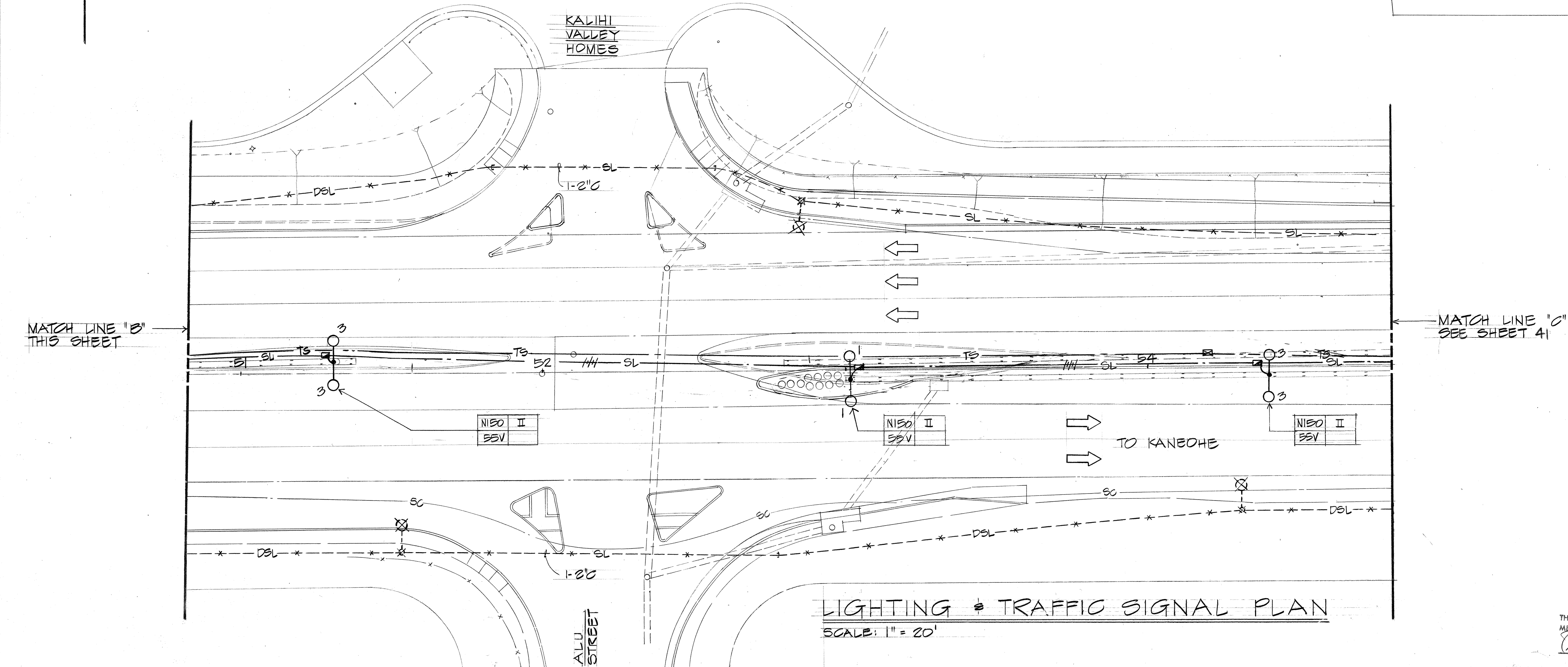
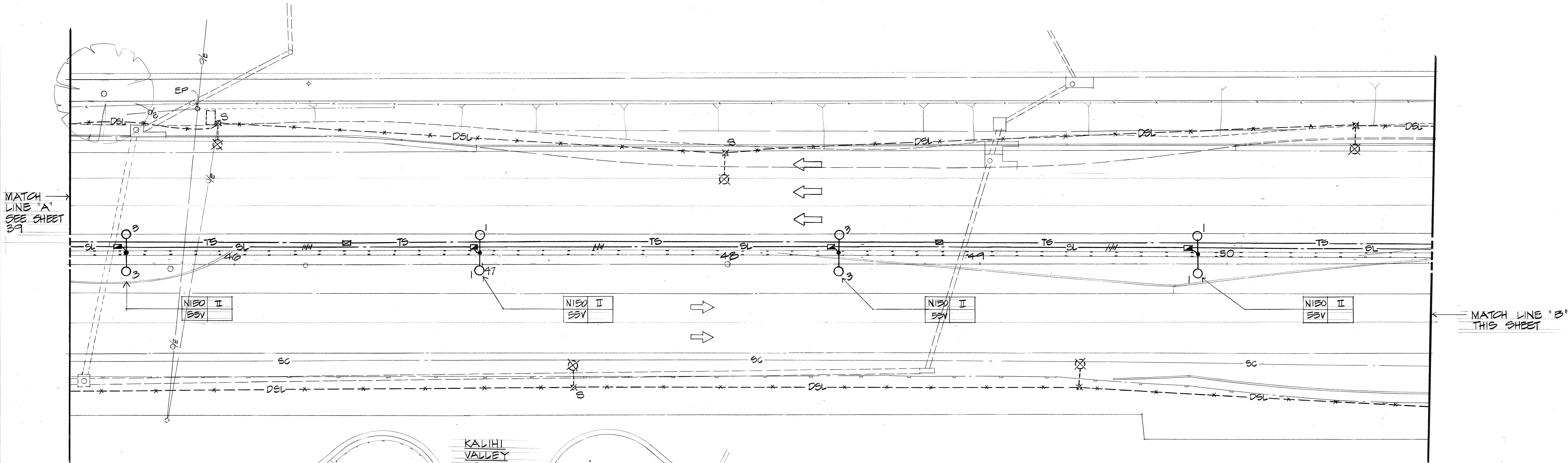
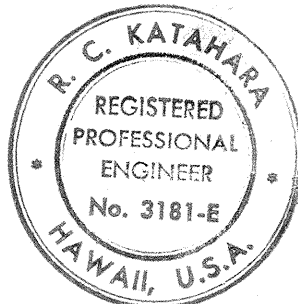


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-063-1(16)	84	40	156



LIGHTING & TRAFFIC SIGNAL PLAN
 SCALE: 1" = 20'



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R.C. KATAHARA

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

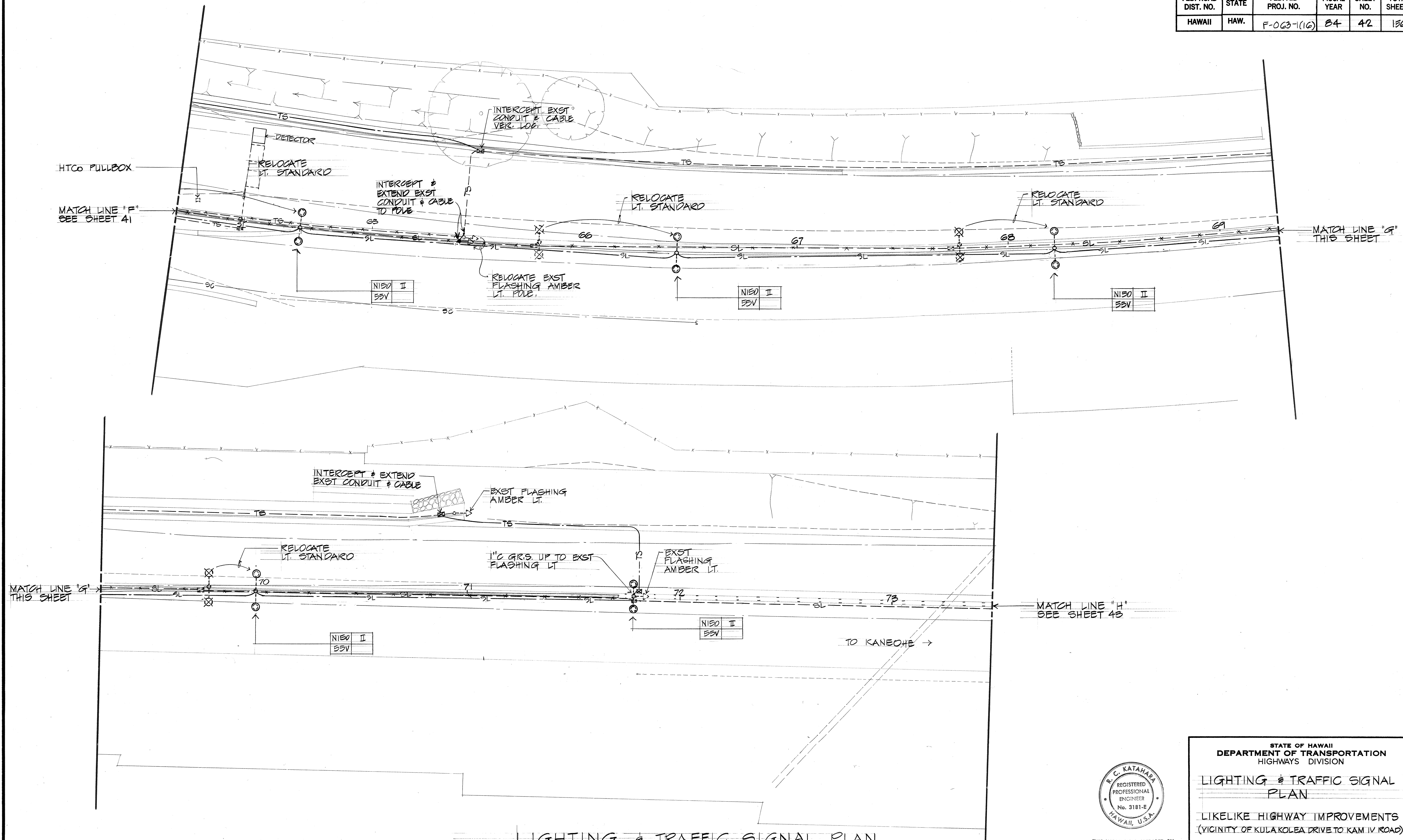
LIGHTING & TRAFFIC SIGNAL PLAN

LIKELIKE HIGHWAY IMPROVEMENTS
 (VICINITY OF KULA KOLEA DRIVE TO KAMI IV ROAD)

