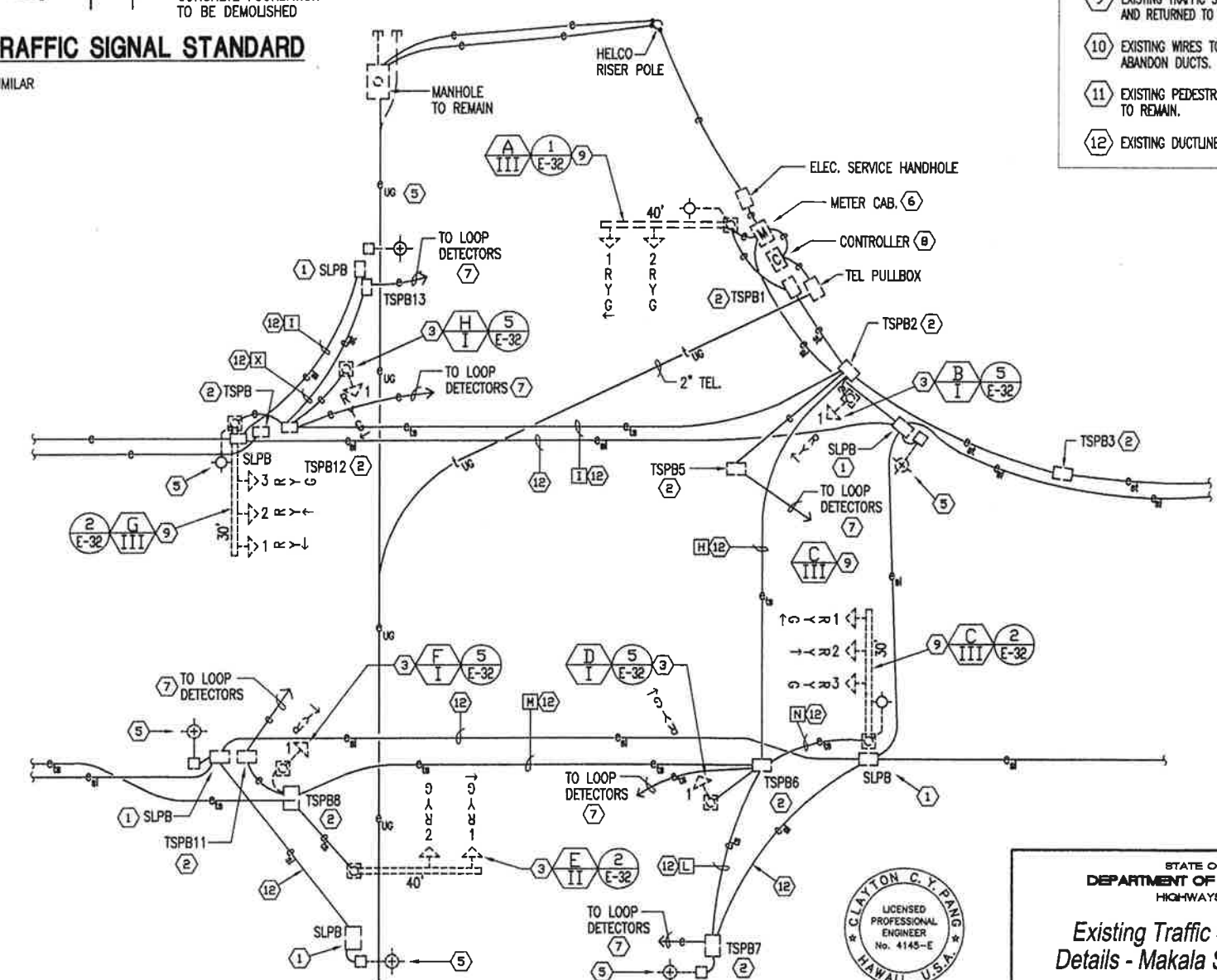
- ELECTRICAL NOTES - EXISTING/REMOVAL WORK:**
- EXISTING STREET LIGHT PULLBOX (SLPB) TO BE DEMOLISHED. REMOVE WIRES, ABANDON DUCT.
 - EXISTING TRAFFIC SIGNAL PULLBOX (TSPB) TO BE DEMOLISHED, REMOVE WIRES, ABANDON DUCT.
 - EXISTING TRAFFIC SIGNAL STANDARD TYPE I TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
 - EXISTING TRAFFIC SIGNAL STANDARD TYPE II TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
 - EXISTING STREET LIGHT STANDARD TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
 - EXISTING METER CAB TO BE REMOVED AND DISPOSED OF. REMOVE WIRE, DEMOLISH BASE.
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 - EXISTING TRAFFIC SIGNAL CONTROLLER TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
 - EXISTING TRAFFIC SIGNAL STANDARD TYPE III TO BE REMOVED AND RETURNED TO COUNTY. REMOVE WIRE, DEMOLISH BASE.
 - EXISTING WIRES TO BE REMOVED FROM DUCTS. ABANDON DUCTS.
 - EXISTING PEDESTRIAN PUSHBUTTON, POLE AND WIRING TO REMAIN.
 - EXISTING DUCTLINE TO BE ABANDONED, REMOVE WIRES.



4 EXISTING STREET LIGHT STANDARD
E-47 NOT TO SCALE



5 EXISTING TYPE I TRAFFIC SIGNAL FOUNDATION
E-47 NOT TO SCALE



6 CONNECTION DIAGRAM (EXISTING/REMOVAL WORK)
E-47 NOT TO SCALE

CLAYTON C. Y. PAID
LICENSED PROFESSIONAL ENGINEER
No. 4145-E
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**Existing Traffic Signal Standard
Details - Makala Street Intersection**

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

CONDUIT/CABLE SCHEDULE

FROM	TO	MAIN CONTROLLER		SIGNAL CONTROL		DETECTORS				OPTICOM		STREET LIGHTS		SPARE	REMARKS
		CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT		CONDUCTOR		CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR		
						2"	1-25/C #14 9/C #14	2"	4/C-#14 COLOR CODED						
POLE	METER	-	-	-	-	-	-	-	-	-	-	-	-	-	2"C, 3#2
METER	UPS	-	-	-	-	-	-	-	-	-	-	-	-	-	2"C, 3#4, 1#8 GRD
METER	PB1	-	-	-	-	-	-	-	-	-	-	1	1	-	
CONTROL	PB1	1	1	-	-	1	1	4	18	1	4	-	-	1	
PB1	PB6	1	1	-	-	1	1	4	18	1	4	1	1	1	
PB2	PB2A	-	-	-	-	-	1	-	4	-	-	1	1	-	
PB2A	PB2B	-	-	-	-	-	1	-	2	-	-	1	1	-	
PB2B	PB2C	-	-	-	-	-	1	-	2	-	-	1	1	-	
PB2C	SL	-	-	-	-	-	-	-	-	-	-	1	1	-	
PB2	A	-	-	1	6	1	-	1	-	1	1	1	1	-	
PB2	PB3	1	1	-	-	1	1	2	1	1	2	1	1	1	
PB3	B	-	-	1	1	-	-	-	-	-	-	-	-	-	
PB3	PB4	1	1	-	-	1	1	2	9	1	2	1	1	1	
PB4	PB4A	-	-	-	-	-	1	-	2	-	-	-	-	-	
PB4	PB4B	-	-	1	3	-	-	-	-	1	1	1	1	-	
PB4B	SL	-	-	-	-	-	-	-	-	-	-	1	1	-	
PB4	PB5	1	1	-	-	1	1	2	7	1	1	1	1	1	
PB4	C	-	-	1	2	-	-	-	-	-	-	-	-	-	
PB5	D	-	-	1	5	1	-	2	-	1	1	1	1	-	
PB5	PB5A	-	-	-	-	-	1	-	4	-	-	1	1	-	
PB5A	PB5B	-	-	-	-	-	1	-	2	-	-	1	1	-	
PB5B	PB5C	-	-	-	-	-	1	-	2	-	-	1	1	-	
PB5C	SL	-	-	-	-	-	-	-	-	-	-	1	1	-	
PB2	PB6	1	1	-	-	1	1	2	2	1	3	1	1	1	
PB6	F	-	-	1	3	1	-	2	-	-	-	1	1	-	
PB6	PB6A	1	1	-	-	-	-	-	-	1	1	1	1	-	
PB6A	PB6B	-	-	-	-	-	-	-	-	-	-	1	1	-	
PB6B	SL	-	-	-	-	-	-	-	-	-	-	1	1	-	
PB6	PB6C	1	1	-	-	1	1	-	2	1	1	-	-	1	
PB6C	E	-	-	1	1	-	-	-	-	-	-	-	-	-	
PB6C	PB6D	-	-	-	-	-	1	-	1	-	-	-	-	-	
PB6	PB6E	-	-	-	-	-	1	-	4	-	-	-	-	-	
PB6E	PB6F	-	-	-	-	-	1	-	2	-	-	-	-	-	
PB3	PB3A	-	-	-	-	-	1	-	1	-	-	-	-	-	
UPS	CONT														2"C, 3#4, 1#8 GRD
CONTROL	UTILITY POLE														2"C, HTCOM COMM
CONTROL	CABLE														2"C, OCEANIC CABLE COMM
CONTROL															2"C, 12PR #19 FOR INTERCONNECT FROM MAKALA TO MALULANI AND TIE INTO COUNTY SYSTEM AT MAKALA KONA COMMONS

LEGEND:

R = RED
Y = YELLOW
G = GREEN

← = ARROW
* = FIBER OPTIC

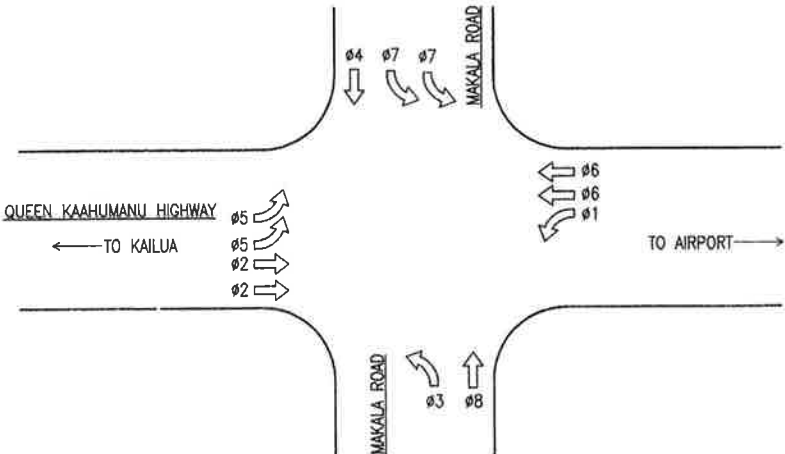
A - 2 - III
POLE NO. SIGNAL HEAD SIGNAL HEAD MOUNTING TYPE

				SIGNAL HEAD TYPE
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYG (UP) TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY) PROGRAMMED VISIBILITY	COUNT DOWN TYPE WITH VISOR	DESCRIPTION
A-2-VI (a) C-3-VI (a) D-3-VI (a) D-5-V A-4-V F-3-VI (a)	C-1-VI (a) C-2-VI (a) F-1-VI (a) F-2-VI (a)	A-1-VI (b) B-1-II (b) B-2-II (b) E-1-I (b) F-4-V (b) A-3-V (b) D-1-VI (b) D-2-VI (b) D-4-VI (b) C-4-V (b)	E-3-VII H-2-VII H-3-VII A-5-VII D-2-VII E-7-VII	POLE LETTER - SIGNAL HEAD NUMBER-MOUNTING TYPE

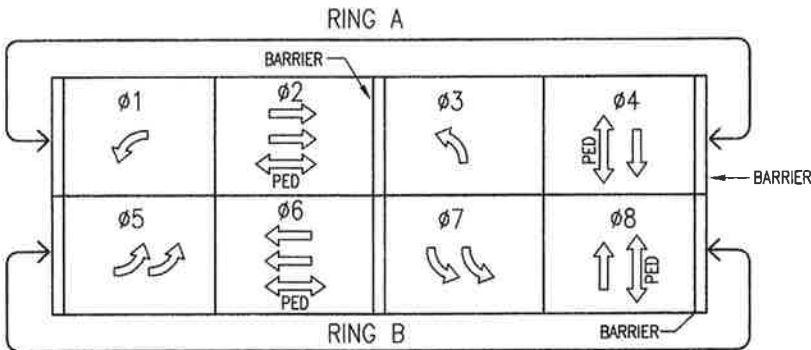
- (a) PROVIDE BACK PLATE FOR SIGNAL HEAD.
(b) PROGRAMMED VISIBILITY SIGNAL HEAD.

- NOTES: 1. PROVIDE ADHESIVE TYPE II OBJECT MARKERS ON ALL POLE STANDARDS. INSTALL TWO (2) MARKERS PER STANDARD.
2. ALL SIGNAL HEADS SHALL BE L.E.D. TYPE INCLUDING PROGRAM VISIBILITY.

1 TRAFFIC SIGNAL TYPE, LOCATION AND MOUNTING SCHEDULE
E-48 NOT TO SCALE



2 PHASE PLAN - MAKALA INTERSECTION
E-48 NOT TO SCALE



3 CONTROLLER PHASE ASSIGNMENT
E-48 NOT TO SCALE



This work was prepared by me or under my supervision. Exp. 04-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Traffic Signal Schedule, Conduit Cable Schedule,
Phase Plan - Makala Intersection

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

LOT 4
T.M.K. : 7-4-08 : 73
STATE OF HAWAII (OWNER)



LOT 3
T.M.K. : 7-4-08 : 72
STATE OF HAWAII (OWNER)

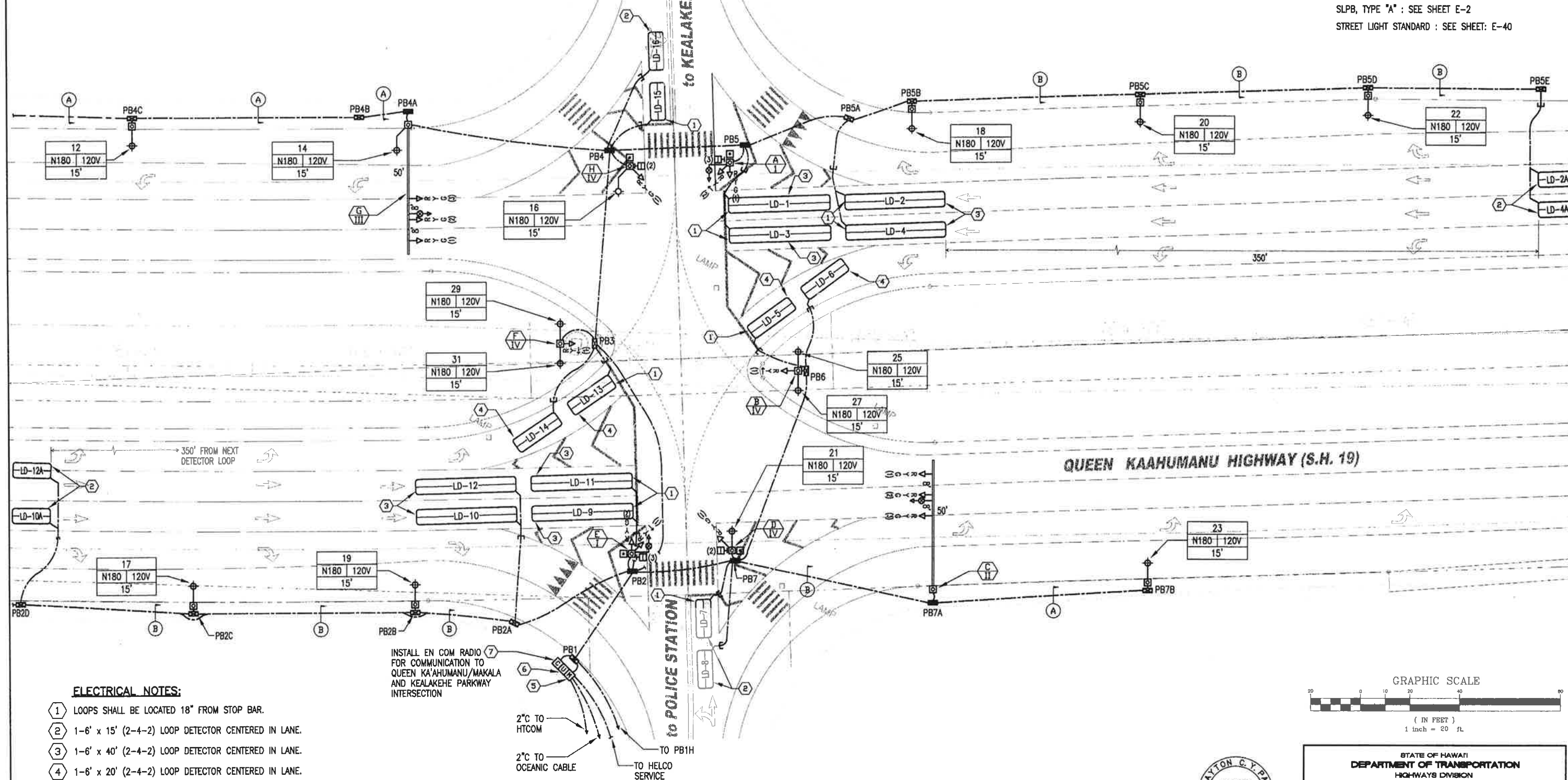
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	300	315

