CORPS OF ENGINEERS

U. S. ARMY

SUBMARINE BRIDGE CABLES – NIC
CABLE NO.1 – 100 # 12, 1 # 6 AWG
CABLE NO.2 – 22 # 8, 4 # 6 AWG
CABLE NO.3 – 15 # 2
CABLE NO.4 – 100 # 12, 1 # 6 AWG

CLEARANCE GAGE LIGHT SEE DETAIL E 57/43

TRAFFIC LIGHT SEE DETAIL A 57/43

TRAFFIC GATE LIGHT SEE DETAIL C 57/43

ROADWAY GATE HANDHOLE SEE DETAIL K 43/43

ST. GRD ROD

SEE SHEET 22 FOR UTILITY BEAM

EXP. JOINTS

C-77A

C-78A

GRD ROD

TRAFFIC LIGHT SEE DETAIL A 57/43

SERVICE POLE SEE DETAIL H 58/43

C 200 INCOMING POWER
1-TELEPHONE CONDUIT
C76, C77, C78

PULL BOX (2'-0"x2'-0"x9")

#2 BC. DOWN CONDUCTORS CLAMPED TO EXTERIOR SIDE OF APPROACH SPAN.

FOR CONDUIT HANGER SUPPORT SEE DETAIL J 58/43

PULLBOX FOR TELEPHONE 6"X6"X4"

C 80 TO SIDEWALK GATE UNIT

J.B. MOUNTED ON CATWALK RAILING

SH-44

C 165

PROVIDE JUNCTION BOX AND CONNECT CLEARANCE GAGE LIGHT TO CIRCUIT 21

C 70 & C 164 ON CATWALK RAILING

NAVIGATION & OBSTRUCTION LIGHT, SEE DET. B 57/43

DETAIL K 58/43

LTG. CONDUIT C 163

110' APPROX.

J.B. MOUNTED ON CATWALK RAILING

SH-45

C 162

ROADWAY LIGHT SEE DETAIL G 59/43

NAVIGATION LIGHT SEE DETAIL B 57/43

FENDER LIGHT SEE DETAIL F 57/43

C 72, C 73, C 74

C 81 TO SIDEWALK GATE UNIT

PROVIDE JUNCTION BOX AND CONNECT CLEARANCE GAGE LIGHT TO CIRCUIT 19

TRAFFIC LIGHT SEE DETAIL A 57/43

ROADWAY GATE HANDHOLE SEE DETAIL L 43/43

C 74B

C 73A
C 74A

PULL BOX (2'-0"x2'-0"x9")

PLAN
SCALE 1"=20'

C 78A-¾" C 76-2"
C 77A-2" C 77-2"
C 78-¾"
3"-4"-4"-4"-3"

C 77A-2" 3"

GATE A GATE B
DETAIL K 43/43
GATE HANDHOLE STUBUPS

C 72-¾"
C 73-1½"
C 74-2"
C 73A-1½"
C 74A-1"
3"-4"-3"-3"-3"

C 73A-1½"
C 74A-1"
C 74B-¾"
3"-3"-3"

GATE C GATE D
DETAIL L 43/43
GATE HANDHOLE STUBUPS

STA. 6+48.50 ℄ BEARING
STA. 7+32.50 ℄ PIER
STA. 8+16.50 ℄ BEARING
STA. 8+50.00 ℄ TRUNNION
STA. 10+00.00 ℄ CHANNEL
STA. 11+50.00 ℄ TRUNNION
STA. 11+83.50 ℄ BEARING
STA. 12+51.25 ℄ PIER
STA. 13+19.00 ℄ BEARING

SIGNAL LIGHTS
PHOTOELECTRIC CONTROL
SIGNAL HORN
SIREN
#2 BC DOWN CONDUCTORS CLAMPED TO MULLION & EXTERIOR OF PIER

TYPICAL PANEL

CONCRETE BELOW THIS LINE NIC

3/4"ø x 10'-0" GRD ROD

#2 BC DOWN CONDUCTOR CLAMPED TO EXTERIOR SIDE OF PIER

FENDER LIGHT SEE DETAIL F 57/43

CONCRETE BELOW THIS LINE NIC

ABUTMENT 1 PIER 2 PIER 3 PIER 4 EL.-55' PIER 5 ABUTMENT 6

ELEVATION
SCALE 1"=20'

LEGEND

- LIGHTING FIXTURE DESCRIPTION–UPPER DESIGNATION IS TYPE LETTER, LOWER FIGURES ARE NUMBER & WATTAGE OF LAMPS.
- CLG. WALL
- OUTLET WITH INCANDESCENT FIXTURE
- OUTLET WITH FLUORESCENT FIXTURE
- FLUORESCENT CONNECTED TO ADJACENT FIXTURE
- ROADWAY LIGHTING FIXTURE
- NAVIGATION & OBSTRUCTION LIGHTING FIXTURE
- DUPLEX RECEPTACLE, 15A, 120V, 3PG, 2 WIRES
- POWER PANELBOARD
- LIGHTING PANELBOARD
- JUNCTION BOX
- WP SINGLE RECEPTACLE, 15A. 120V., 3PG. 2 WIRES
- INTER-COM TELEPHONE
- TELEPHONE OUTLET
- TC TELEPHONE CABINET
- S TOGGLE SWITCH, SINGLE POLE
- S_3 TOGGLE SWITCH, 3-WAY
- F FIRE ALARM STATION
- FIRE ALARM BELL
- CLOCK RECEPTACLE
- GROUND ROD
- DISCONNECT SWITCH
- CIRCUIT BREAKER
- MOTOR CONTROLLER
- DOWN CONDUCTOR, 1-#2 BARE COPPER
- BRANCH CIRCUIT–CONDUIT RUN EXPOSED
- HOME-RUN TO PANELBOARD – NO. OF HASH MARKS INDICATES NO. OF WIRES. (ALL WIRE TO BE №12 AWG EXCEPT AS OTHERWISE SHOWN)
- WATER-TIGHT FLEXIBLE CONDUIT
- CONDUIT RUN UP
- CONDUIT RUN DOWN
- CONDUIT BEND
- EMPTY CONDUIT FOR TELEPHONE WIRE

NOTE: FOR LIST OF ELECTRICAL ABBREVIATIONS SEE SHEET 46.

GRAPHIC SCALE 1"=20'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP.
3	7/1/63	TC AS BUILT REVISION. IN PLAN REVISED CONDUIT 192 AND CHANGED NUMBERING OF ROADWAY LIGHTS	RC	JL	
13	DEC 1961	DELETED OBSTRUCTION LIGHTS FROM NORTH TOWER ROOF. ADDED SIGNAL LIGHTS & HORN ON NORTH ROOF TOWER. ADDED CLEARANCE GAGE LIGHTS. ADDED DOWN CONDUCTORS.	T.Y.		

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP.
4	28 MAR 1961	RELOCATED FENDER LIGHTS	R.T.	CF	
35	9/6/60	REVERSED SHT. NOS. OF DETAIL REFERENCE SYMBOLS; CHANGED NUMBERING OF ROADWAY LIGHTS; ADDED A/V TO PULLBOX FOR TELEPHONE AND INDICATED SIZE OF TEL. CONDUIT FOR CIRCUITS C76 ETC TO; ALSO OMITTED CIRCUITS C163 AND C164	RC	CF	
2	4 DEC 60 ADD'L 2	CHANGED REFERENCE TO DETAIL FROM C/57/43 TO A/57/43 AND ADDED NOTE IN PLAN	RC	CF	
1	5 OCT 60 ADD'L 3	ADDITIONAL PLAN ADDED TRAFFIC LIGHTS ON EAST SIDE OF NORTH BRIDGE APPROACH AND ON WEST SIDE OF SOUTH BRIDGE APPROACH.	RC	CF	

REVISIONS

DONALD E. RALSTON
CONSULTING ENGINEER
605 MISSION ST., SAN FRANCISCO, CALIF.

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

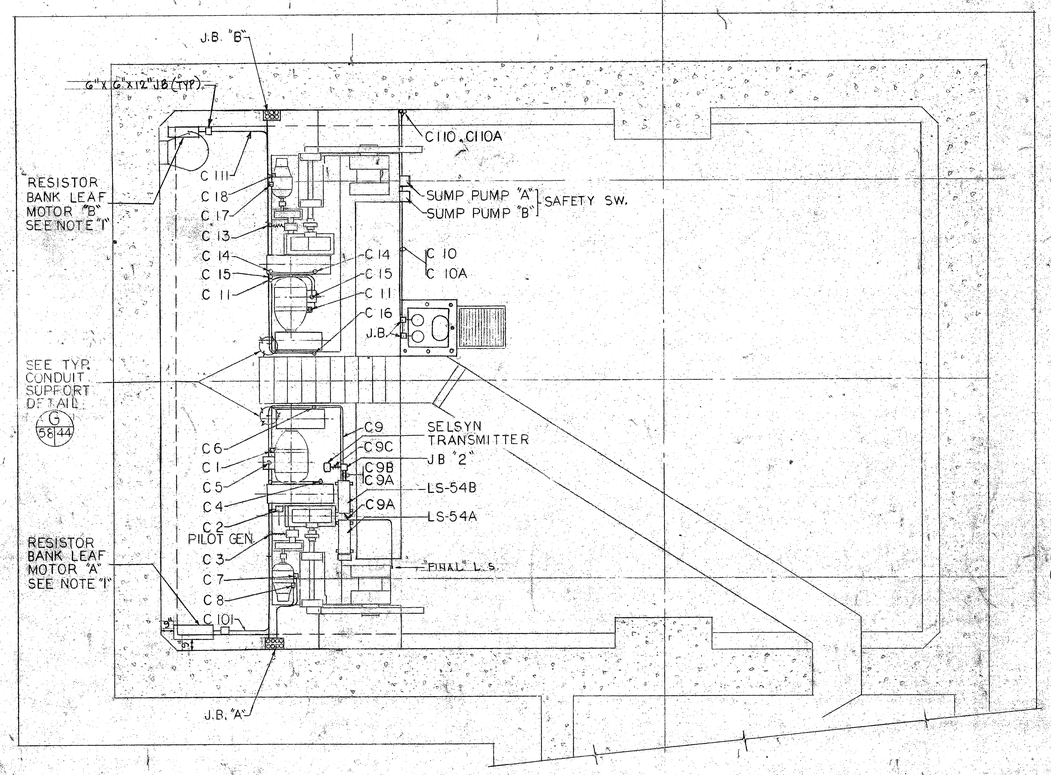
U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: F.W.
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE 29 Oct 1959

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
ELECTRICAL
KEY PLAN AND LEGEND

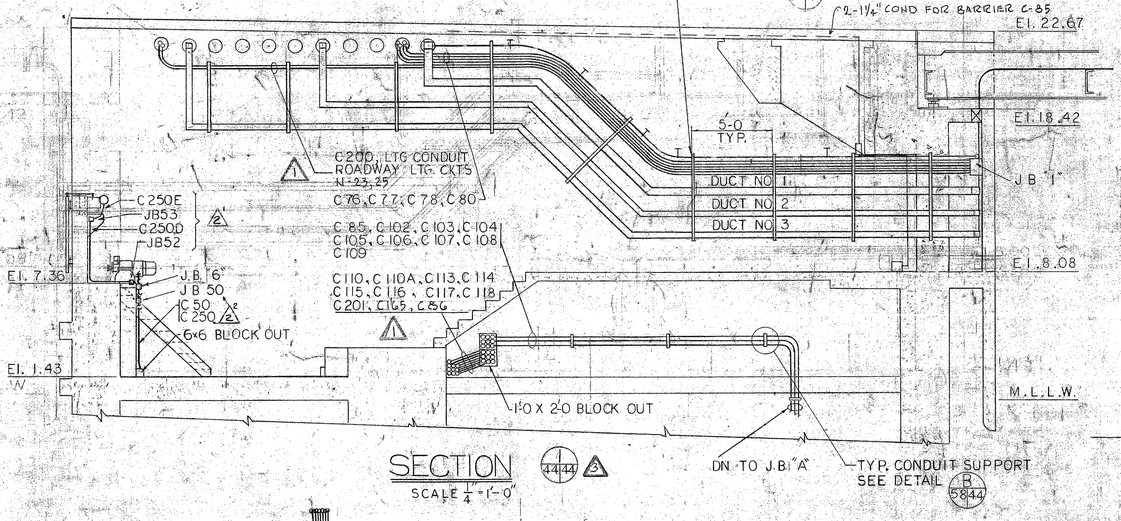
SCALE 1"=20'-0"
DRAWING NUMBER
SHEET 43
AS BUILT
RH 9/67.43

AS BUILT



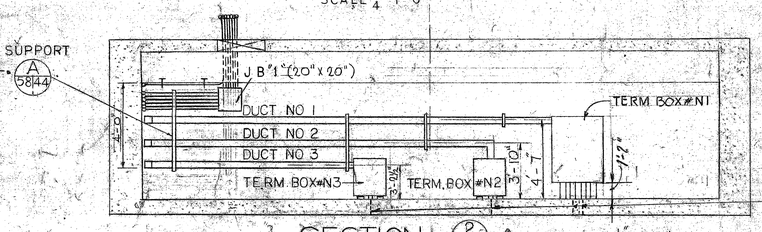
PLAN LOWER LEVEL 2

SCALE 1/4" = 1'-0"



SECTION 1 4444 5

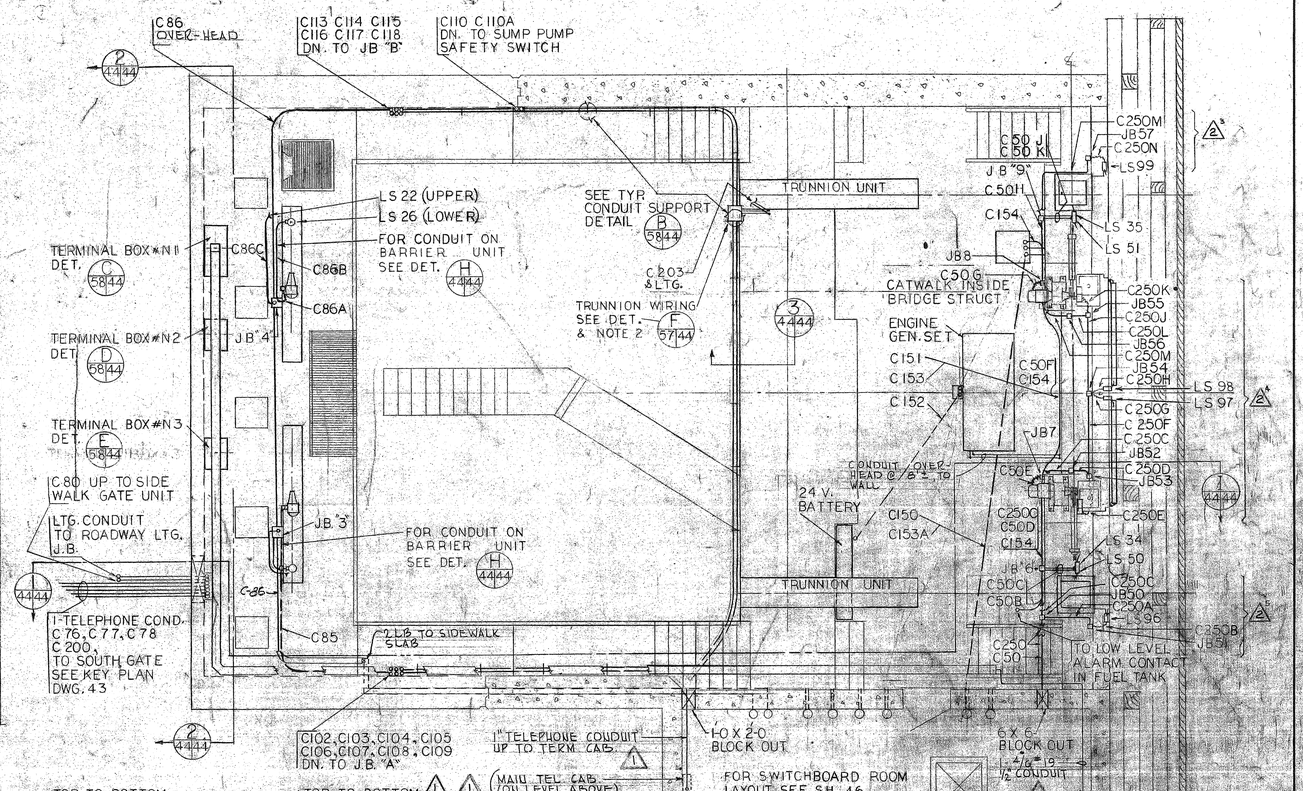
SCALE 1/4" = 1'-0"



SECTION 2 4444 5

SCALE 1/4" = 1'-0"

L. TO R. SUB. CABLES #3, #2, #4, & #1 SEE SHEET 25



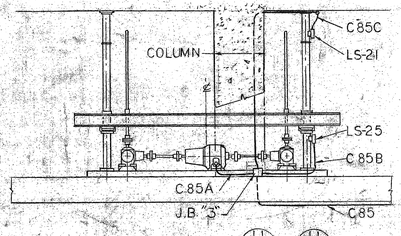
SECTION 3 4444 5

N.T.S.

JUNCTION BOX SCHEDULE	
J.B. NOS.	SIZE
A, B, 1	1'-6" X 1'-6" X 9"
2	6" X 4" X 3"
3, 4, 6, 7, 8, 9	4" X 4" X 3"

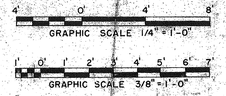
PLAN UPPER LEVEL 2

SCALE 1/4" = 1'-0"



DETAIL H 4444 H 4445

SCALE 3/8" = 1'-0"



DONALD C. RALSTON CONSULTING ENGINEER 100 BUSH ST. SAN FRANCISCO 6, CALIF.

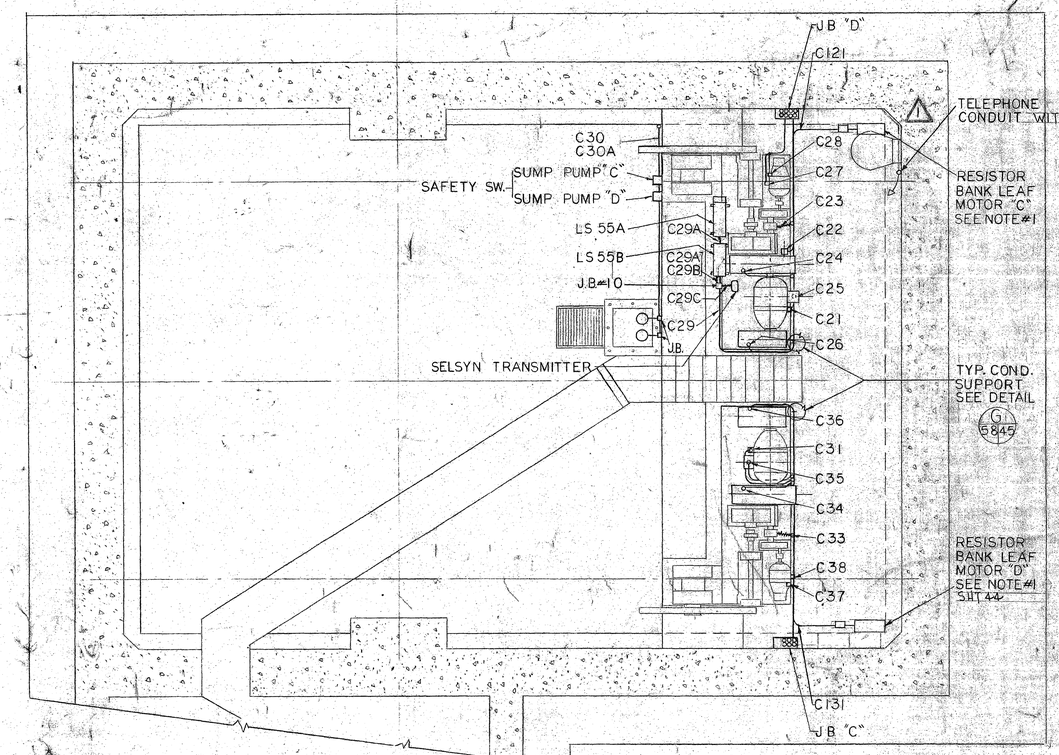
NOTES

1. STACK RESISTOR FRAMES IN TWO VERTICAL ROWS OF FOUR EACH. PROVIDE SEALING BUSHING AT CONDUIT END C101, C111 FOR CABLE CONNECTIONS TO RESISTOR BANK. 9" CLEAR SPACE AROUND RESISTOR ENCLOSURES TYPICAL. HIGH TEMP WIRING FROM J.B. TO RESISTORS.
2. USE STRANDED WIRE IN FLEXIBLE WATERTIGHT CONDUIT.
3. MOUNT LIMIT SWITCHES ON 1/4" PLATE. MOUNT PLATE ON TOP OF WALL.

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
		REVISIONS			
6	10 OCT 66	AS BUILT REVISION: REVISED PLAN LOWER LEVEL, PLAN UPPER LEVEL, SECTION 3 1/65/66, 2/24/66, 3/44/66 AND NOTE 2	RC	CF	MM
5	9/1/61	ADDED GIRDER OPENING DOOR MOTORS, LIMIT SWITCHES, CONDUITS C250 THRU C250N AND NOTE #3	DSF	CE	MM
4	3/1/60	IN PLAN UPPER LEVEL: ADDED LOCAL TEL. AND SPECIFIED SIZE OF WIRES, CONDUITS. ALSO ADDED ROUTE OF TEL. COND. TO TERM. CAB. ADDED PANEL N & TRANSFORMER. IN SECT. 3/64/66 DELETED CIRCUIT C165 AND IN SECTION 1/65/66 DELETED CIRCUITS C-23, 25 AND C-165	RC	CF	MM

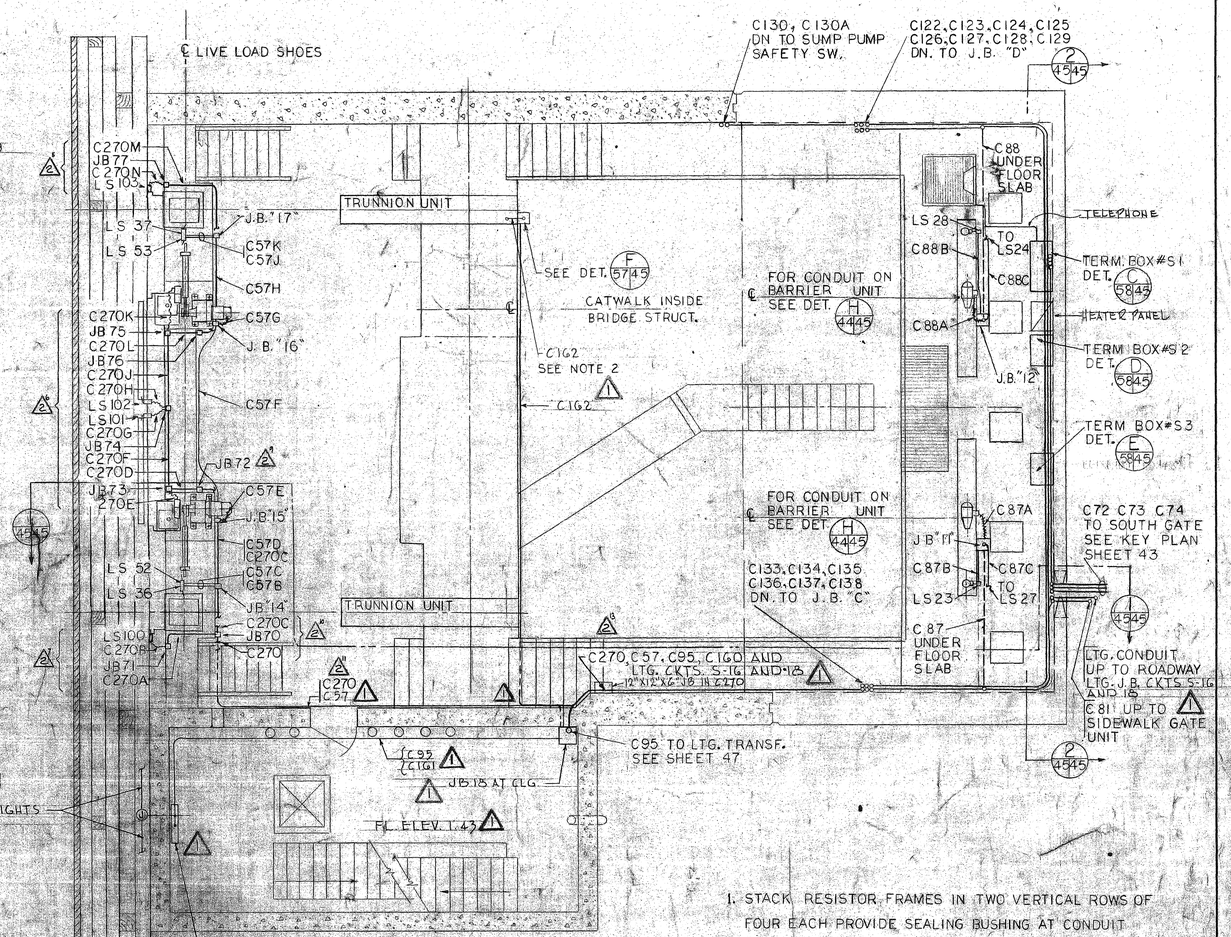
LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU SAN FRANCISCO	U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII
DRAWN BY: D.D.	HONOLULU HARBOR HAWAII
TRACED BY: A	SECOND ENTRANCE CHANNEL
CHECKED BY: KUMAR	BASCULE BRIDGE ELECTRICAL — PIER 3 PLAN AND DETAILS
SUBMITTED BY: L.A. Helgeson	
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH	APPROVED: CHIEF, ENGINEERING DIVISION — DATE: 20 Oct 67
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER	SCALE: AS SHOWN; DRAWING NUMBER: AS BUILT; SHEET 44; RH 9/67.44

