

HONOLULU HARBOR SECOND ENTRANCE CHANNEL

HONOLULU, OAHU, T.H.

BASCULE BRIDGE
SUBSTRUCTURE

AS BUILT

SYMBOL		DATE	DESCRIPTION	BY	CHECKED	APP.
REVISIONS						
LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU			U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, T.H.			
DRAWN BY: ASBUCION		HONOLULU HARBOR OAHU, T.H. SECOND ENTRANCE CHANNEL BASCULE BRIDGE TITLE SHEET				
CHECKED BY: SHF		APPROVED: <i>[Signature]</i> DATE: 20 MAY 1950 CHIEF, PLANNING AND REPORTS BRANCH CHIEF, ENGINEERING DIVISION				
APPROVAL RECOMMENDED: <i>[Signature]</i>		SCALE: AS BUILT DRAWING NUMBER: RH 9/64.1 SHEET 1				

ABBREVIATIONS

A.W.L.	AIRCRAFT WARNING LIGHT
A.W.G.	AMERICAN WIRE GAUGE
A.B.	ANCHOR BOLT
APPROX.	APPROXIMATELY
AZ.	AZIMUTH
BOT.	BOTTOM
B.V.C.	BEGIN VERTICAL CURVE
B.S.	BREAKING STRENGTH
C.I.	CAST IRON
CTR.	CENTER
CL	CENTER LINE
CA	CENTRAL ANGLE
CO.	COMPANY
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
DIAG.	DIAGONAL
DIA.	DIAMETER
DWG.	DRAWING
E.	EAST
EL. OR ELEV.	ELEVATION
E.V.C.	END VERTICAL CURVE
EQUIP.	EQUIPMENT
EXP.	EXPANSION
FED.	FEDERAL
FT.	FEET
FIN.	FINISH
GA.	GAUGE
GALV.	GALVANIZED
HEX.	HEXAGONAL
HORIZ.	HORIZONTAL
I.D.	INSIDE DIAMETER
INV.	INVERT
L	CURVE LENGTH
M.H.	MANHOLE
M.H.D.	MANHOLE DRAIN
MAX.	MAXIMUM
MLLW	MEAN LOWER LOW WATER
MIN.	MINIMUM
N.C.	NATIONAL COURSE THREADS
N.E.M.A.	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N.F.	NEAR FACE
N.	NORTH
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
O.F.	OUTER FACE
O.D.	OUTSIDE DIAMETER
P.I.	POINT OF INTERSECTION
P.I.V.C.	POINT OF INTERSECTION VERTICAL CURVE
P.T.	POINT OF TANGENT
LBS.	POUNDS
RSF.	POUNDS PER SQUARE FOOT
RS.I.	POUNDS PER SQUARE INCH
R. OR RAD.	RADIUS
REINF.	REINFORCING
REQ'D.	REQUIRED
R.H.	RIGHT HAND
Ø	ROUND
S.C.	SIGNAL CORPS
S.C.M.H.	SIGNAL CORPS MANHOLE
SPECS.	SPECIFICATIONS
SQ.	SQUARE
STD.	STANDARD
STA.	STATION
ST.	STRAIGHT
SUBM.	SUBMARINE
Se	SUPERELEVATION
SYM.	SYMMETRICAL
T.	TANGENT
U.S.	UNITED STATES
VERT.	VERTICAL
V.C.	VERTICAL CURVE
W/	WITH

UTILITY LEGEND

	EXISTING	NEW
ELECTRIC	—P—	—P—
24" SEWER	—S ₂₄ —	—S ₂₄ —
SIGNAL CORPS CABLES	—SC—	—SC—
12" WATER	—W ₁₂ —	—W ₁₂ —
BRIDGE CONTROL CABLES		—B—
UNDERGROUND CABLE	—C—	

