

FORSCOM



3d Inf Div(m)

Soil Remedial Action Report

**Hunter Army Airfield Fire Training Center
(HAA-01)**

Hunter Army Airfield, Georgia

Prepared for:
U.S. Army Corps of Engineers
and
Fort Stewart Directorate of Public Works
Under
Contract # DACA21-97-C-0042

Prepared by:
Omega Environmental Services
Geosciences, Inc.

October 1998

Volume II of VI

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**PHOTO DOCUMENTATION OF REMEDIAL
ACTION CONDUCTED AT
HAAF FIRE TRAINING AREA (HAA-01)**

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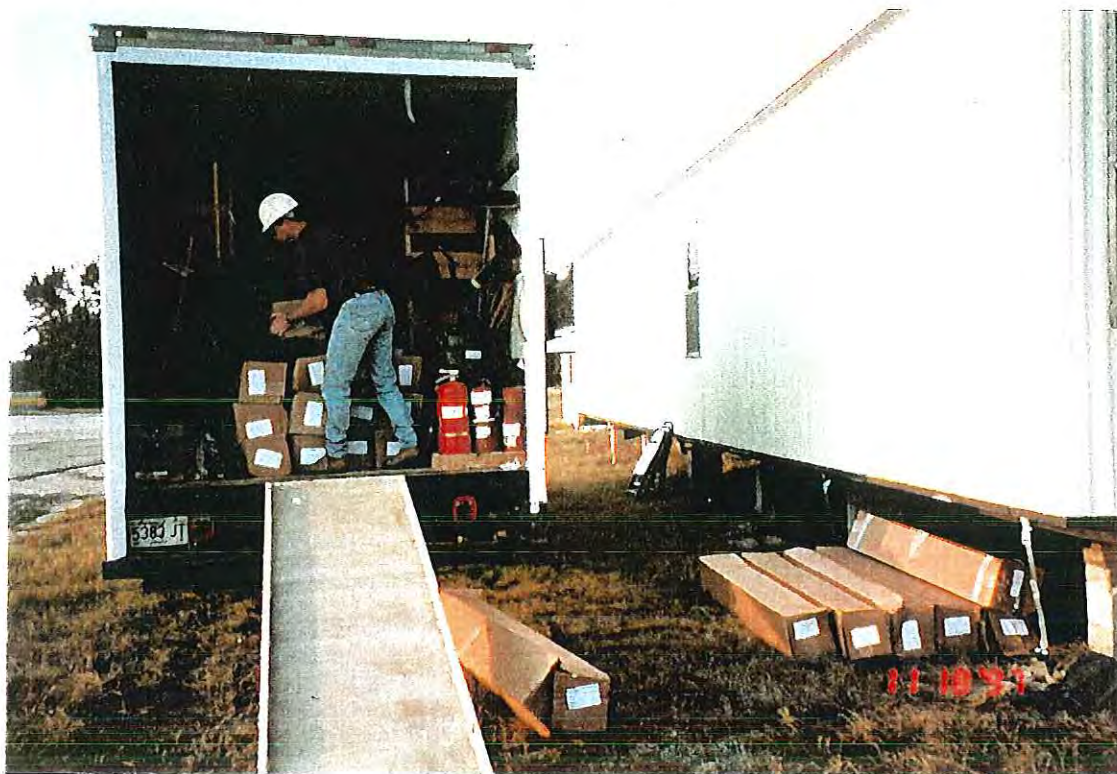
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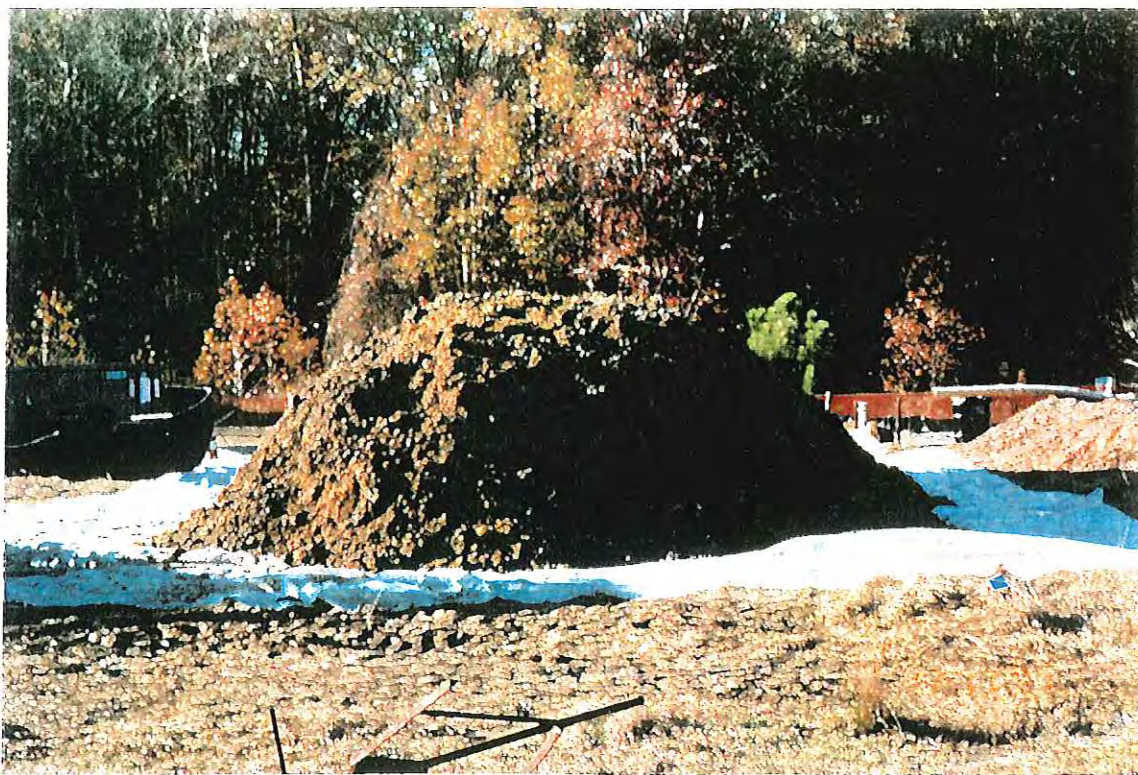
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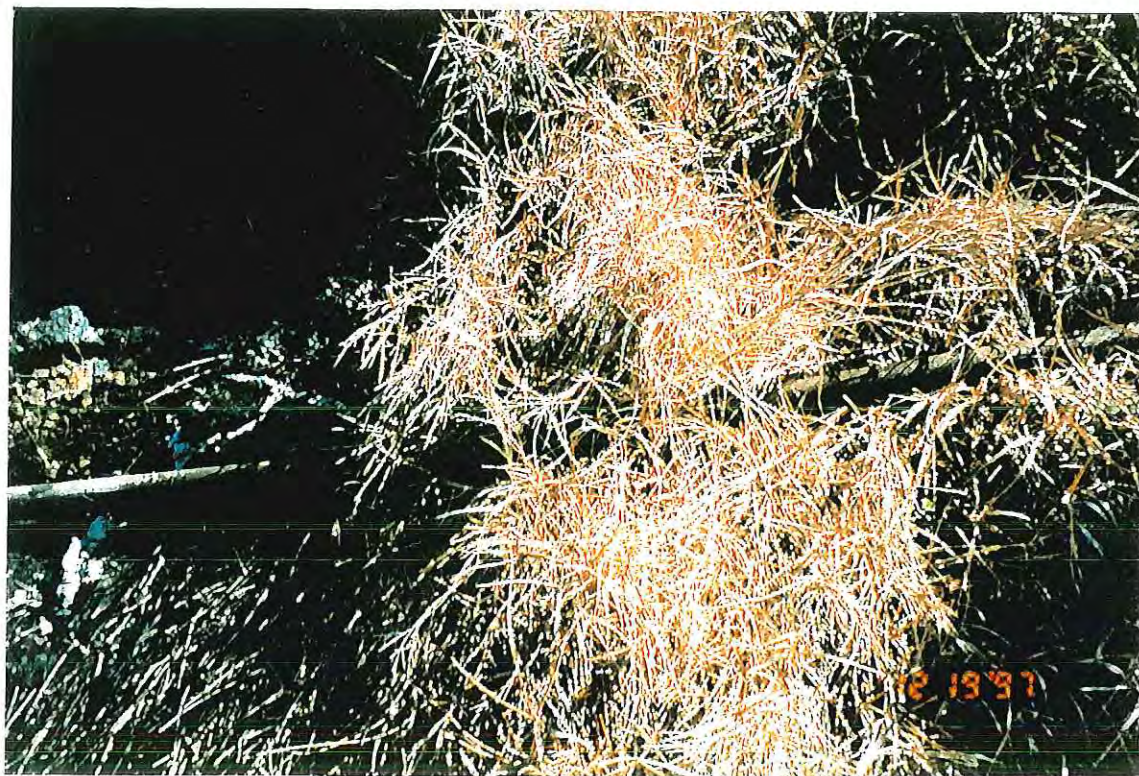
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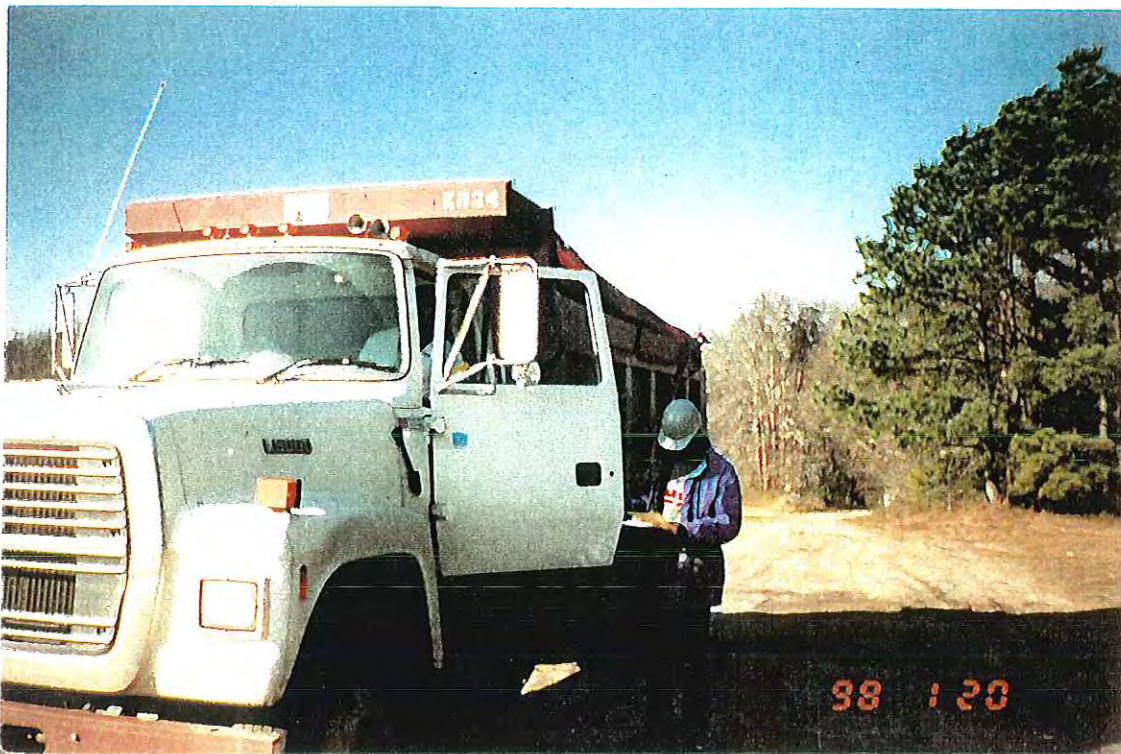
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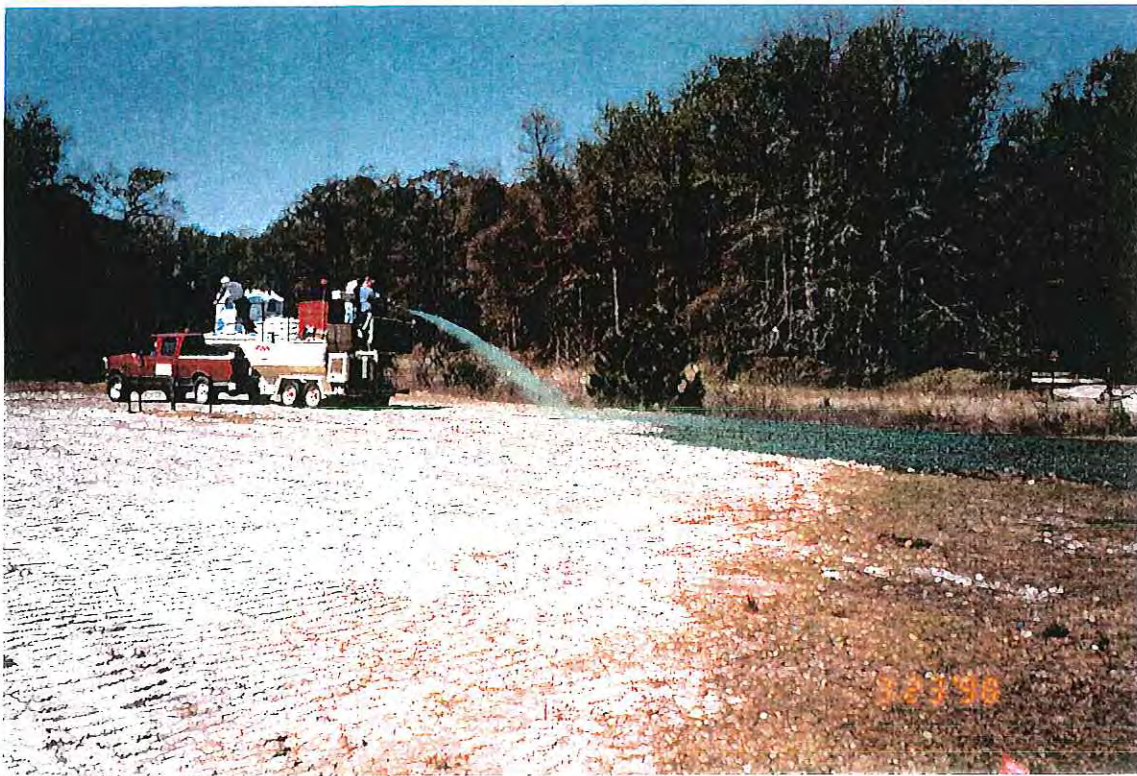
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**DENSITY TEST RESULTS OF
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HAAF FIRE TRAINING AREA (HAA-01)**