PROJECT NO. F-063-1 (16)

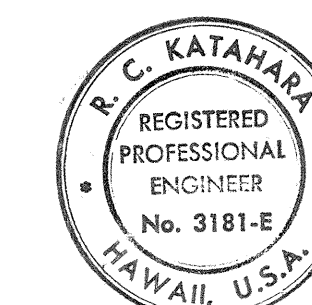
SHEET NO. 2 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-063-1(16)	84	42	156



LIGHTING & TRAFFIC SIGNAL PLAN

SCALE: 1" = 20'



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ME OR UNDER MY SUPERVISION

Dr. K. K. K.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LIGHTING & TRAFFIC SIGNAL PLAN

LIKELIKE HIGHWAY IMPROVEMENTS
(VICINITY OF KULAKOLEA DRIVE TO KAM IV ROAD)

PROJECT NO. F-063-1 (16)

SHEET No. 4 OF 9 SHEETS

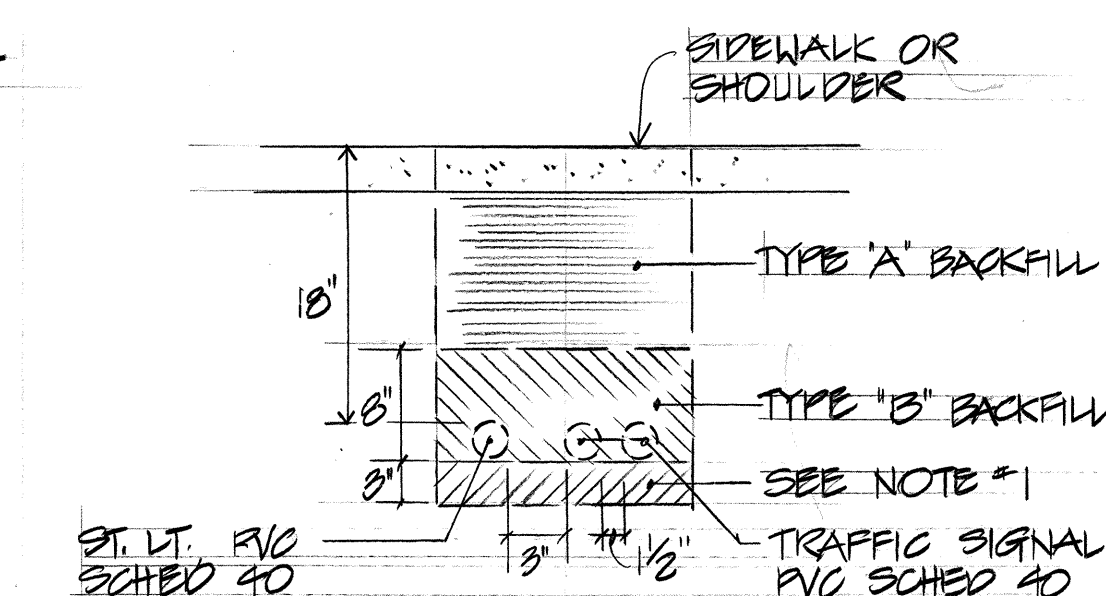
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-063-1(16)	84	43	156

BACKFILL DATA

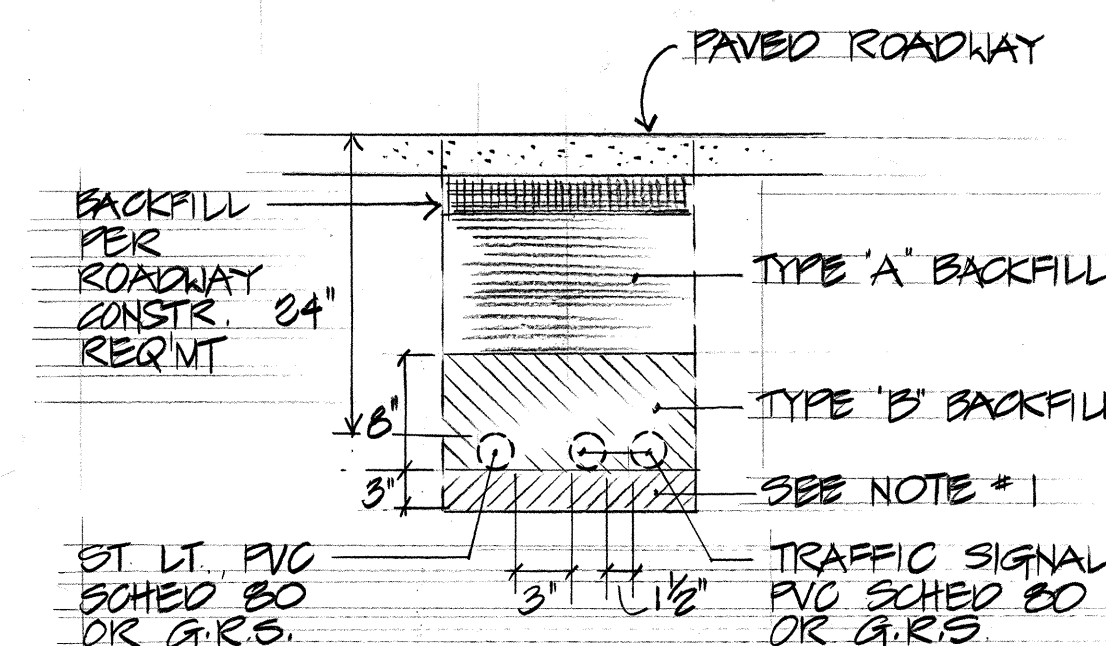
TYPE "A" - BEACH SAND EARTH, OR EARTH & GRAVEL. IF EARTH & GRAVEL USED, MAX. ROCK SIZE SHALL BE 1" & MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.

TYPE "B" - SAME AS "A" EXCEPT THAT IF EARTH & GRAVEL USED, MIXTURE MUST PASS 1/2" MESH SCREEN & CONTAIN NOT MORE THAN 20% BY VOLUME OF ROCK PARTICLES.

NOTE #1 - IF THE NORMAL MATERIAL IN BOTTOM OF TRENCH IS NOT TYPE "B", AN ADD'N 3" SHALL BE EXCAVATED & TYPE "B" BACKFILL SHALL BE PROVIDED



DUCT SECTION UNDER SIDEWALK OR SHOULDER



DUCT SECTION UNDER PAVED ROADWAY

TYPICAL DUCT SECTION

MATCH LINE "H" SEE SHEET 42

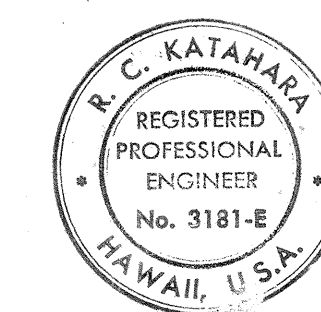
MATCH LINE "I" THIS SHEET

MATCH LINE "J" SEE SHEET 44

TO KANEHOE →

LIGHTING PLAN

SCALE: 1" = 20'



