PROCEDURE FOR: SOILS CONTROL	PROCEDURE NUMBER: QCIP-2

ISSUE SUMMARY

ISSUE/DATE	PREPARED	APPROVED	REMARKS
A/Draft 8/1/75	M. Temchin J. Ice	J. O. Booth J. O. Booth	
A/ 9/17/75	M. Temchin	J. O. Booth	
B/Draft 9/30/75	M. Temchin		
B/ 10/14/75	M. Temchin	J. O. Booth	

VOID

NOTATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

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1.0 PURPOSE

This procedure outlines a means to verify and record compliance with applicable drawings, specifications, procedures, codes, regulatory requirements and documented instructions relating to soils inspection at the construction site.

2.0 SCOPE

The scope of the procedure applies to safety-related items and services involving excavation and backfill operations. Any activities relating to all soils materials (sands, silts, clays) and to all rock materials, or combinations thereof, are included herein, where applicable.

The soils control activities will be performed in the excavated areas, borrow-stockpile areas, the plant backfill and earth structure backfill areas. In-place inspections and tests as well as laboratory tests and analyses will be performed as a combined program for control of integrated activities in all areas.

3.0 REFERENCES

3.1 Ebasco Services Incorporated,
Ebasco Specification,
Excavation and Backfill,
Seismically Designed Category I Structures,
Project Identification No.
LOU 2564.482

4.0 DEFINITIONS

None

5.0 RESPONSIBILITIES

5.1 The Senior Quality Control Supervisor with technical assistance from the Site Soils Engineer is responsible for performing the following jobsite quality control activities:

5.1.1 Performing all soils inspections and soils laboratory operations.

5.1.2 Enforcing quality control documentation requirements and preparing the quality control records required by this procedure.

NOTATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

5.2 The Site Soils Engineer, reporting to the Senior Resident Engineer and coordinating with the Senior Quality Control Supervisor, and/or the Lead Quality Control Engineer (Civil), shall administer the soils control discipline. He shall be a qualified soils engineer who is familiar with the design intent and shall be responsible for the following:

5.2.1 Maintain liaison with the Supervising Soils Engineer of the Ebasco Home Office in order to ensure that field operations yield the design intent.

5.2.2 Consult with the Senior Resident Engineer, Field Superintendents and Contractors to provide technical assistance, in accordance with the specification, in establishing field methods and construction procedures for specification compliance.

5.2.3 Prepare a monthly report on the performance of work.

5.2.4 The Site Soils Engineer shall have the authority to deviate and qualify specifications when in his technical opinion, the specifications will not yield the required results (design intent) in a certain situation. He shall in this case, establish detailed written documentation of the deviation encountered and the earthwork performed on a Specification Qualification Form QC-110(Attached)

5.3 A Quality Control Civil Supervisor, reporting to a Lead Quality Control Engineer (Civil) will receive technical assistance from the Site Soils Engineer as required and shall be responsible for supervision of soils inspector(s) who shall perform inspections to verify a satisfactory quality level as defined in applicable documents. He shall also be responsible for Supervising and directing the Soils Laboratory and observing Field Testing as well as:

5.3.1 Assuring that tests, certifications and examinations are accomplished in accordance with the applicable design drawings, specifications and any other governing documents.

5.3.2 Accepting or rejecting work tests in accordance with the specifications and procedures and documenting same, including preparation of Statistical Analysis of compacted backfill where provided for by the specifications.

5.4 Civil Quality Control Inspector (s), reporting to the Quality Control Civil Supervisor, are responsible for the following:

5.4.1 Performing inspections of work and witnessing or performing soil tests in the work areas.

5.4.2 Provide the assistance during the performance of soils laboratory operations.

NOTATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE

5.4.3 Preparing documentation of all operations requiring specific reports and/or form completion, and submitting same to the Quality Control Civil Supervisor for review and further action as required.

6.0 PROCEDURE

6.1 Borrow and/or Stockpile Areas

6.1.1 Perform visual inspection to assure that all areas are cleaned of all undesirable material such as trees, roots, vegetation, muck and silt in accordance with specification LOU 1564 .482 and document results on form QC- 93.

6.1.2 Make daily inspections during active periods and monthly inspection during inactive periods to verify that proper area drainage is being maintained and record results on form QC- 93 .

6.1.3 Inspect, sample and test all class A borrow materials to determine compliance of gradation and moisture content with the specifications and record the results on form QC-93.

6.1.4 Monitor loading of backfill material to insure that only materials which meet the specifications are taken from borrow areas or stockpiles to backfill areas.

6.2 Test Fills

Test fills will be constructed for the purpose of determining the optimum construction technique to achieve the design conditions. Test fills shall be conducted, inspected and tested as required by the specifications and the general requirements of this Soils Inspection Procedure.

The Site Soils Engineer shall observe, document and coordinate the technical aspects of the following operations when required by the specifications:

6.2.1. Surveying and layout

6.2.2 Excavation

6.2.3 Backfill

6.2.4 Compaction, including equipment performance and operational characteristics.

6.2.5 Field density tests

6.2.6 Trench inspection

6.2.7 Mapping

6.2.8 Laboratory Tests

6.2.9 He shall act as a liaison with the Supervising Soils Engineer and the Senior Resident Engineer concerning the progress of the test fill and obtaining the required approvals for any design changes.