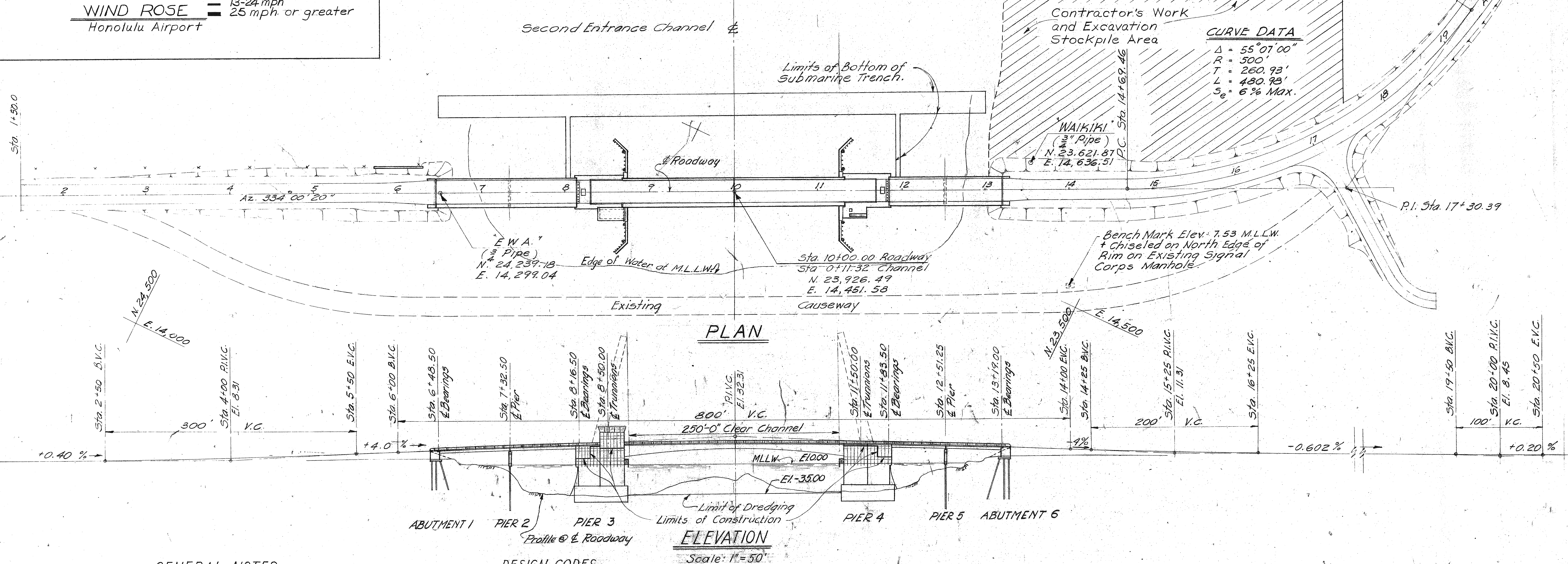
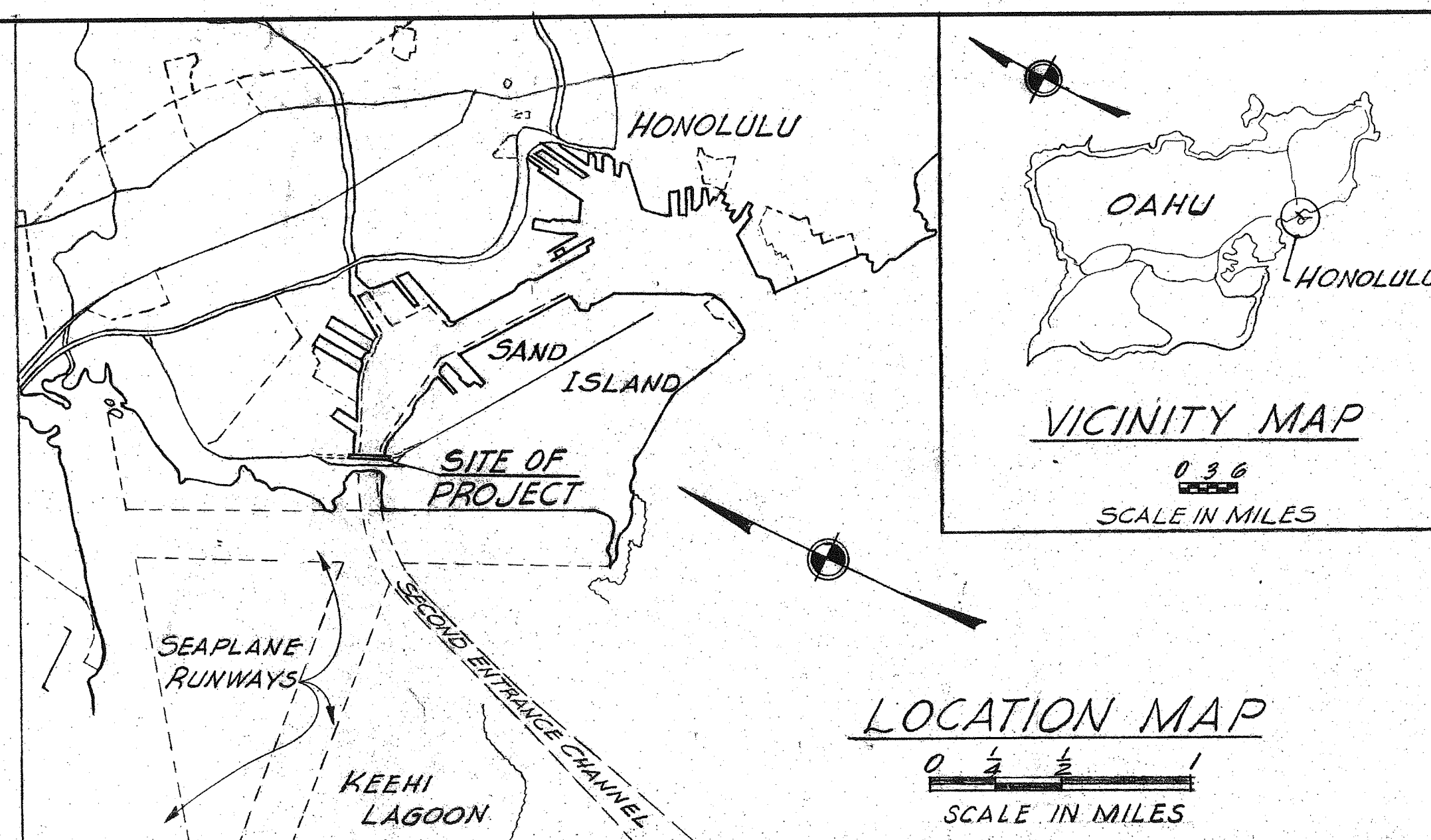