AS BUILT



PLAN LOWER LEVEL

SCALE 1/4" = 1'-0"

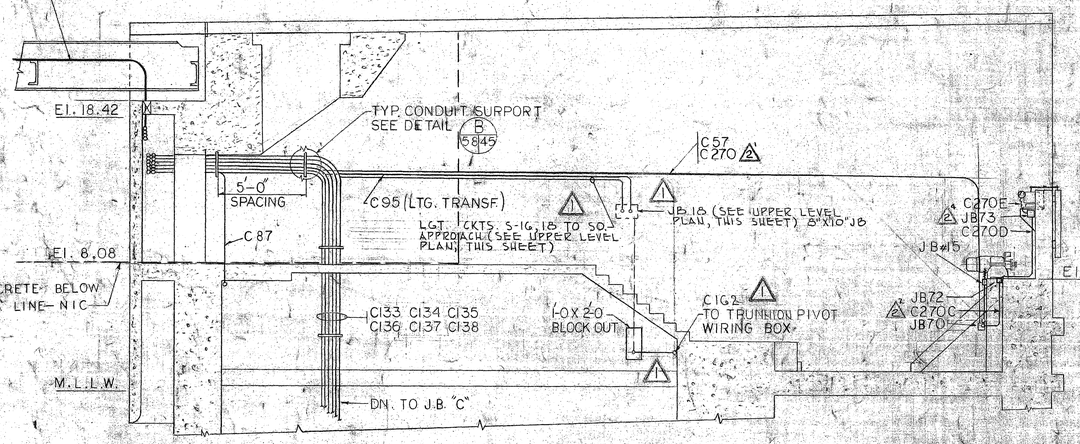


PLAN UPPER LEVEL

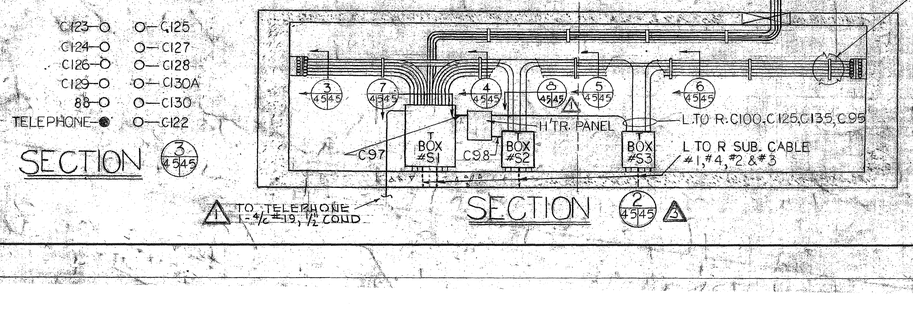
SCALE 1/4" = 1'-0"

JUNCTION BOX SCHEDULE	
J.B. NOS.	SIZE
C, D	1'-6" X 1'-6" X 8"
10	6" X 4" X 3"
11, 12, 14, 15, 16, 17	4" X 4" X 3"
18	8" X 10" X 3"

1. STACK RESISTOR FRAMES IN TWO VERTICAL ROWS OF FOUR EACH. PROVIDE SEALING BUSHING AT CONDUIT END C121 C131 FOR CONNECTIONS TO RESISTOR.
2. USE STRANDED WIRE IN FLEXIBLE WATERTIGHT CONDUIT.
3. MOUNT LIMIT SWITCHES ON 1/4 PLATE. MOUNT PLATE ON TOP OF WALL.

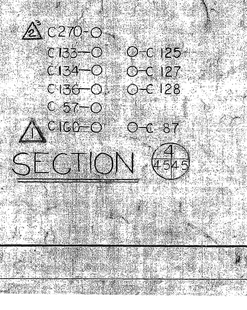


SECTION 4/4545 ⚠3

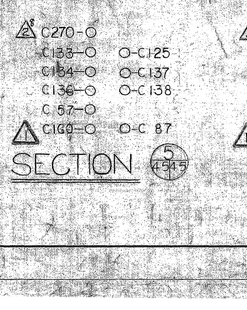


SECTION 3/4545

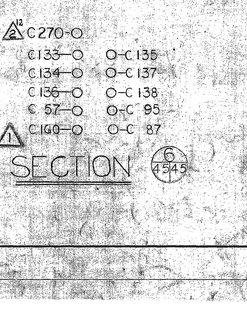
SECTION 2/4545 ⚠3



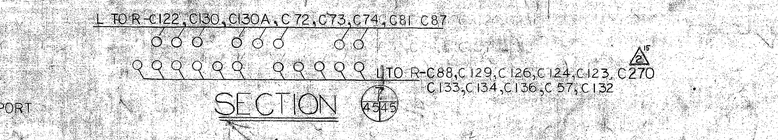
SECTION 4/4545



SECTION 5/4545



SECTION 6/4545



SECTION 7/4545

3*8 4*12 3*14 C127 EM.M.D
3*8 C128 EM.M.D
3*8 4*12 3*14 C137 EM.M.C
3*8 C138 EM.M.C

SECTION 8/4545

GRAPHIC SCALE 1/4" = 1'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP'D
⚠5	10 OCT 1967	AS BUILT REVISIONS REVISED PLAN LOWER LEVEL, PLAN UPPER LEVEL, SECTIONS 1/4545, 2/4545 AND JUNCTION BOX SCHEDULE.	RC	EC	11/67
⚠5	5/11/61	ADDED GIRDER OPENING DOOR MOTORS & LIMIT SWITCHES WITH CONDUIT SYSTEM C 270 THRU C 270 N AND NOTE # 3	DBF	AP	5/61
⚠4 ⚠2	3/13/61	REROUTED TEL CONDUIT IN "PLAN LOWER LEVEL" & "PLAN UPPER LEVEL" REROUTED CONDUIT TO TRUNNION PIVOT WIRING BOX (DELETED CKTS S-16 & 18, ADDED PANEL S & TRANSF. AND REWIRED "TO FEEDER LIGHTS" ADDED SECT D/45/45 GEN. REVISIONS IN SECTS 1, 2, 4, 5, 6, 7/45/45	RC	JL	3/61

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII

DRAWN BY: DD
TRACED BY:
CHECKED BY: KUMAR
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION

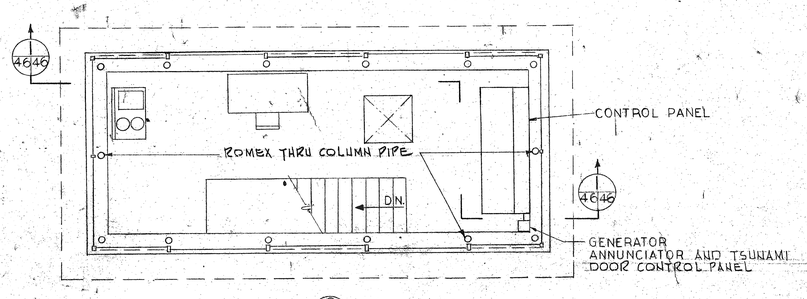
HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
ELECTRICAL - PIER 4
PLAN AND DETAILS

DATE 20 Oct 1959

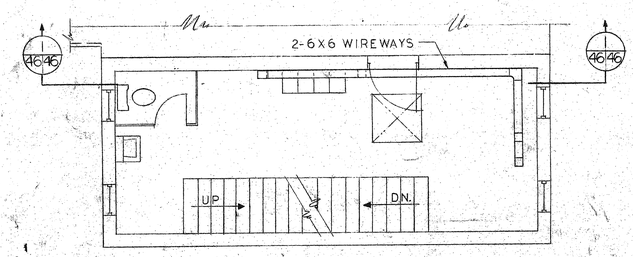
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

SCALE 1/4" = 1'-0"
DRAWING NUMBER AS BUILT
SHEET 45 RH 9/6745

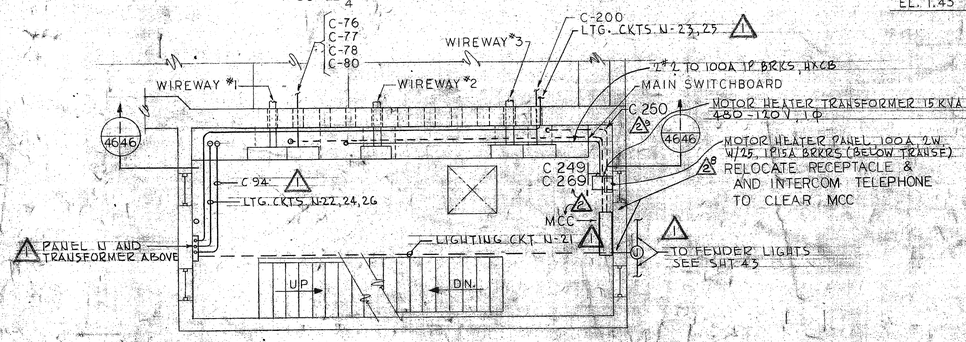
AS BUILT



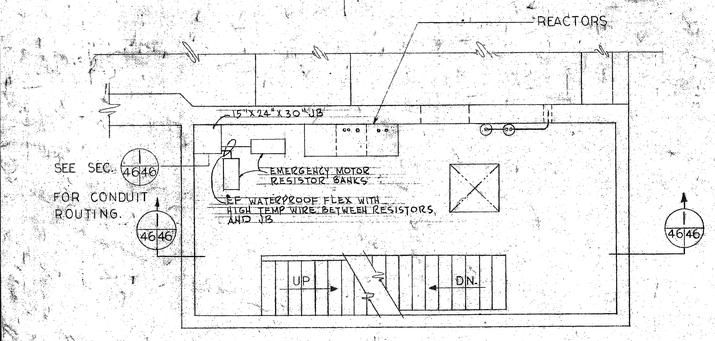
SECTION 2/4646 ⚠4
SCALE 1/4" = 1'-0"



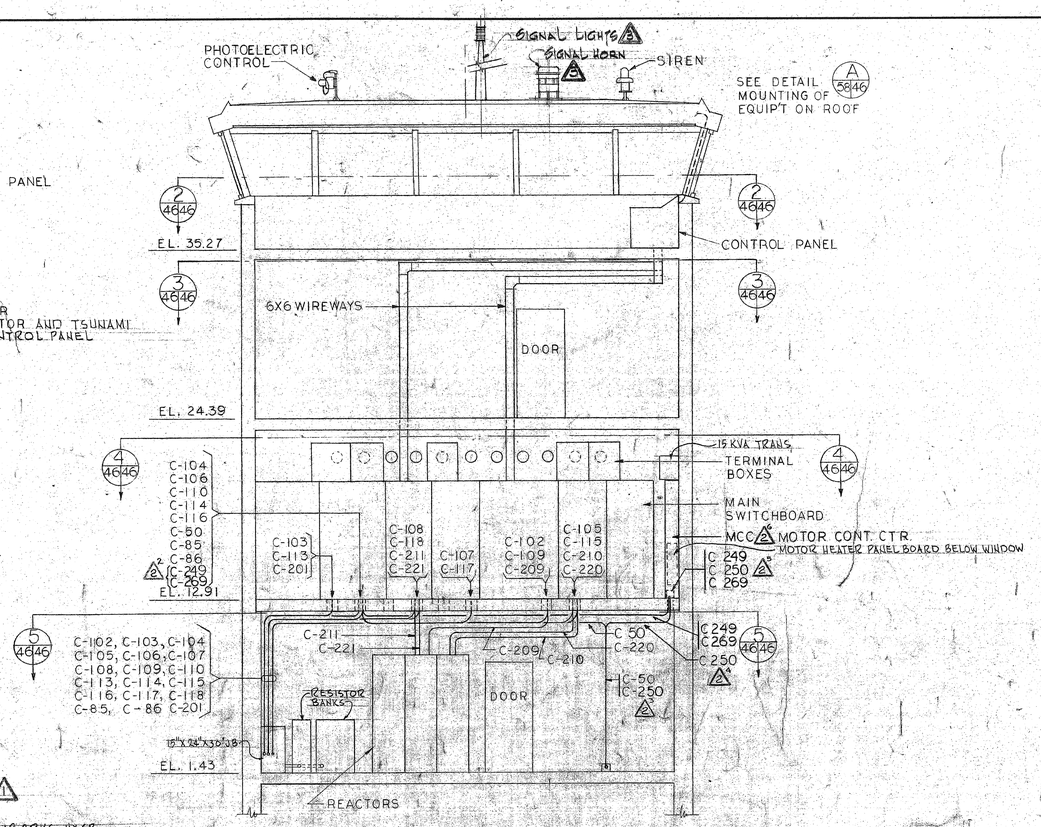
SECTION 3/4646
SCALE 1/4" = 1'-0"



SECTION 4/4646 ⚠4
SCALE 1/4" = 1'-0"



SECTION 5/4646 ⚠4
SCALE 1/4" = 1'-0"



SECTION 4/4646 ⚠4
SCALE 1/4" = 1'-0"

ELECTRICAL ABBREVIATIONS

C, COND.	CONDUIT
J B	JUNCTION
LTG	LIGHTING
MA	MILLIAMPERES
W	WATTS
APPROX	APPROXIMATELY
TERM	TERMINAL
W P	WEATHERPROOF
CKT	CIRCUIT
EQUIP'T	EQUIPMENT
TRANSF	TRANSFORMER
SWBD	SWITCHBOARD
PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER
SUB	SUBMARINE
NAV	NAVIGATION
OBS	OBSTRUCTION
GEN	GENERATOR
⚠2 MCC	MOTOR CONTROL CENTER

GRAPHIC SCALE 1/4" = 1'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
⚠4	10/61	AS-BUILT REVISION: REVISED SECTIONS 1/46/46, 2/46/46 AND 5/46/46	RC	[illegible]	[illegible]
⚠3	12/61	DELETED OBSTRUCTION LIGHTS FROM NORTH TOWER. ADDED SIGNAL LIGHTS & HORN	T.V.	[illegible]	[illegible]
⚠2	5/9/61	ADDED CONDUITS C 249, C 250, C 269 & MCC.	DEF	[illegible]	[illegible]
⚠1	3/3/60	IN SECTION 4/46/46 ADDED LIGHTING CIRCUITS, etc. & PANEL U AND TRANSFORMER	[illegible]	[illegible]	[illegible]

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: F.W.
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
ELECTRICAL — PIER 3
POWER WIRING

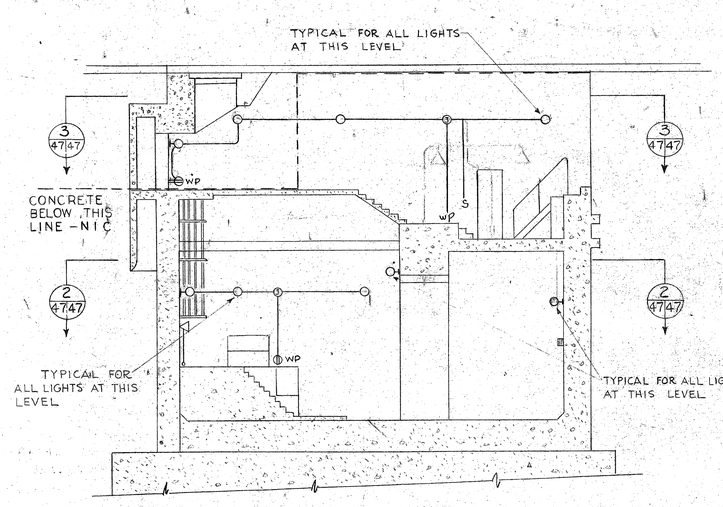
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 23 Oct 1959

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

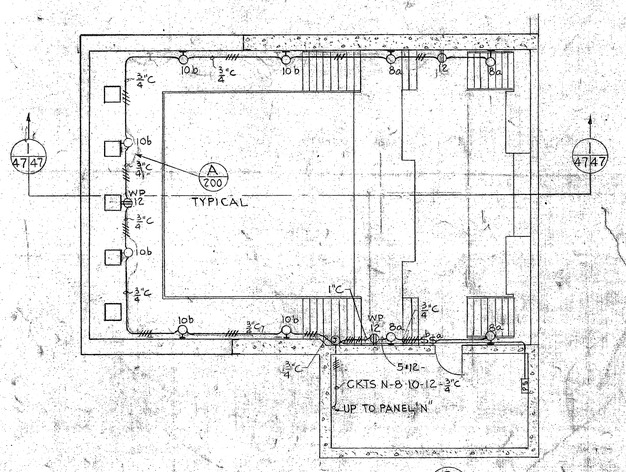
SCALE 1/4" = 1'-0"
DRAWING NUMBER
SHEET 46
AS BUILT RH 9/67.46

RONALD C. RALSTON CONSULTING ENGINEER HONOLULU, HAWAII

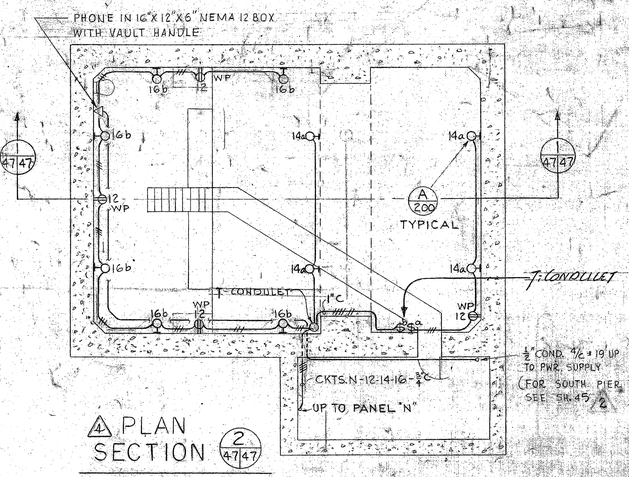
AS-BUILT



MACHINE ROOM – SECTION 1/47|47 4



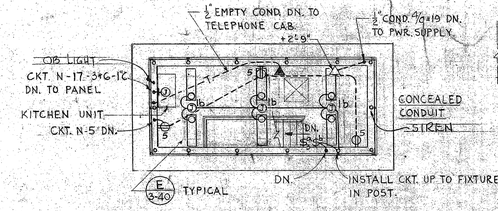
PLAN – SECTION 3|47|47 4



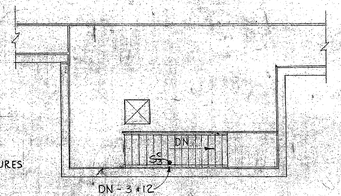
4 PLAN SECTION 2|47|47

PIER 3 – NORTH

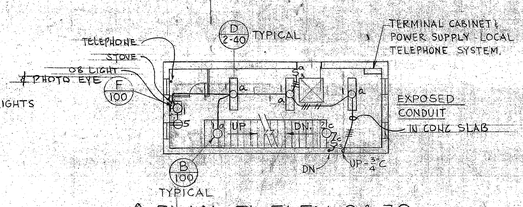
NOTE PIER-4 OPPOSITE HAND TO PIER-3 FOR CIRCUIT NUMBERS SEE SCHEDULE-PANEL "S".



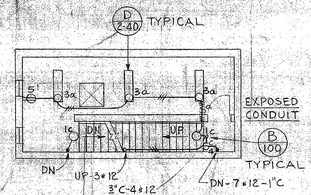
4 PLAN - FL. ELEV. 35.27



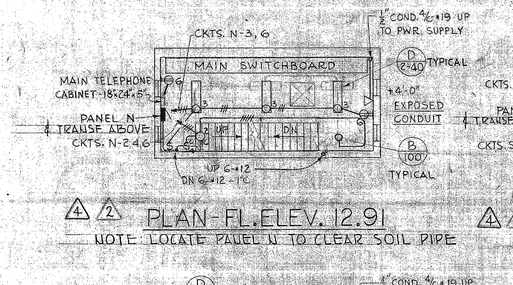
PLAN - FL. ELEV. 24.39



4 PLAN - FL. ELEV. 24.39

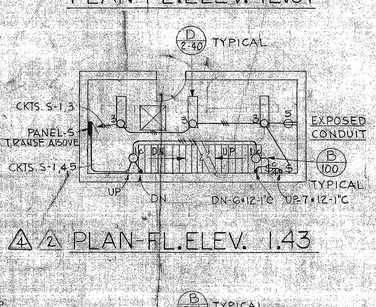


PLAN - FL. ELEV. 12.91

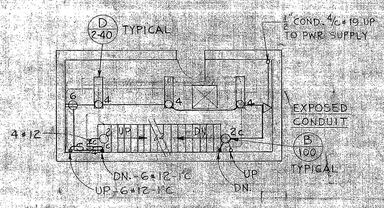


4 2 PLAN - FL. ELEV. 12.91

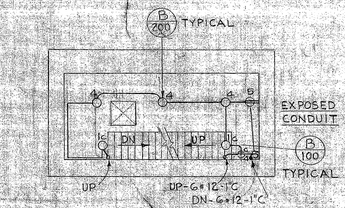
NOTE: LOCATE PANEL N TO CLEAR SOIL PIPE



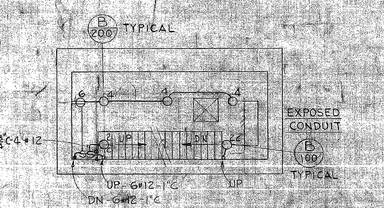
4 2 PLAN - FL. ELEV. 1.43



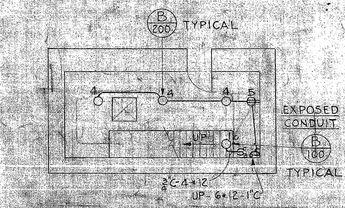
4 PLAN - FL. ELEV. 1.43



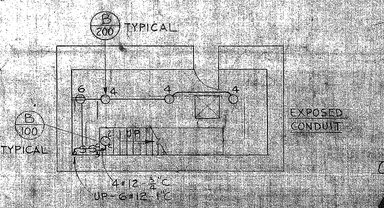
4 PLAN - FL. ELEV. -10.05



4 PLAN - FL. ELEV. -10.05



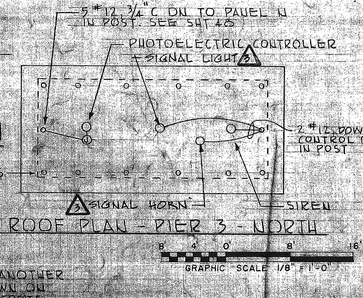
4 PLAN - FL. ELEV. -21.13



4 PLAN FL. ELEV. -21.13

PIER 3 – NORTH

PIER 4 – SOUTH



2 ROOF PLAN – PIER 3 – NORTH

GENERAL NOTE:

3 SLEEVES WILL BE PROVIDED UNDER ANOTHER CONTRACT FOR ALL CONDUITS SHOWN ON THIS SHEET PASSING THROUGH CONCRETE WORK SHOWN AS N.I.C.