6.2.10 He shall be responsible for the maintenance of formal records of all operations and observations as required by the specification and any approved changes thereto.

6.3 Excavated or Stripped Areas

6.3.1 Prior to start of backfill operations, excavated or stripped areas shall be inspected to assure proper drainage and a sound base and for conformance to the specified requirements and the results recorded on Form QC-93.

6.3.1.1 Material that exceeds the permissable moisture content may be dried by specified means or removed and replaced with new fill. Reworked fill material shall be tested for moisture content and the results recorded on Form QC-89.

6.3.1.2 After satisfaction of all specified prerequisites, proof compaction of the final excavated grade may begin if required. After proof compaction, the area shall be tested in accordance with the specifications. If rework is required, retesting shall be performed and the results recorded on Form QC-93. Documented release will be given on Form QC-132 after satisfactory completion of required tests, for the fill operation to begin.

6.4 Soils Fill Operations

All soils placements, inspection and testing operations shall be conducted in accordance with the drawings and specifications. Inspections results shall be recorded on Form QC-93 and shall include at least the following requirements:

6.4.1 The proper class of fill required for use shall be determined from the design documents and verification recorded from inspection and test data in order to verify that material to be placed conforms to these requirements.

6.4.2 Material to be compacted shall be spread and levelled in smooth layers. The following items shall be monitored for conformity to the specifications and recorded on form QC-93.

6.4.2.1 Proper gradation of material

6.4.2.2 Thickness of layers

6.4.2.3 Limits concerning debris.

6.4.2.4 Moisture tests on the material after deposit and where required, moisture adjustment or replacement of material.

6.4.2.5 Weather conditions during placement of fill, for conformance to specified limitations.

6.4.3 Compaction equipment shall be suitable for the intended work.

6.4.4 Compaction equipment usage shall be inspected for the following:

6.4.4.1 Proper speed during the compaction operation

6.4.4.2 Vibration cycle for vibrating compaction equipment

6.4.4.3 Prescribed number of passes

6.4.5 Small areas in which it is not possible to compact with large scale mobile compaction equipment shall be monitored for conformity to specified requirements such as maximum size of contained material, proper type of compaction equipment, integrality with adjacent fill, proper lift thickness and minimum compaction requirements. The results shall be recorded on Form QC-93.

6.4.6 Where allowed by the specifications, initial fill lift data may be reviewed similar to test fill data for arrival at the best combination of equipment types, speed of travel and number of passes for attainment of the required in-place densities.

6.4.7 All tests made in the backfill area shall be randomly located within the area to be tested by selection of points on a grid system similar to the Typical 100 ft. Grid System for Test Locations, Figure 4.1 attached hereto. Grid coordinates shall be prefaced by the elevation +10 ft: "10 + D7 = 35N, 40W." Where "D" is the East-West Coordinate, "7" is the North-South Coordinate, "35N" is the offset to the North in feet from point to the test location and "40W" is the offset to the west in feet from point D7 to the test location. (see sample location). Test locations shall be selected at random without the prejudice of visual observations of the backfill area. Other test location designations may be established in accordance with prevailing specifications or approved procedures. All test locations shall be selected by inspection personnel under the direction of the Quality Control Civil Supervisor. The Site Soils Engineer will provide technical assistance as required.

6.4.8 Frequency of tests pertaining to each class of material shall be as delineated in the specifications and test results shall be recorded on the appropriate QC forms samples attached in Section 7.2.

6.4.8.1 Moisture stability of material

6.4.8.2 Thickness of layers

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6.4.9 Compacted layers shall be tested in accordance with specified parameters and pertinent test fill data. Any material which fails to meet the specified minimum density shall be either recompacted or replaced until the specified requirements are met. Test results shall be recorded on the appropriate QC forms - samples attached in Section 7.2.

6.4.10 Test equipment for in-place density testing shall be as required by standards referenced in the specifications. Moisture indicator equipment used shall be in accordance with prevailing specifications and standards.

6.4.11 Samples from in-place density tests shall be sent to the laboratory, for verification of moisture indications and for sieve analysis and proctor tests, at the specified frequency for each class of fill.

6.4.12 Relative density criteria, maximum density determinations and statistical analyses will be performed in accordance with specified requirements. Correlations and statistical analyses shall be prepared by the Site Soils Engineer.

6.5 Records and Reports

6.5.1 The Quality Control Civil Supervisor shall review records relative to soils control for acceptability.

6.5.2 The Site Soils Engineer shall prepare a monthly report covering earthwork operations.

6.6 Soils Laboratory

In general, the following functions are performed by the soils laboratory staff under the direction of the Quality Control Civil Supervisor.

6.6.1 Testing materials to be used as backfills to determine their suitability; materials are sampled from all borrow areas such as stockpiles and excavated areas and mechanical analysis and compaction tests performed to determine the moisture-density relationships with respect to the specified standards.

6.6.2 Performing mechanical analysis tests (including moisture content determinations) on the materials from the work points in the borrow and stockpile areas to determine their suitability for use in the compacted backfill.

6.6.3 Testing materials being used as "test fill" to establish the optimum number of passes of the compactor to obtain the required density.

