JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1362
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Sand Island,Artillery Fire Control Tower YEAR: 1963 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter

Description, including sketch of object: Near the southeast end of Sand Island, about 1400 feet northwest from southeast corner of island and 500 feet northeast of shoreline. Station is the 32-foot, iron mast, with a yard-arm near the top, mounted on north center part of the flat roof of a 19-foot-square, gray, 2-story building that is supported by four 12-inch diameter iron legs. Top of roof is 59 feet above ground and top of mast is 91 feet above ground.

Described by .....

U. S. GOVERNMENT PRINTING OFFICE 16—88381-5

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SAND IS ARTILLERY FIRE CONT TR

STATE: HAWAII YEAR: 1963 THIRD ORDER

SOURCE: G-12664

GEODETIC LATITUDE:	21 °18 ′16.765	ELEVATION: METERS / FEET
GEODETIC LONGITUDE:	157 52 36.375	

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β (OR Δ α) ANGLE *
HI 3	5103	541,949.02	50,138.97	+ 0 ° 02 ′ 41 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QF 547

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1363
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
FORM 533 D

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Sand Island Coast Guard Station, Flagpole YEAR: 1963 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter

Description, including sketch of object: Along the east edge of Sand Island, just across the harbor from the Aloha Tower; at southeast end of the Coast Guard pier and on northeast side of the Base Office Building. Station is white wooden flagpole, about 45 feet high, with a yard-arm about 12 feet down from top, and with a small brass ball on top of pole. It sets in a lawn just off the southeast end of a parking area.

Described by .....

U. S. GOVERNMENT PRINTING OFFICE 16—86381-1

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SAND IS COAST GUARD STATION FP

STATE: HAWAII YEAR: 1963 THIRD ORDER

SOURCE: G-12664

GEODETIC LATITUDE:	21 °18′34.″267	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 52 29.134		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE *
HI 3	5103	542,632.33	51,905.44	+ 0 °02′44″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	

GF 546

JUN 1978
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1364
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 525 b

DESCRIPTION OF TRIANGULATION INTERSECTION STATION

NAME OF STATION: Sand Island Light YEAR: 1964 STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: R.C. Munson

Description, including sketch of object: Station is the green light mounted on a bracket on the channel side of a concrete pile about 20 feet high. The light is 15 feet above water. Located 50 feet offshore from east end of Sand Island, at entrance to Honolulu Harbor.

Described by .....

U. S. GOVERNMENT PRINTING OFFICE 16—60391-1

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SAND ISLAND LIGHT

STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-13544

GEODETIC LATITUDE:	21 °18 ′13.″619	ELEVATION.	METERS
GEODETIC LONGITUDE:	157 52 19.354		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	543,558.78	49,822.82	+ 0° 02′ 47″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	

QF 452

AUG 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 STATION 1365
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NOAA FORM 76-39
(12-70)
(FORMERLY C&GS FORM 528)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL GEODETIC SURVEY

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: SAT
NEAREST TOWN: Honolulu
CHIEF OF PARTY: J.L. Cook
STATE: Hawaii
QUADRANGLE NO.:
YEAR: 1973
COUNTY: Honolulu
DESCRIBED BY: W.V.M.

NOTE:* HEIGHT OF TELESCOPE ABOVE STATION MARK 1.7 METERS,† HEIGHT OF LIGHT ABOVE STATION MARK 1.5 METERS.

Desc.	SURFACE-STATION MARK, UNDERGROUND-STATION MARK — OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION† ° ′ ″
	AIRPORT 1969				0 00 00.0
Desc.	RM 3	WSW	Approx. 1/4 mile		14 42 22.0
11b	RM 1	NNE	29.33	8.941	147 04 12
11b	RM 2	ESE	36.86	11.234	242 00 46
	Hawaiian Pineapple Co Tank 1928	SSE	Approx. 3.0 mi.		295 47 07.3
	RM 1 to RM 2		49.06	14.952	

Detailed description:

The station is on Fort Shafter about 3 miles northwest of the Honolulu International Airport Terminal Building, 2 miles west of the center of Salt Lake, 1.1 miles northwest of the Fort Shafter Headquarters Building and on a low hill across a bladed road from a large water tank.

To reach the station from the east entrance into Fort Shafter (Patch Gate), in northwest part of Honolulu, go west on Wisser Road for 0.1 mile to a paved side road right. Turn right and go north and west on 7th Street for 0.3 mile to a T-road. Turn right and go north on MaComb Road for 0.15 mile to reference mark 3 on the left, west, side of the road. Continue northerly on MaComb Road for 0.1 mile to a point where the main road turns left. (Dead end side road to the right). Bear left on the main road for 0.15 mile to the end of the pavement. Continue northerly on the bladed road, uphill, for 0.2 mile to the summit of the hill and the station in a fenced area on the left, west, side of the road.

The station mark is a standard disk, stamped SAT 1973, cemented in a drill hole near the southeast corner of a concrete pad which is about 12 feet square. It is 46.2 feet north of the south fence, 23.2 feet west of the center of the gate in the east fence, 2.0 feet west of the east edge of the concrete pad and 1.3 feet north of the south edge of the concrete pad.

Reference mark 1 is a standard disk, stamped SAT NO 1 1973, set in the top of a 12-inch cylindrical concrete monument which projects 1 inch above the ground surface. It is 20.4 feet north of the center of the gate, 19.2 feet northeast of the northeast corner of the concrete pad and 1.4 feet west of the east fence of the fenced area.

Reference mark 2 is a standard disk, stamped SAT NO 2 1973, set in the top of a 12-inch cylindrical concrete monument which is flush with the ground surface. It is 34.6 feet southeast of the southeast corner of the concrete pad, 28.8 feet south of the center of the gate, 1.5 feet west of the east fence and about 3 feet lower than the station mark.