ELECTRICAL NOTES - NEW WORK:

DUCT SECTIONS : SEE SHEET E-40

SLPB, TYPE "A" : SEE SHEET E-2

STREET LIGHT STANDARD : SEE SHEET E-40



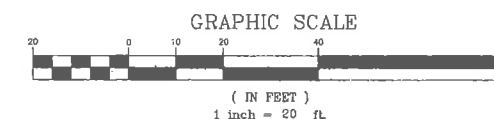
ELECTRICAL NOTES:

- 1 LOOPS SHALL BE LOCATED 18" FROM STOP BAR.
- 2 1-6' x 15' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 3 1-6' x 40' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 4 1-6' x 20' (2-4-2) LOOP DETECTOR CENTERED IN LANE.
- 5 CONSTRUCT METER PEDESTAL AND ELECTRIC SERVICE EQUIPMENT CENTERED IN LANE. SEE DETAIL
- 6 INSTALL UNINTERRUPTIBLE POWER SUPPLY UNIT ON CONCRETE FOUNDATION. SEE DETAIL
- 7 INSTALL LOCAL CONTROLLER AND ASSEMBLIES (MODEL 170 UNITS) WITH AUXILIARY EQUIPMENT INCLUDING OPTICAL PRE-EMPTION MODULE AND MODEL 332A CABINET ON CONCRETE FOUNDATION. SEE DETAIL

INSTALL EN COM RADIO FOR COMMUNICATION TO QUEEN KA'AHUMANU/MAKALA AND KEALAKEHE PARKWAY INTERSECTION

2" C TO HTCOM
2" C TO OCEANIC CABLE
TO PB1H
TO HELCO SERVICE

1 ELECTRICAL PLAN - POLICE STATION/WWTP INTERSECTION (NEW WORK)
E-49 SCALE: 1" = 20'-0"



This work was prepared by me or under my supervision.
Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
POLICE STATION/WWTP INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008
SHEET No. E-49 OF 64 SHEETS

LEGEND:
R = RED
Y = YELLOW
G = GREEN
← = ARROW
* = FIBER OPTIC

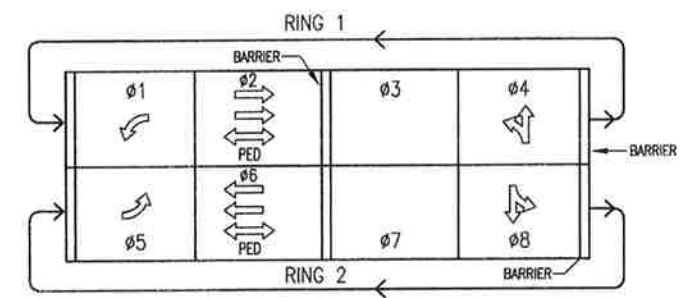
A - 2 - III
POLE NO. SIGNAL HEAD SIGNAL HEAD MOUNTING TYPE

				SIGNAL HEAD TYPE
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	12" RYGA TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	COUNT DOWN TYPE WITH VISOR	DESCRIPTION
A-1-II C-3-VI (a) D-1-V E-2-II G-3 VI (a) H-1-V	C-1-VI (a) C-2-VI (a) G-1 VI (a) G-2 VI (a)	A-2-II B-1-V (b) E-1-II F-1-V (b)	A-3-VII D-2-VII E-3-VII H-2-VII	POLE LETTER - SIGNAL HEAD NUMBER-MOUNTING TYPE

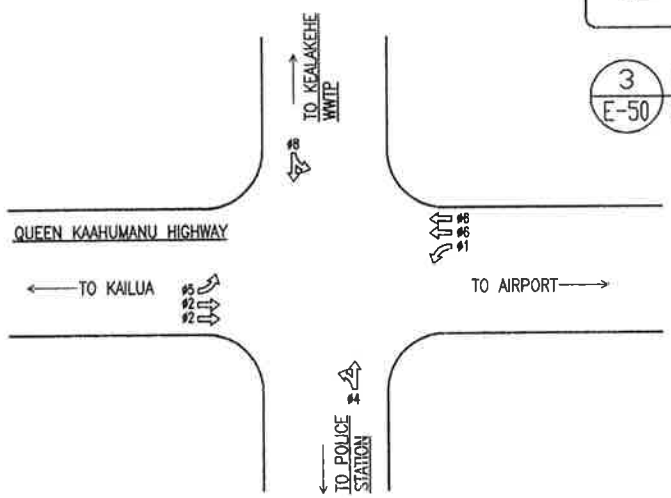
(a) PROVIDE BACK PLATE FOR SIGNAL HEAD.
(b) PROGRAMMED VISIBILITY SIGNAL HEAD.

NOTES: 1. PROVIDE ADHESIVE TYPE II OBJECT MARKERS ON ALL POLE STANDARDS. INSTALL TWO (2) MARKERS PER STANDARD.
2. ALL SIGNAL HEADS SHALL BE L.E.D. TYPE.

1 TRAFFIC SIGNAL TYPE, LOCATION AND MOUNTING SCHEDULE
E-50 NOT TO SCALE



3 CONTROLLER PHASE ASSIGNMENT
E-50 NOT TO SCALE



2 PHASE PLAN - WWTP/POLICE STATION INTERSECTION
E-50 NOT TO SCALE

CONDUIT/CABLE SCHEDULE

FROM	TO	MAIN CONTROLLER		SIGNAL CONTROL		DETECTORS				OPTICOM		STREET LIGHTS		ELEC SERVICE		SPARE	REMARKS
		CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUIT	CONDUCTOR	CONDUCTOR	
		2"	1-26/C #14 9/C #14	2"	4/C-#14 COLOR CODED	2"	2"	2/C-#16 PEDESTRIAN	2/C-#14 VEHICLE	2"	3/C #20	2"	3-#6 1-#8 GND	2"	3-#2 1-#8 GND	2"	2", 1 RADIO
HELCO	METER	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	2", 3-#2, 1-#8 GND
METER	UPS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2", 3-#4, 1-#8 GND
METER	PB1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	1", 2-#10, 1-#10 GND
CONTROL	PB1	1	1	-	-	1	1	-	-	1	4	-	-	-	-	1	
PB1	PB2	1	1	-	-	1	1	8	-	1	4	1	1	-	-	1	
PB2	E	-	-	1	2	1	-	2	-	1	1	-	-	-	-	-	
PB2	PB2A	-	-	-	-	-	1	-	3	-	-	1	1	-	-	-	
PB2A	PB2B	-	-	-	-	-	1	-	1	-	-	1	1	-	-	-	
PB2B	PB2C	-	-	-	-	-	1	-	1	-	-	1	1	-	-	-	
PB2C	PB2D	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	
PB2	PB3	1	1	-	-	1	1	4	5	1	2	1	1	-	-	1	
PB3	F	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	
PB3	PB4	1	1	-	-	1	1	4	4	1	2	1	1	-	-	1	
PB4	H	-	-	1	1	1	-	2	-	-	-	1	1	-	-	-	
PB4	PB5	1	1	-	-	1	1	2	3	1	1	1	1	-	-	1	
PB4	PB4A	1	1	-	-	-	-	-	-	1	1	1	1	-	-	-	
PB4A	G	-	-	1	3	-	-	-	-	1	1	1	1	-	-	-	
PB5	A	-	-	1	2	1	-	2	-	1	1	-	-	-	-	-	
PB5	PB5A	-	-	-	-	-	1	-	3	-	-	1	1	-	-	-	
PB5A	PB5B	-	-	-	-	-	1	-	1	-	-	1	1	-	-	-	
PB5B	PB5C	-	-	-	-	-	1	-	1	-	-	1	1	-	-	-	
PB5C	PB5D	-	-	-	-	-	1	-	1	-	-	1	1	-	-	-	
PB2	PB7	1	1	-	-	1	1	2	2	1	2	1	1	-	-	1	
PB7	D	-	-	1	1	1	1	2	-	1	1	1	1	-	-	-	
PB7	PB7A	1	1	-	-	-	-	-	-	1	1	1	1	-	-	1	
PB7A	C	-	-	1	3	-	-	-	-	1	1	1	1	-	-	-	
PB7A	PB7B	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	
PB7	PB6	1	1	-	-	1	1	-	-	-	-	-	-	-	-	1	
PB6	B	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	
UPS	CONT																2", 3#4, 1#8 GRD
CONTROL	UTILITY POLE																2", HTCOM COMM
CONTROL	CABLE																2", OCEANIC CABLE COMM
CONTROL																	2", EN COMM RADIO COMMUNICATION CABLE TO MAKALA AND KEALAKEHE PARKWAY



This work was prepared by me or under my supervision.
Exp. 04-30-10
Clayton C. Y. Pang
Electron Hawaii, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

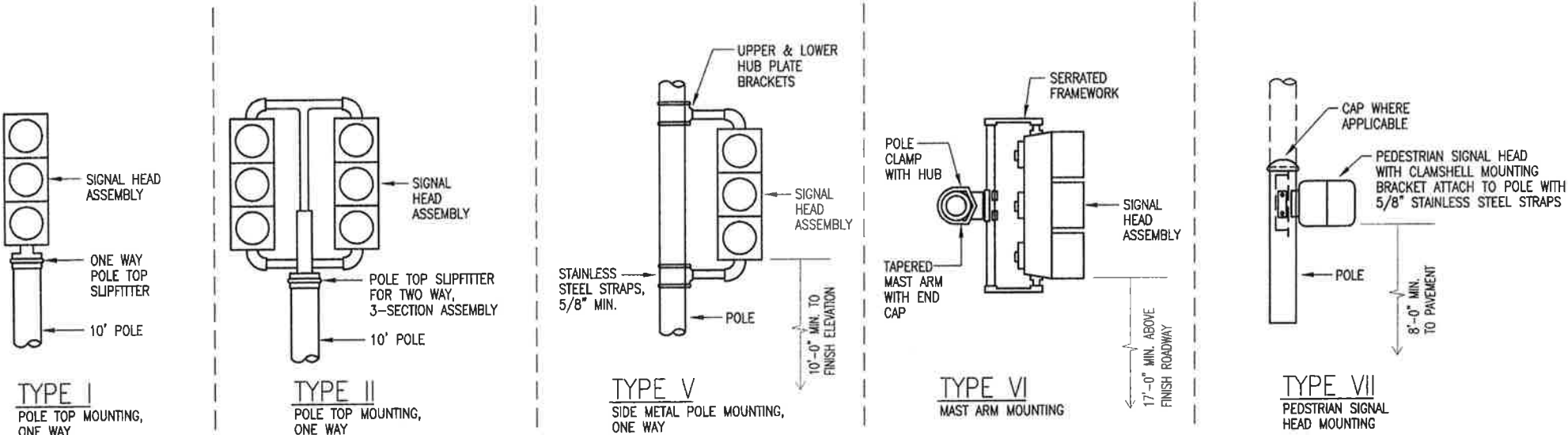
Traffic Signal Schedule, Conduit/Cable Schedule,
Phase Plan - WWTP/Police Station Intersection

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

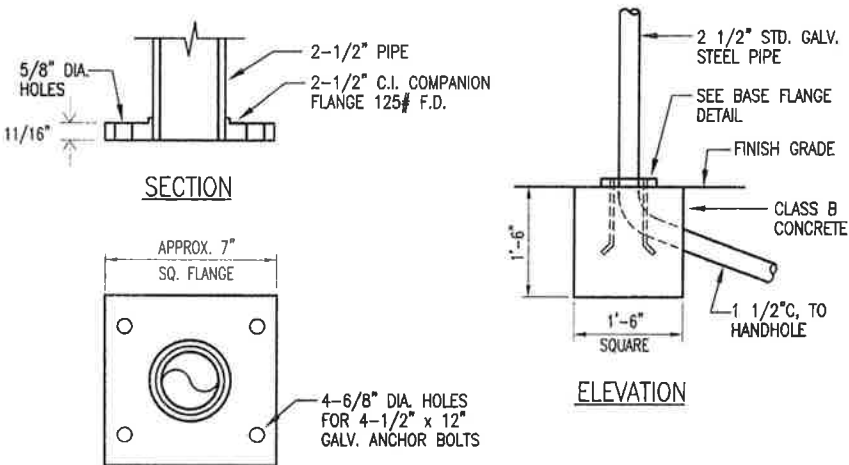
SHEET No. E-50 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	NH-019-1(20)	2005	303	315

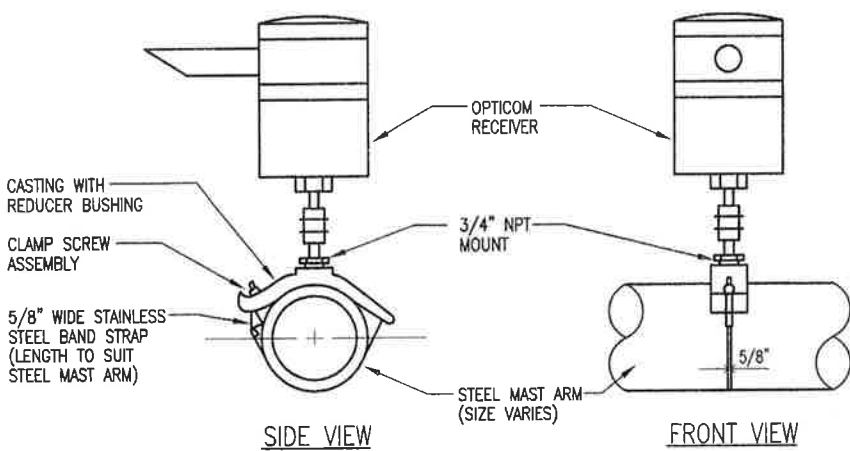


- NOTES:**
- ALL THREADED NEWS, I.E. BOLTS, FITTINGS, SCREWS, ETC., TO BE COATED WITH AN APPROVED ANTI-SIEZE COMPOUND PRIOR TO ASSEMBLY OR INSTALLATION.
 - ALL CINGULAR SIGNAL HEADS (EXCEPT FIBEROPTIC AND PROGRAMMABLE) SHALL HAVE APPROVED GLASS LENSES.

