FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O. 64	

NOTES

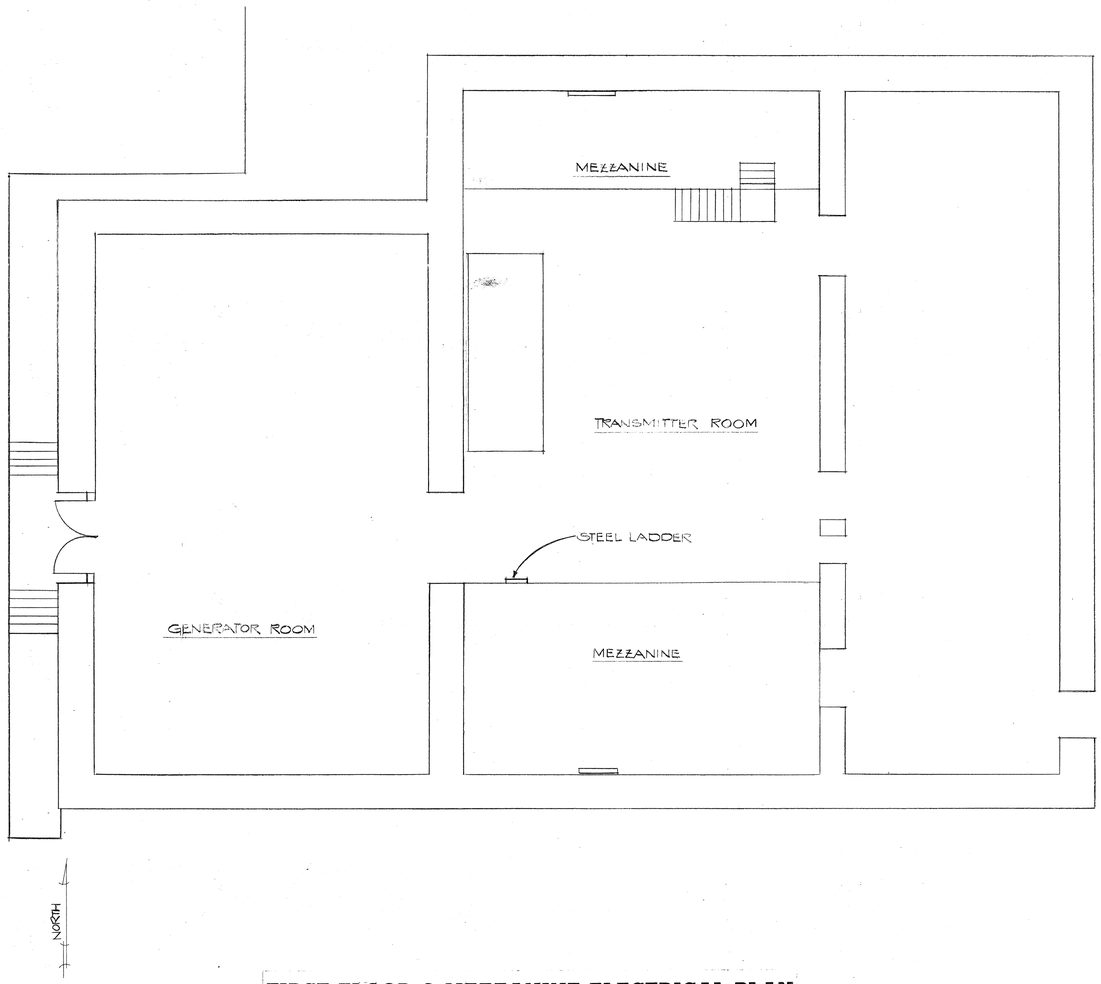
1. CARRY GREEN WIRE THROUGHOUT NEW WORK AND GROUND EQUIPMENT IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, 1987.

2. VERIFY EXISTENCE OF ADEQUATE EQUIPMENT GROUND AT PANELS L3A AND PP1. GROUND RESISTANCE SHALL NOT BE MORE THAN 25 OHMS UNDER NORMALLY DRY CONDITIONS. IF RESISTANCE NOT LESS THAN 25 OHMS, REPORT RESULT TO THE ENGINEER.

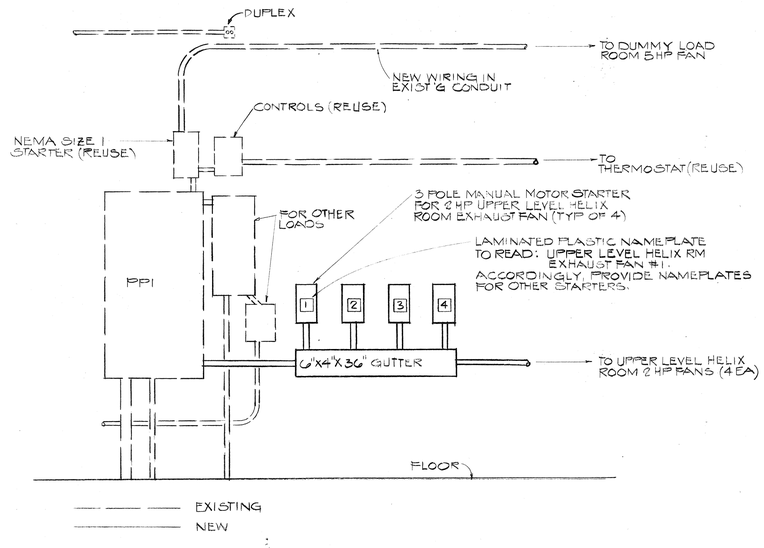
3. UPDATE PANEL DIRECTORY OF EACH PANEL MODIFIED. PROVIDE NEW TYPEWRITTEN DIRECTORY OF ENTIRE PANEL. VERIFYING LOADS NOT REQUIRED. COPY WHAT IS THERE NOW AND INCLUDE THE NEW LOADS.