Reference mark 3 is a standard disk, stamped SAT NO 3 1973, set in a drill hole in the west curb of MaComb Road. It is 131 feet southwest of the approximate center of Radar Hill Road, 14 feet northwest of the approximate center of MaComb Road and 4.5 feet southeast of powerline pole number 110.

*Refers to notes in manuals of triangulation and state publications of trian; :tion-angle measured clockwise, referred to initial station.
†To nearest meter only, when no trigonometric leveling is being done.

U.S. GOVERNMENT PRINTING OFFICE: 1971-760-021

ADJUSTED HORIZONTAL CONTROL DATA
ADJUSTMENT BY NGS

NAME OF STATION: SAT — OBS BY NGS
STATE: HAWAII — YEAR: 1973 — FIRST ORDER
SOURCE: G-14981

GEODETIC LATITUDE:	21 °21 ′12.34548	ELEVATION:	152.04 METERS
GEODETIC LONGITUDE:	157 52 35.70129		498.8 FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE*
HI 3	5103	541,998.85	67,854.96	+ 0 02 42

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
SAT RM 3	74 °50 ′48.6 ″	74 °48 ′07 ″	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF JAN 1973

LEVELING BY NGS

WE 025

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1366
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SCAR (Hawaii,E.R.H.,1925)--A scar or rock slide on the SE slope of Salt Lake crater, which is a steep and well-defined hill between Honolulu and Pearl Harbor. A very prominent mark, visible from just S of Diamond Head to a line S from Pearl Harbor.

(11-8-55)

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Scar
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* D.G. Rushford YEAR: 1964 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was recovered. Station is a prominent bare patch on the brush-covered southeast side of the hill on north side of Aliamanu Crater, about 50 feet below top of hill.

Located about 1/4 mile north of Salt Lake and 1-1/2 miles southeast of Aiea. This is the hill upon which triangulation station SALT LAKE is located.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

COMM-DC 34314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SCAR
STATE: HAWAII YEAR: 1925 THIRD ORDER
SOURCE: G- 558

GEODETIC LATITUDE:	21 °21 ′58.°507	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 54 36.423		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	530,584.55	72,504.90	+ 0 ° 01 ′ 58 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QF 003

NOV 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII STATION 1367
LATITUDE 21° 00′ TO 21° 30
LONGITUDE 157° 30′ TO 158° 00
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: SE DOME AERO OBSTRUCTION LT OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°27′39.24015 GEODETIC LONGITUDE: 157 45 56.34262	ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ IOR Δ α1 ANGLE *
HI 3	5103	579,691.43	106,935.81	+ 0° 05′ 09″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ IOR Δ α1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 032

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1368
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SEE STATION MOK

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SEISMOGRAPH

STATE: HAWAII YEAR: 1965 THIRD ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE: 21 °27′23.369		ELEVATION:	METERS
GEODETIC LONGITUDE: 157 44 11.511			FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	589,596.51	105,350.12	+ 0 05′47″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ α FORMULA NEGLECTING THE SECOND TERM

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

POSITION DETERMINED BY TRAVERSE FROM STATION MOK TRAV PT A

QF 486

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1369
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SHAFTER (Hawaii,L.G.S.,1928)--A standard bronze disk (Territory Survey) set in concrete pier, on grounds SE of Quartermaster Headquarters, Fort Shafter, just mauka from King Street directly across King Street from Nurses' headquarters.
Kapiolami School for Girls, flagpole is 264°34'58" in azimuth from station.

Form 526
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: SHAFTER
ESTABLISHED BY: L.G.S. YEAR: 1928 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was searched for but not found. First a trial point was established in the vicinity by triangulation, and the station location determined by traverse from it. Digging failed to uncover the mark so next, a traverse connection was made from nearby military boundary markers; this point fell within 2 feet of the previously determined point. Considerable digging, to a depth of 4 feet, was done, but the mark was not found.
The building mentioned in the original description has been moved and the area landscaped, and it is believed that the mark was destroyed.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

Coast-DC 34814

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SHAFTER
STATE: HAWAII YEAR: 1928 SECOND ORDER
SOURCE: G- 7448

GEODETIC LATITUDE:	21 °20 ′46.″784	ELEVATION: SCALED	17 METERS / FEET
GEODETIC LONGITUDE:	157 53 25.930		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	537,252.60	65,272.31	+ 0°02′23″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QE 003

NOV 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573
HAWAII
STATION 1370
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: SIGNAL 227 OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°28'00.84186 GEODETIC LONGITUDE: 157 48 44.32628		ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ φ) ANGLE *
HI 3	5103	563,821.12	109,094.06	+ 0° 04′ 07″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (OR Δ φ) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 033

NOV 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY • NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII STATION 1371
LATITUDE 21° 00′ TO 21° 30′
LONGITUDE 157° 30′ TO 158° 00′
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: SIGNAL 22B OBS BY NGS

STATE: HAWAII YEAR: 1976 THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°28′46.97574 GEODETIC LONGITUDE: 157 48 08.92548	ELEVATION:	METERS FEET	

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ (OR △ G) ANGLE *
HI 3	5103	567,159.06	113,753.15	+ 0° 04′ 20″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ (OR △ G) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 034

DEC 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573
HAWAII
STATION 1372
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF TRIANGULATION ~~INTERSECTION~~ STATION
TRAVERSE

