

November 13, 1941.

ADDENDUM NO. 8

To Accompany Job Order No. 50

Contract W-414 eng-602.

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 8 authorizes construction of bunker covers for magazines, numbers: 30-1, 30-2, 30-3, 30-4, 10-1, 10-2, 10-3, 5-1, 5-2, 5-3, 5-4, 5-5, and 5-6, on which work was suspended by Addendum No. 5 dated July 1, 1941; Addendum No. 6 dated August 14, 1941; and Addendum No. 7 dated September 2, 1941.

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

JANUARY 3, 1942.

ADDENDUM No. 9

To Accompany Job Order No. 50

Contract W-414-Eng-002

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 9 to accompany Job Order No. 50 provides for the plugging of holes in all magazines not contemplated for use of personnel.

/s/ THEODORE WYMAN, JR.,  
Colonel, U. S. Army,  
District Engineer.

FEBRUARY 20, 1942.

ADDENDUM NO. 10

To Accompany Job Order No. 50

Contract W-414 Eng 602

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 10 to accompany Job Order No. 50 (Bombproof Ammunition Storage Magazine, Wheeler Field, provides for camouflaging of entrances and approaches to the bomb storage magazine, in accordance with plans and instructions furnished the Area Engineer.

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

ARMY PEARL HARBOR BOARD EXHIBIT No. 4H

Summary—CBR

WAR DEPARTMENT

UNITED STATES ENGINEER OFFICE

HONOLULU, T. H.

Contract No. W-414-eng-602

Hickam Field, Oahu, T. H.

Job Order #7.0 April 25, 1941 (Rev) Aug 15, 1941.

Construct—Eight (8) Igloo type reinforced concrete Magazines (26' 6" x 40' 4" inside dimensions). Increased to ten (10) by revised job order.

Est. Cost \$91,062.00.

Revised \$143,406.00 (to Gov).

Commencement Date: May 1, 1941.

Est. Date to Complete: September 1, 1941.

Revised: November 1, 1941.

Supervision by G. A. Sisson, Area Engr., 2nd Field Area.

Addendum #2 Suspends work on Igloo #8 of Job Order 7.0 (revised).

Job Order #7.1 June 16, 1941 Revised December 1, 1941.

Construct—Access road to bomb storage magazines.

Est. Cost \$38,052.00.

Revised \$74,805.96 (to Gov).

Commencement Date: June 14, 1941.

Est. Date Completion: August 1, 1941.

Revised: December 15, 1941.

Supervision by The Area Engr., Second Field Area.

Job Order #7.2 June 16, 1941 *Rev* November 26, 1941.

Construct—Railroad to Bomb Storage Magazine at Hickam Field.

Est. Cost \$16,700.00.

Revised \$76,086.08 (to Gov).

Commencement Date: June 14, 1941.

Est. Date to Complete: August 1, 1941.

Revised: December 15, 1941.

Supervision by The Area Engr, 2nd Field Area.

Job Order #7.3 Aug. 15, 1941.

Construct—Four (4) Igloo Type Reinforced Concrete Magazines,

Three (3) P. O. #46 Magazines, one (1) P. O. #42 Magazine and one (1)

Block Powder #45 Magazine, and barricades for Magazines.

Est. Cost \$126,000.00 (to Gov).

Commencement Date: Aug. 16, 1941.

Estimate Date for completion: Dec. 1, 1941.

Supervision by the Area Engineer, Second Field Area.

Addendum #1, Dated Aug 18, 1941. Suspends work on all Igloos and Magazines except Igloo #11.

Job Order 7.4. Aug 15, 1941.

Construct—Approx 3410 lin feet Manproof wire fence and relocate 2075 lin feet existing fence.

Est. Cost: \$9,918.70.

Commencement Date:

Aug 16, 1941.

Oct 1, 1941.

Supervision by the Area Engr, Second Field Area.

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WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., April 25, 1941.

Contract No. W-414-Eng-602-7.0

Order No.-----

To: Hawaiian Constructors—Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: The Construction of 8 Igloo Type/Concrete Underground Magazines.
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: 2019
4. WORK TO BE DONE: Construct and complete 8 reinforced concrete igloo type underground magazines (26'-6" x 40'-4" inside dimensions) together with barricades for each structure.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department.
6. DRAWINGS AND REFERENCES: As shown in paragraph 1-04 of Specifications.
7. APPROPRIATION CHARGEABLE: C. B. and U. A. 21 x 0540.062 Construction of Buildings utilities and appurtenances at Military Posts, Eng. 716 P99 A-0540.062-N.
8. ESTIMATED COST: \$91,062.00.
9. COMMENCEMENT DATE: May 1, 1941.
10. ESTIMATED COMPLETION DATE: September 1, 1941.
11. ESTIMATED LABOR AT SITE: See detailed estimate attached.
12. PLANT REQUIRED: See detailed estimate attached.

13. MATERIALS: See detailed estimate attached.

14. SUPERVISION BY: G. A. Sisson, Area Engineer, Second Field Area.

Distribution:

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

Approved:

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

MAY 22, 1941.

