

3. Inclosure No. 2 is the graphical record made on the OPANA station plotting board. This record includes the period covered in Inclosure No. 1 and subsequent hours of 7 December, 1941. Attention is invited to the plot beginning at 7:02 A. M. near the top of the chart and ending at 7:39 A. M. as it developed that this was the hostile flight which attacked PEARL HARBOR at 8:30 A. M.

C. A. Powell
C. A. POWELL
*Lt Col, Signal Corps,
Signal Officer.*

2 Inclosures: Overt
(Stamped:)
RECEIVED
JAN 29 1126 AM '42
OFFICE OF THE CHIEF SIGNAL OFFICER

ARMY PEARL HARBOR BOARD EXHIBIT No. 3A

(Exhibit 3-A is a map of the Hawaiian Islands bearing notations from Radar Detector Station Records. This map is reproduced as Item No. 4 in EXHIBITS-ILLUSTRATIONS, Army Pearl Harbor Board.)

ARMY PEARL HARBOR BOARD EXHIBIT No. 3B

(Exhibit 3-B is a map showing record of Opua Radar Detector Station 7 December 1941. This map is reproduced as Item No. 5 in EXHIBITS-ILLUSTRATIONS, Army Pearl Harbor Board.)

ARMY PEARL HARBOR BOARD EXHIBIT No. 4

SUMMARY

WAR DEPARTMENT

UNITED STATES ENGINEER OFFICE

Honolulu, T. H.

Contract No. W-414-eng-602

Mt. Kaala (Oahu, T. H.).

Job Order #2.1 March 5, 1941.

Construct 9,000 feet of access road from Kole Kole Pass Road to proposed site of Cableway at Mt. Kaala.

Est. Cost \$78,825.00.

Commencement date: March 6, 1941.

Est. date for completion: May 6, 1941.

Supervision by J. J. Kestly, Area Engr., 3rd Field Area.

Job Order #2.0 Feb. 6, 1941.

Construct Cableway Mt. Kaala.

Est. Cost \$71,451.00.

Commencement date: Feb. 6, 1941.

Est. date for completion: June 1, 1941.

Supervision John J. Kestly, Area Engr., 3rd Field Area.

Addendum #1 Feb. 19, 1942 Cable Warehouse.

Addendum #2 Feb. 26, 1942 Splinter Proof Tunnel.

Job Order #2.2 Oct. 17, 1941.

Construct A. W. S. Camp and install utilities—Mess Hall, Barracks, Power House, Radio Communication Bldg., etc. Also erect 100 ft. Radio Tower and install equipment.

Est. Cost \$31,120.93.

Commencement date: Dec. 1, 1941.

Est. date for completion: Mar. 1, 1942.

Supervision Area Engr. J. J. Kestly 3rd Field Area.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Honolulu, T. H., March 5, 1941.

JOB ORDER No. 2.1

Contract No. W-414-eng-602.

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Access Road from Kole Kole Pass Road to base of proposed Cableway at Mt. Kaala.
2. LOCATION: Island of Oahu, T. H.
3. OFFICE FILE REFERENCE: C. of E. 665 (Oahu) 505. July 31, 1940.
4. WORK TO BE DONE: Construct approximately 9,000 feet of access road from Kole Kole Pass Road to the proposed site of the Cableway at Mt. Kaala, together with all necessary culverts and drainage facilities.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department.
6. DRAWINGS AND REFERENCES: See Para. 1-03 Specifications.
7. APPROPRIATION CHARGEABLE: 21010605 Signal Service of the Army 1940-41.
8. ESTIMATED COST: \$57,225.00.
9. COMMENCEMENT DATE: March 6, 1941.
10. ESTIMATED DATE FOR COMPLETION: May 6, 1941.
11. ESTIMATED LABOR AT SITE: 14,200 man hours.
12. PLANT REQUIRED: See detailed estimate attached.
13. MATERIALS: See detailed estimate attached.
14. SUPERVISION BY: J. J. Kestly, Area Engineer, Third Field Area.

THEODORE WYMAN, JR.,

Lt. Col., Corps of Engineers, District Engineer.

Approved: March 20, 1941.

For and in the absence of the Division Engineer:

J. R. D. MATHESON,

Colonel, Corps of Engineers, Executive Assistant.