2 SCHEDULE – PANEL "N" MAINS: 120-208V, 3 ø, 4W, SN MTG. SURFACE

	CKT NO	CIRCUIT BREAKER POLES	FRAME	TRIP	SERVING	CKT LOAD-KW øA	øB	øC	
SECTION 1	1	1P	50A	20A	LIGHTS ELEV. 35.27 & 24.39	1.4			
	2				LIGHTS STAIRWAY	0.9			
	3				LIGHTS ELEV. 12.91				
	4				LIGHTS ELEV. 1.43, -10.05 & -21.13		1.5		
	5				RECEPT. ELEV. 35.27 & 24.39				
	6				RECEPT. ELEV. 12.91, 1.43, -10.05 & -21.13				
	7				MOTOR HEATERS				
3	8				LIGHTS MACH. RM. UPPER LEVEL	0.8			
	9				SIGNAL LIGHTS	0.3			
	10				LIGHTS MACH. ROOM - UPPER LEVEL		1.2		
	11				TRAFFIC SIGNAL & GATE LIGHTS				
	12				RECEPT. – MACH. ROOM				
3	13				SIGNAL HORN				
	14				LIGHTS MACH. ROOM LOWER LEVEL	0.8			
	15				SPARE				
	16				LIGHTS MACH. ROOM LOWER LEVEL		1.2		
	18	2P		50A	STOVE				
	17	1P		20A	PHOTOELECTRIC CELL & CONT.				
	19	3P		30A	SECTION 2				
		SPLIT BUS							
3	21	1P	50A	20A	FENDER LIGHTS - CLEARANCE GAGE LIGHTS	0.3			PHOTO ELEC. CONTROL
SECTION 2	22				ROADWAY LIGHTS	0.6			
	23				ROADWAY LIGHTS		1.0		
	24				ROADWAY LIGHTS		0.8		
	25				ROADWAY LIGHTS			0.8	
	26				NAVIGATION & OBSTRUCTION LTS.			1.2	
	27				SPARE				
	28				SPARE				
		TOTAL LOAD PER PHASE							
		TOTAL LOAD							
		FEEDER SIZE							

2 SCHEDULE – PANEL "S" MAINS: 120-208V, 3 ø, 4W, SN MTG. SURFACE

	CKT NO	CIRCUIT BREAKER POLES	FRAME	TRIP	SERVING	CKT LOAD-KW øA	øB	øC	
SECTION 1	1	1P	50A	20A	LIGHTS STAIRWAY	0.7			
	2				SPARE				
	3				LIGHTS ELEV. 12.91 & 1.43	0.6			
	4				LIGHTS ELEV. -10.05 & -21.13		1.2		
	5				RECEPT. ELEV. 12.91, 1.43, 10.05, & -21.13				
	6				SPARE				
	7				LIGHTS - MACH. ROOM - UPPER LEVEL	0.8			
	8				LIGHTS - MACH. ROOM - LOWER LEVEL	0.8			
	9				LIGHTS - MACH. ROOM - UPPER LEVEL		1.2		
	10				LIGHTS - MACH. ROOM - LOWER LEVEL		1.2		
	11				SPARE				
	12				RECEPT. MACH. ROOM				
	13				SPARE				
	14	3P	50A	30A	SECTION 2				
		SPLIT BUS							
3 SECTION 2	15	1P	50A	20A	ROADWAY LIGHTS	0.6			PHOTO ELEC. CONTROL
	16					1.0			
	17						0.6		
	18				ROADWAY LIGHTS		0.8		
	19				FENDER LIGHTS - CLEARANCE GAGE LIGHTS			0.6	
	20				SPARE				
	21				SPARE				
	22				SPARE				
		TOTAL LOAD PER PHASE							
		TOTAL LOAD							
		FEEDER SIZE							

SYMBOL	DATE	REVISIONS DESCRIPTION	BY	CHKD	APP
4 12	10CT 1967	AS BUILT REVISION. REVISED PLANS AND SECTIONS AS INDICATED.	RLC	CGC LC	
3 C	15 DEC 1961	DELETED OBSTRUCTION LIGHT, ADDED SIGNAL LIGHT & SIGNAL HORN ON ROOF PLAN PIER 3 NORTH. ADDED SIGNAL LIGHTS, SIGNAL HORN & CLEARANCE GAGE LIGHTS TO PANEL "N". ADDED CLEARANCE GAGE LIGHTS TO PANEL "S".	FJ	RLC	
2 6	9/16/61	REVISED SCHEDULES AND ADDED "ROOF PLAN - PIER 3 - NORTH" ADDED NOTE & REFERENCE TO "PLAN-FL.ELEV. 12.91" AND REFERENCE ONLY TO "PLAN-FL.ELEV. 1.43"	RLC	CF	
1	SUNDRY ADDNS	ADDED GENERAL NOTE	RLC	CF	

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII

DRAWN BY: A.E.
TRACED BY:
CHECKED BY: KUMAR
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION — DATE 10 OCT 1967
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
PIER LIGHTING
PLANS AND DETAILS

SCALE: 1/8" = 1'-0"
DRAWING NUMBER: AS BUILT
SHEET 47 RH 9/67.47

AS BUILT

CORPS OF ENGINEERS

U. S. ARMY

480V SERVICE FROM HAWAIIAN ELEC. CO.

C-1 R-1 R-1 CB-2 CB-1 C-1

MAGNETIC AMPLIFIER #2: X-7, R 27 TD, RES-15, RES-14, REC-6, REC-4, REC-5, RES-12, X-5, RES-13, X-6, RES-10, RES-11, SR-7, SR-8, SR5, SR-6, R-20, R-20

PILOT GENERATOR #2 — RES 16 — X-8

MAIN LEAF MOTOR C 50 HP — RES-29A, RES-29B, RES-29C — CB-7 — R-40

MAIN LEAF MOTOR D 50 HP — RES-30A, RES-30B, RES-30C — CB-8 — R-41

PT-2 F-2 — CT-2 (A) I 2 — C-23 — F-2 — CB-4

CB-3 — PT-1 F-1 — CT-1 (A) I-1 — F-1 — C-13

MAGNETIC AMPLIFIER #1: REC-3, RES-6, RES-5, R-17 TD, X-3, R-10, R-10, REC-2, X-2, RES-4, RES-2, SR-1, SR-2, REC-1, X-1, RES-3, RES-1, SR-3, SR-4, RES-7, X-4

PILOT GENERATOR #1 — CB-5 R-30 — CB-6 R-31

MAIN LEAF MOTOR A 50 HP — RES-8A, RES-8B, RES-8C

MAIN LEAF MOTOR B 50 HP — RES-9A, RES-9B, RES-9C

SEC. 1 GEN'L LIGHTING

2 PANEL S

SEC. 2 DECK LIGHTS

C-3 C-1 SW

LTG. TRANSF. 15 KVA 480-208/120V

CHANNEL BETWEEN PIERS

SEC. 1 GEN'L LIGHTING

2 PANEL N

SEC. 2 DECK NAVIGATION & OBSTRUCTION LIGHTS SEE SHT 52

C-2 C-2 SW

P.E. CELL RELAY — P.E. CELL

LTG. TRANSF. 15 KVA 480-208/120V.

CB-15 CB-14

EMERGENCY LEAF MOTOR C 10 HP — RES-27A, RES-27B, RES-27C — C-25 — CB-17

EMERGENCY LEAF MOTOR D 10 HP — RES-28A, RES-28B, RES-28C

FOR CONTINUATION SEE SHEET 49

TS-1

FOR CONT. SEE SHT. 55

R-83 R-83 R-83 TS-1 TS-1 TS-1 R-87 R-87 R-83

TEST SWITCH NO.1 — R 86 — R 85 — R 84 — R-88 MOTOR OPERATED — R-88(M) — R-83 R-88 R-87 — R-84 R-85 R-86

IN NORMAL POSITION OF SWITCH R-83 — 2 ENGINE STARTING CONTACT SEE SHT 55

CB-16 — C-15 — R-32 — R-33

EMERGENCY LEAF MOTOR A 10 HP — RES-25A, RES-25B, RES-25C

EMERGENCY LEAF MOTOR B 10 HP — RES-26A, RES-26B, RES-26C

(3) NOTE: FOR WIRING DIAGRAM SEE CUTLER-HAMMER CO. DWGS (INSTRUCTION MANUAL)

SYMBOL LIST

- SQUIRREL CAGE INDUCTION MOTOR OR OTHER DEVICE AS NOTED.
- WOUND ROTOR INDUCTION MOTOR
- (A) INSTRUMENT. A = AMMETER
- (G) LIGHT: G=GREEN, R=RED, W=WHITE, B=BLUE, A=AMBER
- CIRCUIT BREAKER
- CONTACTOR OR STARTER
- KNIFE SWITCH
- CONTACTOR, STARTER, OR RELAY COIL
- SINGLE CONTACT ON RELAY, STARTER, CONTACTOR, OR LIMIT OR CAM SWITCH
- OVERLOAD RELAY
- TRANSFORMER
- REACTOR
- CONTROL WINDING
- CURRENT TRANSFORMER
- FUSE
- RESISTOR
- VARIABLE RESISTOR
- CAPACITOR
- RECTIFIER
- PUSHBUTTON, NORMALLY OPEN
- PUSHBUTTON, NORMALLY CLOSED
- BELL
- TUMBLER SWITCH
- MULTIPOSITION, MULTIPOLE CONTROL SWITCH X = CONTACT CLOSED IN POSITION INDICATED SWITCH SHOWN IN OFF POSITION. (RAISE, OFF, LOWER)
- CAM TYPE SWITCH (1 2 3) CONTACTS CLOSED IN POSITIONS COVERED BY BLACK BAR. SWITCH SHOWN IN POSITION 1.
- GROUND CONNECTION
- 2 CONTACT OPEN / CONTACT CLOSED } WHEN BRIDGE DOWN TO AUTOMOBILE TRAFFIC

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
3	11 OCT 1952	AS BUILT REVISION. ADDED NOTE.			
2	3 MAR 1950	REVISED PORTION OF DIAGRAM, ADDED PANEL S AND N; ADDED SYMBOLS	RC		
1	30 NOV 1949	AFTER THE WORDS "TEST SWITCH" ADDED "NO.1"	RC	CF	

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS — HONOLULU — SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII

DRAWN BY: V. B.
TRACED BY:
CHECKED BY: R.C.L.F.E.
SUBMITTED BY:

HONOLULU HARBOR HAWAII

SECOND ENTRANCE CHANNEL BASCULE BRIDGE

440 VOLT POWER DIAGRAM - PART I

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH

APPROVED: CHIEF, ENGINEERING DIVISION — DATE 23 OCT 1950

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

DONALD C. CALSTON CONSULTING ENGINEER 604 MISSION ST., SAN FRANCISCO 5, CALIF.

SCALE NO SCALE

DRAWING NUMBER

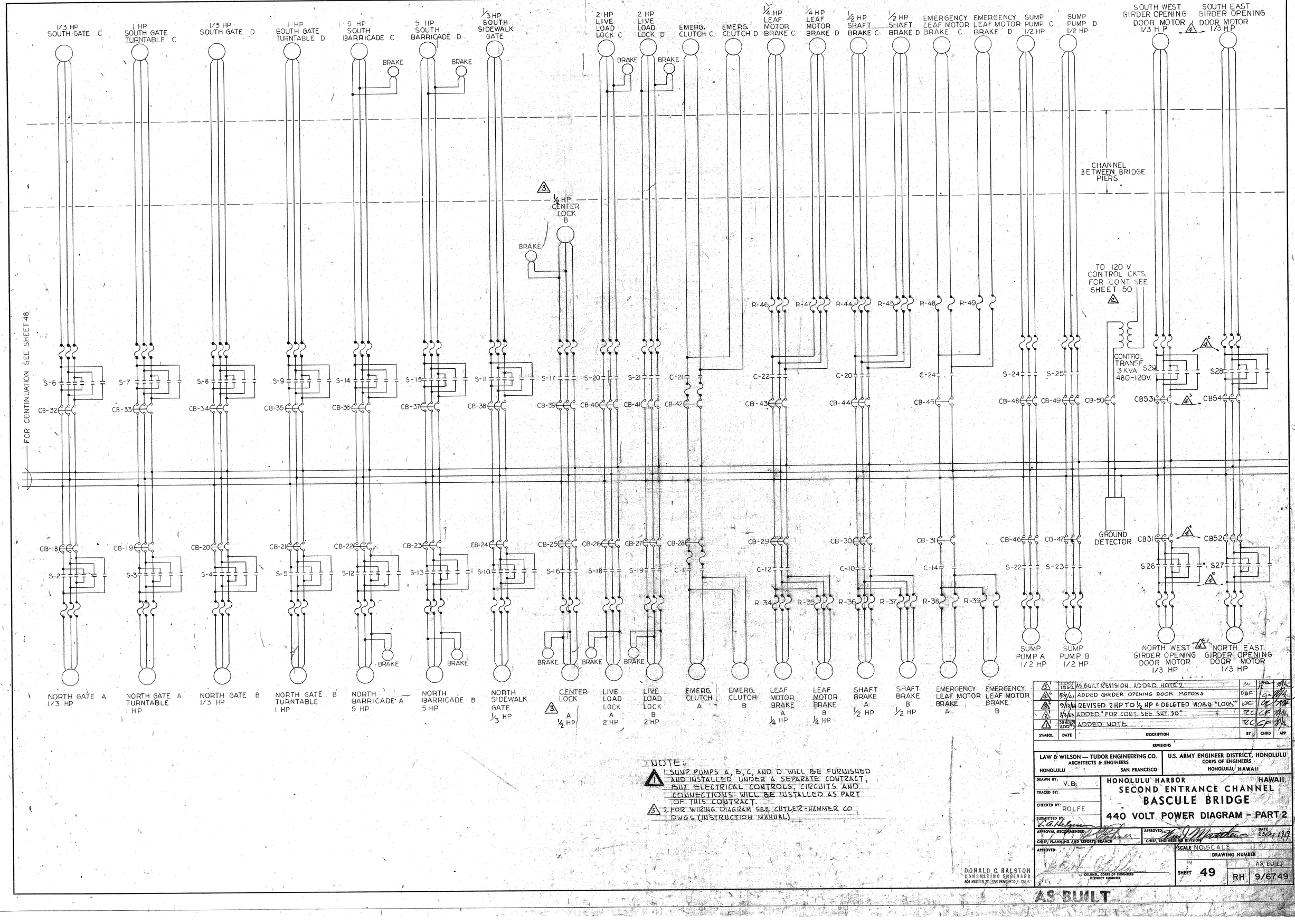
SHEET 48

AS BUILT RH 9/67.48

AS BUILT

CORPS OF ENGINEERS

U. S. ARMY



NOTE:

1. SUMP PUMPS A, B, C, AND D WILL BE FURNISHED AND INSTALLED UNDER A SEPARATE CONTRACT, BUT ELECTRICAL CONTROLS, CIRCUITS AND CONNECTIONS WILL BE INSTALLED AS PART OF THIS CONTRACT.
2. FOR WIRING DIAGRAM SEE CUTLER-HAMMER CO DWGS (INSTRUCTION MANUAL)

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
5	1 OCT 1962	AS BUILT REVISION. ADDED NOTE 2	RW	GEO	
4	5/9/61	ADDED GIRDER OPENING DOOR MOTORS	DBF		
3	9/19/60	REVISED 2 HP TO ½ HP & DELETED WORD "LOCK"	WC		
2	3/3/60	ADDED "FOR CONT. SEE SHT. 50"	RC	CF	
1	30/10/59 ADD'L	ADDED NOTE	RC	CF	

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: V.B.
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY: L.A. Halgren
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE 30 Oct 1959

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
440 VOLT POWER DIAGRAM - PART 2

SCALE NO SCALE
DRAWING NUMBER
SHEET 49
AS BUILT
RH 9/6749

DONALD C. RALSTON
CONSULTING ENGINEER
604 MISSION ST., SAN FRANCISCO 5, CALIF.

AS BUILT

CORPS OF ENGINEERS

U. S. ARMY

ROADWAY GATES & BARRICADE CONTROLS

CHANNEL BETWEEN PIERS

FOR CONTINUATION SEE SHEET 51

R-53 TRAFFIC SIGNAL INTERLOCK

SW-1 SW-2 SW-7 SW-8 SW-3 SW-9

LS-1 LS-2 LS-3 LS-4 LS-5 LS-6 LS-7 LS-8 LS-9 LS-10 LS-11 LS-12 LS-13 LS-14 LS-15 LS-16 LS-17 LS-18 LS-19 LS-20

S-2R S-2L S-3C S-3O S-8L S-8R S-9O S-9C S-4R S-4L S-5O S-5C S-6R S-6L S-5O S-5C S-10L S-10R S-11R S-11L

R-59 R-58 R-64 R-65 R-59 R-60 R-62 R-61 R-60 R-63 R-62 R-61 R-63 R-75 R-77 R-79 R-81

CS-1 OPEN STOP CLOSE

S-2 OL S-3 OL S-8 OL S-9 OL

ROADWAY GATES A&D

CS-2 OPEN STOP CLOSE

S-4 OL S-5 OL S-6 OL S-7 OL

ROADWAY GATES B&C

CS-3 OPEN STOP CLOSE

S-10 OL S-11 OL

SIDEWALK GATES

CB-9-7

120V. FROM CONTROL TRANSFORMER

GATE CONTROL BUS

MAIN 120V. CONTROL BUS

120V. BUS

FOR CONTINUATION SEE SHEET 51

2 NOTE: FOR CONTROL DIAGRAMS SEE CUTLER-HAMMER CO. DWGS (INSTRUCTION MANUAL)

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
1	10CT 1962	AS BUILT REVISION. ADDED NOTE			
2	3/9/60	CHANGED CB-9 TO 1P DENOTED BUSSES AND SOURCE OF POWER	R.C.		

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: V B
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONTROL DIAGRAMS
ROADWAY AND SIDEWALK GATES

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 15 OCT 1962

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

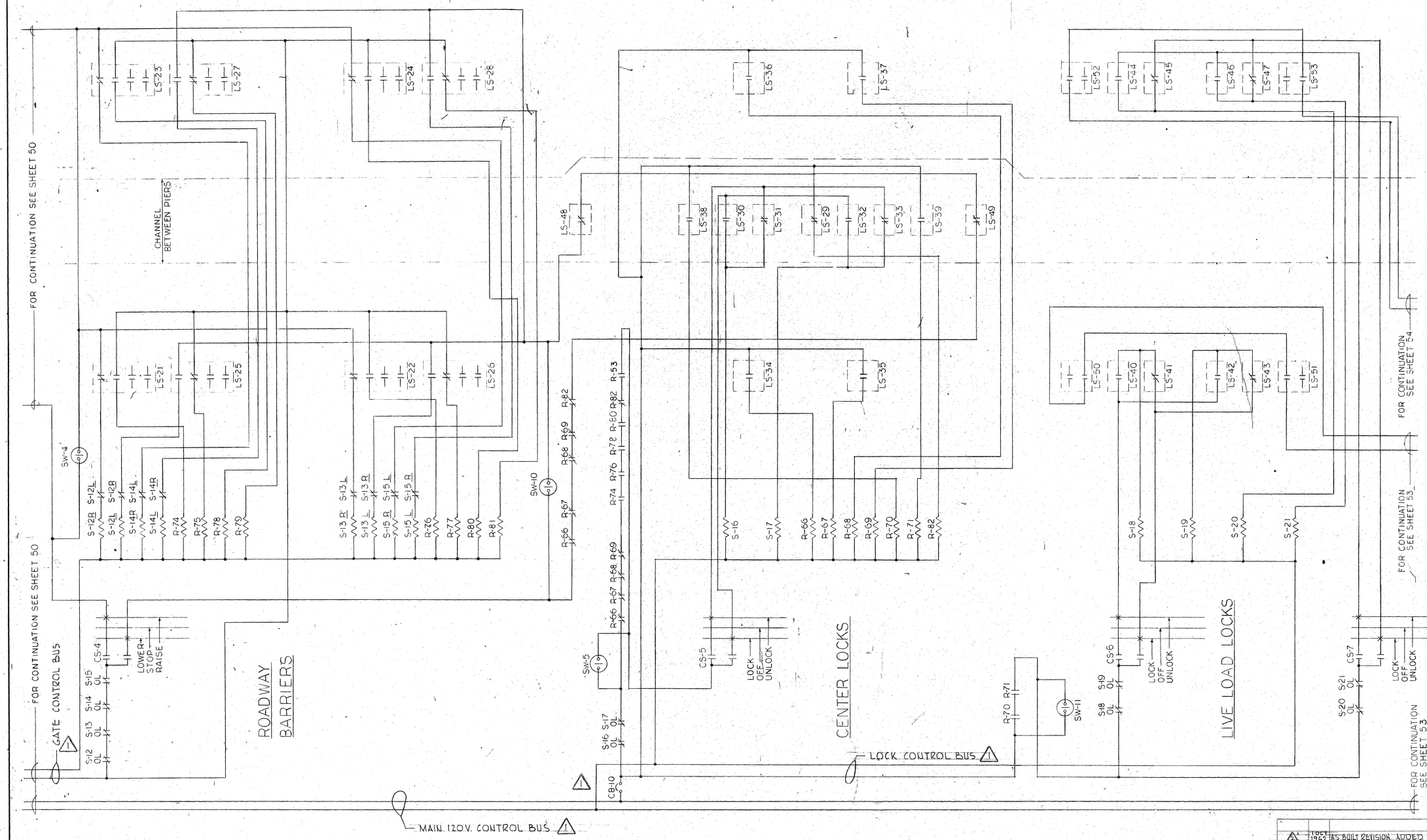
SCALE NO SCALE

DRAWING NUMBER

SHEET 50 | RH | AS BUILT 9/67.50

DONALD C. RALSTON CONSULTING ENGINEER 600 MISSION ST. SAN FRANCISCO

AS BUILT



SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
		REVISIONS			
2	1962	AS BUILT REVISION ADDED NOTE	W		
1	2/16/60	CHANGED CB-10 TO 1P AND DENOTED BUSSES	TC		

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: VB
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER
DATE 13 Oct 1959

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONTROL DIAGRAMS BARRIERS AND LOCKS