ADDENDUM NO. 1

To Accompany Job Order No. 7.0

Contract No. W-414-eng-602

WORK TO BE DONE: Construct and install Electrical Distribution System For Bomb Storage Magazines, Hickam Field, Oahu, T. H.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickam Field, 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 construct and make complete installation of Electrical Distribution System for Bomb Storage Magazines, in accordance with Specifications to Accompany Addendum No. 1 to Job Order No. 7.0, and the details shown on the drawings enumerated in the Specifications.

The total cost of the work to be done shall not exceed \$2,464.70.

Addendum No. 1 to Job Order No. 7.0 provides for additional work other than that specified in Job Order No. 7.0 and does not in any manner change the work to be done thereunder.

COST TO CONTRACTOR

1. Materials to be Furnished:

Item No.	Designation	Quantity	Unit	Unit Price	Total Cost
1	5KVA Transformer.....	1	Each	\$128.00	\$128.00
2	Poles—Creosoted—Douglas Fir (35').....	9	"	24.00	216.00
3	Cross Arms—Douglas Fir.....	13	"	1.50	19.50
4	Cross Arm Braces—Galv.....	26	"	0.25	6.50
5	Underground Ties—3 Way.....	7	"	5.50	38.50
6	Wire—3 Conductor #6RR 600V.....	3,600	Lin. Ft.	0.30	1,080.00
7	Wire—#6 Solid Primary (316#).....	4,000	" "	0.016	64.00
8	Wire—2 Conductor #8.....	200	" "	0.18	36.00
9	Primary Cutouts.....	2	Each	8.00	16.00
10	Miscellaneous Hardware.....		Lump Sum.		70.50
	Total Cost of Materials.....				\$1,675.00

2. Day Labor.

(a) Handling and Hauling.

16 man hours.....	@ \$1.50	\$24.00
16 man hours.....	0.75	12.00
32 man hours.....	0.50	16.00

(b) Digging Pole Holes and Backfilling.

8 man hours.....	@ \$1.50	12.00
48 man hours.....	0.50	24.00

(c) Erecting Poles, Anchors and Cross Arms.

16 man hours.....	@ \$1.50	24.00
32 man hours.....	1.00	32.00
32 man hours.....	0.75	24.00
32 man hours.....	0.50	16.00

(d) <i>Overhead Construction, String Wire.</i>			
16 man hours	-----	@ \$1.50	\$24.00
24 man hours	-----	1.00	24.00
24 man hours	-----	0.75	18.00
24 man hours	-----	0.50	12.00
(e) <i>Excavation and Backfill for Line Trench.</i>			
16 man hours	-----	@ \$1.50	24.00
24 man hours	-----	1.00	24.00
24 man hours	-----	0.65	15.60
48 man hours	-----	0.50	24.00
(f) <i>Splicing and Laying Underground Cable.</i>			
16 man hours	-----	@ \$1.50	24.00
32 man hours	-----	1.00	32.00
32 man hours	-----	0.75	24.00
64 man hours	-----	0.50	32.00
Total Cost of Day Labor			461.60
3. <i>Plant Operation.</i>			
(a) <i>Plant Rental.</i>			
Flatrack Truck	-----	2 da. @ \$18.50	37.00
Truck Crane	-----	2 da. @ 42.80	84.60
Pick-up Truck	-----	10 da. @ 3.15	31.50
Ditching Machine	-----	2 da. @ 25.00	50.00
Bulldozer	-----	1 da. @ 25.00	25.00
			288.10
(b) <i>Gas, Oil, and Miscellaneous Supplies</i>			
			50.00
Total Plant Operation Cost			278.10
4. <i>Total Plant Operation Cost of Job.</i>			
Cost of Material			1,675.00
Cost of Day Labor			461.60
Cost of Plant Operation			278.10
Mobilization & Demobilization			50.00
Total Cost of Job to Contractor			2,464.70

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

#### Recapitulation of estimated cost

1. <i>Total Cost of Job:</i>			
(a) <i>Direct Cost:</i>			
Total Cost to Contractor	-----		\$2,464.70
Contingencies—10%	-----		246.47
Total Direct Cost			2,711.17
(b) <i>Indirect Cost:</i>			
Survey, Insp., and Engr.—8%	-----	\$197.18	
Total Indirect Cost	-----		197.18
Total Field Cost of Job			2,908.35
General Office Overhead—8%	-----		197.18
Grand Total Cost to Government			3,105.53

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

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

WAR DEPARTMENT,  
 UNITED STATES ENGINEER OFFICE,  
*Honolulu, T. H., August 15, 1941,*

JOB ORDER NO. 7.0 (Revised)  
 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: Construct Ten Igloo Type Reinforced Concrete Magazines.
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: 2019.
4. WORK TO BE DONE: Construct and complete ten (10) Igloo Type Reinforced concrete magazines (26' x 6' x 40'-4'', inside dimensions) together with a barricade for each structure.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department.
6. DRAWINGS AND REFERENCES: As shown in paragraph 104 of Specifications.
7. APPROPRIATION CHARGEABLE: Eng 716.
8. ESTIMATED COST: \$113,815.00.
9. COMMENCEMENT DATE: May 1, 1941.
10. ESTIMATED DATE FOR COMPLETION: November 1, 1941.
11. ESTIMATED LABOR AT SITE: 52,570 Man Hours.
12. PLANT REQUIRED: Mixer, trucks, power shovel, pile driving equipment, hand tools.
13. MATERIALS: Building materials, Fuel, Oil Supplies.
14. SUPERVISION BY: The Area Engineer, Second 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. 7.0 (Revised)