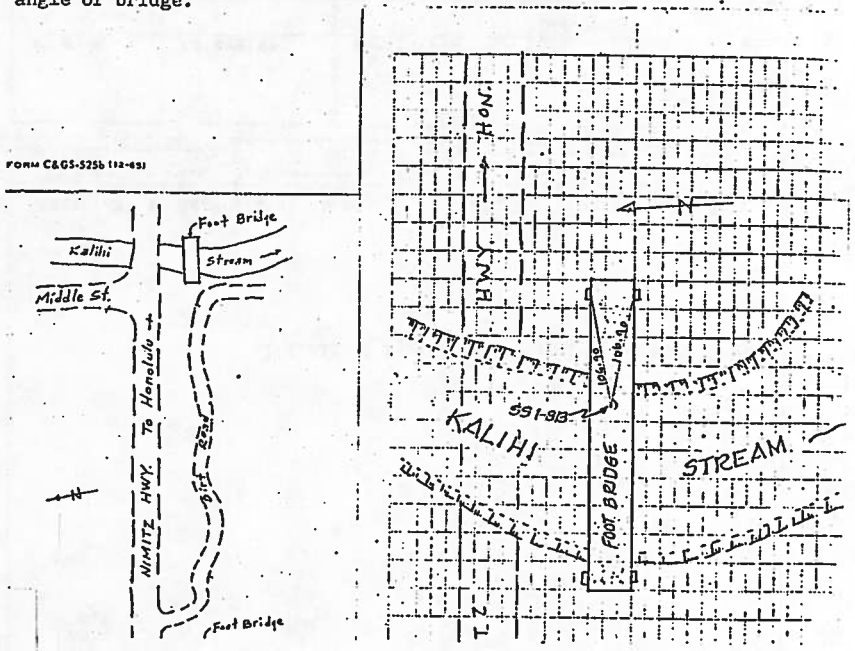
NAME OF STATION: STATE SURVEY 1-8 B

CHIEF OF PARTY: G. Yoshida YEAR: 1971 STATE: Hawaii COUNTY: Honolulu

Description, including sketch of object:

Station is located 1.9 miles east of Honolulu International Airport on the Kalihi Stream foot bridge near the intersection of Nimitz Highway and Middle Street. To reach the station from the intersection of Nimitz Highway and Lagoon Drive go east along Nimitz Highway for 0.6 mile to dirt road, turn right, then go east along dirt road for 0.2 mile to foot bridge.

Station mark is a standard State Survey disk stamped "1-8 B 1970" cemented in concrete near the center of foot bridge. Ties from station are: NE 106.9 ft. to angle of bridge, SE 106.9 ft. to angle of bridge.



FORM C&GS-525b (12-69)

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: STATE SURVEY 1-8B OBS BY WIDT

STATE: HAWAII YEAR: 1970 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE:	21°20'06.38508	ELEVATION: SCALED 4	METERS
GEODETIC LONGITUDE:	157 53 33.26219		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ IOR Δ α ANGLE *
HI 3	5103	536,562.24	61,195.60	+ 0° 02' 21"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ IOR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
SALT LAKE	151° 20' 58.7	151° 18' 38"	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 158

DEC 1979
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY • NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII STATION 1373
LATITUDE 21° 00′ TO 21° 30′
LONGITUDE 157° 30′ TO 158° 00′
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF TRIANGULATION ~~INTERSECTION~~ STATION
TRAVERSE

NAME OF STATION: STATE SURVEY 1-8 C

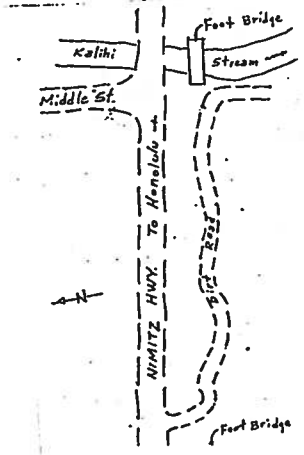
CHIEF OF PARTY: G. Yoshida YEAR: 1971 STATE: Hawaii COUNTY: Honolulu

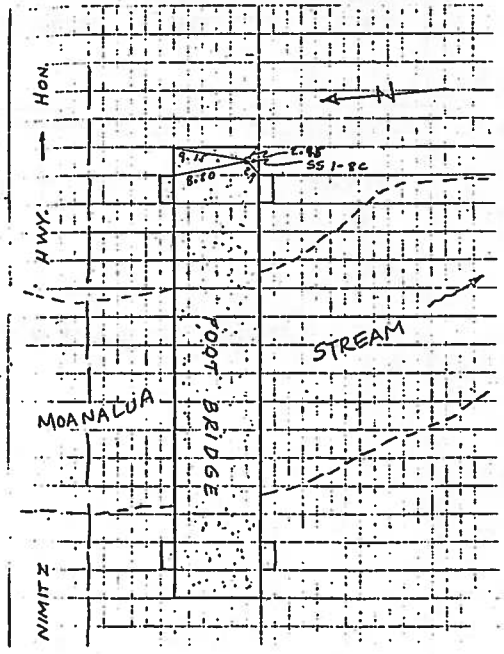
Description, including sketch of object:

Station is located 1.6 miles east of Honolulu International Airport on the Moanalua Stream foot bridge near the northeast end of Keehi Lagoon Park. To reach the station from the intersection of Nimitz Highway and Lagoon Drive, go east along Nimitz Highway for 0.6 mile to dirt road, turn right to foot bridge.

Station mark is a standard State Survey disk stamped "1-8 C 1970" cemented in concrete at the southeast corner of foot Bridge. Ties from station are: SE 2.95 ft. to corner of bridge, NE 9.15 ft. to corner of bridge, NW 8.8 ft. to angle of bridge, SW 2.9 ft. to angle of bridge.