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

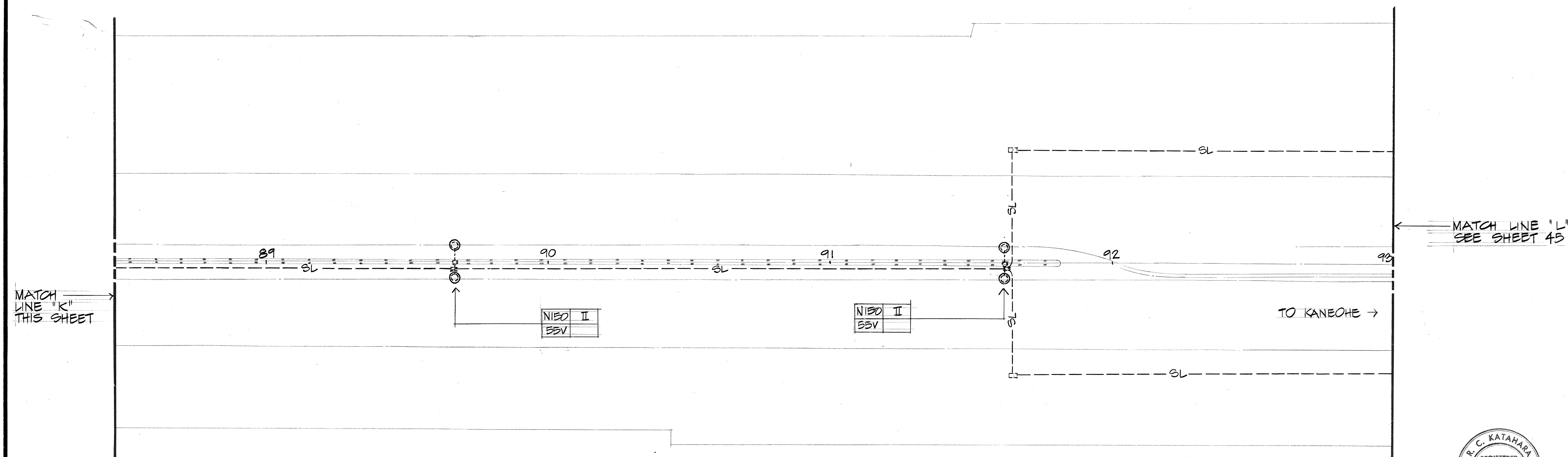
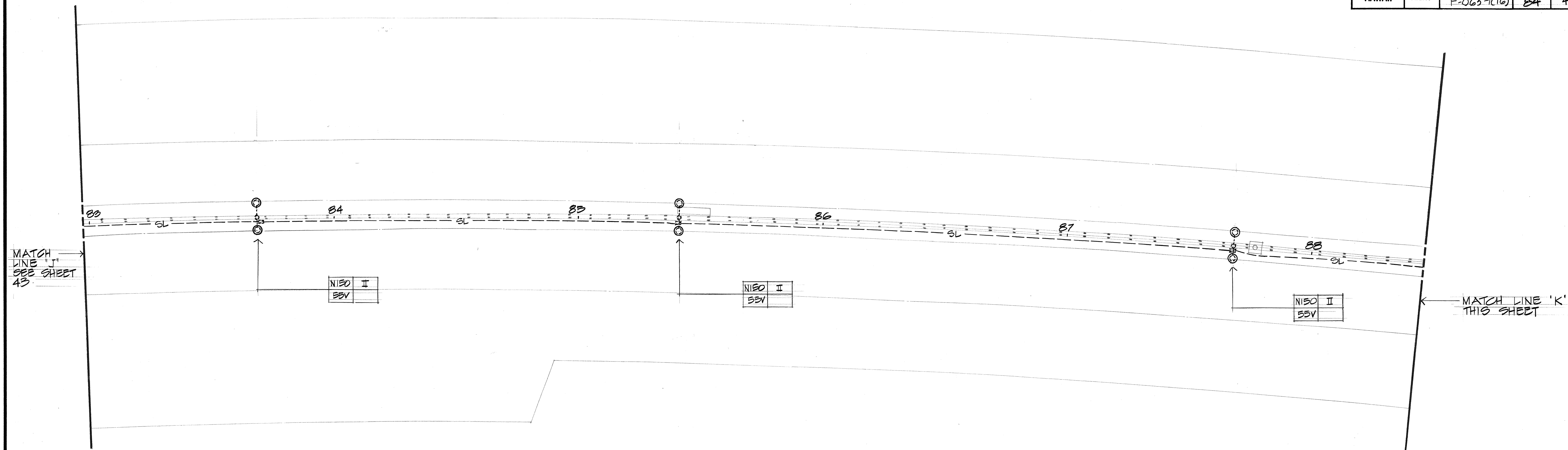
LIGHTING PLAN

LIKELIKE HIGHWAY IMPROVEMENTS
(VICINITY OF KULA KOLEA DRIVE TO KAM IV ROAD)

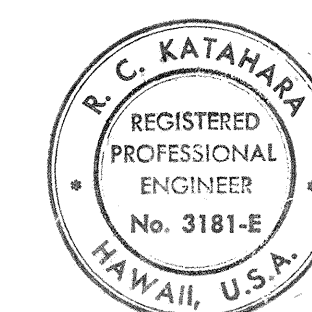
PROJECT NO. F-063-1 (16)

SHEET No. 5 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	E-063-1(16)	84	44	156



LIGHTING PLAN SCALE: 1" = 20'



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

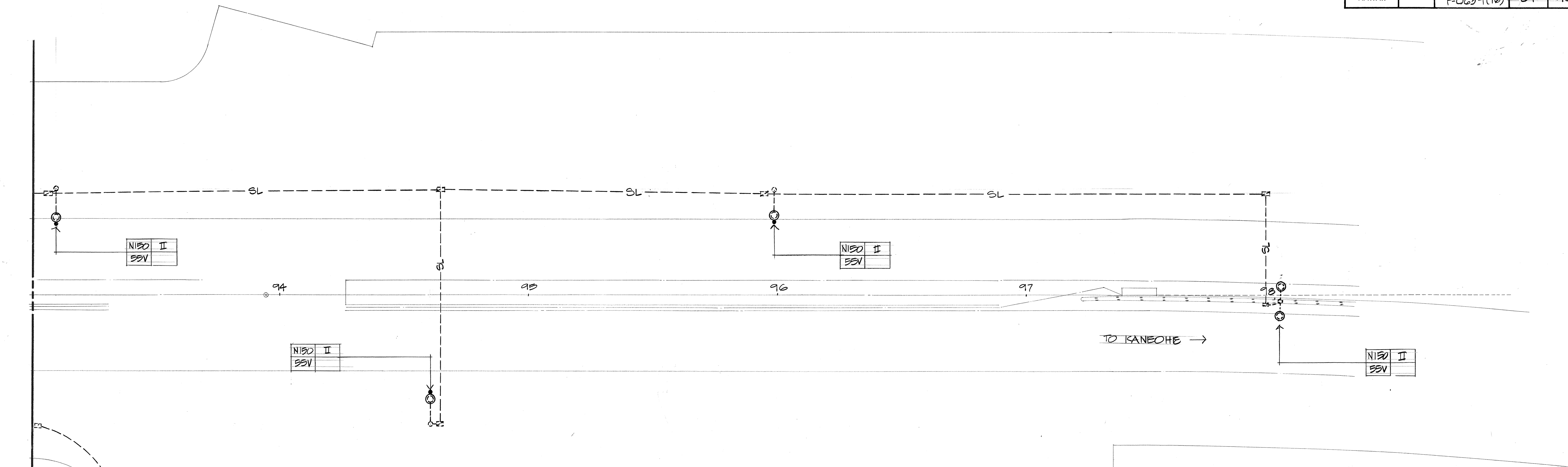
LIGHTING PLAN

LIKELIKE HIGHWAY IMPROVEMENTS
(VICINITY OF KULAKOLEA DRIVE TO KAM IV ROAD)

PROJECT NO. E-063-1 (16)

SHEET NO. 6 OF 9 SHEETS

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	



LIGHTING PLAN

SCALE: 1" = 20'