6.6.4 Performing field density moisture and mechanical analysis tests on materials from the compacted backfill in accordance with the specifications to assure the suitability of the materials and their proper compaction.

6.6.5 Performing any additional tests as required to assure the adequacy of the tested material as required by the specifications.

6.6.6 Maintenance of records of all field and laboratory tests performed.

7.0 ATTACHMENTS

7.1 Typical 50 ft. Grid System for Test Locations - Figure 4.1

7.2 Soils Control Forms:

QC-81 Density of Soil in Place - Sand Cone Method

QC-83 Density of Soil in Place - Rubber Balloon Method

QC-85 Density of Soil in Place - Nuclear-Chicago Gage Method

QC-87 Laboratory Compaction Tests

QC-88 Compaction Test (Graph)

QC-108 Relative Density Determinations of Cohesionless Soil

QC-89 Moisture Content Data Sheet

QC-90 Speedy Moisture Content Test Data Sheet

QC-91 Sieve Analysis

QC-106 Mechanical Analysis Graph of Granular Materials

QC-107 Amount of Material in Soils Finer than No. 200 Sieve

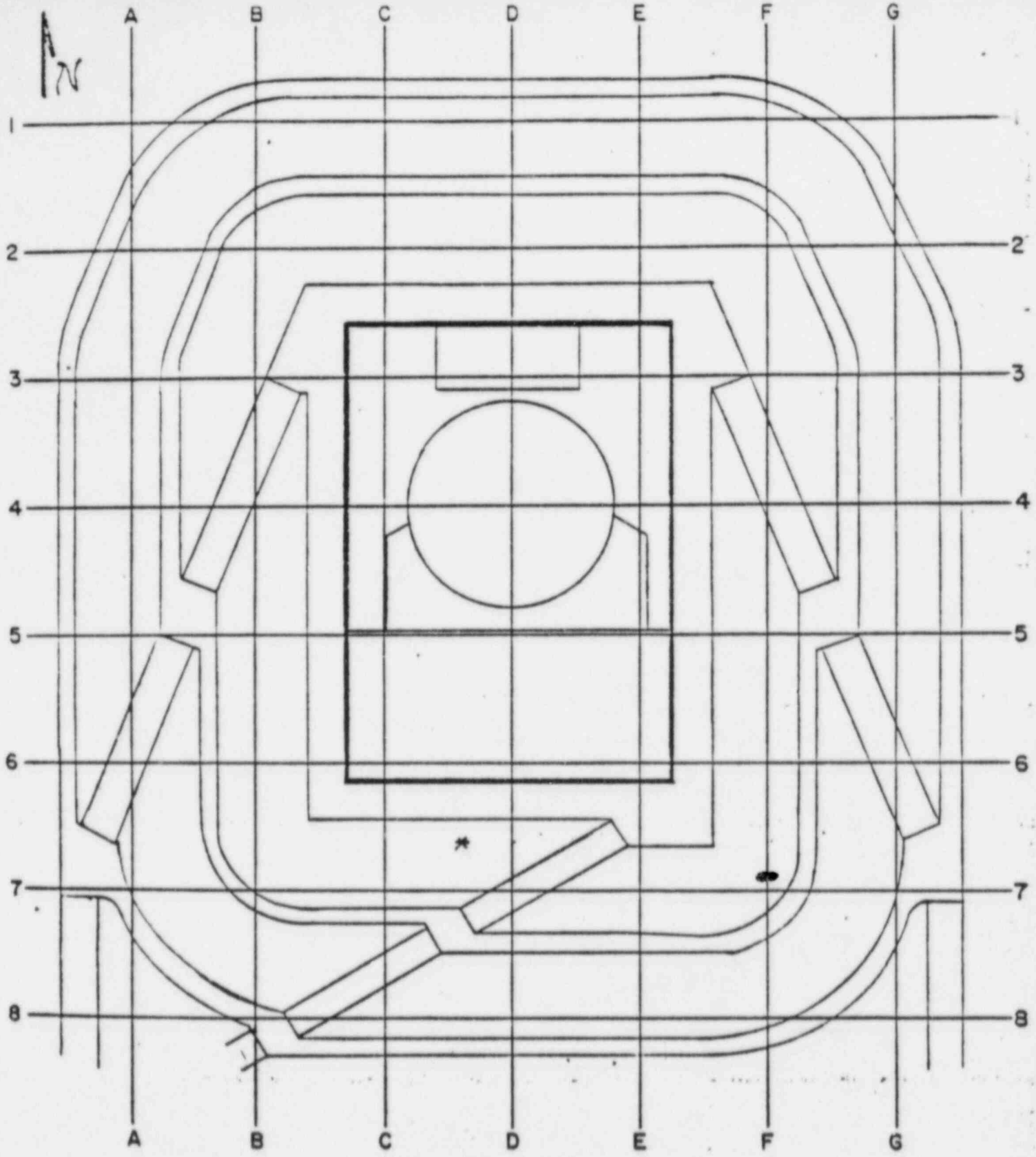
QC-109 Log of Laboratory Samples

QC-93 Soils Construction Inspection Report

QC-110 Specification Qualification Form

QC-132 Site Soils Engineer - Approval Form

NOTATIONS IN THIS COLUMN INDICATE WHICH CHANGES HAVE BEEN MADE



TYPICAL 100 FT. GRID SYSTEM FOR
TEST LOCATIONS

FIGURE NO. 4.1

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
DENSITY OF SOIL IN PLACE - SAND CONE METHOD
(In Accordance With ASTM D1556)

TEST NO.	
SAND CONE APPARATUS NO.	