Contract No. W-414-eng-602

WORK TO BE DONE: Construct and complete Ten Igloo Type Reinforced Concrete Magazines.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickam Field, 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 construct and complete ten (10) Igloo Type reinforced concrete magazines, (26'-6" x 40'-4" inside dimensions), together with a barricade for each structure. All of the work to be done shall be in accordance with, "Specifications to Accompany Job Order No. 7.0", and the details shown on the drawings enumerated in the specifications.

The total cost of the work to be done shall not exceed \$113,815.00.

Job Order No. 7.0 (Revised) *supplants* Job Order No. 7.0 dated April 25, 1941.

/s/ 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-----	\$113, 815. 00
Contingencies—10% -----	11, 381. 50
<b>Total Direct Cost-----</b>	<b>125, 196. 50</b>

(b) *Indirect Cost:*

Survey, Inspection, Engineering-----	\$9, 105. 20	
Total Indirect Cost-----		\$9, 105. 20
Total Field Cost-----		134, 301. 70
General Office Overhead-----		9, 105. 20
Estimated Total Cost to the Government-----		143, 406. 90

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.*

APRIL 18, 1942.

## ADDENDUM NO. 2

To Accompany Job Order No. 7.0 (Rev.)

Contract W-414-Eng-602

Office of Department Engineer, Honolulu, T. H.

Addendum No. 1 to accompany Job Order No. 7.0 (Rev.), (Construct ten (10) Igloo type reinforced concrete magazines) suspends work on Igloo No. 8 of Job Order No. 7.0 (Rev.).

Suspension Requested By: 1st Indorsement Department Engineer to G-4 dated April 3, 1942.

For the Department Engineer:

/s/ JOHN C. MEADOWS,  
*Major, Corps of Engineers,*  
*Assistant Department Engineer.*

MAY 12, 1942.

## ADDENDUM NO. 3

To Accompany Job Order No. 7.0 (Revised)

Contract W-414-Eng-602

Office of Department Engineer, Honolulu, T. H.

Addendum No. 3 to accompany Job Order No. 7.0 (Revised) (Construct 10 Igloo Type Reinforced Concrete Magazines, Hickam Field) authorizes additional electrical distribution work necessary to serve all igloo type magazines at Hickam Field.

Office File Reference: Serial No. 4639.

Work Requested By: Department Engineer by letter from Area Engineer, Second Field Area, dated May 5, 1942.

For the Department Engineer:

[S] JOHN C. MEADOWS,  
*Major, Corps of Engineers,*  
*Assistant Department Engineer.*

DECEMBER 4, 1942.

## ADDENDUM NO. 4

To Accompany Job Order No. 7.0 (Rev.)

Contract W-414-Eng-602

Office of the District Engineer, Honolulu, T. H.

Addendum No. 4 to accompany Job Order No. 7.0 (Revised) (Construct 10 Igloo Type Reinforced Concrete Magazines—Hickam Field) cancels work author-

ized by Addendum No. 3 to Job Order No. 7.0 (Revised), with the exception of grading work, which will be completed.

Office File Reference FA2-57.

Cancellation Requested by: Area Engineer, Second Field Area. In Inter-Office Memo. dated 11/12/42.

For the District Engineer:

[S] JOSEPH MATSON, JR.,  
Major, Corps of Engineers,  
Assistant.

DECEMBER 7, 1942

ADDENDUM NO. 4 (REVISED)

To Accompany Job Order No. 7.0 (Revised)

Contract W-414-Eng-602

Office of the District Engineer, Honolulu, T. H.

Addendum No. 4 (Revised) to accompany Job Order No. 7.0 (Revised), (Construction of 10 Igloo Type Reinforced Concrete Magazines—Hickam Field) cancels work authorized by Addendum No. 3 to Job Order No. 7.0 (Revised).

Office File Reference: FA-2-57.

Cancellation Requested by: Area Engineer, Second Field Area. In Inter-Office Memo. dated November 12, 1942.

For the District Engineer:

[S] JOSEPH MATSON, JR.,  
Major, Corps of Engineers,  
Assistant.

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H. June 16, 1941.

JOB ORDER NO. 7.1.

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—Bomb Storage Magazines
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: 2019
4. WORK TO BE DONE: Construct and Complete the Access Road to Bomb Storage Magazines.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department
6. DRAWINGS AND REFERENCES: Drawings, File No. F-23/19 to F-23/36, inclusive.
7. APPROPRIATION CHARGEABLE: Eng 716
8. ESTIMATED COST: \$30,200.00
9. COMMENCEMENT DATE: June 14, 1941.
10. ESTIMATED DATE FOR COMPLETION: August 1, 1941.
11. ESTIMATED LABOR AT SITE: Detailed estimate to be Furnished Later.
12. PLANT REQUIRED: " " " " " "
13. MATERIALS: " " " " " "
14. SUPERVISION BY: The Area Engineer, Second Field Area

(Signed) 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. 7.1

Contract No. W-414-eng-602

WORK TO BE DONE: Construct and Complete the Access Road to Bomb Storage Magazines.