FORM C&GS-525b (12-69)





ADJUSTED HORIZONTAL CONTROL DATA
ADJUSTMENT BY NGS

NAME OF STATION: STATE SURVEY 1-8C OBS BY WIDT
STATE: HAWAII YEAR: 1970 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE: 21°20′10.68100	ELEVATION SCALED	2	METERS
GEODETIC LONGITUDE: 157 53 45.37255			FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	β OR Δ α ANGLE *
HI 3	5103	535,417.04	61,628.29	+ 0° 02′ 16″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE β OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
STATE SURVEY 1-8B	290° 44′ 08.5	290° 41′ 52″	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 159

DEC 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII
STATION 1374
LATITUDE 21° 00' TO 21° 30'
LONGITUDE 157° 30' TO 158° 00'
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF SURVEY MARK

NAME OF STATION: State Survey 1-8D STATE: Hawaii COUNTY: Honolulu

NEAREST TOWN:

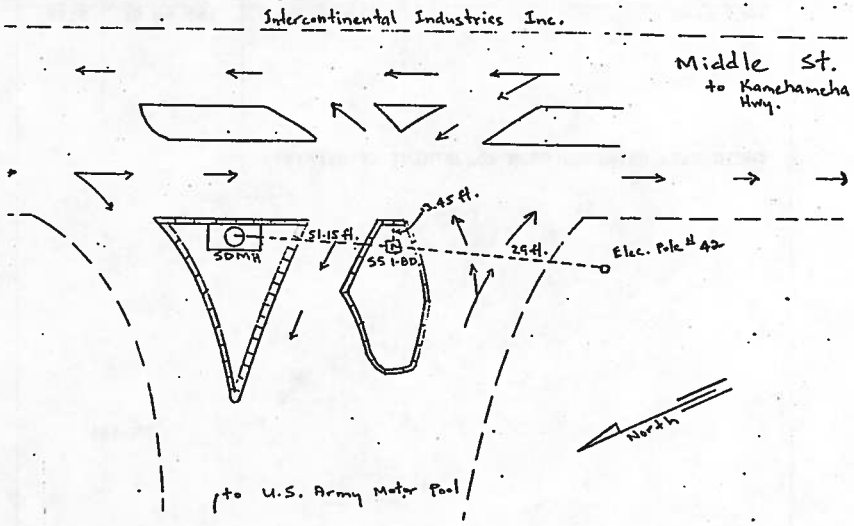
ESTABLISHED BY: State of Hawaii, Highways Division DATE: 1971

DESCRIBED BY: Richard M. Itoh SURFACE MARK: 3/4" pipe set in Concrete Monument

Station is located in Kahauiki District, Honolulu on the west side of Middle Street, 0.1 of a mile northeasterly from the north side of the Kamehameha Highway and Middle Street intersection.

To reach station from the intersection of Kamehameha Highway and Middle Street go northeasterly on Middle Street for 0.1 of a mile to a break in the medial strip on the left for a road leading to a U.S. Army Motor Pool (Shafter Flats). Station is located on the traffic island which is on the west edge of Middle Street south bound lanes and in the center of coral road leading to the U.S. Army Motor Pool gate.

Station mark is a 3/4" pipe set in concrete monument 0.1 foot above ground level. Ties from station are: NE 51.15 ft. to a storm drain manhole cover, SE 13.45 ft. to Middle St. side edge of traffic island, W 29.0 ft. to electric pole No. 42.



NOAA FORM 76-31
(11-74)

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: STATE SURVEY 1-8D OBS BY HIDT

STATE: HAWAII YEAR: 1971 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE:	21°20'16.89656	ELEVATION: SCALED	2 METERS
GEODETIC LONGITUDE:	157 53 27.81999		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	537,076.02	62,256.56	+ 0° 02' 23"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
SALT LAKE	146° 53' 20.1	146° 50' 57"	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 160

DEC 1979
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII STATION 1375
LATITUDE 21 ° 00' TO 21 ° 30'
LONGITUDE 157 ° 30' TO 158 ° 00'
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF SURVEY MARK

NAME OF STATION: State Survey 1-8E STATE: Hawaii COUNTY: Honolulu

NEAREST TOWN:

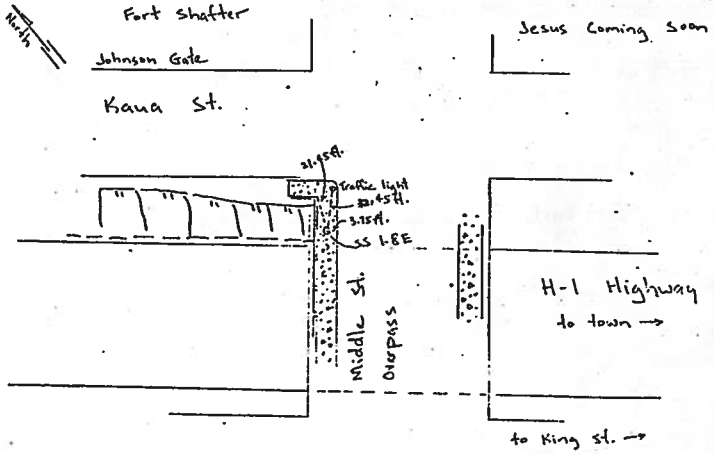
ESTABLISHED BY: State of Hawaii, Highways Division DATE: 1971

DESCRIBED BY: Richard M. Itoh SURFACE MARK: Standard State Survey Disk

Station is located in Kahauiki District, Honolulu on the west side of the Middle Street overpass over H-1 Highway, on the north side of H-1 Highway and 0.5 of a mile northeasterly from the north side of the Kamehameha Highway and Middle Street intersection..

To reach station from the intersection of Kamehameha Highway and Middle Street go northeasterly on Middle Street for 0.5 of a mile to the northwest side of the Middle Street overpass over H-1 Highway at the intersection of Middle and Kaua Streets. Station is on the west side sidewalk of the overpass near to the north end.

