

Revised by Amendment 33.

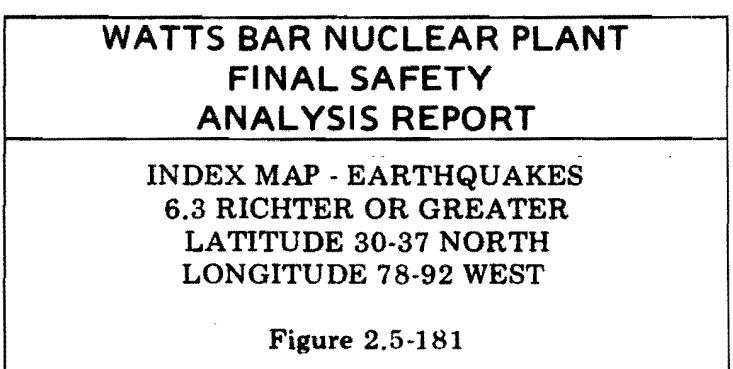


Figure 2.5-181 Index Map -Earthquakes 6.3 Richter or Greater Latitude 30-37 North Longitude 78-92 West

SEISMIC HISTORY OF THE SOUTHEAST REGION OF THE UNITED STATES

THIS IS A CHRONOLOGICAL LISTING OF ALL EARTHQUAKES HAVING EPICENTERS IN THE RECTANGULAR PORTION OF THE SOUTH-EAST REGION BOUNDED BY THE FOLLOWING GEODETIC COORDINATE LINES --

SOUTHERN BOUNDARY - 30.0 -DEGREE NORTH LATITUDE
 NORTHERN BOUNDARY - 37.0 -DEGREE NORTH LATITUDE
 EASTERN BOUNDARY - 78.0 -DEGREE WEST LONGITUDE
 WESTERN BOUNDARY - 92.0 -DEGREE WEST LONGITUDE

AND HAVING A RICHTER SCALE MAGNITUDE EQUAL TO OR GREATER THAN 6.3

YEAR	DATE	TIME-HR-MIN-SEC	LAT - LONG	LOCALITY AND NOTES	FELT-SQ.MI.	MAG/INT	REFERENCES
1811	DEC 16	8 0 0.0	(36.6 89.6)	NEW MADRID, MO-FELT EXTENSIVELY EASTWARD, PERHAPS THE STRONGEST EVER IN U.S., LIMITED DAMAGE BECAUSE POP. SPARCE, INTENSITY-XII	2000000		ABCD-5,6
1812	JAN 23	15 0 0.0	(36.6 89.6)	NEW MADRID, MO-SECOND MAIN SHOCK OF SERIES, INTENSITY-XII	2000000		ABCD-5,6
1812	FEB 7	9 45 0.0	(36.6 89.6)	NEW MADRID, MO-THIRD MAIN SHOCK OF SERIES, INTENSITY-XII			ABCD-5,6
1886	SEP 1	2 51 0.0	(32.9 80.0)	FIFTEEN MILES NW OF CHARLESTON, SC-ONE OF STRONGEST EVER TO OCCUR IN U.S., EXTENSIVE DAMAGE, INTENSITY X	2000000		ABCD-5,6,8
1886	SEP 1	2 59 0.0	(32.9 80.0)	CHARLESTON, SC-2ND MAIN SHOCK, INT-X	2000000		ABCD-5,6,8
1886	SEP 1	5 5 0.0	(32.9 80.0)	CHARLESTON-AFTERSHOCK			-14
1895	OCT 31	11 8 0.0	(37.0 89.4)	Near CHARLESTON, MO-4 ACRES OF GROUND SANK FORMING A LAKE, CONSIDERABLE DAMAGE AT CAIRO, ILL, FELT EXTENSIVELY EASTWARD	1000000	VIII-IX	ACD-6,5
1905	JAN 27	0 0 0.0	(34.0 86.0)	NEAR GADSDEN, ALA	250000	VIII	ACD-6,5
1905	JAN 28	0 0 0.0	(34.0 86.0)	GADSDEN-SECOND SHOCK	250000	VIII	ACD-6,5

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WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
EARTHQUAKE LISTING 6.3 RICHTER OR GREATER LATITUDE 30-37 NORTH LONGITUDE 78-92 WEST SHEET 1 OF 1 Figure 2.5-182

Figure 2.5-182 Earthquakes Listing 6.3 Richter Or Greater Latitude 30-37 Longitude 78-92 West

LIST OF REFERENCES

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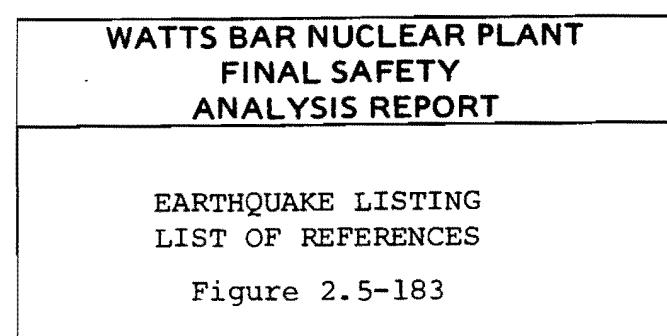


Figure 2.5-183 Earthquake Listing List of References

THE FOLLOWING NOTES APPLY TO VARIOUS SYMBOLS AND CODE LETTERS USED IN THE EARTHQUAKE LIST

ALL DATES AND TIMES ARE GIVEN IN GREENWICH MEAN TIME.

FOR THE EVENTS PRIOR TO 1928, ZEROS IN THE SEC, MIN, OR HOUR COLUMNS MEANS THAT THE TIME OF THE EVENT IS NOT ACCURATELY KNOWN.

PARENTHESIS AROUND THE COORDINATES OF THE EPICENTER INDICATES THE LOCATION OF AN ISOLATED FELT REPORT OR THE APPROXIMATE CENTER OF THE REPORTED FELT AREA AND THAT THE EVENT WAS NOT INSTRUMENTALLY LOCATED.

IN THE -MAG/INT- COLUMN, THE RICHTER MAGNITUDE OF THE EARTHQUAKE IS GIVEN IN ARABIC NUMBERS WITH A DECIMAL POINT. IF THE MAGNITUDE IS NOT AVAILABLE, THE ESTIMATED INTENSITY, ON THE MODIFIED MERCALLI SCALE, IS GIVEN IN ROMAN NUMERALS. IF NEITHER OF THESE MEASURES OF THE SIZE OF THE EARTHQUAKE ARE AVAILABLE, THIS COLUMN IS LEFT BLANK.

THE FIRST NUMBERED REFERENCE CITED IN THE REFERENCE LIST CONTAINS THE BEST DESCRIPTION AND MOST COMPLETE DISCUSSION OF THE VARIOUS EFFECTS OF THAT EARTHQUAKE. SOME OF THE EFFECTS AND CHARACTERISTICS ARE SUMMARIZED USING THE LETTER CODES BELOW.

A- INDICATES THAT THIS EARTHQUAKE WAS FOLLOWED BY AN AFTERSHOCK SEQUENCE, THE INDIVIDUAL EVENTS OF WHICH ARE NOT INCLUDED IN THE LISTING UNLESS THEY ARE IDENTIFIED AS SUCH.

B- INDICATES THAT VARIOUS RUMBLINGS, GROANS, AND OTHER EARTH NOISES WERE REPORTED ACCOMPANYING THE EARTHQUAKE.

C- INDICATES THAT VISIBLE TOPOGRAPHIC CHANGES OCCURRED AS A RESULT OF THE EARTHQUAKE.

D- INDICATES DAMAGE OR CHANGES TO STRUCTURES SUCH AS CHIMNEYS THROWN DOWN, CONCRETE OR PLASTER CRACKED, MOVEMENT OF FURNITURE OR FIXTURES, ETC.

F- INDICATES A SHARPLY FELT LOCAL SHOCK.

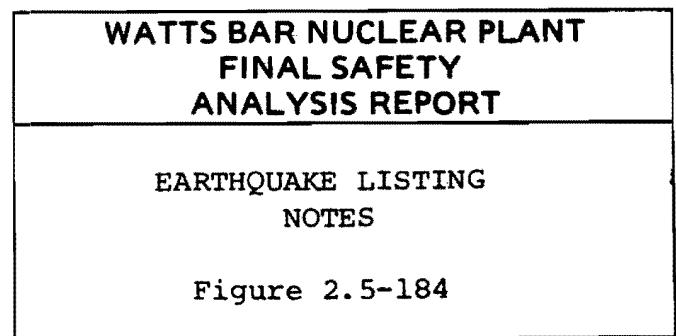
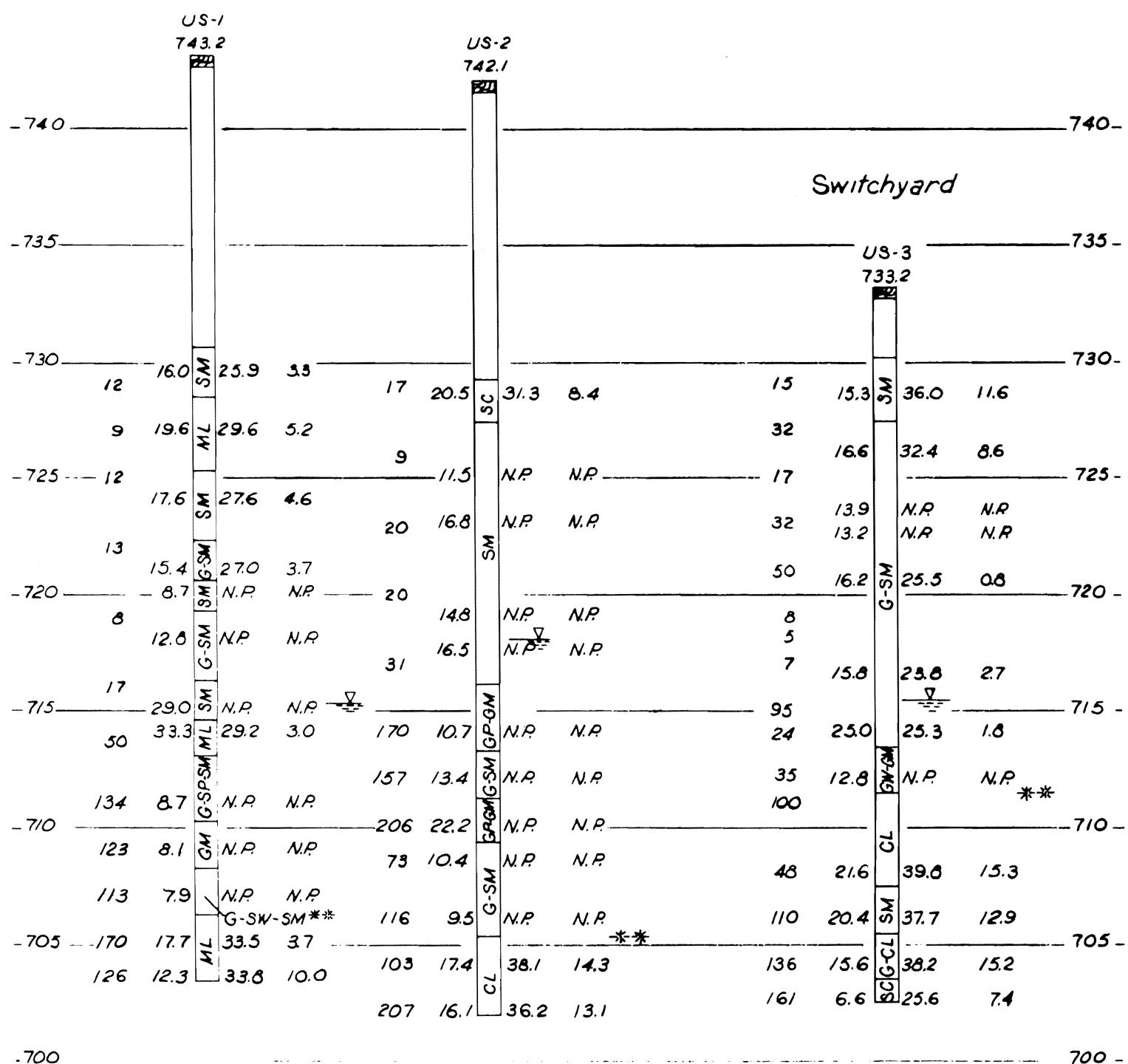


Figure 2.5-184 Earthquake Listing Notes

Figure 2.5-185 Yard Soil Borings Location Plan

Figure 2.5-185a Yard Soil Borings Location Plan

Transformer Yard

LEGEND

Hole No.

Elev.

* Blows

Natural
Moisture
Content

Classification

Liquid
LimitPlasticity
IndexSymbols

Water table

Topsoil

Scale 1"=5' Before Reduction

* Blows per foot with a 140lb. hammer
and a 30 inch drop on a 2 inch OD
split spoon.