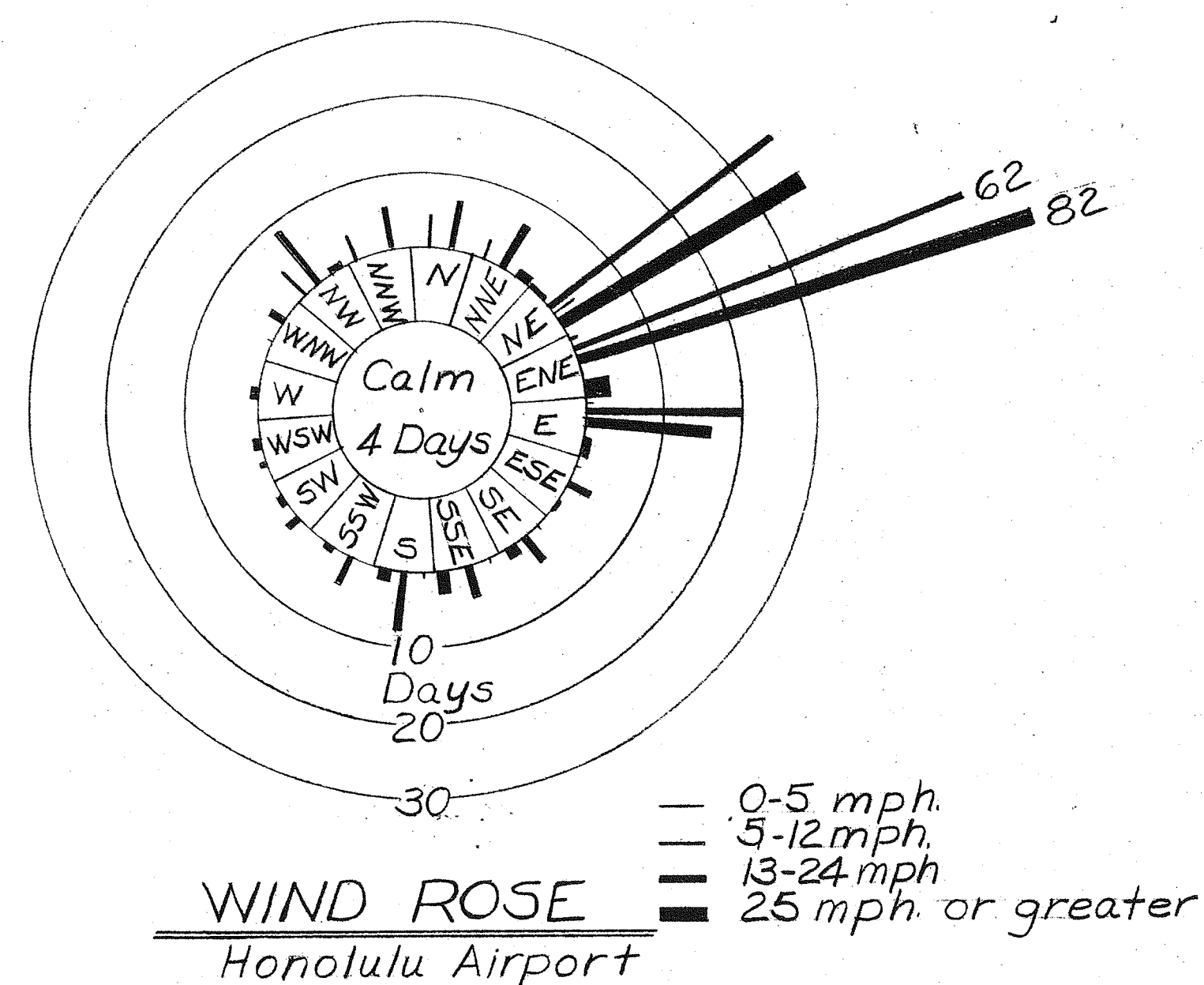
SYMBOLS