Station mark is a standard State Survey disk stamped "1-8E" set in the concrete sidewalk of the overpass. Ties from station are: N NE 21.45 ft. to an angle on metal guardrail, NE 32.45 ft. to traffic light on SW corner of Middle St. and Kaua St. intersection, 3.75 ft. to east edge of overpass sidewalk.



ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: STATE SURVEY 1-8E OBS BY HIDT

STATE: HAWAII YEAR: 1971 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE:	21°20'27.98140	ELEVATION	15 METERS
GEODETIC LONGITUDE:	157 53 10.87622	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	538,677.05	63,376.14	+ 0° 02' 29"

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
SALT LAKE	137° 51' 20.3	137° 48' 51"	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 161

DEC 1979

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY • NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573 HAWAII STATION 1376
LATITUDE 21° 00′ TO 21° 30′
LONGITUDE 157° 30′ TO 158° 00′
DIAGRAM NF 4-11 OAHU

DESCRIPTION OF SURVEY MARK

NAME OF STATION: State Survey 1-8F STATE: Hawaii COUNTY: Honolulu

NEAREST TOWN:

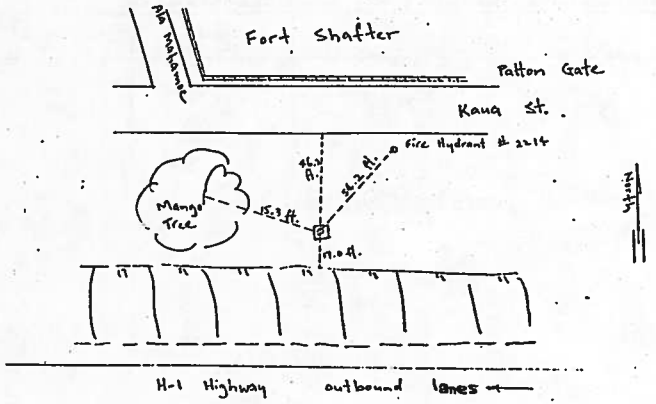
ESTABLISHED BY: State of Hawaii, Highways Division DATE: 1971

DESCRIBED BY: Richard M. Itoh SURFACE MARK: Standard State Survey Disk

Station is located in Moanalua District, Honolulu on the north side of the H-1 Highway, 0.5 of a mile northwesterly from the Middle Street overpass over H-1 Highway and also Middle Street - Kaua Street intersection.

To reach station from the intersection of Kamehameha Highway and Middle Street go northeasterly on Middle Street for 0.5 of a mile to the Middle Street overpass over H-1 Highway and also the Middle Street - Kaua Street intersection. Turn left into Kaua Street and proceed 0.5 of a mile northwesterly on Kaua Street to the station which is on the strip of land on the left separating Kaua Street and the H-1 Highway just before Kaua Street - Ala Mahamoe Street intersection.

Station mark is a standard State Survey disk stamped "1-8F" set in concrete monument level with the ground. Ties from station are: S 17.0 ft. to the top of cut H-1 Highway, NW 15.3 ft. to a mango tree, N 46.2 ft. to the south edge of Kaua St., N NE 54.2 ft. to fire hydrant No. 2214.



ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: STATE SURVEY 1-8F OBS BY HIDT

STATE: HAWAII YEAR: 1971 THIRD ORDER

SOURCE: G-15752

GEODETIC LATITUDE:	21°20′46.72487	ELEVATION: SCALED	17 METERS
GEODETIC LONGITUDE:	157 53 32.82572		FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	θ OR Δ α1 ANGLE *
HI 3	5103	536,600.73	65,265.89	+ 0° 02′ 21″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ α1 FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
SALT LAKE	139° 27′ 16.4	139° 24′ 55″	5103

THESE DATA OBTAINED FROM ADJUSTMENT OF SEP 1979

RL 162

NOAA FORM 76-31
(11-76)

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1377
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Station G (Oahu Island, E. R. Hand, 1925).—On southern coast of Oahu, the artillery fire control station on Ahua Point. Station is an inconspicuous green house on iron frame.

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Station G
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* S.L.H. YEAR: 1956 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station is on Ohau Island, approximately 2 miles E of Pearl Harbor entrance, on Anua Point. It is on an artillery fire control tower of open steel construction framework, approximately 30 feet high, 10 feet square at top with corrugated iron side on house at top. It is faded green in color. An 8-sided concrete column runs up thru the tower, slightly of center and extends 10 inches above floor.

Instrument Station — Station G
Azimuth Station — Pearl Harbor Water Tank A
X to stub — 175 45'30" (rt)
Distance — 26.3 meters (86.3 feet)

FORM 528
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: Station G
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was recovered. On south coast of Oahu, on Ahua Point, 500 feet west of the buildings at Keehi Servicemens Beach. Station is old artillery fire-control tower; an 11-foot-square, metal house, faded green in color, supported by 4 metal legs. Top of roof is 30 feet above ground. A 42-inch-thick, octagon, concrete, instrument pillar extends from the ground up into the house, and has a 1-1/2-inch brass plug in its center. The pillar is about 1-1/2 feet off center, to the southeast, from the center of the house.

