PTPL

CLIENT:

OLYMPIC CONSTRUCTION

610 NORTHWEST 44TH

SEATTLE, WASHINGTON 98107

ATTENTION: MR. BOB AUSTIN

SUBJECT:

GEOTECHNICAL EVALUATION
LOCKHEED PLANT NO. 2 EXPANSION
SEATTLE, WASHINGTON

PREPARED BY:

PACIFIC TESTING LABORATORIES

3220 - 17TH AVENUE WEST

SEATTLE, WASHINGTON 98119

JULY 15, 1980

CERTIFICATE NO. 8007-4005

PREPARED BY: _____
DAN L. BARTHOLME
ENGINEERING GEOLOGIST

TECHNICALLY APPROVED: _____
DR. GEORGE R. KNIGHT, P.E.
CHIEF ENGINEER

PACIFIC TESTING LABORATORIES
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

APPROVED BY: _____
GEORGE C. HUCKABAY, P.E.
PRESIDENT

605321

July 15, 1980
Certificate No. 8007-4005
Page One

GEOTECHNICAL EVALUATION
LOCKHEED PLANT NO. 2 EXPANSION
SEATTLE, WASHINGTON

SYNOPSIS

The geotechnical evaluation of the site for the proposed Lockheed Plant No. 2 Expansion as herein detailed has disclosed that the subsoil conditions will support the structure. This is premised upon the utilization of an allowable design bearing capacity of 2,500 pounds per square foot. It is in detail recommended within the report that specific site preparations be performed prior to the construction.