DISTRICT: Honolulu District, Honolulu, T. H.

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

1. Furnish all necessary labor and equipment, and perform all work necessary to construct and complete the Access Road to Bomb Storage Magazines, in accordance with, "Specifications to Accompany Job Order No. 7.1", and the details shown on the drawings enumerated in the Specifications.

The total Cost of the Work to be done shall not exceed \$30,200.00.

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

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*Recapitulation of estimated cost*

## 1. Total Cost of Work:

## (a) Direct Cost:

Total Cost to Contractor-----	\$30,200.00
Contingencies—10%-----	3,030.00
Total Direct Cost-----	33,220.00

## (b) Indirect Cost:

Survey, Inspection, Engineering, (8% of Total Cost to Contractor)-----	\$2,416.00
Total Indirect Cost-----	2,416.00

Total Field Cost-----	35,636.00
General Office Overhead (8% of Total Cost to Contractor)-----	2,416.00

Estimated total cost to the government-----	38,052.00
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This estimate is prepared for use in the District only, and is not for distribution to the Contractor.

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

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., December 1, 1941.

JOB ORDER NO. 7.1 (Revised)

Contract W-414-eng-602

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

- PROJECT TITLE: Access Road—Bomb Storage Magazines
- LOCATION: Hickman Field, Oahu, T. H.
- OFFICE FILE REFERENCE: ND-611 Hickman-ND-633
- WORK TO BE DONE: Construct and complete the access road to bomb storage magazines.
- WORK REQUESTED BY: Commanding General—Hawaiian Department
- DRAWINGS AND REFERENCES: Drawing as enumerated in Specifications to accompany Job Order 7.1 (Revised.)
- APPROPRIATION CHARGEABLE: Eng. 716
- ESTIMATED COST: \$59,524.00
- COMMENCEMENT DATE: June 14, 1941
- ESTIMATED DATE FOR COMPLETION: December 15, 1941



- 11. ESTIMATED LABOR AT SITE: See detailed estimate attached.
- 12. PLANT REQUIRED: " " " "
- 13. MATERIALS: " " " "
- 14. SUPERVISION BY: Area Engineer, Second Field Area

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

ESTIMATE OF COST

To Accompany Job Order No. 7.1 (Revised)

Contract W-414-eng-602

WORK TO BE DONE: Access Road—Bomb Storage Magazines.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickam Field, 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 construct and complete the access road to bomb storage magazines, in accordance with "Specifications to accompany Job Order No. 7.1 Revised," and the details shown on the drawings enumerated in the Specifications.

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

*Hickam Field bomb storage magazine access road*

1. Materials:

	No. of Units	Unit	Unit Cost	Amount
1. Concrete (Ready Mix).....	20	Cu. Yd.	\$9.75	\$195.00
2. Reinforcing Steel (½"Ø & ⅝"Ø).....	3135	Lb.	0.0292	92.00
3. Rock (in Place).....	3020	Cu. Yd.	3.00	9,060.00
4. Asphaltic Cement (in place).....	3825	Tons.	7.60	29,070.00
5. 18" Reinforced Concrete Pipe.....	104	Lin. Ft.	1.80	187.00
6. Collars for R. C. Pipe.....	11	Ea.	1.71	19.00
7. Lumber—2" x 6" (Header Boards).....	27.42	M. B. M.	47.50	1,302.00
8. Stakes—2" x 3" x 18".....	5480	Ea.	0.05	274.00
9. Plywood (Forms).....	380	Sq. Ft.	0.095	36.00
10. Lumber (Forms).....	.57	M. B. M.	47.50	27.00
11. Nails (16d, 8d & 6d).....	4	Keg.	6.70	27.00
12. Wire—#14 Ga. Black.....	35	Lb.	0.08	3.00
13. Miscellaneous Supplies.....				100.00
<b>Total Material.....</b>				<b>\$40,392.00</b>

2. Labor:

A. Placing Fill:

512 Man Hours @ \$1.50 Per Hour.....	\$ 768.00
256 " " " 1.25 " ".....	320.00
96 " " " 1.10 " ".....	106.00
112 " " " 1.00 " ".....	112.00
1536 " " " 0.95 " ".....	1,459.00
208 " " " 0.90 " ".....	187.00
256 " " " 0.65 " ".....	166.00
256 " " " 0.50 " ".....	128.00