TEST LOCATION _____ TEST ELEVATION _____

SOIL DESCRIPTION _____

NO.	DESCRIPTION	COMPUTATION INDEX	NUMERICAL INDEX	UNITS
1	Weight of Apparatus Filled With Sand	-		lb
2	Weight of Apparatus Plus Remaining Sand	-		lb
3	Weight of Sand in Hole, Plate, and Cone	(1) - (2)		lb
4	Weight of Sand in Cone and Plate	Calib (12) Sheet		lb
5	Weight of Sand in Hole	(3) - (4)		lb
6	Bulk Density of Sand	Calib (9) Sheet		lb/ft^3
7	Volume of Test Hole	(5) /(6)		ft^3
8	Weight of Moist Soil and Can (No.)	-		lb
9	Weight of Can (No.)	-		lb
10	Weight of Moist Soil	(8) - (9)		lb
11	Wet Density	(10) / (7)		lb/ft^3
12	Weight of Wet Sample Plus Container	-		g
13	Weight of Dry Sample Plus Container	-		g
14	Weight of Water in Sample	(12) - (13)		g
15	Weight of Container No.	-		g
16	Weight of Dry Soil	(13) - (15)		g
17	Moisture Content	$\frac{(14)}{(16)} \times 100$		%
18	Dry Density	$\frac{(11)}{1.0 + (17)}$		lb/ft^3
19	Maximum Dry Density	-		lb/ft^3
20	Percent Compaction	$\frac{(18)}{(19)} \times 100$		%

REMARKS

DATE AND TIME OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-81 (9-17-75)

TEST NO.

RUBBER BALLOON APPARATUS

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
DENSITY OF SOIL IN PLACE - RUBBER BALLOON METHOD
(In Accordance With ASTM D2167)

TEST LOCATION _____

TEST ELEVATION _____ TEST DEPTH _____

SOIL DESCRIPTION _____

NO.	DESCRIPTION	QUANTITY
1	Initial Readings with Apparatus on Test Hole Site:	
	a. Volume Indicator	cu ft
	b. Pressure on Liquid (same as for Calib. Check)	psig
	c. Surcharge Weight (same as for Calib. Check)	lb
2	Volume Indicator Reading with Apparatus over Test Hole and Balloon Inflated in Hole	cu ft
3	Volume of Test Hole, (2) - (1)	cu ft
4	Weight of Moist Soil Removed from Test Hole	lb
5	Weight Moisture Content Sample before Drying (Refer to Table II, ASTM D2167 for Min. Wt.)	g
6	Dry Weight of Moisture Content Sample	g
7	Moisture Content, $W = \frac{(5) - (6)}{(6)} \times 100$	%
8	Wet Unit Weight of Soil Removed from Test Hole, $\delta_m = \frac{(4)}{(3)}$	lb/cu ft
9	Dry Unit Weight of Soil Removed from Test Hole, $\delta_d = \frac{(8)}{(7) + 100} \times 100$	lb/cu ft

REMARKS

DATE AND TIME OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-83 (9-17-75)

Dry Density = Wet Density / 1+ Moisture %

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
DENSITY OF SOIL - IN PLACE - RUBBER BALLOON
ASTM D-2167

Test No.	Test Location	Wet Weight	Volume Ft.^{3}	Wet Density #/Ft.^{3}	Moisture %	Dry Density #/Ft.^{3}	Lab. Std. Density	% Compaction	Comments

By: _____ Date: _____

QC-83 Short Form (9-30-75)

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
DENSITY OF SOIL IN PLACE - NUCLEAR - CHICAGO GAUGE METHOD
(In Accordance With ASTM D2922, Method A)

APPARATUS IDENTIFICATION _____ TEST NO. _____

TEST LOCATION _____

SOIL DESCRIPTION _____ TEST ELEVATION _____

DENSITY COUNT	MOISTURE COUNT	
1	1	Wet Density PCF
2	2	Moisture PCF
3	3	Dry Density PCF
Sum	Sum	Moisture Content %
Avg	Avg	
Std CT	Std CT	
CT Ratio	CT Ratio	

REMARKS

DATE	TEST BY	COMPUTED BY	CHECKED BY

APPARATUS IDENTIFICATION _____ TEST NO. _____

TEST LOCATION _____

SOIL DESCRIPTION _____ TEST ELEVATION _____

DENSITY COUNT	MOISTURE COUNT	
1	1	Wet Density PCF
2	2	Moisture PCF
3	3	Dry Density PCF
Sum	Sum	Moisture Content %
Avg	Avg	
Std CT	Std CT	
CT Ratio	CT Ratio	

REMARKS

DATE OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-85 (9-17-75)

TEST OR SAMPLE NO.