MATCH LINE
SEE
SHEET 44

EXIST ST LT
SVC EQUIP
TO REMAIN
IN PLACE

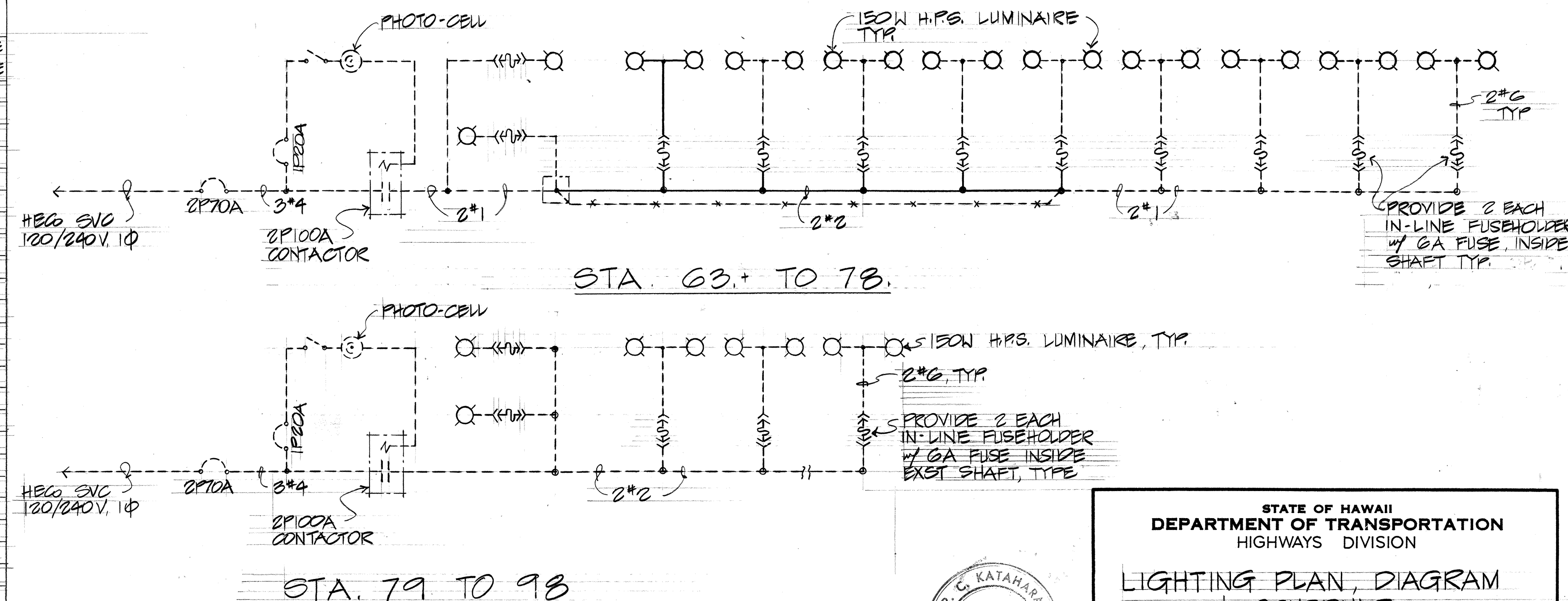
HECO POLE

VALLEY VIEW DRIVE

PANEL SCHEDULE

PAN 'A' 120/240V, 1Ø, 3WSN, 100A MAIN
C.B., SURFACE, INDUST. BOLTED
10,000 A.I.C. MIN

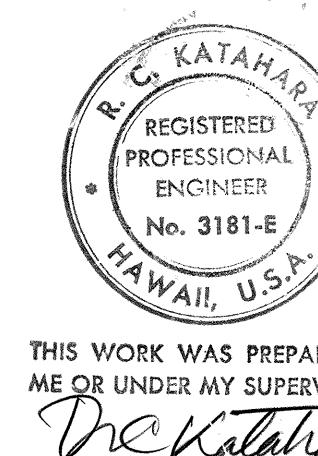
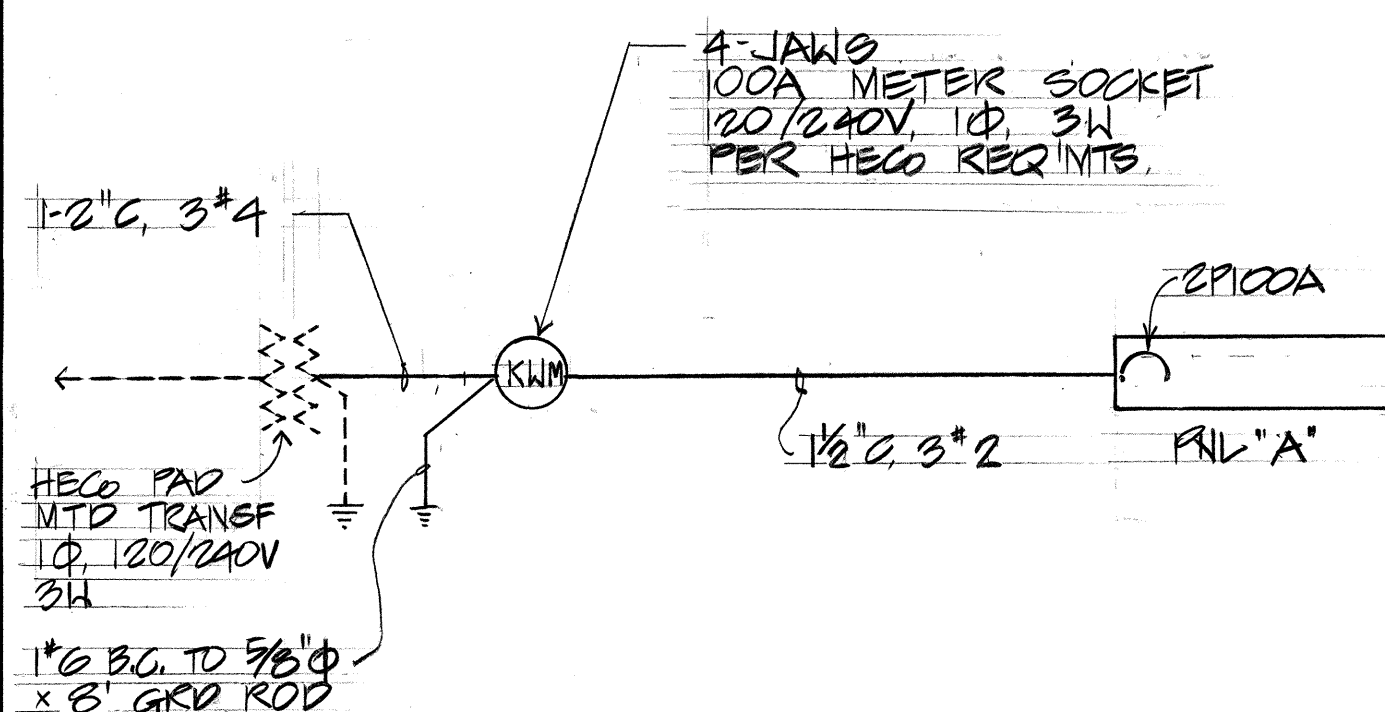
CKT NO.	BREAKERS	USE: L-LTS, R-ROPT, S-SPACE	P.F.B. - PROV. FUT. BKR.	KVA ON BUSSES	WIRE SIZE
1	2 20	L		1.6 1.6	2
2	2 20	L		1.4 1.4	2
3	2 20	L		1.4 1.4	2
4	2 20	L		0.9 0.9	2
5	2 20	S		1.0 1.0	-
6	2 20	S		1.0 1.0	-
7	1 20	PHOTO-CELL		1.0	12
8	20	TRAFFIC SIGNAL (KAM IV RD)		2.0	8
9	20	S		1.0	-
10	50	TRAFFIC SIGNAL (WILSON ST)		5.6	2
11	20	S		1.0	-
12	20	S		1.0	-
13	20	S		1.0	-
14	20	S		1.0	-
TOTALS				12.3 12.9	
KVA CONNECTED:				26.2	
DEMAND FACTOR:				0.7	
DEMAND KVA:				18.3	



STREET LIGHT CONTROL DIAG.

DASHED LINES DENOTE EXISTING.
SOLID LINES DENOTE NEW WORK.

ONE-LINE DIAGRAM



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LIGHTING PLAN, DIAGRAM
& SCHEDULE

LIKELIKE HIGHWAY IMPROVEMENTS
(VICINITY OF KULA KOLEA DRIVE TO KAM IV ROAD)

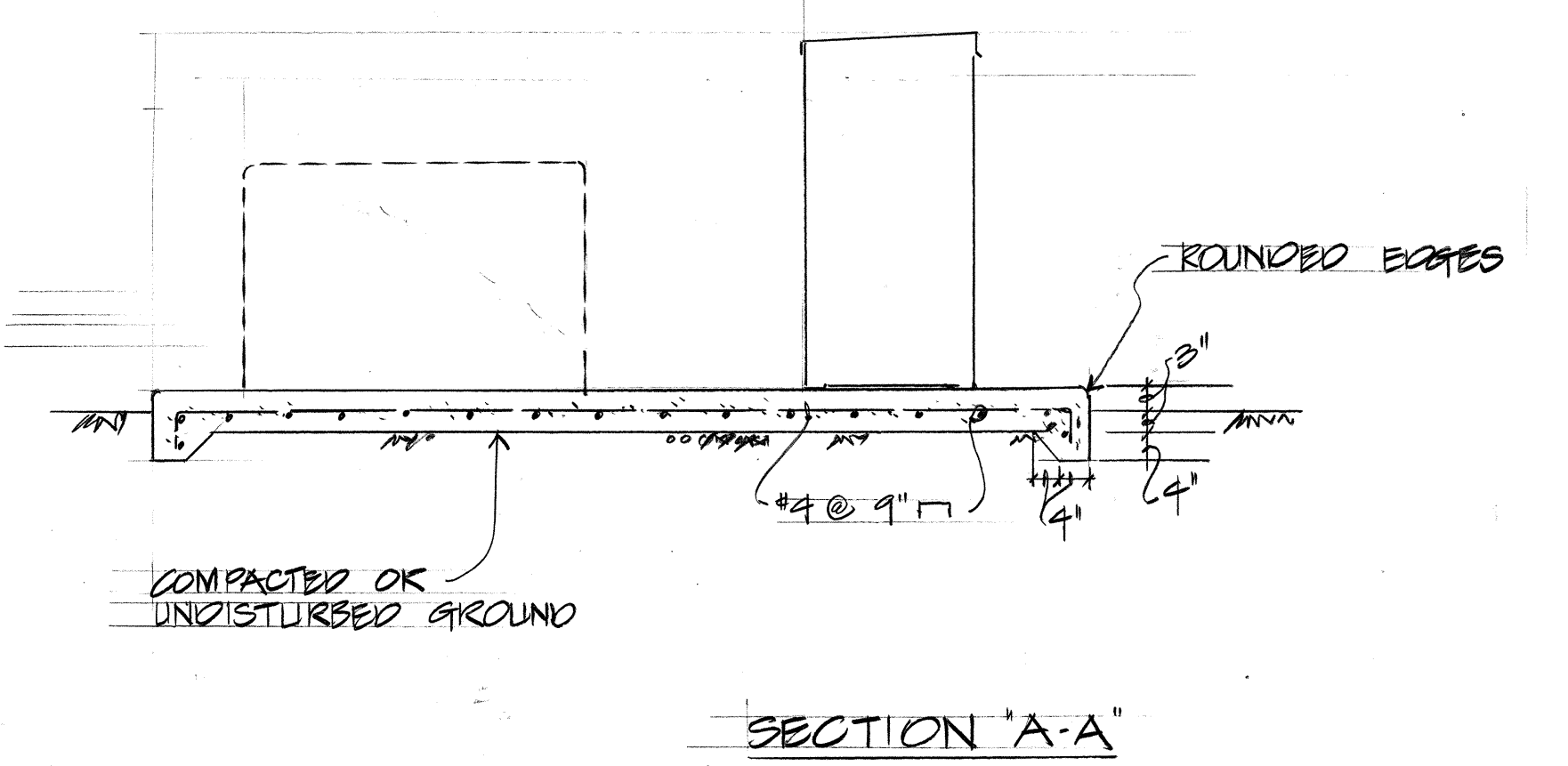
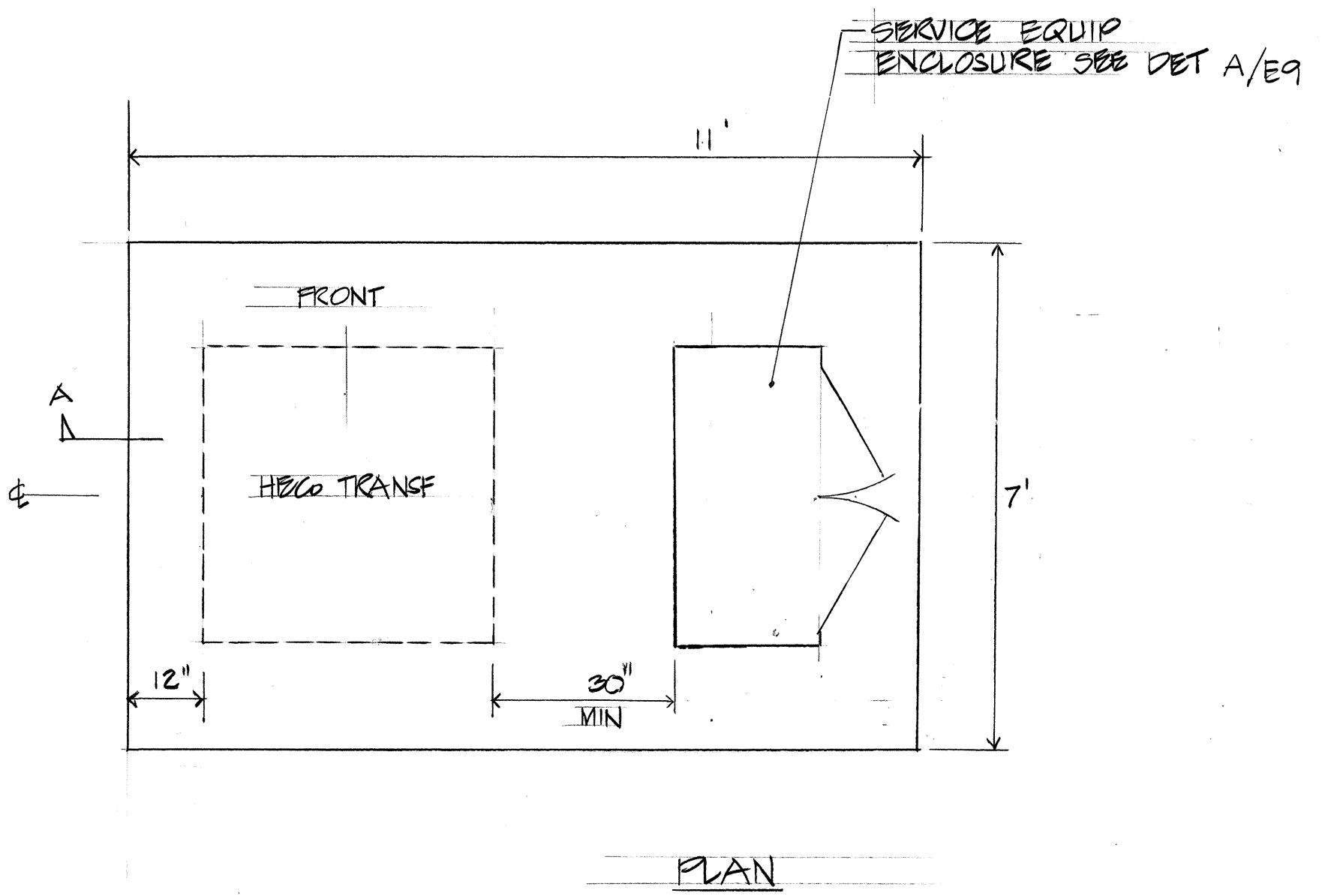
PROJECT NO. F-063-1 (16)