DETAIL DESIGNATION SHOWN AT THE DRAWING OF THE DETAIL.		DETAIL IDENTIFICATION LETTER SHEET NUMBER ON WHICH DETAIL IS CALLED OUT. SHEET NUMBER ON WHICH DETAIL IS DRAWN.
DETAIL CALLOUT INDICATION ON PLAN OR STRUCTURE.		DETAIL IDENTIFICATION LETTER SHEET NUMBER ON WHICH DETAIL IS CALLED OUT. SHEET NUMBER ON WHICH DETAIL IS DRAWN.
SECTION DESIGNATION SHOWN AT DRAWING OF THE SECTION.		SECTION IDENTIFICATION NUMBER SHEET NUMBER ON WHICH SECTION IS TAKEN IN PLAN OR STRUCTURE SHEET NUMBER ON WHICH SECTION IS DRAWN.
SECTION CUTTING LINE DESIGNATION SHOWN AT THE SECTION CUTTING LINE.		SECTION IDENTIFICATION NUMBER SHEET NUMBER ON WHICH SECTION IS TAKEN IN PLAN OR STRUCTURE SHEET NUMBER ON WHICH SECTION IS DRAWN.

SCHEDULE OF DRAWINGS		
SHT. NO.	DWG. NO. R. H.	TITLE OF DRAWING
1	9/64.1	TITLE SHEET
2	9/64.2	LIST OF DRAWINGS AND LEGEND
3	9/64.3	GENERAL PLAN AND ELEVATION
4	9/64.4	TEST HOLE LOGS
5	9/64.5	FOUNDATION PLAN AND ANCHOR BOLT LAYOUT
6	9/64.6	ABUTMENTS 1 AND 6
7	9/64.7	PIERS 2 AND 5
8	9/64.8	PIERS 3 AND 4 ARCHITECTURAL ELEVATIONS
9	9/64.9	PIER 3 ARCHITECTURAL PLANS AND SECTIONS
10	9/64.10	PIER 3 PLANS
11	9/64.11	PIER 3 ELEVATIONS, WEST AND SOUTH WALLS
12	9/64.12	PIER 3 ELEVATIONS, EAST AND NORTH WALLS
13	9/64.13	PIER 3 SECTIONS
14	9/64.14	MAINTENANCE SHAFT
15	9/64.15	ARCHITECTURAL DETAILS
16	9/64.16	STAIRS AND RAILING DETAILS
17	9/64.17	ANCHOR BOLTS AND PILE DETAILS
18	9/64.18	PIER FENDER AND MISCELLANEOUS DETAILS
19	9/64.19	SUMP AND MISCELLANEOUS DETAILS
20	9/64.20	SUMP PUMP AND PIPING
21	9/64.21	UTILITY PLANS AND PROFILES
22	9/64.22	ELECTRIC DETAILS
23	9/64.23	ELECTRIC, SEWER AND WATER DETAILS
24	9/64.24	SIGNAL CORPS DETAILS
25	9/64.25	BRIDGE SUBMARINE CABLE DETAILS
Δ 1	9/64.5	PIER 4, REMEDIAL CONSTRUCTION, PILE LAYOUT & DETAILS