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
LABORATORY COMPACTION TEST
(In Accordance With ASTM D698 or D1557)

TEST LOCATION _____ TEST ELEVATION _____

MATERIAL DESCRIPTION _____

EQUIPMENT IDENTIFICATION _____

SAMPLE PREPARATION	☐ Natural Store ☐ Air Dried ☐ Oven Dried — Date Compacted _____ Date Mixed _____ Scalped on _____ Sieve _____
MOLD	☐ Std 4" ☐ Std 6" ☐ Other — Diameter _____ Height _____ Volume _____ Mold No. _____
TYPE COMPACTION	☐ Std AASHO ☐ Mod AASHO ☐ Other — Dynamic:Hammer _____ lb, Kneading:Spring _____ lb, Blows/layer _____, Layers _____ Temps/layer _____, Layers _____

	TEST NUMBER				
	1	2	3	4	5
% Water Added					
Wgt Wet Soil + Mold in g					
Wgt Mold in g					
Wgt Wet Soil in g					
Wet Density, γ_m in lb/cu ft					

WATER CONTENT	COMPACTION									
	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
Container No.										
Wgt Container + Wet Soil in g										
Wgt Container + Dry Soil in g										
Wgt Water in g										
Wgt Container in g										
Wgt Dry Soil in g										
Water Content, %										
Avg Water Content, %										
Dry Density, γ_d, lb/cu ft										

REMARKS:

1) How fast does soil absorb water while mixing? ☐ Fast ☐ Medium ☐ Slow

2) Degree of difficulty in getting uniform water-soil mixture? ☐ Hard ☐ Medium ☐ Easy

3) At what test number is sample: Crumbly _____ Firm _____ Soft _____, Spongy _____

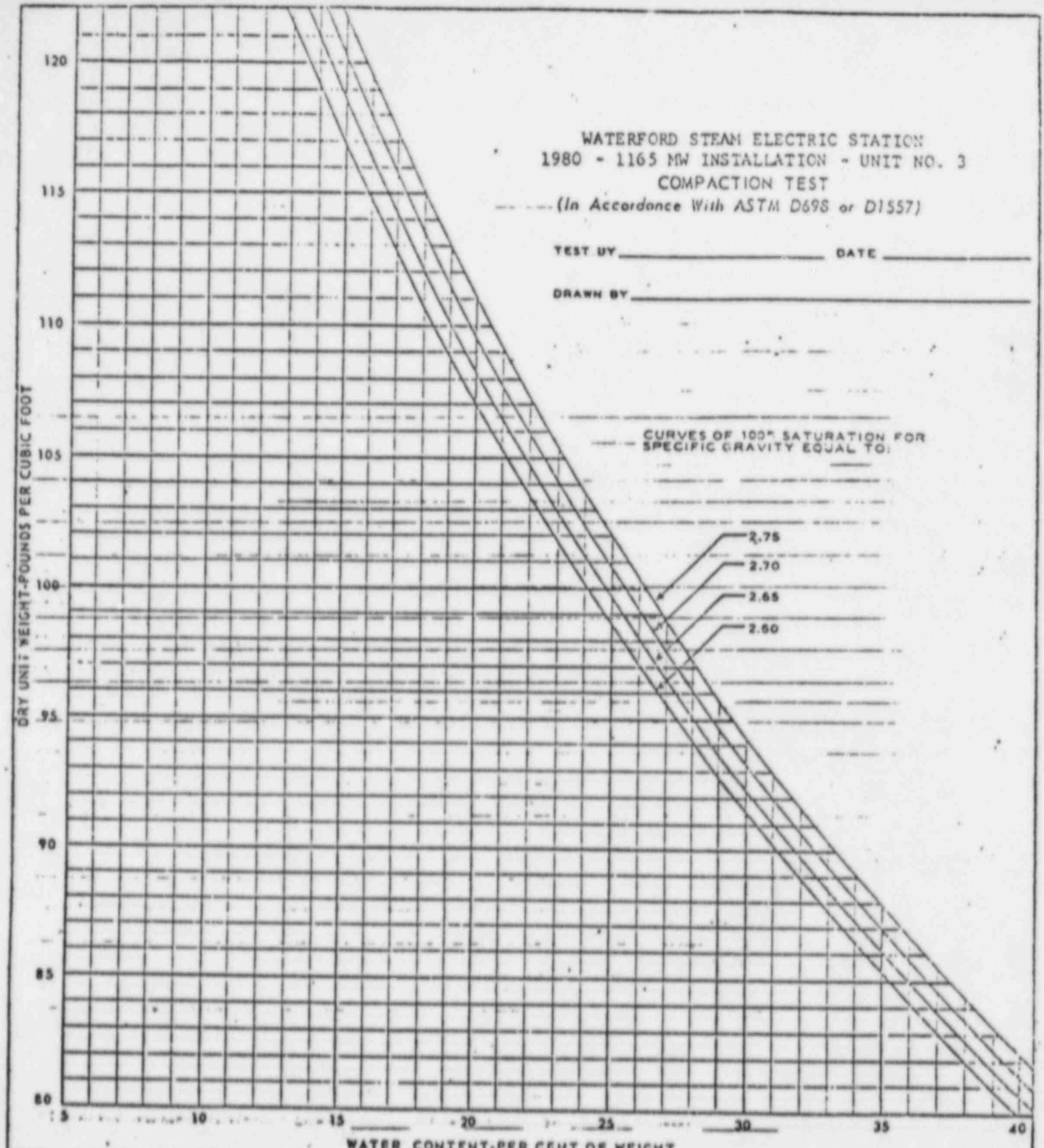
4) Was bleeding noticed during test? ☐ Yes ☐ No. If so what test numbers _____