Total..... \$3,246.00

B. Finishing Base Course:

20 Man Hours @ \$1.50 Per Hour.....	\$ 30.00
56 " " " 1.10 " ".....	62.00
40 " " " 1.00 " ".....	40.00

Total..... 132.00

C. *Setting Header Boards:*

28 Man Hours @ \$1.50 Per Hour	\$ 42.00
224 " " " 1.25 " "	280.00
112 " " " 0.50 " "	56.00

Total----- \$378.00

D. *Framing & Placing Reinforced Concrete:*

24 Man Hours @ \$1.50 Per Hour	\$ 36.00
24 " " " 1.30 " "	31.00
24 " " " 0.625 " "	15.00
106 " " " 0.50 " "	53.00

Total----- 135.00

E. *Excavation (Hand—125 Cu. Yds.):*

16 Man Hours @ \$1.50 Per Hour	\$ 24.00
128 " " " 0.50 " "	64.00

Total----- 88.00

F. *Placing Concrete Pipe (104 Ft.):*

6 Man Hours @ \$1.50 Per Hour	\$ 9.00
8 " " " 0.95 " "	8.00
6 " " " 0.75 " "	5.00
60 " " " 0.50 " "	30.00

Total----- 52.00

G. *Maintenance, Watchmen, Etc.:*

128 Man Hours @ \$1.30 Per Hour	\$ 166.00
128 " " " 0.90 " "	115.00
432 " " " 0.50 " "	216.00

Total----- 497.00

H. *Handling and Hauling:*

8 Man Hours @ \$1.50 Per Hour	\$ 12.00
16 " " " 0.95 " "	15.00
128 " " " 0.50 " "	64.00

Total----- 91.00

Total Labor----- 4,619.00

3. *Plant Rental:*

A. 1-1½ Cu. Yd. Shovel	19 Days @ \$90.00	1,710.00
6-5 Cu. Yd. Trucks	" " " 20.36 Ea.	2,314.00
1-Cat Dozer	" " " 42.60	809.00
1-12 Ton Roller	15 " " 20.40	306.00
1-Road Maintainer	" " " 28.35	425.00
1-Water Tank with Truck	" " " 15.00	225.00
1-Truck with Derrick	1 " " 38.00	38.00
1-5 Ton Flat Truck	2 " " 13.00	26.00
1-¾ Ton Pick Up	33 " " 4.20	139.00
1-Sedan	" " " 5.55	183.00
1-Welding Outfit	19 " " 2.25	43.00
Miscellaneous Small Tools		100.00
B. Gas—Diesel Oil—Lubricants		885.00

Total cost to the contractor----- 7,203.00

4. *Total Operation Cost:*

Total Cost of Labor	4,619.00
Total Cost of Materials	40,392.00
Total Cost of Plant	7,203.00
Contractors Field & Office Overhead	2,089.00
Mobilization & Demobilization	5,221.00

Total cost to the contractor----- 59,524.00

/s/ 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-----	\$59,524.00
Insurance, Taxes, Compensation & Fixed Fee-----	2,380.96

Total Direct Cost-----	61,904.96
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(b) *Indirect Cost:*

Inspection and Supervision-----	\$3,095.25
Surveys-----	3,095.25
Overhead—Field-----	1,857.15
Auditing & General Administrative-----	619.05

Total Indirect Cost-----	8,666.70
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Total Field Cost-----	70,571.66
Overhead—District & Division-----	4,234.30

Estimated Total Cost to the Government-----	74,805.96
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This estimate is prepared for use in the District only and is not for distribution to the Contractor.

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

NOVEMBER 5, 1942.

ADDENDUM NO. 1

To Accompany Job Order No. 7.1 (Rev.)

Contract W-414-Eng-602

Office of the District Engineer, Honolulu, T. H.

Addendum No. 1 to above Job Order (Access Road to Magazines, Hickam Field), eliminates the asphalt concrete paving of access road from Job Order No. 7.1, effective above date.

Work requested by the Area Engineer, Second Field Area, 1st, Ind. 10/28/42. Approved by: Dist. Engr.—Operations Officer.

For the District Engineer:

/s/ JOSEPH MATSON, JR.,  
Major, Corps of Engineers,  
Assistant.

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., June 16, 1941.

Contract No. W-414-eng-602.

Job Order No. 7.2.

To: Hawaiian Constructors—Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Railroad—Bomb Storage Magazines.
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: 2019
4. WORK TO BE DONE: Construct and Complete Railroad to Bomb Storage Magazines at Hickam Field.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department
6. DRAWINGS AND REFERENCES: Drawings, F-23/19 to F-23/36 Inclusive.
7. APPROPRIATION CHARGEABLE: Eng. 716
8. ESTIMATED COST: \$16,700.00
9. COMMENCEMENT DATE: June 14, 1941.
10. ESTIMATED DATE FOR COMPLETION: August 1, 1941.

11. ESTIMATED LABOR AT SITE: Detailed estimate to be furnished later.
12. PLANT REQUIRED: Detailed estimate to be furnished later.
13. MATERIALS: Detailed estimate to be furnished later.
14. SUPERVISION BY: The area Engineer, Second Field Area.

/s/ THEODORE WYMAN, JR.,  
Lt. Col., Corps of Engineers.

Approved:

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

Distribution:

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., November 26, 1941.