1 SIGNAL ASSEMBLY MOUNTING
E-52 NOT TO SCALE

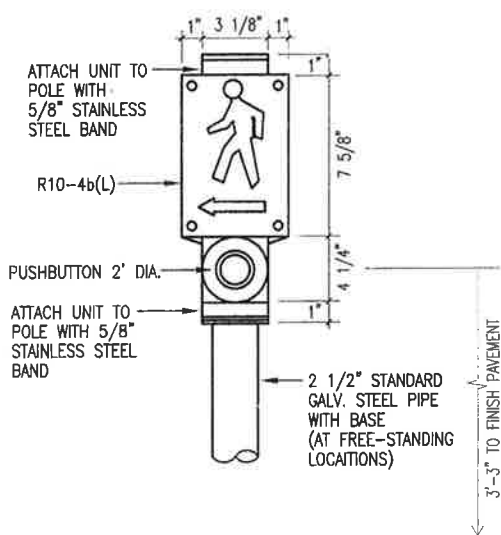


2 DETAIL - PEDESTRIAN PUSHBUTTON FLANGE BASE
E-52 NOT TO SCALE



- NOTES:**
- OPTICAL DETECTOR SHALL BE "OPTICOM M511 OPTICAL DETECTOR", OR APPROVED EQUAL, UNLESS NOTED OTHERWISE IN THE SPECIAL PROVISION.
 - SUPPORT SADDLE ASSEMBLY SHAL BE "ASTRO MINI-BRAC, AB-0132-29", OR APPROVED EQUAL, UNLESS NOTED OTHERWISE IN THE SPECIAL PROVISION

3 DETAIL - MAST ARM OPTICOM RECEIVER MOUNTING
E-52 NOT TO SCALE



4 DETAIL - PEDESTRIAN SIGNAL PUSHBUTTON
E-52 NOT TO SCALE

- NOTES:**
- THE PEDESTRIAN PUSHBUTTON UNIT SHALL CONSISTE OF A ONE PIECE ASSEMBLY WITH A RAISED WALKING MAN, ARROW INDICATION AND PUSH BUTTON.
 - THE PUSHBUTTON ACTIVATOR SHALL BE OF THE MUSHROOM PLUNGER TYPE, ADA ACCEPTABLE, 2-INCHES IN DIAMETER THAT REQUIRES LESS THAN 5 LBS. OF PRESSURE TO ACTIVATE
 - THE RAISE MAN AND ARROW SHALL BE DIRECTIONAL AND MATCH THE DIRECTION INDICATION AS SHOWN ON THE PLANS.
 - THE PUSHBUTTON SHALL BE TAMPERPROOF, WEATHERPROOF AND CONSTRUCTED SO THAT ELECTRICAL SHOCKS ARE IMPOSSIBLE
 - THE COLOR SCHEME SHALL BE:
WHITE - MAN, ARROW AND PUSHBUTTON
BLACK - BACKGROUND

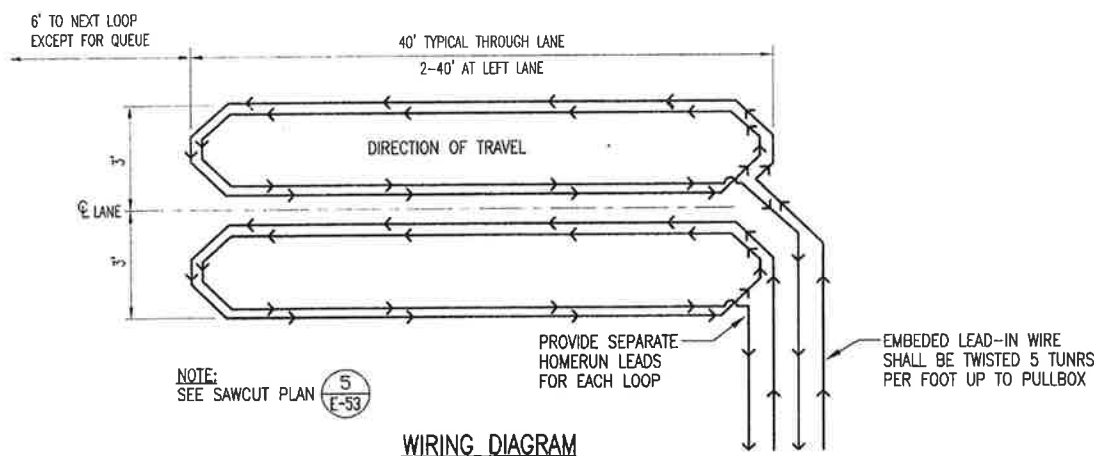
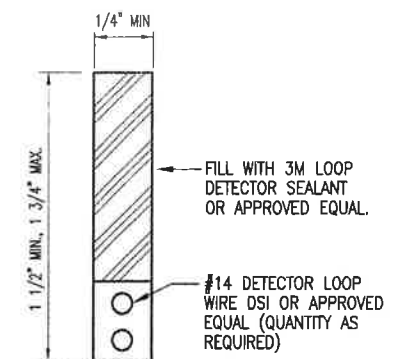
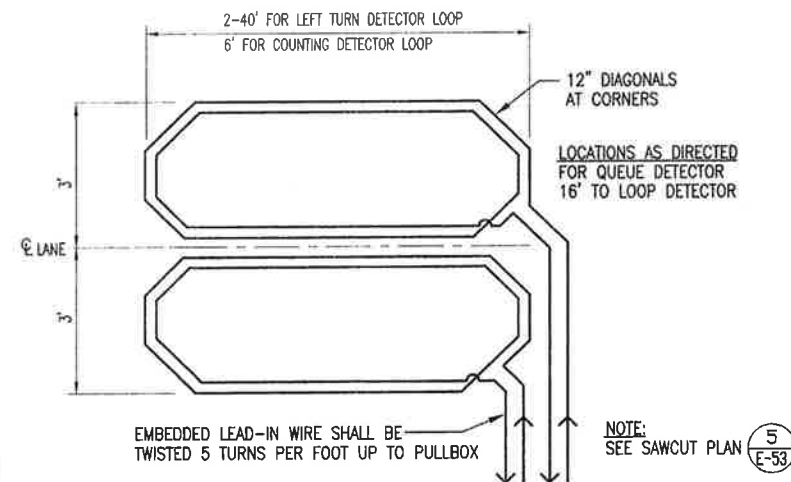
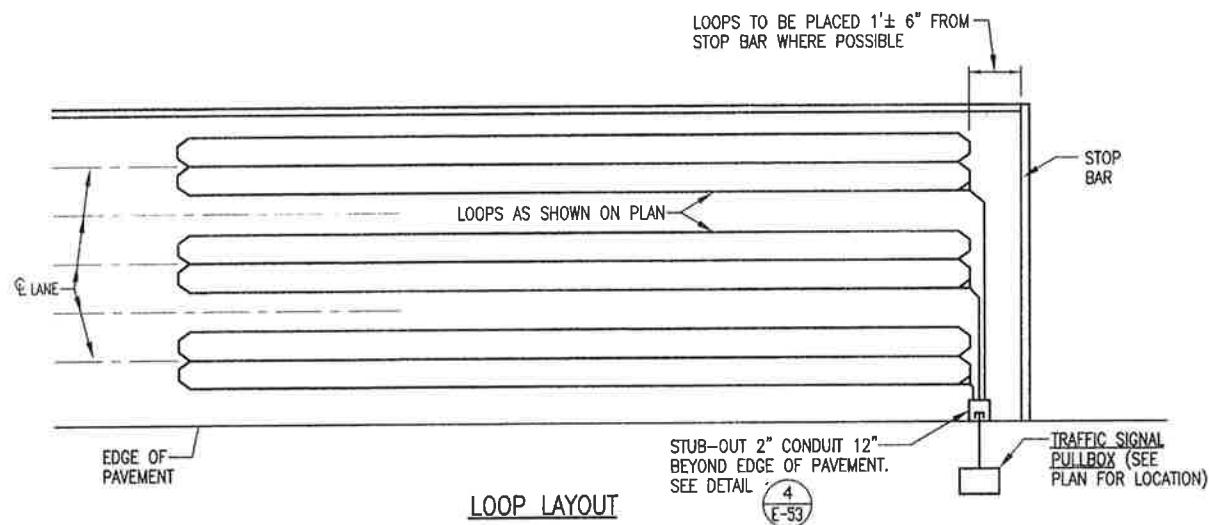


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Exp. 04-30-10
Clayton C. Y. Pang
Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Miscellaneous Details
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007
SHEET No. E-52 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	304	315



2 WIRING DIAGRAM - QUEUE/
COUNTING DETECTOR
NOT TO SCALE

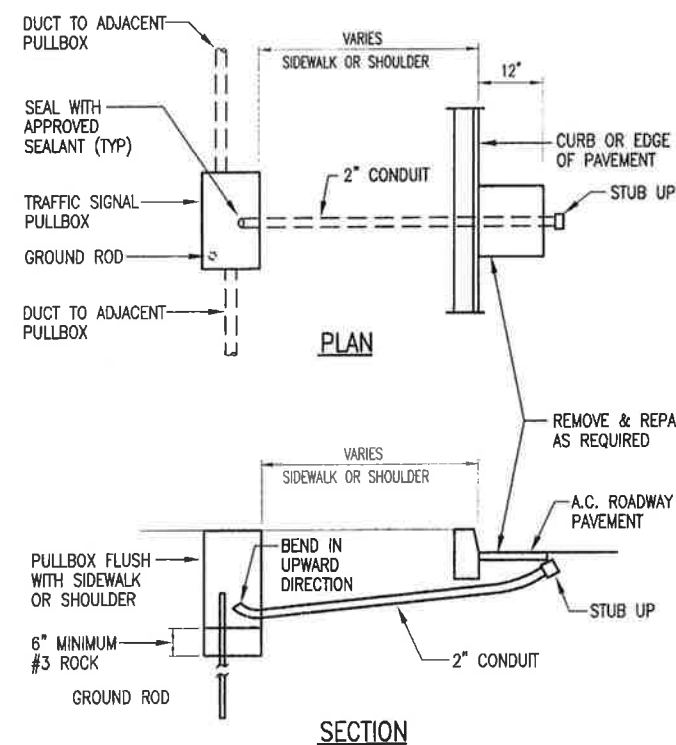
3 SECTION 'A'
NOT TO SCALE

WHEN EXISTING BURIED LOOPS ARE ABANDONED IN PLACE, ALL EXISTING LOOP DETECTORS SHALL BE SAWCUT COMPLETELY THROUGH AT EVERY 15' TO PREVENT INDUCTIVE COUPLING.

EACH LOOP DETECTOR LEAD-IN CABLES SHALL BE IDENTIFIED IN THE CABINET WITH IT'S APPROPRIATED LOOP DETECTOR ASSIGNMENT NUMBER PER PLANS.

WHEN HOT SEALANTS ARE USED, ONLY POLYESTER INSULATION WITH A MINIMUM 400 DEGREES MELTING POINT WILL BE PERMITTED

1 LOOP DETECTOR (TYPICAL)
NOT TO SCALE



5 TYPICAL LOOP DETECTOR
SAWCUT PLAN

4 LOOP DETECTOR STUBOUT
NOT TO SCALE



This work was prepared by me
or under my supervision.
Exp. 04-30-10

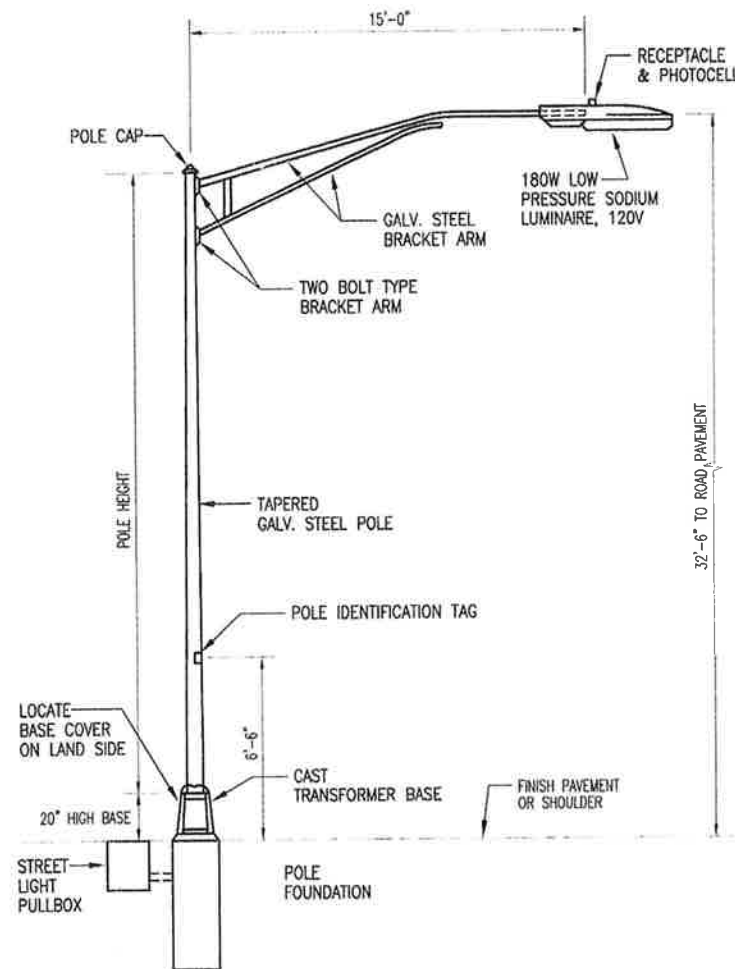
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

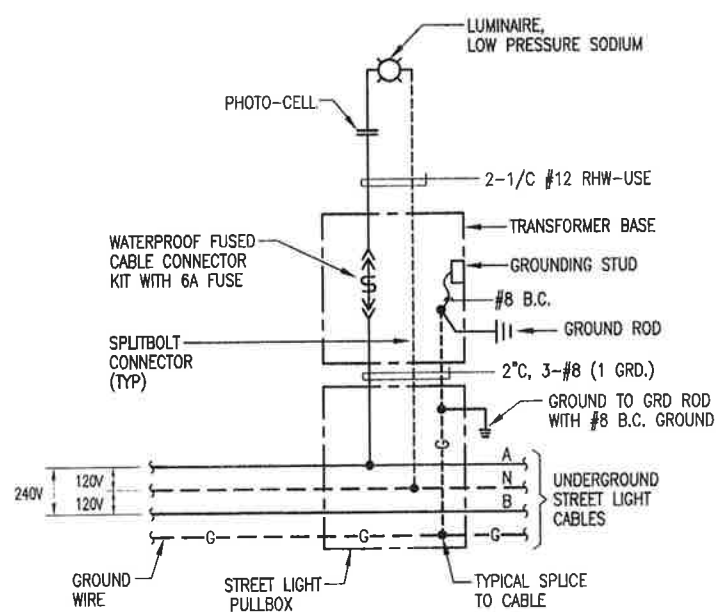
LOOP DETECTOR DETAIL
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2008