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Whitaker Laboratory, Inc., Report No. 3/12/98-15

Whitaker Laboratory, Inc., Report No. 3/6/98-17

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/10/98-2

Test made DATE: 3/9

CLIENT: Omega Environmental Services

fill

PROJECT: Fire Training Center
Hunter Army Airfield
Geosciences Job#MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	1-PT. PROCTOR
29	22.6	93.8	97.8	all tests	all tests
30	21.0	94.8	98.7	90	96.0
31	19.9	95.9	99.9		

LOCATIONS & ELEVATIONS

29.	NE corner of pit,	1' below grade
30.	Center W. side of pit,	2' below grade
31.	SW corner of pit,	2' below grade

WHITAKER LABORATORY, INC.

by: _____

J. M. Whitaker

1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Rd. Ste B
Tucker, GA 30084
Phone 770/621-9414
FAX: 692-0508 Attn: John Fleming
1 cc: File

[illegible]

1. Sand Volume (SV), Moisture Content (MC)
2. When Soil Class. is estimated, note by letter (E).
3. This method is used for control of sandy/cohesionless materials exhibiting flat or reversed shape compaction curves.
4. Enter Difference from Optimum Moisture to Field Moisture.

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-9-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT FIRE TRAINING Center Omega Const.				
Test No.	#29 Test	#30 Test		
Area i.e., Subgrade, site fill, <u>backfill</u>	NE CORNER Pit	Center W. Side Pit		
Station				
Offset				
Elevation	1' Below Grade	2' Below Grade		
(A) Initial Wt. Jar & Sand	12.31	12.68		
(B) Wt. Jar & Sand Retained	3.90	4.26		
(C) Wt. Sand Used (A-B)	8.41	8.42		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.93	4.94		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0569	0.0570		
(H) Wet Wt. Rock & Soil	7.20	7.17		
(I) Wt. Container	0.65	0.63		
(J) Wet Wt. Soil & Rock (H-I)	6.55	6.54		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.55	6.54		
(M) Volume Rock ($\frac{K}{\text{Sp. Gr.} \times 62.4}$)*	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0569	0.0570		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	115.1	114.7		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		163.1		165.3
(R) Wt. Water (P-Q)		36.9		34.7
(S) % Moisture (R ÷ Q)		22.6		21.0
(T) Dry Wt. Lbs. Cu. Ft. ($\frac{O}{S+100}$)		93.8		94.8
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		97.8%		98.7%
Difference from Optimum + or -		+2.3		+0.7
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

Mold constant <u>STD</u> Compaction Test <u>25</u> Blows per each of <u>3</u> layers with <u>55</u> lb. rammer <u>1.2</u> inch drop <u>4</u> inch dia. mold ONE OR TWO POINT COMPACTION TEST									
Test No.	#29 Test	#30 Test	RAPID	OVEN	RAPID	OVEN	RAPID	OVEN	
1. Weight of Wet Soil + Mold	13.14	13.18							
2. Weight of Mold	9.42	9.42							
3. Weight of Wet Soil (1-2)	3.72	3.76							
Wet Unit Weight = $\left(\frac{\text{Wt. Wet Soil}}{\text{Vol. of Soil Sample}} \right)$ 4. lb./cu. ft.	111.6	112.8							
MOISTURE DETERMINATION (SEE NOTE)									
5. Wet Weight Moisture Sample				200.0		200.0			
6. Dry Weight Moisture Sample				163.4		164.1			
7. Weight Water (5-6)				36.6		35.9			
8. % Moisture (7 ÷ 6)				22.4		21.8			
9. Dry Unit Weight $\left(\frac{4}{8 + 100} \right)$				91.1		92.6			

Plot Items 8 and 9 on appropriate family of 5 point compaction curves to determine optimum moisture content and maximum density. Enter these values on the front form.

NOTE: Any rapid method of moisture determination may be used provided the results are compatible with the oven method. Preliminary results may be determined for moisture contents obtained by the Rapid Method; however, final results must be obtained using moisture contents determined from the oven method. In the event of a conflict, the results using the oven method take precedence.

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-9-98	
NAME Hunter Arms Airfield		PROJECT Pine Bluff Center		
Omega Const.		CONTRACT NO.		
Test No.	#21 - 25			
Area i.e., Subgrade, site fill, backfill	SW CORNER Pit			
Station				
Offset				
Elevation	2' Below Grade			
(A) Initial Wt. Jar & Sand	12.71			
(B) Wt. Jar & Sand Retained	4.14			
(C) Wt. Sand Used (A-B)	8.57			
(D) Wt. Sand in Cone & Plate	3.48			
(E) Sand Used in Hole (C-D)	5.09			
(F) Wt. Sand Per Cu. Ft.	86.6			
(G) Vol. Hole (E ÷ F)	0.0587			
(H) Wet Wt. Rock & Soil	7.39			
(I) Wt. Container	0.64			
(J) Wet Wt. Soil & Rock (H-I)	6.75			
(K) Wt. Rock	0			
(L) Wet Wt. Soil (J-K)	6.75			
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right) *$	0			
(N) Adjusted Volume of Hole (G-M)*	0.0587			
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	115.0			
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		
(Q) Dry Wt. Moist. Sample		166.8		
(R) Wt. Water (P-Q)		33.2		
(S) % Moisture (R ÷ Q)		19.9		
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		95.9		
(U) Optimum Moisture		20.3		
(V) Maximum Density		96.0		
% Compaction (T ÷ V)		99.9%		
Difference from Optimum + or -		-0.4		
* Correction for + #4 Fraction		TESTED BY JOE Lindbarn		

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/6/98-7

Test made DATE: 3/4/98

CLIENT: Omega Environmental Services Fill

PROJECT: Fire Training Center, HAAF
Geosciences Job# MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	PROCTOR
1	19.1	99.5	97.9	All tests	101.6
2	16.8	97.6	96.8	90	100.8
3	17.5	99.1	98.3		100.8
4	19.2	98.4	97.6		100.8
5	18.5	99.8	99.0		100.8
6	16.8	97.3	96.5		100.8

ONE-PROCTOR

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	PROCTOR
7	18.6	94.1	98.0		96.0
8	17.6	92.8	96.7		96.0
9	17.8	92.1	95.9		96.0
10	16.8	91.0	94.8		96.0
11	15.8	92.9	96.8		96.0
2	16.6	94.2	98.1		96.0
13	16.4	94.3	98.2		96.0
14	14.7	91.5	95.3		96.0
15	15.6	92.8	96.7		96.0
16	16.5	93.5	97.4		96.0

LOCATIONS & ELEVATIONS

1-2	See the attached sketch for approx. locations, 7' below grade
3-6	See the attached sketch for approx. locations, Subgrade 0-6
7-8	See the attached sketch for approx. locations, 6' below grade
9-10	See the attached sketch for approx. locations, 5' below grade
11-13	See the attached sketch for approx. locations, 4' below grade
14	See the attached sketch for approx. locations, 3' below grade
15	See the attached sketch for approx. locations, 4' below grade
16	See the attached sketch for approx. locations, 3' below grade

NOTE: One-point proctors were performed at each location to match with the correct moisture-density curve.