JOB ORDER NO. 7.2 (REVISED).  
Contract W-414-eng-602

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Railroad—Bomb Storage Magazines
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: ND 617—Ry. Hickam
4. WORK TO BE DONE: Construct and complete railroad to Bomb Storage Magazines at Hickam Field.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department
6. DRAWINGS AND REFERENCES: Access Railroad and Highway, F-29/62 and other drawings enumerated in the Specifications.
7. APPROPRIATION CHARGEABLE: Eng. 716.
8. ESTIMATED COST: \$60,542.61.
9. COMMENCEMENT DATE: June 14, 1941.
10. ESTIMATED DATE FOR COMPLETION: December 15, 1941.
11. ESTIMATED LABOR AT SITE: See detailed estimate attached.
12. PLANT REQUIRED: " " " "
13. MATERIALS: " " " "
14. SUPERVISION BY: The Area Engineer—Second Field Area.

/s/ 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. 7.2 (Revised)

Contract W-414-eng-602

WORK TO BE DONE: Railroad—Bomb Storage Magazines  
DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickham Field, 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 construct and complete a railroad to the Bomb Storage Magazines, in accordance with the Specifications to Accompany Job Order No. 7.2 (REVISED) and the details shown on the drawings enumerated in the Specifications.

Hickam Field access railroad to bomb storage

1. Material:

	Unit	No. of Units	U. cost	Amount
1. 60 lb. Rail-Stand, A. S. C. E. Punched	Tons	157.13	\$33.33	\$5,237.14
2. #9 Turnout Complete	Each	1	277.75	277.75
3. Angle Bars	Pairs	694	1.94	1,346.36
4. 3/4" x 4 3/4" Track Bolts & Nuts	Kegs	11	13.90	152.90
5. 9/16" x 5 1/2" Track Spikes	"	91	7.78	707.98
6. 60 Lb. Guard Rails—Std. Punching	Tons	53.58	33.33	1,785.82
7. Verona lock washers	Each	6470	.01678	108.57
8. Tie Plates—66" x 8"—60#—1 hole	"	12118	.25	3,029.20
9. Rail Braces	"	25	.55	13.75
10. 3/2" x 6" Bolts with Hex. Nuts	"	3590	.099	355.41
11. Pipe—1 1/2" D. S.—3 3/4" long O. D.—1.66"	"	3590	.25	897.50
12. 6" x 8" x 6'-0" Cross Ties—Untreated	"	4345	1.12	4,866.40
13. Switch Ties—6' x 8" x 6'-6" "	"	10	1.24	12.40
14. " " " " 7'-0" "	"	5	1.33	6.65
15. " " " " " 6" "	"	4	1.43	5.72
16. " " " " " 5'-0" "	"	3	1.52	4.56
17. " " " " " 6" "	"	3	1.62	4.86
18. " " " " " 9'-0" "	"	3	1.71	5.13
19. " " " " " 6" "	"	3	1.80	5.40
20. " " " " " 10'-0" "	"	3	1.90	5.70
21. " " " " " 14'-0" "	"	2	2.66	5.32
22. Crushed Rock Ballast	Cu. Yds	6140	2.55	15,657.00
23. 18" Reinf. Concrete Pipe	Lin. ft	48	1.80	86.40
24. Collars for 18" Reinf. Concrete Pipe	Each	5	1.90	9.50
25. Reinforcing Steel	Lbs	464	.03	13.92
26. Lumber	MBM	2	47.50	9.50
27. 5/8" Plywood	Sq. Ft	128	.125	16.00
28. Ready-Mix Concrete	Cu. Yds	2	8.50	17.00
Miscellaneous Material	Lump			200.00
Total cost of material				\$34,844.14

2. Day Labor:

(a) Clearing Site:

6 Man Hours @ \$1.50	\$9.00
6 " " " .75	4.50
48 " " " .50	24.00

(b) Excavation & Embankment:

40 Man Hours @ \$1.50	60.00
24 " " " 1.25	30.00
192 " " " .50	96.00

(c) Handling & Hauling & Distributing:

112 Man Hours @ \$1.50	168.00
64 " " " 1.25	80.00
400 " " " 1.00	400.00
576 " " " .50	288.00

(d) Laying Track (7882 Lin. ft.):

392 Man Hours @ \$1.50	588.00
9936 " " " .50	4,968.00

(e) Installing Guard Rail (5358'):

240 Man Hours @ \$1.50	360.00
300 " " " 1.37 1/2	412.50
300 " " " .90	270.00
2400 " " " .50	1,200.00
180 " " " .65	117.00

(f) Ballasting & Surfacing:

400 Man Hours @ \$1.50	600.00
10960 " " " .50	5,480.00

(g) Reconstruction of Pres. Track:

56 Man Hours @ \$1.50	84.00
1304 " " " .50	652.00

(h) Installing Turnout:

24 Man Hours @ \$1.50	36.00
224 " " " .50	112.00

(i) Installing 18" Concrete Pipe:

8 Man Hours @ \$1.50	12.00
8 " " " 1.25	10.00
80 " " " .50	40.00

(j) <i>Building Concrete Culverts (2 Cu. Yds. Concrete):</i>		
16 Man Hours @ \$1.50	-----	\$24.00
10 " " 1.30	-----	13.00
20 " " 1.25	-----	25.00
8 " " .50	-----	4.00
(k) <i>Maintenance, Clerks, Watchmen, Etc. (2 Months):</i>		
208 Man Hours @ \$1.50	-----	312.00
594 " " 1.00	-----	594.00
832 " " .75	-----	624.00
1024 " " .50	-----	512.00
Total Cost of Day Labor	-----	<u>18,269.00</u>