SHEET No. E-53 OF 64 SHEETS

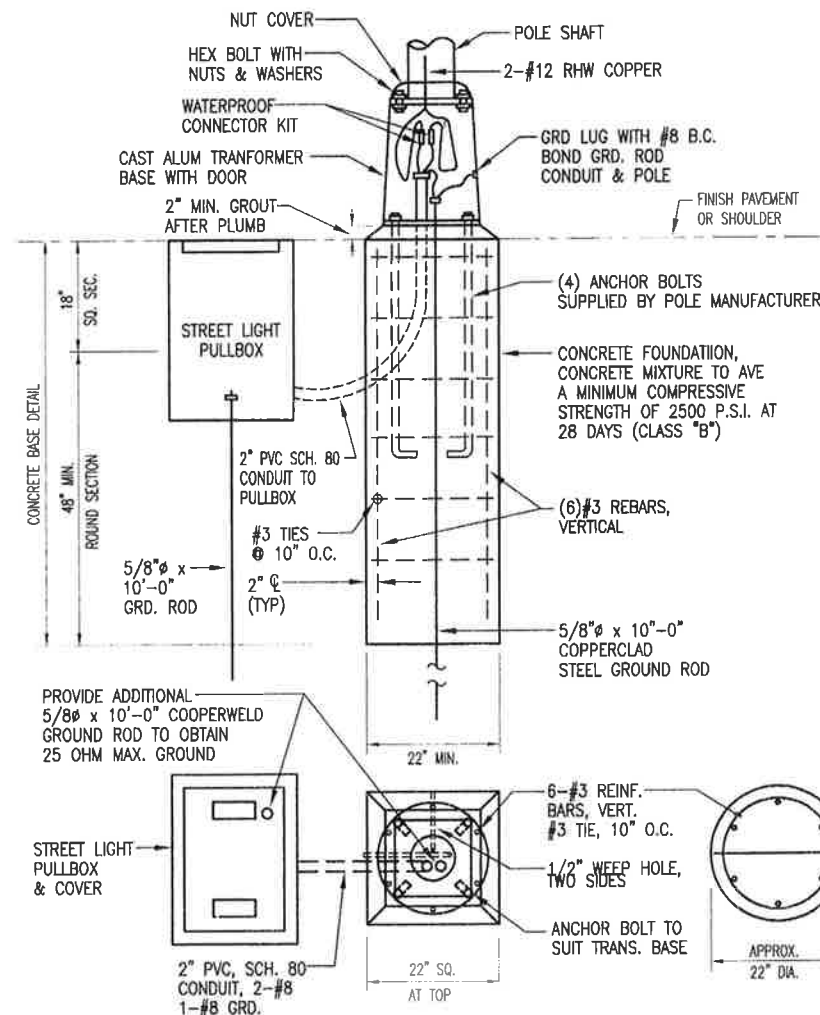
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	305	315



1 **TRAFFIC STREET LIGHT STANDARD**
E-54 NOT TO SCALE



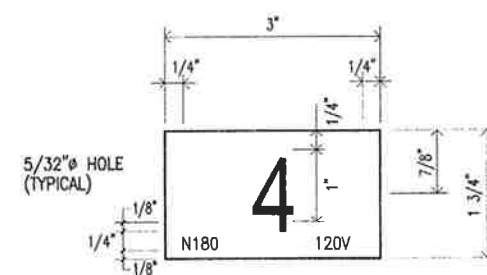
3 STREET LIGHT CONNECTION DIAGRAM
E-54 NOT TO SCALE



2
E-54

DETAIL - CONCRETE FOUNDATION

NOT TO SCALE



NOTES:

1. USE 2-PLY PLASTIC - BLACK, WHITE.
2. NUMBER SIZE SHALL BE 1" HIGH AND ENGRAVED 1" WIDE, WHITE IN COLOR (NUMBER AS REQUIRED).
3. NOMENCLATURE SHALL BE 1/4" HIGH AND ENGRAVED 1/32" WIDE, WHITE IN COLOR (WTTAGE AND VOLTAGE AS REQUIRED).
4. ATTACHED TO STEEL POLES WITH NO. 7 CADMIUM PLATED DRIVE SCREWS.
(a) ATTACHED TO ALUMINUM POLES WITH NO. 7 ALUM. DRIVE SCREWS.
5. USE "N" FOR SODIUM LAMPS.

4 POLE IDENTIFICATION TAG
E-54 NOT TO SCALE

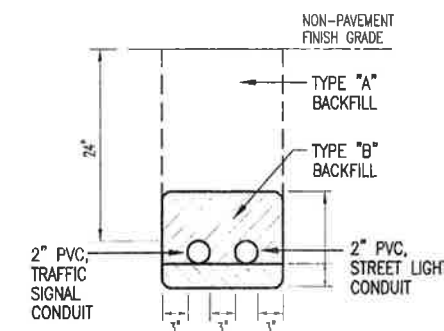
BACKFILL NOTES:

1. ALL CONDUIT SHALL BE "PVC" SCHEDULE 80 FOR DIRECT BURIED OR CONCRETE ENCASEMENT UNLESS OTHERWISE NOTED.
2. BACKFILL OVER CONCRETE DUCT SECTIONS SHALL BE TYPE "A".
3. BACKFILL OVER DIRECT BURIED CONDUITS SHALL BE TYPE "B".
4. IF THE NORMAL MATERIAL IN THE BOTTOM OF A TRENCH CONTAINING A DIRECT BURIED CONDUIT IS NOT TYPE "A", AN ADDITIONAL 3" SHALL BE EXCAVATED AND TYPE "B" BACKFILL PROVIDED.
5. CONCRETE JACKET FOR DUCTS SHALL BE 3000 P.S.I. IN 28 DAYS.

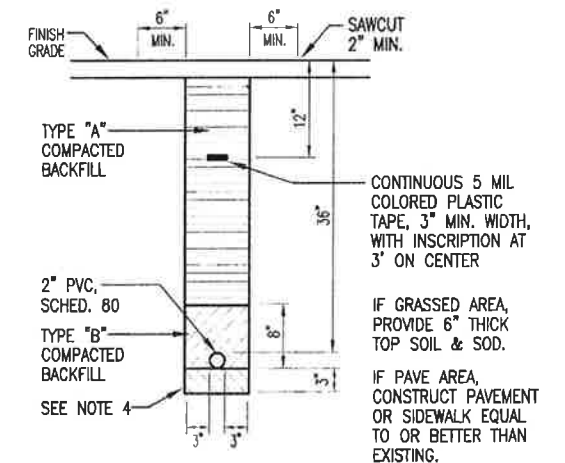
BACKFILL TYPES ARE:

TYPE "A" : BEACH SAND, EARTH OR EARTH AND GRAVEL.
IF EARTH AND GRAVEL USED, THE MAXIMUM ROCK SIZE
SHALL BE 1" AND THE MIXTURE SHALL CONTAIN NOT MORE
MORE THAN 50% BY VOLUME OF ROCK PARTICLES

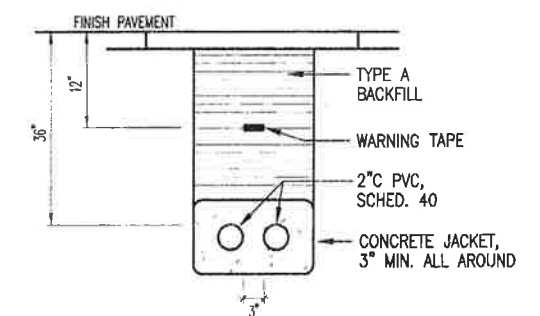
TYPE "B" : BEACH SAND, EARTH OR EARTH AND GRAVEL.
IF EARTH AND GRAVEL USED, MIXTURE MUST PASS A 1/2"
MESH SCREEN AND CONTAIN NOT MORE THAN 20% BY
BY VOLUME OF ROCK PARTICLES.



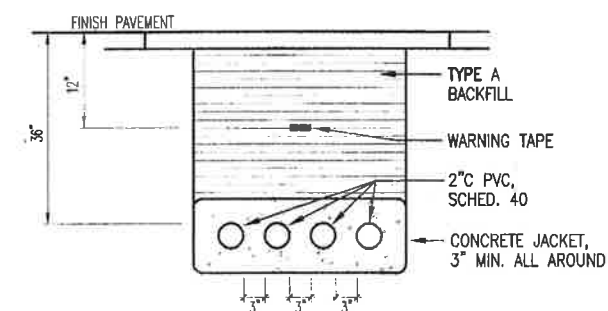
TYPICAL DUCT SECTION (B)
(DIRECT BURIED)



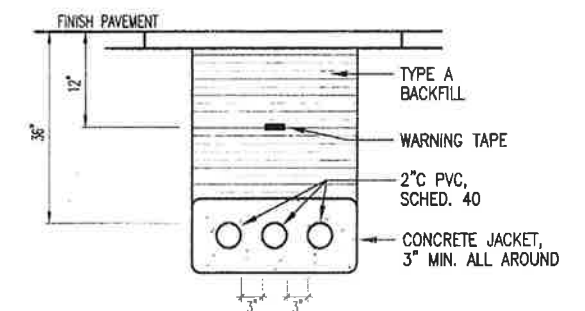
TYPICAL DUCT SECTION (A)



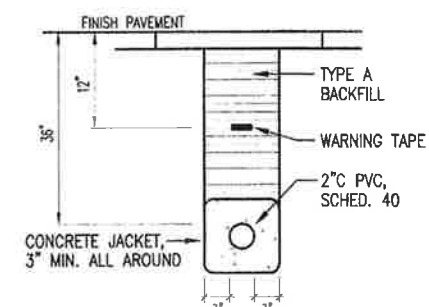
TYPICAL DUCT SECTION (C)
(CONCRETE ENCASED)



TYPICAL DUCT SECTION (D)
(CONCRETE ENCASED)



TYPICAL DUCT SECTION (E)
(CONCRETE ENCASED)



TYPICAL DUCT SECTION (F)
(CONCRETE ENCASED)



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Exh. 04-50-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Typical Street Light Standard Details

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

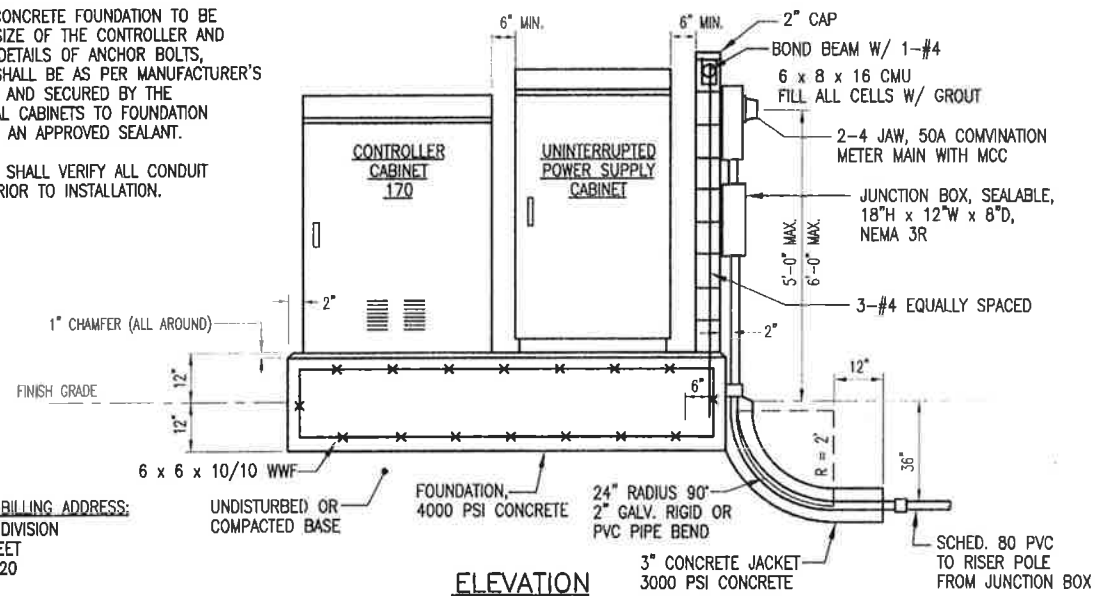
Date: Mar. 2008

SHEET No. **E-54** OF **64** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	306	315

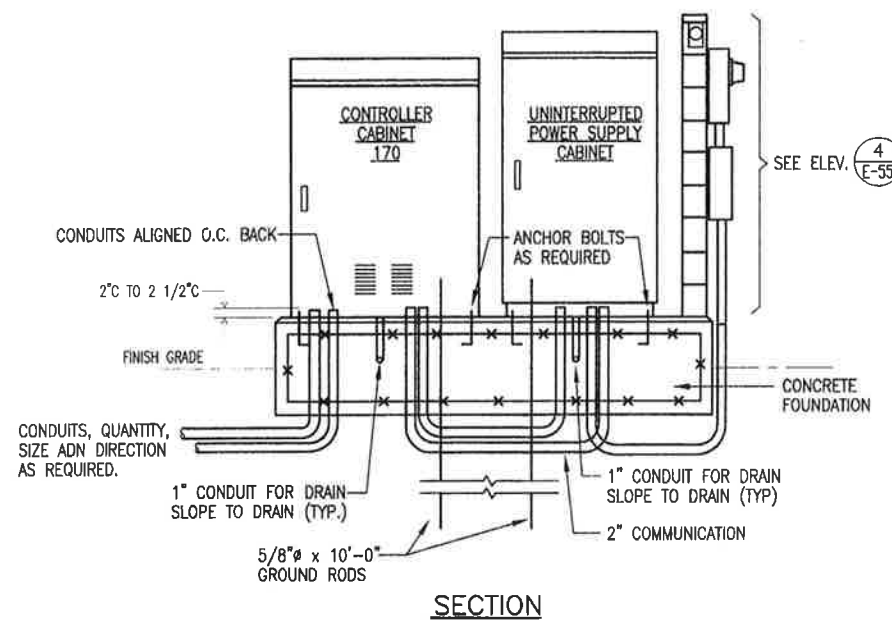
NOTES:

- DIMENSIONS OF CONCRETE FOUNDATION TO BE DETERMINED BY SIZE OF THE CONTROLLER AND UPS CABINEETS. DETAILS OF ANCHOR BOLTS, CONDUITS, ETC. SHALL BE AS PER MANUFACTURER'S RECOMMENDATION AND SECURED BY THE CONTRACTOR. SEAL CABINETS TO FOUNDATION FOUNDATION WITH AN APPROVED SEALANT.
- THE CONTRACTOR SHALL VERIFY ALL CONDUIT REQUIREMENTS PRIOR TO INSTALLATION.