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by:

J. M. Whitaker

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Suite B
Tucker, GA 30084

Fax# 692-0508 - John Fleming
(770) 621-9414

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-99	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT FIRE TRAINING CENTER (CONCRETE CONST)				
Test No.	#5 Test	#6 Test		
Area i.e., <u>Subgrade</u> site fill, backfill	*SE CORNER - Pit	*NW CORNER - Pit		
Station				
Offset				
Elevation				
(A) Initial Wt. Jar & Sand	12.16	12.13		
(B) Wt. Jar & Sand Retained	3.18	3.00		
(C) Wt. Sand Used (A-B)	8.98	9.13		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	5.50	5.65		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0635	0.0652		
(H) Wet Wt. Rock & Soil	8.17	8.05		
(I) Wt. Container	0.66	0.64		
(J) Wet Wt. Soil & Rock (H-I)	7.51	7.41		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	7.51	7.41		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0635	0.0652		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	118.3	113.7		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		168.8		171.2
(R) Wt. Water (P-Q)		31.2		28.8
(S) % Moisture (R ÷ Q)		18.5		16.8
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{0}{S + 100}\right)$		99.8		97.3
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		100.8		101.6
% Compaction (T ÷ V)		99.0		95.8%
Difference from Optimum + or -		-1.8		-3.5
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT FIRE TRAINING CENTER (OMEGA CONST)				
Test No.	(3) Test	(4) Test		
Area i.e., (Subgrade) site fill, backfill	CENTER OF W. Side	Center of E. Side		
Station	Pit	Pit		
Offset				
Elevation				
(A) Initial Wt. Jar & Sand	11.40	11.86		
(B) Wt. Jar & Sand Retained	3.26	3.61		
(C) Wt. Sand Used (A-B)	8.14	8.25		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.66	4.77		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0538	0.0550		
(H) Wet Wt. Rock & Soil	6.92	7.11		
(I) Wt. Container	0.65	0.66		
(J) Wet Wt. Soil & Rock (H-I)	6.27	6.45		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.27	6.45		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0538	0.0550		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	116.5	117.3		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		170.2		167.8
(R) Wt. Water (P-Q)		29.8		32.2
(S) % Moisture (R ÷ Q)		17.5		19.2
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{0}{S+100}\right)$		99.1		98.4
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		100.8		100.8
% Compaction (T ÷ V)		98.3%		97.6%
Difference from Optimum + or -		-2.8		-1.1
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98	
NAME Hunter Army A.R. Field		CONTRACT NO.		
PROJECT Fire Training Area (Omega Const.)				
Test No.	① Test	② Test		
Area i.e., <u>Subgrade, site fill, backfill</u>	SE Corner Tank Pad	NW Corner Tank Pad		
Station				
Offset				
Elevation	7' Below Grade	7' Below Grade		
(A) Initial Wt. Jar & Sand	10.73	11.76		
(B) Wt. Jar & Sand Retained	3.69	3.33		
(C) Wt. Sand Used (A-B)	7.04	8.43		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	3.56	4.95		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.041	0.0571		
(H) Wet Wt. Rock & Soil	5.52	7.15		
(I) Wt. Container	0.66	0.64		
(J) Wet Wt. Soil & Rock (H-I)	4.86	6.51		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	4.86	6.51		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.041	0.0571		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	118.5	114.0		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		167.9		171.2
(R) Wt. Water (P-Q)		32.1		28.8
(S) % Moisture (R ÷ Q)		19.1		16.8
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		99.5		97.6
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		101.6		100.8
% Compaction (T ÷ V)		97.9%		96.8
Difference from Optimum + or -		-1.2		-3.5
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98	
NAME Hunter Army Airfield		PROJECT Fire Training AREA (OMEGA CONST)		
CONTRACT NO.				
Test No.	#7 Test	#8 Test		
Area i.e., Subgrade, site fill, (backfill)	NW CORNER TANK PAD	SW CORNER TANK PAD		
Station				
Offset				
Elevation	6' Below Grade	6' Below Grade		
(A) Initial Wt. Jar & Sand	12.17	12.46		
(B) Wt. Jar & Sand Retained	5.33	5.85		
(C) Wt. Sand Used (A-B)	6.84	6.61		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	3.36	3.13		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0388	0.0361		
(H) Wet Wt. Rock & Soil	4.98	4.57		
(I) Wt. Container	0.65	0.63		
(J) Wet Wt. Soil & Rock (H-I)	4.33	3.94		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	4.33	3.94		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0388	0.0361		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	111.6	109.1		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		168.7		170.1
(R) Wt. Water (P-Q)		31.3		29.9
(S) % Moisture (R ÷ Q)		18.6		17.6
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		94.1		92.8
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		98.0%		96.7%
Difference from Optimum + or -		-1.7		-2.7
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

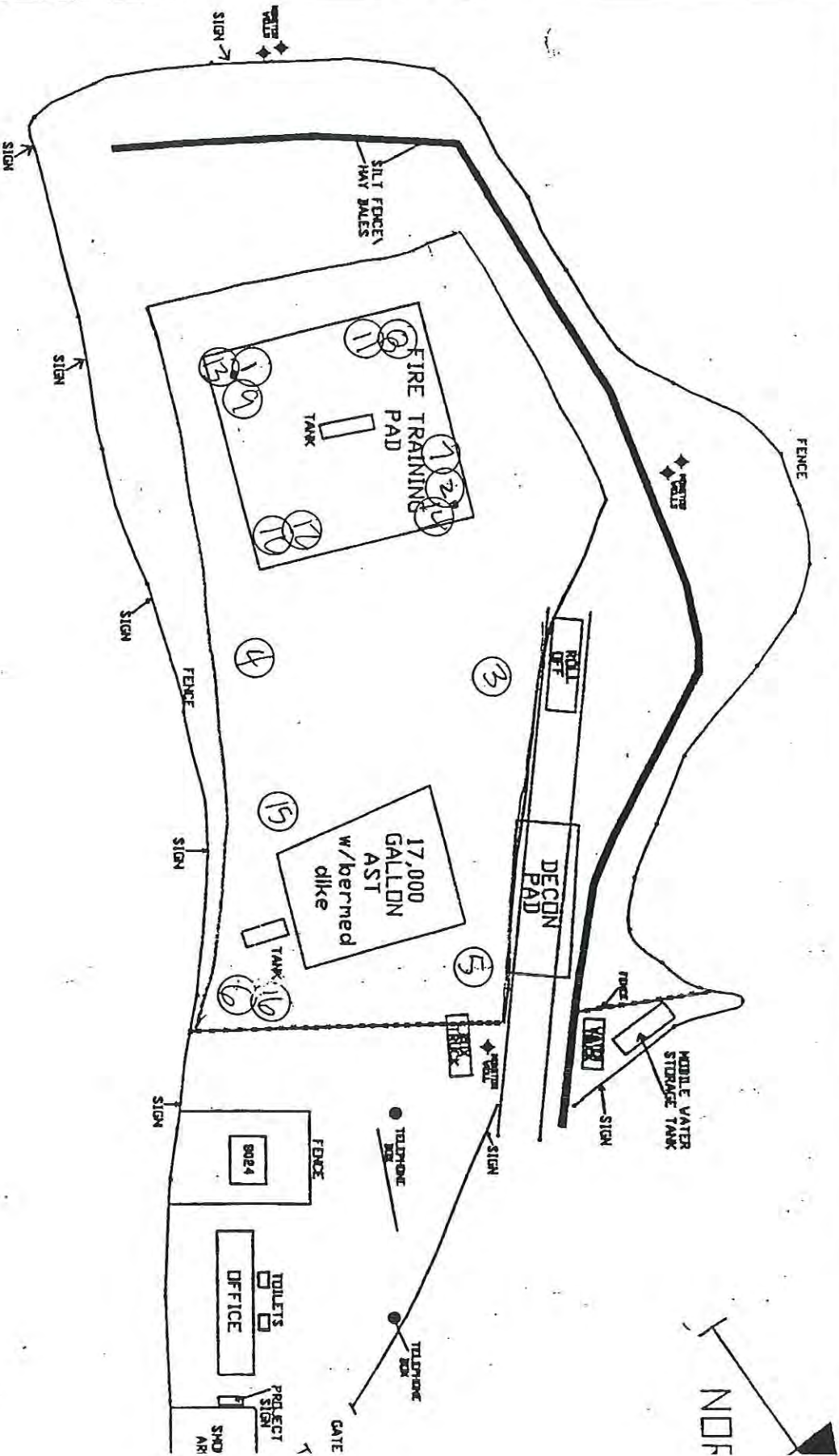
COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 34-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Area				
Test No.	#9 Test	#10 Test		
Area i.e., Subgrade, site fill, backfill	SE CORNER Tank Pad	NE CORNER Tank Pad		
Station				
Offset				
Elevation	5' Below Grade	5' Below Grade		
(A) Initial Wt. Jar & Sand	12.16	12.44		
(B) Wt. Jar & Sand Retained	4.59	4.95		
(C) Wt. Sand Used (A-B)	7.57	7.49		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.09	4.01		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0472	0.0463		
(H) Wet Wt. Rock & Soil	5.76	5.59		
(I) Wt. Container	0.64	0.66		
(J) Wet Wt. Soil & Rock (H-I)	5.12	4.93		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	5.12	4.93		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0472	0.0463		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	108.5	106.5		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		169.8		171.2
(R) Wt. Water (P-Q)		30.2		28.8
(S) % Moisture (R ÷ Q)		17.8		16.8
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		92.1		91.1
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		95.9%		94.8%
Difference from Optimum + or -		-2.5		-3.5
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Center (Omega Const)				
Test No.	# 11 Test	# 12 Test		
Area i.e., Subgrade, site fill, backfill	SW CORNER Tank Pad	NE CORNER Tank Pad		
Station				
Offset				
Elevation	4' Below Grade	4' Below Grade		
(A) Initial Wt. Jar & Sand	11.81	11.56		
(B) Wt. Jar & Sand Retained	3.45	3.14		
(C) Wt. Sand Used (A-B)	8.36	8.42		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.88	4.94		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0563	0.0570		
(H) Wet Wt. Rock & Soil	6.72	6.89		
(I) Wt. Container	0.66	0.63		
(J) Wet Wt. Soil & Rock (H-I)	6.06	6.26		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.06	6.26		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0563	0.0570		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	107.6	109.8		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		172.7		171.5
(R) Wt. Water (P-Q)		27.3		28.5
(S) % Moisture (R ÷ Q)		15.8		16.6
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{Q}{S + 100}\right)$		92.9		94.2
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		96.8		98.0
Difference from Optimum + or -		-4.5		-3.7
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98		
NAME Hunter Army Airfield		PROJECT Fire Training Center (Omega Const)			
Test No.		#13 Test	#14 Test		
Area i.e., Subgrade, site fill, backfill		SE Corner Tank Pad	NW Corner Tank Pad		
Station					
Offset					
Elevation		5' Below Grade	5' Below Grade		
(A)	Initial Wt. Jar & Sand	12.91	12.41		
(B)	Wt. Jar & Sand Retained	4.65	4.41		
(C)	Wt. Sand Used (A-B)	8.26	8.00		
(D)	Wt. Sand in Cone & Plate	3.48	3.48		
(E)	Sand Used in Hole (C-D)	4.78	4.52		
(F)	Wt. Sand Per Cu. Ft.	86.6	86.6		
(G)	Vol. Hole (E ÷ F)	0.0551	0.0522		
(H)	Wet Wt. Rock & Soil	6.69	6.14		
(I)	Wt. Container	0.64	0.66		
(J)	Wet Wt. Soil & Rock (H-I)	6.05	5.48		
(K)	Wt. Rock	0	0		
(L)	Wet Wt. Soil (J-K)	6.05	5.48		
(M)	Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N)	Adjusted Volume of Hole (G-M)	0.0551	0.0522		
(O)	Wet Wt. Soil/Cu. Ft. (L ÷ N)	109.8	105.0		
MOISTURE DETERMINATION (See Note)		RAPID	OVEN	RAPID	OVEN
(P)	Wet Wt. Moist. Sample		200.0		200.0
(Q)	Dry Wt. Moist. Sample		171.8		174.3
(R)	Wt. Water (P-Q)		28.2		25.7
(S)	% Moisture (R ÷ Q)		16.4		14.7
(T)	Dry Wt. Lbs. Cu. Ft. $\left(\frac{Q}{S + 100}\right)$		94.3		91.5
(U)	Optimum Moisture		20.3		20.3
(V)	Maximum Density		96.0		96.0
% Compaction (T ÷ V)			98.2		95.3
Difference from Optimum + or -			-3.9		-5.6
* Correction for + #4 Fraction			TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-4-98	
NAME <u>Hunter Army Airfield</u>				
PROJECT <u>FIRE TRAINING CENTER (Omega Const)</u>			CONTRACT NO.	
Test No.	#15 Test		#16 Test	
Area i.e., Subgrade, site fill, <u>backfill</u>	SE CORNER (Pit)		SE CORNER (Pit)	
Station				
Offset				
Elevation	4' Below Grade		3' Below Grade	
(A) Initial Wt. Jar & Sand	11.80		11.64	
(B) Wt. Jar & Sand Retained	3.95		3.43	
(C) Wt. Sand Used (A-B)	7.85		8.21	
(D) Wt. Sand in Cone & Plate	3.48		3.48	
(E) Sand Used in Hole (C-D)	4.37		4.73	
(F) Wt. Sand Per Cu. Ft.	86.6		86.6	
(G) Vol. Hole (E ÷ F)	0.0504		0.0546	
(H) Wet Wt. Rock & Soil	6.06		6.58	
(I) Wt. Container	0.65		0.63	
(J) Wet Wt. Soil & Rock (H-I)	5.41		5.95	
(K) Wt. Rock	0		0	
(L) Wet Wt. Soil (J-K)	5.41		5.95	
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4} \right) *$	0		0	
(N) Adjusted Volume of Hole (G-M)*	0.0504		0.0546	
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	107.3		108.9	
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		173.0		171.6
(R) Wt. Water (P-Q)		27.0		28.4
(S) % Moisture (R ÷ Q)		15.6		16.5
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{Q}{S + 100} \right)$		92.8		93.5
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		96.7		97.4 %
Difference from Optimum + or -		-4.7		-3.8
* Correction for + #4 Fraction			TESTED BY <u>Joe Lindbom</u>	