** Top of weathered shale

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORTTRANSFORMER YARD & SWITCHYARD
SOIL INVESTIGATION

Figure 2.5-186

Figure 2.5-186 Transformer Yard & Switchyard Soil Investigation

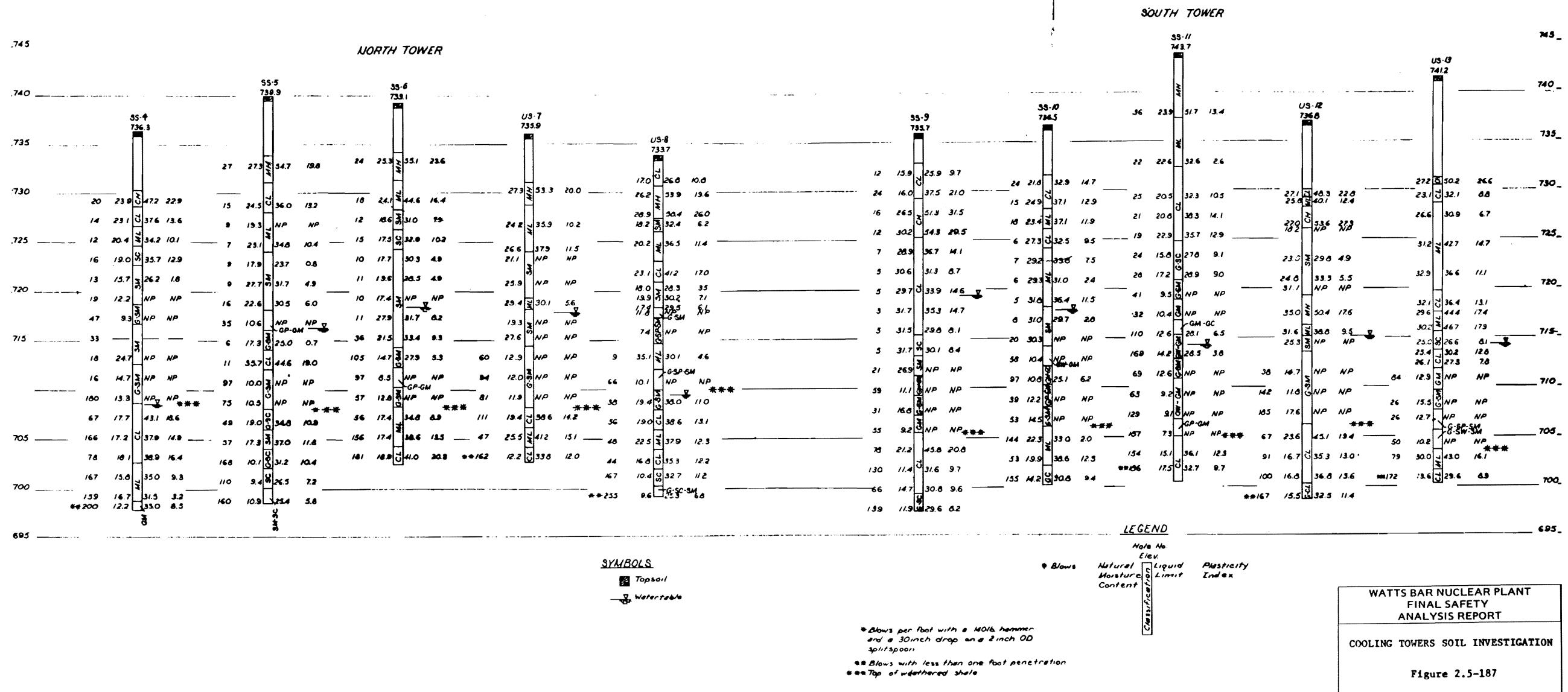


Figure 2.5-187 Cooling Towers Soil Investigation

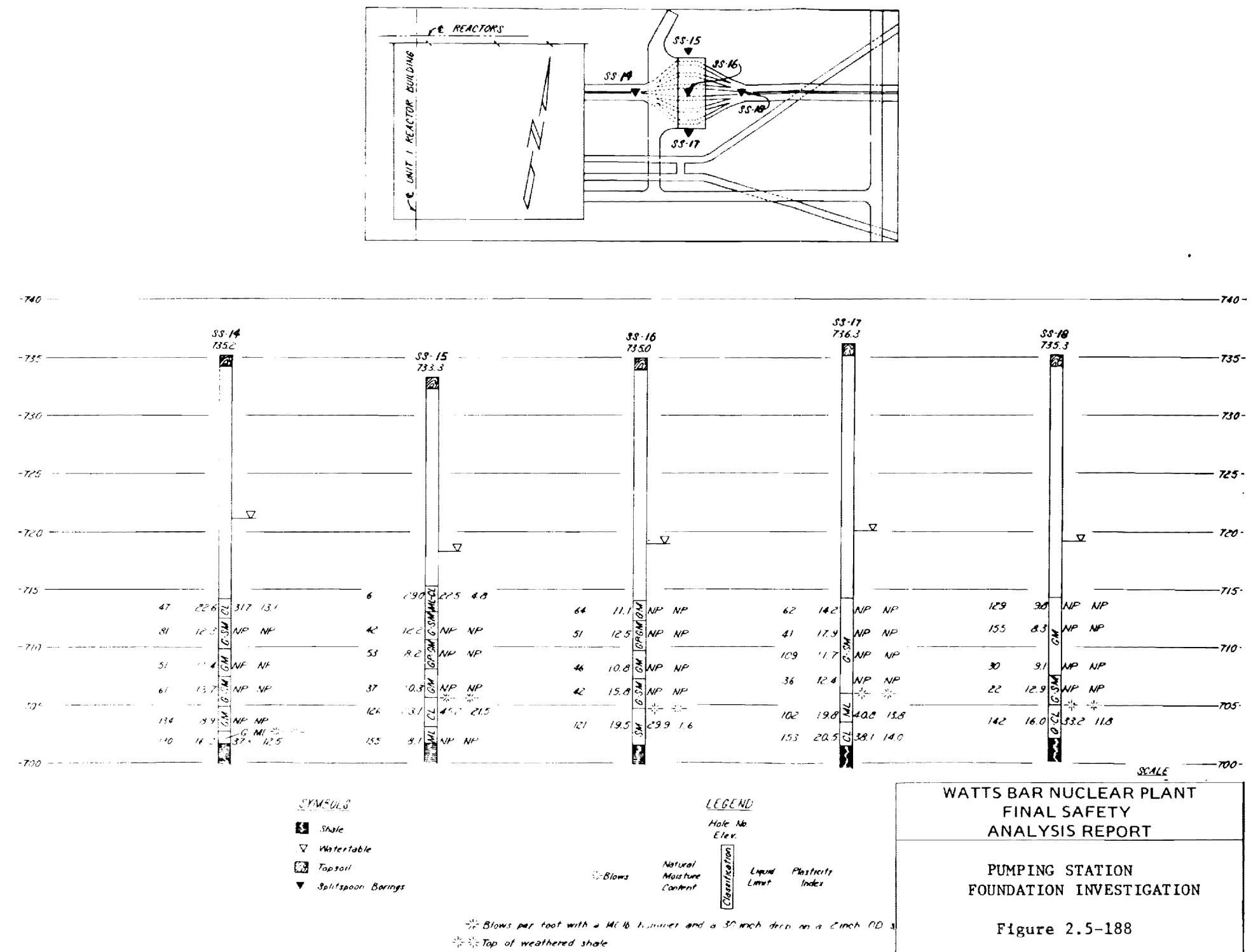


Figure 2.5-188 Pumping Station Foundation Investigation

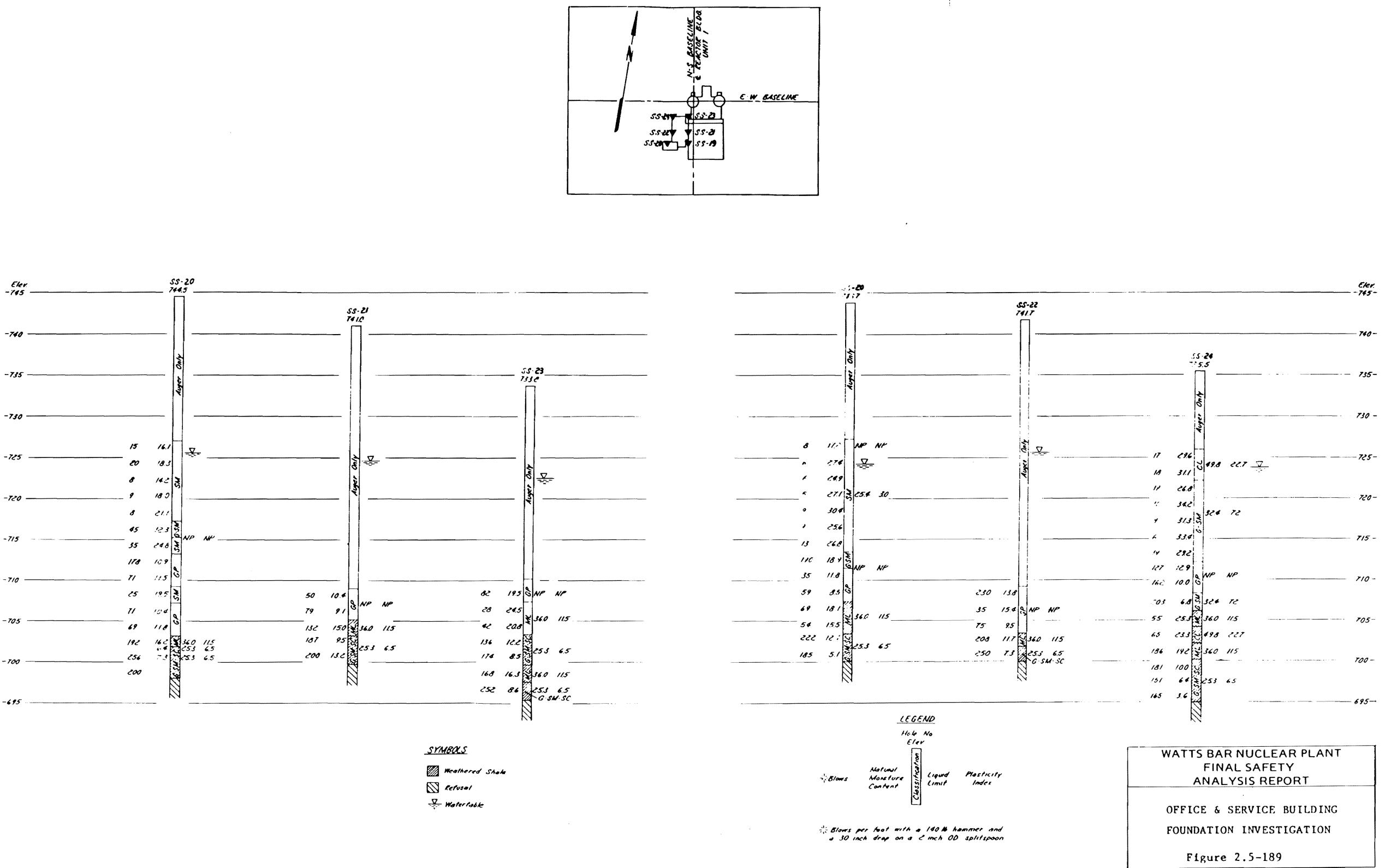


Figure 2.5-189 Office & Service Building Foundation Investigation

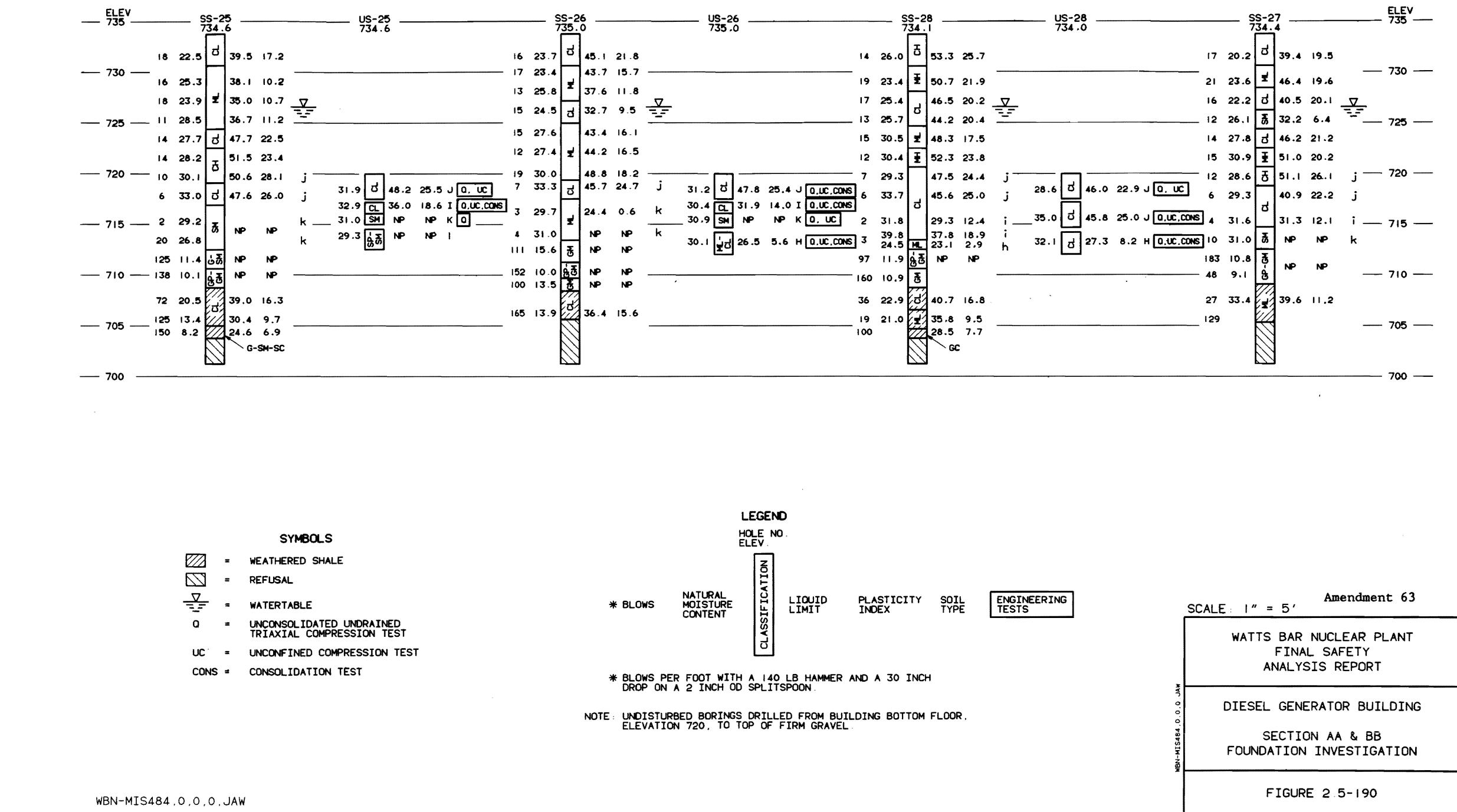


Figure 2.5-190 Diesel Generator Building Sections AA & BB Foundation Investigation