ELECTRICAL SYMBOL LIST FOR OMEGA STATION

SYMBOL	DESCRIPTION
	PANELBOARD OR LOADCENTER
	EXIST DUPLEX RECEPTACLE, NEMA 5-20R
MS	MANUAL MOTOR STARTER, NEMA 1 ENCL, MHT TO SUIT (48" TO 72")
M	EXHAUST FAN MOTOR CONNECTION
	~~EXHAUST FAN MOTOR CONNECTION~~
	CEILING OUTLET WITH STRIP FLUORESCENT CONNECTION
S	1P20A TOGGLE SWITCH, 120/277V, MHT +48"
	DISCONNECT SWITCH (NEMA 3R)
J	JUNCTION BOX, WALL MOUNTED
	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LTFMC)
B2	HOMERUN TO PANEL (CKT B2 INDICATED)
	NEW RACEWAY RUN
	EXISTING RACEWAY RUN
GRC	GALVANIZED RIGID (STEEL) CONDUIT
AFF	ABOVE FINISHED FLOOR
WP	WEATHERPROOF (NEMA 3R)
MHT	MOUNTING HEIGHT
GND	GROUND (EQUIPMENT); ALSO ABBREVIATED "GRN" FOR GREEN



FIRST FLOOR & MEZZANINE ELECTRICAL PLAN
(NO ELECTRICAL WORK)
1/8":1'-0"



A ELEVATION
E-2 E-1 NOT TO SCALE

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

TOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 1785-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

FIRST FLOOR ELECTRICAL PLAN, SYMBOLS, NOTES

HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT No. 1-H3-1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-1 SHEET No. 8 OF 14 SHEETS

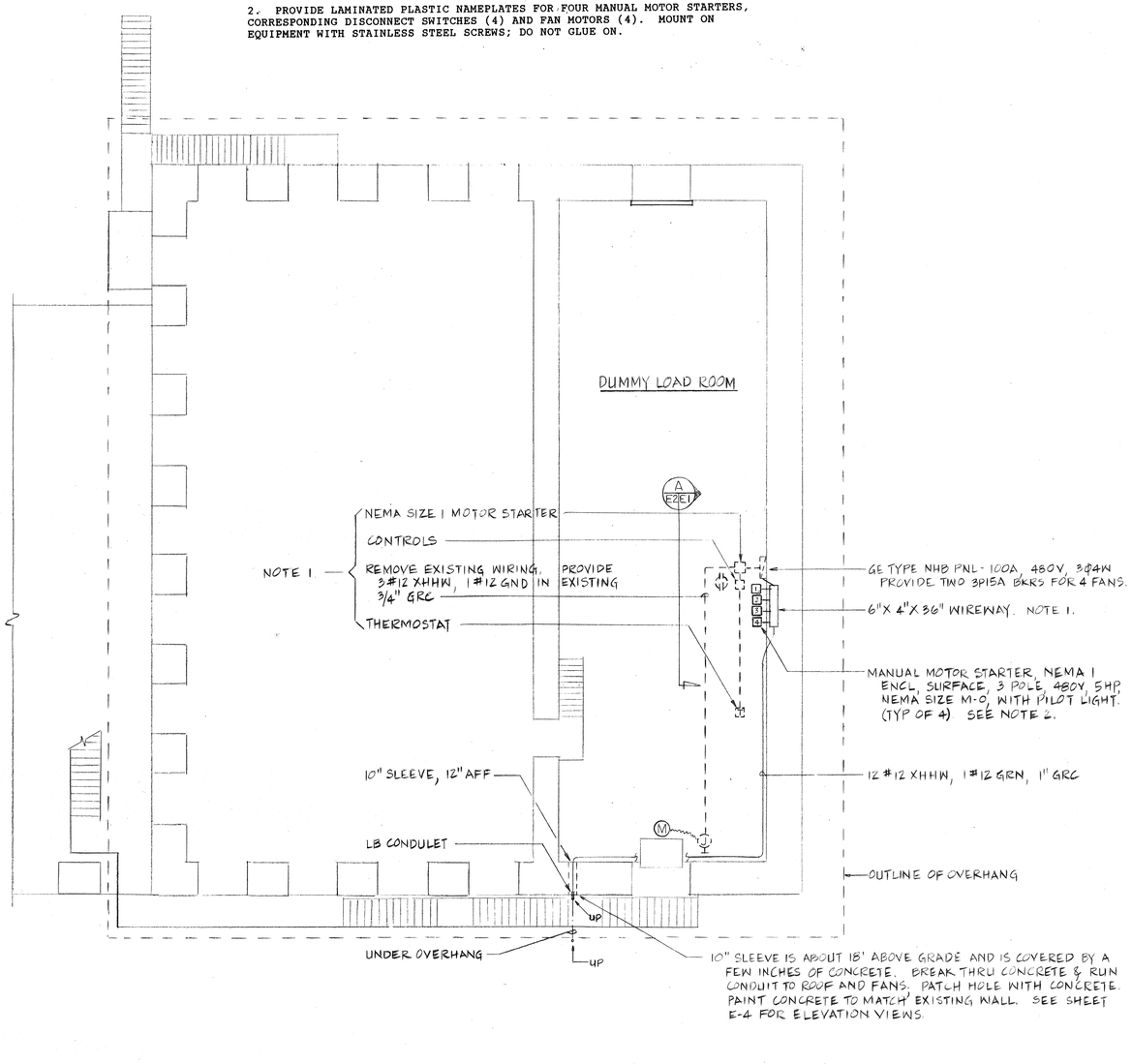
C.O. 64

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O. 65	

NOTES

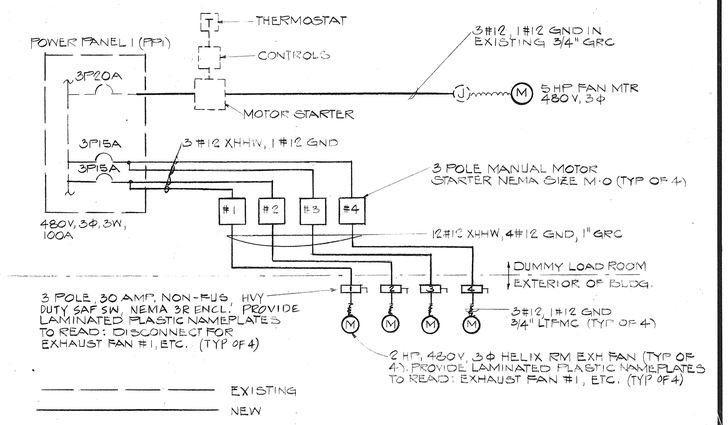
1. ELECTRICAL EQUIPMENT IS DRAWN AWAY OR IN WALL FOR CLARITY, BUT THEY ALL ARE OR ARE TO BE MOUNTED ON THE WALL.