SCALE NO SCALE
DRAWING NUMBER
SHEET 51
AS BUILT
RH 9/67.51

2 NOTE: FOR CONTROL DIAGRAMS SEE CUTLER-HAMMER CO. DWGS (INSTRUCTION MANUAL)

DONALD C. RALSTON CONSULTING ENGINEER 604 MISSION ST., SAN FRANCISCO

AS BUILT

CORPS OF ENGINEERS

U. S. ARMY

MOTOR HEATERS
LEAF MOTOR A
LEAF MOTOR B
EMERG LEAF MOTOR A
EMERG LEAF MOTOR B
LIVE LOAD LOCK MOTOR A
LIVE LOAD LOCK MOTOR B
CENTER LOCK MOTOR A
CENTER LOCK MOTOR B
MAIN SWITCHBOARD
BENCH BOARD
SUMP PUMP A
SUMP PUMP B
NO HEATERS
GATE A TT
GATE A
GATE B TT
GATE B
BARRICADE A
BARRICADE B
SIDEWALK GATE A
LEAF MTR BRAKE A
LEAF MTR BRAKE B
SHAFT BRAKE A
SHAFT BRAKE B
N. LEAF PILOT GEN.
EMERGENCY GEN.
NEUTRAL
CB-13
R-57
TRAFFIC SIGNALS
CS-14(R)
R-540 (ON DELAY)
CS-14(G)
R-50
R-54 TD
R-51
R-52
R-53
SW-6
SIREN
R-72
R-58
R-73
R-64
R-74
R-252
R-251
NORTH TRAFFIC SIGNALS
SOUTH TRAFFIC SIGNALS
GATE 'A'
GATE 'B'
GATE 'C'
GATE 'D'
BENCH BOARD PILOT LIGHTS
MOTOR HEATERS
BENCH BOARD ILLUMINATION
NORTH TRAFFIC LIGHT
SOUTH TRAFFIC LIGHT
NORTH ROADWAY GATE A OPEN
NORTH ROADWAY GATE A CLOSED
NORTH ROADWAY GATE B OPEN
NORTH ROADWAY GATE B CLOSED
SOUTH ROADWAY GATE C OPEN
SOUTH ROADWAY GATE C CLOSED
SOUTH ROADWAY GATE D OPEN
SOUTH ROADWAY GATE D CLOSED
NORTH SIDEWALK GATE OPEN
NORTH SIDEWALK GATE CLOSED
SOUTH SIDEWALK GATE OPEN
SOUTH SIDEWALK GATE CLOSED
NORTH ROAD BARRIER A OPEN
NORTH ROAD BARRIER A CLOSED
NORTH ROAD BARRIER B OPEN
NORTH ROAD BARRIER B CLOSED
SOUTH ROAD BARRIER C OPEN
SOUTH ROAD BARRIER C CLOSED
SOUTH ROAD BARRIER D OPEN
SOUTH ROAD BARRIER D CLOSED
LIVE LOAD LOCK A OPEN
LIVE LOAD LOCK A CLOSED
LIVE LOAD LOCK B OPEN
LIVE LOAD LOCK B CLOSED
LIVE LOAD LOCK C OPEN
LIVE LOAD LOCK C CLOSED
LIVE LOAD LOCK D OPEN
LIVE LOAD LOCK D CLOSED
CENTER LOCK A OPEN
CENTER LOCK A CLOSED
CENTER LOCK B OPEN
CENTER LOCK B CLOSED
NORTH SHAFT BRAKE A RELEASED
NORTH SHAFT BRAKE A SET
NORTH SHAFT BRAKE B RELEASED
NORTH SHAFT BRAKE B SET
SOUTH SHAFT BRAKE C RELEASED
SOUTH SHAFT BRAKE C SET
SOUTH SHAFT BRAKE D RELEASED
SOUTH SHAFT BRAKE D SET
NORTH LEAF MOTOR A BRAKE RELEASED
NORTH LEAF MOTOR A BRAKE SET
NORTH LEAF MOTOR B BRAKE RELEASED
NORTH LEAF MOTOR B BRAKE SET
SOUTH LEAF MOTOR C BRAKE RELEASED
SOUTH LEAF MOTOR C BRAKE SET
SOUTH LEAF MOTOR D BRAKE RELEASED
SOUTH LEAF MOTOR D BRAKE SET
NORTH LEAF FULLY CLOSED
NORTH LEAF NEARLY CLOSED
NORTH LEAF NEARLY OPEN
NORTH LEAF FULLY OPEN
SOUTH LEAF FULLY CLOSED
SOUTH LEAF NEARLY CLOSED
SOUTH LEAF NEARLY OPEN
SOUTH LEAF FULLY OPEN
N. EMERG. LEAF MOTOR A BRAKE SET
N. EMERG. LEAF MOTOR A BRAKE RELEASED
N. EMERG. LEAF MOTOR B BRAKE SET
N. EMERG. LEAF MOTOR B BRAKE RELEASED
S. EMERG. LEAF MOTOR C BRAKE SET
S. EMERG. LEAF MOTOR C BRAKE RELEASED
S. EMERG. LEAF MOTOR D BRAKE SET
S. EMERG. LEAF MOTOR D BRAKE RELEASED
NORTH CLUTCH A ENGAGED
NORTH CLUTCH A DISENGAGED
NORTH CLUTCH B ENGAGED
NORTH CLUTCH B DISENGAGED
SOUTH CLUTCH C ENGAGED
SOUTH CLUTCH C DISENGAGED
SOUTH CLUTCH D ENGAGED
SOUTH CLUTCH D DISENGAGED
MAIN 120V. CONTROL BUS
FULLY CLOSED
NEARLY CLOSED
NEARLY OPEN
FULLY OPEN
SELSYN TRANSMITTER SOUTH LEAF
SELSYN TRANSMITTER NORTH LEAF
CHANNEL BETWEEN TOWERS
OBSTRUCTION LIGHTS
NAVIGATION LIGHTS
NAVIGATION AND OBSTRUCTION LIGHTS
SOUTH LEAF POSITION INDICATOR
NORTH LEAF POSITION INDICATOR
LTG. PANEL
R-82
R-55
R-56

3 NOTE FOR ADDITIONAL CONTROL DIAGRAM CHANGES SEE CUTLER-HAMMER CO. DWGS (INSTRUCTION MANUAL)

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
6		TOC AS BUILT REVISION, DENOTED "NO HEATERS" IN 1962 CONTROL DIAGRAM AND ADDED NOTE	RC	CF	RH
5	3/5/68	CONNECTED CB-13 TO MAIN BUS.	RC	CF	RH
4		ADDED YELLOW TRAFFIC LIGHTS TO DIAGRAM CONNECTED IN PARALLEL WITH TRAFFIC LIGHT GUARD BELLS. ADDED NEW LIGHTS IN PARALLEL W/EXIST	RC	CF	RH

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: VB
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONTROL DIAGRAMS
HEATERS, SIGNALS AND PILOT LIGHTS

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 23 OCT 1967

APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

SCALE NO SCALE
DRAWING NUMBER AS BUILT
SHEET 52 RH 9/67 52

DONALD C. RALSTON
CONSULTING ENGINEER
604 MISSION ST., SAN FRANCISCO 5, CALIF.

AS BUILT

NORTH LEAF

LS-88 LS-92 LS-89 LS-93

LS-54 A | LS 54 B

OPEN
NR OP
NR CL
CLOSED

LS-54
NORTH LEAF
LIMIT SWITCH

FOR CONTINUATION SEE SH 51

SW-12

R-90 R-91 R-70 R-71

CS-10
LEAF CONTROL
TRANSFER
SWITCH

C-11 C-10 R-10 (UV PROT) PB-1 R-12 R-11 (ON DELAY) R-13 R-14 C-12 C-13 R-15 R-16 R-17 (OFF DELAY) C-14 C-15L C-15R C-15L C-15R

R-97

R-24 R-10 R-24 R-17 TD R-11 TD

CS-8
NORTH LEAF
MASTER SWITCH

RAISE
OFF
LOWER

CB-11

MAIN 120V. CONTROL BUS
FOR CONTINUATION SEE SH 51

R-39A R-39B R-38A R-38B R-37A R-37B R-37C R-36A R-36B R-36C R-35A R-35B R-35C R-34A R-34B R-34C R-33A R-33B R-33C R-32A R-32B R-32C R-31A R-31B R-31C R-30A R-30B R-30C

PILOT GENERATOR
SHUNT FIELD

R-12 R-12

REC-7 REC-8 REC-9 REC-10 REC-11 REC-12

RES-17 RES-18 RES-19 RES-20

R-15 R-16 R-15 R-16

X-9

RAISE LOWER

MAGNETIC AMPLIFIER

FOR CONTINUATION SEE CORRESPONDING NUMBERS ABOVE

R-12 C-16 R-12 C-17 R-12 C-18

R-11 TD R-12 R-12 R-12

R-24 R-10 R-24 R-24 R-24 R-24

CS-9
NORTH LEAF EMER.
MASTER SWITCH

RAISE
OFF
LOWER

FOR CONTINUATION SEE SH. 54

NOTES

1. CONTACTS OF R 14 APPEAR ON SHEET 54
2. SMALL NUMBERS ON LEAF LIMIT SWITCH ARE CAM SETTINGS IN DEGREES OF LS SWITCH POSITION WITH BRIDGE CLOSED.
3. COIL OF R-24 APPEARS ON SH. 54
4. COILS OF R-90 & R-91 APPEAR ON SH 61 ALSO CONTACT FOR R-97
5. FOR CONTROL DIAGRAMS SEE CUTLER-HAMMER CO. DWGS. (INSTRUCTION MANUAL)

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
		REVISIONS			
1	10/1964	AS BUILT REVISION. ADDED NOTE 5	RC	CBF	
2 5	5/16/61	ADDED RELAY R-97 CONTACTS R-90 & R-91, NOTE 4. TAG ON PB-1	DBF	CBF	
1	7/5/60	DENOTED MAIN CONTROL BUS	RJC	CBF	

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: N.B.
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION — DATE 23 OCT 1959
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONTROL DIAGRAMS
NORTH LEAF MOTORS

SCALE NO SCALE
DRAWING NUMBER
SHEET 53 RH 9/67.53
AS BUILT

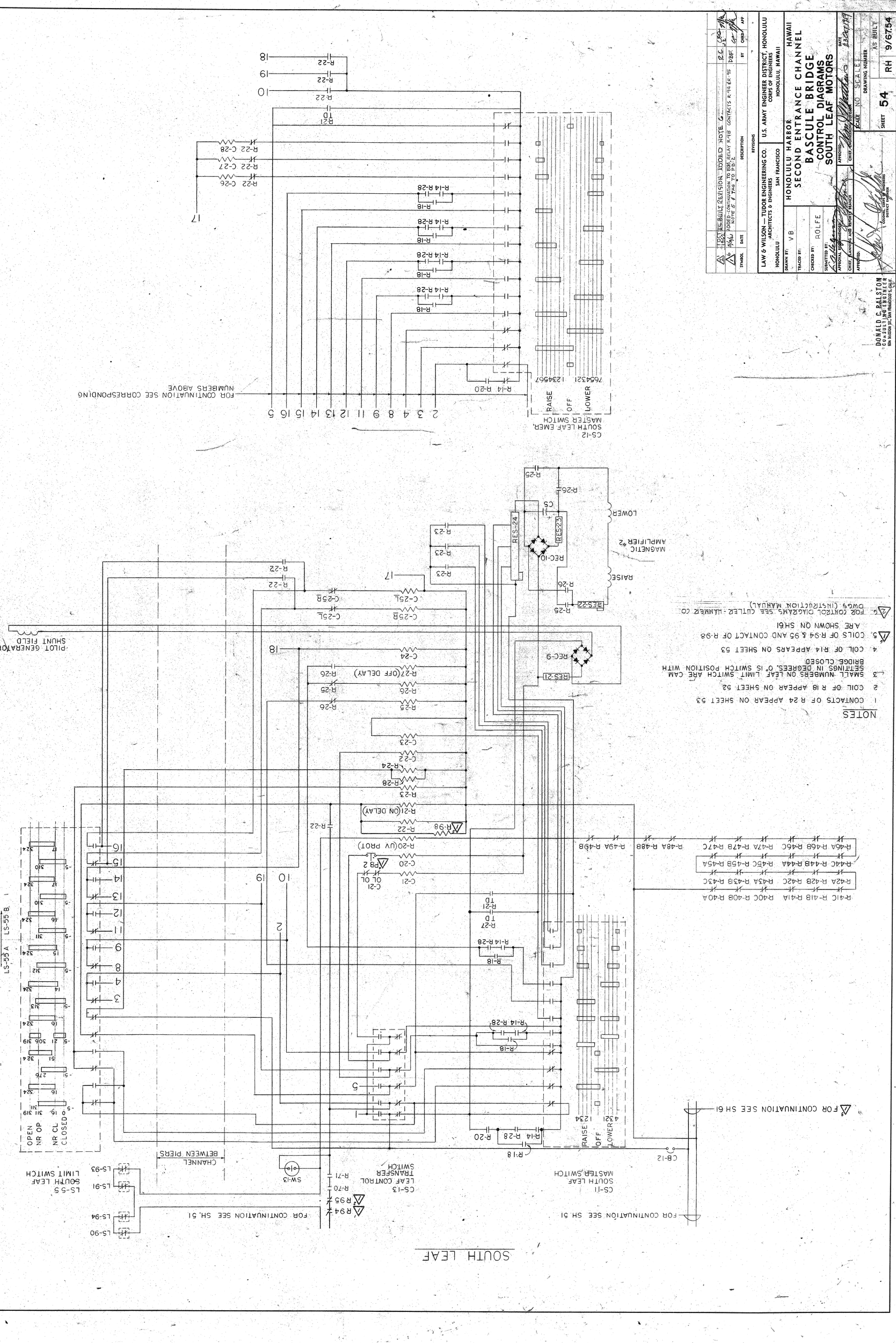
DONALD C. RALSTON
CONSULTING ENGINEER
604 MISSION ST. SAN FRANCISCO 5, CALIF.

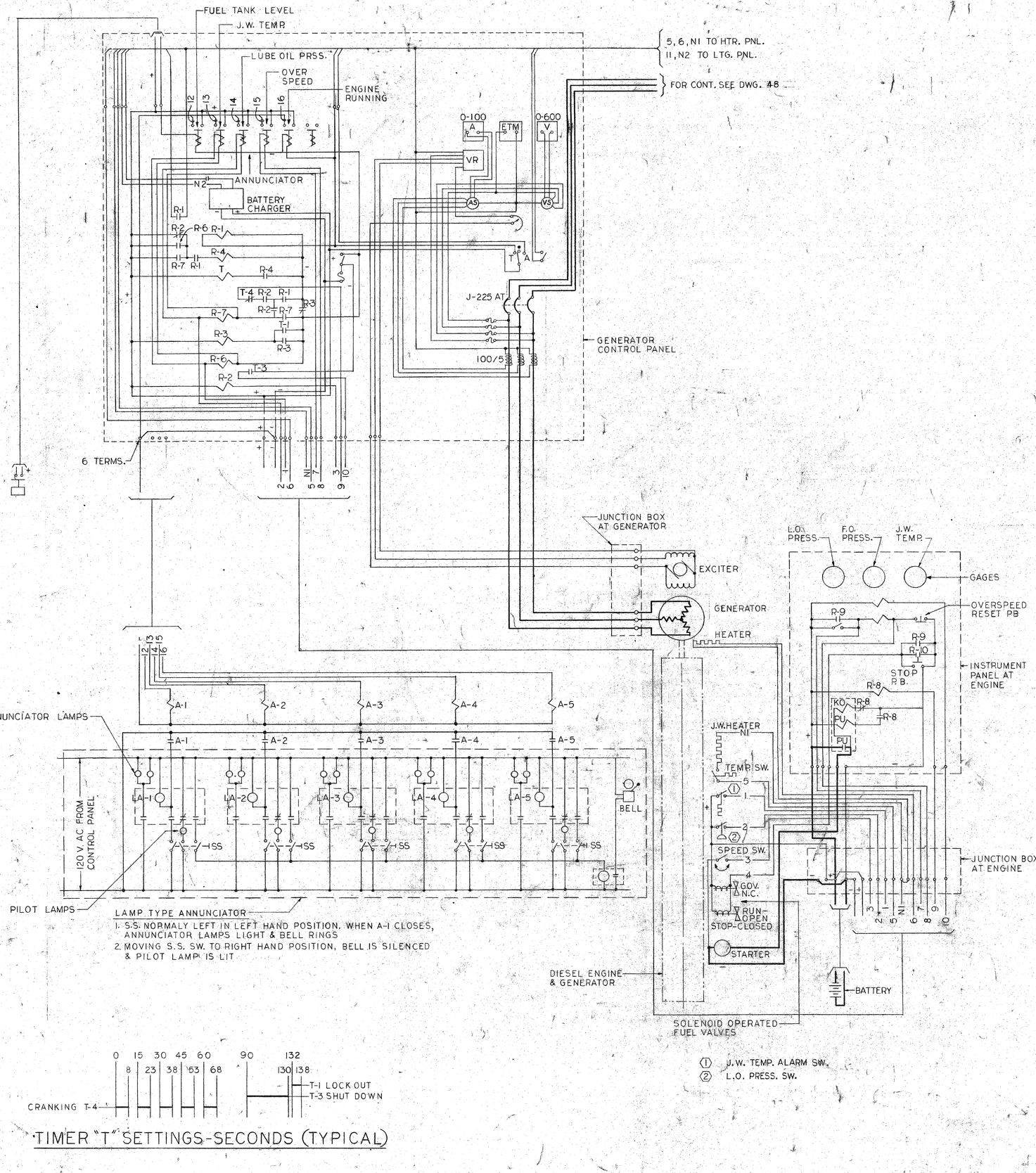
AS BUILT

U. S. ARMY

CORPS OF ENGINEERS

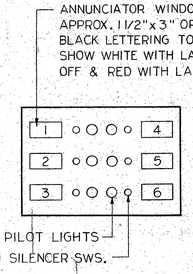
AS BUILT





NOTES

1. ENGINE STARTING, CRANKING & RUNNING CIRCUIT SHOWS THE REQIRED OPERATION OF THE ENGINE CONTROLS. EQUIPMENT FURNISHED MAY DIFFER FROM THAT SHOWN, PROVIDED THAT THE CONTROLS FUNCTION AS SHOWN.
2. OPENING TEST SWITCH NO. 1 (SHOWN ON SHEET 48) SIMULATES PRIMARY POWER FAILURE AND TRANSFERS LOAD TO ENGINE.
3. MOVING TEST-OFF-AUTOMATIC SWITCH #2 TO TEST POSITION WILL START ENGINE WITHOUT TRANSFERING THE LOAD TO THE GENERATOR.
4. ENGINE OVERSPEED WILL CAUSE AN IMMEDIATE SHUT DOWN VIA TACHOMETER 12, RELAY R-9, TO SOLENOID VALVE. LOW L.O. PRESSURE OR HIGH JACKET WATER TEMP. WILL CAUSE A DELAYED SHUT DOWN VIA RELAY R-6 (JACKET WATER) OR RELAY R-7 (LUBE OIL) TO TIMING AUXILLARY RELAY R-4 TO CAM OPERATED TIMER. SHUT DOWN CONTACTS T-3 OF TIMER CONTROL STOPPING RELAY R-10, CONTACTS OF WHICH ARE ON THE SOLENOID VALVE CIRCUIT. THE CIRCUIT TO THE SOLENOID VALVES CAN BE CONTROLLED BY THE STOP BUTTON ON THE GAGE BOARD.
5. DEVICE NUMBERS USED ON THIS DRAWING APPLY TO THIS DRAWING ONLY. DEVICE NUMBERS USED FOR THE BRIDGE CONTROL SYSTEM, AS SHOWN ON SHEETS 45 THROUGH 54 AND AS LISTED IN THE SPECIFICATIONS, DO NOT APPLY TO THIS SHEET.
6. FOR ADDITIONAL WIRING DIAGRAMS, SEE KING-KNIGHT CO. DWGS (INSTRUCTION MANUAL)



FRONT ELEVATION

ANNUNCIATOR

N.T.S.

ANNUNCIATOR WINDOW MARKING

1. FUEL TANK LOW LEVEL
2. JACKET WATER HIGH TEMP.
3. LUBE OIL LOW PRESS.
4. GENERATOR OVERSPEED
5. GENERATOR RUNNING
6. BLANK

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
1	10-67	AS BUILT REVISION, ADDED NOTE 6.	RC	CF	
2	10-67	DELETED NOTES 2 AND 5, ADDED NEW NOTES 2 AND 5	RC	CF	

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: F.W.
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION DATE: 23 OCT 1919
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
EMERGENCY GENERATOR
WIRING DIAGRAM

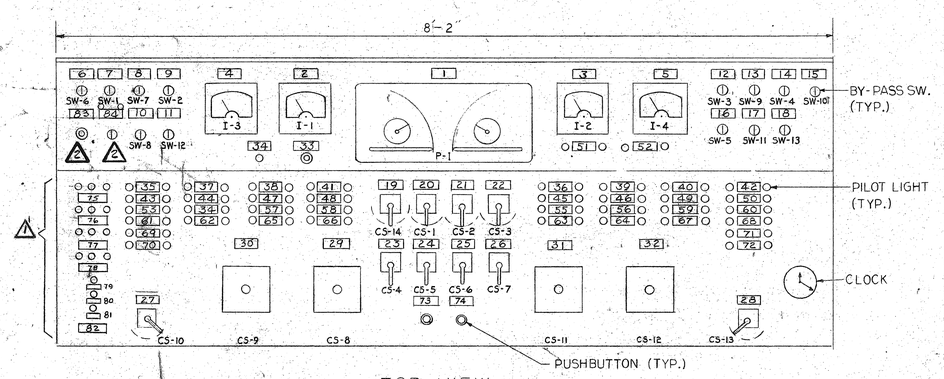
SCALE NO SCALE
DRAWING NUMBER
SHEET 55 RH 9/67.55 AS BUILT

DONALD C. RALSTON
CONSULTING ENGINEER
604 MISSION ST., SAN FRANCISCO 5, CALIF.

AS BUILT

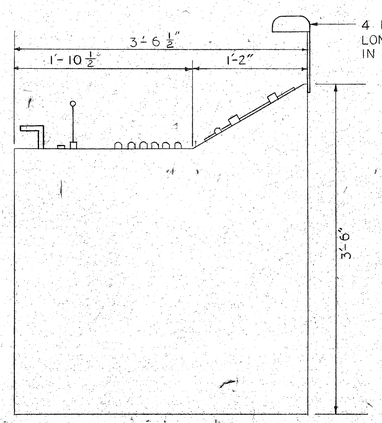
CORPS OF ENGINEERS

U. S. ARMY

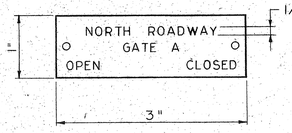


TOP VIEW

CONTROL PANEL LIGHTING NOT SHOWN FOR CLARITY



SIDE VIEW



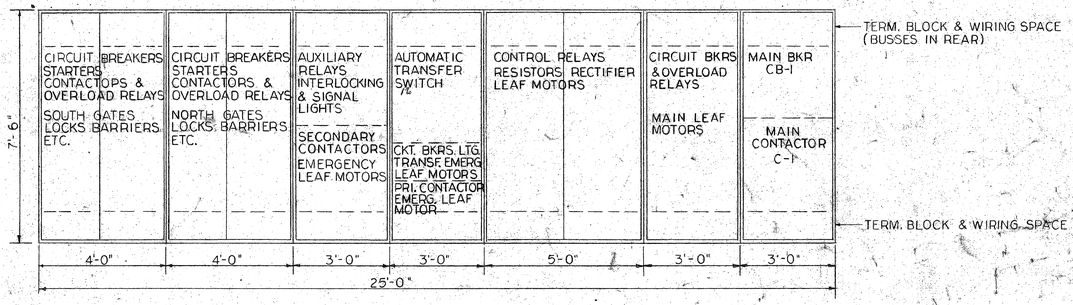
SAMPLE NAME PLATE

FULL SIZE

CONTROL PANEL

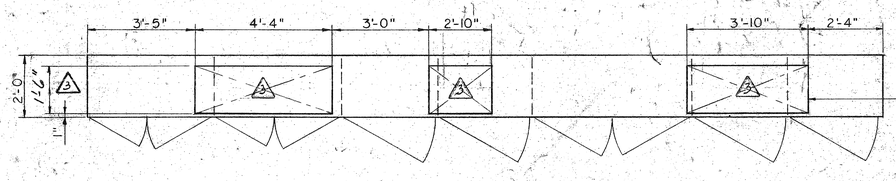
(SUGGESTED ARRANGEMENT)

SCALE 1 1/2" = 1'-0"



FRONT ELEVATION

ALL DIMENSIONS APPROXIMATE



PLAN — EXTERIOR DOORS OPEN

EQUIPMENT MOUNTED ON INTERIOR PANELS, FRONT WIRED AND/OR HINGED OR REMOVABLE SO THAT ALL WIRING AND EQUIPMENT IS ACCESSIBLE AND REPLACEABLE FROM THE FRONT WITHOUT ACCESS TO REAR OF SWITCHBOARD.