A dense growth of keawe trees in the area is about even with the floor of the house.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

COMM-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: STATION G

STATE: HAWAII YEAR: 1925 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 18 52.059	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 55 49.836		FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	523,653.84	53,688.92	+ 0 01 31

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	

QI 369

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1378
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Station G, Honolulu, Ahua Pt., ATC Tower
ESTABLISHED BY: H.O.F. YEAR: 1957 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was recovered; it was verified by taping from Station G 1925. Located on south coast of Oahu, on Ahua Point, at west end of the Keehi Servicemens' Beach. A shingled, white building 20 feet wide, 48 feet long, 20 feet high, with a 12-foot-square white platform 35 feet above ground, mounted on the roof. There are 6 white posts mounted vertically on the platform and twin, red, obstruction lights mounted on the northeast and southwest corners of the platform rail. A sign "ATC TRANSMITTER STATION KEEHI BEACH, OAHU. CIVIL AERONAUTICS ADMINISTRATION, DEPT OF COMMERCE" is mounted over the door of the building.

The building is abandoned and some superstructure has been removed from the platform so it is not known what the point of intersection was.

NOTE: Because this is an ATC building it is believed that the name of the station was meant to be "ATC Tower", and was mistakenly named "ATG Tower".

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

COMM-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: STA G HONOLULU AHUA PT ATC TWR OBS BY HTS
STATE: HAWAII YEAR 1957 THIRD ORDER
SOURCE: G-11968

GEODETIC LATITUDE:	21 °18 ′49.″766	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 55 45.599		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE
HI 3	5103	524,054.56	53,457.73	+ 0 °01 ′33 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH* (From south) ° ′ ″	CODE

QF 220

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 HAWAII STATION 1379
LATITUDE 21 °00′ TO 21 °30′
LONGITUDE 157 °30′ TO 158 °00′
DIAGRAM NF 4-11 OAHU

SEE STATION KALIHI 2

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: STREET MARKER SPIKE

STATE: HAWAII YEAR: 1964 THIRD ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °19′28.″093	ELEVATION: SCALED	2 METERS FEET
GEODETIC LONGITUDE:	157 53 39.424		

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ α) ANGLE *
HI 3	5103	535,982.30	57,331.57	+ 0°02′18″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

POSITION DETERMINED BY TRAVERSE FROM STATION KALIHI 2

QF 5o1

NOV 1979
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
Old Hawaiian Datum

QUAD 211573
HAWAII
STATION 1380
LATITUDE 21 ° 00′ TO 21 ° 30
LONGITUDE 157 ° 30′ TO 158 ° 00
DIAGRAM NF 4-11 OAHU

NO TEXT

ADJUSTED HORIZONTAL CONTROL DATA

ADJUSTMENT BY NGS

NAME OF STATION: SW RADIO TOWER AERO OBSTR LT — OBS BY NGS
STATE: HAWAII — YEAR: 1976 — THIRD ORDER

SOURCE: G-15809

GEODETIC LATITUDE: 21°27′41.36968		ELEVATION	METERS
GEODETIC LONGITUDE: 157 46 03.98983			FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ OR Δ α ANGLE *
HI 3	5103	578,960.75	107,149.60	+ 0° 05′ 06″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

THESE DATA OBTAINED FROM ADJUSTMENT OF AUG 1979

K9 035

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1381
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Form 526
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY
RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: SWAMP
ESTABLISHED BY: HTS YEAR: 1952 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

According to a notation on a sketch obtained from the Hawaii State Survey Office, the station was marked by a pipe in concrete.

The station point was determined by check angle. Digging at this point failed to uncover any kind of mark. The site is along the east side of the Kawainui Canal, on the ditch-bank. This portion of the canal, which passes along the east side of Kawainui Swamp, is dredged periodically and it is believed that the mark has been destroyed by the dredging machinery.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

Coast-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: SWAMP DBS BY HTS
STATE: HAWAII YEAR: 1952 THIRD ORDER

SOURCE: G-11968

GEODETIC LATITUDE: 21 °24 ′13.″406 GEODETIC LONGITUDE: 157 45 25.745		ELEVATION:	METERS FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ IOR Δ α ANGLE *
HI 3	5103	582,613.84	86,171.34	+ 0 °05 ′19 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ IOR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QF 202

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1382
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

Tantalus (Puu Ohia) (Oahu Island, Hawaiian Government Survey, 1872; L. G. Simmons, 1927).—In the southeastern part of Oahu, on the summit of Puu Ohia (Tantalus Hill), about 3½ miles northeast of the center of the Honolulu business district. Car can be driven to within 300 feet (in elevation) of station. Marked by a granite post sunk nearly level with ground, with cross cut in top. Around this has been placed a concrete pier 6 feet square with 3-inch galvanized pipe set vertically over center. Reference marks, note 13a, standard reference disks in concrete in tile, are at the following distances and azimuths from station: No. 1, 7.055 meters (23.15 feet), 352° 19′; No. 2, 4.360 meters (14.30 feet), 80° 03′. Re-marked according to note 14A in 1929.

FORM 2400 (9-18-68) U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY

R

RECOVERY NOTE, TRIANGULATION STATION

NAME OF STATION: TANTALUS-PUU OHIA
ESTABLISHED BY: HGS YEAR: 1872 STATE: Hawaii
RECOVERED BY:* W.R. Porter YEAR: 1963 COUNTY: Honolulu

HEIGHT OF TELESCOPE ABOVE STATION MARK METERS, HEIGHT OF LIGHT ABOVE STATION MARK METERS.

DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION

OBJECT	BEARING	DISTANCE FEET	DISTANCE METERS	DIRECTION °	′	″
KAIMUKI 1872-1927				00	00	00.0
R.M. No. 1	S	23.120	7.048	07	22	50
R.M. No. 2	WSW	14.410	4.390	94	47	52

Station was recovered and all marks found in good condition. A complete description follows:

Station is located about 3-3/4 miles airline northeast of the Federal Building in Honolulu, at about 2013 feet elevation, on the summit of the hill just above the northernmost end of Tantalus Drive.