2. PROVIDE LAMINATED PLASTIC NAMEPLATES FOR FOUR MANUAL MOTOR STARTERS, CORRESPONDING DISCONNECT SWITCHES (4) AND FAN MOTORS (4). MOUNT ON EQUIPMENT WITH STAINLESS STEEL SCREWS; DO NOT GLUE ON.



SECOND FLOOR ELECTRICAL PLAN

1/8":1'-0"



ONE LINE DIAGRAM FOR FAN MOTORS

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

TOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 1785-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Toshiaki Saito
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECOND FLOOR ELECTRICAL PLAN, ONE LINE DIAGRAMS

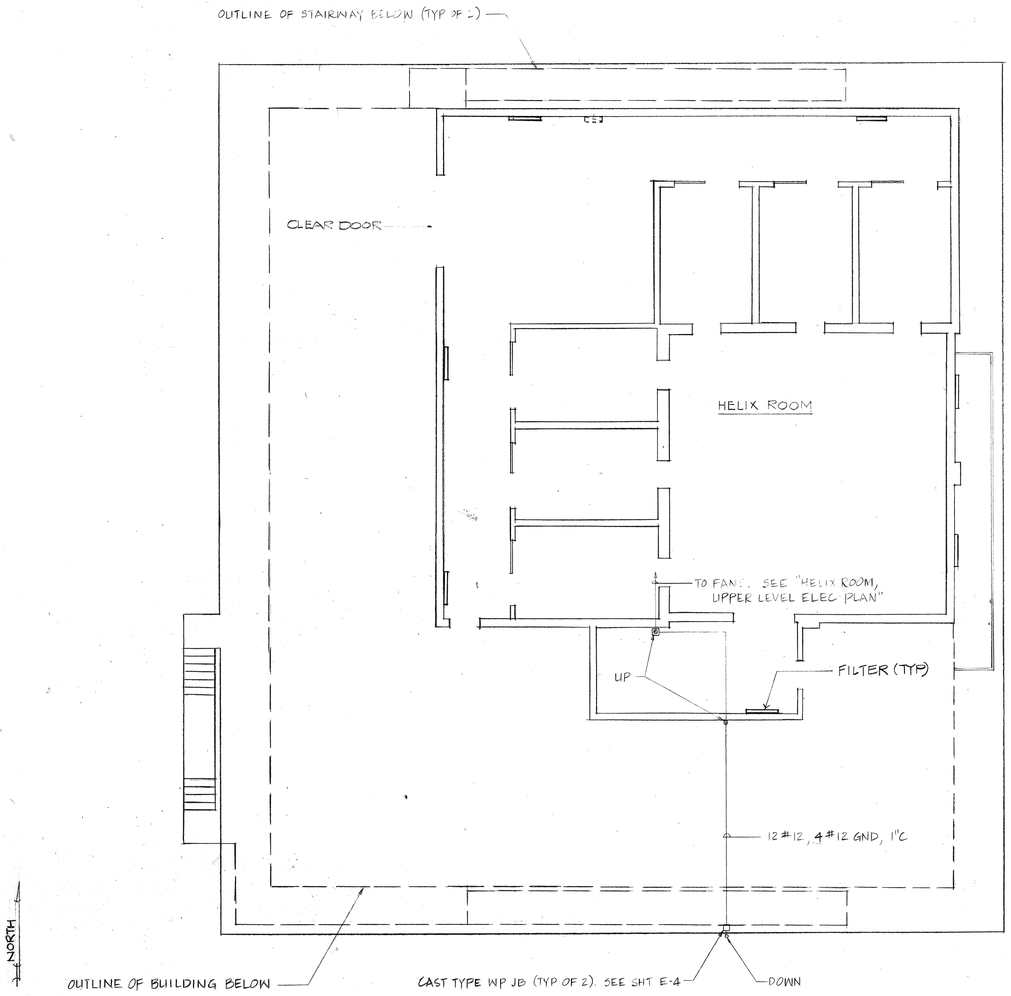
HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-2 SHEET No. 9 OF 14 SHEETS

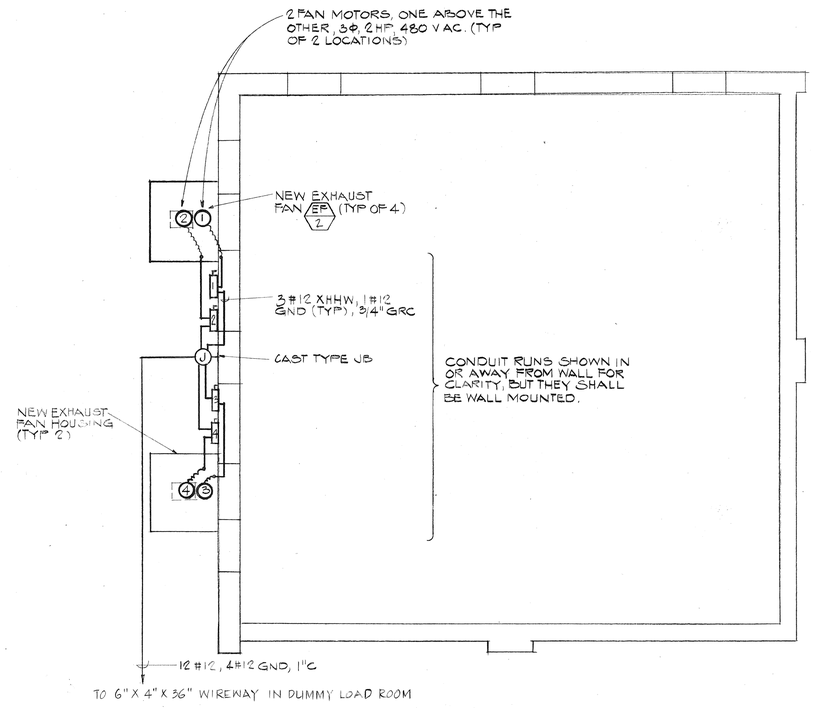
C.O. 65

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I - H3 - 1(36)	1988	C.O. 66	



THIRD FLOOR ELECTRICAL PLAN

1/8":1'-0"



HELIX ROOM, UPPER LEVEL ELECTRICAL PLAN

1/4":1'-0"

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

TOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 1785-E
HAWAII, U.S.A.