SITE LOCATION AND DESCRIPTION

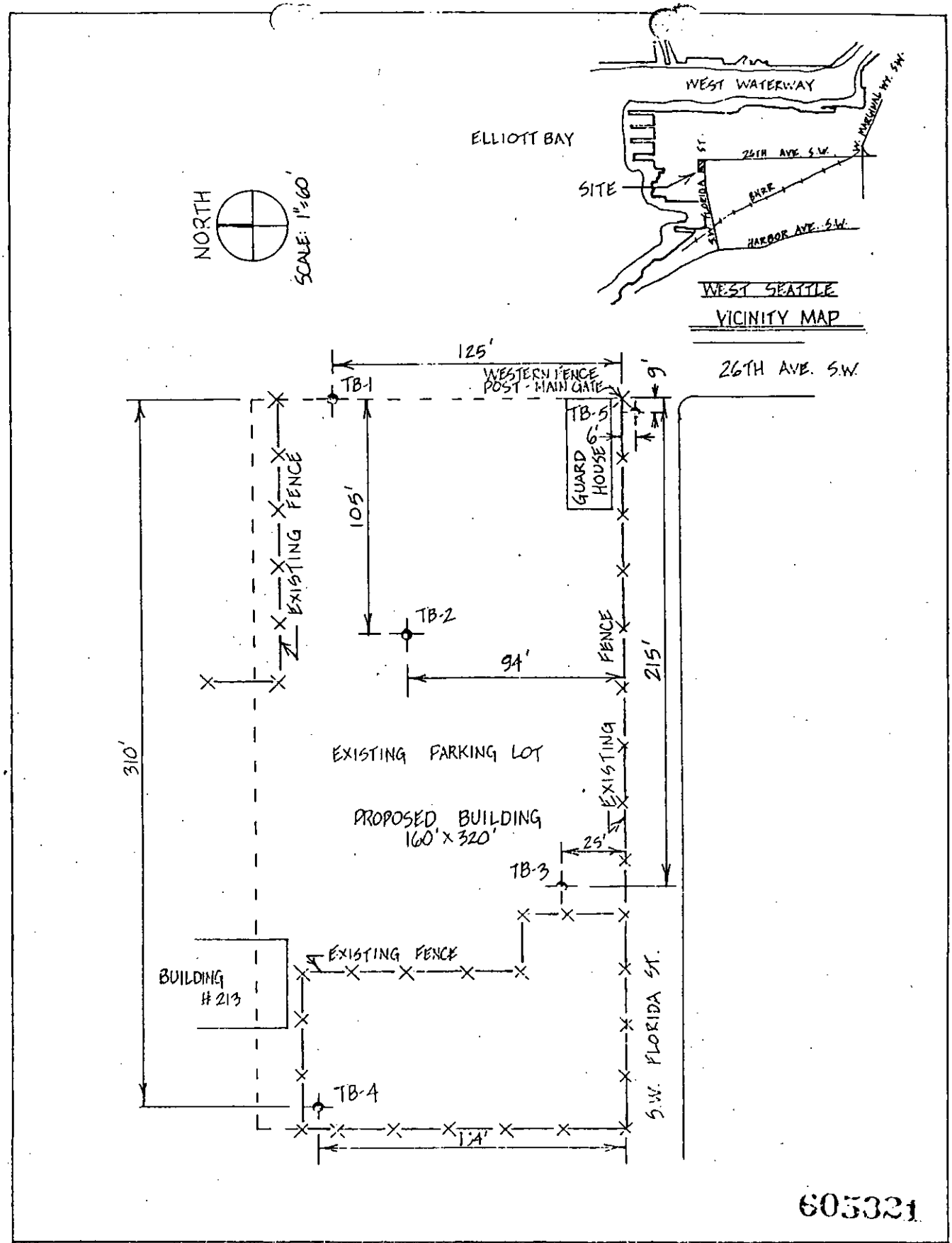
The proposed site, dominion of Lockheed Shipbuilding, is located west of Harbor Island near the West Waterway in West Seattle, Washington. The subject site is bounded on the north, east and west by Lockheed property. Southwest Florida Street is the southern boundary. Currently Lockheed is utilizing the property for visitor parking with the majority of the western third of the site having a fenced storage area. A second storage area fence line infringes approximately ten feet into the building area along the eastern half of the northern perimeter. In addition, two structures occupy the site. Building No. 213 sits approximately thirteen feet into the construction area in the northwest corner and a guard house is in the southeast corner of the site. There is no vegetation on the site of the proposed construction.