5) Other comments: _____

Calculations: γ_t (in lb/ft³) = Mold Factor x weight wet soil in g. Mold Factor std 4" diam = 0.0661 std 6" diam = 0.0273

DATE OF TEST	TEST BY	CHECKED BY (WITH DATE)	ENGR'D BY (WITH DATE)

Form No. QC-87 (9-17-75)



TEST NO.	METHOD OF TEST	MAX DRY DENSITY PCF	OPTIMUM MOISTURE CONTENT %	SOIL DESCRIPTION OR CLASSIFICATION AND SAMPLE LOCATION

Form No. QC-88 (9-17-75)

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
MOISTURE CONTENT DATA SHEET
(In Accordance With ASTM D2216)

1	Sample Number							
2	Sample Location							
3	Sample Elevation							
4	Laboratory Number							
5	Container Number							
6	Weight Container and Wet Soil, g							
7	Weight Container and Dry Soil, g							
8	Weight Water, g (6) – (7)							
9	Weight Container, g							
10	Weight Dry Soil, g (7) – (9)							
11	Water Content, % $\frac{(8)}{(10)} \times 100$							

LABORATORY NO.	REMARKS

DATE OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-89 (9-17-75)

EQUIPMENT IDENTIFICATION

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
SPEEDY MOISTURE CONTENT TEST DATA SHEET
(In Accordance With Manufacturer's Instructions)

TEST NUMBER	TEST LOCATION	TEST ELEVATION	SOIL DESCRIPTION	GAUGE READING	MOISTURE CONTENT % DRY WEIGHT	TESTED BY	DATE AND TIME

DATE OF TEST | TEST BY | EQUIPED BY (WITH DATE) | CHECKED BY (WITH DATE)

Form No. QC-90 (9-17-75)

TEST OR SAMPLE NO.

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION-UNIT NO. 3
SIEVE ANALYSIS
(In Accordance With ASTM D422)

TEST LOCATION _____ TEST ELEVATION _____

MATERIAL DESCRIPTION _____

EQUIPMENT IDENTIFICATION _____

SAMPLE PREPARATION: ☐ Natural State ☐ Air Dried ☐ Oven Dried — Soil Broken Up by: ☐ Mortar + Pestle ☐ Roller ☐ Both — Soil Soaked: ☐ Yes ☐ No

	WEIGHT OF TEST SPECIMEN	TOTAL SAMPLE	PARTIAL SAMPLE	SOIL RETAINED ON #200 SIEVE
Container Number	Container Number			
Weight Container + Wet Soil in g	Weight Container + Dry Soil in g			
Weight Container + Dry Soil in g	Weight Container in g			
Weight Water, W_w in g	Weight Dry Soil W_s			
Weight Container in g	Weight Dry Soil from Water Content, W_s in g			
Weight Dry Soil, W_s in g	Weight Dry Soil from Hydrometer Test			
Water Content, W in % $= \frac{W_w}{W_s} \times 100$	Factor 100/Dry Weight Soil			

SIEVE NO.	SIEVE OPENING IN MM	WEIGHT SIEVE IN g	WEIGHT SIEVE + SOIL IN g	WGT OF RETAINED SOIL IN g	CUMULATIVE WGT RETAINED IN g	CUMULATIVE % RETAINED	% FINER N	TOTAL SAMPLES % FINER
3"	76.2							
1½"	38.1							
3/4"	19.1							
3/8"	9.52							
4	4.76							
10	2.00							
Pan								

Sample washed on #200 Sieve: ☐ Yes ☐ No. Sample from Hydrometer Test: ☐ Yes ☐ No

3/8"	9.52							
4	4.76							
10	2.00							
20	0.84							
40	0.42							
60	0.250							
100	0.149							
200	0.074							
Pan								

REMARKS: _____

DATE OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-91 (9-17-75)

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
SOILS CONSTRUCTION
Inspection Report

GENERAL

Date _____ Shift _____ Weather _____ By _____

Area Worked _____

Average Elevation: Start of Shift _____ End of Shift _____ Total Loads _____

Construction Work Accomplished, Crew and Equipment _____

Work of the Construction Engineer for Soils _____

FILL

Origin of Material _____

Type of material, describe (when/where, oversize, frozen, too wet, contaminated, nonuniform, what remedial action was taken) _____

Lift Thickness Required _____ Actually Placed _____

Watering (reason for, how much, when, where) _____

Keying (when, how, how much, where) _____

Placement (leveling, raking, lift thickness; describe) _____

Remarks (include nonconformity to specifications, times and locations of each remark) _____

Form No. QC-93 (9-17-75)

(CONTINUED OVER)

COMPACTION

Units used, model, contractor's number, frequency when checked, when malfunctioned, remedial action taken for each