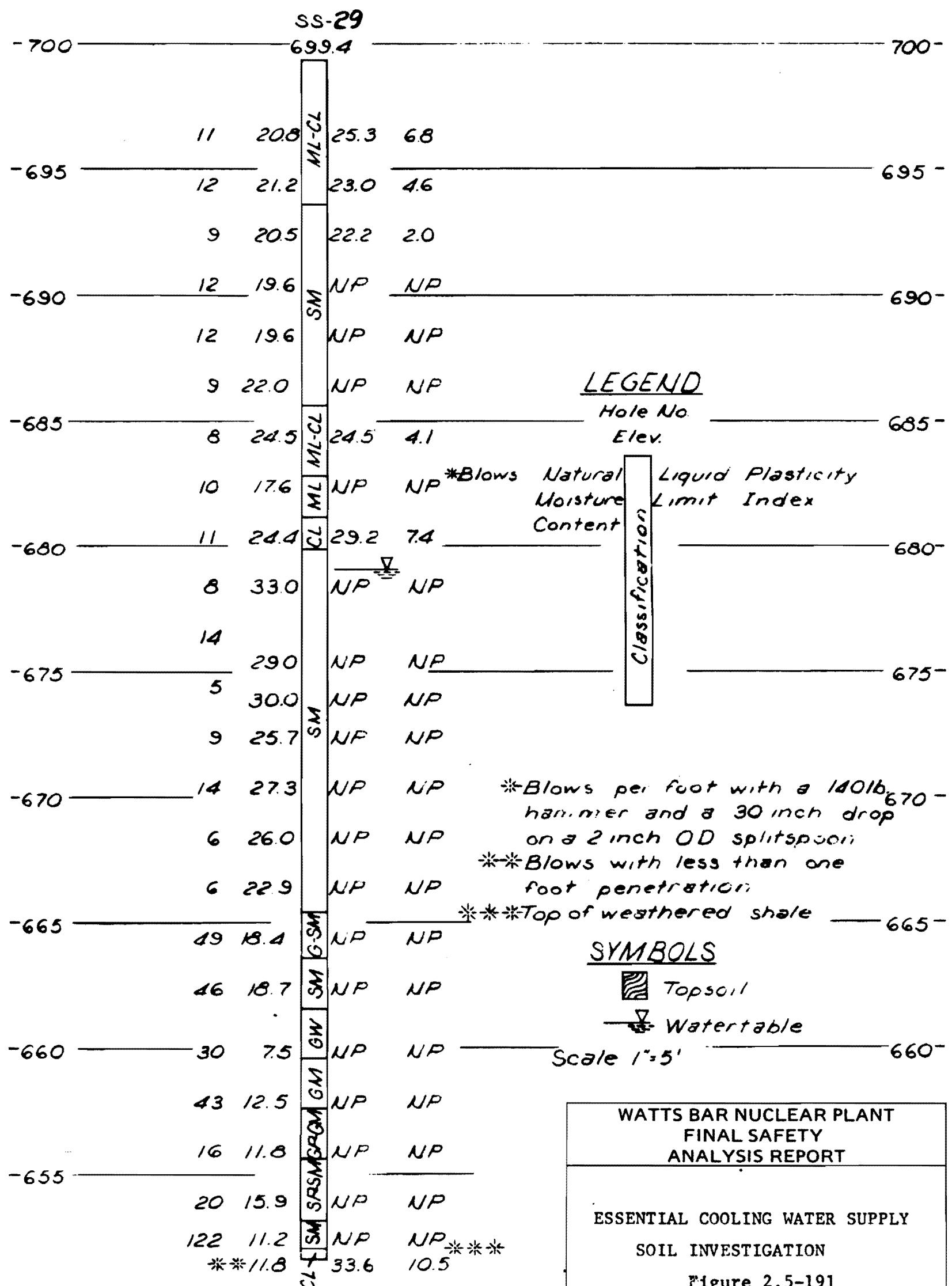
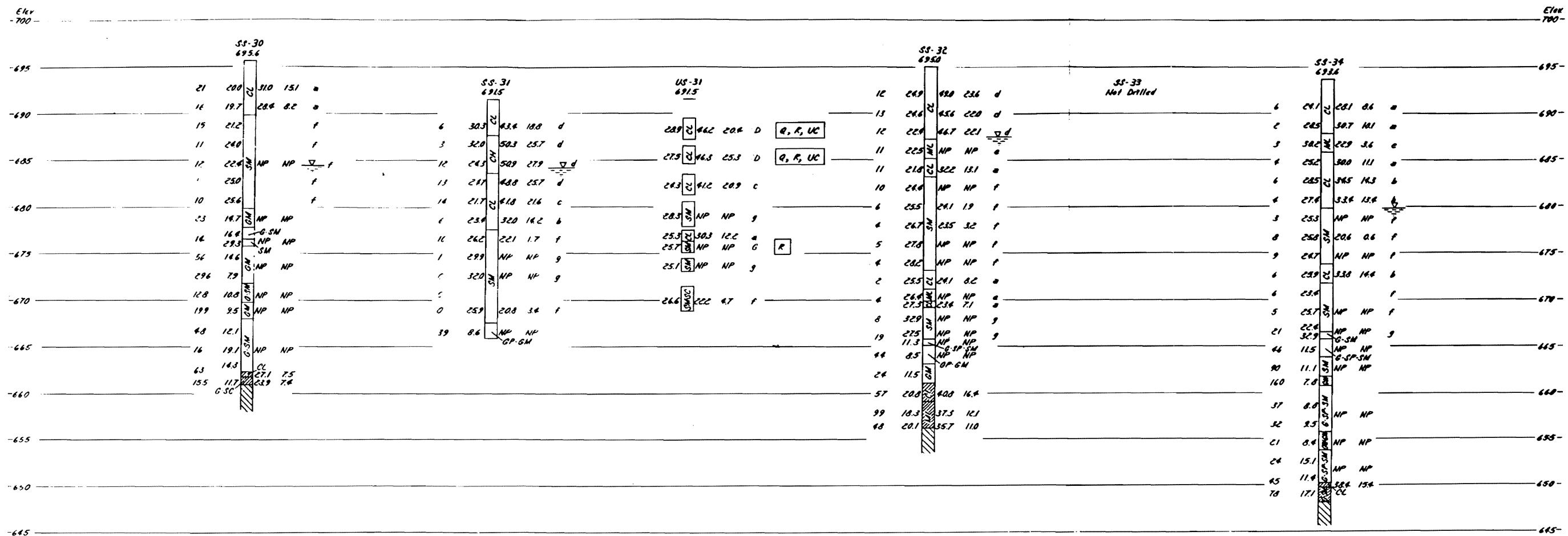


Figure 2.5-191 Essential Cooling Water Supply Soil Investigation



SYMBOLS

- Weathered shale
- Refusal
- Water table
- Q Unconsolidated undrained triaxial compression test
- R Consolidated undrained triaxial compression test
- UC Unconfined compression test

LEGEND

Hole No	Elev	Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type	Engineering Tests
SS-30	695.6	21	31.0	15.1	0		
SS-31	695.5	6	30.3	13.8	10.0	d	
US-31	695.5	12	28.9	2.8	20.8	d	Q, R, UC
SS-32	695.0	13	28.6	2.8	22.0	d	
SS-33	695.0	12	28.9	2.8	22.1	d	
SS-34	695.6	6	29.1	2.8	20.1	0.6	0

Blows per foot with a 160 lb hammer and a 30 inch drop on a 2 inch OD split-spoon

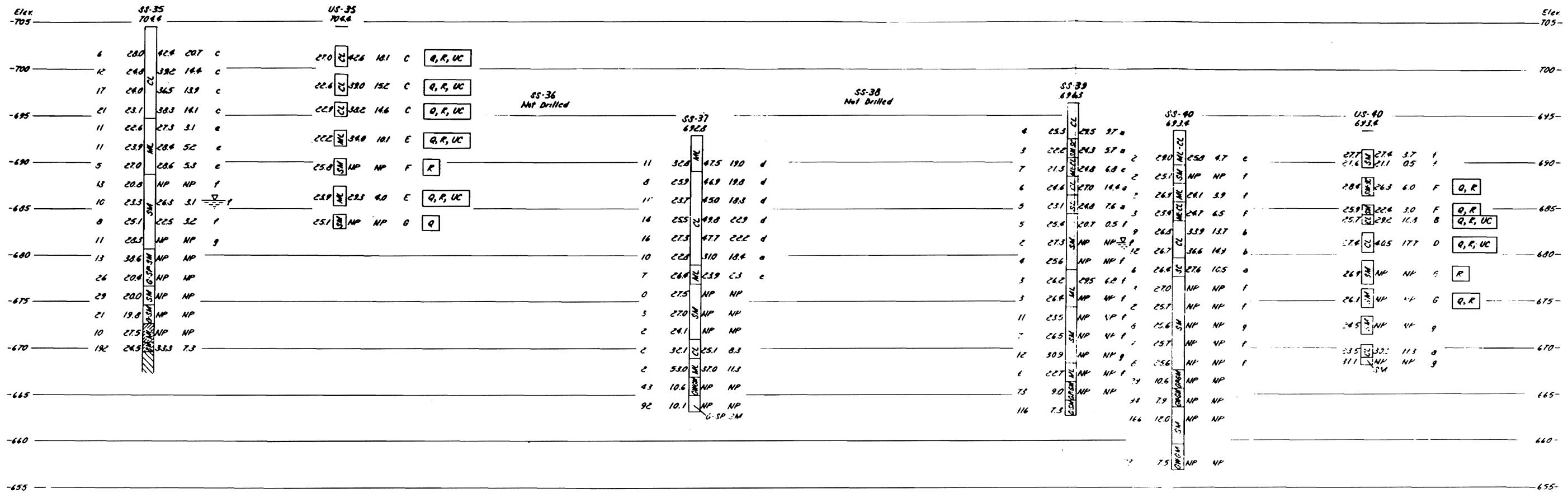
Note: Undisturbed borings drilled to top of firm gravel

**WATTS BAR NUCLEAR PLANT
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**INTAKE CHANNEL, SECTION DD
FOUNDATION INVESTIGATION**

Figure 2.5-192

Figure 2.5-192 Intake Channel, Section DD Foundation Investigation

SYMBOLS

- Weathered shale
- Refusal
- Watertable

C: Unconsolidated undrained triaxial compression test
 R: Consolidated undrained triaxial compression test
 UC: Unconfined compression test

LEGEND

Hole No	Floc	Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type	Engineering Tests

Blows per foot with a 100 lb hammer and a 30 inch drop on a 2 inch OD split spoon
 Note: Undisturbed borings drilled to top of firm gravel

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT							
INTAKE CHANNEL, SECTION EE FOUNDATION INVESTIGATION							
Figure 2.5-193							

Figure 2.5-193 Intake Channel, Section EE Foundation Investigation

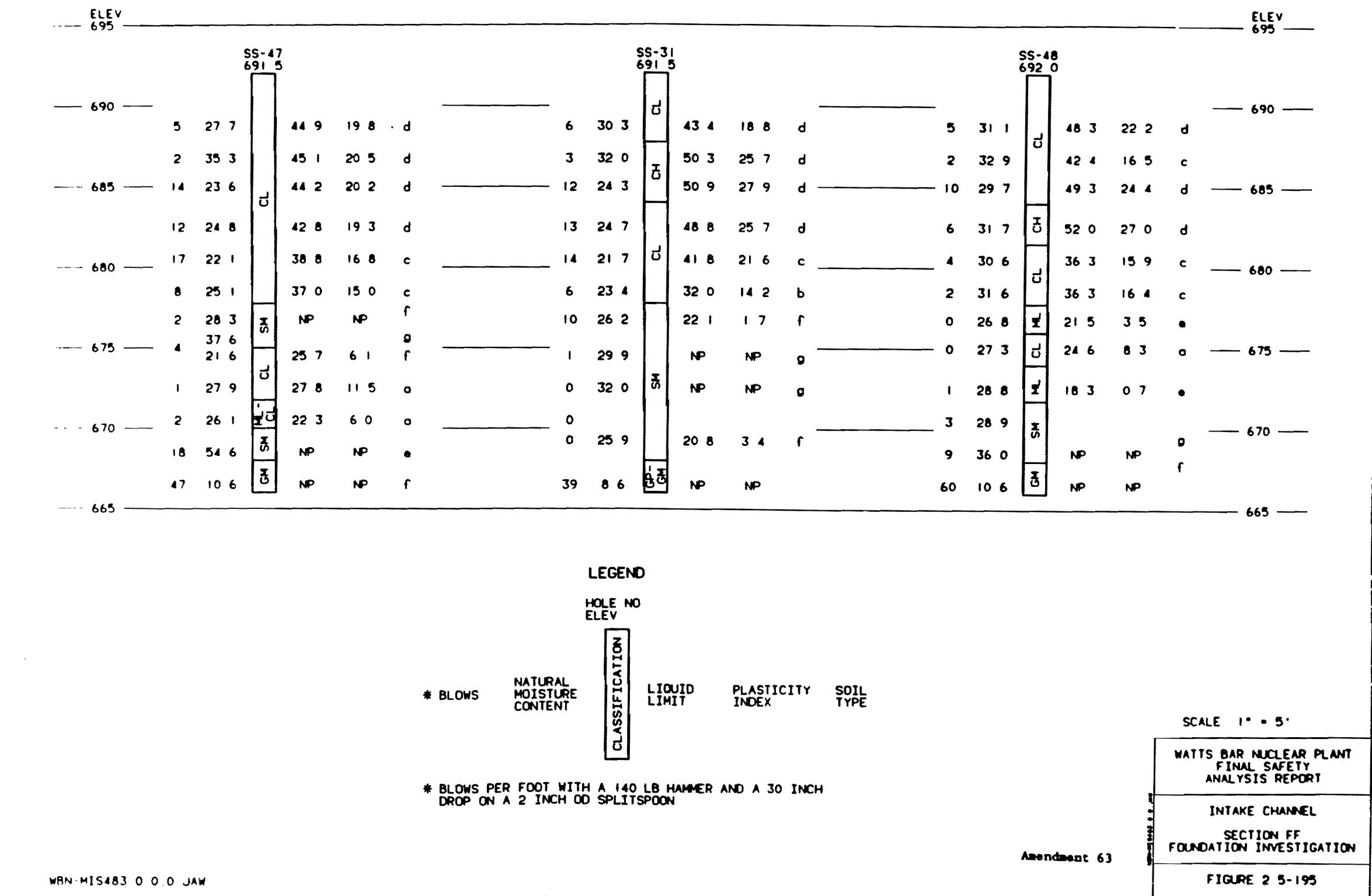
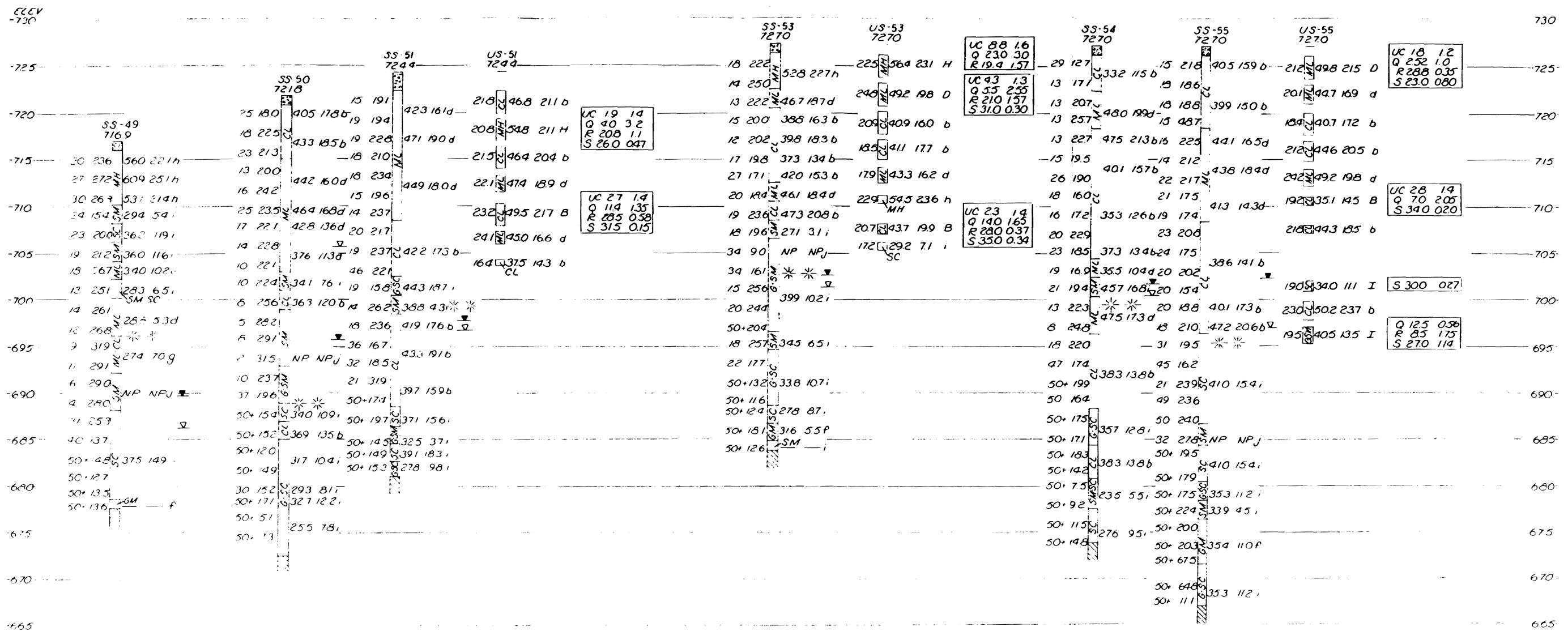