PROPOSED DEVELOPMENT

The proposed development, as shown on the attached site plan, calls for a 160 by 320 foot building with a height of 25 feet at the eave. The structure is planned to be typical steel column and concrete tilt-up panel in construction. Three and possibly four rows of columns at 30 foot spacings is currently being utilized for design with wall loadings expected to be 3,000 pounds per lineal foot. Slab design calls for a six inch concrete slab reinforced with six by six inch, ten gauge wire mesh. Interior plans call for two levels with finished slab grade to be at elevation 18.0. The completed structure is scheduled to be used as a barracks and represents light loading to the foundation soils.

FIELD DRILLING OPERATION

To establish subsurface soil bearing capacity conditions at the subject site, a truck-mounted "Mobile-type" B-75 drill unit was moved to the site on the 8th of July, 1980 to drill and sample five test borings. Hole was advanced utilizing eight inch O.D. continuous flight hollow-stem auger. Through the center of the auger at meaningful intervals, samples were obtained utilizing a two inch O.D. split-spoon sampler. The sampler was extended to sampling depth with BW rod and



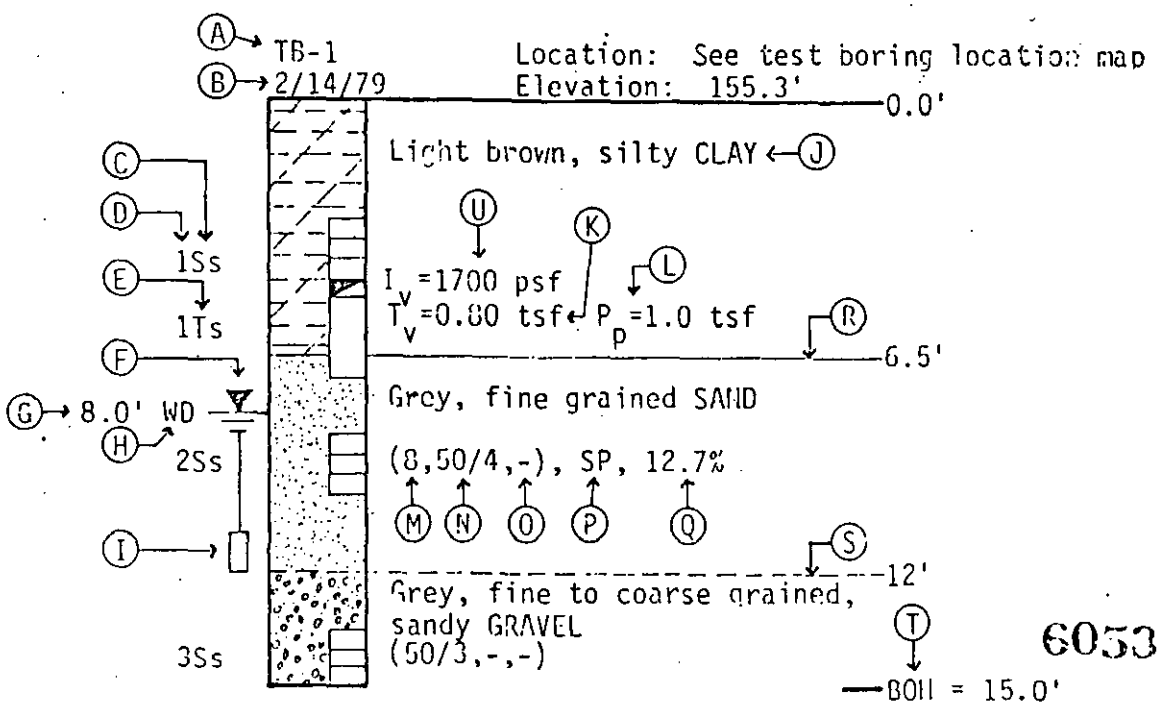
605321

PACIFIC TESTING LABORATORIES 3220 17th AVE W SEATTLE, WA 98119 206-282-0666	TEST BORING LOCATION MAP for Lockheed Plant 2 Expansion Olympic Construction Company Seattle, Washington	PROJECT NO. 8007-4005 DATE 7-22-80 DRAWN JEM ENGR./GEOL. DB APPROVED

STANDARD SYMBOLS

Organic	Cobbles & Boulders	Limestone
Clay	Conglomerate	Igneous
Silt	Sandstone	Volcanic
Sand	Mudstone	Metamorphic
Gravel	Uncontrolled Fill	

SAMPLE BORING LOG



605321

KEY:

A: Test Boring number
B: Date drilled
C: Sample type
D: Sample number
E: Sample type
F: Water table
G: Depth of water table
H: "While drilling"
I: Piezometer
J: General soil description
K: Torvane shear test (tons/ft^2)
L: Pocket penetrometer test "
M: Blows per 6"
N: Blows per designated depth
O: Not driven
P: Unified Soil Classification
Q: Moisture content
R: Strata change
S: Approximate strata change
T: Bottom of hole
U: In-place vane shear test(psf)

PACIFIC TESTING LABORATORIES 3220 17th AVE W. SEATTLE, WA. 98119 206-282-0666	Standard Symbols Olympic Construction 610 N.W. 44th Seattle, WA 98107	PROJECT NO. 8007-4005 DATE 7/15/80 DRAWN ENGR./GEOL. APPROVED

SAMPLER TYPE SYMBOLS

St...1.4" Split Spoon With 47# Hammer
Ss...1.4" Split Spoon With 140# Hammer
Sl...2.5" Split Spoon With 140# Hammer
Sh...2.5" Split Spoon With 340# Hammer
Sx...2.0" Split Spoon With 140# Hammer
Sz...1.4" Split Spoon With 340# Hammer
Sp...2.5" Split Spoon, Pushed
Hs...1.4" Split Spoon Driven With Air Hammer
Hl...2.5" Split Spoon Driven With Air Hammer
Pt...1.6" Tapered Probe Driven With 35# Hammer 30" Fall