SHEET No. 7 OF 9 SHEETS

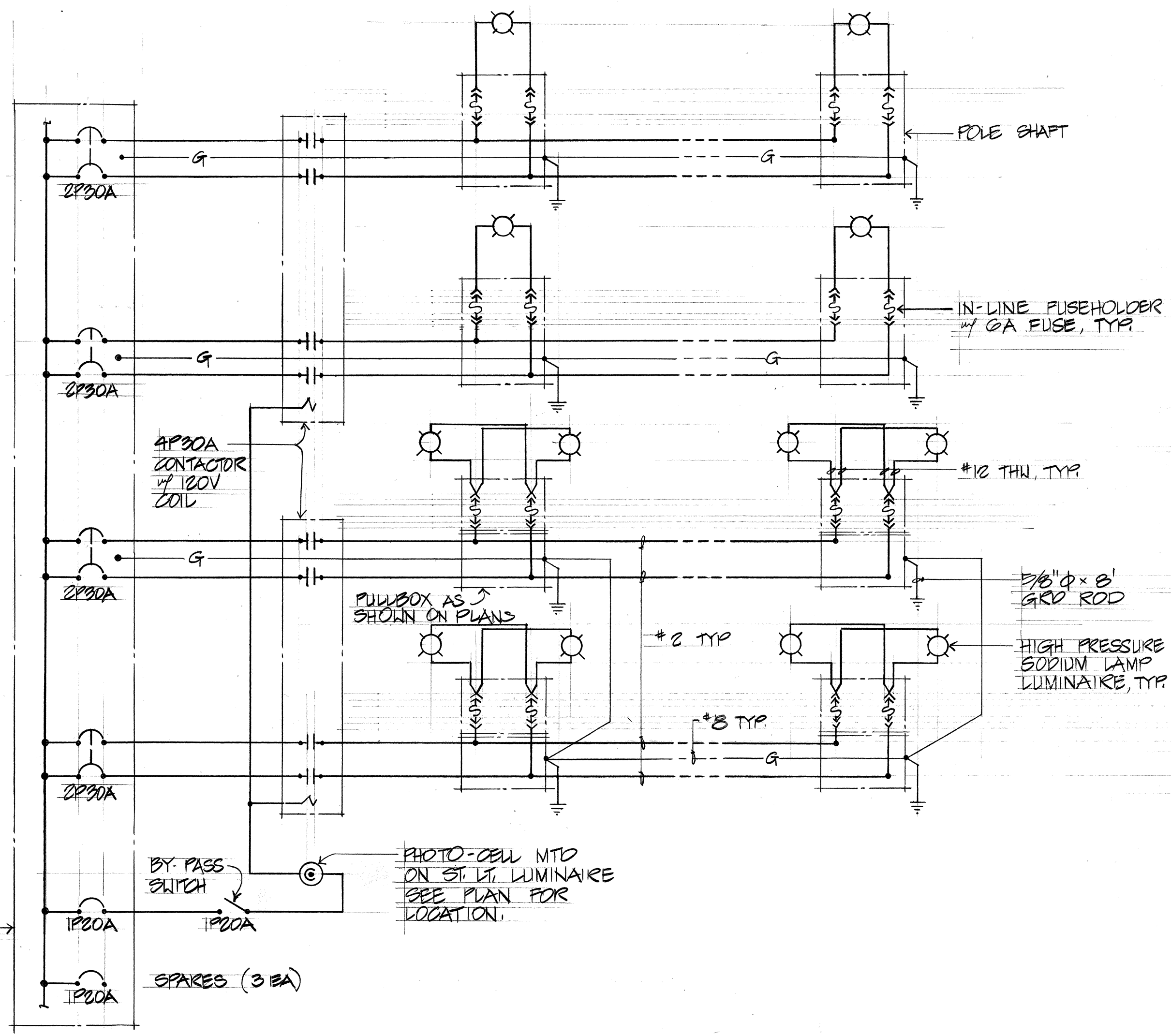
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-063-1(16)	84	46	186

HIGHWAY LIGHTING NOTES

1. CONTRACTOR SHALL NOTIFY ELECTRICAL MAINTENANCE SECTION, DEPT. OF TRANSPORTATION, STATE HIGHWAY DIVISION, 72 HOURS IN ADVANCE BEFORE COMMENCING INSTALLATION OF HIGHWAY LIGHTING SYSTEM. PHONE: 548-4077.
2. ALL LUMINAIRES SHALL BE HIGH PRESSURE SODIUM TYPE WITH WATTAGE & I.E.S. TYPE LIGHT DISTRIBUTION AS SHOWN ON THE PLANS.
3. CONTRACTOR SHALL HAVE ONE SET OF APPROVED PLANS AT JOB SITE AT ALL TIMES DURING THE CONSTRUCTION WORK & RECORD ALL CHANGES OCCUR ON CONSTRUCTION OF HIGHWAY LIGHTING SYSTEM.
4. CONTRACTOR TO STENCIL DATE OF INSTALLATION AT THE BOTTOM OF PHOTOCELL. ONE PHOTOCELL ONLY IS REQUIRED AS INDICATED ON PLAN.
5. FINAL ACCEPTANCE & INSPECTION WILL BE UNDERTAKEN ONLY AFTER ALL WORK HAS BEEN COMPLETED.
6. CONTRACTOR SHALL MEASURE & RECORD GROUND RESISTANCE AT EACH STANDARD & SUBMIT RECORDED GROUND RESISTANCES TO TRAFFIC SECTION DEPT. OF TRANSPORTATION, STATE HIGHWAY.
7. CONTRACTOR SHALL PROVIDE EIGHT (8) LIGHT FIXTURE SHIELDS & DELIVER TO THE STATE HIGHWAY DIVISION ELECTRICAL MAINTENANCE SECTION, OAHU DISTRICT AT 707 KAKOI STREET FOR STORAGE.



(A) TRANSFORMER & EQUIP ENCLOSURE PAD DET. 46 N.T.S.