To reach station from the police station at Beretania and Kalakaua Streets in Honolulu, go east on Beretania for 2 blocks; turn left and go 0.35 mile on Punahou Street; turn left and go 0.15 mile on Wilder Avenue; turn right and follow Round Top Drive winding upgrade for 6.0 miles to locked gate on a narrow, hard-surfaced road on right.. Pass through gate and go up steep grade for 0.55 mile; turn sharp right and go 0.05 mile to end of road at building. Walk up flight of steps to top of hill and station.

Station mark is an unstamped, Hawaii Territory Survey, bronze disk, set in the top of an 8-inch-square, concrete monument 1 inch below ground level. It is 24 feet south from the top step of the flight, and about 25 yards south of a telephone company building. A "Type A" Hawaii Territory Survey signal is centered over the mark. The floor is 4-1/2 feet above ground and the metal target extends 8 feet above the floor.

Reference mark number one is a standard disk stamped "TANTALUS NO 1 1927", set in concrete in the top of a 5-inch iron pipe that projects 4 inches above ground. It is 10 feet east of dim trail and about 1 foot lower than station.

Reference mark number two is a standard disk stamped "TANTALUS NO 2 1927", set in concrete in the top of a 5-inch iron pipe that projects 3 inches above ground. It is at about same elevation as station mark.

(NOTE): (Key for locked gate was obtained from the Forest Service Office in Honolulu).

(E.P.,Jr.,1969)--This station was recovered in good condition as described.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the [illegible] note.

NOTE - One of these forms must be used for every station recovered.

USCOMM-DC 27179-P69

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TANTALUS-PUU OHIA
STATE: HAWAII YEAR: 1872 SECOND -ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °20 ′08.″929	ELEVATION:	614 METERS
GEODETIC LONGITUDE:	157 49 03.233	SCALED	FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	ϕ (OR Δ α) ANGLE °
HI 3	5103	562,090.60	61,475.78	+ 0 03 59

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ (OR Δ α) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH* (From south)	CODE
KAIMUKI	345 °11 ′07.″1	345 °07 ′08 ″	5103

QI 276

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1383
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
Form 526
Rev. Aug. 1963

DESCRIPTION OF TRIANGULATION STATION

NAME OF STATION: TEN (USN) STATE: Hawaii COUNTY: Honolulu

CHIEF OF PARTY: W.R. Porter YEAR: 1960 Described by: D.R. Tomlinson

NOTE.*	HEIGHT OF TELESCOPE ABOVE STATION MARK 1 METERS.†	HEIGHT OF LIGHT ABOVE STATION MARK METERS.

	Surface-station mark, Underground-station mark	DISTANCES AND DIRECTIONS TO AZIMUTH MARK, REFERENCE MARKS AND PROMINENT OBJECTS WHICH CAN BE SEEN FROM THE GROUND AT THE STATION					
		OBJECT	BEARING	DISTANCE feet	DISTANCE meters	DIRECTION: ° ′ ″	
		SALT LAKE 1873 1927				0 00 00.0	
Desc.		RM 1	SE	25.87	7.884	31 50 49	
Desc.		RM 2	SW	16.40	4.998	128 52 41	

Detailed descriptions

Station is located in the Pearl Harbor Shipyard, near the northeast end of birth 3.

The station mark is a United States Navy bronze disk, stamped TEN, cemented in a drill hole in concrete. It is 8 feet southwest of the northeast corner of the pier and 2 feet southeast of the northwest edge of the pier.

Reference mark 1 is a standard disk, stamped TEN USN NO 1 1960, cemented in a drill hole in concrete. It is 27 feet southeast of the northeast corner of the pier.

Reference mark 2 is a standard disk, stamped TEN USN NO 2 1960, cemented in a drill hole in concrete. It is 2 feet southeast of the northwest edge of the pier.

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: Ten (USN)
ESTABLISHED BY: W.R. Porter YEAR: 1960 STATE: Hawaii BENCH MARK(S) ALSO ☐
RECOVERED BY: R.H. Allbritton YEAR: 1967 COUNTY: Honolulu
AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN:

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Berth 3 is being reconstructed.
Station has been destroyed. Reference marks 1 and 2 have also been destroyed.

FORM C&GS-526 (1-68)
USCOMM-DC 16808-P65

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TEN USN
STATE: HAWAII YEAR: 1960 SECOND ORDER
SOURCE: G-12191

GEODETIC LATITUDE:	21 °21 ′36.″167	ELEVATION:	1 METERS
GEODETIC LONGITUDE:	157 57 25.445	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	θ IOR Δ α ANGLE *
HI 3	5103	514,609.17	70,244.06	+ 0° 00′ 56″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE θ IOR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QF 231

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1384
HAWAII
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

Transit of Venus (Oahu Island, Hawaiian Government Survey, 1875).—In a lot belonging to the estate of the late Queen Dowager Kapiolani, on the south side of Punchbowl Street, near the sea. Marked by transit pier of solid masonry, which is about 10 feet north of the altazimuth pier.

TRANSIT OF VENUS (Hawaii,Hawaiian Government Survey, 1875;R.D.K.,1932) --From Circular Letter No. 12, filed with "Report of the Surveyor" -
"Transit of Venus said to be a recovery of W.D. Alexander's station of 1904 was reestablished in 1917 by the Hawaiian Territory Survey and used as a reference station for the city survey of Waimea town. Through the courtesy of Aubrey Robinson Esq. of Kauai, it has now been marked with Type B monument and platform, but without a target. It can no longer be used for general triangulation purposes and has been preserved for historical reasons and as a reference point of the street monuments established in Waimea town. It is situated in the parsonage of the Waimea Foreign Church and must not be occupied except by first obtaining permission from the resident minister. Extreme care must be exercised in the use of this station and no foliage or trees may be cut or other property injured or destroyed."