Ts...Shelby Tube
Tm...Modified Shelby Tube
Pb...Pitcher Barrel
Cs...Core Barrel With Single Tube
Cd...Core Barrel With Double Tube
Bs...Bulk Sample
A....Auger Sample
G....Grab Sample
O....Osterberg
W....Wash
TO...Osterberg Sample

Note: Sampler Types are noted at the Respective Sample Depth

DRILLING SYMBOLS

H: Heave
WL: Water Level
WCI: Wet Cave In
DCI: Dry Cave In
WS: While Sampling
WD: While Drilling
BCR: Before Casing Removal
ACR: After Casing Removal
AD: After Drilling

SOIL CONSISTENCY

Cohesionless

N* (Blows/ft)

Less than 10.....Loose
10 - 30.....Medium Dense
30 - 50.....Dense
Over 50.....Very Dense

Cohesive

Less Than 2.....Very Soft
2 - 4.....Soft
4 - 8.....Medium Stiff
8 - 15.....Stiff
15 - 30.....Very Stiff
Over 30.....Hard

605321

PACIFIC TESTING LABORATORIES 3220 171h AVE. W SEATTLE, WA. 98119 206-282-0666	Standard Symbols OLYMPIC CONSTRUCTION 610 N.W. 44th Seattle, WA 98107	PROJECT NO. 8007-4005 DATE 7/15/80 DRAWN ENGR./GEOL. APPROVED

TB-3
7-9-80

Location: See Test Boring Location Map
Elevation: 15.2'

(0.0') EL.15.2'
3" asphalt
(0.25') EL.14.95'
1Ss (15,17,14)GP Gray, moist, fine grained sandy GRAVEL
(1.8') EL.13.4'

2Ss (4,6,7)SP

Dark gray, moist, becoming wet at (8.5') EL.6.7' and water bearing at (12.0') EL.3.2', fine grained SAND with shell fragments

3Ss (7,10,14)SP

(11.0'WD) EL.4.2'

4Ss (4,5,7)SP

5Ss (6,10,14)SP
1' Heave

6Ss (4,8,8)SP
2' Heave

With wood debris from (23.0') EL.-7.8' to (28.0') EL.-12.8'

7Ss (5,10,14)SP
3' Heave

Dark gray, water bearing, fine grained SAND with shell fragments

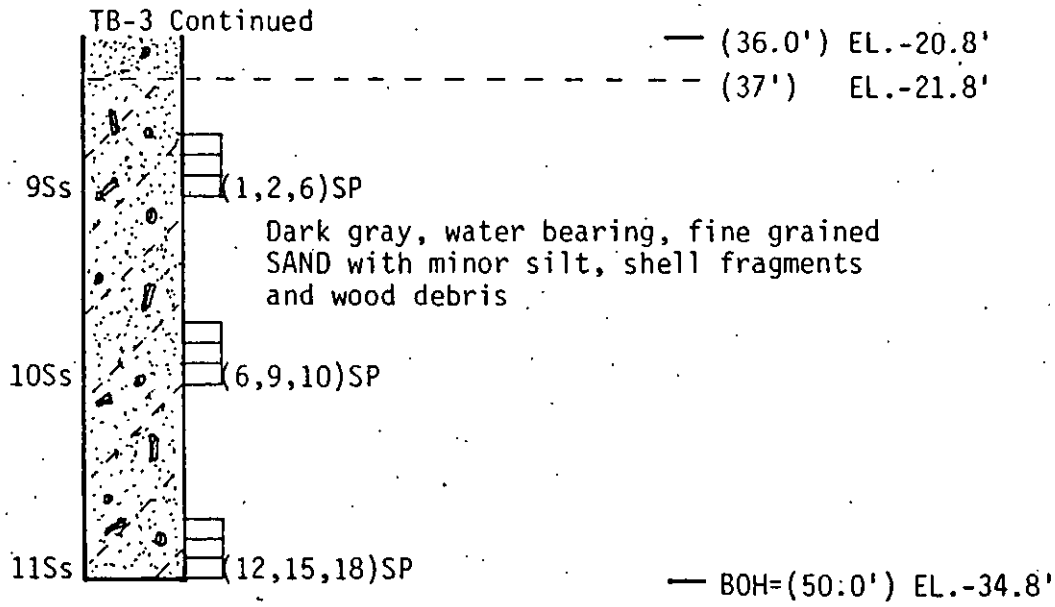
605321

8Ss (12,16,18)SP
3' Heave

(36.0')EL.-20.8'