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Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

THIRD FLOOR ELECTRICAL PLAN

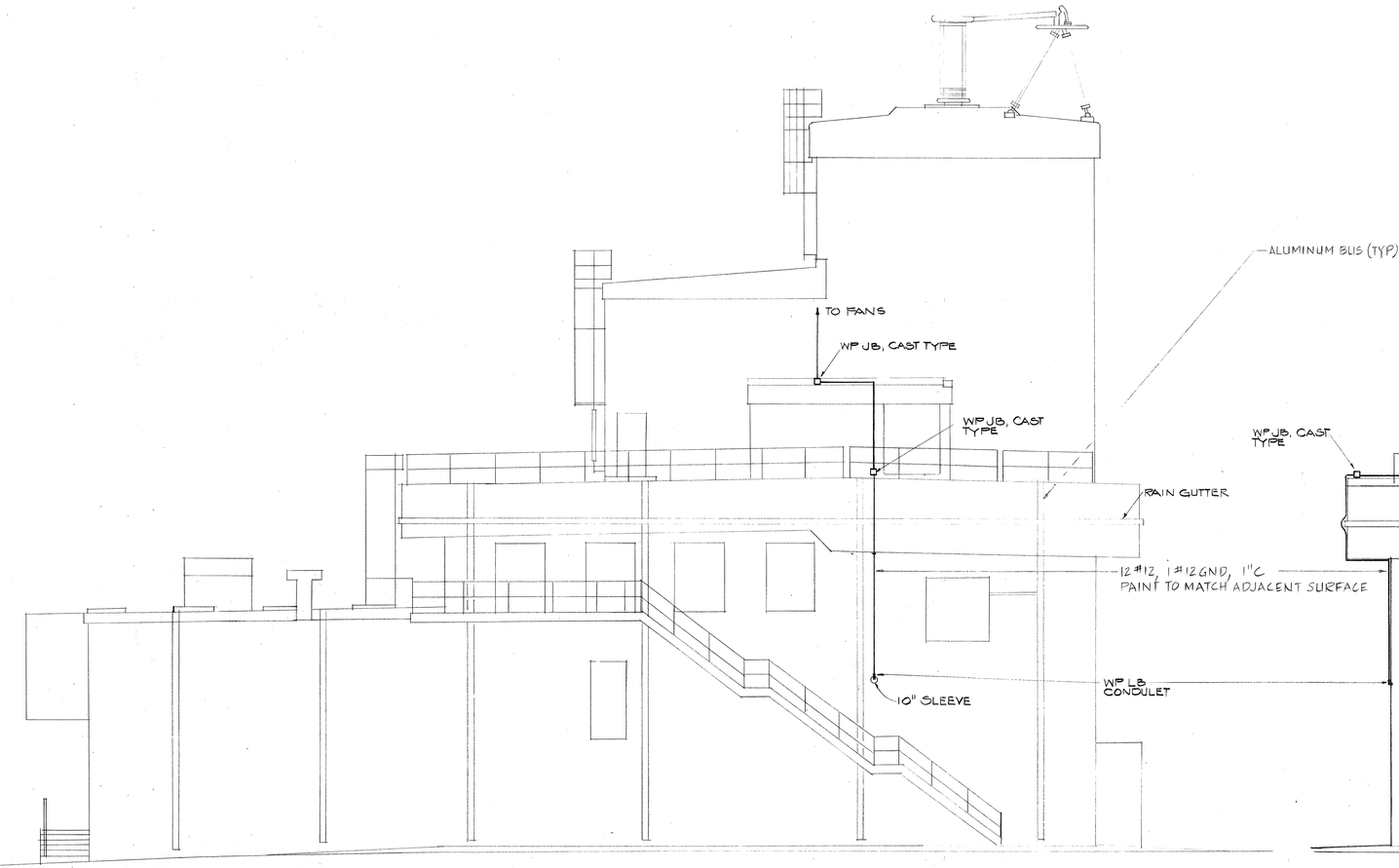
HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT No. 1 - H3 - 1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-3 SHEET No. 10 OF 14 SHEETS