Figure 2.5-195 Intake Channel, Section FF Foundation Investigation



SYMBOLS

- [Box] - Silty clay
- [Box with dots] - Limestone gravel
- [Crossed lines] - Refusal
- Q - Unconsolidated undrained triaxial compression test
- R - Consolidated undrained triaxial compression test
- S - Consolidated drained direct shear test
- UC - Unconfined compression test
- - 1 hour water table reading
- - 24 hour water table reading

LEGEND

Boring No	Elevation	Type Test	Friction Angle (degrees)	Cohesion (tsf) or Sensitivity Ratio	
*	Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type
Q	Q	Q	Q	Q	Q
R	R	R	R	R	R
S	S	S	S	S	S

* Blows per foot with a 100 lb hammer and a 30 inch drop on a 2 inch OD split spoon sampler.
* * Top of weathered shale

WATTS BAR NUCLEAR PLANT
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CLASS IE CONDUITS
SOIL INVESTIGATION

Figure 2.5-196

Figure 2.5-196 Class IE Conduits Soil Investigation

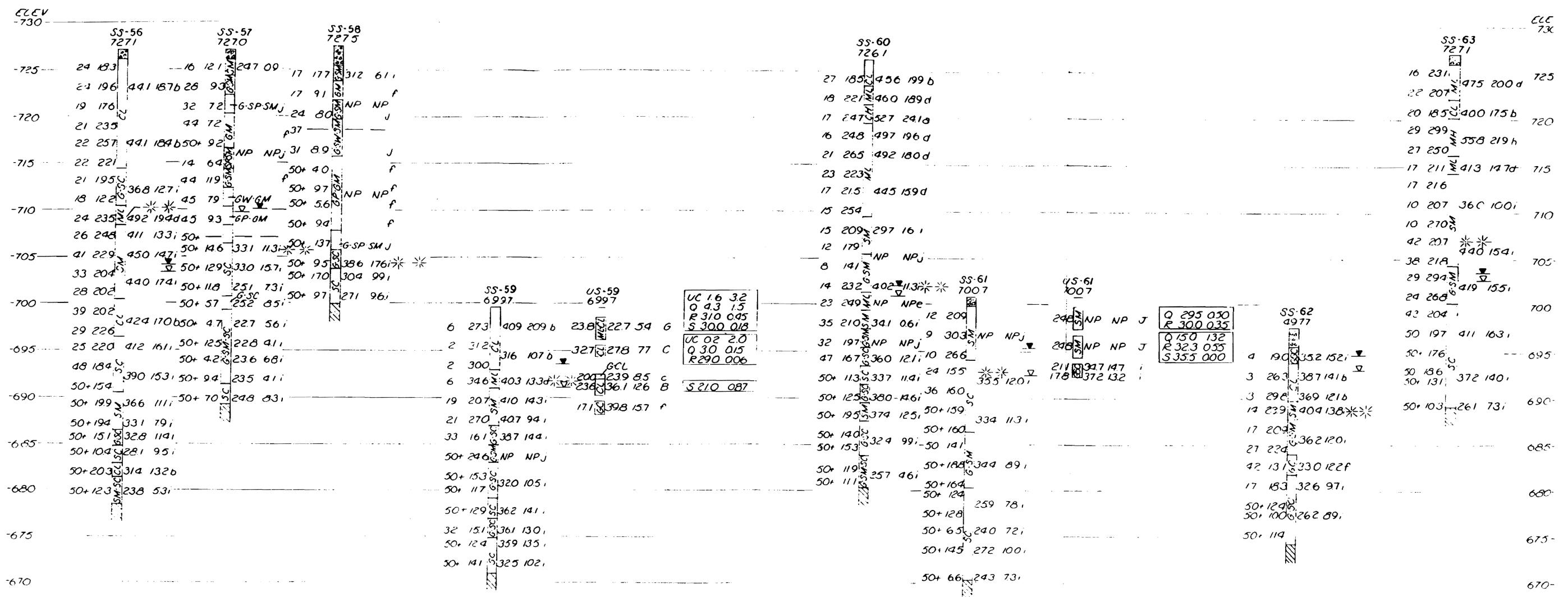
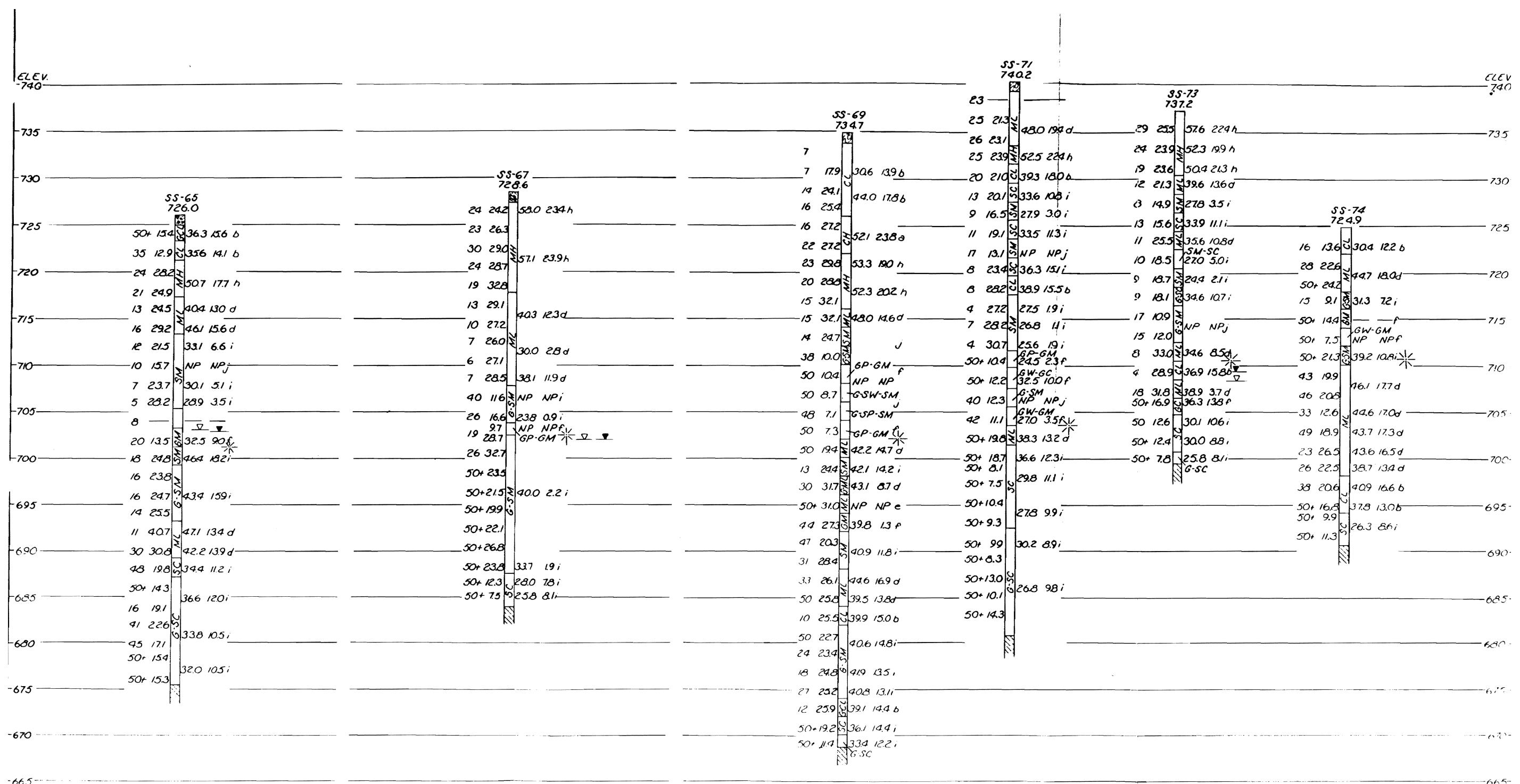


Figure 2.5-197 Class IE Conduits Soil Investigation



Boring No.	Elevation	Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type
23						
25	21.3	480 199 d				
26	23.1	525 224 h				
25	23.9	525 224 h				
20	21.0	393 180 d				
19	20.1	336 103 i				
16	25.4	44.0 17.86				
14	24.1	17.9	30.6 13.96			
16	27.2	521 238 d				
22	27.2	523 202 h				
23	29.8	53.3 190 h				
20	28.8	52.3 202 h				
15	32.1	403 123 d				
10	27.2	480 14.6 d				
7	26.0	30.0 28 d				
4	24.7	30.0 28 d				
38	10.0	SP-GM f				
50	10.4	NP NP				
50	8.7	GSM-SM				
40	12.3	NP NP				
48	7.1	GSP-SM				
50	7.3	GSP-GM f				
50	19.4	GP-GM f				
13	24.4	42.2 14.7 d				
30	31.7	42.1 14.2 i				
50	7.5	43.1 8.7 d				
44	27.3	43.1 8.7 d				
47	20.3	40.9 11.8 i				
31	28.4	40.9 11.8 i				
33	26.1	44.6 16.9 d				
50	25.8	39.5 13.8 d				
10	25.5	39.9 15.0 d				
50	22.7	40.6 14.8 i				
24	23.4	41.9 13.5 i				
18	24.8	41.9 13.5 i				
21	25.2	40.8 13.1 i				
12	25.9	39.1 14.4 d				
50	19.2	36.1 14.4 i				
50	11.9	33.4 12.2 i				
		SC				

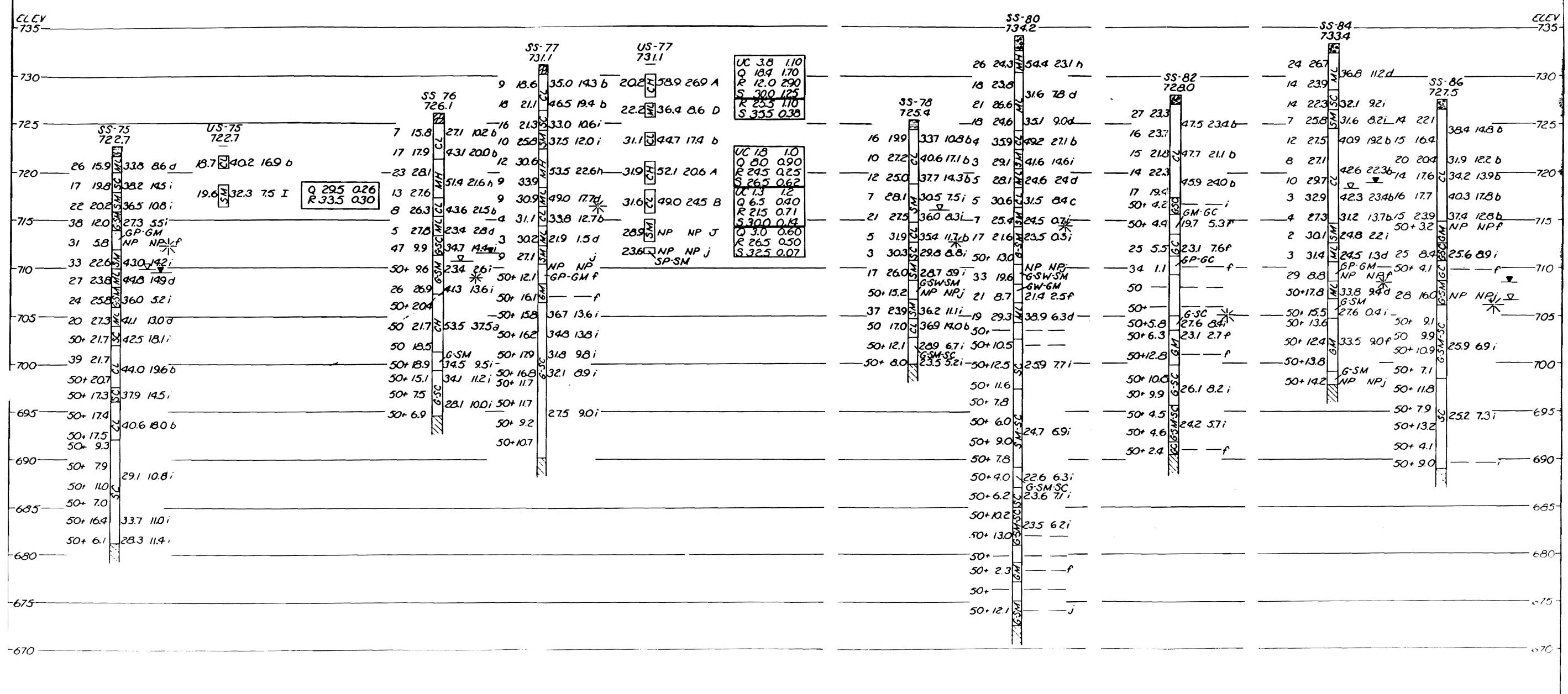
**WATTS BAR NUCLEAR PLANT
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**SOIL INVESTIGATION BORINGS
FOR ERCW AND HPFP SYSTEMS**

Figure 2.5-198

Added by Amendment 24

Figure 2.5-198 Soil Investigation Borings For ERCW & HPFP Systems

SYMBOLS

- Topsoil
- Limestone, gravel
- Clayey silt
- Refusal

Q - Unconsolidated undrained triaxial compression test
 R - Consolidated undrained triaxial compression test at natural moisture
 S - Consolidated drained direct shear test
 UC - Unconfined compression test
 ✓ - One hour water table reading
 * - Twenty-four hour water table reading

LEGEND

Boring No	Elevation	Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type	Type Test	Friction Angle (degrees)	Cohesion (lbf)	or Sensitivity Ratio

Note: Blows per foot with a 10 lb. hammer and a 30 inch drop on a 2 inch OD split spoon sampler