PACIFIC TESTING LABORATORIES 3220 17th AVE. W. SEATTLE, WA. 98119 206-282-0666	TEST BORING LOG for Lockheed Plant 2 Expansion Olympic Construction Company Seattle, Washington	PROJECT NO. 8007-4005 DATE 7-21-80 DRAWN JEM ENGR./GEOL. DB APPROVED

TB-3 Continued



605321

PACIFIC TESTING LABORATORIES 3220 17th AVE. W. SEATTLE, WA. 98119 206-282-0666	TEST BORING LOG for Lockheed Plant 2 Expansion Olympic Construction Company Seattle, Washington	PROJECT NO. 8007-4005 DATE 7-21-80 DRAWN JEM ENGR./GEOL. DB APPROVED

K+E CRYSTALENE®

TB-4
7-9-80

Location: See Test Boring Location Map
Elevation: 14.0'

(0.0') EL.14.0'
3" asphalt
(0.25') EL.13.75'
1Ss (15,18,21)GP, Gray, moist, fine grained, sandy
(1.5') EL.12.5'

2Ss (4,7,7)SP, 26.8%
Dark gray, moist, fine grained SAND

(6.5'AD) EL.7.5'

(7') EL.7'

(10.0'WD) EL.4.0'

3Ss (4,6,5)SP, 31.5%
Dark gray, wet-water bearing, fine grained SAND with minor silt

4Ss (3,3,3)SP, 37.1%

(17') EL.-3'

5Ss (4,5,7)SP,28.5%
Dark gray, water bearing, fine grained SAND with shell fragments

6Ss (2,2,2)SP, 38.7%
Sandy SILT layer from (23.6') EL.-9.6 to (24.5') EL.-10.5'

7Ss (6,9,12)SP, 26.3%

605321

8Ss (8,14,18)SP, No Recovery
3' Heave

(36.0')BOH=-22.0'

PACIFIC TESTING LABORATORIES 3220 17th AVE. W SEATTLE, WA. 98119 206-282-0666	TEST BORING LOG for Lockheed Plant 2 Expansion Olympic Construction Company Seattle, Washington	PROJECT NO. 8007-4005 DATE 7-21-80 DRAWN JEM ENGR./GEOL. DB APPROVED

CRYSTALENE® TRACING PAPER

TB-4 Continued

— (36.0') EL.-22.0'

Dark gray, water bearing, fine grained SAND with shell fragments

9Ss (9,12,14)SP, 29.6%

— BOH=(40.0') EL.-26.0'