ESTIMATE OF COST

To Accompany Job Order No. 2.1

Contract No. W-414-eng-602

ESTIMATE OF COST: Access Road From Kole Kole Pass Road to Base of Proposed Cableway at Mt. Kaala, Island of Oahu, T. H.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done is on the Island of Oahu, T. H., and includes the furnishing of all necessary labor and equipment, and the performing of all work necessary to construct a 10' roadway approximately 9,000 feet long, together with all necessary culverts and drainage facilities. Unit prices are stated in the following schedules:

1. Materials to be furnished:

Item	Designation	Quantity	Unit	Unit Price	Amount
1	Dynamite	15,000	lbs.	\$0.125	\$1,875.00
2	Blasting Caps, Electric (Lump Sum)				400.00
3	Cement	460	bbl.	3.04	1,398.40
4	Fine Aggregate	170	cu. yd.	2.70	459.00
5	Coarse Aggregate	260	cu. yd.	3.00	780.00
6	1" Ø Reinf. Steel	7,210	lbs.	0.045	324.45
7	3/4" Reinf. Steel	8,420	lbs.	0.045	378.90
8	5/8" Reinf. Steel	27,590	lbs.	0.045	1,240.20
9	1" x 6" Shiplap—Lumber	9,500	bf	55.00M	522.50
10	2" x 4" Studding—Lumber	3,000	bf	55.00M	165.00
11	4" x 4" Whaling—Lumber	3,500	bf	53.00M	185.50
12	2" Black Steel Pipe and Fittings	9,000	lin. ft.	0.30	2,700.00
13	Wire #14	100	lbs.	0.10	10.00
14	48" R. C. Pipe	608	lin. ft.	6.30	3,830.40
15	Tar Paper	1	roll	3.00	3.00
16	Nails	300	lbs.	0.08	24.00
17	18" Reinf. Concrete Pipe	240	lin. ft.	3.15	756.00
	Total Cost of Material				15,052.35

2. Day Labor:

(a) <i>Clearing and Grubbing:</i>			
60 man hours	-----	@ \$1.50	\$90.00
1,400 man hours	-----	0.50	700.00
(b) <i>Hauling and Handling:</i>			
16 man hours	-----	@ \$1.50	24.00
320 man hours	-----	1.00	320.00
320 man hours	-----	0.50	160.00
(c) <i>Excavation and Fill (Road):</i>			
800 man hours	-----	@ \$1.50	1,200.00
480 man hours	-----	1.00	480.00
2,400 man hours	-----	0.75	1,800.00
1,200 man hours	-----	0.50	600.00
(d) <i>Excavation and Backfill (Drainage Structures):</i>			
24 man hours	-----	@ \$1.50	36.00
400 man hours	-----	0.50	200.00
(e) <i>Drilling and Blasting:</i>			
300 man hours	-----	@ \$1.50	450.00
1,200 man hours	-----	0.75	900.00
800 man hours	-----	0.50	400.00
(f) <i>Shaping and Rolling:</i>			
16 man hours	-----	@ \$1.50	24.00
280 man hours	-----	1.00	280.00
240 man hours	-----	0.50	120.00
(g) <i>Forming, Stripping and Curing:</i>			
40 man hours	-----	@ \$1.50	60.00
320 man hours	-----	1.00	320.00
320 man hours	-----	0.50	160.00
(h) <i>Mixing and Placing Concrete:</i>			
40 man hours	-----	@ \$1.50	60.00
80 man hours	-----	1.00	80.00
320 man hours	-----	0.50	160.00
(i) <i>Trenching, Laying and Backfilling Concrete Pipe:</i>			
64 man hours	-----	@ \$1.50	96.00
100 man hours	-----	1.00	100.00
100 man hours	-----	0.75	75.00
420 man hours	-----	0.50	210.00
(j) <i>Rock Masonry—Channel Work:</i>			
64 man hours	-----	@ \$1.50	96.00
120 man hours	-----	1.00	120.00
300 man hours	-----	0.50	150.00
(k) <i>Maintenance Crew, Watchmen, etc.:</i>			
240 man hours	-----	@ \$1.50	360.00
480 man hours	-----	1.00	480.00
480 man hours	-----	0.65	292.00
480 man hours	-----	0.50	240.00
Total Cost of Day Labor	-----		<u>10,843.00</u>