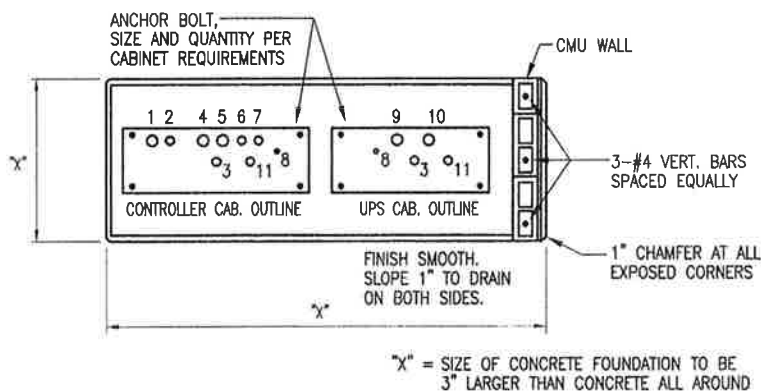
ELECTRIC METER BILLING ADDRESS:
STATE HIGHWAYS DIVISION
50 MAKALA STREET
HILO, HAWAII 96720

ELEVATION



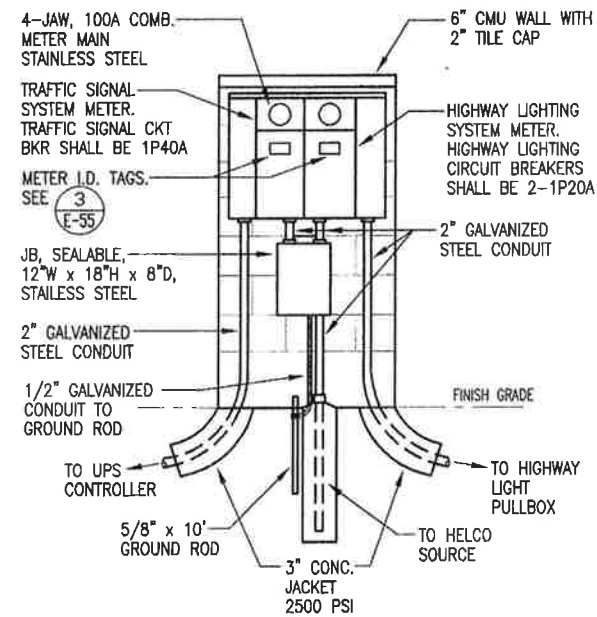
SECTION

- 2" LOOP DETECTOR (NUMBER, AS REQUIRED)
- 1.5" FOR MASTER CONTROLLER ONLY (TELEPHONE CABLE)
- 1" CONDUIT FOR DRAIN
- OPTICAL PREEMPTION DETECTOR
- 2" CONTROL (NUMBER, AS REQUIRED)
- 2" SPARE
- 2" POWER FROM UPS
- 5/8" x 10'-0" GROUND ROD
- 2" POWER TO CONTROLLER
- 2" POWER TO FROM METER
- 2" COMMUNICATION

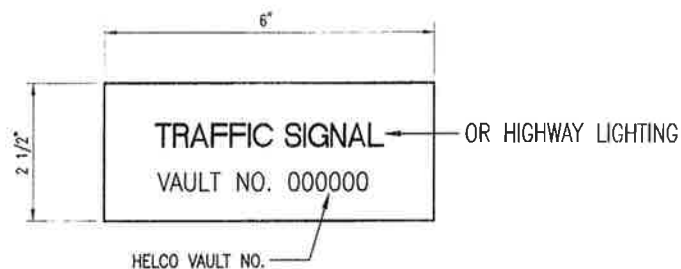


FOUNDATION PLAN

1 E-55 NOT TO SCALE
DETAIL - CONTROLLER CABINET, UPS and SERVICE EQUIPMENT



2 E-55 NOT TO SCALE
ELEVATION - ELECTRICAL SERVICE EQUIPMENT



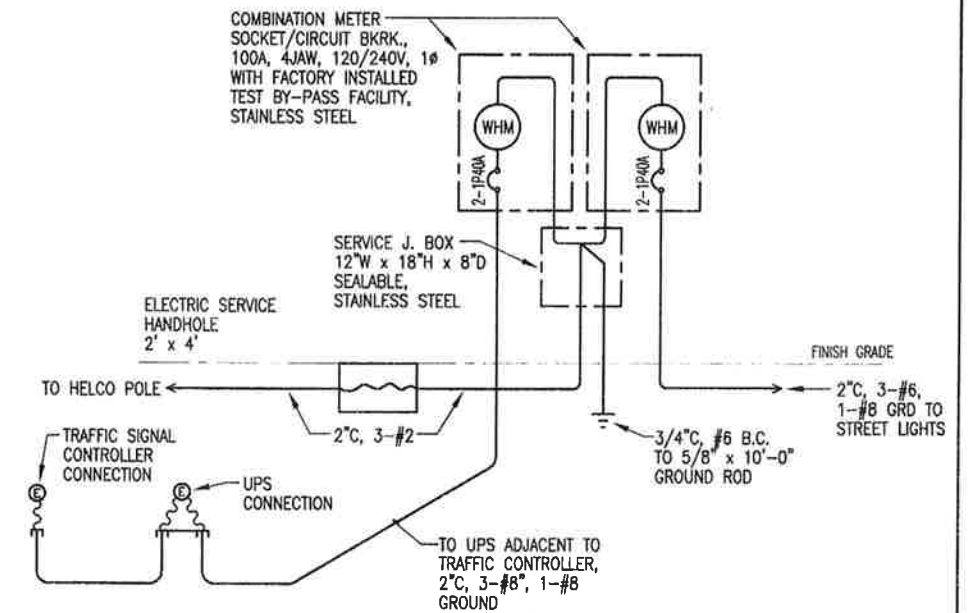
USE 3-PLY LAMINATED FLEXIBLE PLASTIC, BLACK WHITE BLACK.
THICKNESS: 0.010" - BLACK CAP SHEET
0.052" - WHITE BASE SHEET
0.010" - BLACK BASE SHEET

ATTACH TO METER SOCKET USING SCOTCH 3M BRAND VERY HIGH BOND (VHB) DOUBLE COATED ACRYLIC FOAM TAPE OR EQUIVALENT.

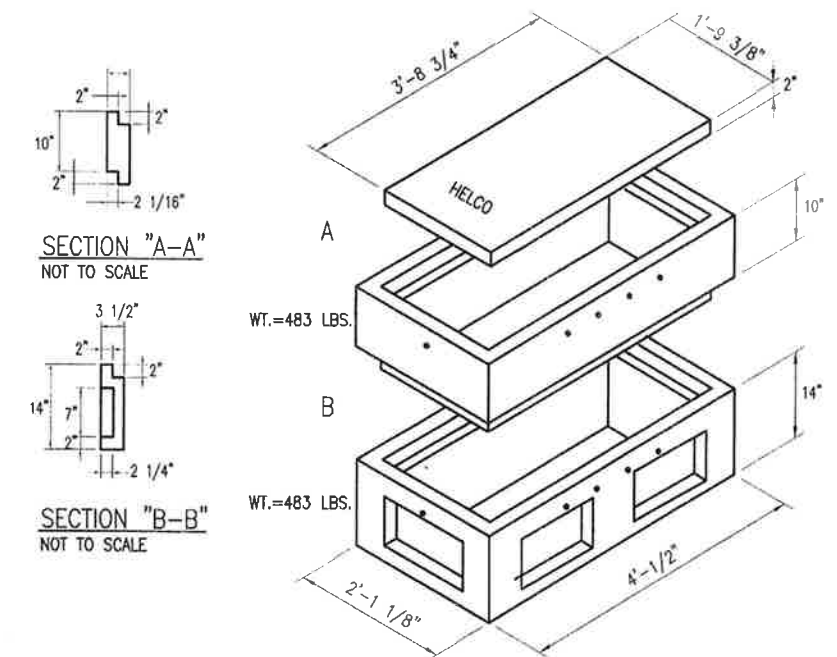
LETTERS/NUMBERS SHALL BE 1/16" STROKE, (WHITE IN COLOR).

LETTERS/NUMBERS AREA INSCRIBED BY CUTTING THROUGH "BLACK CAP SHEET" TO EXPOSE WHITE LETTERS/NUMBERS.

3 E-55 NOT TO SCALE
DETAIL - METER I.D. TAG



4 E-55 NOT TO SCALE
ONE LINE DIAGRAM



5 E-55 (FOR HELCO SERVICE)
2' x 4' ELECTRIC PULLBOX ASSEMBLY



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Exp. 04, 10-10
Clayton C.Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Details - Controller Cabinet,
UPS Cabinet and Service Equipment

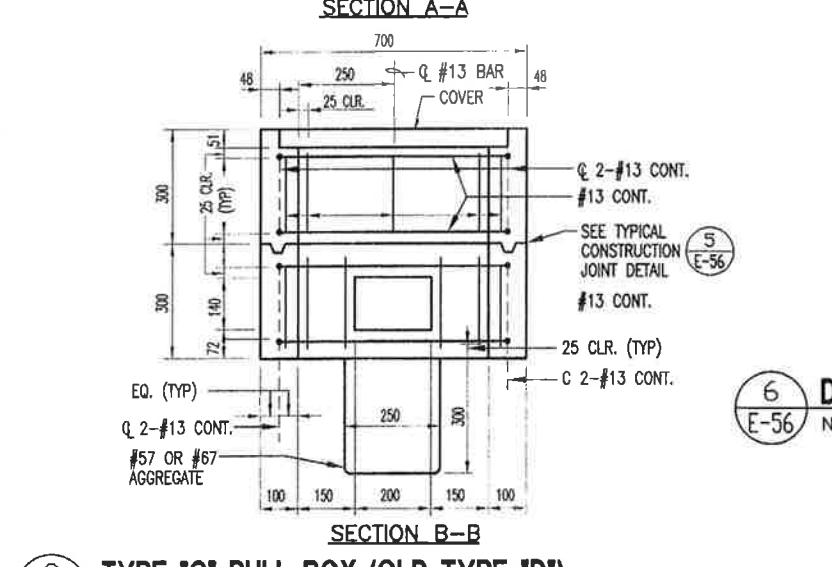
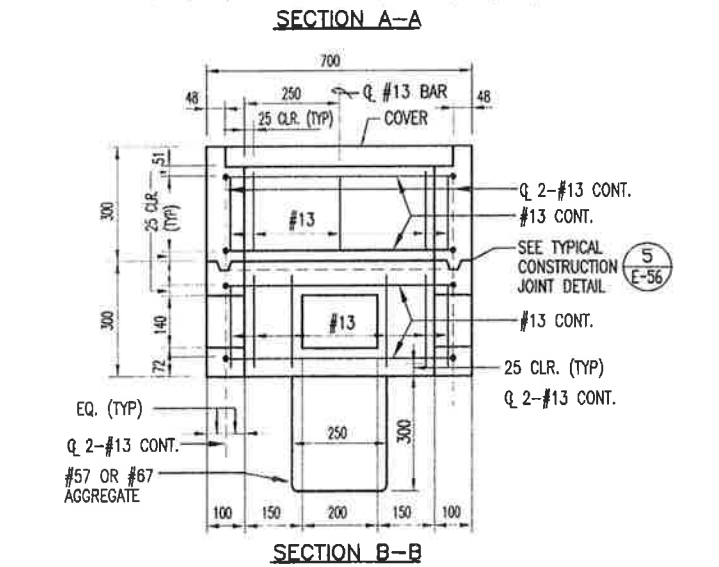
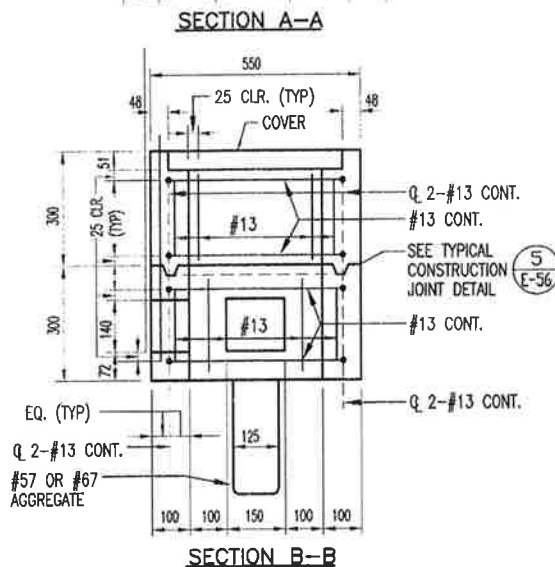
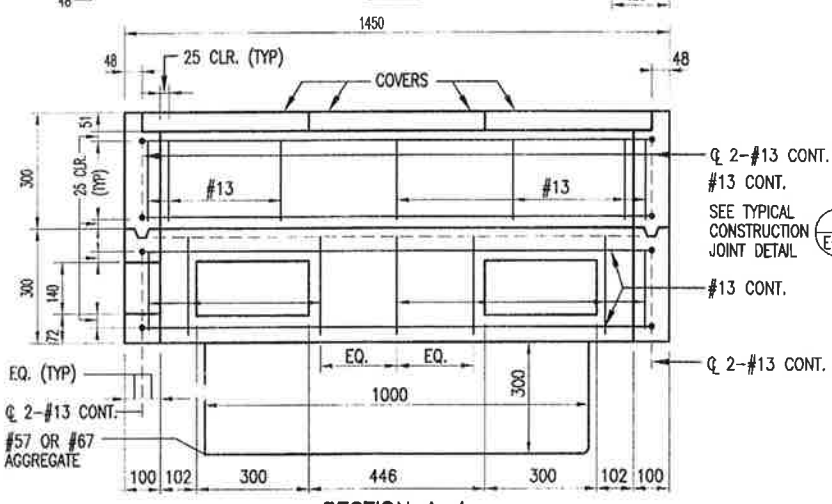
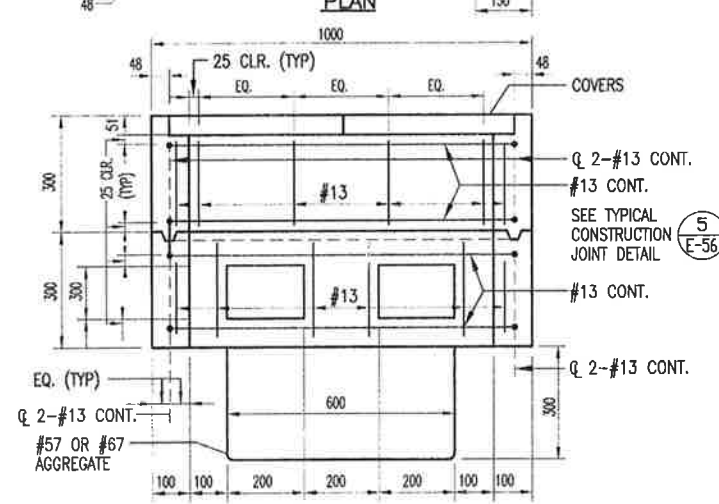
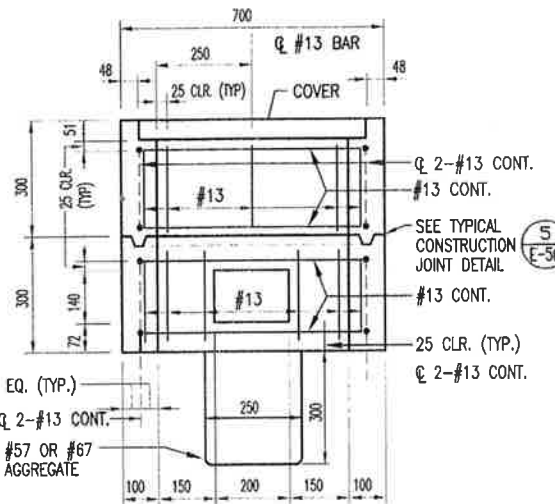
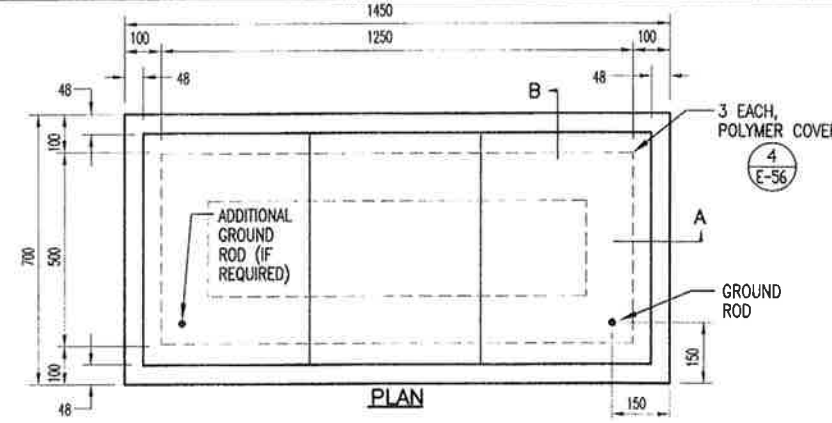
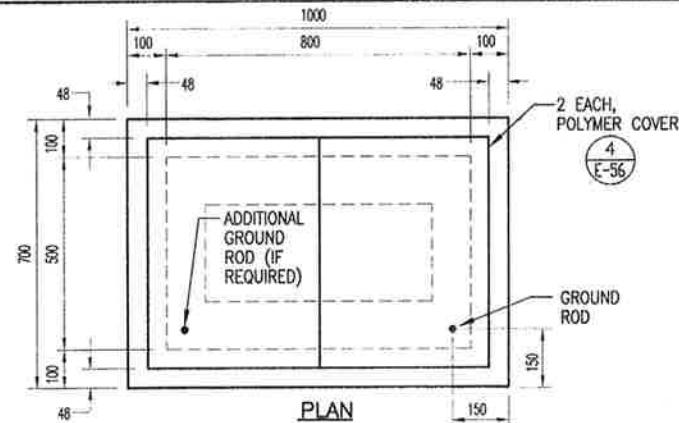
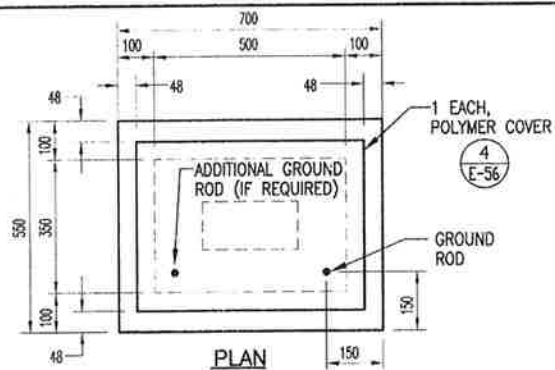
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