MAIN SWITCHBOARD

(SUGGESTED ARRANGEMENT)

SCALE: 1/2" = 1'-0"

NAMEPLATE SCHEDULE

NO.	NAMEPLATE NOMENCLATURE	
1	POSITION INDICATOR	
2	AMMETER NORTH LEAF MAIN MOTORS	
3	AMMETER SOUTH LEAF MAIN MOTORS	
4	AMMETER NORTH LEAF EMERGENCY MOTORS	
5	AMMETER SOUTH LEAF EMERGENCY MOTORS	
6	TRAFFIC SIGNAL INTERLOCK OPERATE	BY-PASS SIGNAL LIGHT RELAYS
7	ROADWAY GATES A & D CLOSE	BY-PASS TRAFFIC SIGNAL INTERLOCK
8	ROADWAY GATES A&D OPEN	BY-PASS GATES B&C INTERLOCKS
9	ROADWAY GATES B&C CLOSE	BY-PASS GATES A&D INTERLOCKS
10	ROADWAY GATES B&C OPEN	BY-PASS SIDEWALK GATE INTERLOCKS
11	NORTH LEAF OPERATE	BY-PASS LOCK & BRAKE INTERLOCKS
12	SIDEWALK GATES CLOSE	BY-PASS GATES B&C INTERLOCKS
13	SIDEWALK GATES OPEN	BY-PASS BARRIER INTERLOCKS
14	ROADWAY BARRIERS CLOSE	BY-PASS SIDEWALK GATE INTERLOCKS
15	ROADWAY BARRIERS OPEN	BY-PASS LOCK INTERLOCKS
16	CENTER LOCKS OPERATE	BY-PASS LOCK & BARRIER INTERLOCKS
17	LIVE LOAD LOCKS OPERATE	BY-PASS CENTER LOCK INTERLOCKS
18	SOUTH LEAF OPERATE	BY-PASS LOCK & BRAKE INTERLOCKS
19	TRAFFIC SIGNALS	
20	ROADWAY GATES A&D	
21	ROADWAY GATES B&C	
22	SIDEWALK GATES	
23	ROADWAY BARRIERS	
24	CENTER LOCKS	
25	NORTH LIVE LOAD LOCKS	
26	SOUTH LIVE LOAD LOCKS	
27	NORTH LEAF CONTROL TRANSFER SWITCH	
28	SOUTH LEAF CONTROL TRANSFER SWITCH	
29	NORTH LEAF MAIN MOTORS	
30	NORTH LEAF EMERGENCY MOTORS	
31	SOUTH LEAF MAIN MOTORS	
32	SOUTH LEAF EMERGENCY MOTORS	
33	WARNING SIREN	
34	MOTOR HEATERS	
35	NORTH TRAFFIC SIGNAL	
36	SOUTH TRAFFIC SIGNAL	
37	NORTH ROADWAY GATE A	OPEN-CLOSED
38	NORTH ROADWAY GATE B	OPEN-CLOSED
39	SOUTH ROADWAY GATE C	OPEN-CLOSED
40	SOUTH ROADWAY GATE D	OPEN-CLOSED
41	NORTH SIDEWALK GATE	OPEN-CLOSED
42	SOUTH SIDEWALK GATE	OPEN-CLOSED
43	NORTH ROAD BARRIER A	OPEN-CLOSED
44	NORTH ROAD BARRIER B	OPEN-CLOSED
45	SOUTH ROAD BARRIER C	OPEN-CLOSED
46	SOUTH ROAD BARRIER D	OPEN-CLOSED
47	NORTH LIVE LOAD LOCK A	ENGAGED-DISENGAGED
48	NORTH LIVE LOAD LOCK B	ENGAGED-DISENGAGED
49	SOUTH LIVE LOAD LOCK C	ENGAGED-DISENGAGED
50	SOUTH LIVE LOAD LOCK D	ENGAGED-DISENGAGED
51	CENTER LOCK A	ENGAGED-DISENGAGED
52	CENTER LOCK B	ENGAGED-DISENGAGED
53	NORTH SHAFT BRAKE A	SET-RELEASED
54	NORTH SHAFT BRAKE B	SET-RELEASED
55	SOUTH SHAFT BRAKE C	SET-RELEASED
56	SOUTH SHAFT BRAKE D	SET-RELEASED
57	NORTH LEAF MAIN MOTOR BRAKE A	SET-RELEASED
58	NORTH LEAF MAIN MOTOR BRAKE B	SET-RELEASED
59	SOUTH LEAF MAIN MOTOR BRAKE C	SET-RELEASED
60	SOUTH LEAF MAIN MOTOR BRAKE D	SET-RELEASED
61	NORTH LEAF EMERGENCY MOTOR BRAKE A	SET-RELEASED
62	NORTH LEAF EMERGENCY MOTOR BRAKE B	SET-RELEASED
63	SOUTH LEAF EMERGENCY MOTOR BRAKE C	SET-RELEASED
64	SOUTH LEAF EMERGENCY MOTOR BRAKE D	SET-RELEASED
65	NORTH LEAF EMERGENCY CLUTCH A	ENGAGED-DISENGAGED
66	NORTH LEAF EMERGENCY CLUTCH B	ENGAGED-DISENGAGED
67	SOUTH LEAF EMERGENCY CLUTCH C	ENGAGED-DISENGAGED
68	SOUTH LEAF EMERGENCY CLUTCH D	ENGAGED-DISENGAGED
69	NORTH LEAF	FULLY CLOSED NEARLY CLOSED
70	NORTH LEAF	NEARLY OPEN FULLY OPEN
71	SOUTH LEAF	FULLY CLOSED NEARLY CLOSED
72	SOUTH LEAF	NEARLY OPEN FULLY OPEN
73	NORTH SHAFT BRAKES SET	
74	SOUTH SHAFT BRAKES SET	
75	NW GIRDER OPENING DOOR	OPEN-MIDPOSITION-CLOSED
76	NE " " "	" " "
77	SE " " "	" " "
78	SW " " "	" " "
79	OPEN	
80	CLOSE	
81	STOP	
82	CONTROL-GIRDER OPENING DOOR MOTORS	

NAMEPLATE SCHEDULE (CONT.)

NO.	NAMEPLATE NOMENCLATURE	
83	SIGNAL HORN	
84	SIGNAL LIGHTS	GREEN-OFF-RED

3 NOTE: FOR EXACT DETAILS SEE CUTLER-HAMMER CO. DWGS (INSTRUCTION MANUAL)

GRAPHIC SCALE 1/2" = 1'-0"

GRAPHIC SCALE 1 1/2" = 1'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
1	1/10/62	ADDED PILOT LIGHTS, PUSH BUTTONS AND NAMEPLATES	DBR		
2	5/16/62	1962 REVISED HEIGHT OF 18's AND ADDED NOTE			
3	6/26/62	ADDED SIGNAL HORN P.B., SIGNAL LIGHT SW & NAMEPLATES			
4	10/29/62	TO CONFORM TO AS BUILT REVISION IN "PLAN - EXTERIOR DOORS OPEN"			

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII

DRAWN BY: V. B.

TRACED BY:

CHECKED BY: ROLFE

SUBMITTED BY:

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH

APPROVED: CHIEF, ENGINEERING DIVISION

DATE 23 Oct 1962

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

HONOLULU HARBOR HAWAII

SECOND ENTRANCE CHANNEL

BASCULE BRIDGE

SWITCHBOARD AND CONTROL PANEL DETAILS

SCALE AS SHOWN

DRAWING NUMBER

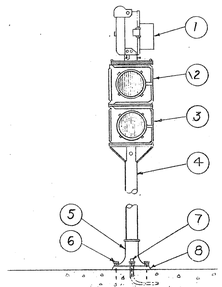
AS BUILT

SHEET 56

RH 9/67.56

DONALD C. RALSTON CONSULTING ENGINEER 604 MISSION ST., SAN FRANCISCO 5, CALIF.

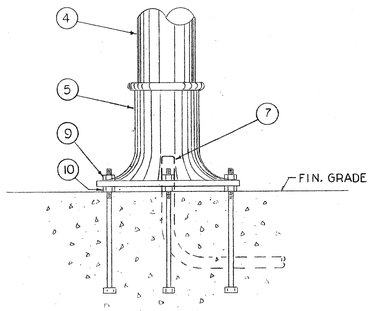
AS BUILT



MATERIAL LIST

1 WEATHERPROOF TRAFFIC WARNING BELL
2 CAST ALUMINUM TRAFFIC LIGHT 30 DEGREE GREEN SPREAD LIGHT ROUNDEL
3 SAME AS ITEM 2 BUT WITH RED SPREAD LIGHT ROUNDEL
4 CAST IRON PEDEDESTAL
5 WEATHERPROOF CAST IRON MOUNTING BASE
6 $\frac{3}{4}$"-6" ANCHOR BOLTS
7 1" C. STUB UP & CAP IN FIN. GRADE
8 SHIM & GROUT TO BEST SUIT MOUNTING CONDITIONS.
9 LOCKING NUT & WASHER $\frac{3}{4}$"-10"
10 $\frac{3}{4}$" LEVELING NUT

UNIT



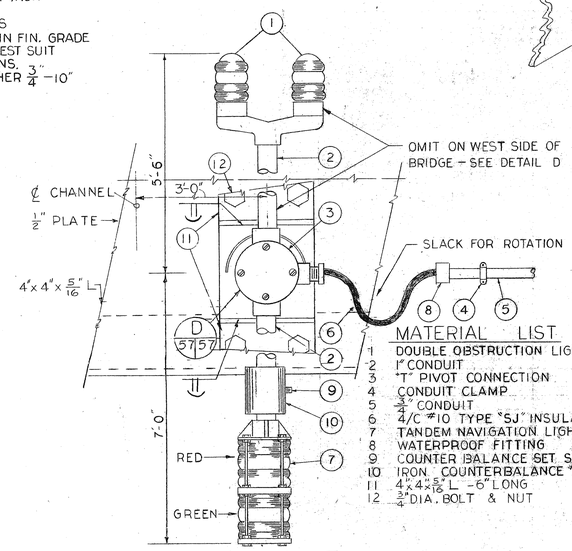
BASE

DETAIL (A 57/43)

TRAFFIC LIGHT UNIT

NOT TO SCALE

NOTE: SEE SH. 22 FOR LOCATION



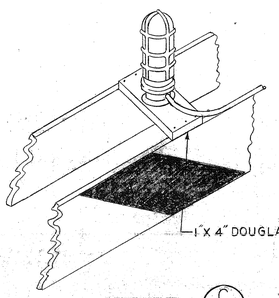
MATERIAL LIST

1 DOUBLE OBSTRUCTION LIGHTS
2 1" CONDUIT
3 "T" PIVOT CONNECTION
4 CONDUIT CLAMP
5 $\frac{3}{4}$" CONDUIT
6 4/C #10 TYPE "SJ" INSULATION
7 TANDEM NAVIGATION LIGHTS
8 WATERPROOF FITTING
9 COUNTER BALANCE SET SCREW
10 IRON COUNTERBALANCE #10
11 4"x4"x$\frac{5}{16}$" L -6" LONG
12 $\frac{3}{4}$" DIA. BOLT & NUT

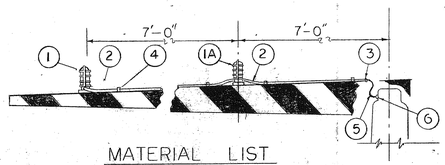
DETAIL (B 57/43)

NAVIGATION & OBSTRUCTION LIGHTS

NOT TO SCALE



1"x4" DOUGLAS FIR



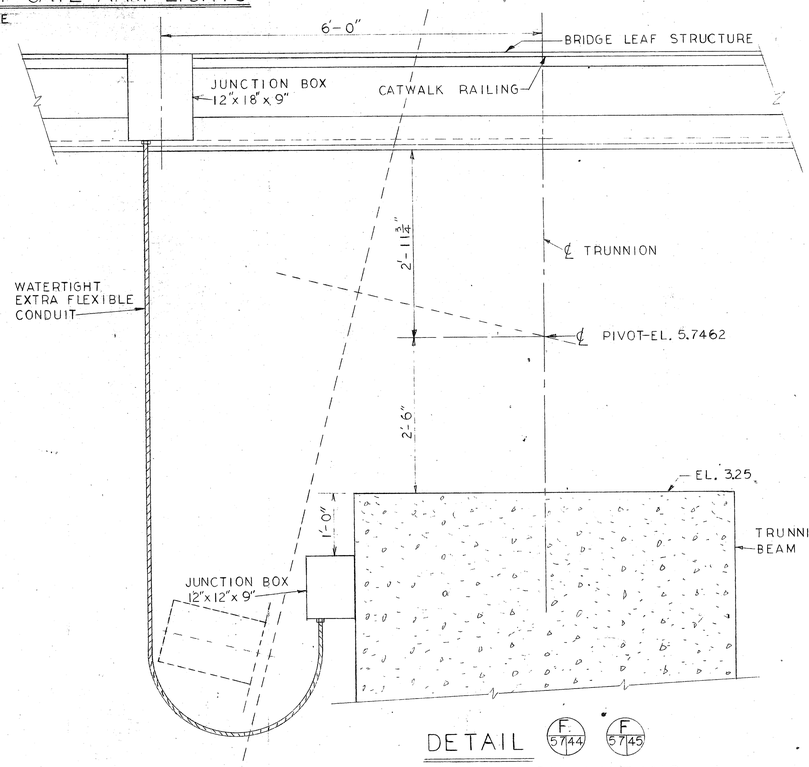
MATERIAL LIST

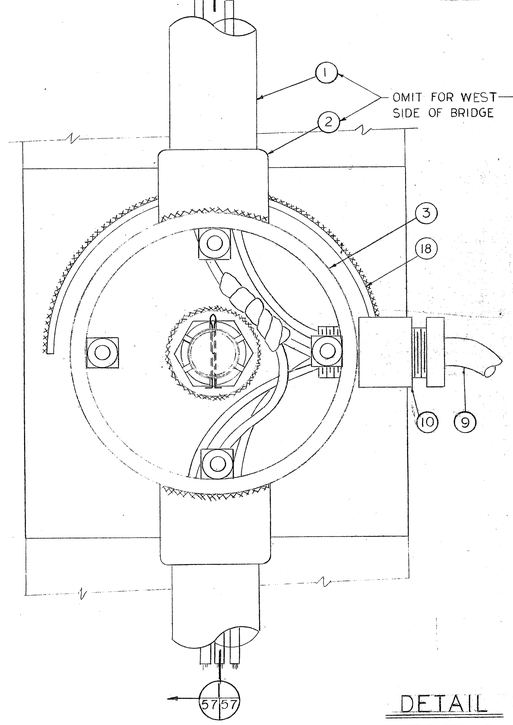
1 WEATHERPROOF LIGHTING FIXTURE WITH GUARD ONE CONDUIT ENTRANCE AT SIDE OF FIXTURE BASE
1A SAME AS ABOVE EXCEPT TWO CONDUIT ENTRANCE.
2 $\frac{3}{4}$" CONDUIT
3 WEATHERPROOF END BUSHING WITH CABLE CLAMP
4 CABLE CLAMP
5 2/C #10 TYPE "SJ" INSULATION
6 WEATHERPROOF END BUSHING

DETAIL (C 57/43)

MOUNTING OF ROADWAY GATE ARM LIGHTS

NOT TO SCALE





MATERIAL LIST

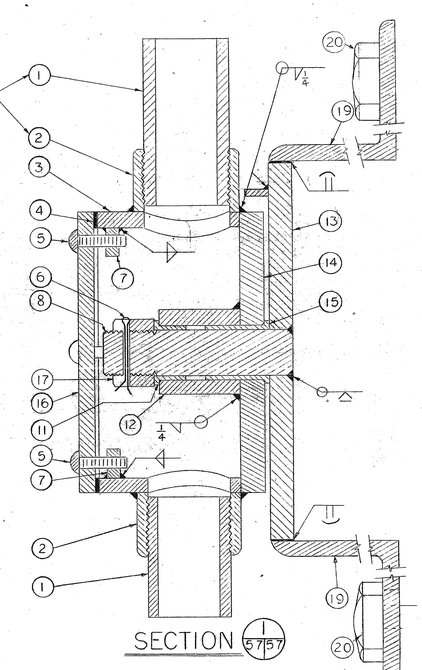
1. 1" CONDUIT
2. 1" CONDUIT COUPLING
3. 4" x 2½" LONG, SCHED. 40 STEEL PIPE
4. NEOPRENE GASKET
5. $\frac{1}{4}$"-20 MACH SCREW
6. 1½" x 13 GA. COTTER PIN
7. $\frac{1}{4}$"-20 SQUARE HEAD NUT
8. 3" X $\frac{3}{4}$" DIA. STEEL SHAFT
9. 4/C 10 WITH TYPE "SJ" INSULATION
10. WEATHERPROOF TERMINAL TUBE
11. $\frac{3}{4}$" I.D.-$\frac{5}{8}$" O.D. X $\frac{1}{2}$" LONG WITH $\frac{1}{16}$" FLANGE BRONZE OIL-IMPREGNATED BEARING
12. $\frac{3}{8}$" I.D. — 1$\frac{3}{8}$" O.D. X 1$\frac{1}{4}$" STEEL SLEEVE
13. 6" X 6" X $\frac{3}{8}$" STEEL MOUNTING PLATE
14. 4" DIA. X $\frac{3}{8}$" STEEL BASE PLATE
15. $\frac{3}{8}$" I.D.-$\frac{5}{8}$" O.D. X 1" LONG WITH 1" FLANGE BRONZE OIL IMPREGNATED BEARING
16. 4" DIA. X $\frac{1}{4}$" STEEL FACE PLATE WITH 4 MOUNTING HOLES
17. $\frac{3}{4}$" LIGHT SLOTTED NUT
18. $\frac{1}{4}$"x$\frac{3}{8}$"x7$\frac{1}{8}$" LONG STEEL BAR
19. 4"x4"x$\frac{5}{16}$" L
20. $\frac{3}{4}$" DIA. BOLT & NUT

NOTE:
BEARINGS TO BE INSTALLED WITH PRESS FIT IN STEEL SLEEVE.

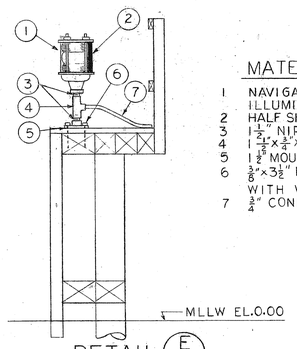
DETAIL (D 57/57)

OBSTRUCTION LIGHT PIVOT ASSEMBLY

SCALE: 1" = 1"



SECTION (I 57/57)



MLLW EL.0.00

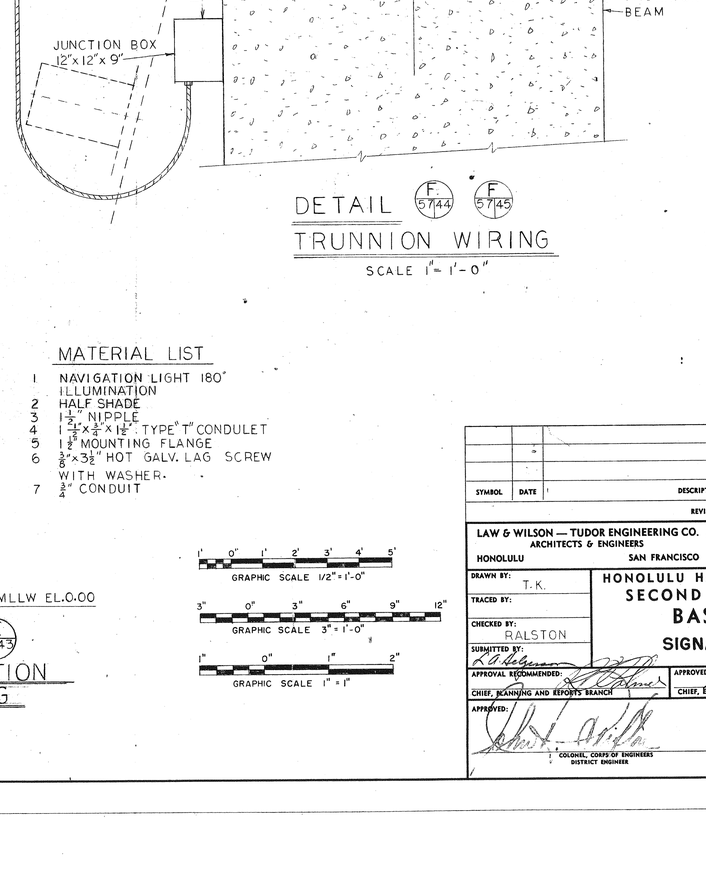
MATERIAL LIST

1 NAVIGATION LIGHT 180°
2 ILLUMINATION
3 HALF SHADE
4 1$\frac{1}{2}$" NIPPLE
5 1$\frac{1}{2}$"x$\frac{1}{2}$"x1$\frac{1}{2}$" TYPE "T" CONDULET
6 1$\frac{1}{2}$" MOUNTING FLANGE
7 $\frac{5}{16}$"x3$\frac{1}{2}$" HOT GALV. LAG SCREW WITH WASHER.
8 $\frac{3}{4}$" CONDUIT

DETAIL (E 57/43)

TYPICAL NAVIGATION LIGHT MOUNTING

SCALE $\frac{1}{2}$" = 1'-0"



DETAIL (F 57/44) (F 57/45)

TRUNNION WIRING

SCALE 1" = 1'-0"

GRAPHIC SCALE 1/2" = 1'-0"

GRAPHIC SCALE 3" = 1'-0"

GRAPHIC SCALE 1" = 1"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: T.K.
TRACED BY:
CHECKED BY: RALSTON
SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
SIGNAL LIGHT DETAILS

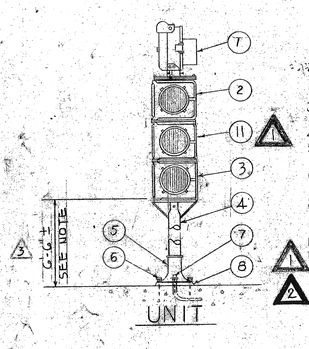
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 23 Oct 1967

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

SCALE AS SHOWN
DRAWING NUMBER
SHEET 57
RH 9/67.57

CORPS OF ENGINEERS

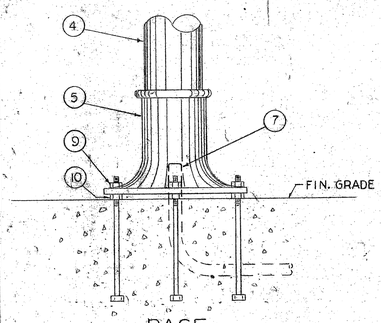
U. S. ARMY



UNIT

MATERIAL LIST

1 WEATHERPROOF TRAFFIC WARNING BELL 7-10" DIA., 120V. 3
2 CAST ALUMINUM TRAFFIC LIGHT 30 DEGREE GREEN SPREAD LIGHT ROUNDEL, ONE-WAY 3
3. SAME AS ITEM 2 BUT WITH RED SPREAD LIGHT ROUNDEL, ONE-WAY 3
4 CAST IRON PEDESTAL
5 WEATHERPROOF CAST IRON MOUNTING BASE
6 ¾"-6" ANCHOR BOLTS
7 1" C. STUB UP & CAP IN FIN. GRADE
8. SHIM & GROUT TO BEST SUIT MOUNTING CONDITIONS.
9. LOCKING NUT & WASHER ¾"-10
10. ¾" LEVELING NUT
11. SAME AS ITEM 2, BUT WITH AMBER ROUNDEL, ONE-WAY 3



BASE

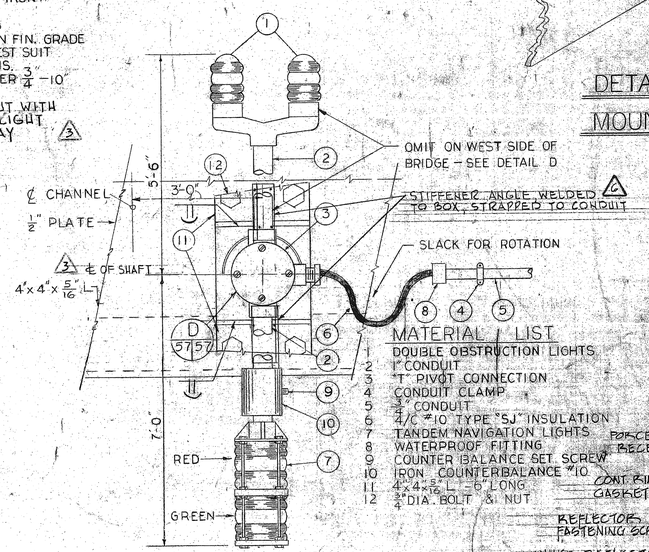
DETAIL (A 5743)

TRAFFIC LIGHT UNIT

NOT TO SCALE

NOTES: SEE SH. 22 FOR LOCATION

3 TRAFFIC LIGHT UNITS TO BE FOR 1-WAY INDICATION ONLY, WITH LIGHTS FACING AWAY FROM BRIDGE TO SIGNAL APPROACHING TRAFFIC. HEIGHT OF LAMPS AND ORIENTATION OF LIGHT BEAM TO BE IN ACCORDANCE WITH THE STANDARDS OF THE STATE OF HAWAII



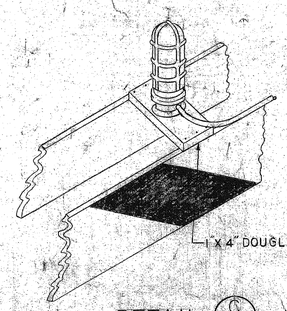
MATERIAL LIST

1 DOUBLE OBSTRUCTION LIGHTS
2 1" CONDUIT
3 "T" PIVOT CONNECTION
4 CONDUIT CLAMP
5 ¾" CONDUIT
6 4/C #10 TYPE "SJ" INSULATION
7 TANDEM NAVIGATION LIGHTS
8 WATERPROOF FITTING
9 COUNTER BALANCE SET SCREW
10 IRON COUNTERBALANCE #10
11 4"x4"x5/16" L - 6" LONG
12 ¾" DIA. BOLT & NUT

DETAIL (B 5743)

NAVIGATION & OBSTRUCTION LIGHTS

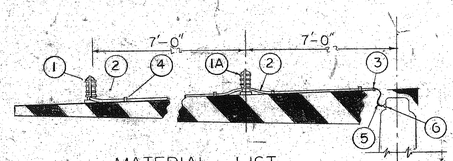
NOT TO SCALE



DETAIL (C 5743)