3. Plant Operation.

(a) <i>Rental of Equipment:</i>			
1 Caterpillar w/dozer	-----	60 da. @ \$22.50	\$1,350.00
1 Grader	-----	15 da. 6.00	90.00
1 Shovel—2½ yd	-----	2 mo. 3,115.00	6,230.00
3 Trucks—9 yd	-----	2 mo. 584.00	3,504.00
1 Truck—1½ ton	-----	2 mo. 180.00	360.00
1 Pick-up Truck	-----	2 mo. 69.00	138.00
1 Concrete Mixer—¼ yd	-----	20 da. 2.50	50.00
1 Compressor	-----	2 mo. 695.00	1,390.00
3 Jackhammers	-----	2 mo. 45.00	270.00
1 Roller	-----	1 mo. 360.00	360.00
1 Motor truck Crane	-----	½ mo. 942.00	471.00
1 Sedan	-----	2 mo. 76.00	152.00
1 Bar bending Machine	-----	6 da. 2.50	15.00
1 Bar Shear	-----	6 da. 3.50	21.00
Small Tools (lump sum)	-----		500.00
Total Plant to be Leased	-----		<u>14,901.00</u>

(b) Fuel, Oil, and Supplies-----	\$900.00
(c) Temporary buildings, shelters-----	200.00
Total Plant Operation Cost-----	<u>16,001.00</u>

Part 4.

Total Plant Operation Cost of Job:

Cost of Material-----	15,052.35
Cost of Day Labor-----	10,843.00
Cost of Plant Operation-----	16,001.00
Total Plant Operation Cost-----	<u>41,896.35</u>

5. Total Cost of Work:

(a) Direct Cost:	
Total Plant Operation Cost-----	41,896.35
Contingencies—15%-----	6,284.45
Total Direct Cost-----	48,180.80
(b) Indirect Cost:	
Mobilization & Demobilization-----	\$1,500.00
Survey, Inspection, Engineering—10%-----	4,818.08
Total Indirect Cost-----	6,318.08
Total Field Cost-----	54,498.88
General Office Overhead—5%-----	2,726.12
Estimated Grand Total Cost by Hired Labor and Government Plant-----	<u>57,225.00</u>

THEODORE WYMAN, JR.
Lt. Col., Corps of Engineers,
District Engineer.

UNSKILLED LABOR

CLASS 1—\$0.50 per hour.

Shovelers
Concrete Placers
Slopers—Roadway
Material Handlers
Brush Cutters
Water Boy

CLASS 2—\$0.65 per hour.

Carpenter's Helper
Crane Operator's Helper
Air Compressor Men

SEMI-SKILLED LABOR

CLASS 3—\$0.75 per hour.

Truck Drivers
Drillers
Steel Tiers

SKILLED LABOR

CLASS 4—\$1.00 per hour.

Carpenters
Tractor Operators
Crane Operators
Cement Finishers

CLASS 5—\$1.50 per hour.

General Foreman

JUNE 24, 1941.

ADDENDUM NO. 1

To Accompany Job Order No. 2.1
Contract No. W-414-eng 602

WORK TO BE DONE: Pave Mt. Kaala Access Road, with 4" Water Bound Macadam Base Course and 2½" Asphaltic Concrete Top Course.
DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Mt. Kaala Access Road, on the Island of Oahu, T. H., and is limited to the following Specific item:

1. Furnish all labor and equipment and perform all work necessary to pave Mt. Kaala Access Road with a 4" water bound Macadam base Course and 2½" asphaltic concrete top Course, in accordance with the Specifications to be issued and the details shown on the drawings enumerated in the Specifications.

Addendum No. 1 to Job Order No. 2.1 is additional work and does not alter Job Order No. 2.1.

The total Cost of the Work shall not exceed \$21,600.00.