Date: Mar. 2008

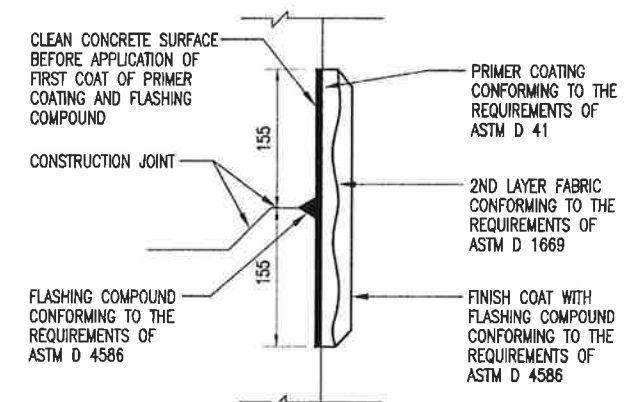
SHEET No. E-55 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	307	315



GENERAL NOTES:

1. PROVIDE A MINIMUM OF ONE 16# x 12.5M COPPERWELD GROUND ROD IN EACH PULLBOX. WHEN DIRECTED BY THE TRAFFIC SIGNAL INSPECTOR/ENGINEER, INSTALL ADDITIONAL GROUND RODS. COST OF GROUND RODS SHALL BE INCIDENTAL TO THE PULLBOXES.
2. ALL PRE-CAST CONCRETE PULLBOXES SHALL BE MANUFACTURED IN TWO PIECES.
3. THE PULLBOX WITH COVER SHALL BE CAPABLE OF SUPPORTING AN MS 18 LOADING.
4. THE MAXIMUM WEIGHT OF THE PULLBOX COVER SHALL NOT EXCEED 27 KILOGRAMS.
5. THE OPENINGS FOR THE CONDUIT ON ALL PULLBOXES SHALL BE PRE-CAST CONCRETE KNOCKOUTS.
6. AFTER INSTALLING THE CONDUITS IN THE OPENINGS OF THE PULLBOXES, THE CONTRACTOR SHALL FILL THE EXCESS OPENING IN THE PRE-CAST KNOCKOUTS WITH CONCRETE MORTAR.
7. PRIOR TO INSTALL THE PULLBOXES, THE CONTRACTOR SHALL LEVEL THE BOTTOM OF THE TRENCH AND ACHIEVE A MINIMUM OF 95% RELATIVE COMPACTION OF THE BOTTOM OF THE TRENCH.
8. ALL CONCRETE SHALL BE CLASS A (25MPA, MIN.).
9. REBARS SHALL BE GRADE 300 AND ALL LAPPED SPLICES SHALL BE 260MM MINIMUM.
10. THE #57 OR #67 SIZE AGGREGATE SHALL CONFORM TO LATEST VERSION OF AASHTO M43 (ASTM D 448).
11. TYPE 'C' PULLBOX SHALL BE INSTALLED IN A LOCATION PROTECTED FROM VEHICULAR TRAFFIC (I.E. RAISED SIDEWALK, BEHIND A.C. CURBS, TRAFFIC SIGNAL STANDARD OR PIPE GUARDS).

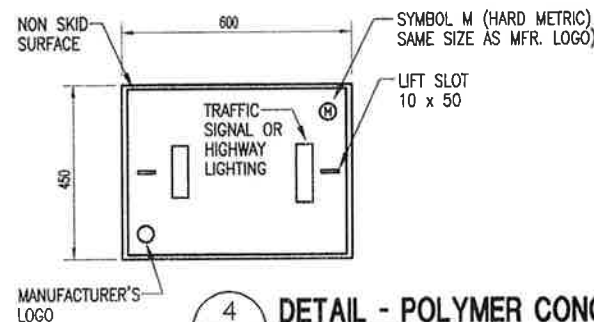


6 DETAIL - TYPICAL FLASHING COMPOUND WATERPROOFING
E-56 NOT TO SCALE

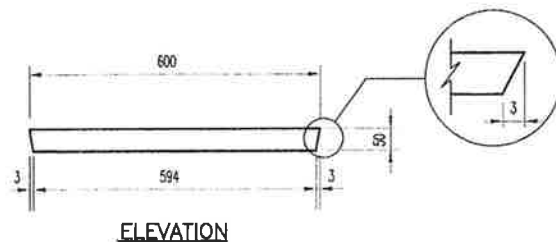
1 TYPE 'A' PULL BOX (OLD TYPE 'B')
E-56 NOT TO SCALE

2 TYPE 'B' PULL BOX (OLD TYPE 'C')
E-56 NOT TO SCALE

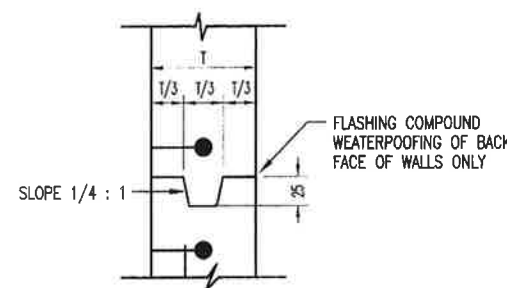
3 TYPE 'C' PULL BOX (OLD TYPE 'D')
E-56 NOT TO SCALE (SEE NOTE 11)



4 DETAIL - POLYMER CONCRETE COVER
E-56 NOT TO SCALE



ELEVATION



5 DETAIL - TYPICAL CONSTRUCTION JOINT
E-56 NOT TO SCALE



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Clayton C.Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

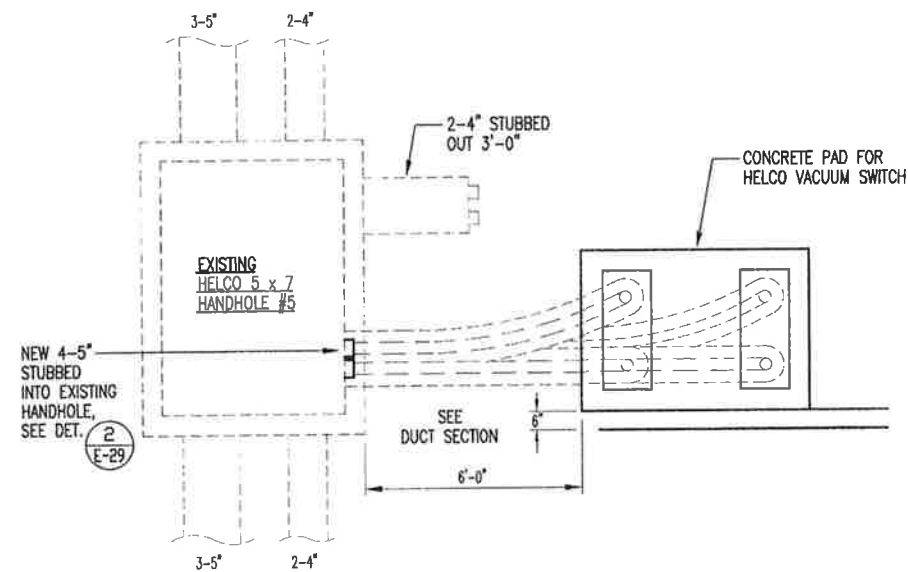
Pullbox and Cover Details

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

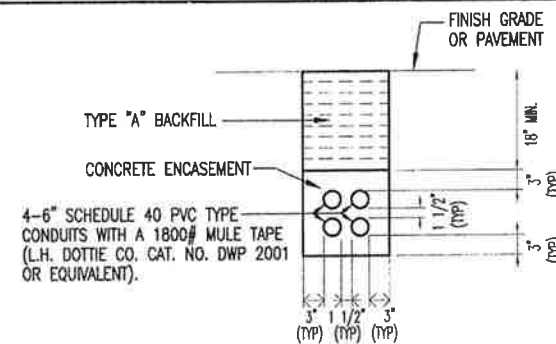
Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

SHEET No. **E-56** OF **64** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	308	315



1 PLAN - HELCO HANDHOLE #5 (NEW WORK)
E-57 NOT TO SCALE

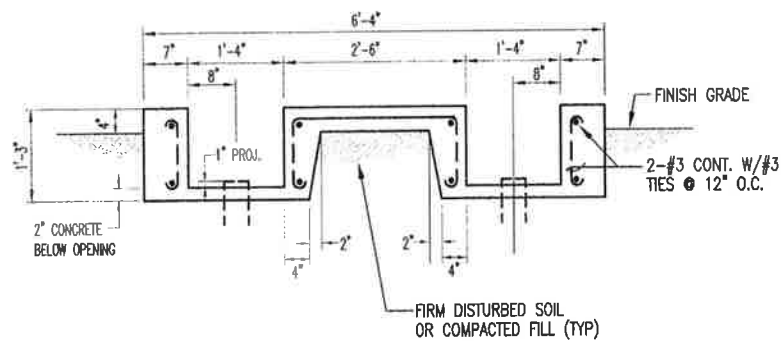


DUCT LINE SHOULD BE LAID OUT PARALLEL TO THE CENTER OF ROAD WHERE POSSIBLE.
KEEP DUCT LINE SQUARE TO THE WINDOW FACE WHEN ENTERING HANDHOLES.

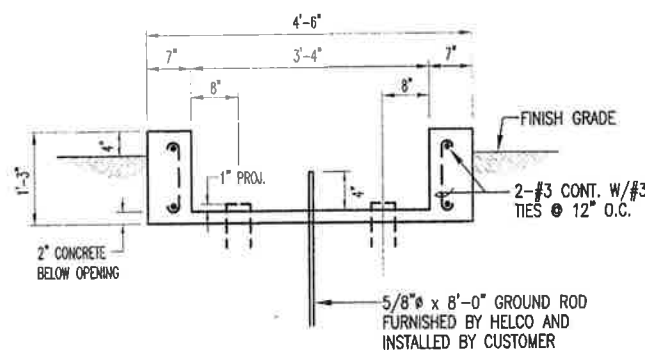
CONCRETE NOTES:
CONCRETE STRENGTH 2,500 P.S.I. IN 28 DAYS
MAXIMUM AGGREGATE FOR DUCT LINE CONCRETE - 3/4"

BACKFILL:
TYPE "A" - BEACH SAND, EARTH OR EARTH & GRAVEL IF EARTH & GRAVEL, THE MAXIMUM ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL CONTRAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES

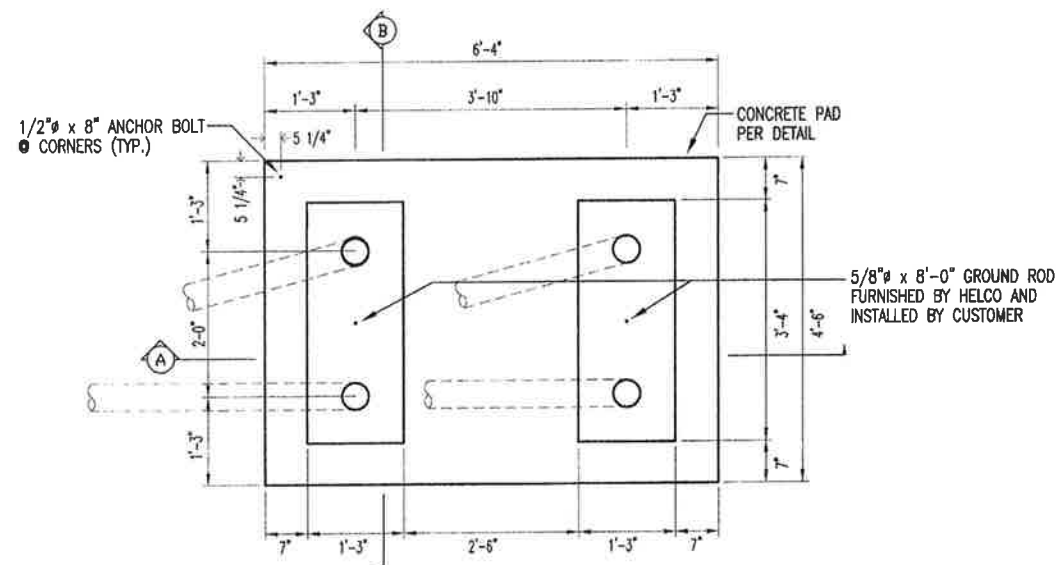
2 DUCT SECTION
E-57 NOT TO SCALE



SECTION A



SECTION B



- NOTES:
1. CONCRETE COMPRESSIVE STRENGTH 3,000 PSI. IN 28 DAYS.
 2. REINFORCING: CLEAN AND NEW ROUND DEFORMED BARS AND 6" x 6" WIRE MESH.
 3. CONTRUCTION TO COMPLY WITH ACI 318 AS AMENDED.
 4. TOP OF CONCRETE PAD TO BE SMOOTH AND TRUE. OTHER EXPOSED SURFACES TO BE SMOOTH AND FREE FROM DEFECTS. SIDEWALK AS PER COUNTY SPECIFICATIONS. ROUND ALL EXPOSED EDGES TO 3/8" RADIUS.
 5. MAINTAIN MINIMUM CLEARANCE 4'-0" FROM THE SIDES & BACK OF PAD AND 8'-0" FROM THE FRONT EDGE OF PAD.
 6. LOCATE, SECURE, AND CAP ALL CONDUIT BEFORE POURING PAD.
 7. IF THE GROUP RESISTANCE IS MORE THAN 25 OHMS, INSTALL ADDITIONAL GROUND RODS OR GROUND WIRE.