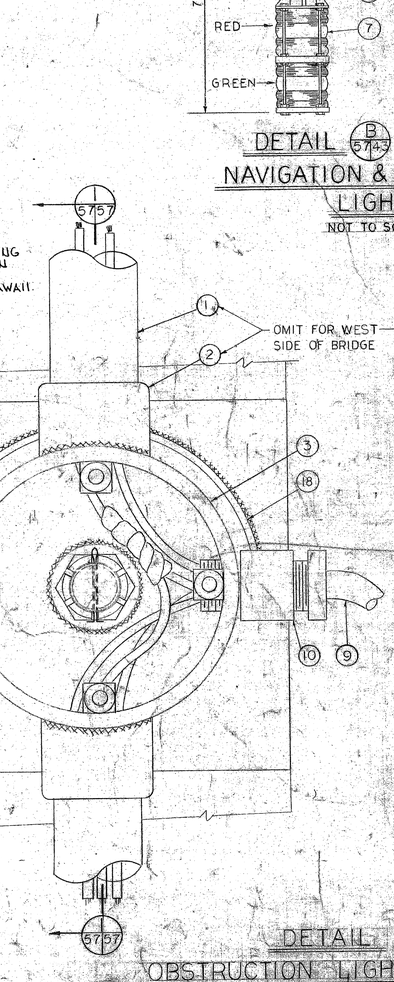
MOUNTING OF ROADWAY GATE ARM LIGHTS

NOT TO SCALE



MATERIAL LIST

1 WEATHERPROOF LIGHTING FIXTURE WITH GUARD ONE CONDUIT ENTRANCE AT SIDE OF FIXTURE BASE
1A SAME AS ABOVE EXCEPT TWO CONDUIT ENTRANCE.
2 ¾" CONDUIT
3 WEATHERPROOF END BUSHING WITH CABLE CLAMP
4 CABLE CLAMP
5 2/C #10 TYPE "SJ" INSULATION
6 WEATHERPROOF END BUSHING



MATERIAL LIST

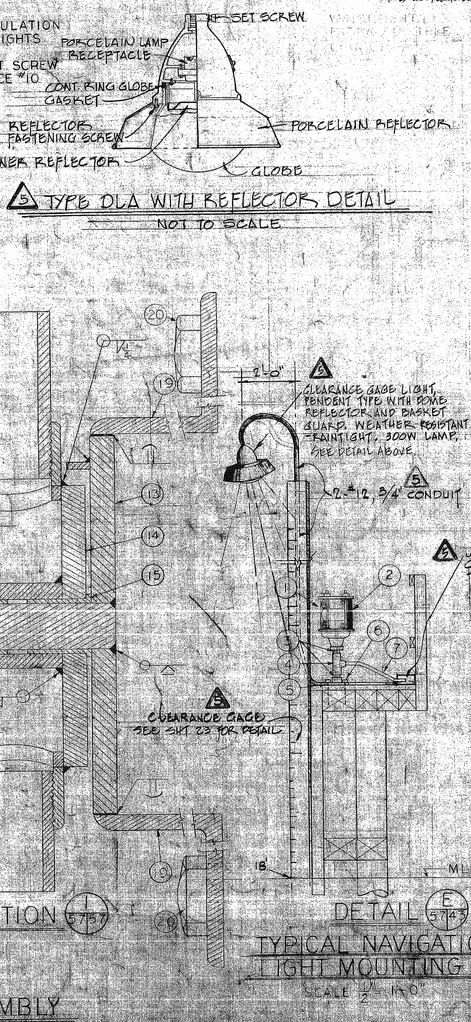
1 1" CONDUIT
2 1" CONDUIT COUPLING
3 4" x 2½" LONG, SCHED. 40 STEEL PIPE
4 NEOPRENE GASKET
5 ¼"-20 MACH. SCREW
6 1½" x 13 GA. COTTER PIN
7 ¾"-20 SQUARE HEAD NUT
8 3" x ¾" DIA. STEEL SHAFT
9 4/C 10 WITH TYPE "SJ" INSULATION
10 WEATHERPROOF TERMINAL TUBE
11 ¾" I.D. - 6" O.D. x ½" LONG WITH ½" FLANGE BRONZE OIL-IMPREGNATED BEARING
12 ½" I.D. - 1¾" O.D. x 1½" STEEL SLEEVE
13 6" x 6" x ¾" STEEL MOUNTING PLATE
14 4" DIA. x ¾" STEEL BASE PLATE
15 ¾" I.D. - 6" O.D. x 1" LONG WITH ½" FLANGE BRONZE OIL IMPREGNATED BEARING
16 4" DIA. x ¾" STEEL FACE PLATE WITH 4 MOUNTING HOLES
17 ¾" LIGHT SLOTTED NUT
18 ⅝" x ¾" x 7⅞" LONG STEEL BAR
19 4"x4"x ⅝" L
20 ¾" DIA. BOLT & NUT

NOTE:
BEARINGS TO BE INSTALLED WITH PRESS FIT IN STEEL SLEEVE.

DETAIL (D 5757)

OBSTRUCTION LIGHT PIVOT ASSEMBLY

SCALE: 1"=1'



5 TYPE DLA WITH REFLECTOR DETAIL

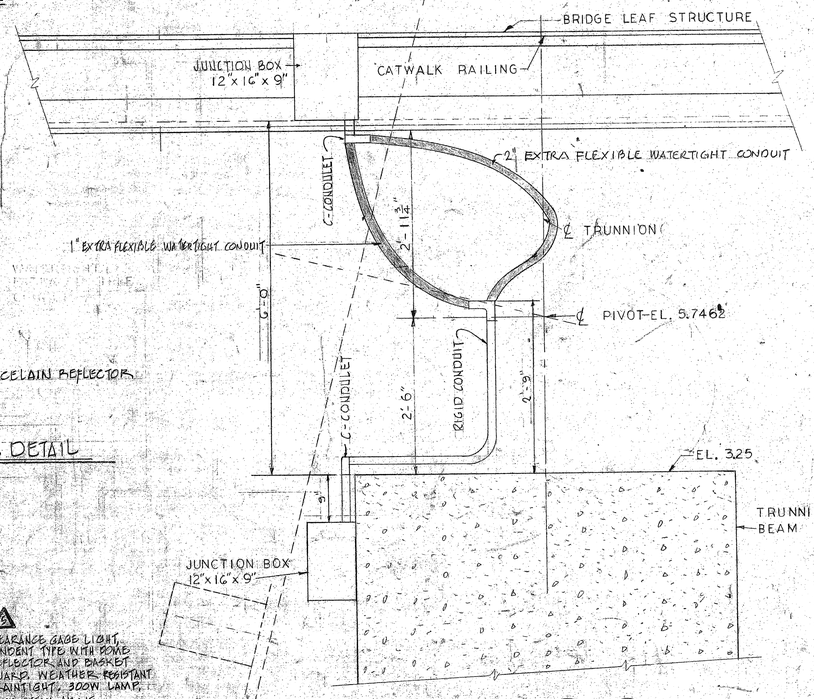
NOT TO SCALE

SECTION (1 5757)

DETAIL (E 5743)

TYPICAL NAVIGATION LIGHT MOUNTING

SCALE ½" = 1'-0"



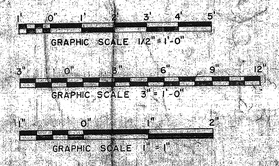
DETAIL (F 5744) (F 5745)

TRUNNION WIRING 6

SCALE 1"=1'-0"

MATERIAL LIST 4

1 NAVIGATION LIGHT-RED, 180 DEGREE ILLUMINATION 1
2 HALF SHADE
3 1½" NIPPLE
4 1½"x½"x1½" TYPE "T" CONDULET
5 1½" MOUNTING FLANGE
6 ⅜"x3½" HOT GALV. LAG SCREW WITH WASHER.
7 ¾" CONDUIT



SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
2	10CT 1962	AS BUILT REVISION IN "DETAIL 5/57/43" DENOTED "STIFFENER ANGLE IN TRUNNION WIRING REVISED LOCATION AND SIZE OF J.B.'S & WIRING	LC	CSC	
5		ADDED "CLEARANCE CAGE LIGHT DETAIL" ADDED CLEARANCE CAGE LIGHT TO DETAIL E/57/43	TY	AC MP	
4	24 MAR 1961	ITEM #1 LISTED UNDER MATERIAL LIST FOR DETAIL E/57/43 REVISED	RH	CF	
3	3/8/60	ADDED NOTE 1 FOR REVISIONS TO MAT LIST FOR DET A/57/43	EC	CF	
2		ADDED "DENOTED" & OF SHAFT" IN DET B/57/43			
1		ADDED SUBSTITUTED "ROUNDEL" TO ITEM 11 OF MATERIAL LIST IN DETAIL A/57/43	RC	CF	
3	SUNDRY	ADDED TRAFFIC LIGHT TO DETAIL A/57/43 AND ITEM 11 TO MATERIAL LIST ADDED "DEGREE" TO ITEM 1 IN MATERIAL LIST FOR DET E/57/43	RC	CF	

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

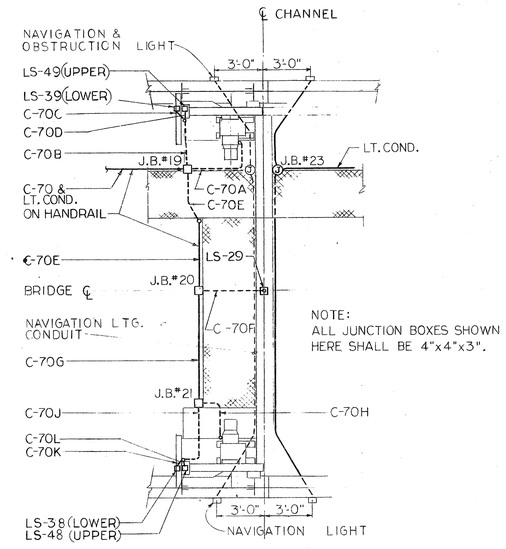
DRAWN BY: T.K.
TRACED BY:
CHECKED BY: TRALSTON
SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
SIGNAL LIGHT DETAILS

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 23 OCT 1957
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

SCALE AS SHOWN
DRAWING NUMBER
SHEET 57
AS BUILT RH 9/67.57

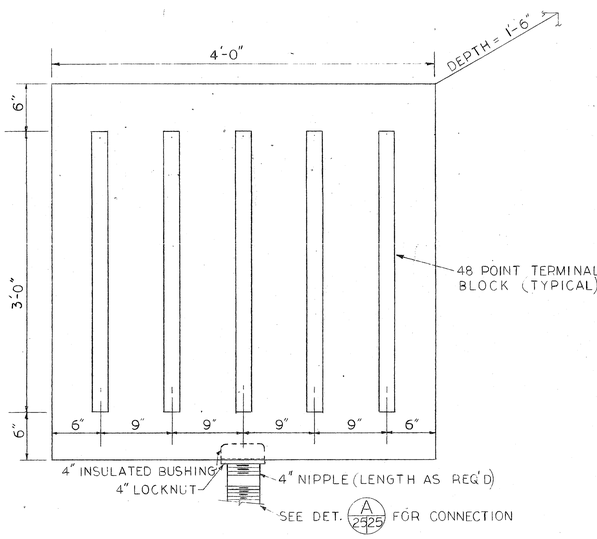
AS BUILT



NOTE:
ALL JUNCTION BOXES SHOWN HERE SHALL BE 4"x4"x3".

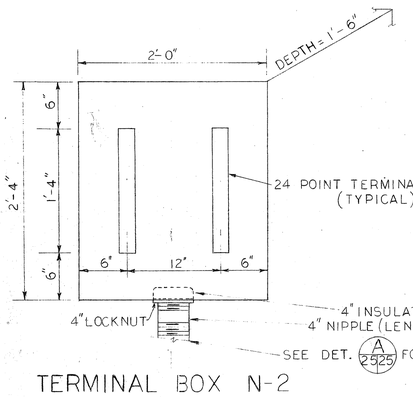
PLAN AT CENTER OF SPAN
DETAIL (K / 5843)

SCALE: $\frac{1}{4}$" = 1'-0"



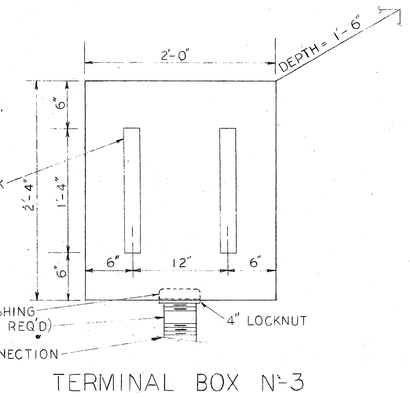
TERMINAL BOX N-1
TERMINAL BOX S-1
DETAIL (C / 5844) (C / 5845)

SCALE: $1\frac{1}{2}$" = 1'-0"



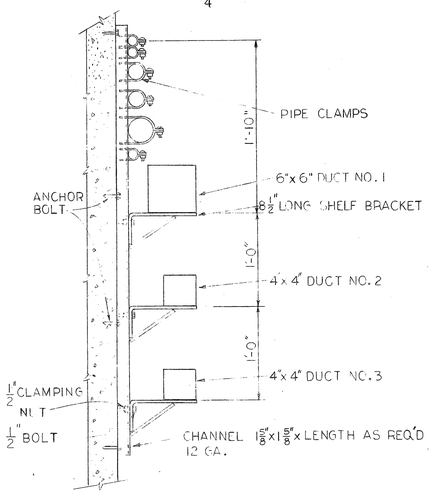
TERMINAL BOX N-2
TERMINAL BOX S-2
DETAIL (D / 5844) (D / 5845)

SCALE: $1\frac{1}{2}$" = 1'-0"



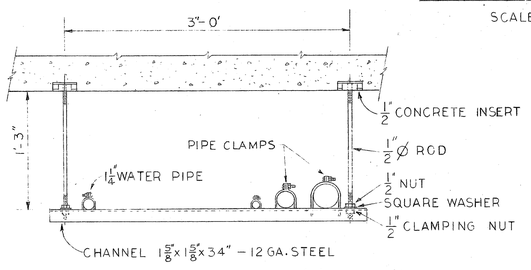
TERMINAL BOX N-3
TERMINAL BOX S-3
DETAIL (E / 5844) (E / 5845)

SCALE: $1\frac{1}{2}$" = 1'-0"



DUCT SUPPORT - TYPICAL
DETAIL (A / 5844)

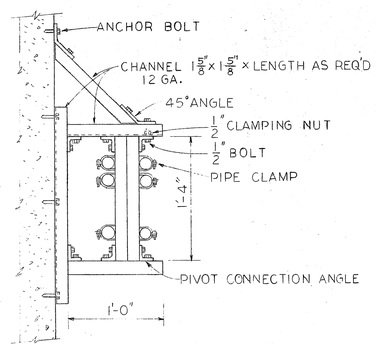
SCALE: $1\frac{1}{2}$" = 1'-0"



NOTE CONDUIT HANGERS SPACED AT 22'-0' INTERVALS. SUPPORT CONDUIT ON CROSSMEMBER OF ROADWAY STRUCTURE HALFWAY BETWEEN HANGERS.

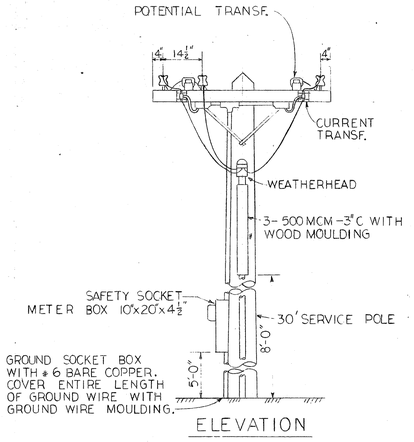
CONDUIT HANGER - TYPICAL
DETAIL (J / 5843)

SCALE: $1\frac{1}{2}$" = 1'-0"

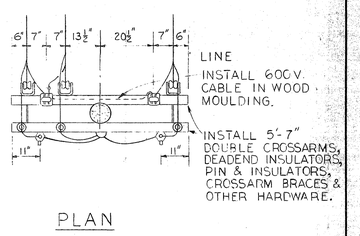


CONDUIT SUPPORT (TYPICAL)
DETAIL (B / 5844) (B / 5845)

SCALE: $1\frac{1}{2}$" = 1'-0"



ELEVATION

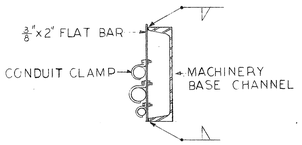


PLAN

NOTE: HAWAIIAN ELECTRIC CO. TO INSTALL WATT-HOUR METER, POTENTIAL TRANSFORMERS, CURRENT TRANSFORMERS, PLASTIC CONDUIT, & INCIDENTAL WIRING FROM INSTRUMENT TRANSFORMERS TO METER BOX.

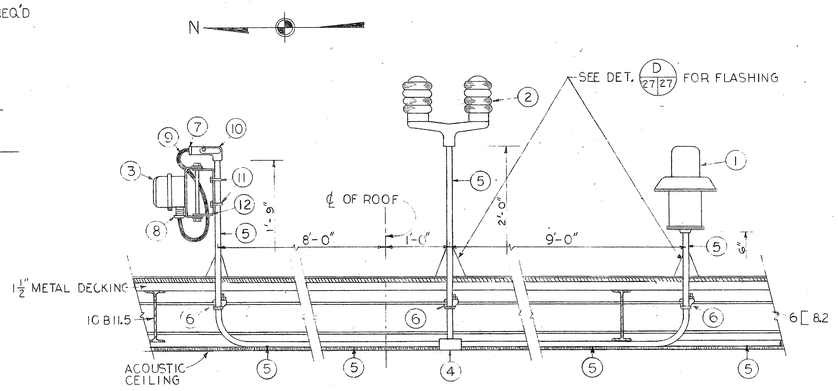
ELECTRIC SERVICE POLE
DETAIL (H / 5843)

SCALE $\frac{1}{2}$ = 1'-0"



CONDUIT SUPPORT - TYPICAL
DETAIL (G / 5844) (G / 5845)

SCALE $1\frac{1}{2}$" = 1'-0"



ARRANGEMENT OF EQUIPMENT ON NORTH TOWER ROOF
DETAIL (A / 5846)

NOT TO SCALE

BILL OF MATERIAL

1	SIREN
2	DOUBLE OBSTRUCTION LIGHT
3	PHOTOELECTRIC CONTROL
4	4"x 4"x2⅛" JUNCTION BOX
5	1" CONDUIT
6	1" EDGE TYPE CONDUIT SUPPORT
7	1" WEATHERPROOF CABLE CONNECTOR
8	1¼" WEATHERPROOF CABLE CONNECTOR
9	3℄ -#14 RHW NEOPRENE JACKETED CABLE
10	1" CONDULET TYPE "LL" WITH COVER & GASKET
11	¼" U-BOLT & NUTS
12	ADJUSTABLE SWIVEL BRACKET

GRAPHIC SCALE 1/4" = 1'-0"

GRAPHIC SCALE 1/2" = 1'-0"

GRAPHIC SCALE 1 1/2" = 1'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
		REVISIONS			

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

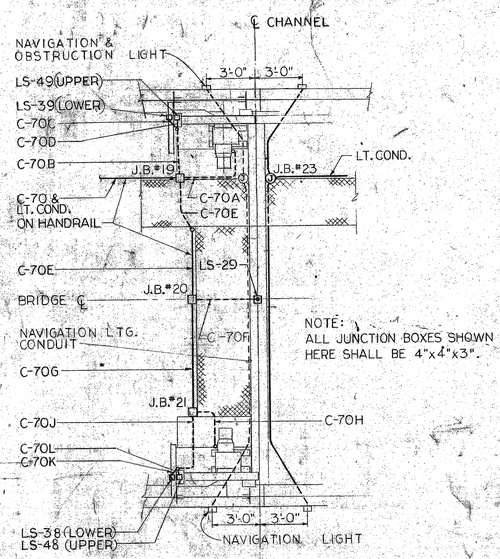
U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: AE
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY: L.O. Nelson
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE 23 Oct 1959
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

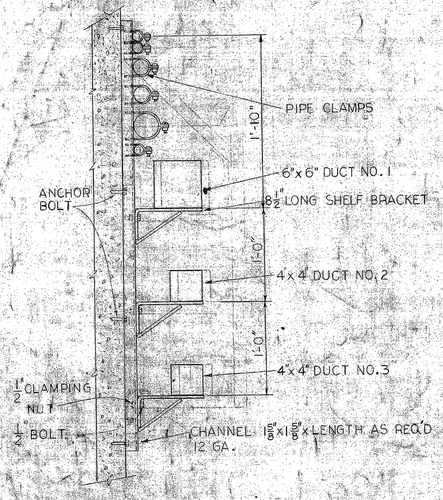
HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
MISCELLANEOUS ELECTRICAL DETAILS

SCALE AS SHOWN
DRAWING NUMBER
SHEET 58
RH 9/67.58

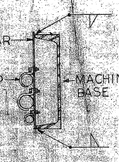
RONALD C. RALSTON CONSULTING ENGINEER



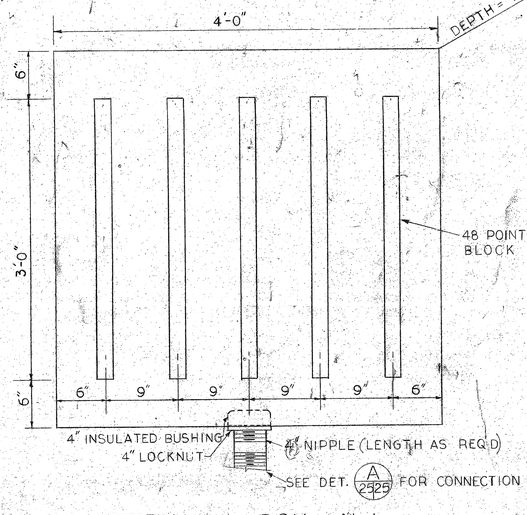
PLAN AT CENTER OF SPAN
DETAIL (K / 5843)
SCALE: 1/4" = 1'-0"



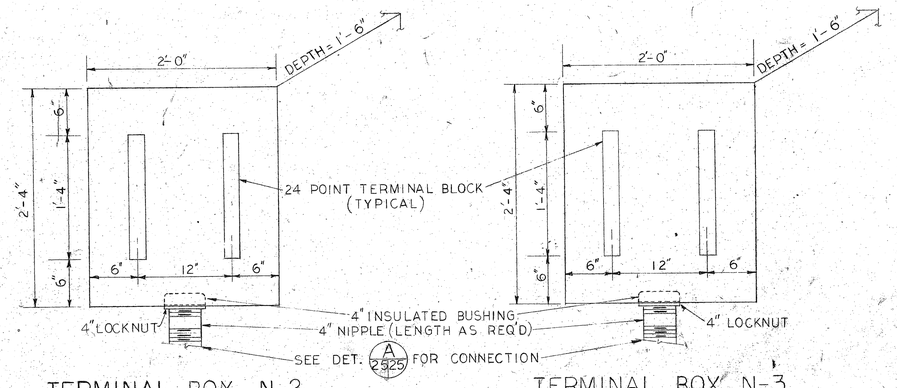
DUCT SUPPORT - TYPICAL
DETAIL (A / 5844)
SCALE: 1½" = 1'-0"



CONDUIT SUPPORT - TYPICAL
DETAIL (Q / 5844) (Q / 5845)
SCALE 1½" = 1'-0"

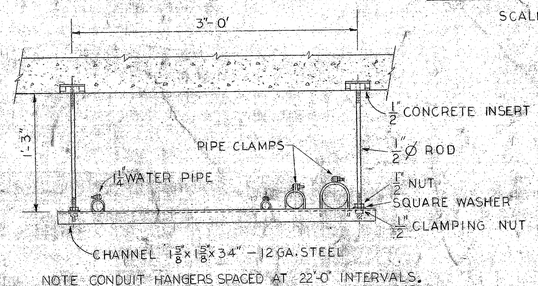


TERMINAL BOX N-1
TERMINAL BOX S-1
DETAIL (C / 5844) (C / 5845)
SCALE: 1½" = 1'-0"



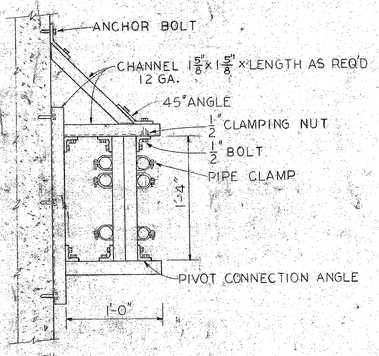
TERMINAL BOX N-2
TERMINAL BOX S-2
DETAIL (D / 5844) (D / 5845)
SCALE: 1½" = 1'-0"

TERMINAL BOX N-3
TERMINAL BOX S-3
DETAIL (E / 5844) (E / 5845)
SCALE: 1½" = 1'-0"

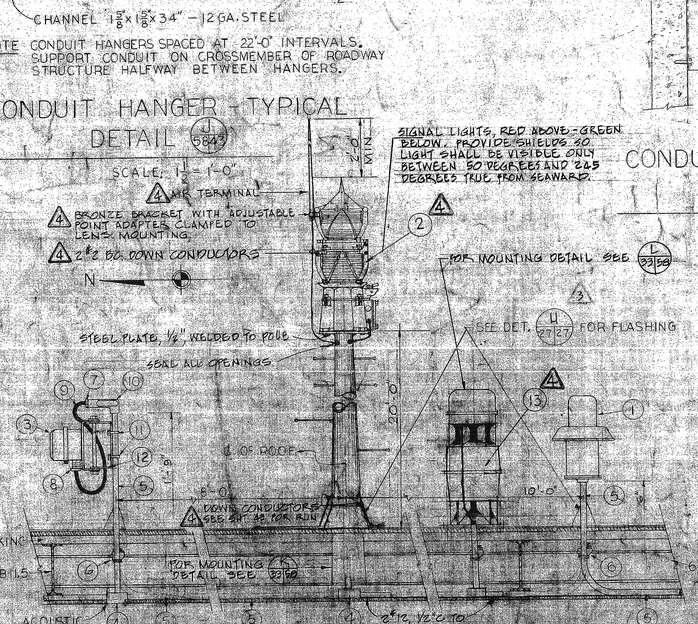


NOTE CONDUIT HANGERS SPACED AT 22'-0" INTERVALS. SUPPORT CONDUIT ON CROSSMEMBER OF ROADWAY STRUCTURE HALFWAY BETWEEN HANGERS.