(Signed) Theodore Wyman, Jr.,
THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

Recapitulation of Estimated Cost

1. Total Cost of Work.

(a) Direct Cost:

Total Cost to the Contractor-----	\$21,600.00	
Contingencies—10%-----	2,160.00	

Total Direct Cost-----		\$23,760.00
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(b) Indirect Cost:

Survey, Inspection, Engineering-----	\$1,728.00	
Total Indirect Cost-----		\$1,728.00
Total Field Cost-----	\$25,488.00	

General Office Overhead-----		1,728.00
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Estimated Total Cost to the Government-----		\$27,216.00
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This estimate is prepared for use in the District only, and is not for distribution to the Contractor.

(Signed) Theodore Wyman, Jr.,
THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Honolulu, T. H., February 6, 1941.

JOB ORDER NO. 2.0.

Contract No. W-414-eng-602.

To: Hawaiian Constructors Honolulu, T. H.

You are hereby directed to proceed with the following work:

- PROJECT TITLE: Sea Coast Defense, Cableway Mt. Kaala.
- LOCATION: On the island of Oahu, T. H., east slope of Mt. Kaala.
- OFFICE FILE REFERENCE: C. of E. 665 (Oahu) 505. July 31, 1940.
- WORK TO BE DONE: Construct and complete a cableway, as specified and in conformity to the approved plans and drawings.
- WORK REQUESTED BY: Commanding General, Hawaiian Department.
- DRAWINGS AND REFERENCES: As enumerated. (see Para. 1-03 of attached specifications).
- APPROPRIATION CHARGEABLE: S. S. S. A. 1940-1941, Aircraft Warning Service, Hawaiian Department SC1450 P99 A0605-01.
- ESTIMATED COST: \$71,451.91 (see detailed estimate attached).
- COMMENCEMENT DATE: (See para. 1-05a of attached specifications.)
- ESTIMATED DATE FOR COMPLETION: (See para. 1-05b of attached specifications).
- ESTIMATED LABOR AT SITE: 11,620 man hours (See detailed estimate sheet).
- PLANT REQUIRED: See detailed estimate attached.
- MATERIALS: See detailed estimate attached.
- SUPERVISION BY: John J. Kestly, Area Engineer, Third Field Area.

THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

Approved:

Corps of Engineers,
Division Engineer.

(d) <i>Drilling and Blasting for Excavation:</i>		
120 man hours	@ \$1.50	\$180.00
240 man hours	@ 0.75	180.00
240 man hours	@ 0.65	156.00
(e) <i>Erection Structural Steel and Stringing Cable:</i>		
400 man hours	@ 1.50	600.00
1200 man hours	@ 1.00	1,200.00
1200 man hours	@ 0.65	780.00
(f) <i>Installing Electrical Equipment:</i>		
100 man hours	@ 1.50	150.00
200 man hours	@ 1.00	200.00
200 man hours	@ 0.65	135.00
(g) <i>Operators for Rented Equipment:</i>		
360 man hours	@ 1.25	450.00
1800 man hours	@ 1.00	1,800.00
600 man hours	@ 0.75	450.00
(h) <i>Misc. Form and Scaffolding, etc.:</i>		
480 man hours	@ 1.00	480.00
960 man hours	@ 0.65	624.00
(i) <i>Clearing and Grubbing for Cableway:</i>		
80 man hours	@ 1.50	120.00
400 man hours	@ 0.50	200.00
Total Labor Cost		9,805.00

3. *Plant to be leased:*

(2) Truck	60 da. @ \$5.00	600.00
(1) Tractor with blade	60 da. @ 2.50	150.00
(1) 1/4 yd. Concrete Mixer	50 da. @ 2.50	125.00
(2) Compressors #210	50 da. @ 10.00	1,000.00
(2) Jack hammers	50 da. @ 1.50	150.00
(1) 2-Drum Hoist	60 da. @ 3.50	210.00
(1) Water Wagon	60 da. @ 2.50	150.00
(1) Welding Machine	45 da. @ 18.00	810.00
(1) Pump	50 da. @ 1.50	75.00
(1) Vibrator	50 da. @ 1.00	50.00
Small Tools, Gas, Oil & Supplies (Lump Sum)		500.00
(1) Pick-up Truck	60 da. @ 3.50	210.00
Total Plant Cost		4,030.00

4. *Field Cost:*

Materials	33,260.50
Plant Rental	4,030.00
Labor	9,805.00
Total Field Cost	47,095.50

5. *Total Cost to Work:*

(a) <i>Direct Cost:</i>	
Total plant operating cost	47,095.50
Contingencies—20%	9,419.10
Total Direct Cost	56,514.60
(b) <i>Indirect Cost:</i>	
Mobilization and demobilization	\$500.00
Engineering and inspection—12%	6,781.75
Total Indirect Cost	7,281.75
Total Field Cost	63,796.35
General Office Overhead—12%	7,655.56

Grand Total Cost by hired labor and Government plant— 71,451.91

THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

FEBRUARY 19, 1942.