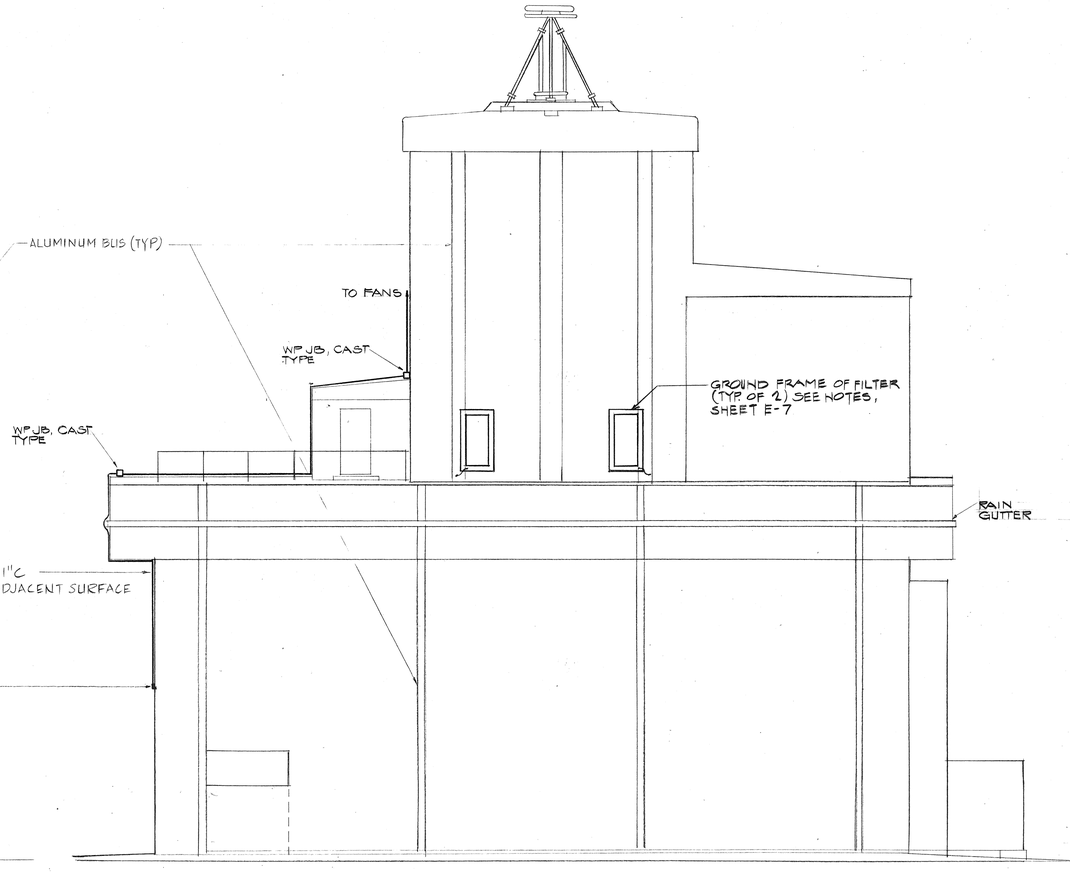
C.O. 66

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O. 67	



SOUTH ELEVATION

1/8":1'-0"



EAST ELEVATION

1/8":1'-0"

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

TOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 1785-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Toshiaki Saito
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELEVATION VIEWS

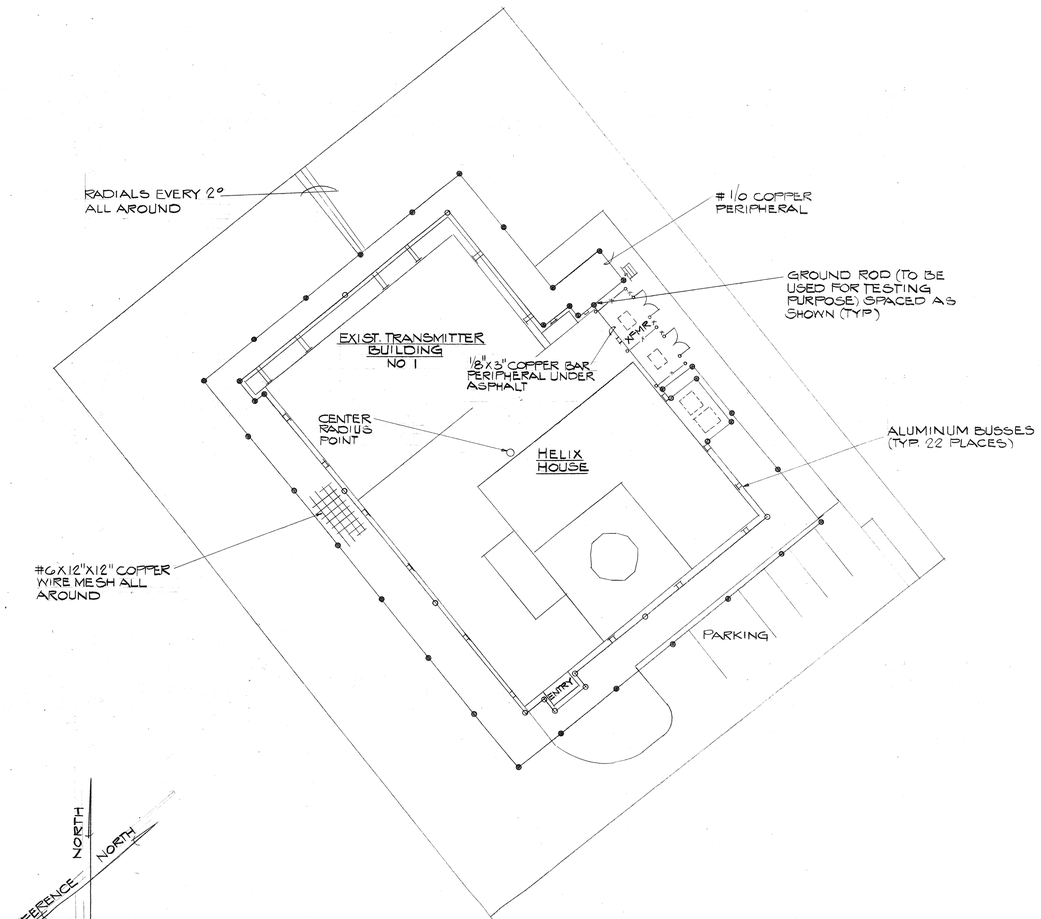
HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-4 SHEET NO. 11 OF 14 SHEETS