CONDUIT HANGER - TYPICAL
DETAIL (J / 5844)
SCALE: 1½" = 1'-0"



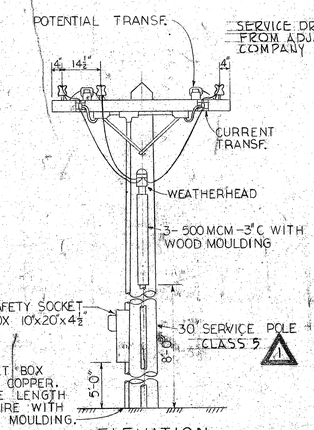
CONDUIT SUPPORT (TYPICAL)
DETAIL (B / 5844) (B / 5845)
SCALE: 1½" = 1'-0"



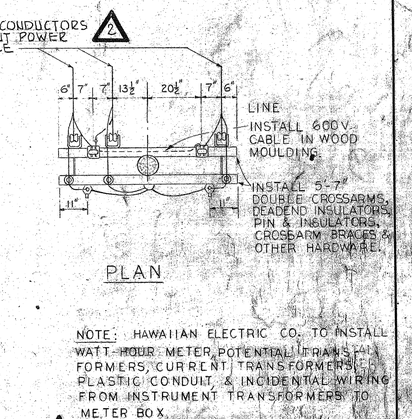
ARRANGEMENT OF EQUIPMENT ON NORTH TOWER ROOF
DETAIL (G / 5844) 3
NOT TO SCALE

BILL OF MATERIAL

1	SIREN
4 2	SIGNAL LIGHTS
3	PHOTOELECTRIC CONTROL
4	4"x4"x2⅛" JUNCTION BOX
5	1" CONDUIT
6	1" EDGE TYPE CONDUIT SUPPORT
7	1" WEATHERPROOF CABLE CONNECTOR
8	1¼" WEATHERPROOF CABLE CONNECTOR
9	30 - #14 RHW NEOPRENE JACKETED CABLE
10	1" CONDULET TYPE "LL" WITH COVER & GASKET
11	½" U-BOLT & NUTS
12	ADJUSTABLE SWIVEL BRACKET
4 13	SIGNAL HORN



ELEVATION



PLAN

NOTE: HAWAIIAN ELECTRIC CO. TO INSTALL WATT-HOUR METER, POTENTIAL TRANSFORMERS, CURRENT TRANSFORMERS, PLASTIC CONDUIT, & INCIDENTAL WIRING FROM INSTRUMENT TRANSFORMERS TO METER BOX.

2 HAWAIIAN ELECTRIC CO. TO INSTALL SERVICE DROP CONDUCTORS

ELECTRIC SERVICE POLE
DETAIL (H / 5843)
SCALE 1/2" = 1'-0"

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP'D
4 6	DEC 1967	ADDED AIR TERMINAL AND DOWN CONDUCTORS. DELETED OBSTRUCTION LIGHTS AND ADDED SIGNAL LIGHTS & HORN ON NORTH TOWER ROOF	TY	HF	
4 5 2	3/6/68	IN DET. A/5844 RELOCATED ITEM 4 AND RENUMBERED ITEM 3	K		
4 2	3/6/68	IN PLAN OF DETAIL H/5843 INSERTED "SERVICE DROP CONDUCTORS FROM ADJACENT POWER COMPANY POLE" ADDED NOTE	RC		
4 1	3/6/68	IN DET. H/5843 RELOCATED POLE AS CLASS 5 IN ELEVATION OF ELECTRIC SERVICE POLE. DETAIL	RC		

REVISIONS

GRAPHIC SCALE 1/4" = 1'-0"

GRAPHIC SCALE 1/2" = 1'-0"

GRAPHIC SCALE 1/2" = 1'-0"

DONALD C. RALSTON
CONSULTING ENGINEER
660 BUSH ST. SAN FRANCISCO, CAL.

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

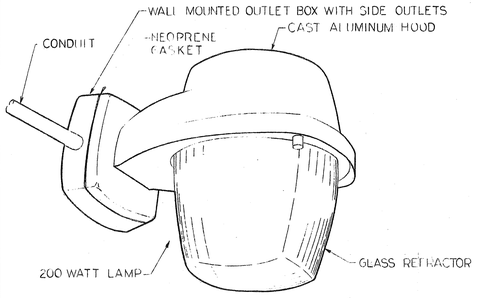
U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: AE
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION — DATE 20 Oct 67
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
MISCELLANEOUS ELECTRICAL DETAILS

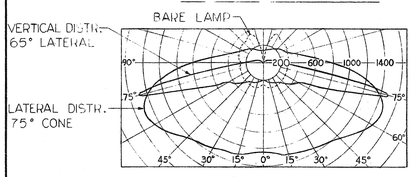
SCALE: AS SHOWN
DRAWING NUMBER
SHEET 58 RH 9/67.58 AS BUILT

AS BUILT



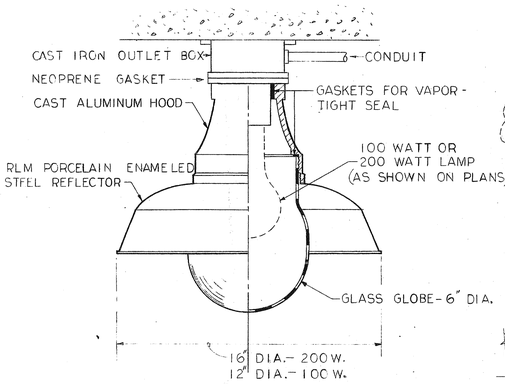
NOTE FIXTURE TO BE WEATHERPROOF WITH ALL EXPOSED JOINTS GASKETED OR SEALED AGAINST ENTRANCE OF RAIN.

FIXTURE DETAIL



LIGHT DISTRIBUTION CURVE

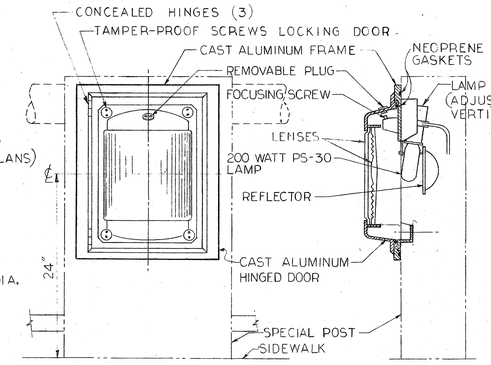
LIGHTING FIXTURE — TYPE A



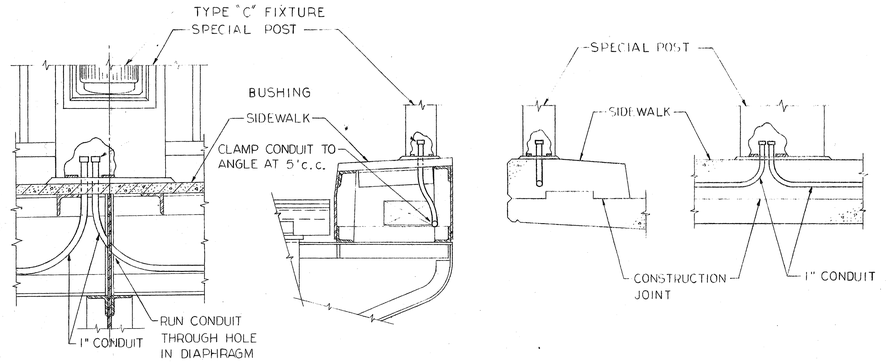
NOTE FIXTURE TO BE LISTED BY UNDERWRITERS' LABORATORIES AS VAPOR-TIGHT

LIGHTING FIXTURE — TYPE B

NOTE: CONDUITS ENTER ALL SPECIAL BRIDGE RAIL POSTS WITH OR WITHOUT LIGHTING FIXTURES.



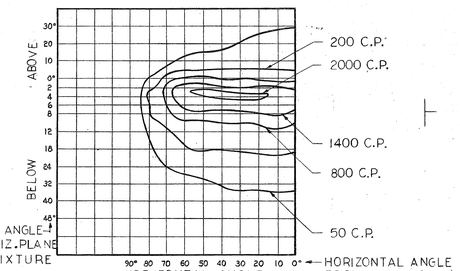
FIXTURE DETAIL SECTION



ELEVATION SECTION — MOVABLE SPAN

SECTION ELEVATION — APPROACH SPAN

ROADWAY LIGHTING CONDUIT DETAIL (G 5943)



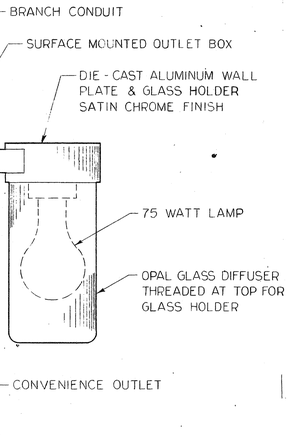
ISOCANDLE CURVE

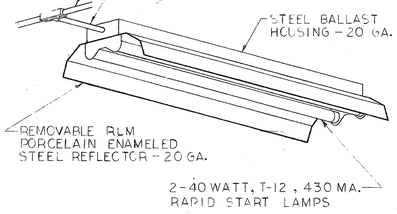
(AVERAGE OF RIGHT AND LEFT SIDES)

NOTES

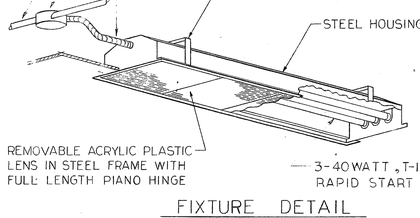
1. FURNISH 2 WRENCHES FOR TAMPER-PROOF SCREWS.
2. FIXTURE TO BE WEATHERPROOF WITH ALL EXPOSED JOINTS GASKETED OR OTHERWISE SEALED AGAINST ENTRANCE OF RAIN
3. ALL EXPOSED SCREWS & BOLTS TO HAVE TAMPER-PROOF HEADS

LIGHTING FIXTURE — TYPE C

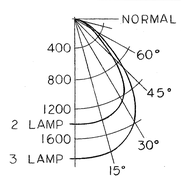




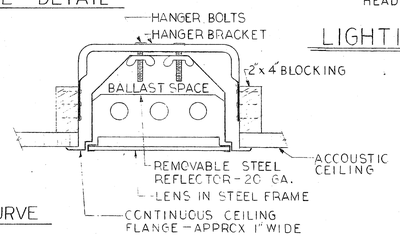
LIGHTING FIXTURE — TYPE D



FIXTURE DETAIL



LIGHT DISTRIBUTION CURVE



SECTION

NOTE ALL STEEL TO BE BONDERIZED & FINISHED WITH BAKED ENAMEL. REFLECTING SURFACES TO HAVE 85% REFLECTANCE.

LIGHTING FIXTURE — TYPE E

LIGHTING FIXTURE — TYPE F

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

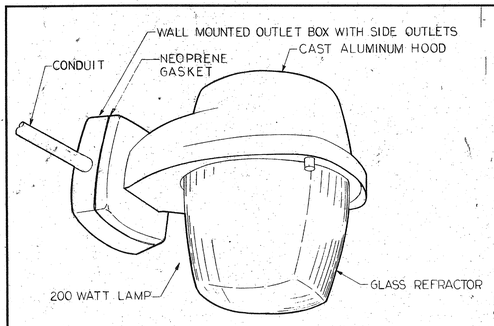
U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: AL
TRACED BY: AL
CHECKED BY: N R
SUBMITTED BY: L. A. Halgren

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
LIGHTING FIXTURE DETAILS

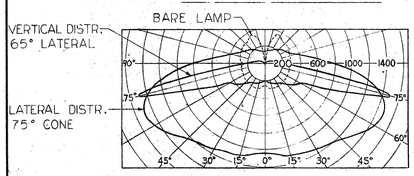
APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: Wm. J. Matthews CHIEF, ENGINEERING DIVISION DATE 23 Oct 1959
APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

SCALE NO SCALE
DRAWING NUMBER
SHEET 59 RH 9/67.59



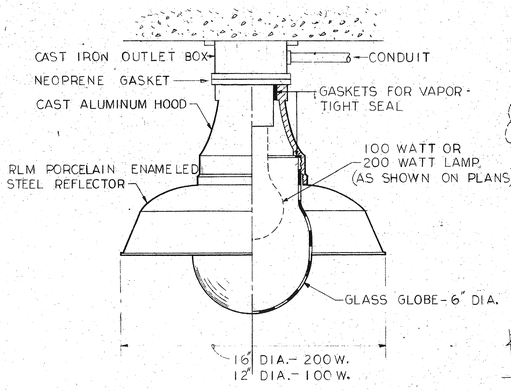
NOTE FIXTURE TO BE WEATHERPROOF WITH ALL EXPOSED JOINTS GASKETED OR SEALED AGAINST ENTRANCE OF RAIN.

FIXTURE DETAIL



LIGHT DISTRIBUTION CURVE

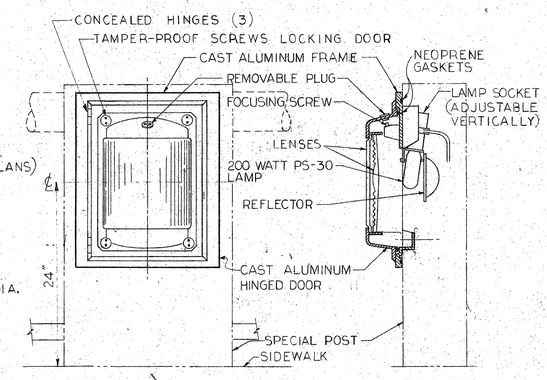
LIGHTING FIXTURE — TYPE A



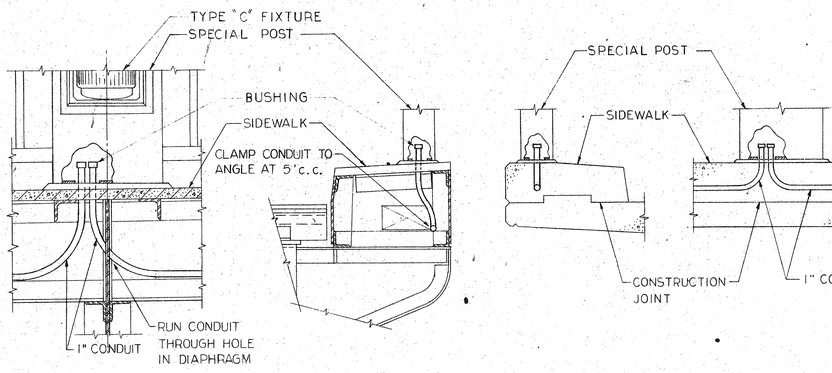
NOTE FIXTURE TO BE LISTED BY UNDERWRITERS' LABORATORIES AS VAPOR-TIGHT

LIGHTING FIXTURE — TYPE B

NOTE: CONDUITS ENTER ALL SPECIAL BRIDGE RAIL POSTS WITH OR WITHOUT LIGHTING FIXTURES.



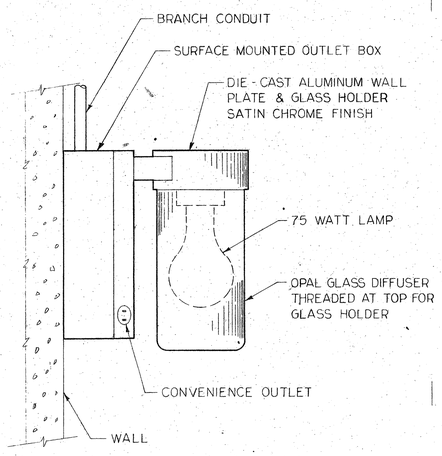
FIXTURE DETAIL SECTION

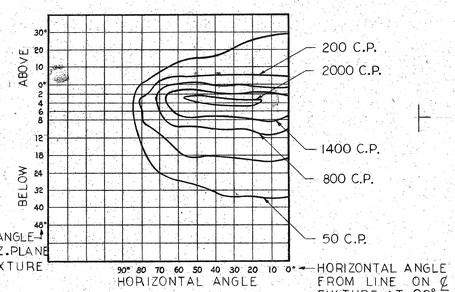


ELEVATION SECTION SECTION ELEVATION

MOVABLE SPAN APPROACH SPAN

ROADWAY LIGHTING CONDUIT DETAIL (G 5943)





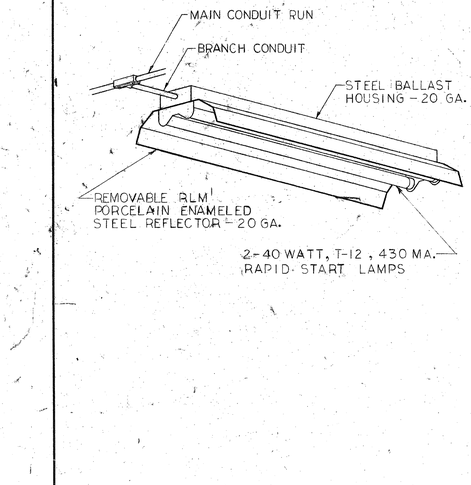
ISOCANDLE CURVE

(AVERAGE OF RIGHT AND LEFT SIDES)

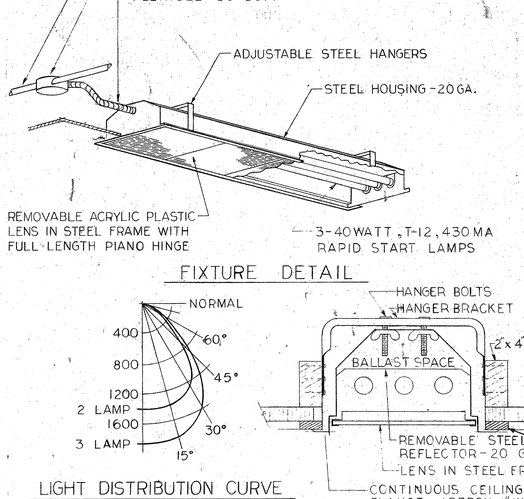
NOTES

1. FURNISH 2 WRENCHES FOR TAMPER-PROOF SCREWS.
2. FIXTURE TO BE WEATHERPROOF WITH ALL EXPOSED JOINTS GASKETED OR OTHERWISE SEALED AGAINST ENTRANCE OF RAIN
3. ALL EXPOSED SCREWS & BOLTS TO HAVE TAMPER-PROOF HEADS

LIGHTING FIXTURE — TYPE C

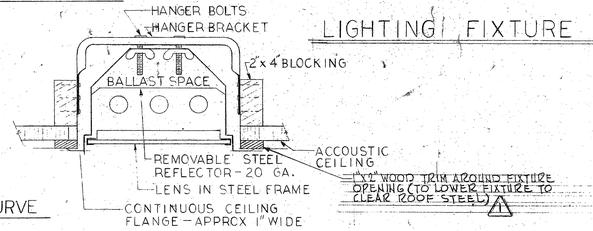


LIGHTING FIXTURE — TYPE D



FIXTURE DETAIL

LIGHT DISTRIBUTION CURVE



SECTION

NOTE ALL STEEL TO BE BONDERIZED & FINISHED WITH BAKED ENAMEL. REFLECTING SURFACES TO HAVE 85° REFLECTANCE.

LIGHTING FIXTURE — TYPE E

LIGHTING FIXTURE — TYPE F

SYMBOL	DATE	REVISIONS	BY	CHKD	APP
1	OCT 1962	AS BUILT REVISION IN "LIGHTING FIXTURE - TYPE E" SECTION DENOTED 1"X2" WOOD TRIM AROUND FIXTURE OPENING	RC	JL	

LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS — HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, HAWAII

DRAWN BY: AL
TRACED BY: AL
CHECKED BY: NR
SUBMITTED BY: L. A. Lefgren

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
LIGHTING FIXTURE DETAILS

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION — DATE 23 Oct 1959
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

DONALD C. RALSTON, CONSULTING ENGINEER, 420 MISSION ST., SAN FRANCISCO 5, CALIF.