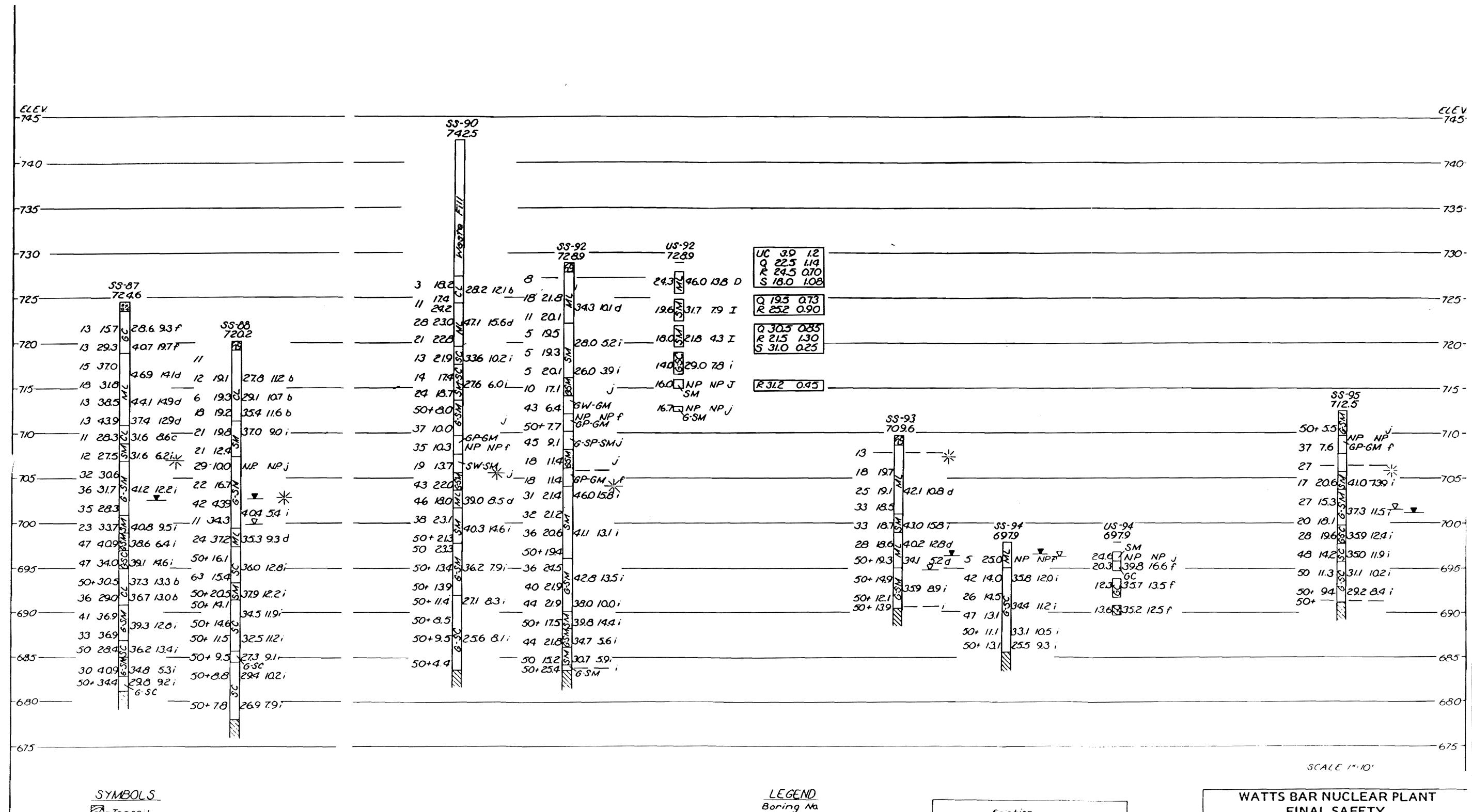
* Top of weathered shale

SCALE: 1'-0"

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL INVESTIGATION BORINGS FOR ERCW AND HPFP SYSTEMS	
Figure 2.5-199	
Added by Amendment 24	

103115 9 CS 3 10048617P1

Figure 2.5-199 Soil Investigation Borings For ERCW & HPFP Systems



SCALE 1:10'

SYMBOLS

- [Topsoil]
- [Limestone, gravel]
- [Refusal]

Q - Unconsolidated undrained triaxial compression test
 R - Consolidated undrained triaxial compression test at natural moisture
 S - Consolidated drained direct shear test
 UC - Unconfined compression test
 Q - One hour water table reading
 R - Twenty four hour water table reading

LEGEND

Boring No

Elevation

Blows	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type
-------	--------------------------	--------------	------------------	-----------

Type Test	Unconfined Compressive Strength (tsf)	Friction Angle (degrees) or Cohesion (tsf)	Sensitivity Ratio
-----------	---------------------------------------	--------------------------------------------	-------------------

Note: Blows per foot with a 100 lb. hammer and a 30 inch drop on a 2 inch OD split-spoon sampler

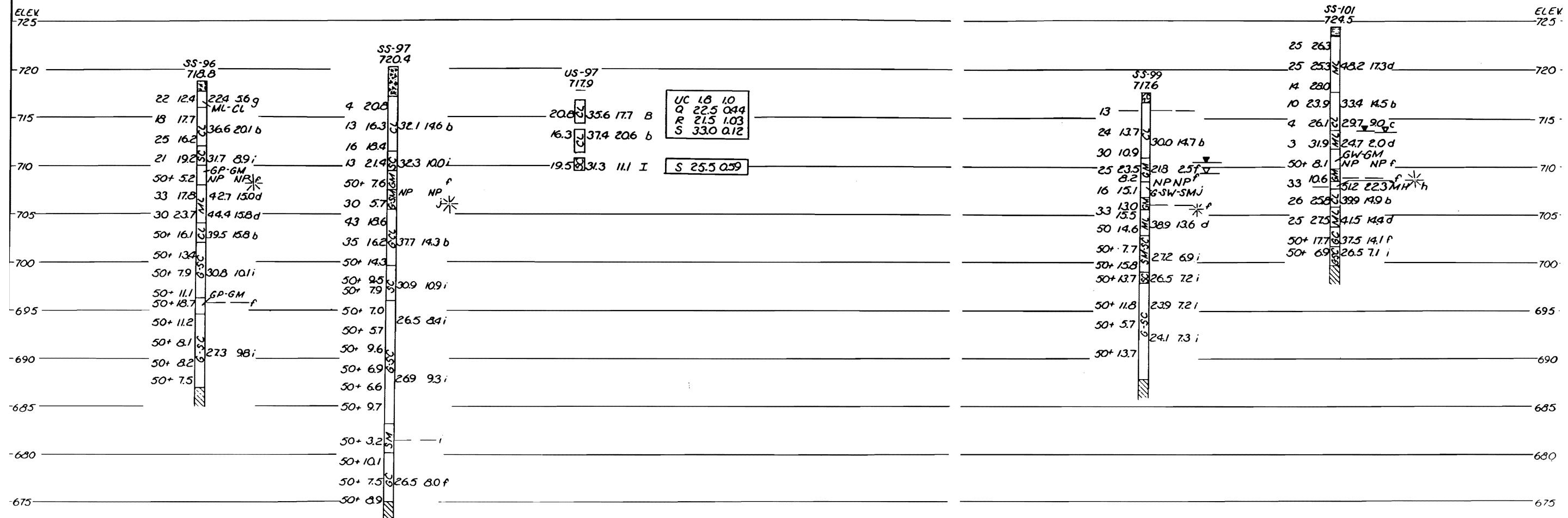
* Top of weathered shale

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

SOIL INVESTIGATION BORINGS
FOR ERCW AND HPFP SYSTEMS
Figure 2.5-200
Added by Amendment 24

103175 9 CS 3 604K618P1

Figure 2.5-200 Soil Investigation Borings For ERCW & HPFP Systems



SYMBOLS

- Topsoil
- Limestone gravel
- Clayey silt
- Refusal

Q - Unconsolidated undrained triaxial compression test
 R - Consolidated undrained triaxial compression test at natural moisture content
 S - Consolidated drained direct shear test
 UC - Unconfined compression test
 □ - One hour water table reading
 ■ - Twenty four hour water table reading

2000, 1000, 500, 100, 50, 10, 5, 1

LEGEND

Boring No
Elevation

Blows	Natural Moisture Content	Cross Section	Liqui-
-------	--------------------------------	---------------	--------

Friction
 Angle
 (degrees) or Cohesion
 (tsf)
 Type Test Unconfined Compressive Strength (tsf) Sensitivity Ratio

Note: Blows per foot with a 140 lb. hammer and a 30 inch drop onto 2 inch OD split-spoon sampler.

↗ Top of weathered sha

SCALE: 1'-10'

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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SOIL INVESTIGATION BORINGS

FOR ERCW AND HPFP SYSTEMS

Figure 2.5-201

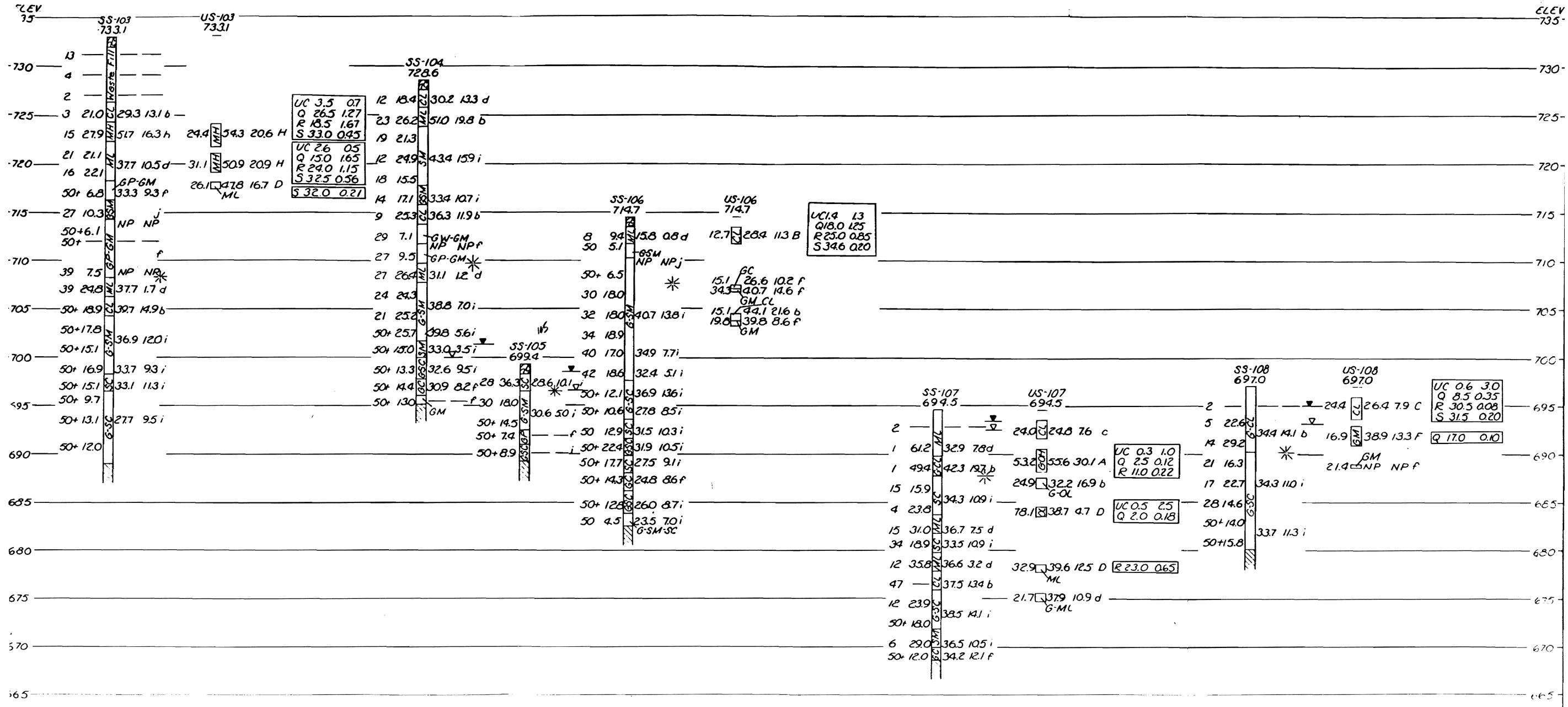
Added by Amendment 24

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Figure 2.5-201 Soil Investigation Borings For ERCW & HPFP Systems

SYMBOLS

- Topsoil
- Refusal
- Q - Unconsolidated undrained triaxial compression test
- R - Consolidated undrained triaxial compression test at natural moisture
- S - Consolidated drained direct shear test
- UU - Unconfined compression test
- 1H - One hour water table reading
- 24H - Twenty four hour water table reading

LEGEND

Boring No Elevation		Blows per foot	Natural Moisture Content	Liquid Limit	Plasticity Index	Soil Type	Friction Angle (degrees) or Unconfined Compressive Strength (psi)	Cohesion (tsf) or Sensitivity Ratio
Type	test							

Note: Blows per foot with a 100 lb hammer and a 30 inch drop on a 2 inch OD split spoon sampler

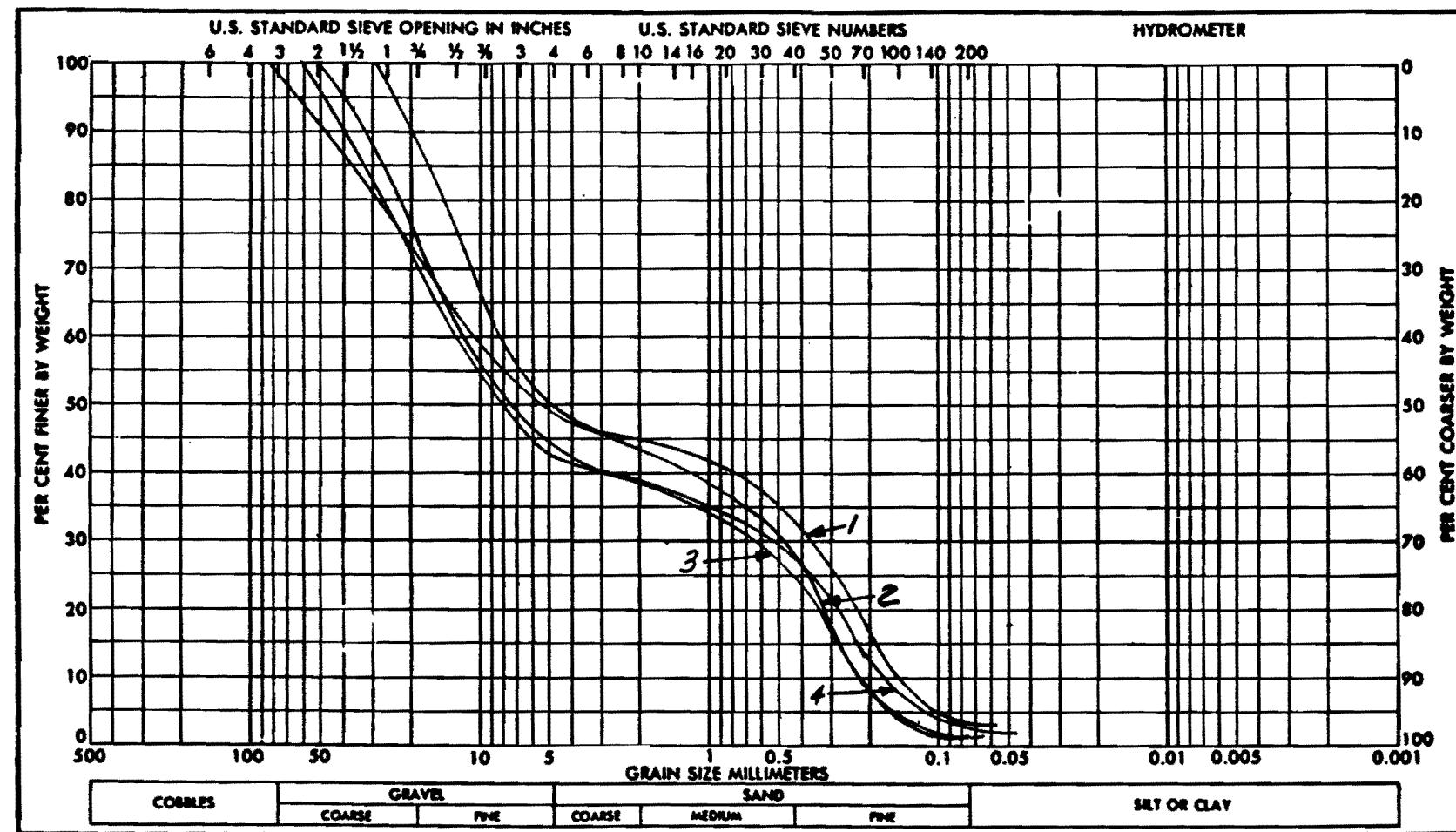
* Top of weathered shale

SCALE: 1":10'