3. *Plant Operation:*(a) *Rental of Equipment:*

Carryall & Tractor	2 days @ \$40.00	\$80.00
Bulldozer	3 " " 28.40	85.00
Gasoline Locomotive	2 Mos. " 45.00	90.00
Hand Car	2 " " 16.00	32.00
Auto Crane	8 days " 42.80	342.40
(2) R. R. Dump Cars	1 Mo. " 90.00	90.00
(1) Ford Sedan	2 Mos. " 110.00	220.00
(1) 3/4-Ton Pickup	2 " " 83.00	166.00
Miscellaneous Tools & Equipment		500.00

(b) Fuel, Oil, Etc.		1,605.60
(c) Rental on R. R. Cars		200.00
		120.00

Total Plant Operation----- 1,925.60

4. *Total Plant Operation Cost of Job:*

(1) Cost of Material	-----	34,844.14
(2) Cost of Labor	-----	18,269.00
(3) Cost of Plant Operation	-----	1,925.60
(4) Mobilization & Demobilization	-----	5,503.87

Total Cost to the Contractor----- 60,542.61

/s/ 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	-----	\$60,542.61
Ins., Taxes, Compensation, Fixed-Fee	-----	2,421.70

Total Direct Cost----- 62,964.31

(b) *Indirect Cost:*

Inspection & Supervision	-----	\$3,148.22
Surveys	-----	3,148.22
Overhead—Field	-----	1,888.93
Auditing & General Adm.	-----	629.64

Total Indirect Cost----- 8,815.01

Total Field Cost	-----	71,779.32
Overhead—District & Division	-----	4,306.76

Estimated Total Cost to the Government----- 76,086.08

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

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

FEBRUARY 12, 1942.

## ADDENDUM NO. 1

To Accompany Job Order No. 7.2 (Rev.)

Contract W-414-eng-602

DISTRICT: Honolulu District, Honolulu, T. H.

Addendum No. 1 to Accompany Job Order No. 7.2 (Rev.) (Access Railroad to Magazines) authorizes the rehabilitation of all tracks serving the Hickam Field Bomb Storage Area, in accordance with instructions furnished the Area Engineer.

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

APRIL 20, 1942.

## ADDENDUM NO. 2

To Accompany Job Order No. 7.2 (REV)

Contract W-414-Eng-602

OFFICE OF DEPARTMENT ENGINEER, Honolulu, T. H.

Addendum No. 2 to accompany Job Order No. 7.2 (REV) (Railroad—Bomb Storage Magazines) cancels Addendum No. 1 (Rehabilitation of all tracks serving the Hickam Field Bomb Storage Area).

Office File Reference: Serial No. 3963.

Cancellation Requested By: Department Engineer by letter from the Area Engineer dated April 14, 1942.

For the Department Engineer:

/s/ JOHN C. MEADOWS,  
Major, Corps of Engineers,  
Assistant Department Engineer.

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., August 15, 1941.

JOB ORDER No. 7.3.

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: Construct and Complete Four (4) Igloo Type Reinforced Concrete Magazines, three (3) P. O. No. 46 Magazines, one (1) P. O. No. 42 Magazine, and one (1) Black Powder No. 45 Magazine.
2. LOCATION: Hickam Field, Oahu, T. H.
3. OFFICE FILE REFERENCE: 2019.
4. WORK TO BE DONE: Construct and complete four (4) Igloo Type reinforced concrete magazines; three (3) P. O. No. 46 magazines; one (1) P. O. No. 42 magazine, and one (1) Black Powder No. 45 magazine, together with necessary barricades.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department.
6. DRAWINGS AND REFERENCES: To be furnished later.
7. APPROPRIATION CHARGEABLE: Eng 716.
8. ESTIMATED COST: \$100,000.00.
9. COMMENCEMENT DATE: August 16, 1941.
10. ESTIMATED DATE FOR COMPLETION: December 1, 1941.
11. ESTIMATED LABOR AT SITE: Detailed estimate to be furnished later.
12. PLANT REQUIRED: Detailed estimate to be furnished later.

13. MATERIALS: Detailed estimate to be furnished later.

14. SUPERVISION BY: The Area Engineer, Second Field Area.

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

Approved: August 28, 1941.

/s/ WARREN T. HANNUM,  
Colonel, Corps of Engineers,  
Division Engineers.

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### ESTIMATE OF COST

To Accompany Job Order No. 7.3

Contract No. W-414-eng-602

WORK TO BE DONE: Construct and complete four (4) Igloo Type reinforced concrete magazines; three (3) P. O. No. 46 magazines; one (1) P. O. No. 42 magazine, and one (1) Black Powder No. 45 magazine, together with necessary barricades.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickam Field, 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 construct and complete the following structures, in accordance with the Specifications, "To Accompany Job Order No. 7.3", and the details shown on drawings enumerated in the Specifications:

- (a) Four (4) Igloo Type Reinforced Concrete Magazines.
- (b) Three (3) P. O. No. 46 Magazines.
- (c) One (1) P. O. No. 42 Magazine.
- (d) One (1) Black Powder Magazine.
- (e) Necessary barricades for the Magazines.