ADDENDUM NO. 1

To Accompany Job Order No. 2.0

Contract W-414-Eng-602

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 1 to accompany Job Order No. 2.0 (Cable Warehouse at Mount Kaala) authorizes the construction of necessary housing to protect the hoist equipment serving the Mount Kaala Cable Warehouse. All work is to be done in accordance with plans and instructions furnished the Area Engineer.

/s/ THEODORE WYMAN, JR.,
Colonel, Corps of Engineers,
District Engineer.

JO4 3-20

MARCH 16, 1942.

ADDENDUM NO. 1 (Revised)

To Accompany Job Order No. 2.0

Contract W-414-Eng-602

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 1 (Revised), to accompany Job Order No. 2.0 (Cableway at Mount Kaala) authorizes the construction of necessary housing to protect the hoist equipment serving the Mount Kaala Cableway. All work is to be done in accordance with plans and instructions furnished the Area Engineer.

For the District Engineer:

/s/ H. B. NURSE,
Lt. Col., Corps of Engineers,
Executive Assistant.

FEBRUARY 26, 1942.

ADDENDUM NO. 2.

To Accompany Job Order No. 2.0

Contract W-414-Eng-602.

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 2, to accompany Job Order No. 2.0, (Cableway at Mt. Kaala) provides for the construction of a splinter-proof protection for Bombardment Tunnel, Mt. Kaala, in accordance with plans and specifications furnished the Area Engineer, Third Field Area.

/s/ THEODORE WYMAN, JR.,
Colonel, Corps of Engineers,
District Engineer.

MARCH 13, 1942.

ADDENDUM NO. 2 (Rev.)

To Accompany Job Order No. 2.0

Contract W-414-Eng-602

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 2 (Revised) to accompany Job Order No. 2.0 (Cableway at Mt. Kaala), authorizes the construction of a protection tunnel for personnel at

Mt. Kaala, in accordance with plans and specifications furnished the Area Engineer, Third Field Area.

For the District Engineer:

/s/ H. B. NURSE,
Lt. Col., Corps of Engineers,
Executive Assistant,

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Honolulu, T. H., October 17, 1941.

JOB ORDER NO. 2.2.

Contract W-414-eng-602.

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Construct A. W. S. Camp and Install Utilities
2. LOCATION: Mt. Kaala, Oahu, T. H.
3. OFFICE FILE REFERENCE: ND 676.3—A. W. S. Mt. Kaala
4. WORK TO BE DONE: Construct and complete with necessary utilities, 1 Mess Hall, 1 Barracks Building, 1 Power House, 1 Caretaker's Quarters, 1 Radio Communications Building, 1 Power House Building for Radio, 1 Foundation for Transmitter Building and Tower, 1 Water tank. Also erect 100-ft. Radio Tower, clear and grade Camp Site, and install equipment.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department
6. DRAWINGS AND REFERENCES: As enumerated in Specifications to Accompany Job Order No. 2.2
7. APPROPRIATION CHARGEABLE: SC 1450.
8. ESTIMATED COST: \$31,120.93.
9. COMMENCEMENT DATE: December 1, 1941.
10. ESTIMATED DATE FOR COMPLETION: March 1, 1942.
11. ESTIMATED LABOR AT SITE: See detailed estimate attached.
12. PLANT REQUIRED: " " " "
13. MATERIALS: " " " "
14. SUPERVISION BY: The Area Engineer—Third Field Area.

/s/ Theodore Wyman, Jr.,
THEODORE WYMAN, Jr.,
Lt. Col., Corps of Engineers,
District Engineer.

Approved:

WARREN T. HANNUM,
Colonel, Corps of Engineers,
Division Engineer.