ALL LOCATIONS ARE APPROXIMATE



APPROXIMATE SCALE: 1"

FIGURE 1

BASEMAP

FIRE TRAINING CENTER
HINTER ARMY AIRFIELD

OMEGA ENVIRONMENTAL & SERVICES, INC.

SUMMARY OF FIELD DENSITY TESTS

TEST NO.	DATE MADE	TEST TYPE	LOCATION OF TEST	EXCAVATION OR BORROW SOURCE	SOIL CLASS	FIELD IN-PLACE DATA		LABORATORY TEST DATA				FIELD AND LAB CORRELATION		COMBINATION ON TEST
						DRY DENSITY	% MOISTURE	ONE-POINT COMP. TEST WITH FAMILY OF CURVES	ONE-POINT COMP. DRY (1" MOLD)	VAR. FROM OPT. - OR -	PERCENT COMPACTION	SPECIFIED COMPACTION		
1	3/4		7' BELOW GRADE			99.5	19.1	101.6	20.3		-1.2	97.9	90	
2			7' BELOW GRADE			97.6	16.8	100.8	20.3		-3.5	96.8		
3			SUBGRADE 0.6"			99.1	17.5	100.8	20.3		-2.8	98.3		
4			SUBGRADE 0.6"			98.4	19.2	100.8	20.3		-1.1	97.6		
5			SUBGRADE 0.6"			99.8	18.5	100.8	20.3		-1.8	99.0		
6			SUBGRADE 0.6"			97.3	16.8	100.8	20.3		-3.5	96.5		
7			6' BELOW GRADE			94.1	18.6	96.0	20.3		-1.7	98.0		1 POINT
8			5' BELOW GRADE			92.8	17.6	96.0	20.3		-2.7	96.7		1 POINT
9			5' BELOW GRADE			92.1	17.8	96.0	20.3		-2.5	95.9		1 POINT
10			5' BELOW GRADE			91.0	16.8	96.0	20.3		-3.5	94.8		1 POINT
11			4' BELOW GRADE			92.9	15.8	96.0	20.3		-4.5	96.8		1 POINT
12			4' BELOW GRADE			94.2	16.6	96.0	20.3		-3.7	98.1		1 POINT
13			4' BELOW GRADE			94.3	16.4	96.0	20.3		-3.9	98.2		1 POINT
14			3' BELOW GRADE			91.5	14.7	96.0	20.3		-5.6	95.3		1 POINT

1. and Volume (SV), Moisture Content (MC)
2. and Soil Class, is estimated, note by letter (E).
3. This method is used for control of sandy/cohesionless materials exhibiting flat or reversed shape compaction curves.

SUMMARY OF FIELD DENSITY TESTS

[illegible]

1. Standard Volume (SV), Moisture Content (MC)
2. V 1 Soil Class, is estimated, note by letter (E).
3. This method is used for control of sandy/cohesionless materials exhibiting late or reversed shape compaction curves.

WHITAKER LABORATORY, INC.

JOB NAME FIRE TRAINING CENTER H.A.A.F.

SAMPLE NUMBER 2

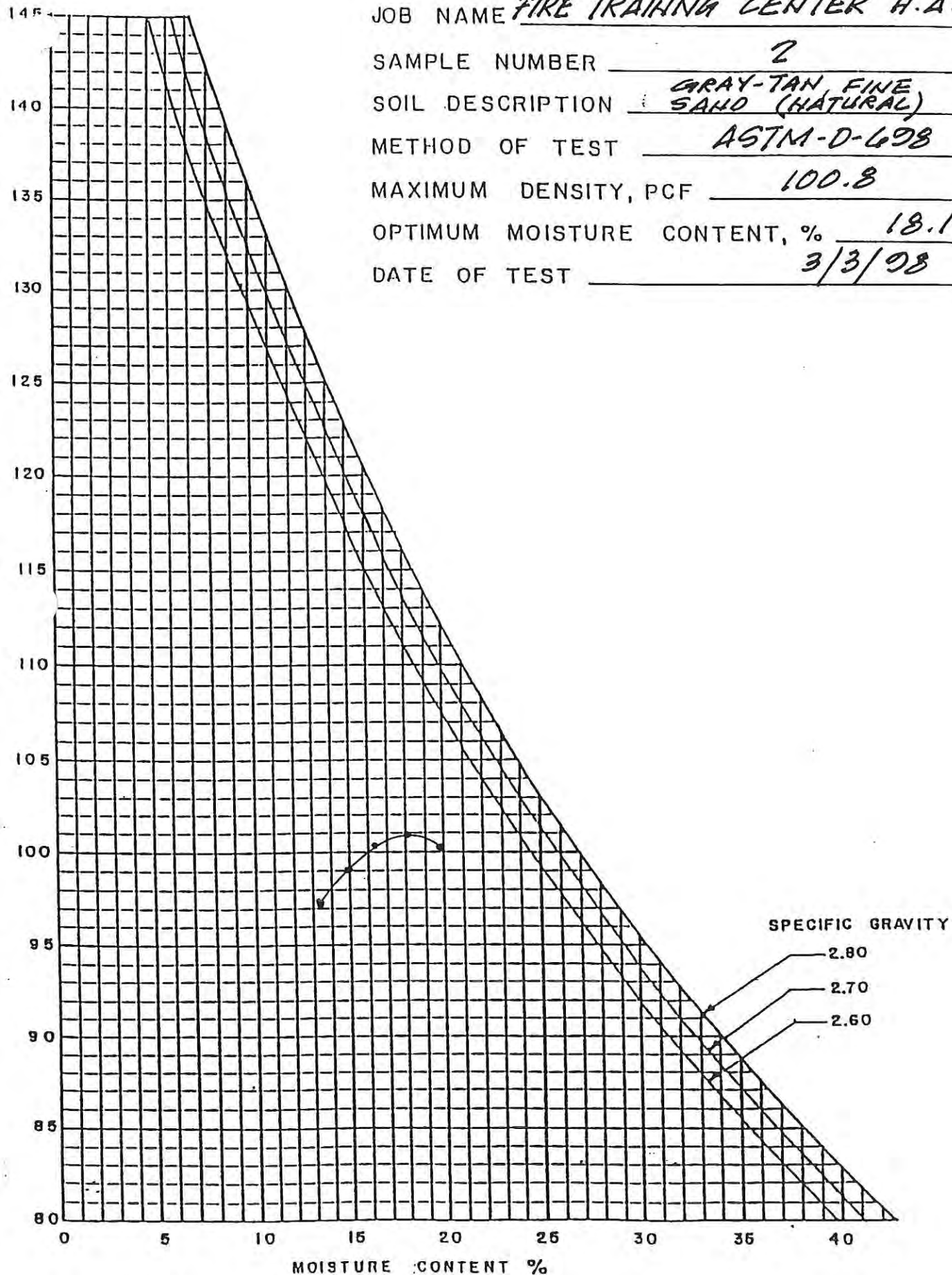
SOIL DESCRIPTION GRAY-TAN FINE SAND (NATURAL)

METHOD OF TEST ASTM-D-698

MAXIMUM DENSITY, PCF 100.8

OPTIMUM MOISTURE CONTENT, % 18.1

DATE OF TEST 3/3/98



WHITAKER LABORATORY, INC.