EQUIPMENT NO.	MODEL NO.	FREQUENCY	TIME	FREQUENCY	TIME	FREQUENCY	TIME

Speed of Towing _____ Lift Thickness Compacted _____

Coverages Requested _____ Coverages Given _____

Are areas being missed by compactors? If so, where, when? What is compaction pattern? Is it satisfactory? If not, why not? (use sketch attached) _____

Tests failing. What remedial action was taken? When was the area retested? How many extra coverages were requested?. In what areas? Was request fulfilled? _____

Remarks (include nonconformity to specifications, times and locations of each remark) _____

SUMMARY

Number of coverages on lift partially compacted last shift _____

Number of lifts placed and compacted this shift _____

Number of coverages on lift partially compacted at end of this shift _____

A sketch may be attached to scale of area being filled and compacted indicating condition of area at end of shift, coverages completed, coverages needed in indicated areas.

INSTRUCTIONS AND MISCELLANEOUS

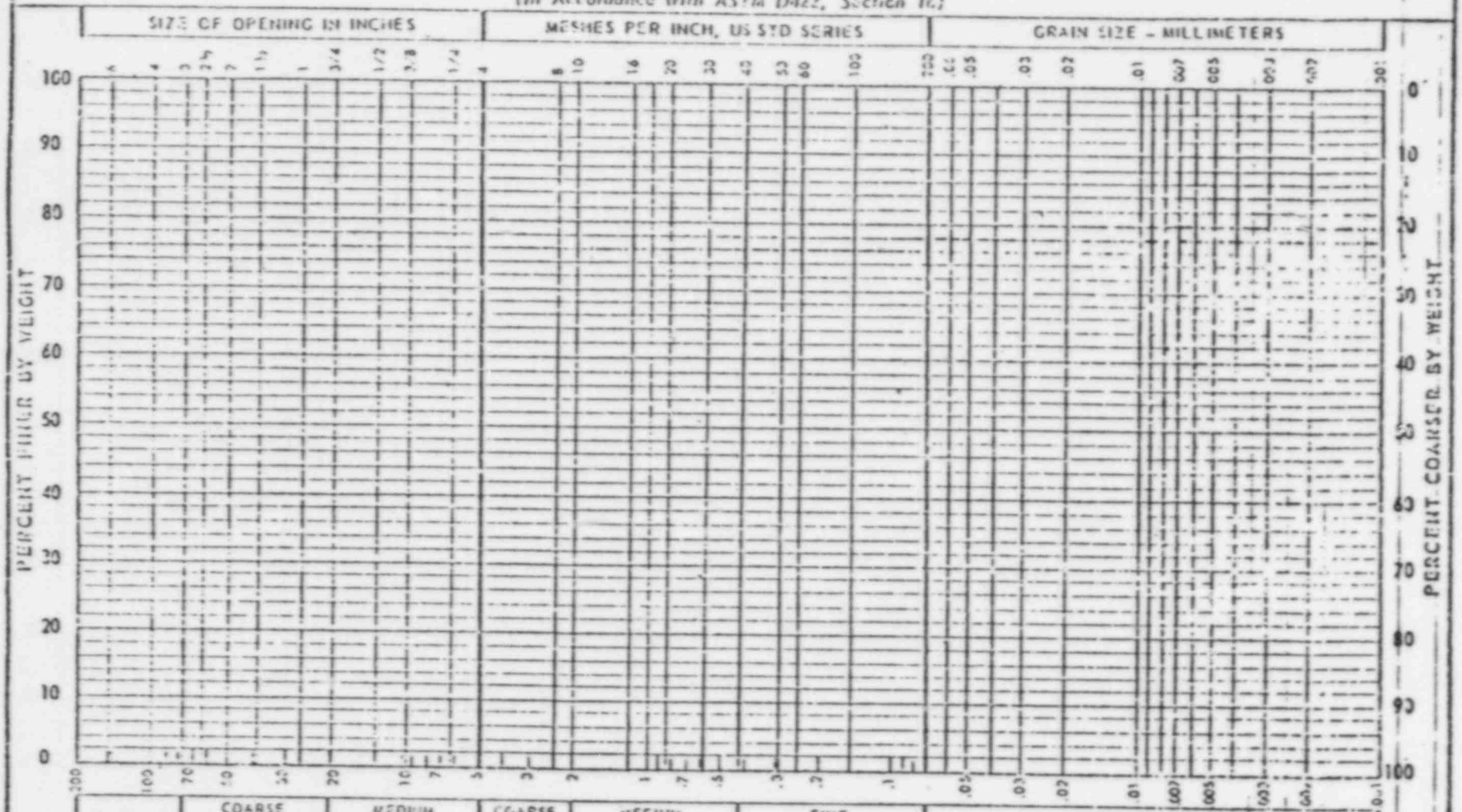
Instructions to and conversations with subcontractor(s) _____

Examinations, discussions, decisions _____

Other important matters (dewatering operations, dredging pelzometric readings, etc.) _____

MECHANICAL ANALYSIS GRAPH OF GRANULAR MATERIALS

(In Accordance With ASTM D422, Section 16)



TEST NO.

SAMPLE NO.