STREET LIGHT CONTROL DIAGRAM

CONSTRUCTION NOTES

1. CONSTRUCTION WORK SHALL BE SCHEDULED IN SUCH A MANNER THAT STREET LIGHTING IS PROVIDED DURING ALL HOURS OF DARKNESS EITHER WITH NEW OR EXISTING LUMINAIRES OR A COMBINATION THEREOF. TEMPORARY CONNECTION SHALL BE MADE TO ACCOMPLISH THIS. END THE CONTINUITY OF SERIES STREET LIGHTING CIRCUITS SHALL BE MAINTAINED UNTIL THE EXISTING SERIES STREET LIGHTING FIXTURES ARE READY FOR REMOVAL.
2. WHERE EXISTING SERIES CIRCUIT HIGHWAY LIGHTING LUMINAIRES ON METAL STANDARDS ARE INDICATED TO BE REMOVED THE LUMINAIRE & POLE SHALL BE REMOVED & DISPOSED OF BY THE CONTRACTOR. THE FOUNDATION SHALL BE DEMOLISHED TO 6" BELOW GRADE & THE SURFACES AFFECTED SHALL BE RESTORED TO MATCH THE SURROUNDINGS.
3. NEW POLE LOCATIONS SHALL BE STAKED & APPROVAL OF LOCATIONS SHALL BE OBTAINED FROM THE ENGINEER BEFORE EXCAVATION IS STARTED. ADJUSTMENT OF POLE LOCATIONS IN THE FIELD WILL BE REQUIRED TO CLEAR UNDERGROUND & AERIAL UTILITY LINES.
4. CONTRACTOR SHALL, AT HIS EXPENSE KEEP THE PROJECT & SURROUNDING AREA FROM DUST NUISANCE & SHALL BE RESPONSIBLE FOR CLEANING & REMOVAL OF ALL SILT & DEBRIS GENERATED BY THE EXCAVATION WORK & DEPOSITED & ACCUMULATED WITHIN DOWNSTREAM WATERWAYS, DITCHES, DRAIN PIPES & ON ROADWAYS.
5. THE CONTRACTOR SHALL LOCATE EXISTING BURIED UTILITY LINES IN THE VICINITY OF THE EXCAVATION WORK PRIOR TO COMMENCING EXCAVATION. AS A MINIMUM, AN ELECTRONIC MAGNETIC DEVICE FOR DETECTION OF BURIED LINES SHALL BE UTILIZED PRIOR TO EXCAVATION. TRENCHES SHALL BE EXCAVATED WITH CARE THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO EXISTING UTILITIES RESULTING FROM HIS NEGLIGENCE & SHALL BEAR COST OF REPAIRS TO THE UTILITIES. METHOD OF REPAIR SHALL BE DETERMINED BY THE STATE. CONTACT HECO & HTO BEFORE STARTING EXCAVATION & HAVE EACH LOCATE BURIED UTILITY LINES AT THE PROJECT SITE.

CONSTRUCTION NOTE for GAS FACILITIES

1. THE GASCO INC GAS PIPELINES IN THE PROJECT AREA ARE PLASTIC COATED & CATHODICALLY PROTECTED. THE CONTRACTOR SHALL BE EXTREMELY CAREFUL WHEN WORKING NEAR THESE GAS PIPELINES.
2. PRIOR WRITTEN CLEARANCE MUST BE OBTAINED FROM GASCO INC. AT LEAST FIVE (5) WORKING DAYS BEFORE STARTING EXCAVATION NEAR THESE GAS PIPELINES.

SINCE GAS LINE LOCATION ON FIELD MAPS ARE APPROXIMATE THE CONTRACTOR, AFTER OBTAINING A WRITTEN CLEARANCE SHALL CALL GASCO INC. A MINIMUM OF 48 HOURS BEFORE STARTING EXCAVATION TO ARRANGE FOR FIELD LOCATION OF EXISTING GAS LINES. THE TEL. NO. IS 547-2575 DURING BUSINESS HOURS & 526-0060 AFTER HOURS.

THE CONTRACTOR SHALL EXCAVATE & BACKFILL AROUND GAS PIPELINES IN THE PRESENCE OF A GASCO INC REPRESENTATIVE. THE BACKFILL WITHIN SIX INCHES OF GAS PIPELINE SHALL BE SELECT CUSHION MATERIAL APPROVED BY GASCO INC.
3. FOR RELOCATION OF ANY GAS PIPELINE THE CONTRACTOR SHALL NOTIFY GASCO INC. FIVE (5) WORKING DAYS BEFORE STARTING WORK. THE CONTRACTOR SHALL PROVIDE THE NECESSARY EXCAVATION & BACKFILL, ARRANGE FOR TRAFFIC PERMITS & RESTORE SIDEWALK, PAVEMENT OR OTHER FACILITIES. ANY RELOCATION OF GAS FACILITIES SHALL BE DONE BY GASCO INC. & PAID FOR BY THE CONTRACTOR.
4. THE CONTRACTOR SHALL NOTIFY GASCO INC IMMEDIATELY AFTER ANY DAMAGE HAS BEEN CAUSED TO EXISTING GAS PIPELINES, THEIR COATINGS OR THEIR CATHODIC PROTECTION DEVICES. REPAIR WORK ON THIS DAMAGE SHALL BE DONE BY GASCO INC. & PAYMENT FOR THIS WORK TO BE BORNE BY THE CONTRACTOR.
5. MINIMUM VERTICAL OR HORIZONTAL CLEARANCE BETWEEN GAS PIPELINES & OTHER PIPELINES, CONDUITS OR DUCTLINES SHALL BE 12 INCHES. ADEQUATE SUPPORT & PROTECTION FOR GAS PIPELINES EXPOSED IN TRENCH SHALL BE PROVIDED. SUCH SUPPORT & PROTECTION SHALL BE APPROVED BY GASCO INC.
6. THE CONTRACTOR SHALL WORK IN AN EXPEDITIOUS MANNER IN ORDER TO KEEP UNCOVERED GAS PIPE LINES EXPOSED FOR AS SHORT A PERIOD OF TIME AS POSSIBLE.

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



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R.C. KATAHARA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

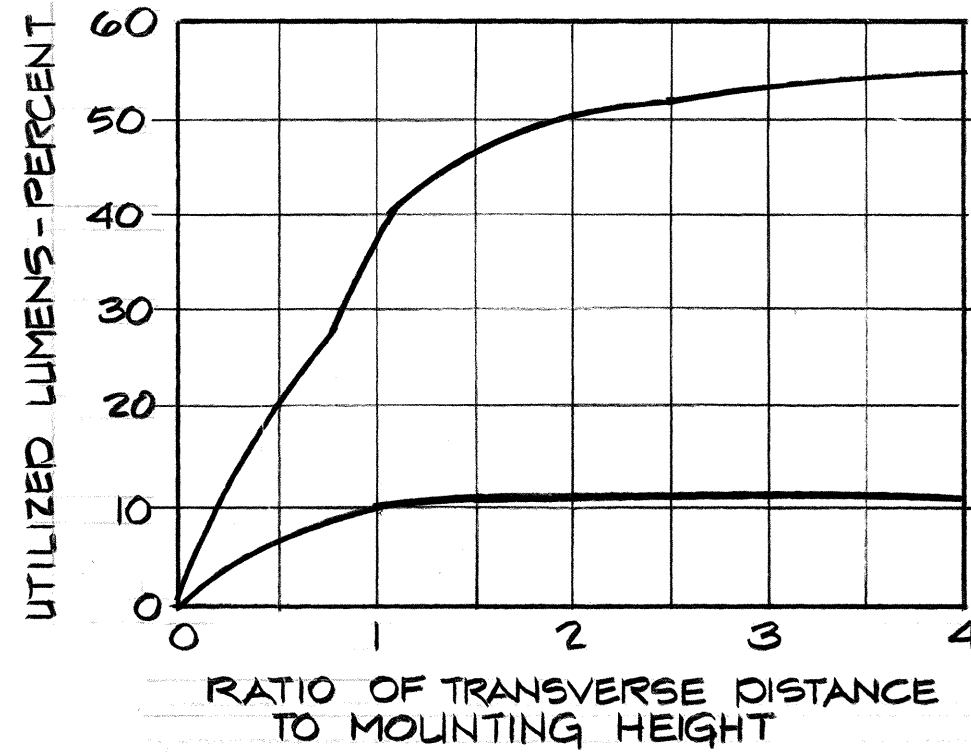
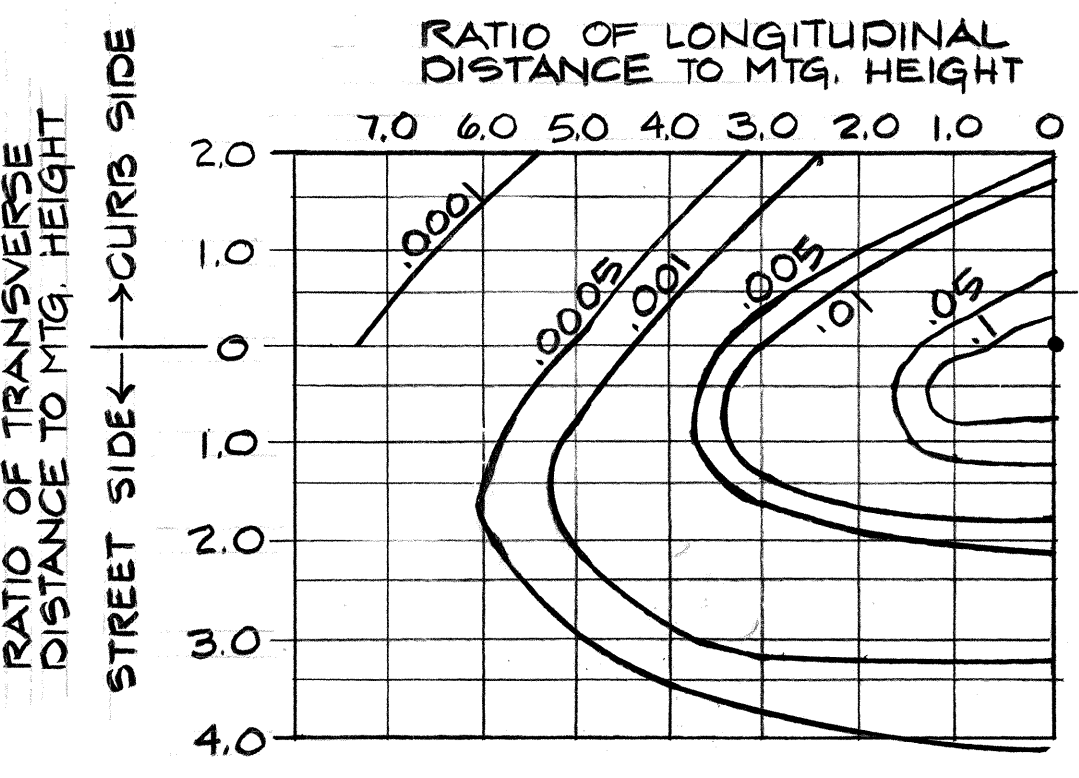
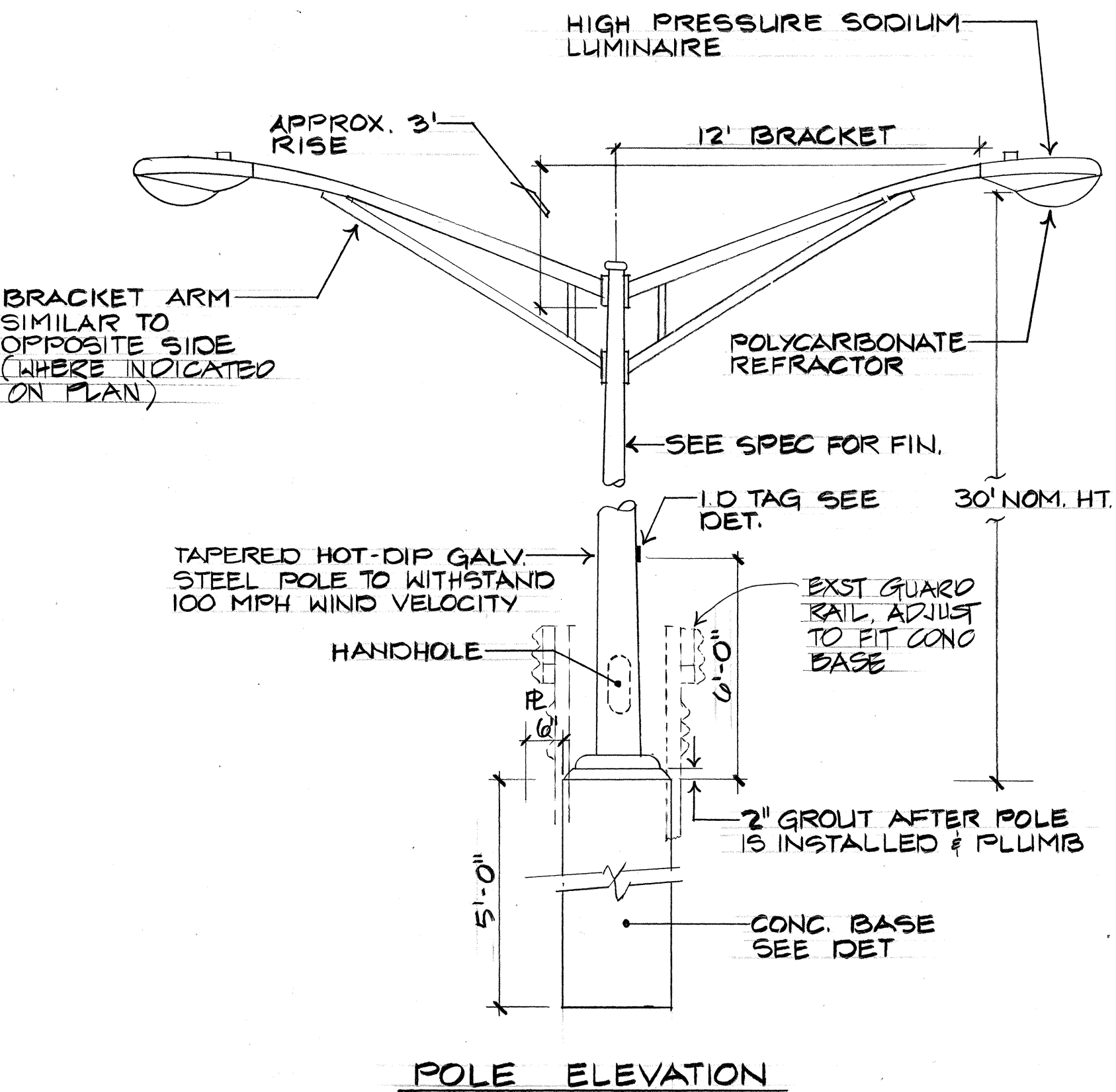
CONTROL DIAGRAM