3 DETAIL - CONCRETE PAD FOR HELCO VACUUM SWITCH
E-57 NOT TO SCALE



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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

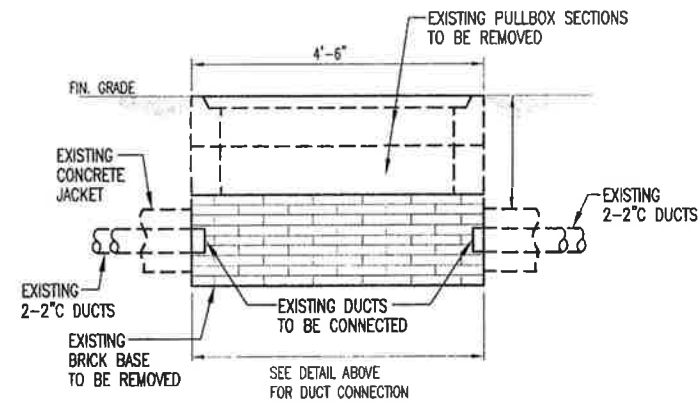
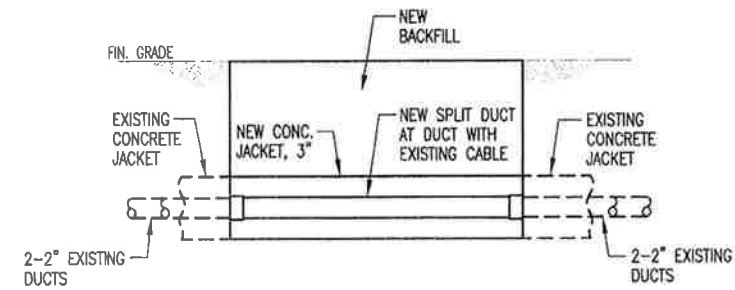
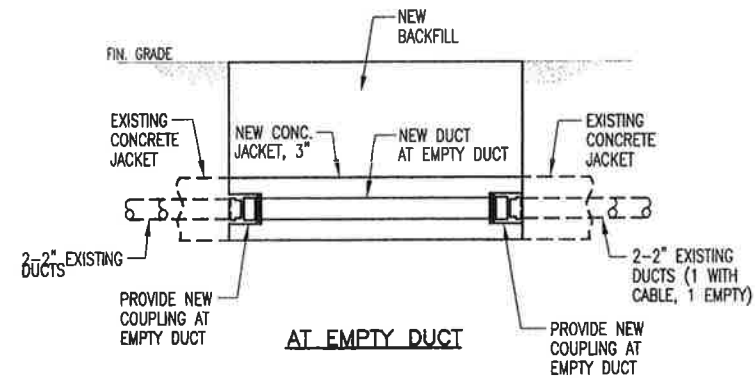
Plan - Helco Handhole #5 (New Work),
Detail - Concrete Pad For Helco Vacuum Switch

QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I

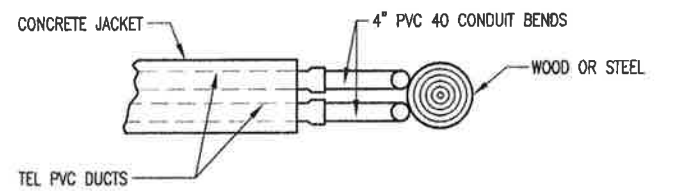
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-57 OF 64 SHEETS

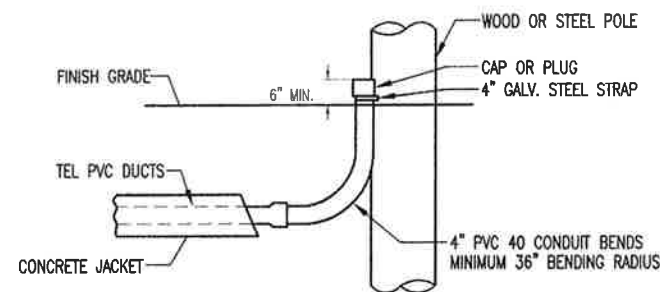
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	309	315



1 DETAIL - EXISTING PULLBOX (MODIFICATION WORK)
E-58 NOT TO SCALE



PLAN



ELEVATION

2 DETAIL - TELEPHONE RISER
E-58 NOT TO SCALE



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Exp. 04-30-10

Clayton C. Y. Pang
Electrical Engineer

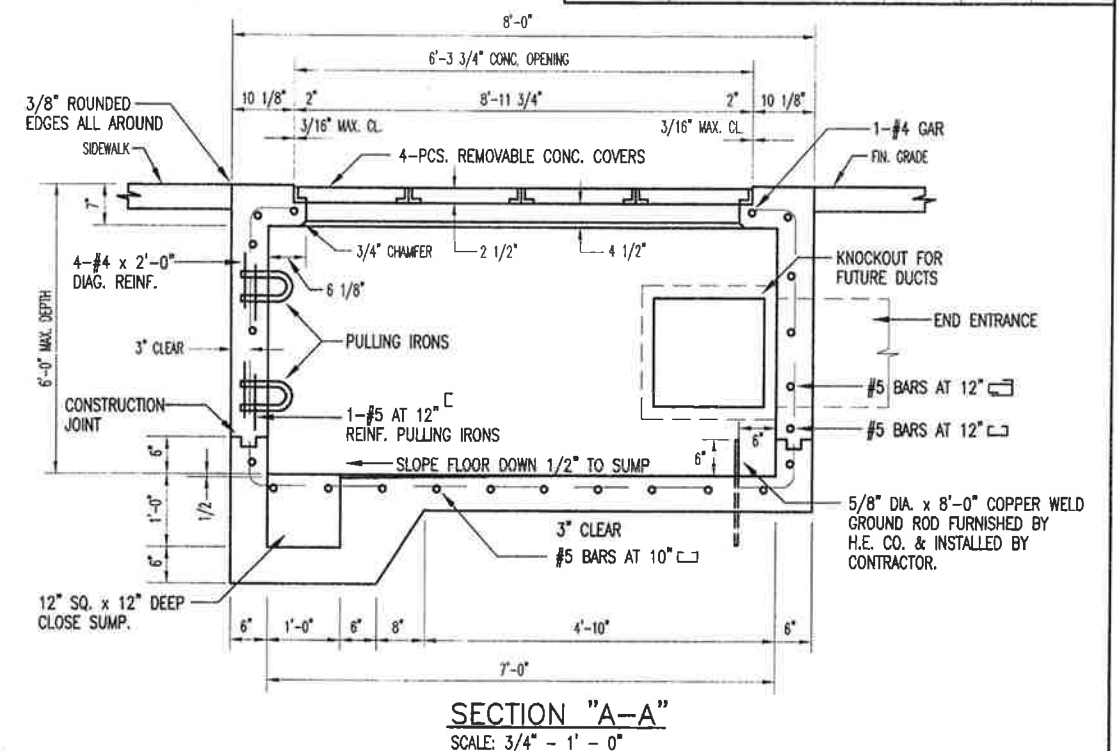
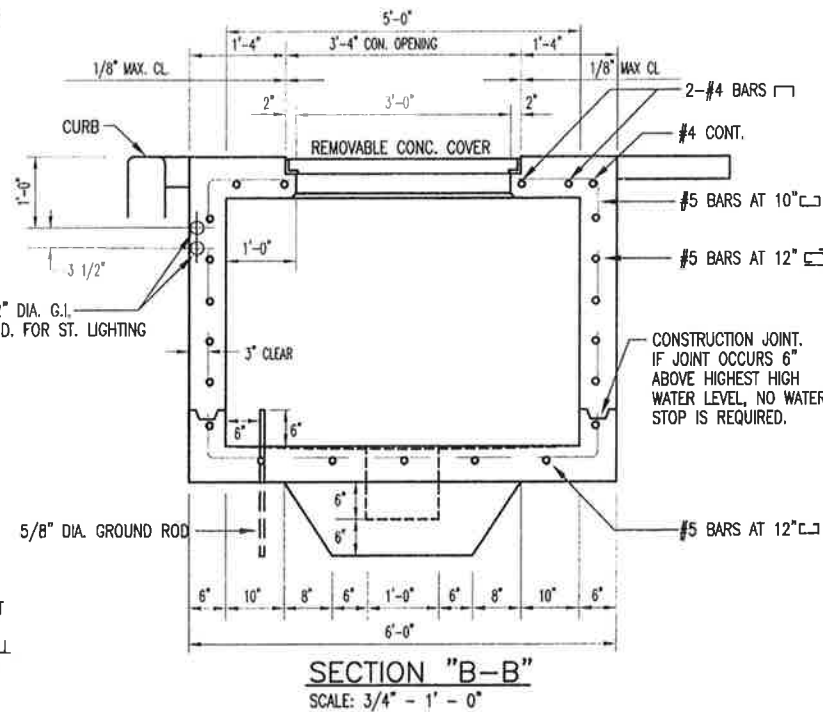
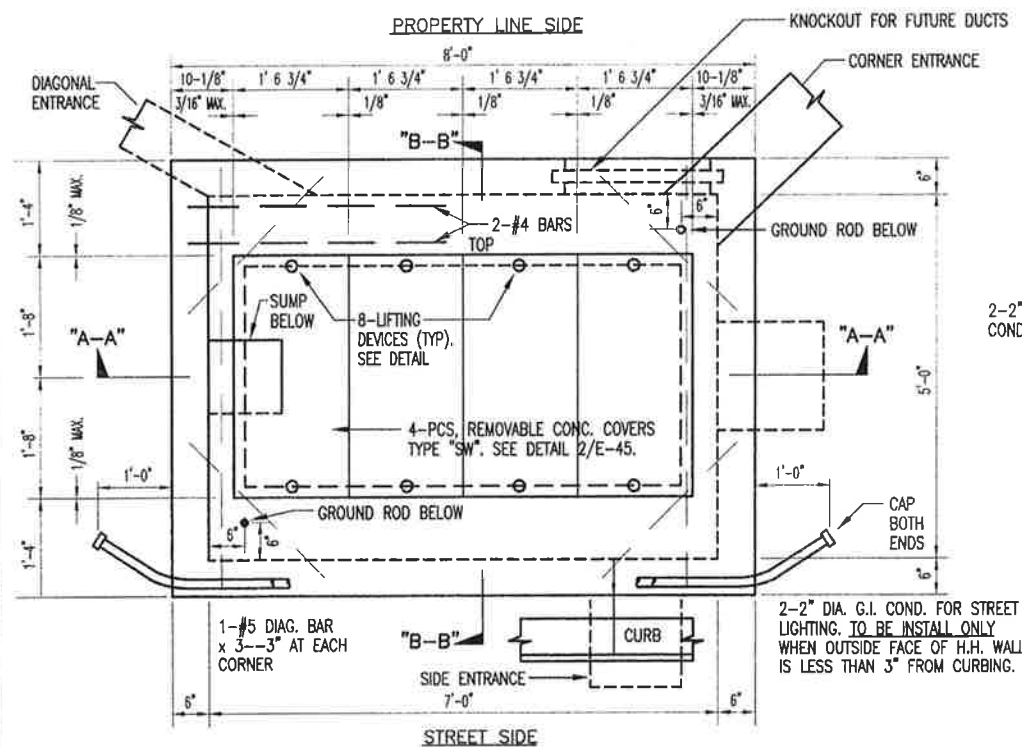
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**Detail - Existing Telephone Pullbox
(Modification Work)**

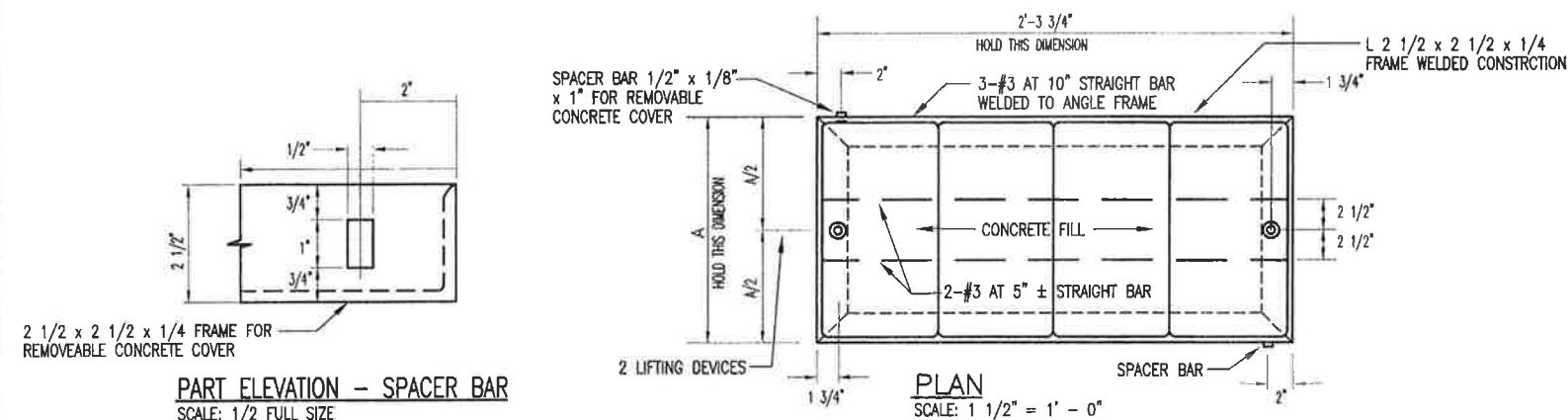
**QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I**

Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

SHEET No. E-58 OF 64 SHEETS

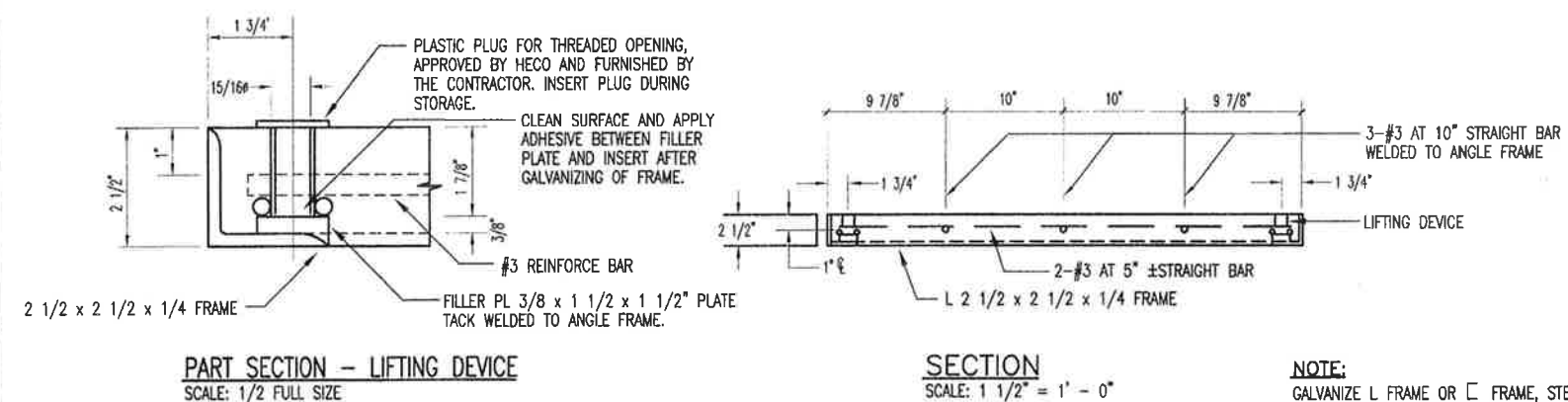


1 HANDHOLE TYPE 57 (5'-0" x 7'-0") - UNDERGROUND STANDARDS E-59 NOT TO SCALE



NOTES:

- FOR GENERAL NOTES AND MISCELLANEOUS DETAILS, REFER TO DWG. 16699 (2 SHEETS).
- FOR DUCT ENTRANCES, DEPTH AND LOCATIONS OF PULLING IRONS, SEE HANDHOLE DEVELOPMENTS OF PROJECT CONCERNED.
- SEE PROJECT DRAWINGS FOR LOCATION OF HANDHOLE CONCERNED.
- TOP OF HANDHOLE SHALL MATCH NEW AND/OR EXISTING GRADES UNLESS OTHERWISE SHOWN OR NOTED ON PLANS OR PROJECT CONCERNED.
- MAXIMUM CLEARANCES BETWEEN REMOVABLE CONCRETE COVER SLABS AND CONCRETE OPENING AT THE THE SUPPORTS MUST BE KEPT. CONCRETE CONTRACTOR SHALL MEASURE COVER SLAB STEEL FRAME AFTER FABRICATION TO OBTAIN PROPER CLEARANCES. ANY VARIATION IN CLEARANCES SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AT CONTRACTOR'S EXPENSE.