AS BUILT

SYMBOL		DATE	DESCRIPTION	BY	CHKD	APP
REVISIONS						
LAW & WILSON — TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU		U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS SAN FRANCISCO		OAHU, T.H.		
DRAWN BY: FAYE		HONOLULU HARBOR		OAHU, T.H.		
CHECKED BY: SHF		SECOND ENTRANCE CHANNEL		BASCULE BRIDGE		
SUBMITTED BY: [Signature]		LIST OF DRAWINGS AND LEGEND				
APPROVAL RECOMMENDED: [Signature]		APPROVED: [Signature]		DATE: 20 MAY 1959		
CHIEF, PLANNING AND REPORTS BRANCH		CHIEF, ENGINEERING DIVISION				
APPROVED: [Signature]		SCALE		DRAWING NUMBER		
LT. COLONEL, CORPS OF ENGINEERS DISTRICT ENGINEER		AS BUILT		SHEET 2		
				RH 9/64.2		

**GENERAL NOTES****VERTICAL AND HORIZONTAL CONTROL**

Coordinates are referenced to "North Base" N. 20,000, E. 20,000. "North Base" is located on the Eastern end of Sand Island. Datum Elev. 0.00 is M.L.L.W. Azimuths are from south.

ALLOWABLE STRESSES

Structural carbon steel 18,000 psi
Reinforcement 20,000 psi
Concrete f_c 3,000 psi
 f_c 1,200 psi
 n 10

ALLOWABLE SOIL STRESSES

Abutments 1 & 6, Piers 2 & 5 - Piles - 64 Tons each.
Piers 3 & 4 - Bearing - 3 Tons per square foot.

DESIGN CODES

"Standard Specifications for Highway Bridges", 1957 Edition, and "Standard Specifications for Movable Highway Bridges", 1953 Edition of the American Association of State Highway Officials. For those items in Piers 3 & 4 not covered by the bridge specifications the "Uniform Building Code", 1958 Edition, and the American Concrete Institute's, "Building Code Requirements for Reinforced Concrete" (ACI 318-56) were used.

DESIGN LOADINGS

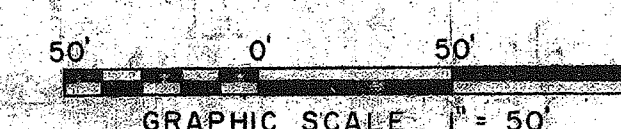
Main Bridge
Live Load H20 - S16 - 44
Wind Load 50 pounds per square foot
Seismic 5 per cent of dead load
Temperature $\pm 50^\circ\text{F}$ to $\pm 90^\circ\text{F}$
Earth pressure 30 pounds per cubic foot equivalent fluid pressure 2 foot surcharge for live load
Soil unit weight 100 pounds per cubic foot
Water pressure weight 64 pounds per cubic foot
Maximum high tide 2 feet. Assumed maximum wave 4 feet
Total design water surface 6 feet above MLLW

Live load on floors and walkways.
Maintenance Shaft El. +24.39 150 pounds per square foot
El. +12.91 200 pounds per square foot plus
+1.43 1000-pound concentrated load.
+0.05
Floor El. +1.43 150 pounds per square foot plus
6000 pound equipment load
Cantilevered walks 200 pounds per square foot plus
12000 pounds concentrated load at lifting fixtures.

LIMITS OF CONTRACT

1. Abutments 1 and 6. Piers 2 and 5.
2. Lower portions of piers 3 and 4 as shown above and on sheet 5.
3. Utility relocation and bridge submarine cables as shown on sheet 21.

Approach roads, bridge superstructure and tender pile system, and the upper portions of piers 3 and 4 are shown for information only.

**AS BUILT**

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REVISIONS					
LAW & WILSON - TUDOR ENGINEERING CO. ARCHITECTS & ENGINEERS HONOLULU			U.S. ARMY ENGINEER DISTRICT, HONOLULU CORPS OF ENGINEERS HONOLULU, T.H.		
DRAWN BY: A.J.G., F.A.G.			HONOLULU HARBOR OAHU, T.H.		
CHECKED BY: PML			SECOND ENTRANCE CHANNEL		
SUBMITTED BY: L.A. Halpern			BASCULE BRIDGE		
APPROVAL RECOMMENDED: [Signature]			GENERAL PLAN AND ELEVATION		
CHIEF, PLANNING AND REPORTS BRANCH			CHIEF, ENGINEERING DIVISION		
APPROVED: [Signature]			DATE: 20 MAY 1959		
SHEET 3			SCALE AS SHOWN		
DRAWING NUMBER AS BUILT			RH 9/64.3		