LIKELIKE HIGHWAY IMPROVEMENTS
(VICINITY OF KULAKOLEA DRIVE TO KAM IV ROAD)

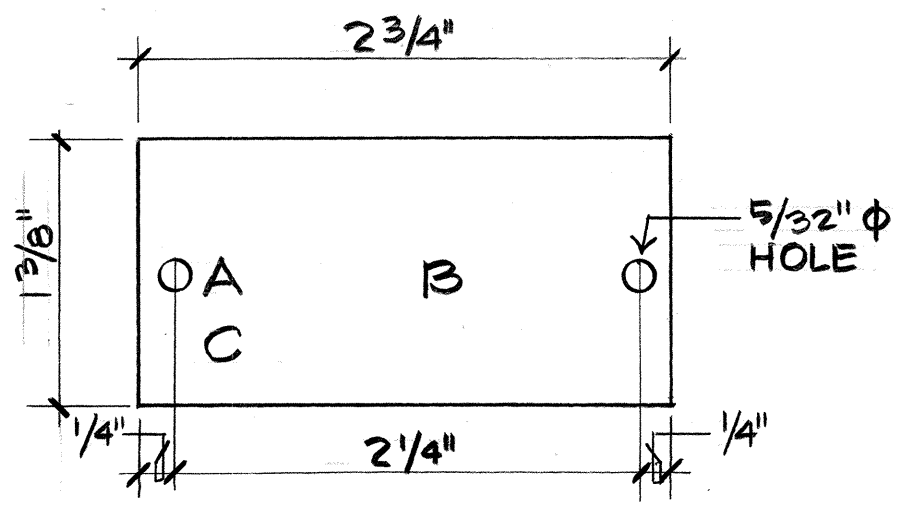
PROJECT NO. F-063-1 (16)

SHEET No. 8 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-063-1(16)	84	47	156