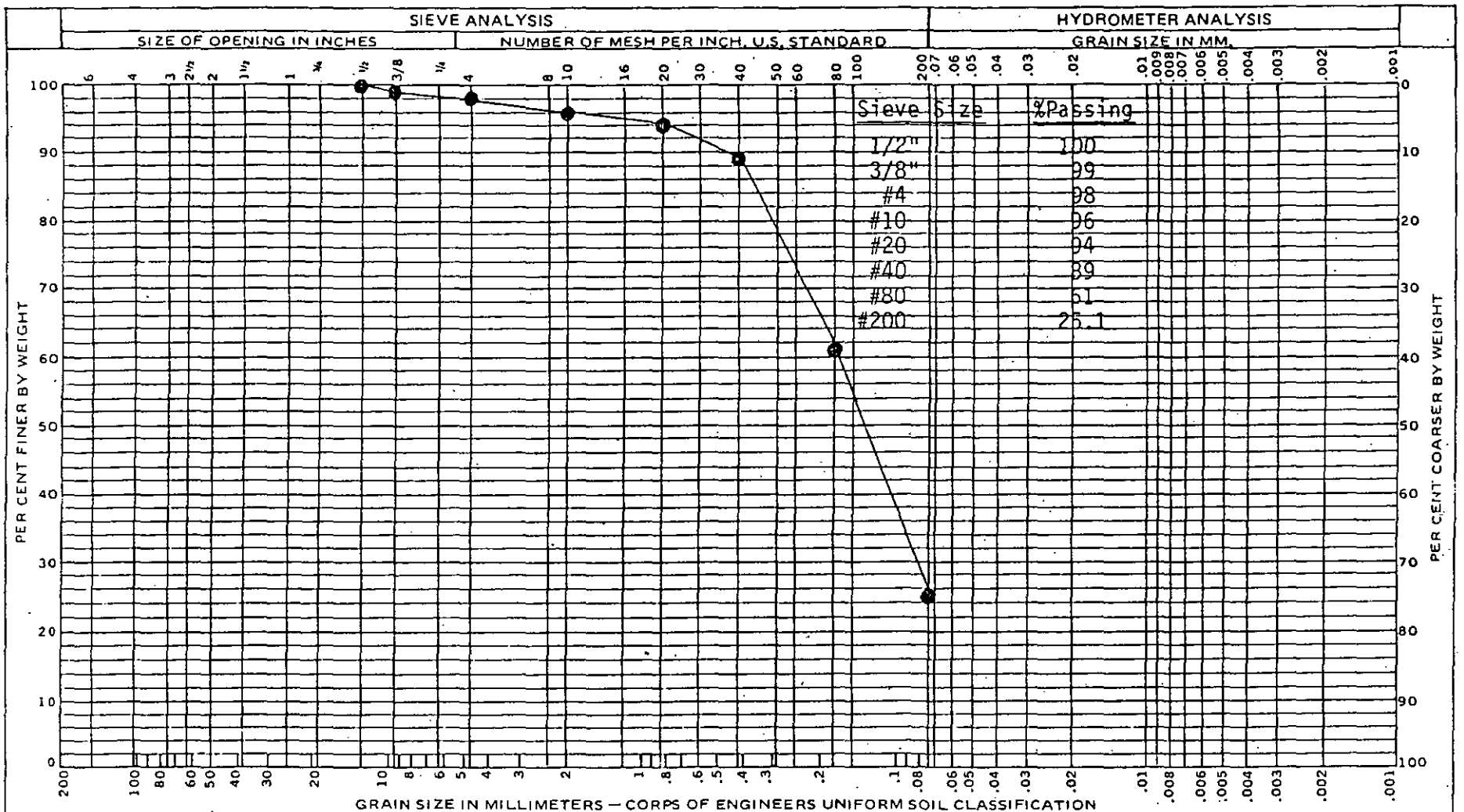
605321

PACIFIC TESTING LABORATORIES 3220 17th AVE. W. SEATTLE, WA 98119 206-282-0666	TEST BORING LOG for Lockheed Plant 2 Expansion Olympic Construction Company Seattle, Washington	PROJECT NO 8007-4005 DATE 7-21-80 DRAWN JEM ENGR./GEOL. DB APPROVED

K+E CRYSTALENE® TRACING PAPER

PACIFIC TESTING LABORATORIES

Report No.
Transmittal No.
Date of Test 7-14-80
Specification Standard



SAMPLE NO.	DEPTH	ELEVATION	MATERIAL DESCRIPTION		LL	PI
TB #4	8.5'-15.0'		Silty sand			
Ss_3&Ss_4						

Plotted: CPC
Checked: PAM

PROJECT Cert. No. 8007-4005
Lockheed Plant #2 Expansion
26th Ave. S.W. & S.W. Florida

Olympic Construction

(Date of Report)

No. 125 9-2-75 Rev. 1

603331