JOB NAME FIRE TRAINING CENTER HAAF

SAMPLE NUMBER 1

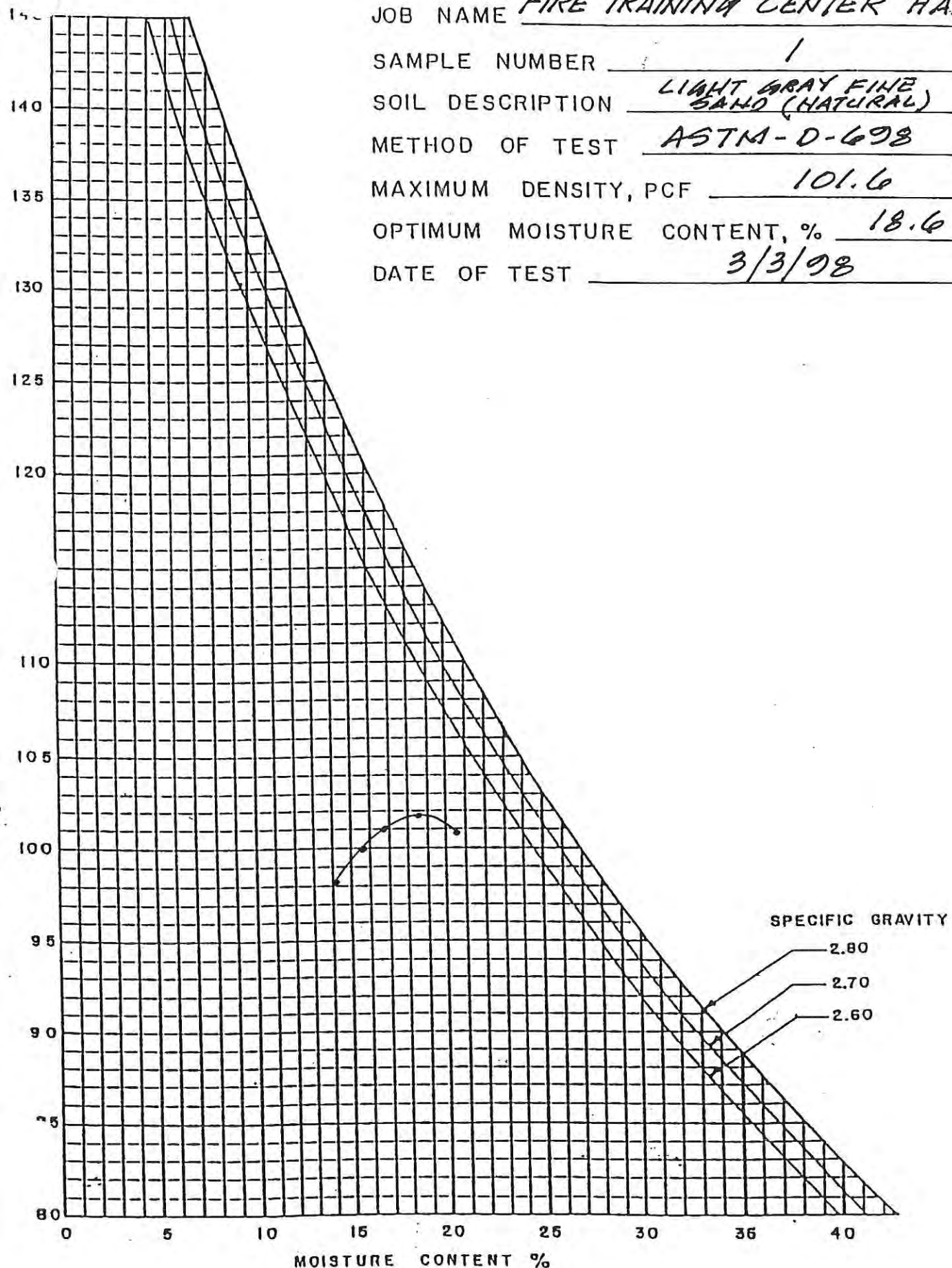
SOIL DESCRIPTION LIGHT GRAY FINE SAND (NATURAL)

METHOD OF TEST ASTM-D-698

MAXIMUM DENSITY, PCF 101.6

OPTIMUM MOISTURE CONTENT, % 18.6

DATE OF TEST 3/3/98



WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/6/98-10

Test made DATE: 3/5/98

CLIENT: Omega Environmental Service Fill

PROJECT: Fire Training Center, HAAF
Geosciences Job# MCE-97-626A

FIELD DENSITY REPORT

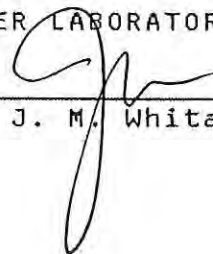
NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	ONE-POINT PROCTOR
17	18.1	93.4	97.2	90	96.0
18	17.0	92.6	96.4	90	96.0
19	18.0	92.9	96.8	90	96.0
20	18.2	93.7	97.6	90	96.0
21	17.0	92.1	95.9	90	96.0
22	17.1	92.5	96.3	90	96.0

LOCATIONS & ELEVATIONS

17-19 See the attached sketch for approx. locations, 3' below grade
20-21 See the attached sketch for approx. locations, 4' below grade
2 See the attached sketch for approx. locations, 3' below grade

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by: 

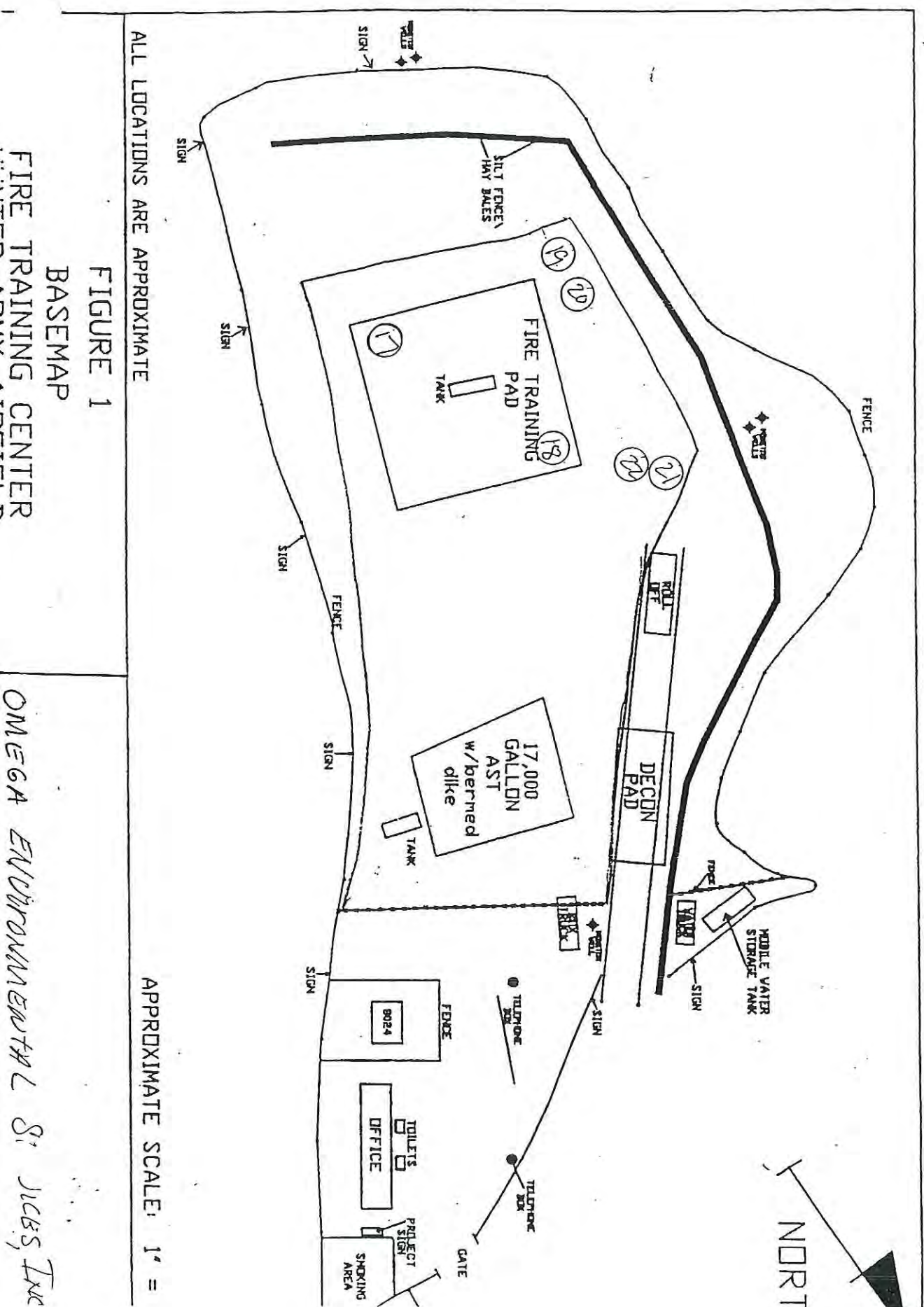
J. M. Whitaker

✓ 1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Road
Suite B
Tucker, GA 30084
Fax# 692-0508 - John Fleming
(770) 621-9414
1 cc: File

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-5-98	
NAME Hunter Army Airfield				
PROJECT Fire Training Center Omega Const. CONTRACT NO.				
Test No.	#17 Test		#18 Test	
Area i.e., Subgrade, site fill, (backfill)	SE CORNER Tank Pad		NW CORNER Tank Pad	
Station				
Offset				
Elevation	3' Below Grade		3' Below Grade	
(A) Initial Wt. Jar & Sand	12.37		12.46	
(B) Wt. Jar & Sand Retained	3.94		4.16	
(C) Wt. Sand Used (A-B)	8.43		8.30	
(D) Wt. Sand in Cone & Plate	3.48		3.48	
(E) Sand Used in Hole (C-D)	4.95		4.82	
(F) Wt. Sand Per Cu. Ft.	86.6		86.6	
(G) Vol. Hole (E ÷ F)	0.0571		0.0556	
(H) Wet Wt. Rock & Soil	6.95		6.70	
(I) Wt. Container	0.65		0.67	
(J) Wet Wt. Soil & Rock (H-I)	6.30		6.03	
(K) Wt. Rock	0		0	
(L) Wet Wt. Soil (J-K)	6.30		6.03	
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0		0	
(N) Adjusted Volume of Hole (G-M)*	0.0571		0.0556	
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	110.3		108.4	
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		169.4		171.0
(R) Wt. Water (P-Q)		30.6		29.0
(S) % Moisture (R ÷ Q)		18.1		17.0
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		93.4		92.6
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		97.2%		96.4
Difference from Optimum + or -		-2.2		-3.3
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-5-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Center Omega Const.				
Test No.	#19 Test	#20 Test		
Area i.e., Subgrade, site fill, backfill	SW CORNER (Pit)	SW CORNER (Pit)		
Station				
Offset				
Elevation	3' Below Grade	4' Below Grade		
(A) Initial Wt. Jar & Sand	12.16	12.44		
(B) Wt. Jar & Sand Retained	3.90	4.23		
(C) Wt. Sand Used (A-B)	8.26	8.21		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.78	4.73		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0552	0.0546		
(H) Wet Wt. Rock & Soil	6.68	6.70		
(I) Wt. Container	0.63	0.65		
(J) Wet Wt. Soil & Rock (H-I)	6.05	6.05		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.05	6.05		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0552	0.0546		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	109.6	110.8		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		169.5		169.2
(R) Wt. Water (P-Q)		30.5		30.8
(S) % Moisture (R ÷ Q)		18.0		18.2
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		92.9		93.7
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		96.8%		97.6%
Difference from Optimum + or -		-2.3		-2.1
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-5-98	
NAME <u>Hunter Army Airfield</u>				
PROJECT <u>Fire Training Center (Omega Const)</u> CONTRACT NO.				
Test No.	# 21 Test		# 22 Test	
Area i.e., <u>Subgrade, site fill,</u> <u>backfill</u>	Center W. Side Pit		Center W. Side Pit	
Station				
Offset				
Elevation	4' Below Grade		3' Below Grade	
(A) Initial Wt. Jar & Sand	12.05		12.41	
(B) Wt. Jar & Sand Retained	4.10		4.01	
(C) Wt. Sand Used (A-B)	7.95		8.40	
(D) Wt. Sand in Cone & Plate	3.48		3.48	
(E) Sand Used in Hole (C-D)	4.47		4.92	
(F) Wt. Sand Per Cu. Ft.	86.6		86.6	
(G) Vol. Hole (E ÷ F)	0.0516		0.0568	
(H) Wet Wt. Rock & Soil	6.19		6.80	
(I) Wt. Container	0.63		0.65	
(J) Wet Wt. Soil & Rock (H-I)	5.56		6.15	
(K) Wt. Rock	0		0	
(L) Wet Wt. Soil (J-K)	5.56		6.15	
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4} \right)^*$	0		0	
(N) Adjusted Volume of Hole (G-M)*	0.0516		0.0568	
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	107.7		108.3	
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		170.9		170.9
(R) Wt. Water (P-Q)		29.1		29.2
(S) % Moisture (R ÷ Q)		17.0		17.1
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{Q}{S + 100} \right)$		92.1		92.5
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		95.9%		96.3%
Difference from Optimum + or -		-3.3		-3.2
* Correction for + #4 Fraction		TESTED BY <u>JOE Lindborn</u>		



SUMMARY C' FIELD DENSITY TESTS

[illegible]

1. Sand Volume (SV), Moisture Content (MC)
2. When Soil Class. is estimated, note by letter (E).
3. This method is used for control of sandy/cohesionless materials exhibiting flat or reversed shape compaction curves.
4. Enter Difference from Optimum Moisture to Field Moisture.