SAMPLE LOCATION

SAMPLE ELEVATION

SAMPLE DESCRIPTION

WATERFORD STEAM ELECTRIC STATION
1980-1165 MW INSTALLATION UNIT NO. 3

PROJECT

DRAWN BY | CHECKED BY | DATE

FORM NO. QC-106 (9-17-75)

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
AMOUNT OF MATERIAL IN SOILS FINER THAN NO. 200 SIEVE
(In Accordance With ASTM D1140)

1	Sample Number				
2	Sample Location				
3	Sample Elevation				
4	Soil Description				
5	Laboratory Number				
6	Container Number				
7	Container Weight, g				
8	Weight of Container and Dry Sample, g				
9	Weight of Container and Dry Material Retained on Nos. 40 and 200 Sieves, g				
10	Weight of Dry Material Passing No. 200 Sieve, g (8) - (9)				
11	Weight of Dry Sample, g (8) - (7)				
12	% Passing No. 200 Sieve $\frac{(10)}{(11)} \times 100$				
13	Date of Test				
14	Test By				
15	Computed By (With Date)				
16	Checked By (With Date)				

FORM NO. QC-107 (9-17-75)

TEST OR SAMPLE NO.

WATERFORD STEAM ELECTRIC STATION
1980 - 1165 MW INSTALLATION - UNIT NO. 3
RELATIVE DENSITY DETERMINATIONS OF COHESIONLESS SOIL
(In Accordance With ASTM D2049)

TEST LOCATION _____ TEST ELEVATION _____

SOIL DESCRIPTION _____

EQUIPMENT IDENTIFICATION _____ MOLD SIZE _____

MAXIMUM DENSITY DETERMINATION	☐ Vibrating Table ☐ Other _____ ☐ Wet ☐ Dry
VIBRATING TABLE METHOD	Frequency _____ Cyc/Sec Surcharge _____ lb, _____ lb/in^2 Displacement _____ In Vibration Time _____ Min
MINIMUM DENSITY DETERMINATION	☐ 1 - Inch Funnel ☐ ½ - Inch Funnel ☐ Scoop

MINIMUM DENSITY DETERMINATION (0% RELATIVE DENSITY)

TEST NO.	1	2	3
Weight Soil + Mold, lb			
Weight Mold, lb			
Weight Soil (Ws), lb			
Volume of Mold (Vc), cu ft			
Minimum Density, Ws ÷ Vc, PCF			

RELATIVE DENSITY COMPUTATION

TEST NO.		1	2	3
1	In Place Density, PCF			
2	Maximum Laboratory Density, PCF			
3	Minimum Laboratory Density, PCF			
4	(1) - (3)			
5	(4) ÷ (2)			
6	(2) - (3)			
7	(5) ÷ (6)			
	Relative Density (5) x (7) x 100			

NOTES:

MAXIMUM DENSITY DETERMINATION (100% RELATIVE DENSITY)

TEST NO.	1	2	3
Left Gage Read, in			
Right Gage Read, in			
Average Gage Read, R_i			
Initial Gage Read, R_i			
Area Sample Surf (A), sq ft			
Calibration Volume of Mold (Vc), cu ft			
Soil Volume, $V = Vc - \frac{R_i - R_f}{12} \times A$			
Weight Dry Soil + Mold, lb			
Weight Mold, lb			
Weight Dry Soil (Ws), lb			
Maximum Density, Ws ÷ V, PCF			

Mold No. _____ Surcharge Base Plate No. _____

Surcharge Base Plate Thickness _____ In.

Straightedge Thickness _____ In.

Left Dial Read _____

Right Dial Read _____

R_i = Average Dial Gage Reading + Surcharge Base Plate Thickness - Straightedge Thickness = _____ In.

DATE OF TEST	TEST BY	COMPUTED BY (WITH DATE)	CHECKED BY (WITH DATE)

Form No. QC-108 (9-17-75)

WATERFORD STEAM ELECTRIC STATION

1980 - 1165 MW INSTALLATION - UNIT NO. 3

LOG OF LABORATORY SAMPLES

Lab. No.	Location	Sample No.	Date In	Tests Required	Date Completed	Test Result

Recorded By: _____

QC-109A (9-30-75)

EBASCO SERVICES INCORPORATED
SPECIFICATION QUALIFICATION REPORT

O: _____ FROM: _____

_____ _____

_____ _____

_____ _____

UBJECT: _____

PECIFICATION REFERENCED: _____ SECTION: _____

DATE: _____

EPORT: _____

SIGNED: _____

ISTRIBUTION: SUPERVISING SOILS ENGR _____ SITE SOILS ENGR _____ RESIDENT ENGR _____

CIVIL QUALITY COMPLIANCE ENGR _____ SENIOR QUALITY CONTROL SUPV _____

FORM NO. QC-110 (9-17-75)

EBASCO SERVICES INCORPORATED
WATERFORD SES - UNIT NO. 3
SITE SOILS ENGINEER - APPROVAL FORM

Date _____

Location _____

_____

Quality Control forms reviewed _____

_____

Approval ☐ Rejection ☐

Signature _____

Comments/Recommended Action _____

_____

_____

_____

_____

_____

Remedial Work Report _____

_____

_____

_____

_____

_____

_____

QC Inspector: _____

Remedial Action: Accepted ☐ Rejected ☐

Form No. QC-132

Site Soils Engineer _____