TYPE	DIMENSIONS	
	A	A/2
"SW"	1'-6 3/4"	9 3/8"
"SW1"	1'-6 3/4"	7 13/32"

NOTE:
GALVANIZE L FRAME OR C FRAME, STEEL RODS, AND SPACE BARS AFTER FABRICATION.

2 TYPE "SW" and SW1 REMOVABLE CONCRETE COVER E-59 NOT TO SCALE



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Exp. 04-30-10

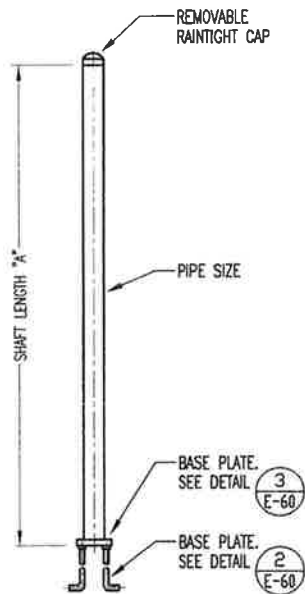
Clayton C. Y. Pang
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

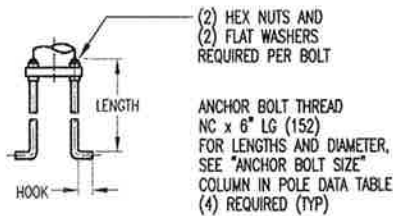
Miscellaneous Electrical Details
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Oct. 2007

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	311	315

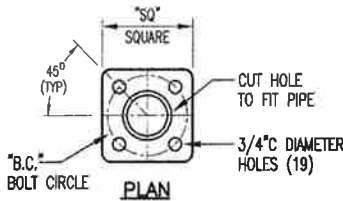
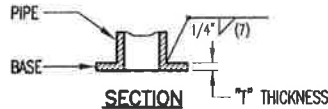
POLE DATA								
ITEM NUMBER	POLE QUANTITY	POLE DESCRIPTION	SHAFT LENGTH "A"	PIPE SIZE	BASE SQUARE "SQ"	COLT CIRCLE "B.C."	BASE THICKNESS "T"	ANCHO BOLT OR ROD DIMNSIONS
		PPBP-4-4	4'-0" (121)	4" SCH. 40 (101)	7 1/2" (190)	7 1/2" (190)	1/2" (13)	5/8" x 12" x 3"



1 PEDESTRIAN (2) PUSH-BUTTON POST DETAIL
E-60 NOT TO SCALE



2 ANCHOR BOLT DETAIL
E-60 NOT TO SCALE



3 BASE PLATE DETAIL
E-60 NOT TO SCALE

GENERAL NOTES	
MATERIAL SPECIFICATIONS	
SHAFT	N/A
BASE PLATES & FLANGES	ASTM A-36 STEEL
PIPE	ASTM A-35 GRADE "B" STEEL
ANCHOR BOLTS	ASTM A-307
MANUFACTURING PROCESSES	
LONGITUDINAL WELDS	BUTT WELDED BY THE ELECTRICAL RESISTANCE PROCESS
FINISH COATING	
STRUCTURE	HOT DIP GALVANIZED PER ASTM A-123
HARDWARE	HOT DIP GALVANIZED PER ASTM A-153
DESIGN CRITERIA	
STRUCTURE AND HARDWARE	IN ACCORDANCE WITH THE "SPECIFICATIONS FOR STRUCTURAL SUPPORTS OF HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", AASHTO 1994
WELDING	IN ACCORDANCE WITH LATEST EDITION OF AWS D1.1 WELDING CODE



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Exp. 04-30-10
Clayton C. Y. Pang
Electech Hawaii, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Miscellaneous Details

**QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I**

Federal Aid Project No. NH-019-1(20)
Date: Dec. 2007

SHEET No. E-60 OF 64 SHEETS

STRUCTURAL GENERAL NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	312	315

1. **GENERAL SPECIFICATIONS:** HAWAII DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005, TOGETHER WITH SPECIAL PROVISIONS PREPARED FOR THIS CONTRACT.

2. **DESIGN SPECIFICATIONS:**

- a) AASHTO 2004 LRFD BRIDGE DESIGN SPECIFICATIONS (THIRD EDITION) AND ITS SUBSEQUENT INTERIM SPECIFICATIONS WITH INTERIM SUPPLEMENTS AND MODIFICATIONS BY THE HIGHWAYS DIVISION, DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII.
- b) AASHTO 2001 STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS (FOURTH EDITION) AND ITS SUBSEQUENT INTERIM SPECIFICATIONS WITH INTERIM SUPPLEMENTS AND MODIFICATIONS BY THE HIGHWAYS DIVISION, DEPARTMENT OF TRANSPORTATION, STATE OF HAWAII.

3. **LOADS:**

- a) WIND LOAD : 105 MPH VALUE IS A 3 SECOND GUST SPEED AT 32.8 FEET ABOVE GROUND FOR EXPOSURE C CATEGORY AND IS ASSOCIATED WITH AN ANNUAL PROBABILITY OF 0.02 (50 YEAR MEAN RECURRENCE INTERVAL).
- b) RECURRENCE INTERVAL OF 50 YEARS.
- c) FATIGUE IMPORTANCE FACTOR, IF, SHALL BE BASED ON FATIGUE CATEGORY 1 FOR TRAFFIC SIGNAL STRUCTURES.
- d) VORTEX SHEDDING INDUCED LOADS SHALL BE CONSIDERED FOR CANTILEVERED MAST ARMS AND POLE SHAFTS THAT DO NOT HAVE TAPERS OR HAVE TAPERS OF LESS THAN 0.14 IN/FT.
- e) TRAFFIC SIGNAL SUPPORT STRUCTURES SHALL BE DESIGNED FOR A TRUCK INDUCED GUST BASED ON A TRUCK SPEED OF 20 MPH OVER THE POSTED SPEED.
- f) GALLOPING AND NATURAL WIND GUST SHALL BE CONSIDERED FOR CANTILEVER TRAFFIC SIGNAL STRUCTURES.

4. **MATERIALS:**

- a) ALL CONCRETE STRENGTHS SHALL BE AS NOTED BELOW:

ITEM NO.	STRUCTURAL PARTS	CLASSES OF CONCRETE	SPECIFIED COMPRESSIVE STRENGTH, FC (28 DAYS)
(1)	DRILLED SHAFTS	-	4500 PSI

ALL CONCRETE WITH A 28 DAYS COMPRESSIVE STRENGTH OF 4000 PSI OR GREATER SHALL HAVE A MAXIMUM W/C RATIO OF 0.45. THE W/C RATIO FOR OTHER CLASS OF CONCRETE SHALL FOLLOW THE STANDARD SPECIFICATIONS.

- b) ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED.
- c) ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION, UNLESS OTHERWISE SPECIFIED.
- d) ALL ANCHOR BOLTS, WASHERS AND NUTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION, UNLESS OTHERWISE SPECIFIED.

5. **REINFORCEMENT:**

- a) THE MINIMUM COVERING MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCING BARS SHALL BE AS FOLLOWS, EXCEPT AS OTHERWISE SHOWN:
- 1) CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH = 3"
- 2) ALL OTHERS UNLESS OTHERWISE NOTED = 2"
- b) REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN SPECIFICATION IN NOTE 2 UNLESS OTHERWISE NOTED.
- c) MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS SHALL BE 1 1/2 TIMES THE DIAMETER OF BARS (FOR NON-BUNDLED BARS). IN NO CASE SHALL THE CLEAR DISTANCE BETWEEN THE BARS BE LESS THAN 1 1/2 TIMES THE MAXIMUM SIZE OF THE COARSE AGGREGATE OR 1 1/2".
- d) ALL DIMENSIONS RELATING TO REINFORCING BARS ARE TO CENTERS OF BARS UNLESS OTHERWISE NOTED.
- e) REINFORCING SHALL BE SECURELY TIED AT ALL INTERSECTIONS AND LAP SPLICES EXCEPT WHERE THE SPACING OF INTERSECTIONS IS LESS THAN ONE FOOT IN EACH DIRECTION, IN WHICH CASE ALTERNATE INTERSECTIONS SHALL BE TIED.

6. **CONSTRUCTION NOTES:**

- a) SEE STANDARD SPECIFICATIONS AND PROVISIONS.
- b) EXCEPT AS OTHERWISE NOTED, ALL VERTICAL DIMENSIONS ARE MEASURED PLUMB.
- c) THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS AND NOT RELY UPON THESE PLANS FOR STREAM LOCATIONS, ETC. CONDITIONS MAY DIFFER FROM THOSE SHOWN.
- d) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITY LINES AND NOTIFY THE RESPECTIVE OWNERS BEFORE COMMENCING WITH EXCAVATION, AND ANY TEMPORARY PILING OR SHEETING.
- e) FOR CONCRETE FINISH, SEE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
- f) CONSTRUCTION JOINTS MAY BE RELOCATED OR ADDITIONAL ONES ADDED SUBJECT TO THE APPROVAL OF THE ENGINEER.
- g) UNLESS OTHERWISE NOTED, ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4" x 3/4".



This work was prepared by me or under my supervision.
Exp. 04-30-10

Clayton C. Y. Pang
Clayton C. Y. Pang, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Structural General Notes

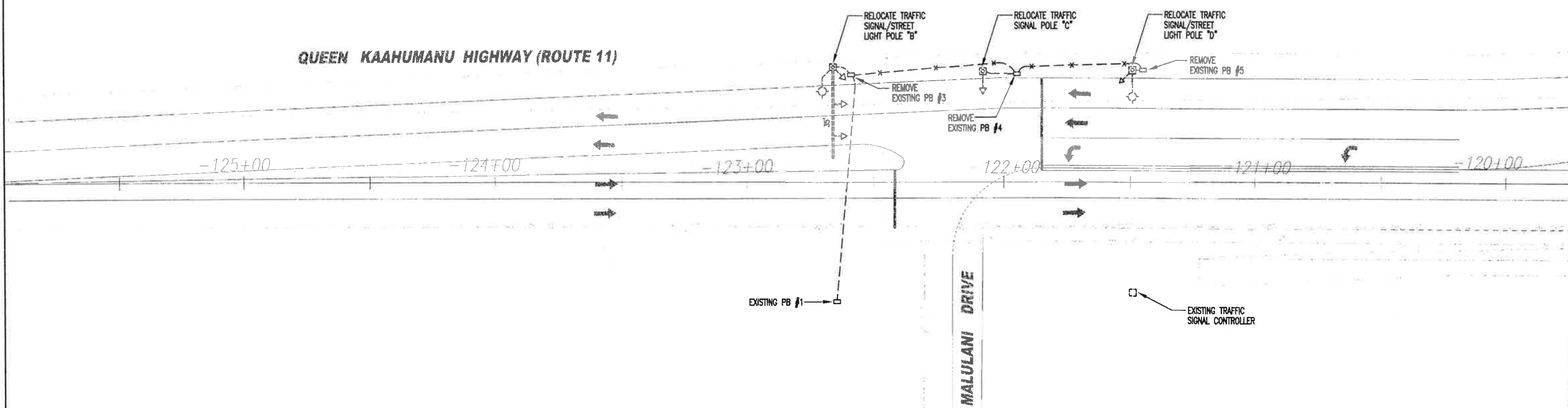
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HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)

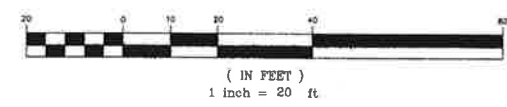
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SHEET No. E-61 OF 64 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	314	315



1
E-63 **ELECTRICAL PLAN - MALULANI DRIVE INTERSECTION (DEMOLITION WORK)**
SCALE: 1" = 20'-0"



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Exp. 04-30-10

Clayton C. Y. Feng
Elizbeth Howells Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN (DEMOLITION WORK)

MALULANI DRIVE INTERSECTION

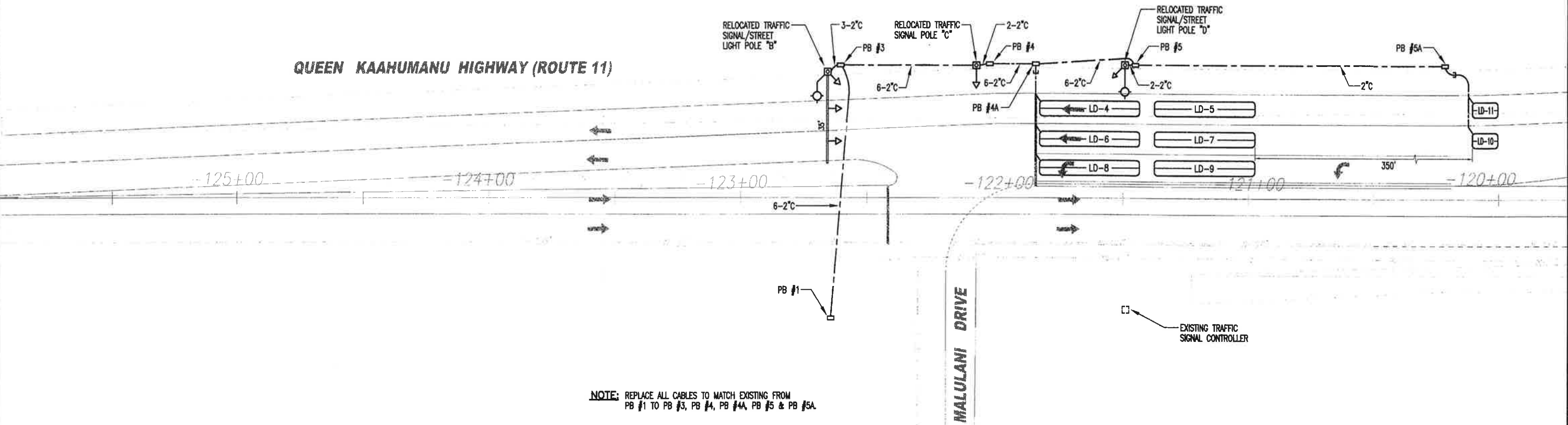
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HENRY ST. to KEALAKEHE PKWY - PHASE I

Federal Aid Project No. NH-019-1(20)
Date: Mar. 2009

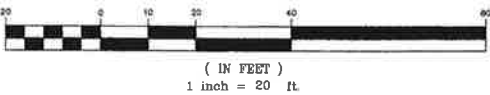
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-019-1(20)	2005	315	315



QUEEN KAAHUMANU HIGHWAY (ROUTE 11)



1
E-64 **ELECTRICAL PLAN - MALULANI DRIVE INTERSECTION (NEW WORK)**
SCALE: 1" = 20'-0"



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or under my supervision.
Exp. 04-30-10
Clayton G. Y. Paig
Electrical Engineer

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL PLAN (NEW WORK)
MALULANI DRIVE INTERSECTION
QUEEN KAAHUMANU HIGHWAY WIDENING
HENRY ST. to KEALAKEHE PKWY - PHASE I
Federal Aid Project No. NH-019-1(20)
Date: Mar. 2009
SHEET No. E-64 OF 64 SHEETS