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

500 TREMONT RD.

912/234-0696

REPORT NO. 3/6/98-11

Test made DATE: 3/5/98

CLIENT: Omega Environmental Services Fill

PROJECT: Fire Training Center, HAAF
Geosciences Hob# MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	ONE-POINT PROCTOR
23	16.0	91.8	95.7	90	96.0
24	16.9	92.3	96.1	90	96.0
25	16.1	91.4	95.2	90	96.0

LOCATIONS & ELEVATIONS

23 See the attached sketch for approximate locations, 4' below grade
24 See the attached sketch for approximate locations, 3' below grade
25 See the attached sketch for approximate locations, 2' below grade

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by:

J. M. Whitaker

✓
1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Road
Suite B
Tucker, GA 30084
Fax# 692-0508 - John Fleming
(770) 621-9414
1 cc: File

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-5-98	
NAME Hunter Armu Airfield		PROJECT Fire Training CENTER (OMEGA CONST)		
		CONTRACT NO.		
Test No.	#23 Test	#24 Test		
Area i.e., Subgrade, site fill, (backfill)	NW CORNER Pit	NW CORNER Pit		
Station				
Offset				
Elevation	4' Below Grade	3' Below Grade		
(A) Initial Wt. Jar & Sand	12.60	12.30		
(B) Wt. Jar & Sand Retained	3.99	4.24		
(C) Wt. Sand Used (A-B)	8.61	8.06		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	5.13	4.58		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0592	0.0528		
(H) Wet Wt. Rock & Soil	6.96	6.33		
(I) Wt. Container	0.65	0.63		
(J) Wet Wt. Soil & Rock (H-I)	6.31	5.70		
(K) Wt. Rock	⊖	⊖		
(L) Wet Wt. Soil (J-K)	6.31	5.70		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right) *$	⊖	⊖		
(N) Adjusted Volume of Hole (G-M)*	0.0592	0.0528		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	106.5	107.9		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		172.4		171.1
(R) Wt. Water (P-Q)		27.6		28.9
(S) % Moisture (R ÷ Q)		16.0		16.9
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		91.8		92.3
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		95.7%		96.1%
Difference from Optimum + or -		-4.3		-3.4
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-5-98	
NAME Hunter Apma Airfield		PROJECT Fire Training Center (Omega Const)		
CONTRACT NO.				
Test No.	#25 Test			
Area i.e., Subgrade, site fill, backfill	SE CORNER Tank Pad			
Station				
Offset				
Elevation	2' Below Grade			
(A) Initial Wt. Jar & Sand	12.82			
(B) Wt. Jar & Sand Retained	4.54			
(C) Wt. Sand Used (A-B)	8.28			
(D) Wt. Sand in Cone & Plate	3.48			
(E) Sand Used in Hole (C-D)	4.80			
(F) Wt. Sand Per Cu. Ft.	86.6			
(G) Vol. Hole (E ÷ F)	0.0554			
(H) Wet Wt. Rock & Soil	6.54			
(I) Wt. Container	0.66			
(J) Wet Wt. Soil & Rock (H-I)	5.88			
(K) Wt. Rock	Ø			
(L) Wet Wt. Soil (J-K)	5.88			
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	Ø			
(N) Adjusted Volume of Hole (G-M)*	0.0554			
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	106.1			
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		
(Q) Dry Wt. Moist. Sample		172.3		
(R) Wt. Water (P-Q)		27.7		
(S) % Moisture (R ÷ Q)		16.1		
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		91.4		
(U) Optimum Moisture		20.3		
(V) Maximum Density		96.0		
% Compaction (T ÷ V)		95.2		
Difference from Optimum + or -		-4.2		
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

—

[illegible]

- רמב"ם פ"ב הל' א' ופ"ג הל' א'

ing flat or reversed shape comparison curves.

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/12/98/-12

Test made DATE: 3/11/98

CLIENT: Omega Environmental Services

PROJECT: Fire Training Center, HAAF
Geosciences Job# MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	ONE-POINT PROCTOR
32	15.8	91.4	95.2	90	96.0
33	15.0	89.5	93.2	90	96.0
34	13.8	89.3	93.0	90	96.0
35	16.0	92.1	96.0	90	96.0
36	16.9	93.6	97.5	90	96.0
37	17.9	94.0	97.9	90	96.0

LOCATIONS & ELEVATIONS

32	S. E. corner of tank pad, final grade
33	N. W. corner of tank pad, final grade
4	S. W. corner of pit, 1' below grade
35	Center of W. side pit, 1' below grade
36	N. W. corner of pit, 1' below grade
37	N. E. corner of pit, final grade

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by:

J. M. Whitaker

✓
1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Road
Suite B
Tucker, GA 30084
Fax# 692-0508 - John Fleming
(770) 621-9414
1 cc: File

SUMMARY OF FIELD DENSITY TESTS

[illegible]

1. Sand Volume (SV), Moisture Content (MC)

2. When Soil Class is estimated, note by letter (E).

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-11-98	
NAME Hunter Army Airfield		PROJECT Fire Training Center Omega Const.		
CONTRACT NO.				
Test No.	#32	#33		
Area i.e., Subgrade, site fill, backfill	SE Corner Tank Pad	NW Corner Tank Pad		
Station				
Offset				
Elevation	Final Grade	Final Grade		
(A) Initial Wt. Jar & Sand	12.21	12.20		
(B) Wt. Jar & Sand Retained	3.79	3.89		
(C) Wt. Sand Used (A-B)	8.42	8.31		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.94	4.83		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0570	0.0557		
(H) Wet Wt. Rock & Soil	6.69	6.36		
(I) Wt. Container	0.66	0.63		
(J) Wet Wt. Soil & Rock (H-I)	6.03	5.73		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.03	5.73		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4} \right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0570	0.0557		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	105.8	102.9		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		172.7		173.9
(R) Wt. Water (P-Q)		27.3		26.1
(S) % Moisture (R ÷ Q)		15.8		15.0
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100} \right)$		91.4		89.5
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		95.2%		93.2%
Difference from Optimum + or -		-4.5		-5.3
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-11-98		
NAME Hunter Army Airfield		PROJECT Fire Training Center Omega Const.			
Test No.		#34 Test	#35 Test		
Area i.e., Subgrade, site fill, <u>backfill</u>		SW CORNER Pit.	Center W. Side Pit		
Station					
Offset					
Elevation		Final Lift.	1' Below Grade		
(A)	Initial Wt. Jar & Sand	11.89	12.68		
(B)	Wt. Jar & Sand Retained	3.65	3.92		
(C)	Wt. Sand Used (A-B)	8.24	8.76		
(D)	Wt. Sand in Cone & Plate	3.48	3.48		
(E)	Sand Used in Hole (C-D)	4.76	5.28		
(F)	Wt. Sand Per Cu. Ft.	86.6	86.6		
(G)	Vol. Hole (E ÷ F)	0.0549	0.0609		
(H)	Wet Wt. Rock & Soil	6.22	7.17		
(I)	Wt. Container	0.64	0.66		
(J)	Wet Wt. Soil & Rock (H-I)	5.58	6.51		
(K)	Wt. Rock	Ø	Ø		
(L)	Wet Wt. Soil (J-K)	5.58	6.51		
(M)	Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	Ø	Ø		
(N)	Adjusted Volume of Hole (G-M)*	0.0549	0.0609		
(O)	Wet Wt. Soil/Cu. Ft. (L ÷ N)	101.6	106.9		
MOISTURE DETERMINATION (See Note)		RAPID	OVEN	RAPID	OVEN
(P)	Wet Wt. Moist. Sample		200.0		200.0
(Q)	Dry Wt. Moist. Sample		175.8		172.4
(R)	Wt. Water (P-Q)		24.2		27.6
(S)	% Moisture (R ÷ Q)		13.8		16.0
(T)	Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S+100}\right)$		89.3		92.0
(U)	Optimum Moisture		20.3		20.3
(V)	Maximum Density		96.0		96.0
% Compaction (T ÷ V)			93.0		96.0
Difference from Optimum + or -			-6.5		-4.3
* Correction for + #4 Fraction			TESTED BY Joe Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-11-98	
NAME Hunter Army Airfield		PROJECT Fire Training Center Omega Const- CONTRACT NO.		
Test No.	#36 Test	#37 Test		
Area i.e., Subgrade, site fill, backfill	NW CORNER Pit	NE CORNER Pit		
Station				
Offset				
Elevation	1' Below Grade	FINAL Grade		
(A) Initial Wt. Jar & Sand	12.78	12.07		
(B) Wt. Jar & Sand Retained	4.15	3.80		
(C) Wt. Sand Used (A-B)	8.63	8.27		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	5.15	4.79		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0594	0.0553		
(H) Wet Wt. Rock & Soil	7.13	6.79		
(I) Wt. Container	0.63	0.66		
(J) Wet Wt. Soil & Rock (H-I)	6.50	6.13		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	6.50	6.13		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4} \right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0594	0.0553		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	109.4	110.8		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		171.1		169.6
(R) Wt. Water (P-Q)		28.9		30.4
(S) % Moisture (R ÷ Q)		16.9		17.9
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{Q}{S + 100} \right)$		93.6		94.0
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		97.5 %		97.9 %
Difference from Optimum + or -		-3.4		-2.4
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