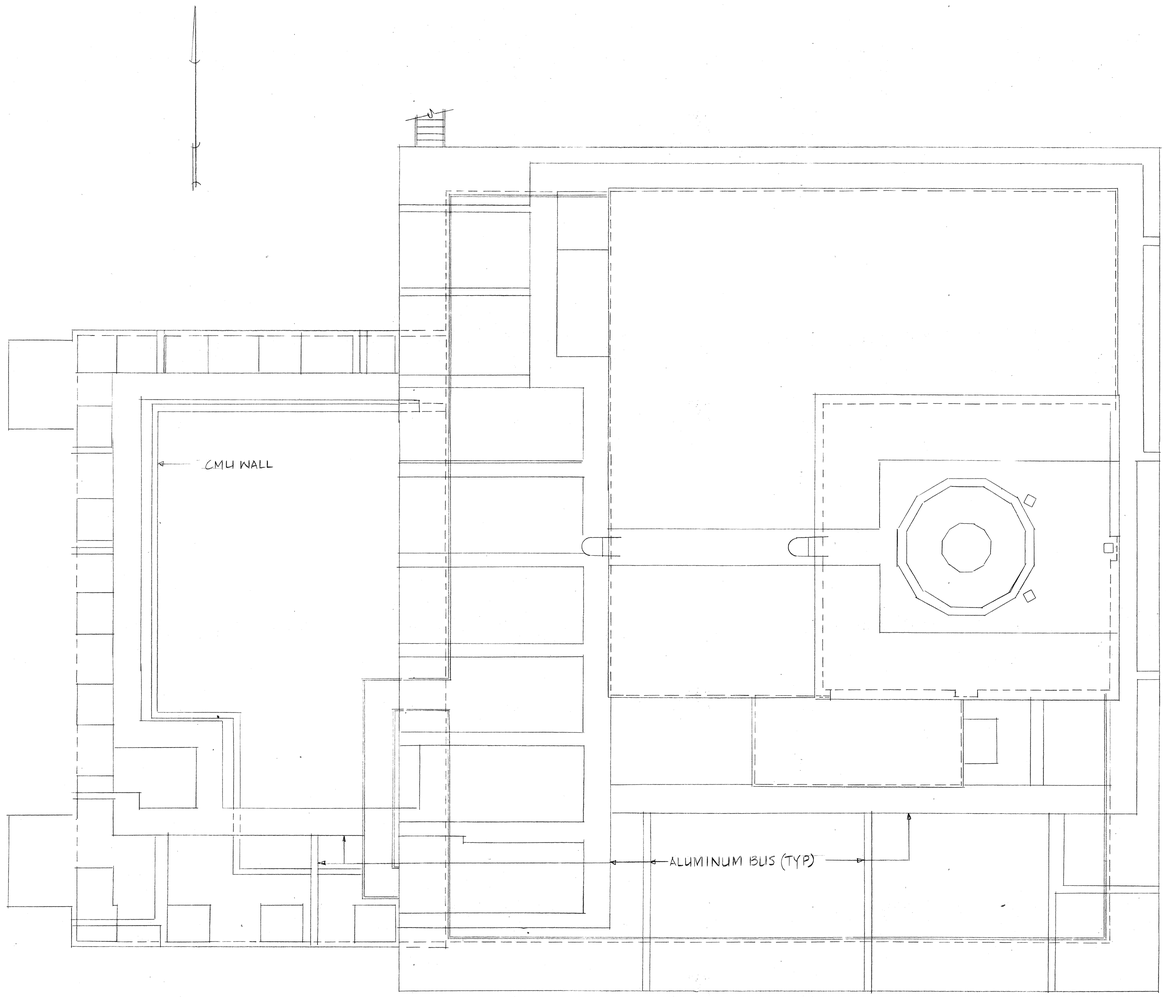
C.O. 67

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O. 68	



EXISTING RADIAL GROUND SYSTEM

1":20'-0"



EXISTING ROOF ALUMINUM BUS PLAN

1/8":1'-0"

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

TOSHIAKI SAITO REGISTERED PROFESSIONAL ENGINEER No. 1785-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXISTING RADIAL GROUND SYSTEM
EXISTING ROOF ALUMINUM BUS PLAN

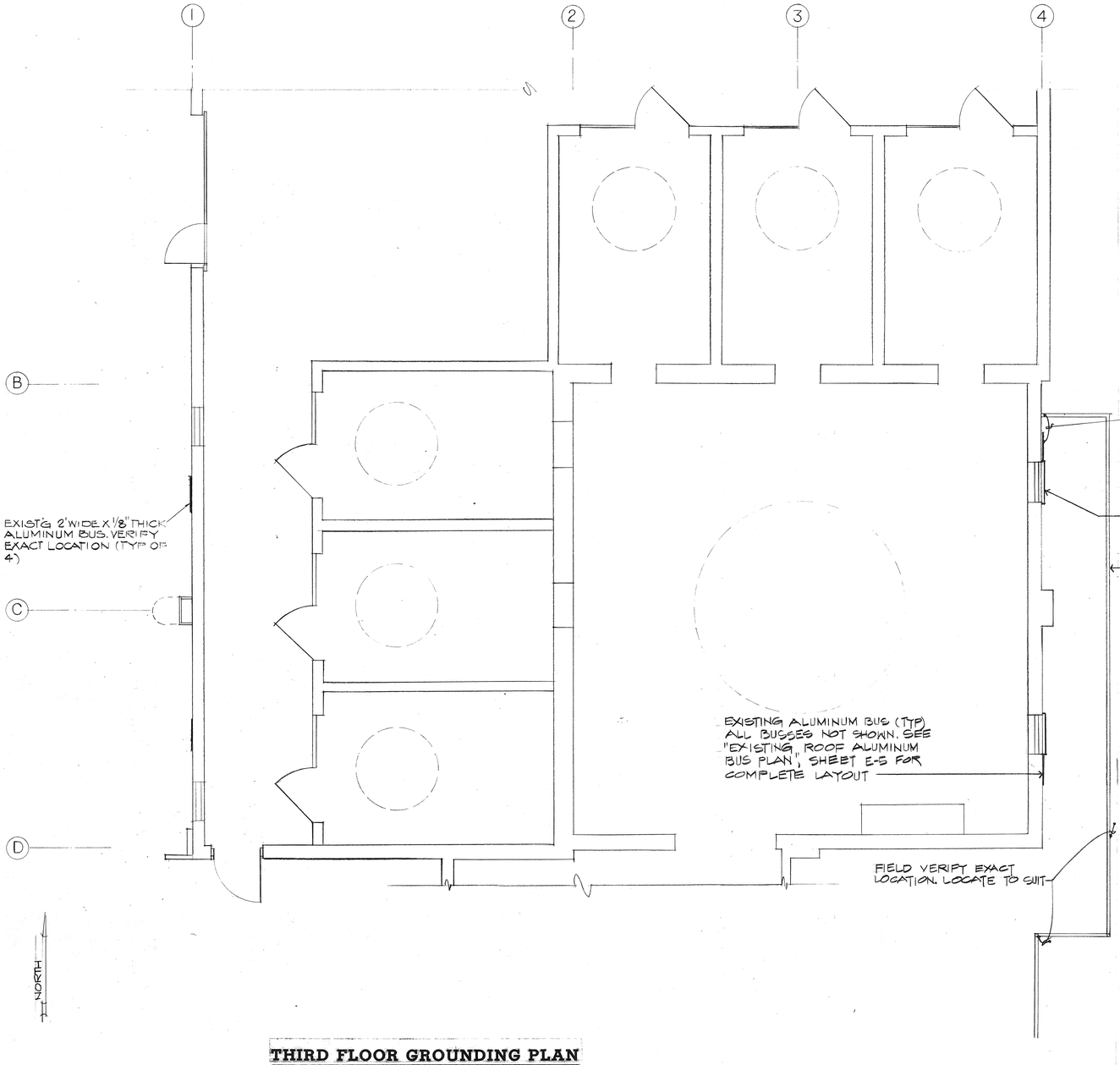
HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-5 SHEET NO. 12 OF 14 SHEETS