The total cost of the work to be done shall not exceed \$100,000.00.

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

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### Recapitulation of estimated cost

1. Total Cost of Work:

(a) Direct Cost:

Total Cost to the Contractor.....	\$100,000.00
Contingencies—10% .....	10,000.00
<b>Total Direct Cost.....</b>	<b>110,000.00</b>

(b) Indirect Cost:

Survey, Inspection, Engineering.....	\$8,000.00
<b>Total Indirect Cost.....</b>	<b>8,000.00</b>
<b>Total Field Cost.....</b>	<b>118,000.00</b>
General Office Overhead.....	8,000.00

<b>Estimated Total Cost to the Government.....</b>	<b>126,000.00</b>
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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.



JOB 4-21

APRIL 18, 1942.

ADDENDUM NO. 1

To Accompany Job Order No. 7.3

Contract W-414-Eng-602

Office of Department Engineer, Honolulu, T. H.

Addendum No. 1 to accompany Job Order No. 7.3, (Construct four (4) Igloo Type reinforced Concrete Magazines: three (3) P. O. No. 46 Magazines; one (1) P. O. No. 42 Magazine and one (1) Black Powder No. 45 Magazine together with necessary barricades (suspends work on all Igloos and Magazines authorized by the Job Order No. 7.3 except Igloo No. 11.)

Suspension Requested By: 1st Indorsement Department Engineer to G-4 dated April 3, 1942.

For the Department Engineer.

/s/ JOHN C. MEADOWS,  
Major, Corps of Engineers,  
Assistant Department Engineer.

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., August 15, 1941.

JOB ORDER NO. 7.4.

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: Construct and install approximately 3410 lineal feet of Manproof Wire fence, and relocate approximately 2075 lineal feet of existing Manproof Fence.
2. LOCATION: Hickam Field.
3. OFFICE FILE REFERENCE: ND 654.
4. WORK TO BE DONE: Construct and install approximately 3410 lineal feet of Manproof wire fence and relocate approximately 2075 lineal feet of existing Manproof fence.
5. WORK REQUESTED BY: Commanding General—Hawaiian Department.
6. DRAWINGS AND REFERENCES: To be furnished later.
7. APPROPRIATION CHARGEABLE: Eng. 716.
8. ESTIMATED COST: \$7,872.00.
9. COMMENCEMENT DATE: August 16, 1941.
10. ESTIMATED DATE FOR COMPLETION: October 1, 1941.
11. ESTIMATED LABOR AT STAFF: Detailed estimate to be furnished later.
12. PLANT REQUIRED: " " " " " "
13. MATERIALS: " " " " " "
14. SUPERVISION BY: The Area Engineer, Second Field Area.

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

ESTIMATE OF COST

To Accompany Job Order No. 7.4

Contract No. W-414-eng-602

WORK TO BE DONE: Construct and install approximately 3410 lineal feet of manproof wire fence, and relocate approximately 2075 lineal feet of existing manproof fence.

DISTRICT: Honolulu District, Honolulu, T. H.

The work to be done, as provided for herein, is located at Hickam Field, 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 install approximately 3410 lineal feet of manproof wire fence.

2. Furnish all labor and equipment and perform all work necessary to relocate approximately 2075 lineal feet of existing manproof fence.

All of the work to be done shall be in accordance with the "Specifications to Accompany Job Order No. 7.4", and the details shown on the drawings enumerated in the Specifications.

The total cost of the work to be done shall not exceed \$7,872.00.

/s/ 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-----	\$7, 872. 00
Contingencies—10%-----	787. 20

Total Direct Cost-----	8, 659. 20
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(b) *Indirect Cost:*

Survey, Inspection, Engineering-----	\$629. 76
Total Indirect Cost-----	629. 76

Total Field Cost-----	9, 288. 96
General Office Overhead-----	629. 76

Estimated Total Cost to the Government-----	9, 918. 72
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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 BOARD EXHIBIT No. II

*Summary*

WAR DEPARTMENT,  
UNITED STATES ENGINEER OFFICE,  
Honolulu, T. H., March 15, 1941.

Contract No. W41-cug-602

Panchovo, Oahu, T. H.

Job Order #140.

Contract—reinforced concrete fire control station at Panchovo.

Est. Cost: \$3,650.00.

Commencement Date: March 10, 1941.

Est. date for completion: April 10, 1941.

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

WAR DEPARTMENT,  
U. S. ENGINEER OFFICE,  
Honolulu, T. H., Mar. 15, 1941.

JOB ORDER NO. 140.

Contract No. W-414-cug-602.

To: Hawaiian Constructors, Honolulu, T. H.

You are hereby directed to proceed with the following work:

1. PROJECT TITLE: Fire Control Station at Panchovo.

2. LOCATION: Honolulu, Oahu, T. H.

3. OFFICE FILE REFERENCE: 20134 P.

4. WORK TO BE DONE: Construct and complete reinforced concrete fire control station at Panchovo.

5. WORK REQUESTED BY: Commanding General—Hawaiian Department.

6. DRAWINGS AND REFERENCES: See paragraph 1-CB Specifications.