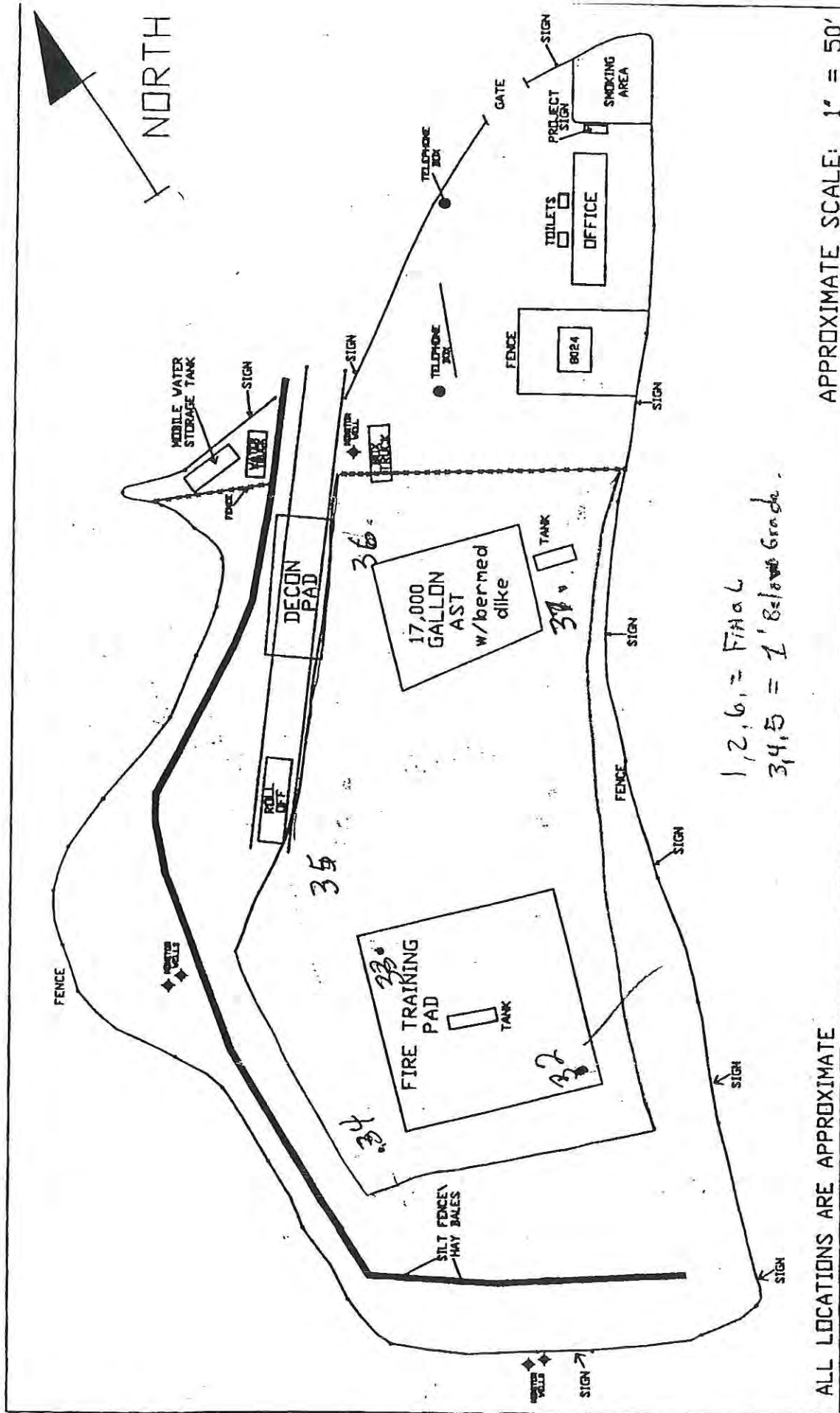


FIGURE 1

BASEMAP

FIRE TRAINING CENTER
 HUNTER ARMY AIRFIELD

GEOSCIENCES JOB NO. MCE-97-626A

GEOSCIENCES, inc.

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/12/98-15

Test made DATE: 3/5/98

CLIENT: Omega Environmental Service Fill

PROJECT: Fire Training Center, HAAF
Geosciences Job# MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	ONE-POINT PROCTOR
38	18.0	92.5	96.4	90	96.0
39	16.5	91.0	94.8	90	96.0
40	17.8	92.1	95.9	90	96.0

LOCATIONS & ELEVATIONS

38 S. W. corner of pit, final lift
39 Center W. side pit, final lift
40 N. W. corner of pit, final lift

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by: _____

J. M. Whitaker

1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Road
Suite B
Tucker, GA 30084
Fax# 692-0508 - John Fleming
(770) 621-9414
1 cc: File

•

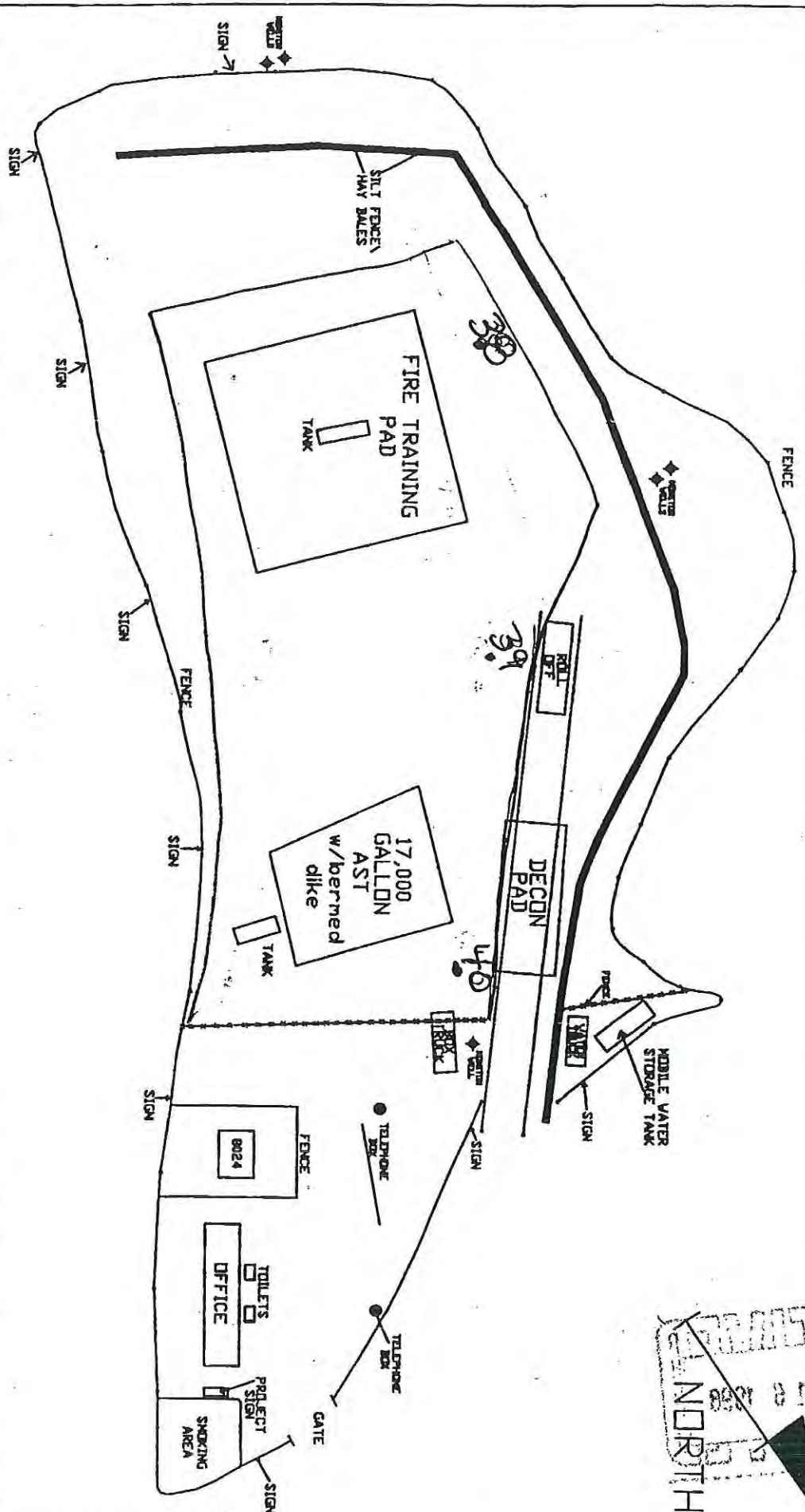
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COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-12-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Center (Omega Const)				
Test No.	#38 Test	#39 Test		
Area i.e., Subgrade, site fill, backfill	SW CORNER Pit	CENTER W. Side Pit		
Station				
Offset				
Elevation	FINAL Lift	FINAL Lift		
(A) Initial Wt. Jar & Sand	12.56	12.62		
(B) Wt. Jar & Sand Retained	4.65	4.86		
(C) Wt. Sand Used (A-B)	7.91	7.76		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.43	4.28		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0511	0.0494		
(H) Wet Wt. Rock & Soil	6.23	5.87		
(I) Wt. Container	0.65	0.63		
(J) Wet Wt. Soil & Rock (H-I)	5.58	5.24		
(K) Wt. Rock	0	0		
(L) Wet Wt. Soil (J-K)	5.58	5.24		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0	0		
(N) Adjusted Volume of Hole (G-M)*	0.0511	0.0494		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	109.2	106.0		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		169.5		171.6
(R) Wt. Water (P-Q)		30.5		28.4
(S) % Moisture (R ÷ Q)		18.0		16.5
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		92.5		91.0
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		96.4%		94.8%
Difference from Optimum + or -		-2.3		-3.8
* Correction for + #4 Fraction		TESTED BY Joe Lindhorn		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST		DATE 3-12-98	
NAME Hunter Army Airfield		CONTRACT NO.	
PROJECT Fire Training Center Omega Const.			
Test No.	#40 Test		
Area i.e., Subgrade, site fill, <u>backfill</u>	NW CORNER Pit		
Station			
Offset			
Elevation	Final Grade		
(A) Initial Wt. Jar & Sand	12.49		
(B) Wt. Jar & Sand Retained	4.32		
(C) Wt. Sand Used (A-B)	8.17		
(D) Wt. Sand in Cone & Plate	3.48		
(E) Sand Used in Hole (C-D)	4.69		
(F) Wt. Sand Per Cu. Ft.	86.6		
(G) Vol. Hole (E ÷ F)	0.0541		
(H) Wet Wt. Rock & Soil	6.51		
(I) Wt. Container	0.64		
(J) Wet Wt. Soil & Rock (H-I)	5.87		
(K) Wt. Rock	0		
(L) Wet Wt. Soil (J-K)	5.87		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0		
(N) Adjusted Volume of Hole (G-M)*	0.0541		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	108.5		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	
(P) Wet Wt. Moist. Sample		200.0	
(Q) Dry Wt. Moist. Sample		169.8	
(R) Wt. Water (P-Q)		30.2	
(S) % Moisture (R ÷ Q)		17.8	
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		92.1	
(U) Optimum Moisture		20.3	20.3
(V) Maximum Density		96.0	96.0
% Compaction (T ÷ V)		95.9%	
Difference from Optimum + or -		-2.5	
* Correction for + #4 Fraction		TESTED BY JOE Lindbom	

3-12-98



ALL LOCATIONS ARE APPROXIMATE

APPROXIMATE SCALE: 1" = 50'

FIGURE 1

BASEMAP

FIRE TRAINING CENTER
HUNTER ARMY AIRFIELD

WHITAKER LABORATORY INC.

P.O. BOX 7081

SAVANNAH, GEORGIA 31418

FAX 912/233-5061

2500 TREMONT RD.

912/234-0696

REPORT NO. 3/6/98-17

Test made DATE: 3/6/98

CLIENT: Omega Environmental Services Fill

PROJECT: Fire Training Center, HAAF
Geosciences Job# MCE-97-626A

FIELD DENSITY REPORT

NO.	% MOISTURE	DRY PCF	% COMPACTION	% COMP. REQ.	ONE-POINT PROCTOR
26	17.2	91.9	95.7	90	96.0
27	19.0	94.5	98.4	90	96.0
28	18.5	92.3	96.1	90	96.0

LOCATIONS & ELEVATIONS

26	S.E. corner of tank pad, 1' below grade
27	N.W. corner of tank pad, 2' below grade
28	N.W. corner of tank pad, 1' below grade

Tests taken by Joe Lindbom

WHITAKER LABORATORY, INC.

by: _____

J. M. Whitaker

✓ 1 cc: Omega Environmental Services
Attn: John Mount
4661 Hammermill Road
Suite B
Tucker, GA 30084
Fax# 692-0508 - John Fleming
(770) 621-9414
1 cc: File

SUMMARY OF FIELD DENSITY TESTS

[illegible]

1. Sand Volume (SV), Moisture Content (MC)
2. an Soil Class. is estimated, note by letter (E).
3. this method is used for control of sandy/cohesionless materials ext. and flat or reversed shape compaction curves.