ESTIMATE OF COST

To Accompany Job Order No. 2.2

Contract W-414-eng-602

WORK TO BE DONE: Construct A. W. S. Camp and Install Utilities

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Mt. Kaala, on the Island of Oahu, T. H., and is limited to the following specific items:

1. Furnish all labor and equipment and perform all work necessary to construct and complete the following structures:

- (a) 1 Mess Hall (33'-0" x 52'-0")
- (b) 1 Barracks Building, Thirty-Man (22'-0" x 83'-0")
- (c) 1 Power House (16'-0" x 16'-0")
- (d) 1 Caretaker's Quarters (40'-0" x 42'-0")
- (e) 1 Radio Communications Building
- (f) 1 Powerhouse for Radio
- (g) 1 Foundation for Transmitter Building and Tower
- (h) 1 Erect 100-ft. Steel Tower (Tower furnished by Signal Corps)
- (i) 1 20,000 gallon concrete water tank.

2. Furnish all labor and equipment and perform all work necessary to clear and grade site for structures and facilities, and install necessary equipment.

3. Furnish all labor and equipment and do all work necessary to install, complete, all necessary utilities for the Camp.

The total cost of the work to be done shall not exceed \$31,120.93.

/s/ Theodore Wyman, Jr.,
THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

COST TO CONTRACTOR

1. Construction A. W. S. Camp—Mt. Kaala

A. 1 Mess Hall (33'-0" x 52'-0") :		
(a) Materials -----	\$2,275.46	
(b) Labor -----	2,423.61	
(c) Plant Rental -----	100.00	
(d) Contractors Field & Office Overhead -----	191.96	
(e) Mobilization & Demobilization -----	479.91	
Total -----		\$5,470.94
B. 1 Barracks Building, Thirty-Man (22'-0" x 83'-0") :		
(a) Material -----	\$2,667.43	
(b) Labor -----	2,438.29	
(c) Plant Rental -----	100.00	
(d) Contractors Field & Off. Overhead -----	208.23	
(e) Mobil. & Demobil -----	520.57	
Total -----		5,934.52
C. 1 Power House (16'-0" x 16'-0") :		
(a) Material -----	\$526.09	
(b) Labor -----	819.10	
(c) Plant Rental -----	50.00	
(d) Contractors Field & Off. Overhead -----	55.81	
(e) Mobil. & Demobil -----	139.52	
Total -----		1,590.52
D. 1 Caretaker's Quarters (40'-0" x 42'-0") :		
(a) Materials -----	\$2,386.93	
(b) Labor -----	2,513.96	
(c) Plant Rental -----	100.00	
(d) Contractors Field & Off. Overhead -----	200.04	
(e) Mobil. & Demobil -----	500.00	
Total -----		5,700.93
E. 1 Radio Communications :		
(a) Labor -----	\$1,874.40	
(b) Materials -----	2,359.92	
(c) Plant Rental -----	100.00	
(d) Contractors Field & Off. Overhead -----	173.37	
(e) Mobil. & Demobil -----	433.43	
Total -----		4,941.12
F. 1 Power House for Radio (18'-0" x 24'-0") :		
(a) Material -----	\$798.96	
(b) Labor -----	1,033.58	
(c) Plant Rental -----	50.00	
(d) Contractors Field & Off. Overhead -----	75.30	
(e) Mobil. & Demobil -----	188.25	
Total -----		2,146.09

G. *Foundations for Transmitter Building & Tower:*

(a) Material -----	\$810. 73
(b) Labor -----	390. 68
(c) Plant Rental -----	35. 00
(d) Contractors Field & Off. Overhead -----	49. 46
(e) Mobil. & Demobil -----	123. 64

Total ----- \$1,409. 51

H. *Erect 100-ft. Radio Tower:*

(a) Labor -----	\$725. 00
(b) Plant Rental -----	50. 00
(c) Contractors Field & Off. Overhead -----	31. 00
(d) Mobil. & Demobil -----	77. 50

Total ----- 883. 50

I. *One 20,000 Gallon Concrete Water Tank:*

(a) Materials -----	\$600. 00
(b) Labor -----	1,100. 00
(c) Plant Rental -----	200. 00
(d) Contractors Field & Off. Overhead -----	76. 00
(e) Mobil. & Demobil -----	190. 00