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL INVESTIGATION BORINGS FOR ERCW AND HPFP SYSTEMS	
Figure 2.5-202 Added by Amendment 24	

KNOXVILLE 10/31/75 | CS 3 600 KER-A-21

Figure 2.5-202 Soil Investigation Borings For ERCW & HPFP Systems



Soil Symbol	GP	Liquid Limit, %	
Moisture Content, %		Plastic Limit, %	
Specific Gravity		Plasticity Index, %	
		Sinkage Limit, %	

Remarks:

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

INTAKE CHANNEL TRENCH

Figure 2.5-203

Figure 2.5-203 Intake Channel Trench

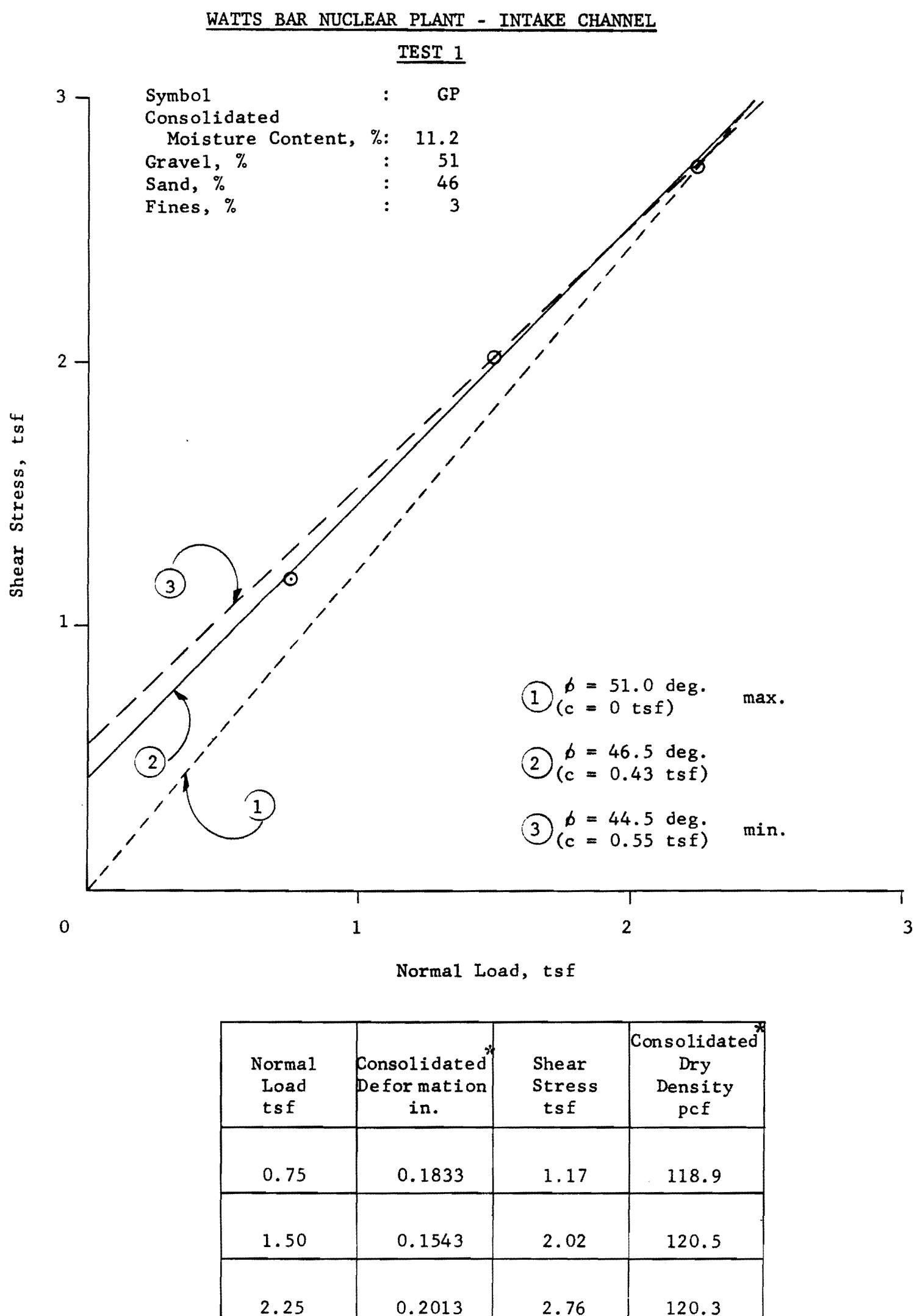


Figure 2.5-204

Figure 2.5-204 Intake Channel Test 1

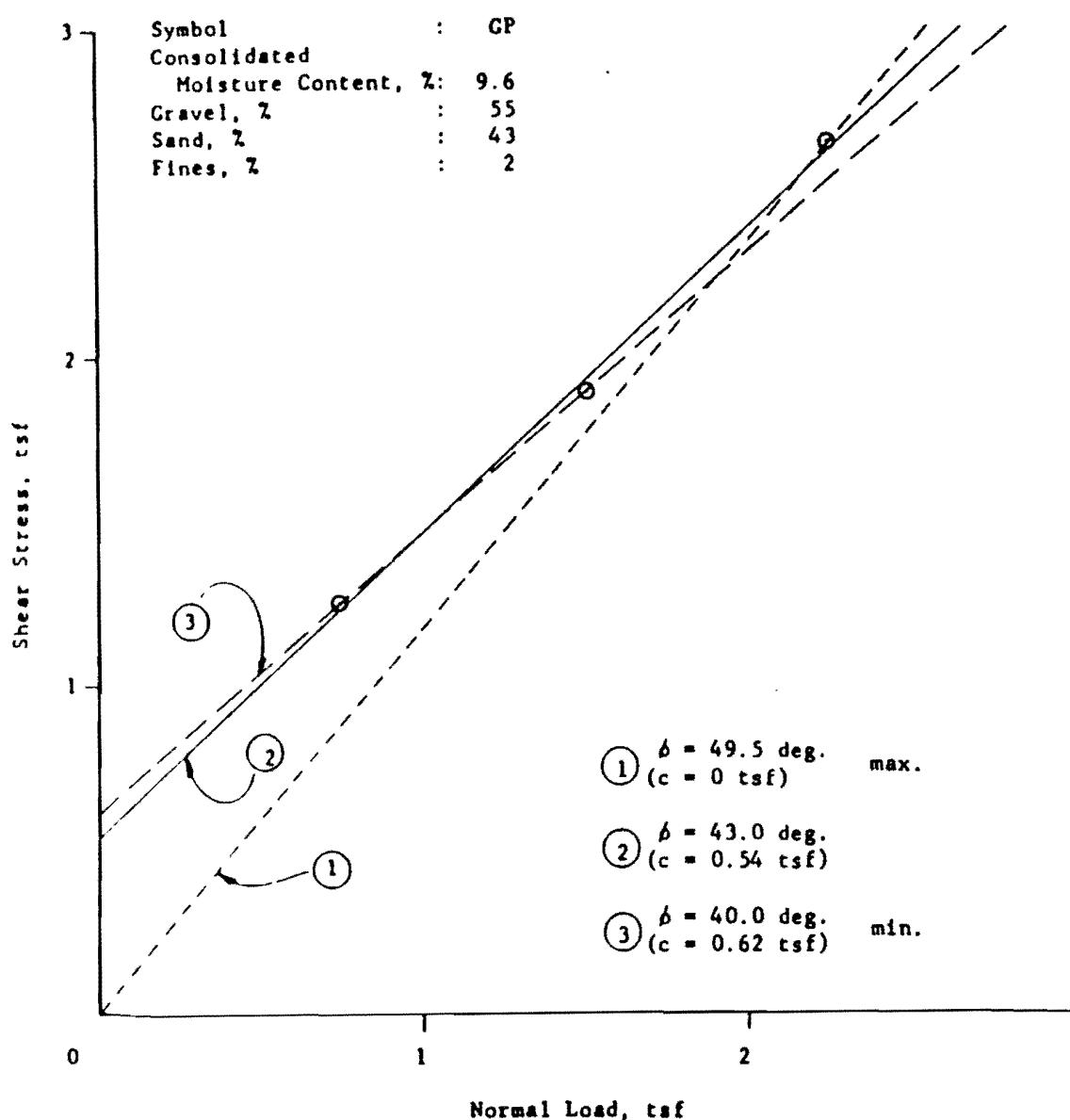


Figure 2.5-205 Intake Channel Strength Evaluation Test 2

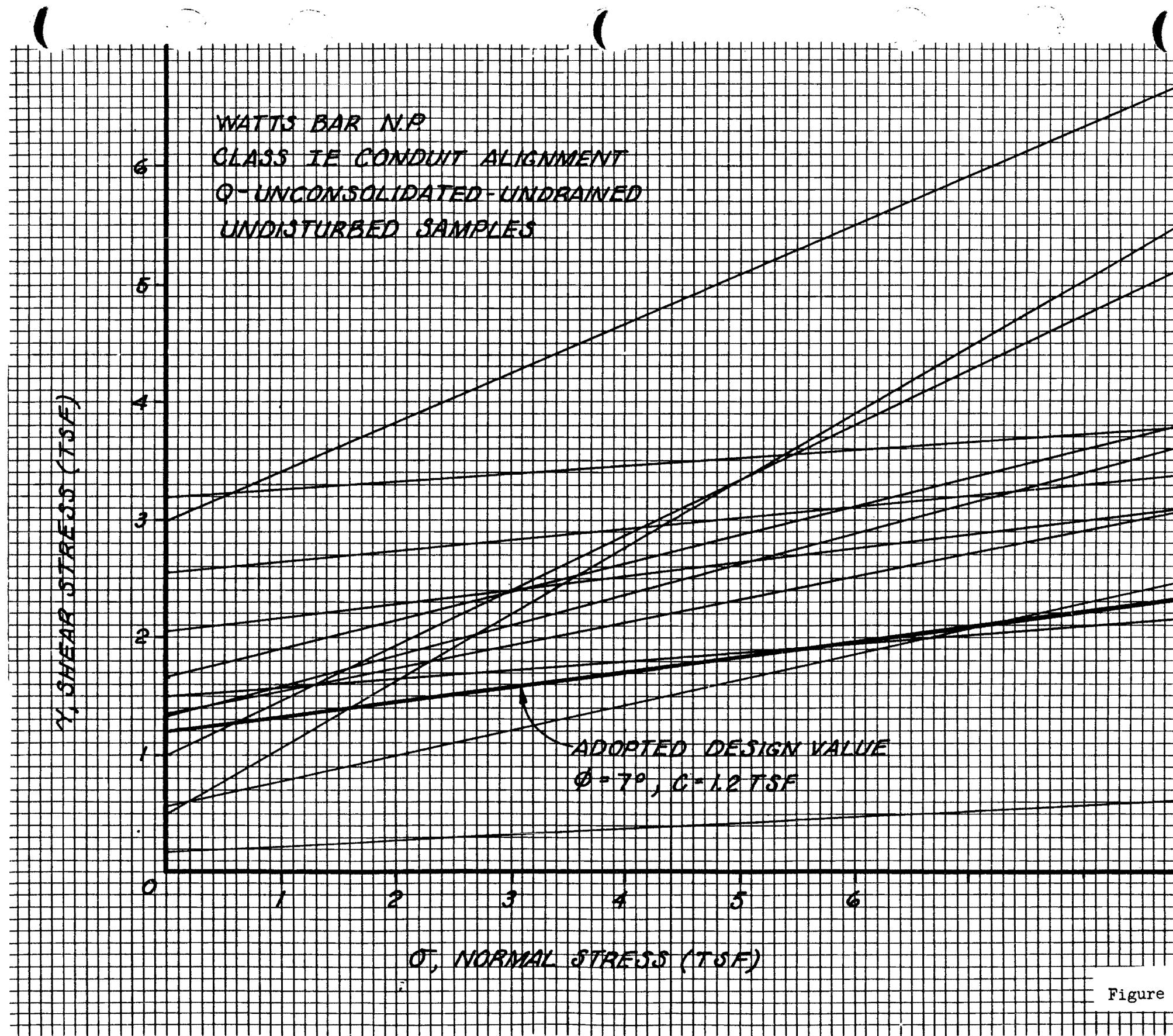
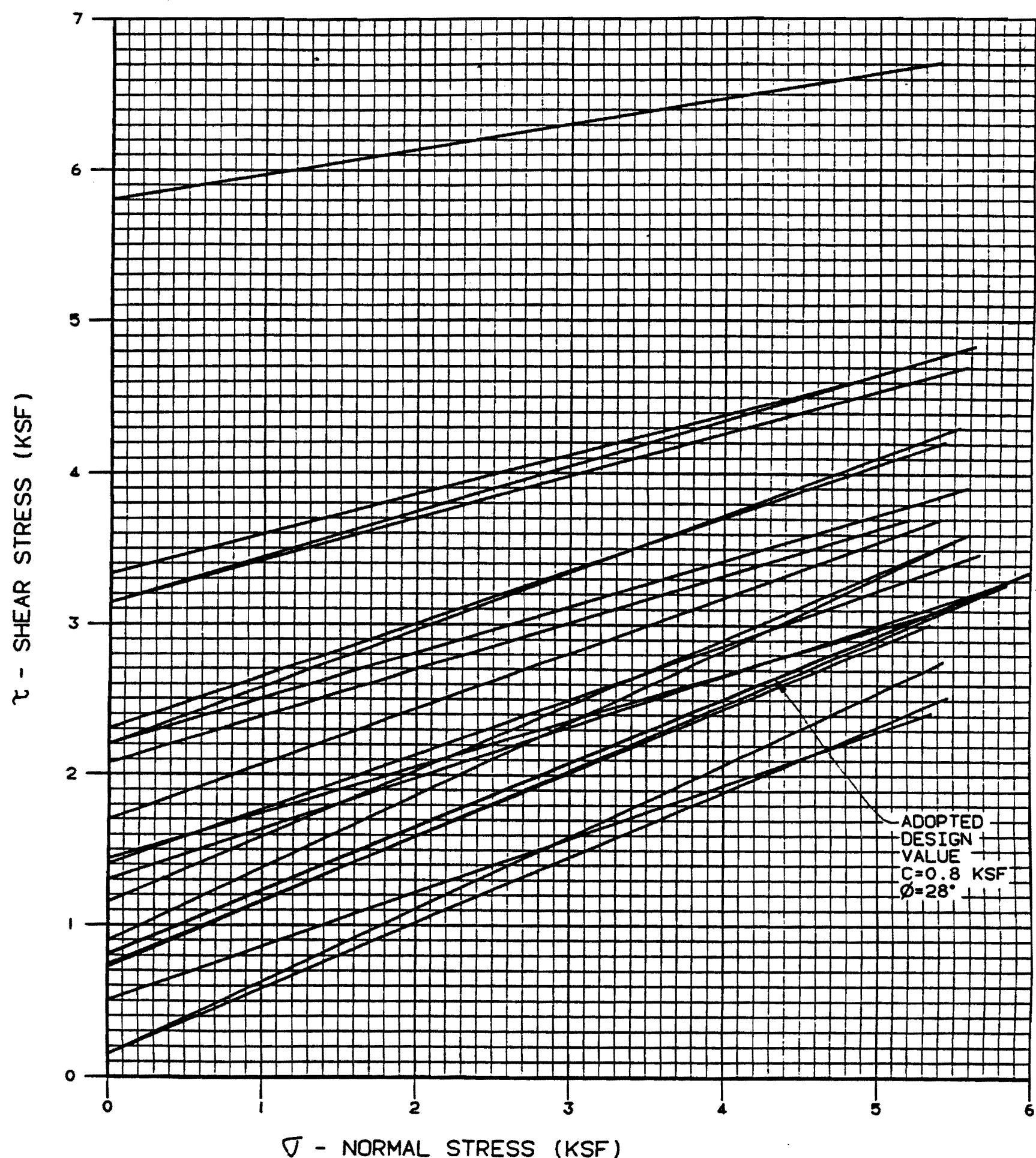


Figure 2.5-206 Class IE Conduit Alignment Q (Unconsolidated, Undrained, Undisturbed) Samples.