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-6-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Center Omega Const				
Test No.	#26 TEST	#27 TEST		
Area i.e., Subgrade, site fill, backfill	SE CORNER Tank Pad	NW CORNER Tank Pad		
Station				
Offset				
Elevation	1' Below Grade	2' Below Grade		
(A) Initial Wt. Jar & Sand	11.46	11.82		
(B) Wt. Jar & Sand Retained	3.29	3.61		
(C) Wt. Sand Used (A-B)	8.17	8.21		
(D) Wt. Sand in Cone & Plate	3.48	3.48		
(E) Sand Used in Hole (C-D)	4.69	4.73		
(F) Wt. Sand Per Cu. Ft.	86.6	86.6		
(G) Vol. Hole (E ÷ F)	0.0541	0.0546		
(H) Wet Wt. Rock & Soil	6.48	6.80		
(I) Wt. Container	0.65	0.66		
(J) Wet Wt. Soil & Rock (H-I)	5.83	6.14		
(K) Wt. Rock	⊖	⊖		
(L) Wet Wt. Soil (J-K)	5.83	6.14		
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	⊖	⊖		
(N) Adjusted Volume of Hole (G-M)*	0.0541	0.0546		
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	107.7	112.4		
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		200.0
(Q) Dry Wt. Moist. Sample		170.6		168.0
(R) Wt. Water (P-Q)		29.4		32.0
(S) % Moisture (R ÷ Q)		17.2		19.0
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		91.9		94.5
(U) Optimum Moisture		20.3		20.3
(V) Maximum Density		96.0		96.0
% Compaction (T ÷ V)		95.7%		98.4%
Difference from Optimum + or -		-3.1		-1.3
* Correction for + #4 Fraction		TESTED BY JOE Lindbom		

COMPACTION DETERMINATION SAND CONE METHOD & ONE POINT COMPACTION TEST			DATE 3-6-98	
NAME Hunter Army Airfield		CONTRACT NO.		
PROJECT Fire Training Center Omega Const.				
Test No.	#28 Test			
Area i.e., Subgrade, site fill, backfill	NW CORNER Tank Pad			
Station				
Offset				
Elevation	1' Below Grade			
(A) Initial Wt. Jar & Sand	11.64			
(B) Wt. Jar & Sand Retained	3.12			
(C) Wt. Sand Used (A-B)	8.52			
(D) Wt. Sand in Cone & Plate	3.48			
(E) Sand Used in Hole (C-D)	5.04			
(F) Wt. Sand Per Cu. Ft.	86.6			
(G) Vol. Hole (E ÷ F)	0.0582			
(H) Wet Wt. Rock & Soil	7.00			
(I) Wt. Container	0.63			
(J) Wet Wt. Soil & Rock (H-I)	6.37			
(K) Wt. Rock	0			
(L) Wet Wt. Soil (J-K)	6.37			
(M) Volume Rock $\left(\frac{K}{\text{Sp. Gr.} \times 62.4}\right)^*$	0			
(N) Adjusted Volume of Hole (G-M)*	0.0582			
(O) Wet Wt. Soil/Cu. Ft. (L ÷ N)	109.4			
MOISTURE DETERMINATION (See Note)	RAPID	OVEN	RAPID	OVEN
(P) Wet Wt. Moist. Sample		200.0		
(Q) Dry Wt. Moist. Sample		168.8		
(R) Wt. Water (P-Q)		31.2		
(S) % Moisture (R ÷ Q)		18.5		
(T) Dry Wt. Lbs. Cu. Ft. $\left(\frac{O}{S + 100}\right)$		92.3		
(U) Optimum Moisture		20.3		
(V) Maximum Density		96.0		
% Compaction (T ÷ V)		96.1 %		
Difference from Optimum + or -		-1.8		
* Correction for + #4 Fraction		TESTED BY Joe Lindbom		

ALL LOCATIONS ARE APPROXIMATE

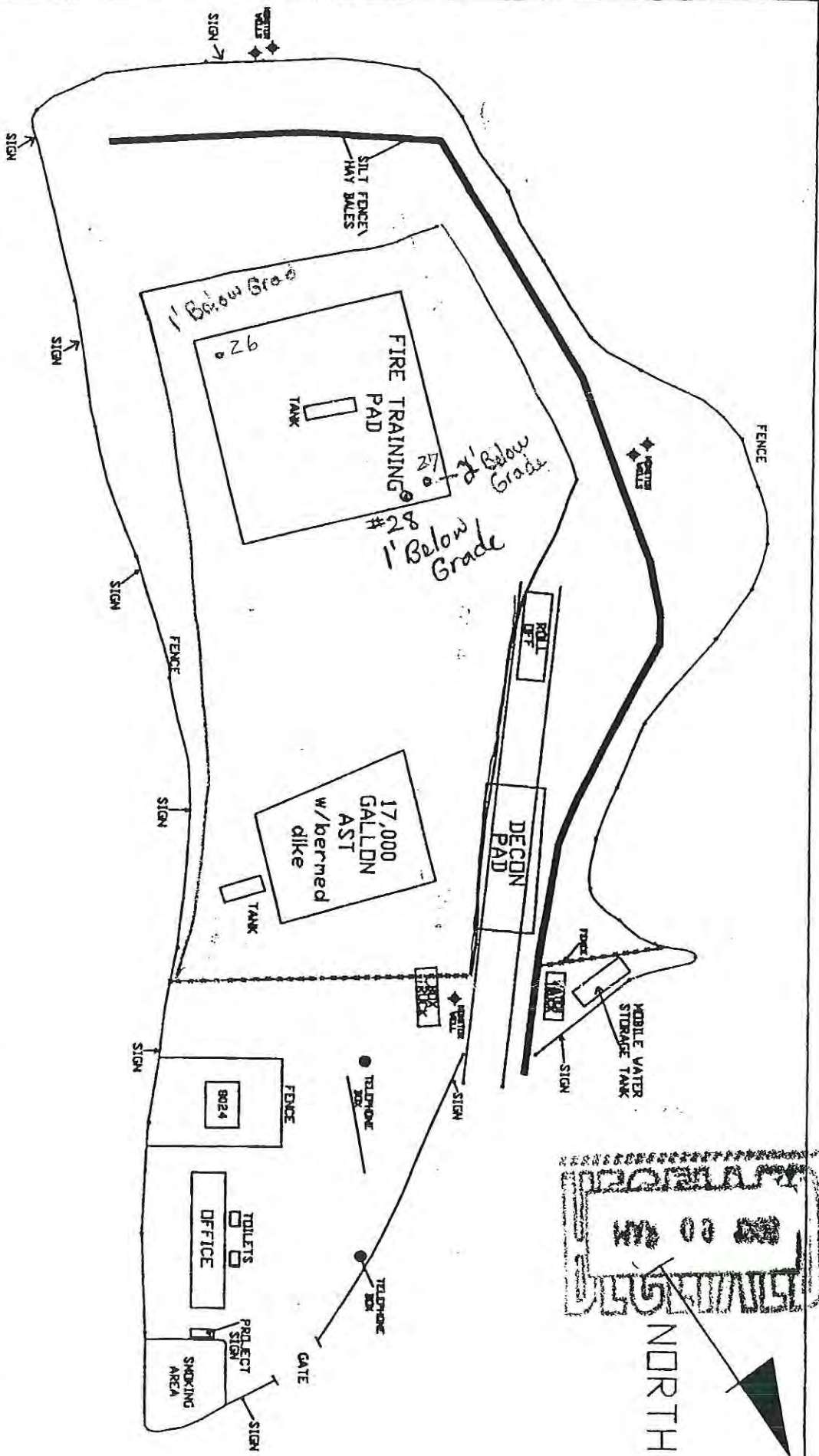
FIGURE 1

BASEMAP

FIRE TRAINING CENTER
HUNTER ARMY AIRFIELD

1. FTSC/TFN/TFE JTR NT MCF-97-626A

APPROXIMATE SCALE: 1" = 50'



RECEIVED

100

VOLUME II, SECTION 3:

**IMMUNOASSAY SCREENING DATA OF
REMEDIAL ACTION CONDUCTED AT
HAAF FIRE TRAINING AREA (HAA-01)**

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**PRELIMINARY RESULTS
IMMUNOASSAY SCREENING
FIRE TRAINING AREA
HUNTER ARMY AIRFIELD, GEORGIA
CONTRACT NO. DACA21 - 97 - C- 0042**

SAMPLE NUMBER	DATE	OPTICAL DENSITY	TPH (DRO) RANGE (ppm)
<i>NEG. CONTROL</i>	<i>2/13/98</i>	<i>1.16</i>	
<i>14</i>	<i>2/13/98</i>	<i>1.13</i>	
<i>91</i>	<i>2/13/98</i>	<i>0.65</i>	
<i>592</i>	<i>2/13/98</i>	<i>0.23</i>	
EB-K5-S	2/13/98	0.04	>592
EB-L5-S	2/13/98	0.04	>592
<i>NEG. CONTROL</i>	<i>2/16/98</i>	<i>2.25</i>	
<i>14</i>	<i>2/16/98</i>	<i>1.68</i>	
<i>91</i>	<i>2/16/98</i>	<i>0.99</i>	
<i>592</i>	<i>2/16/98</i>	<i>0.33</i>	
EB-J5-S	2/16/98	1.96	<14
EB-J6-S	2/16/98	0.07	>592
EB-J7-S	2/16/98	0.04	>592
EB-J8-S	2/16/98	0.05	>592
EB-K6-S	2/16/98	0.05	>592
EB-K7-S	2/16/98	0.03	>592
EB-K7-S (DUP)	2/16/98	0.05	>592
EB-K8-S	2/16/98	0.10	>592
EB-I5-S	2/16/98	0.56	>592
EB-I5-S (DUP)	2/16/98	0.73	91-592

EB-I7-S	2/16/98	0.08	>592
EB-I8-S	2/16/98	0.07	>592
EB-L6-S	2/16/98	0.08	>592
EB-L7-S	2/16/98	0.06	>592
EB-L8-S	2/16/98	0.05	>592

**PRELIMINARY RESULTS
IMMUNOASSAY SCREENING
FIRE TRAINING AREA
HUNTER ARMY AIRFIELD, GEORGIA
CONTRACT NO. DACA21 - 97 - C- 0042**

SAMPLE NUMBER	DATE	OPTICAL DENSITY	TPH (DRO) RANGE (ppm)
<i>NEG. CONTROL</i>	<i>2/18/98</i>	<i>1.62</i>	
<i>14</i>	<i>2/18/98</i>	<i>1.48</i>	
<i>91</i>	<i>2/18/98</i>	<i>0.78</i>	
<i>592</i>	<i>2/18/98</i>	<i>0.28</i>	
EB-E8-S	2/18/98	1.16	14-91
EB-F8-S	2/18/98	0.04	>592
EB-G8-S	2/18/98	0.06	>592
EB-G8-S (DUP)	2/18/98	0.04	>592
EB-H8-S	2/18/98	0.05	>592
EB-I6-S	2/18/98	0.05	>592
EB-I4-S	2/18/98	1.45	14-91
EB-J4-S	2/18/98	1.48	14
EB-K4-S	2/18/98	0.03	>592