Total ----- 2,166. 00

J. *Clearing of Site & Grading:*

(a) Material -----	\$20. 00
(b) Labor -----	300. 00
(c) Plant Rental -----	50. 00
(d) Contractors Field & Off. Overhead -----	14. 80
(e) Mobil. & Demobil -----	37. 00

Total ----- \$421. 80

K. *Install Equipment:*

(a) Material -----	\$50. 00
(b) Labor -----	300. 00
(c) Plant Rental -----	50. 00
(d) Contractors Field & Off. Overhead -----	16. 00
(e) Mobil. & Demobil -----	40. 00

Total ----- 456. 00

Total cost to the contractor ----- 31,120. 93

/s/ Theodore Wyman, Jr.,
THEODORE WYMAN, JR.,
Lt. Col., Corps of Engineers,
District Engineer.

Recapitulation of estimated cost

I. Total Cost of Work:

(a) <i>Direct Cost:</i>	
Total Cost to Contractor -----	\$31,120. 93
Contingencies—10% -----	3,112. 09

Total Direct Cost ----- 34,233. 02

(b) *Indirect Cost:*

Survey, Inspection, Engineering ----- \$2,849. 67

Total Indirect Cost ----- 2,489. 67

Total Field Cost ----- 36,722. 69

General Office Overhead ----- 2,489. 67

Estimated Total Cost to the Government ----- 39,212. 36

This estimate is prepared for use in the District only and is not for distribution to the Contractor.

/s/ THEODORE WYMAN, JR.,
Theodore Wyman, Jr.,
Lt. Col., Corps of Engineers,
District Engineer.

ARMY PEARL HARBOR ROAD EXHIBIT NO. 4a

SUMMARY

WAR DEPARTMENT

UNITED STATES ENGINEER OFFICE

Honolulu, T. H.

Contract W411-eng-002

Kafoe (Kauai, T. II.)

Job Order #22.0 April 28, 1941 (revised) Sept. 3, 1941.

Construct a 12 foot road approximately 11,500 feet long (AWS Service Rd., Kafoe).

Est. Cost: \$70,630.00.

Est. Cost (Rev.): \$69,365.00.

Commencement date: May 1, 1941.

Est. date for completion: Jul 15, 1941.

Revised date for completion: Sept. 25, 1941.

Supervision by Area Engr. 11th Field Area.

Job Order #21.7 June 18, 1941 (revised) Dec. 17, 1941.

Construct—complete structures at Base Camp and Station X with utilities and fence National Parkland Forest Reserve.

Est. Cost: \$82,800.00.

Est. Cost (rev.): \$87,124.25.

Commencement date: June 25, 1941.

Est. date for completion: Sept. 28, 1941.

Revised date for completion: Dec. 1, 1941.

Supervision by Area Engr. 10th Field Area.

Addendum #1 June 2, 1941 \$290.00 shed.

Addendum #2 Oct. 10, 1941 Construct Radio Shelter and Garage \$14,081.27.

Addendum #3 Feb. 5, 1942 Construct Bombproof Shelter for Radio Communications.

WAR DEPARTMENT.

UNITED STATES ENGINEER OFFICE.

Honolulu, T. H., September 3, 1941.

JOB ORDER NO. 22.0 (Revised)

Contract No. W-414-002.

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Aircraft Warning Service Road, Kauai, T. II.
2. LOCATION: Na Pali-Koa Forest Reserve, Kauai, T. II.
3. OFFICE FILE REFERENCE: 2014.
4. WORK TO BE DONE: Construct a twelve foot road approximately 11,500 feet long complete with penetration macadam paving and all necessary drainage facilities.
5. WORK REQUESTED BY: Commanding General, Hawaiian Department.
6. DRAWINGS AND REFERENCES: As enumerated in Specifications "Access Road to Kafoe, Job Order No. 22.0".
7. APPROPRIATION CHARGABLE: S. S. A. 1940-41 861450 P23 A0605 01.
8. ESTIMATED COST: \$55,060.00.
9. COMMENCEMENT DATE: May 1, 1941.
10. ESTIMATED DATE FOR COMPLETION: September 25, 1941.