SCALE NO SCALE
DRAWING NUMBER AS BUILT
SHEET 59 RH 9/67.59

AS BUILT

CORPS OF ENGINEERS

U. S. ARMY

COND. NO.	SIZE	CONDUCTORS	FOR	FROM	TO
C-1	2"	3 #1/0	MAIN MOTOR A	J.B.A	MAIN MOTOR A ROTOR
C-2	3/4"	2 #12 & 4 #14	NO.LEAF PILOT GENERATOR	J.B.A	NO.LEAF PILOT GENERATOR
C-3	3/4"	2 #12 & 3 #14	EMERG. CLUTCH A	J.B.A	EMERG. CLUTCH A
C-4	1-1/4"	5 #12 & 5 #14	SHAFT BRAKE A	J.B.A	SHAFT BRAKE A
C-5	1-1/2"	3 #2 & 2 #12	MAIN MOTOR A	J.B.A	MAIN MOTOR A STATOR
C-6	1-1/4"	5 #12 & 5 #14	MOTOR BRAKE A	J.B.A	MOTOR BRAKE A
C-7	1-1/4"	3 #10, 4 #12 & 3 #14	EMERG. MOTOR A	J.B.A	EMERG.MOTOR A STATOR
C-8	3/4"	3 #8	EMERG. MOTOR A	J.B.A	EMERG.MOTOR A ROTOR
C-9	2"	32 #14	NO. LEAF SELSYN & LS 54	J.B.A	J.B.2
C-9A	1-1/4"	12 #14	LS-54A	J.B.2	LS-54A
C-9B	1-1/4"	16 #14	LS-54B	J.B.2	LS-54B
C-9C	3/4"	5 #14	NO. LEAF SELSYN	J.B.2	NO. LEAF SELSYN
C-10	3/4"	5 #12	SUMP PUMP A	SAFETY SW.	SUMP PUMP A
C-10A	3/4"	5 #12	SUMP PUMP B	SAFETY SW.	SUMP PUMP B
C-11	2"	3 #1/0	MAIN MOTOR B	J.B.B	MAIN MOTOR B ROTOR
C-13	3/4"	2 #12 & 3 #14	EMERG. CLUTCH B	J.B.B	EMERG. CLUTCH B
C-14	1-1/4"	5 #12 & 5 #14	SHAFT BRAKE B	J.B.B	SHAFT BRAKE B
C-15	1-1/2"	3 #2 & 2 #12	MAIN MOTOR B	J.B.B	MAIN MOTOR B STATOR
C-16	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE B	J.B.B	MOTOR BRAKE B
C-17	1-1/4"	3 #10, 4 #12 & 3 #14	EMERG. MOTOR B	J.B.B	EMERG. MOTOR B STATOR
C-18	3/4"	3 #8	EMERG. MOTOR B	J.B.B	EMERG. MOTOR B ROTOR
C-21	2"	3 #1/0	MAIN MOTOR D	J.B.P	MAIN MOTOR D ROTOR
C-22	3/4"	2 #12 & 4 #14	SO.LEAF PILOT GENERATOR	J.B.P	SO.LEAF PILOT GENERATOR
C-23	3/4"	2 #12 & 3 #14	EMERG. CLUTCH D	J.B.D	EMERG. CLUTCH D
C-24	1-1/4"	5 #12 & 5 #14	SHAFT BRAKE D	J.B.D	SHAFT BRAKE D
C-25	1-1/2"	3 #2 & 2 #12	MAIN MOTOR D	J.B.D	MAIN MOTOR D STATOR
C-26	1-1/4"	5 #12 & 5 #14	MOTOR BRAKE D	J.B.D	MOTOR BRAKE D
C-27	1-1/4"	3 #8, 4 #12 & 3 #14	EMERG. MOTOR D	J.B.D	EMERG. MOTOR D STATOR
C-28	3/4"	3 #8	EMERG. MOTOR D	J.B.D	EMERG. MOTOR D ROTOR
C-29	2"	32 #14	SO. LEAF SELSYN & LS-55	J.B.D	J.B.10
C-29A	1-1/4"	12 #14	LS-55A	J.B.10	LS-55A
C-29B	1-1/4"	16 #14	LS-55B	J.B.10	LS-55B
C-29C	3/4"	5 #14	SO. LEAF SELSYN	J.B.10	SO. LEAF SELSYN
C-30	3/4"	5 #12	SUMP PUMP C	SAFETY SW.	SUMP PUMP C
C-30A	3/4"	5 #12	SUMP PUMP D	SAFETY SW.	SUMP PUMP D
C-31	2"	3 #1/0	MAIN MOTOR C	J.B.C	MAIN MOTOR C ROTOR
C-33	3/4"	2 #12 & 3 #14	EMERG. CLUTCH C	J.B.C	EMERG. CLUTCH C
C-34	1-1/4"	5 #12 & 5 #14	SHAFT BRAKE C	J.B.C	SHAFT BRAKE C
C-35	1-1/2"	3 #2 & 2 #12	MAIN MOTOR C	J.B.C	MAIN MOTOR C STATOR
C-36	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE C	J.B.C	MOTOR BRAKE C
C-37	1-1/4"	3 #8, 4 #12 & 3 #14	EMERG. MOTOR C	J.B.C	EMERG. MOTOR C STATOR
C-38	3/4"	3 #8	EMERG. MOTOR C	J.B.C	EMERG. MOTOR C ROTOR
C-50	1-1/2"	9 #12 & 12 #14	NORTH LIVE LOAD LOCKS	MAIN SWBD.	J.B.6
C-50B	1/2"	4 #14	LIVE LOAD LOCK A	J.B. 6	LS-50
C-50C	1/2"	2 #14	LIVE LOAD LOCK A	J.B. 6	LS-34
C-50D	1-1/2"	9 #12 & 10 #14	NORTH LIVE LOAD LOCKS	J.B. 6	J.B.7
C-50E	1-1/4"	5 #12 & 5 #14	LIVE LOAD LOCK A	J.B. 7	LIVE LOAD LOCK A MOTOR
C-50F	1-1/4"	5 #12 & 9 #14	LIVE LOAD LOCK B	J.B. 7	J.B.8
C-50G	1-1/4"	5 #12 & 3 #14	LIVE LOAD LOCK B	J.B. 8	LIVE LOAD LOCK B MOTOR
C-50H	3/4"	6 #14	LIVE LOAD LOCK B	J.B. 8	J.B.9
C-50J	1/2"	2 #14	LIVE LOAD LOCK B	J.B. 9	LS-35
C-50K	1/2"	4 #14	LIVE LOAD LOCK B	J.B. 9	LS-51
C-57	1-1/2"	9 #12 & 12 #14	SOUTH LIVE LOAD LOCKS	T.B.S1	J.B.14
C-57B	1/2"	4 #14	LIVE LOAD LOCK C	J.B. 14	LS-52
C-57C	1/2"	2 #14	LIVE LOAD LOCK C	J.B. 14	LS-35
C-57D	1-1/2"	9 #12 & 10 #14	SOUTH LIVE LOAD LOCKS	J.B. 14	J.B. 15
C-57E	1-1/4"	5 #12 & 5 #14	LIVE LOAD LOCK C	J.B. 15	LIVE LOAD LOCK C MOTOR
C-57F	1-1/4"	5 #12 & 9 #14	LIVE LOAD LOCK D	J.B. 15	J.B. 16
C-57G	1-1/4"	5 #12 & 3 #14	LIVE LOAD LOCK D	J.B. 16	LIVE LOAD LOCK D MOTOR
C-57H	3/4"	5 #14	LIVE LOAD LOCK D	J.B. 16	J.B. 17
C-57J	1/2"	2 #14	LIVE LOAD LOCK D	J.B. 17	LS-37
C-57K	1/2"	4 #14	LIVE LOAD LOCK D	J.B. 17	LS-53
C-70	2"	9 #12 & 17 #14	CENTER LOCKS	PIVOT J.B.	J.B.19
C-70A	1-1/4"	5 #12 & 5 #14	CENTER LOCK B	J.B. 19	CENTER LOCK B MOTOR
C-70B	3/4"	5 #14	CENTER LOCK B	J.B. 19	TEE.
C-70C	1/2"	2 #14	CENTER LOCK B	TEE.	LS-38
C-70D	1/2"	4 #14	CENTER LOCK B	TEE.	LS-48 20
C-70E	1-1/2"	5 #12 & 11 #14	CENTER LOCK A	J.B. 19	J.B.
C-70F	1/2"	4 #14	LS-29	J.B. 20	LS-29
C-70G	1-1/2"	5 #12 & 11 #14	CENTER LOCK A	J.B. 20	J.B.21
C-70H	1-1/4"	5 #12 & 3 #14	CENTER LOCK A	J.B. 21	CENTER LOCK A MOTOR
C-70J	1"	8 #14	CENTER LOCK A	J.B. 21	TEE.
C-70K	1/2"	4 #14	CENTER LOCK A	TEE.	LS-39
C-70L	1/2"	4 #14	CENTER LOCK A	TEE.	LS-49
C-72	2"	9 #12 & 12 #14	ROADWAY GATE C	T.B. S1	ROADWAY GATE C
C-73	1-1/2"	9 #12 & 11 #14	ROADWAY GATE D	T.B. S1	ROADWAY GATE C
C-73A	1-1/2"	9 #12 & 11 #14	ROADWAY GATE D	ROADWAY GATE C	ROADWAY GATE D
C-74	3/4"	5 #12	SOUTH TRAFFIC SIGNAL	T.B. S1	ROADWAY GATE C
C-74A	1"	7 #12	SOUTH TRAFFIC SIGNAL	ROADWAY GATE C	ROADWAY GATE D
C-74B	3/4"	4 #12	SOUTH TRAFFIC SIGNAL	ROADWAY GATE D	SOUTH TRAFFIC SIGNAL
C-76	2"	9 #12 & 12 #14	ROADWAY GATE A	MAIN SWBD.	ROADWAY GATE A
C-77	2"	9 #12 & 15 #14	ROADWAY GATE B	MAIN SWBD.	ROADWAY GATE A
C-77A	2"	11 #12 & 16 #14	ROADWAY GATE B	ROADWAY GATE A	ROADWAY GATE B
C-78	3/4"	5 #12	NORTH TRAFFIC SIGNAL	MAIN SWBD.	ROADWAY GATE A
C-78A	3/4"	4 #12	NORTH TRAFFIC SIGNAL	ROADWAY GATE A	NORTH TRAFFIC SIGNAL
C-80	1-1/4"	5 #12 & 9 #14	NORTH SIDEWALK GATE	MAIN SWBD	NORTH SIDEWALK GATE
C-81	1-1/4"	5 #12 & 12 #14	SOUTH SIDEWALK GATE	T.B.S1	SOUTH SIDEWALK GATE
C-85	1-1/4"	5 #12 & 7 #14	ROADWAY BARRIER A	MAIN SWBD	J.B. 3
C-85A	3/4"	5 #12	ROADWAY BARRIER A	J.B.3	ROADWAY BARRIER A MOTOR
C-85B	1/2"	4 #14	ROADWAY BARRIER A	J.B. 3	LS-25
C-85C	1/2"	4 #14	ROADWAY BARRIER A	J.B. 3	LS-21
C-86	1-1/4"	5 #12 & 7 #14	ROADWAY BARRIER B	MAIN SWBD.	J.B. 4
C-86A	3/4"	5 #12	ROADWAY BARRIER B	J.B. 4	ROADWAY BARRIER B MOTOR
C-86B	1/2"	4 #14	ROADWAY BARRIER B	J.B. 4	LS-26
C-86C	1/2"	4 #14	ROADWAY BARRIER B	J.B. 4	LS-22
C-87	1-1/4"	5 #12 & 7 #14	ROADWAY BARRIER C	T.B.S1	J.B.11
C-87A	3/4"	5 #12	ROADWAY BARRIER C	J.B.11	ROADWAY BARRIER C MOTOR
C-87B	1/2"	4 #14	ROADWAY BARRIER C	J.B.11	LS-27
C-87C	1/2"	4 #14	ROADWAY BARRIER C	J.B.11	LS-23
C-88	1-1/4"	5 #12 & 7 #14	ROADWAY BARRIER D	T.B.S1	J.B.12
C-88A	3/4"	5 #12	ROADWAY BARRIER D	J.B.12	ROADWAY BARRIER D MOTOR
C-88B	1/2"	4 #14	ROADWAY BARRIER D	J.B.12	LS-28
C-88C	1/2"	4 #14	ROADWAY BARRIER D	J.B.12	LS-24
1 C-94	3/4"	3 #10	NORTH LIGHTING TRANSFORMER	MAIN SWBD	LIGHTING TRANSF IN NO. TOWER
C-95	1-1/4"	3 #2	SOUTH LIGHTING TRANSFORMER	TERM.BOX #S1	LIGHTING TRANS. IN SO. TOWER
C-97	2"	20 #12	HEATERS	TERM.BOX #S1	HEATER PANEL
C-98	1"	2 #8	HEATERS	HEATER PANEL	TERM.BOX #S2
C-100	1/2"	3 #12	HEATERS	HEATER PANEL	TERM.BOX #S3
C-101	2"	3 #1/0	MAIN MOTOR A	J.B.A	MAIN MOTOR A RESISTORS
C-102	3/4"	2 #12 & 4 #14	NO.LEAF PILOT GENERATOR	J.B.A	MAIN SWITCHBOARD
C-103	3/4"	2 #12 & 3 #14	EMERG. CLUTCH A	J.B.A	MAIN SWITCHBOARD
C-104	1-1/4"	5 #12 & 4 #14	SHAFT BRAKE A	J.B.A	MAIN SWITCHBOARD
C-105	1-1/2"	3 #2 & 2 #12	MAIN MOTOR A	J.B.A	MAIN SWITCHBOARD
C-106	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE A	J.B.A	MAIN SWITCHBOARD
C-107	1-1/4"	3 #10, 4 #12 & 3 #14	EMERG. MOTOR A	J.B.A	MAIN SWITCHBOARD
C-108	3/4"	3 #8	EMERG. MOTOR A	J.B.A	MAIN SWITCHBOARD
C-109	2"	32 #14	NO.LEAF SELSYN & LS-54	J.B.A	MAIN SWITCHBOARD
C-110	1"	5 #12 & 2 #14	SUMP PUMP A	SAFETY SWITCH	MAIN SWITCHBOARD
C-110A	1"	5 #12 & 2 #14	SUMP PUMP B	SAFETY SWITCH	MAIN SWITCHBOARD
C-111	2"	3 #1/0	MAIN MOTOR B	J.B.B	MAIN MOTOR B RESISTORS
C-113	3/4"	2 #12 & 3 #14	EMERG. CLUTCH B	J.B.B	MAIN SWITCHBOARD
C-114	1-1/4"	5 #12 & 4 #14	SHAFT BRAKE B	J.B.B	MAIN SWITCHBOARD
C-115	1-1/2"	3 #2 & 2 #12	MAIN MOTOR B	J.B.B	MAIN SWITCHBOARD
C-116	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE B	J.B.B	MAIN SWITCHBOARD
C-117	1-1/4"	3 #10, 4 #12 & 3 #14	EMERG. MOTOR B	J.B.B	MAIN SWITCHBOARD
C-118	3/4"	3 #8	EMERG. MOTOR B	J.B.B	MAIN SWITCHBOARD

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
1	7/3/61	ADDED COND. NO. C-94	R.C.		

REVISIONS

LAW & WILSON — TUDOR ENGINEERING CO.
ARCHITECTS & ENGINEERS
HONOLULU SAN FRANCISCO

U.S. ARMY ENGINEER DISTRICT, HONOLULU
CORPS OF ENGINEERS
HONOLULU, HAWAII

DRAWN BY: RS
TRACED BY:
CHECKED BY: ROLFE
SUBMITTED BY:

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH

APPROVED: CHIEF, ENGINEERING DIVISION

DATE 23 Oct 1959

APPROVED: COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER

DONALD C. RALSTON CONSULTING ENGINEER

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONDUIT AND WIRE SCHEDULE
PART I

SCALE NO SCALE

DRAWING NUMBER

SHEET 60 RH 9/6/60 AS BUILT

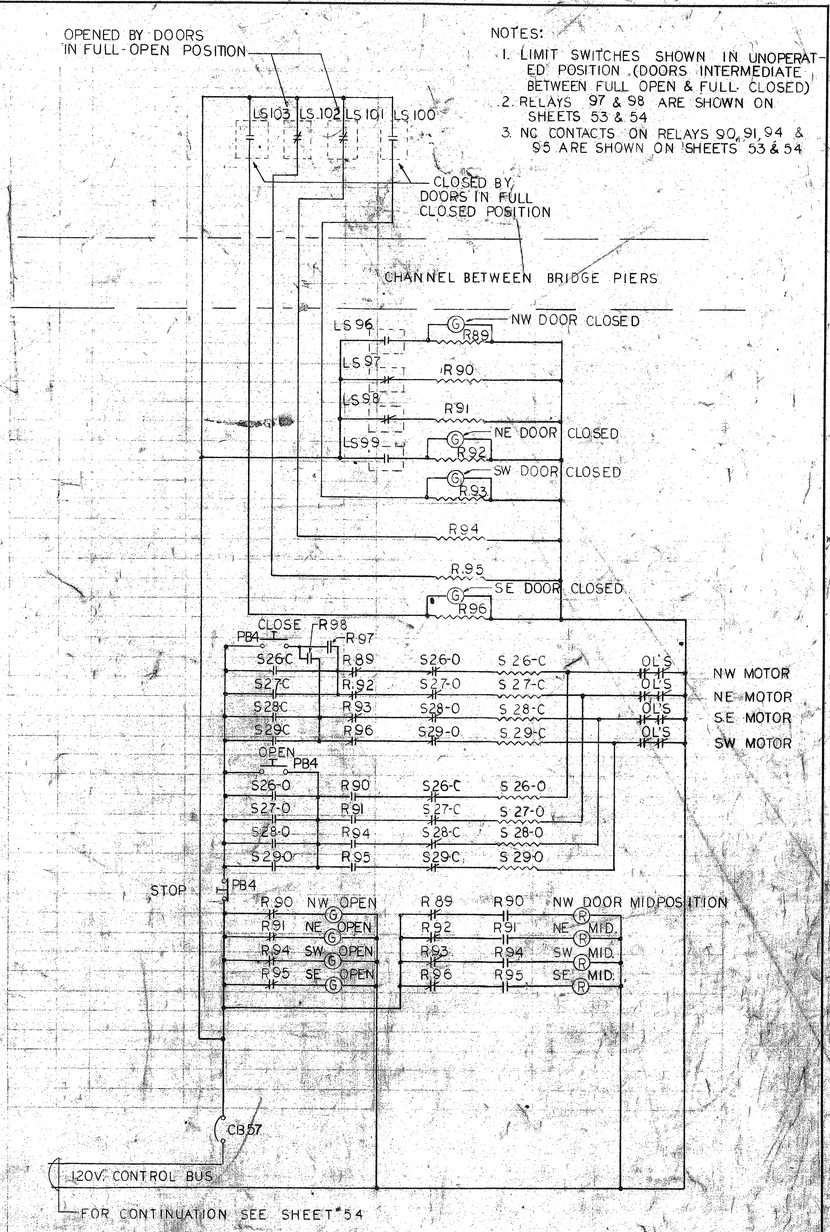
AS BUILT

COND. NO.	SIZE	CONDUCTORS	FOR	FROM	TO
C-121	2"	3 #1/0	MAIN MOTOR D	J.B.D	MAIN MOTOR D RESISTORS
C-122	3/4"	2 #12 & 4 #14	SO. LEAF PILOT GENERATOR	J.B.D	T.B.
C-123	3/4"	2 #12 & 3 #14	EMERG. CLUTCH D	J.B.D	T.B.
C-124	1-1/4"	5 #12 & 4 #14	SHAFT BRAKE D	J.B.D	T.B.
C-125	1-1/2"	3 #2 & 2 #12	MAIN MOTOR D	J.B.D	T.B.
C-126	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE D	J.B.D	T.B.
C-127	1-1/4"	3 #6, 4 #12 & 3 #14	EMERG. MOTOR D	J.B.D	T.B.
C-128	3/4"	3 #8	EMERG. MOTOR D	J.B.D	T.B.
C-129	2"	32 #14	SO. LEAF SELSYN & LS-55	J.B.D	T.B.
C-130	1"	5 #12 & 2 #14	SUMP PUMP C	SAFETY SW.	SUMP PUMP C
C-130A	1"	5 #12 & 2 #14	SUMP PUMP D	SAFETY SW.	SUMP PUMP D
C-131	2"	3 #1/0	MAIN MOTOR C	J.B.C	MAIN MOTOR C RESISTORS
C-133	3/4"	2 #12 & 3 #14	EMERG CLUTCH C	J.B.C	T.B.
C-134	1-1/4"	5 #12 & 4 #14	SHAFT BRAKE C	J.B.C	T.B.
C-135	1-1/2"	3 #2 & 2 #12	MAIN MOTOR C	J.B.C	T.B.
C-136	1-1/4"	5 #12 & 4 #14	MOTOR BRAKE C	J.B.C	T.B.
C-137	1-1/4"	3 #6, 4 #12 & 3 #14	EMERG. MOTOR C	J.B.C	T.B.
C-138	3/4"	3 #8	EMERG. MOTOR C	J.B.C	T.B.

COND. NO.	SIZE	CONDUCTORS	FOR	FROM	TO
C-200	3"	3-500 MCM	INCOMING FEED	POWER CO. POLE	MAIN SWBD.
C-201	2"	9 #12 & 17 #14	CENTER LOCKS	MAIN SWBD.	J.B.5
C-203	2"&3"	16 #12 & 17 #14	CENTER LOCKS & LEAF LTG.	J.B.	PIVOTED J.B.
C-209	1"	8 #14	LEAF MOTOR CONTROL	MAIN SWGR.	REACTOR CUBICLE
C-210	2"	6 #2	NO. LEAF MAIN MOTORS	MAIN SWGR.	REACTOR CUBICLE
C-211	1-1/4"	6 #6	NO. LEAF EMERG. MOTORS	MAIN SWGR.	REACTOR CUBICLE
C-220	2"	6 #2	SO. LEAF MAIN MOTORS	MAIN SWGR.	REACTOR CUBICLE
C-221	1-1/4"	6 #6	SO. LEAF EMERG. MOTORS	MAIN SWGR.	REACTOR CUBICLE

C-150	3/4"	6 #14	EMERG. GEN. ALARM	EMERG. GEN. CONT. PANEL	MAIN SWBD.
C-151	1-1/4"	3 #12 & 13 #14	EMERG. GEN. CONTROL	EMERG. GENERATOR	EMERG. GEN. CONT. PANEL
C-152	2"	2 #4/0	EMERG. GENERATOR	EMERG. GENERATOR	BATTERY
C-155	1-1/4"	3 #6 & 2 #12	EMERG. GENERATOR	EMERG. GENERATOR	EMERG. GEN. CONT. PANEL
C-153A	1-1/4"	3 #6 & 2 #12	EMERG. GENERATOR	EMERG. GEN. CONT. PANEL	MAIN SWBD.
C-154	1/2"	2 #14	EMERG. GEN. ALARM	EMERG. GEN. CONT. PANEL	FUEL TANK
C-155	1"	8 #14	EMERG. GEN. ALARM	CONTROL PANEL	EMERG. GEN. ANNUNCIATOR
C-160	1"	9 #12	NAV. AND OBS. LGTS. AND CONTROL OF CONT. C-3 PANEL S	TB 5-1	JB 18
C-161	1"	8 #12	LGT. CKTS. S-13-18 CONT. C-3 CONTROL	JB 18	PANEL S
C-162	1"	7 #12	LGT. CKTS. S-15, 17 AND CKTS TO NAV. AND OBS. LIGHTS, SO. LEAF	JB 18	SO. LEAF
C-163	3/4"	4 #12	NAV. AND OBS. LIGHTS, SO. LEAF	JB	NAV. AND OBS. LIGHTS
C-164	3/4"	4 #12	NAV. AND OBS. LIGHTS, NO. LEAF	JB	NAV. AND OBS. LIGHTS
C-165	1"	7 #12	LTG. CKTS. U-22, 24 AND CKTS. TO NAV. AND OBS. LIGHTS, NO. LEAF		

C-249	2"	3 #3/0	MCC NORTH GIRDER OPNG. MTRS.	MAIN SWBD	MCC
C-250	1-1/4"	5 #14, 6 #12		MCC	JB 50
C-250A	1/2"	2 #14		JB 50	JB 51
C-250B	1/2"	2 #14		JB 51	LS 96
C-250C	1-1/4"	4 #14, 6 #12		JB 50	JB 52
C-250D	1-1/4"	4 #14, 6 #12		JB 52	JB 53
C-250E	1/2"	3 #12		JB 53	WEST DOOR MOTOR
C-250F	1"	4 #14, 3 #12		JB 53	JB 54
C-250G	1/2"	2 #14		JB 54	LS 97
C-250H	1/2"	2 #14		JB 54	LS 98
C-250J	3/4"	2 #14, 3 #12		JB 54	JB 55
C-250K	1/2"	3 #12		JB 55	EAST DOOR MOTOR
C-250L	1/2"	2 #14		JB 55	JB 56
C-250M	1/2"	2 #14		JB 56	JB 57
C-250N	1/2"	2 #14		JB 57	LS 99
C-269	2"	24 #14, 6 #12		MCC	MAIN PANEL
C-270	1-1/4"	5 #14, 6 #12	SOUTH GIRDER OPNG MTR'S	TB 51	JB 70
C-270A	1/2"	2 #14		JB 70	JB 71
C-270B	1/2"	2 #14		JB 71	LS 100
C-270C	1-1/4"	4 #14, 6 #12		JB 70	JB 72
C-270D	1-1/4"	4 #14, 6 #12		JB 72	JB 73
C-270E	1/2"	3 #12		JB 73	WEST DOOR MOTOR
C-270F	1"	4 #14, 3 #12		JB 73	JB 74
C-270G	1/2"	2 #14		JB 74	LS 101
C-270H	1/2"	2 #14		JB 74	LS 102
C-270J	3/4"	2 #14, 3 #12		JB 74	JB 75
C-270K		3 #12		JB 75	EAST DOOR MOTOR
C-270L	1/2"	2 #14		JB 75	JB 76
C-270M	1/2"	2 #14		JB 76	JB 77
C-270N	1/2"	2 #14		JB 77	LS 103



2 CONTROL DIAGRAM - GIRDER OPENING DOOR MOTORS

SYMBOL	DATE	DESCRIPTION	BY	CHKD	APP
2	5/14/60	ADDED C249 TO C270-N TO CONDUIT & WIRE SCHED. ADDED CONTROL DIAGRAM-GIRDER OPENING DOORS	DJR	CF	
1	3/3/60	ADDED C-160 TO C-165 IN CONDUIT AND WIRE SCHED	R.C.	CF	

REVISIONS

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SUBMITTED BY:

HONOLULU HARBOR HAWAII
SECOND ENTRANCE CHANNEL
BASCULE BRIDGE
CONDUIT AND WIRE SCHEDULE
PART 2

APPROVAL RECOMMENDED: CHIEF, PLANNING AND REPORTS BRANCH
APPROVED: CHIEF, ENGINEERING DIVISION
DATE: 22 Oct 1959
APPROVED: COLONEL, CORPS OF ENGINEERS, DISTRICT ENGINEER

SCALE NO SCALE
DRAWING NUMBER
SHEET 61 RH 9/67.61
AS BUILT

AS BUILT