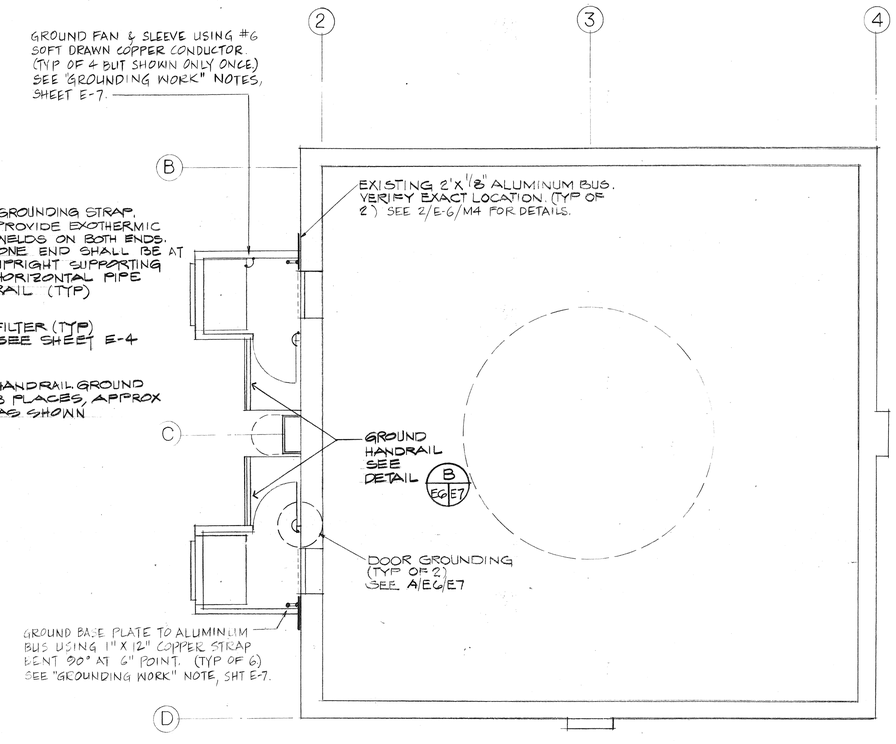
C.O. 68

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O.69	



THIRD FLOOR GROUNDING PLAN

1/4":1'-0"



UPPER LEVEL- HELIX ROOM GROUNDING PLAN

1/4":1'-0"

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

TOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 7185-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

THIRD FLOOR GROUNDING PLAN
HELIX ROOM GROUNDING PLAN

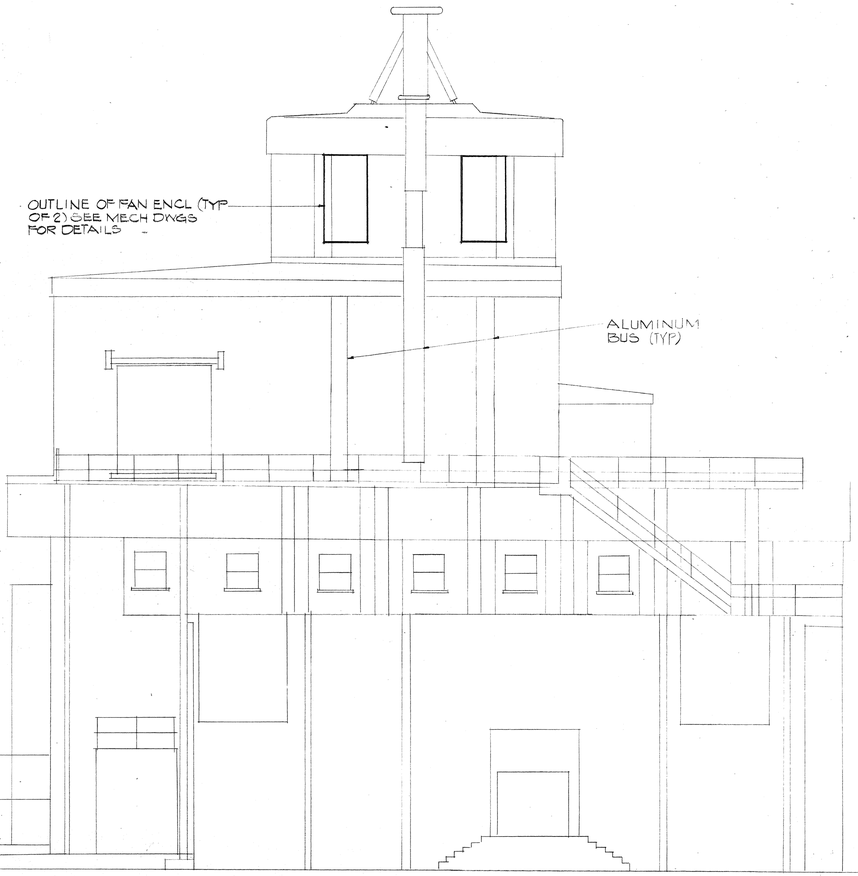
HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F. A. I. PROJECT No. 1-H3-1(36)

SCALE: AS NOTED
DATE: MARCH 1990

E-6 SHEET No. 13 OF 14 SHEETS

C.O. 69

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(36)	1988	C.O. 70	



WEST ELEVATION

1/8"=1'-0"

GROUNDING WORK

FOR THE PURPOSE OF REDUCING RF INDUCED VOLTAGES IN THE EQUIPMENT INSTALLED UNDER THIS CONTRACT, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING GROUNDING WORK AS LISTED BELOW AND AS INDICATED ON THE DRAWINGS:

1. GROUND ALL EXTERIOR FAN ENCLOSURES ON UPPER LEVEL HELIX ROOM - TOTAL TWO.

A. GROUND BASE PLATE TO EXISTING ALUMINUM BUS USING 1" X 1/8" X 12" COPPER STRAP. USE EXOTHERMIC WELDING AT BOTH ENDS.

B. GROUND ALL DOORS TO STEEL STRUCTURE USING 1" X 1/8" X LENGTH TO SUIT TINNED COPPER BRAID. USE EXOTHERMIC WELDING ON STEEL STRUCTURE END AND APPROPRIATELY SIZED STAINLESS STEEL SCREW ON DOOR; PROVIDE STAINLESS STEEL WASHER WITH SCREW. COPPER BRAID GROUNDING STRAP SHALL BE APPROPRIATELY TERMINATED AT BOTH ENDS FOR THE TYPE OF CONNECTION REQUIRED.

C. INDIVIDUALLY GROUND EACH SHEET METAL SIDING FOR WALLS AND ROOF TO STEEL STRUCTURE USING #6, SOFT DRAWN, BARE COPPER WITH APPROPRIATELY SIZED, RING TYPE, CRIMP-ON, TERMINAL CONNECTOR BOTH ENDS; REMOVE INSULATION AND SECURE CRIMP-ON CONNECTION WITH SILVER SOLDER. USE 1/8" X LENGTH TO SUIT STAINLESS STEEL BOLTS BOTH ENDS. PROVIDE STAINLESS STEEL WASHERS, TWO EACH BOTH ENDS; TOTAL FOUR PER WIRE.

D. GROUND FAN FRAME & SLEEVE TO STEEL STRUCTURE USING #6, SOFT DRAWN, BARE COPPER CONDUCTOR WITH APPROPRIATELY SIZED , RING TYPE, CRIMP-ON CONNECTORS BOTH ENDS; REMOVE INSULATION AND SECURE CRIMP-ON CONNECTION WITH SILVER SOLDER. USE 1/8" X LENGTH TO SUIT STAINLESS STEEL BOLTS BOTH ENDS. PROVIDE STAINLESS STEEL WASHER, TWO EACH BOTH ENDS - TOTAL FOUR WASHERS PER WIRE.

2. GROUND ALL EXTERIOR FILTER FRAMES ON THIRD FLOOR - TOTAL TWO.

A. GROUND FILTER ASSEMBLY FRAME & SHELL TO EXISTING ALUMINUM BUS USING 1" X 1/8" X LENGTH TO SUIT COPPER STRAP; EXOTHERMIC WELD BOTH ENDS.

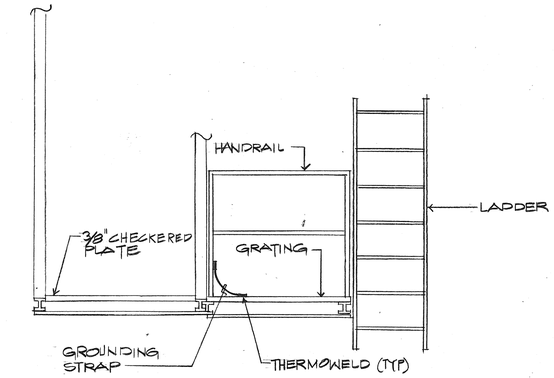
B. INDIVIDUALLY GROUND EACH PART OF THE FRAME TO EACH OTHER USING # 6 SOFT DRAWN BARE COPPER WITH APPROPRIATELY SIZED, RING TYPE, CRIMP-ON, TERMINAL CONNECTOR BOTH ENDS. PROVIDE STAINLESS STEEL WASHERS, TWO EACH BOTH ENDS; TOTAL FOUR PER WIRE. IF IT WILL HOLD, SILVER SOLDERING COPPER WIRE DIRECTLY TO FRAME SECTIONS IN LIEU OF BOLTING IS ACCEPTABLE; PRIME AND PAINT (TWO COATS) SOLDERED AREA TO MATCH FRAME COLOR.

3. TEST EACH STRUCTURE GROUNDING TO EARTH GROUND.

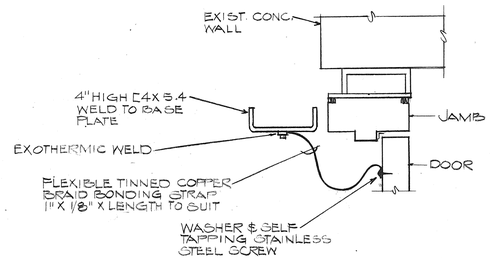
A. TEST GROUNDING FROM VARIOUS POINTS OF STRUCTURE OR FRAME TO THE ALUMINUM BUS. RESISTANCE SHALL BE LESS THAN 3 OHMS FROM EACH POINT TO THE ALUMINUM BUS; OTHERWISE, PROVIDE ADDITIONAL BONDING.

B. TEST FROM STRUCTURE BASE PLATE OR FRAME TO GROUND RODS AT BASE OF TRANSMITTER BUILDING. RESISTANCE SHALL BE LESS THAN FIVE OHMS.

C. PROVIDE REPORT OF TESTING OF EACH AND ALL NEW EXTERIOR STRUCTURES AND FRAMES (4 EACH).



B EG E7 ELEVATION OF RAILING
SCALE: 1/2" = 1'-0"



A E-6 E-7

METHOD OF BONDING STEEL DOOR TO FRAME

NOT TO SCALE

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY _____ DATE
DRAWN BY _____
TRACED BY _____
DESIGNED BY _____
QUANTITIES BY _____
CHECKED BY _____

YOSHIAKI SAITO
REGISTERED PROFESSIONAL ENGINEER
No. 1785-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Yoshiaki Saito
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WEST ELEVATION DETAILS, NOTES

HAIKU ACCESS ROAD
INTERSTATE ROUTE H-3
F.A.I. PROJECT No. I-H3-1(36)

SCALE: AS NOTED DATE: MARCH 1990

E-7 SHEET No. 14 OF 14 SHEETS

C.O. 70