AMMENDMENT 71

WATTS BAR NUCLEAR PLANT
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ERCW PIPING AND
IE CONDUIT ALIGNMENTS
R (CONSOLIDATED-UNDRAINED)
SILT AND CLAY SAMPLES
NATURAL MOISTURE CONTENT

figure 2.5-207

Figure 2.5-207 ERCW Piping and IE Conduit Alignments R (Consolidated - Undrained) Silt and Clay Samples Natural Moisture Content

Figure 2.5-208

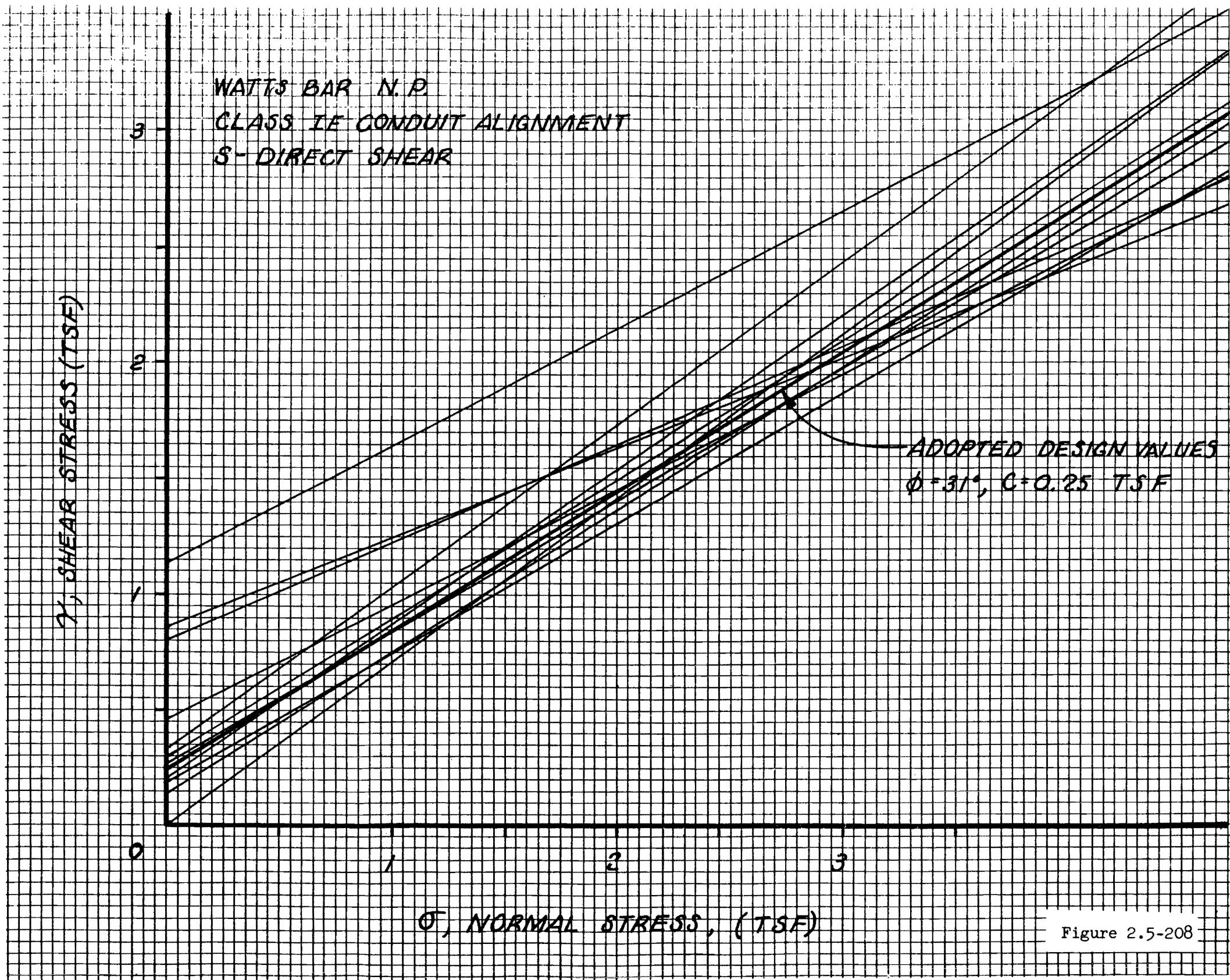


Figure 2.5-208 Class IE Conduit Alignment S-Direct Shear

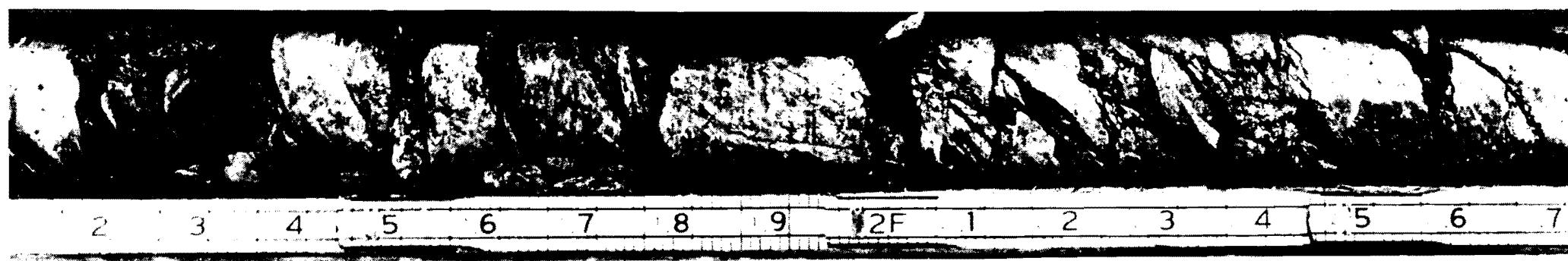
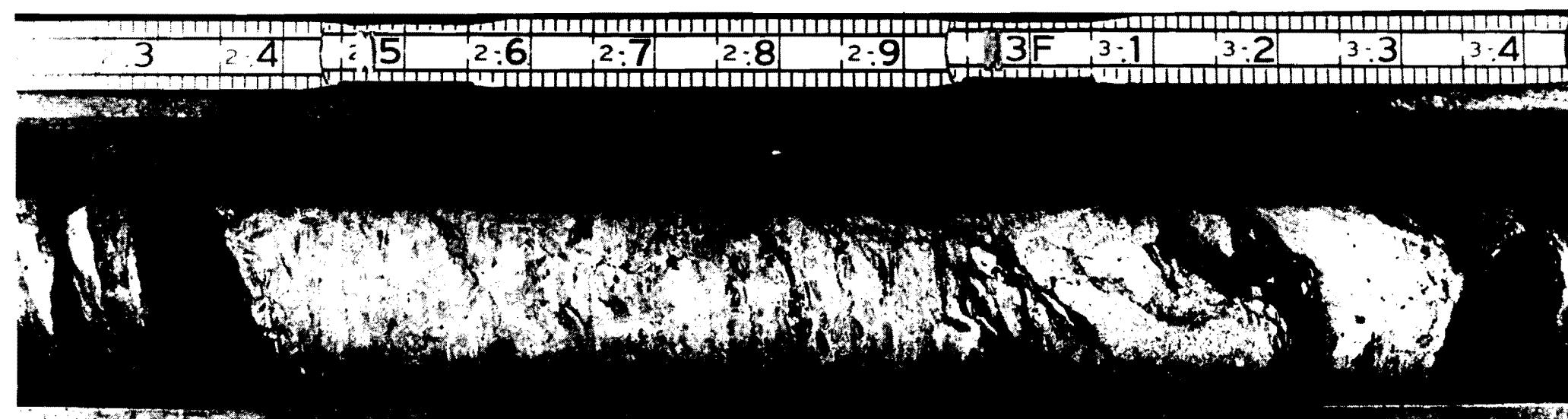
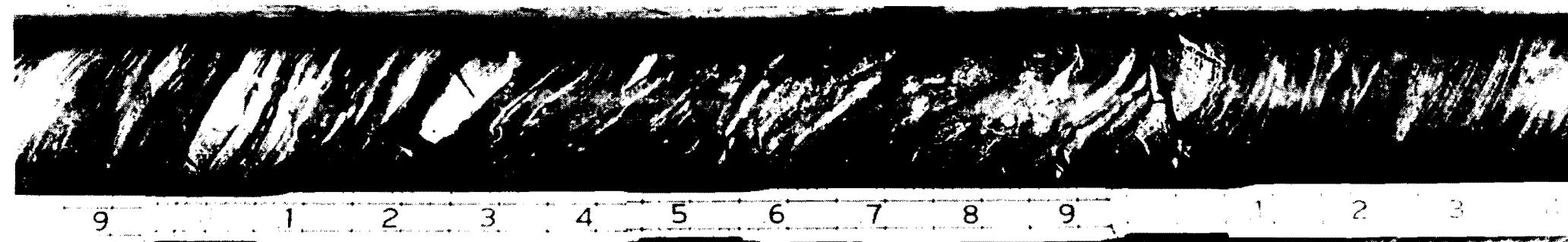
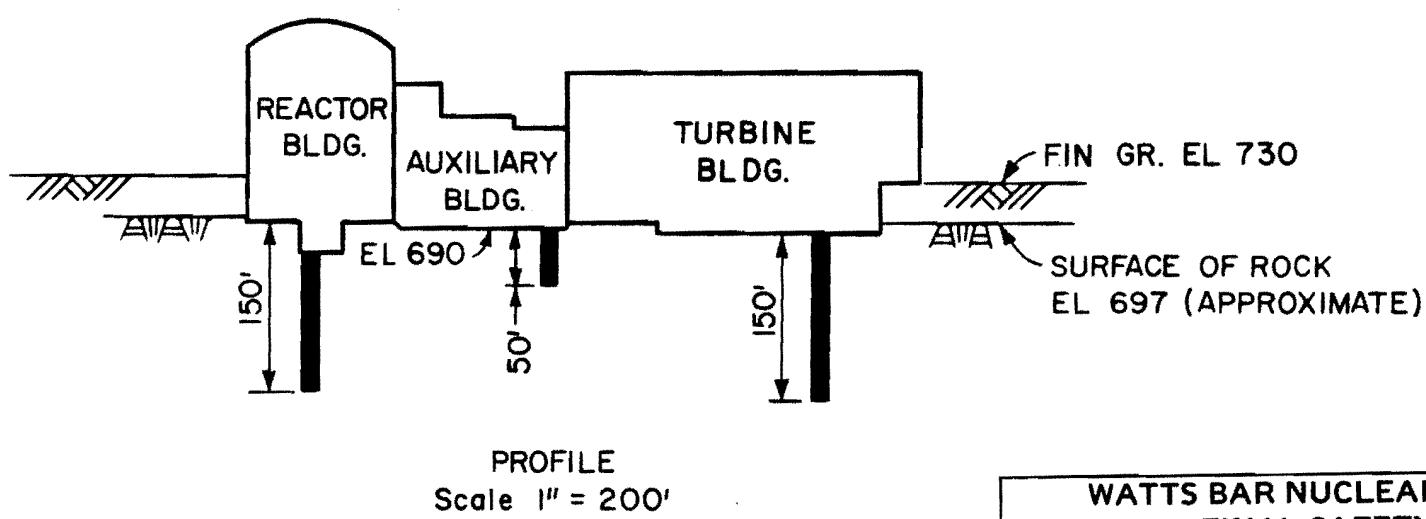
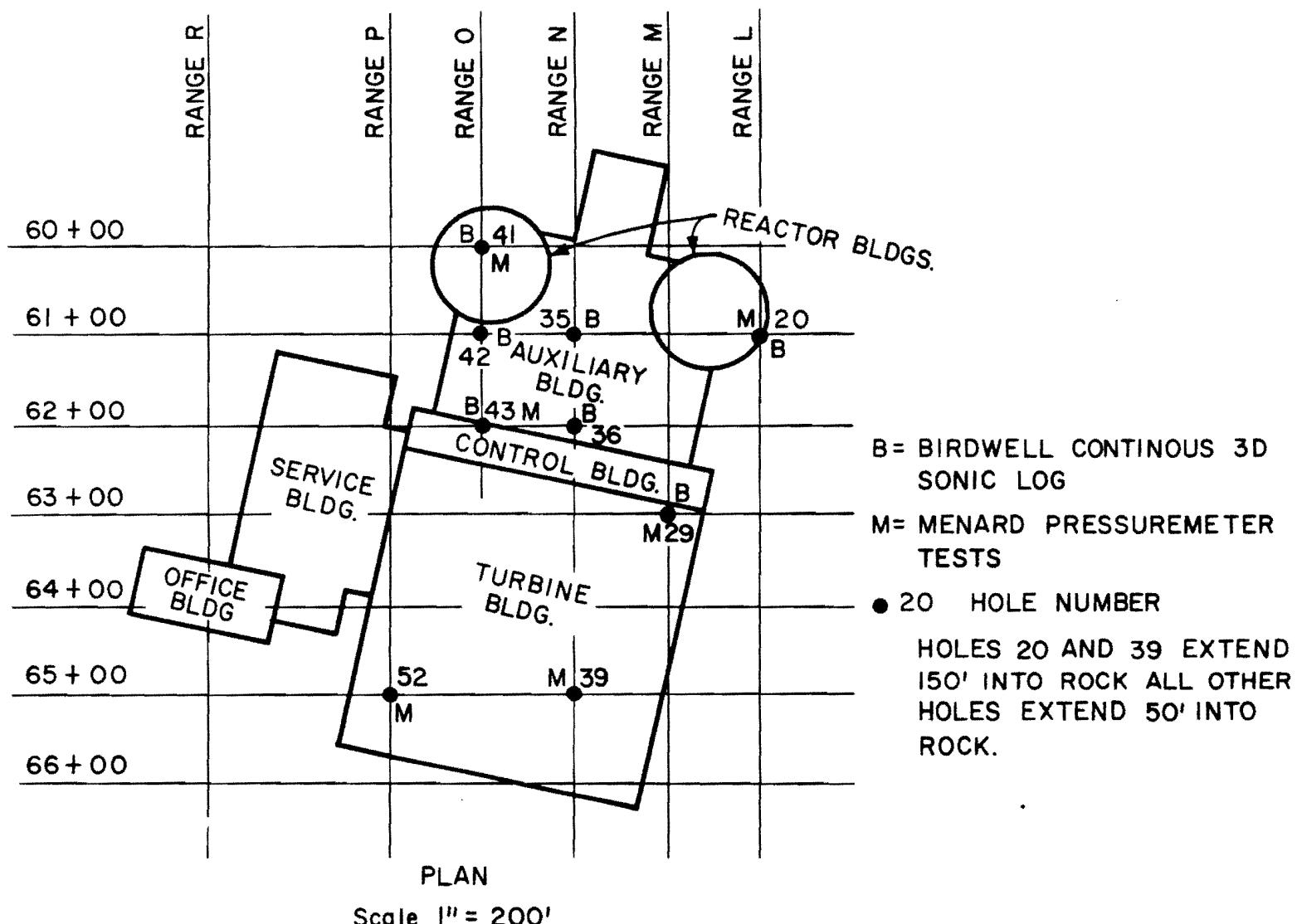
TYPE I - SOFT SHALE**TYPE 2 - HARD SHALE****TYPE 3 - LIMESTONE**