ILLUMINATION DATA
UTILIZATION CURVE
150W HIGH PRESSURE SODIUM

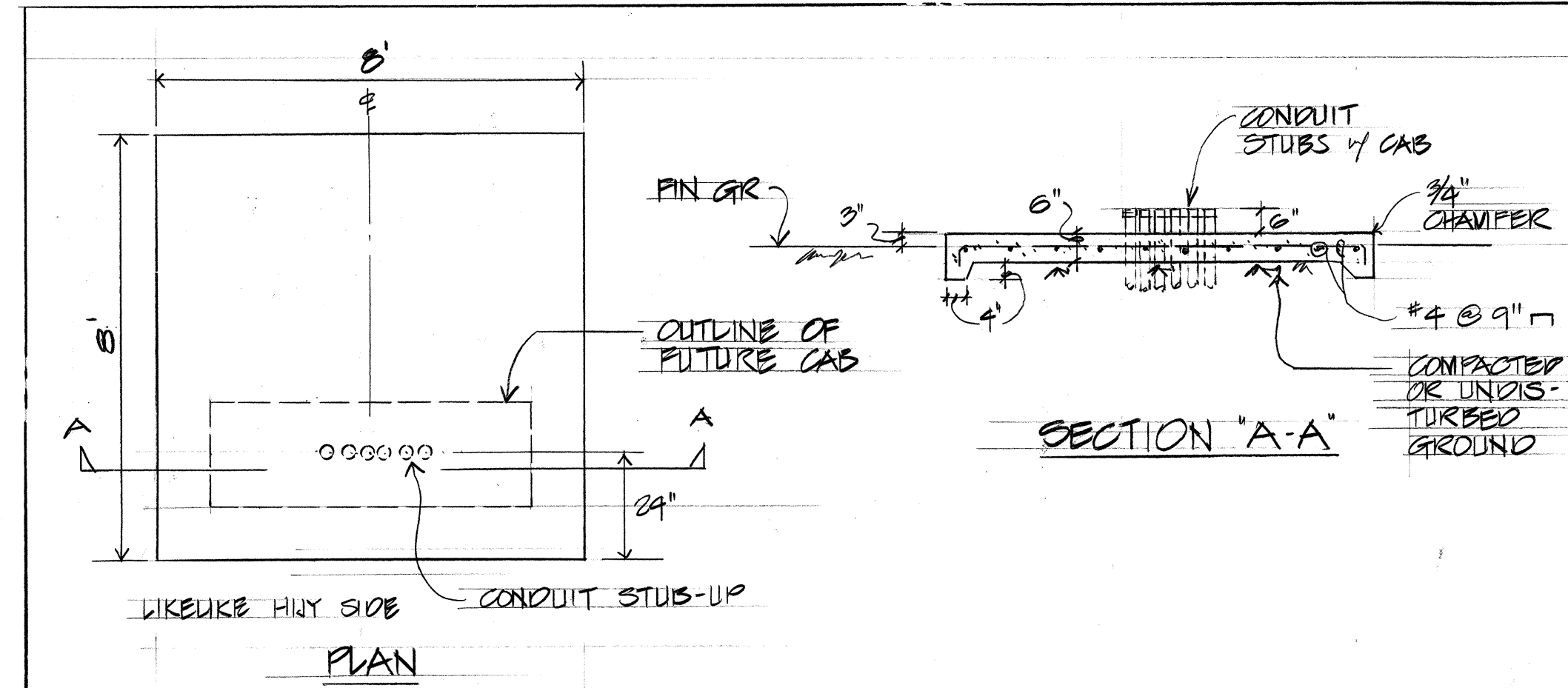


- LEGEND
- A LAMP DATA
 - B REFRACTOR TYPE
 - C LAMP VOLTAGE TO BE OBTAINED FROM SUPPLIER

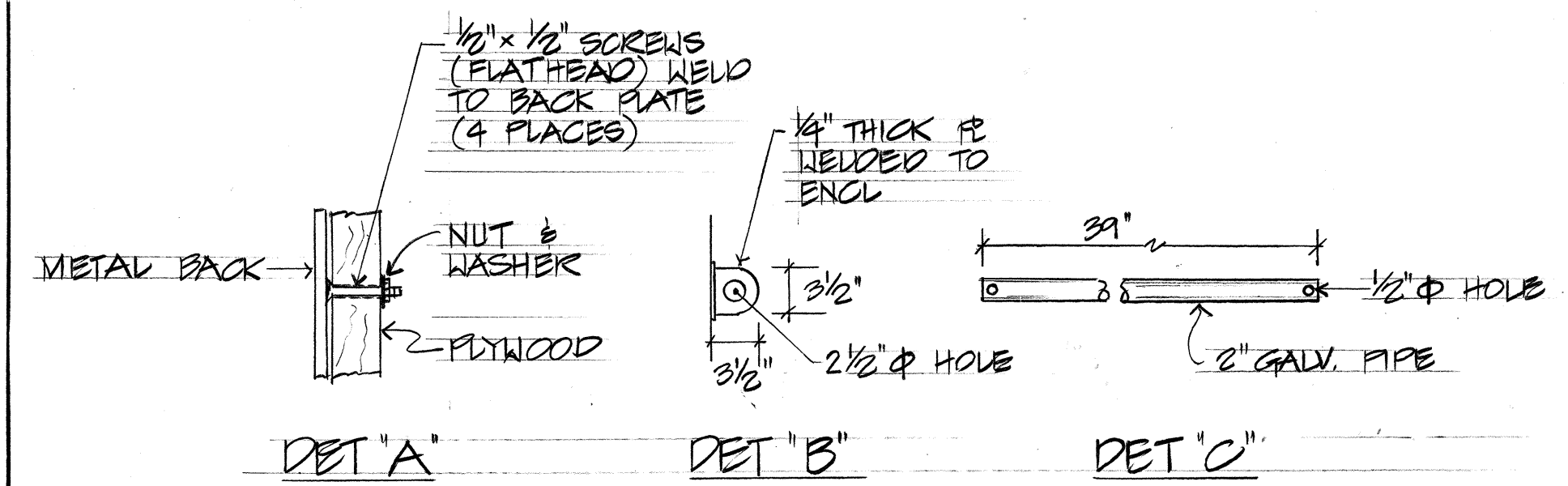
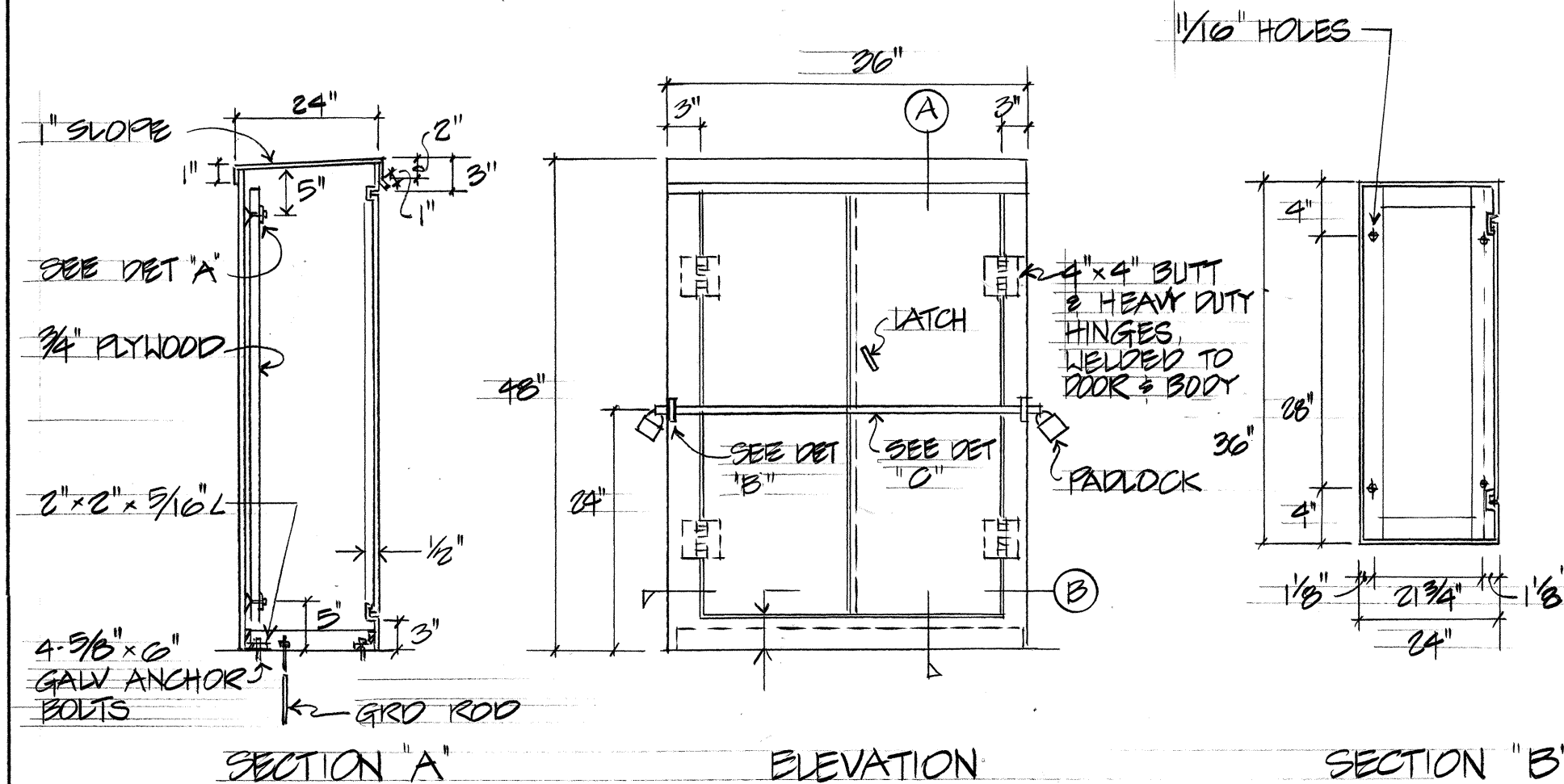
NOTES

1. TAG MADE FROM 3-PLY LAMINATED PLASTIC BLACK-WHITE-BLACK.
2. ATTACH TO STEEL POLE W/NO. 8 5/8" L DRIVE SCREWS IN 1/8" DRILL HOLE.
3. LETTERS NO. 5 REDUCTION, 1/8" ENLARGED.
4. ATTACH 6'-0" ABOVE CURB OR FINISHED GRADE. TAG SHALL BE ON STREET SIDE OF POLE.

TYPICAL IDENTIFICATION TAG DETAIL

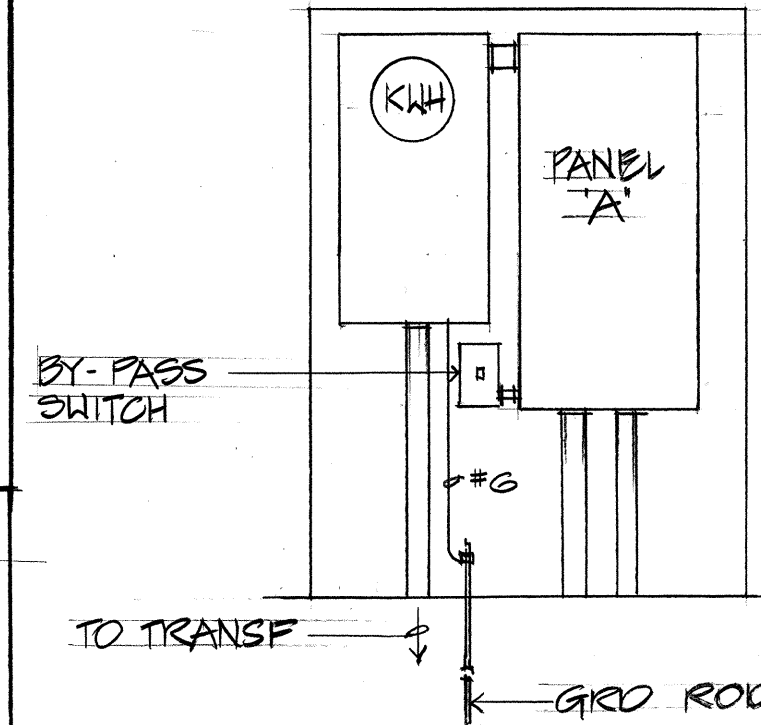


TRAFFIC SIGNAL CONTROLLER CAB PAD DETAIL
47 N.T.S.



NOTES

1. CABINET TO BE PRIMED W/ ONE COAT OF SHOP PRIMER.
2. PLYWOOD TO BE TERMITE TREATED.
3. MADE FROM 10 GA. GALV. SHEET STEEL.
4. ACRYLIC FINISH PAINT AS SELECTED BY ENGINEER OR OFFICER-IN-CHARGE.
5. ENCLOSURE SHALL BE NEMA 3R.
6. PADLOCKS:
 - 1- HECO FURNISH
 - 1- STATE HIGHWAY TRANSPORTATION DIV.



SERVICE EQUIPMENT ENCLOSURE DETAIL
47 N.T.S.

HIGHWAY LIGHT POLE STANDARD DETAIL
NOT TO SCALE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

LIGHT POLE & EQUIPMENT

ENCLOSURE DETAILS

LIKELIKE HIGHWAY IMPROVEMENTS

(VICINITY OF KULA KOLEA DRIVE TO KAM IV ROAD)

PROJECT NO. F-063-1 (16)

SHEET No. 9 OF 9 SHEETS



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R. C. KATAHARA

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