Form 526
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: TRANSIT OF VENUS
ESTABLISHED BY: Haw. Govt. Surv YEAR: 1875 STATE: Hawaii
RECOVERED BY:* D.G. Rushford YEAR: 1964 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Searched for but not found. Located in a built-up part of Honolulu and believed to be destroyed.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

Comm-DC 34914

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TRANSIT OF VENUS
STATE: HAWAII YEAR: 1875 THIRD ORDER

SOURCE: G-SP156

GEODETIC LATITUDE:	21 °18 ′22.″738	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 51 47.993	SCALED	FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ OR Δ α ANGLE *
HI 3	5103	546,523.49	50,745.41	+ 0 °02 ′59 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ OR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south)	PLANE AZIMUTH * (From south)	CODE
	° ′ ″	° ′ ″	

QI 339

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 HAWAII STATION 1385
LATITUDE 21 ° 00′ TO 21 °30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

SEE STATION KAHALA

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: TRAVERSE MARK

STATE: HAWAII YEAR: 1963 SECOND -ORDER

SOURCE: G-12664
NO OBSERVATION CHECK ON THIS POSITION

GEODETIC LATITUDE:	21 °16′24.″277	ELEVATION:	2 METERS
GEODETIC LONGITUDE:	157 46 50.401		SCALED FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	φ (OR Δ G) ANGLE *
HI 3	5103	574,680.07	38,824.56	+ 0° 04′ 47″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ (OR Δ G) FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

POSITION DETERMINED BY TRAVERSE FROM STATION KAHALA

QF 558

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 STATION 1386
HAWAII
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

NO ORIGINAL TEXT

ULT (Hawaii,E.R.H.,1925;H.A.P.,1931)
--At Wailupe, 250 meters SSE of the Naval Radio Station, near SW corner of rock fill enclosing a fish pond. The pond has three outlets on the W side. The station is two meters S of the most S outlet and two meters E of the W side of the fill. It is marked with a Territorial Survey disk set in a concrete block flush with ground.

Form 526
(11-8-55)

U.S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION

R

NAME OF STATION: ULT
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* D.G. Rushford YEAR: 1964 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

When the fishpond was filled and converted into a housing development about 4 feet was added to the height of the pond wall. It is possible that the mark is still in place beneath the fill, however no excavation was done in a search for it.

*Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

COMM-DC 34314

NOAA FORM 76-31
(11-76)

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: ULT
STATE: HAWAII YEAR: 1925 THIRD ORDER
SOURCE: G-SP156

GEODETIC LATITUDE:	21 °16 ′37.″299	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 45 40.832		FEET

STATE COORDINATES (Feet)

STATE & ZONE	CODE	X	Y	φ IOR Δ α ANGLE °
HI 3	5103	581,257.93	40,148.01	+ 0 ° 05 ′ 12 ″

° PLANE AZIMUTH HAS BEEN COMPUTED BY THE φ IOR Δ α FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH ° (From south) ° ′ ″	CODE

QI 318

JUN 1978
U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY , NATIONAL GEODETIC SURVEY

HORIZONTAL CONTROL DATA

by the
National Ocean Survey
OLD HAWAIIAN DATUM

QUAD 211573 HAWAII STATION 1387
LATITUDE 21 ° 00′ TO 21 ° 30′
LONGITUDE 157 ° 30′ TO 158 ° 00′
DIAGRAM NF 4-11 OAHU

University of Hawaii Library

(Oahu Island, E. R. Hand, 1925).—In southeastern Oahu, back in the valley between Honolulu and Diamond Head, on the library building of the University of Hawaii, a low white square structure of classical design, the highest of a group of three white buildings. Library has a line of pillars on front face. Station is exact center of building, as determined by intersection of diagonals.

Form 526
(11-8-55)

U. S. DEPARTMENT OF COMMERCE - COAST AND GEODETIC SURVEY

RECOVERY NOTE, TRIANGULATION STATION
INTERSECTION

R

NAME OF STATION: University of Hawaii, Library
ESTABLISHED BY: E.R.H. YEAR: 1925 STATE: Hawaii
RECOVERED BY:* D.M. Whipp YEAR: 1965 COUNTY: Honolulu

Detailed statement as to the fitness of the original description; including marks found, stampings, changes made, and other pertinent facts:

Station was recovered as previously described. It is at the west end of the campus, among the group of older style buildings; no longer used as a library. There is a sign "GEORGE HALL" over the main entrance of the building.

* Name of chief of party should be inserted here. The officer who actually visited the station should sign his name at the end of the recovery note.
NOTE.—One of these forms must be used for every station recovered.

Comm-DC 34314

ADJUSTED HORIZONTAL CONTROL DATA

NAME OF STATION: UNIVERSITY OF HAWAII LIBRARY

STATE: HAWAII YEAR: 1925 ORDER: THIRD

SOURCE: G- 7448

GEODETIC LATITUDE:	21 °18 ′12.″349	ELEVATION:	METERS
GEODETIC LONGITUDE:	157 49 22.541		FEET

STATE COORDINATES (Feet)				
STATE & ZONE	CODE	X	Y	ϕ OR $\Delta\phi$ ANGLE *
HI 3	5103	560,278.43	49,710.85	+ 0 ° 03 ′ 52 ″

* PLANE AZIMUTH HAS BEEN COMPUTED BY THE ϕ OR $\Delta\phi$ FORMULA NEGLECTING THE SECOND TERM.

TO STATION OR OBJECT	GEODETIC AZIMUTH (From south) ° ′ ″	PLANE AZIMUTH * (From south) ° ′ ″	CODE

QE 028