Figure 2.5-209

Figure 2.5-209 Type 1-Soft Shale Type 2-Hard Shale -Type 3 Limestone

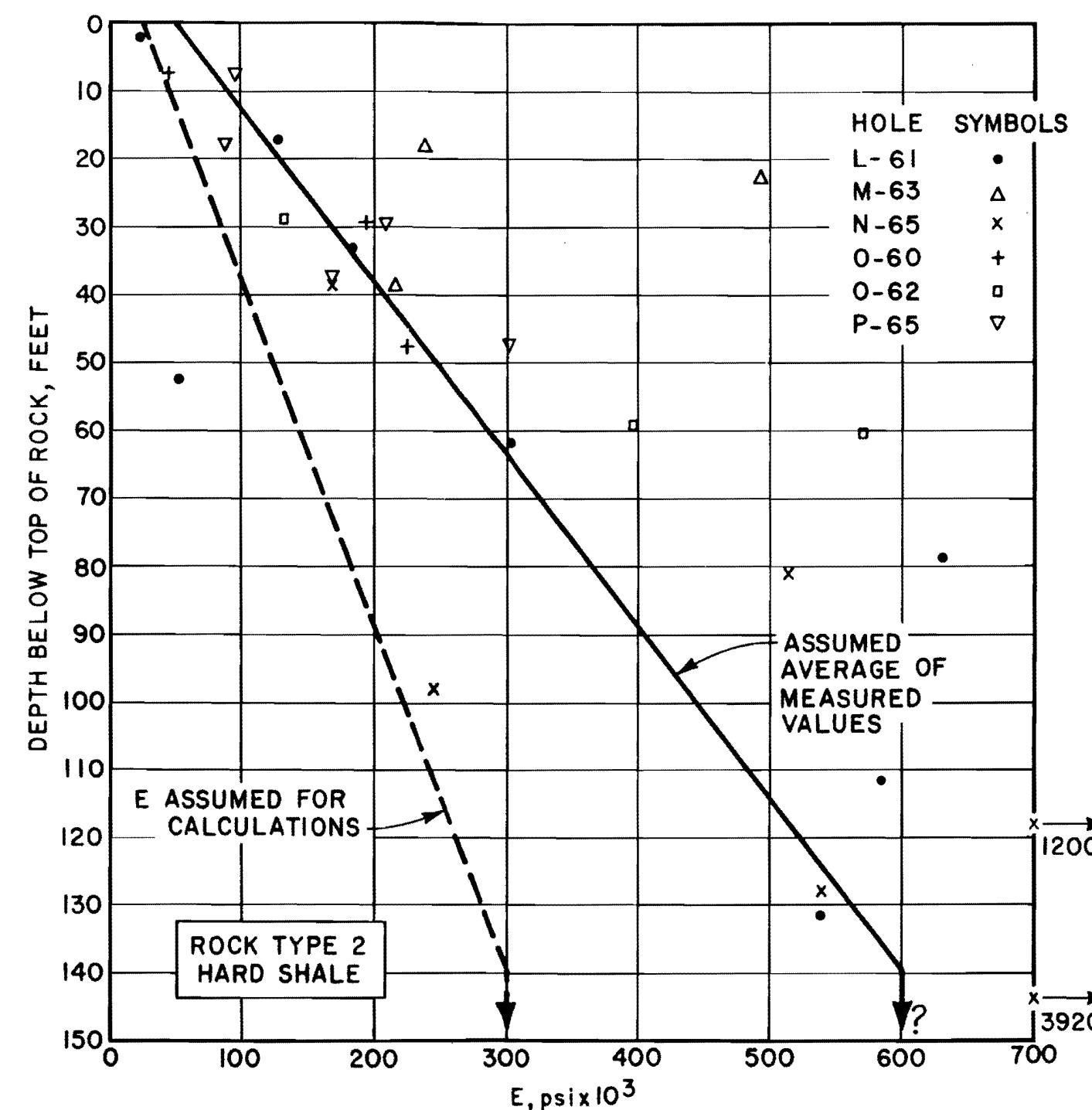
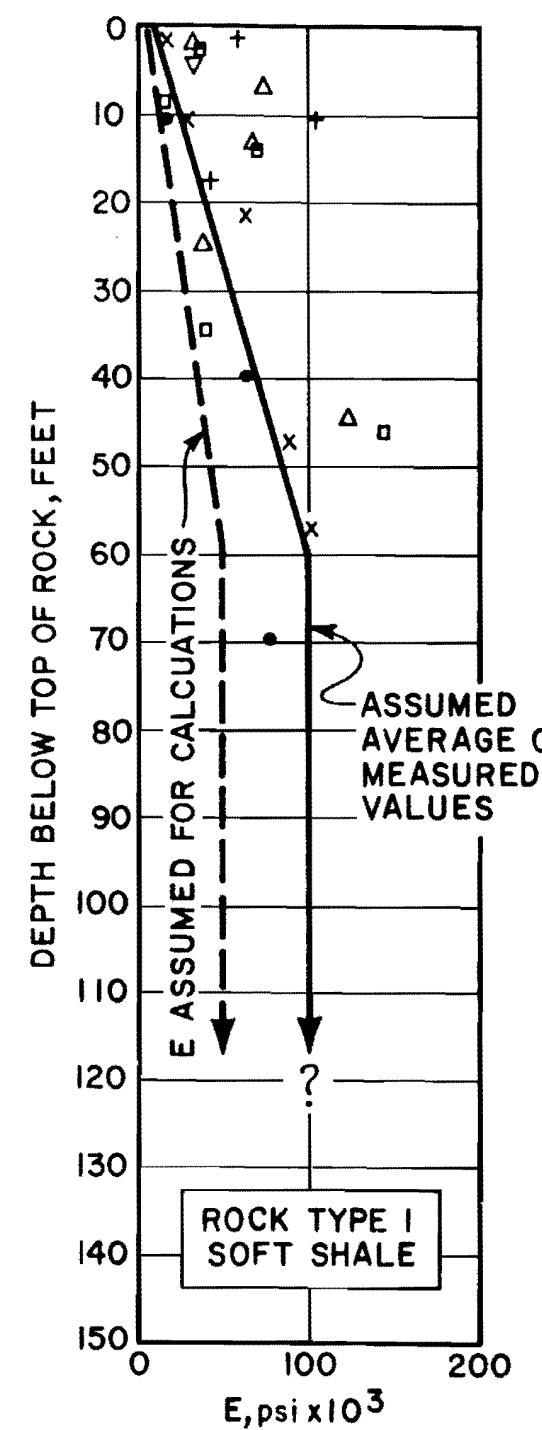


**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

LOCATION OF TEST HOLES

Figure 2.5-210

Figure 2.5-210 Location of Test Holes



**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**
**DEFORMATION MODULI FROM MENARD
PRESSUREMETER TESTS**
Figure 2.5-211

Figure 2.5-211 Deformation Moduli From Menard Pressuremeter Tests

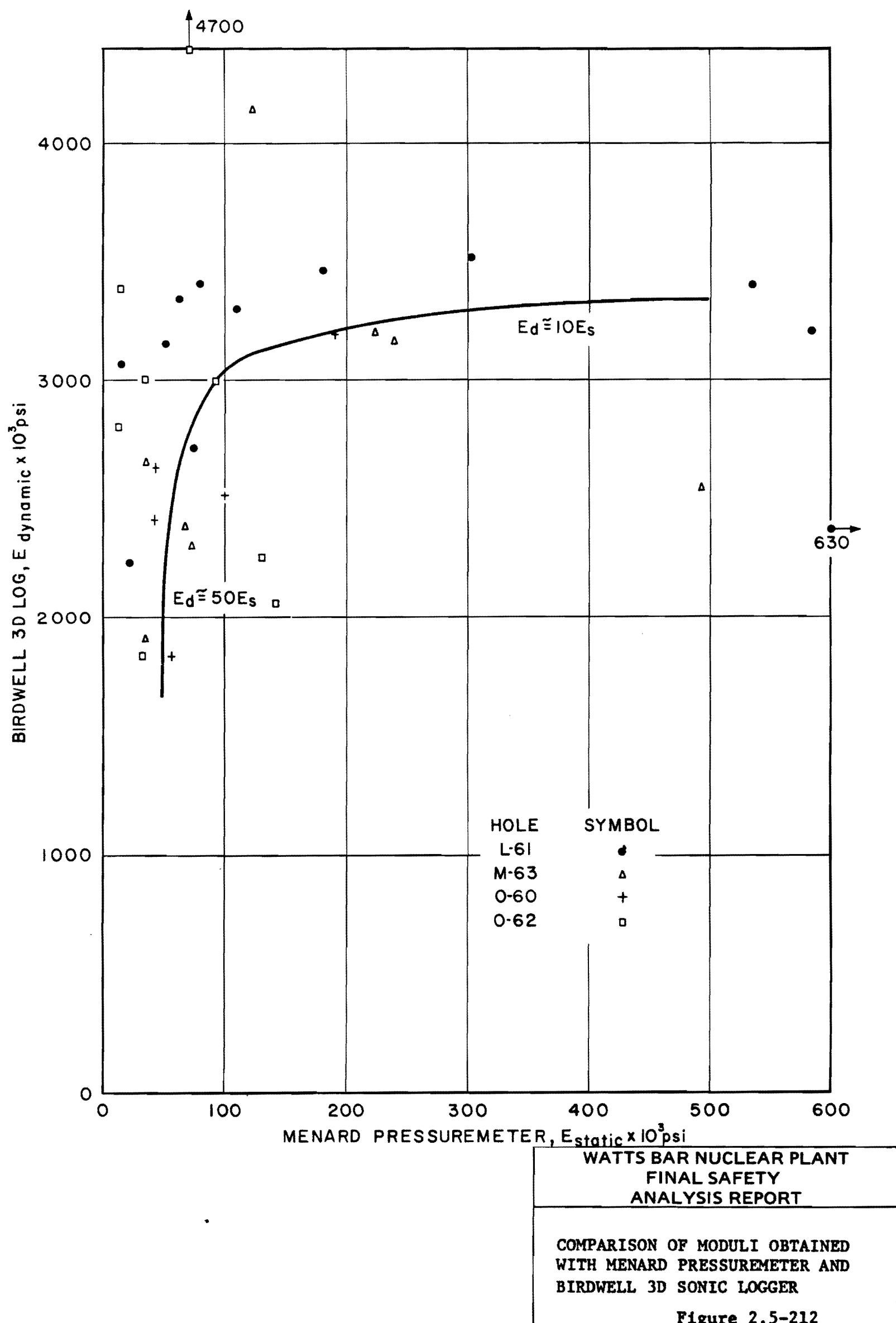
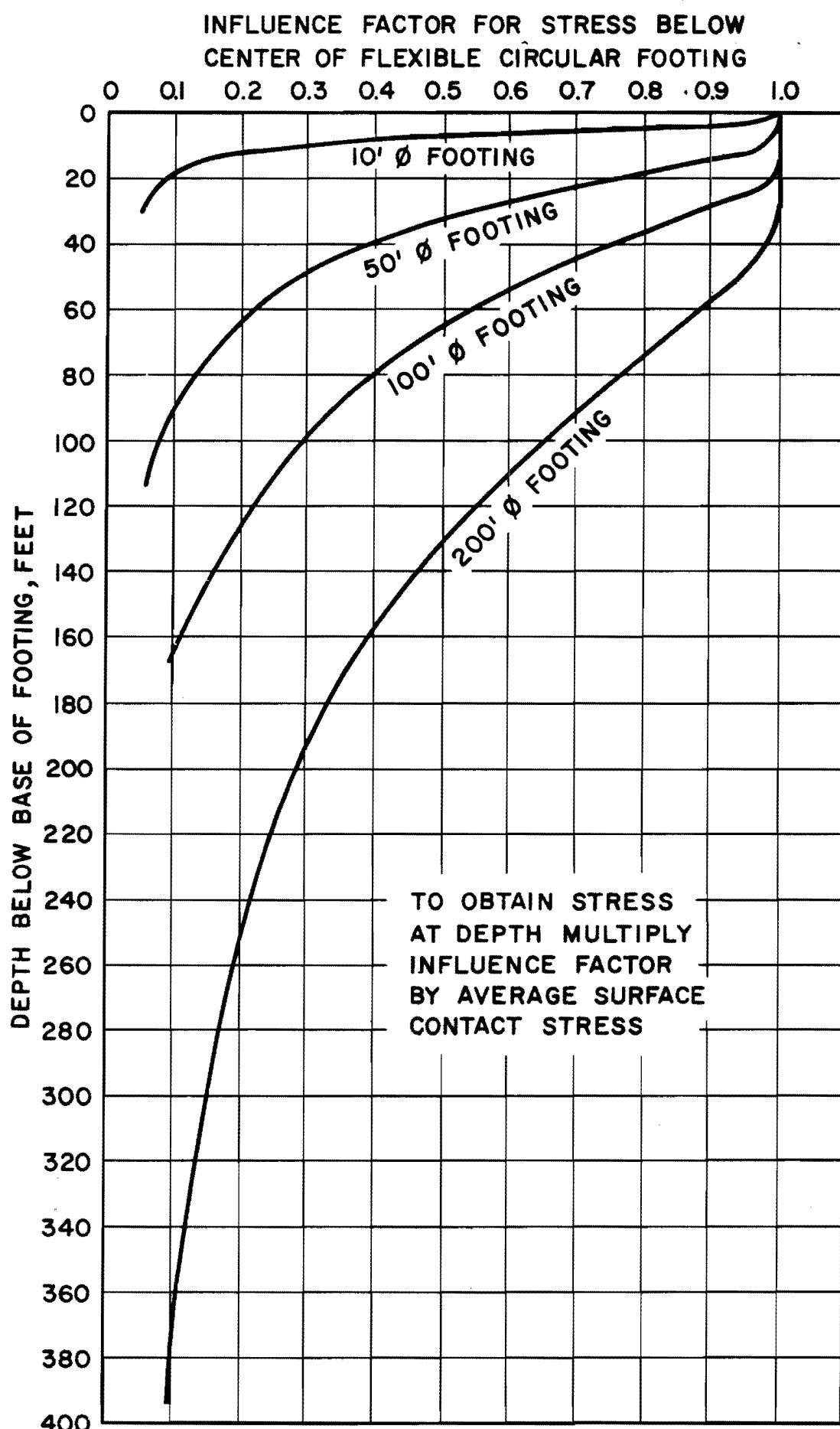
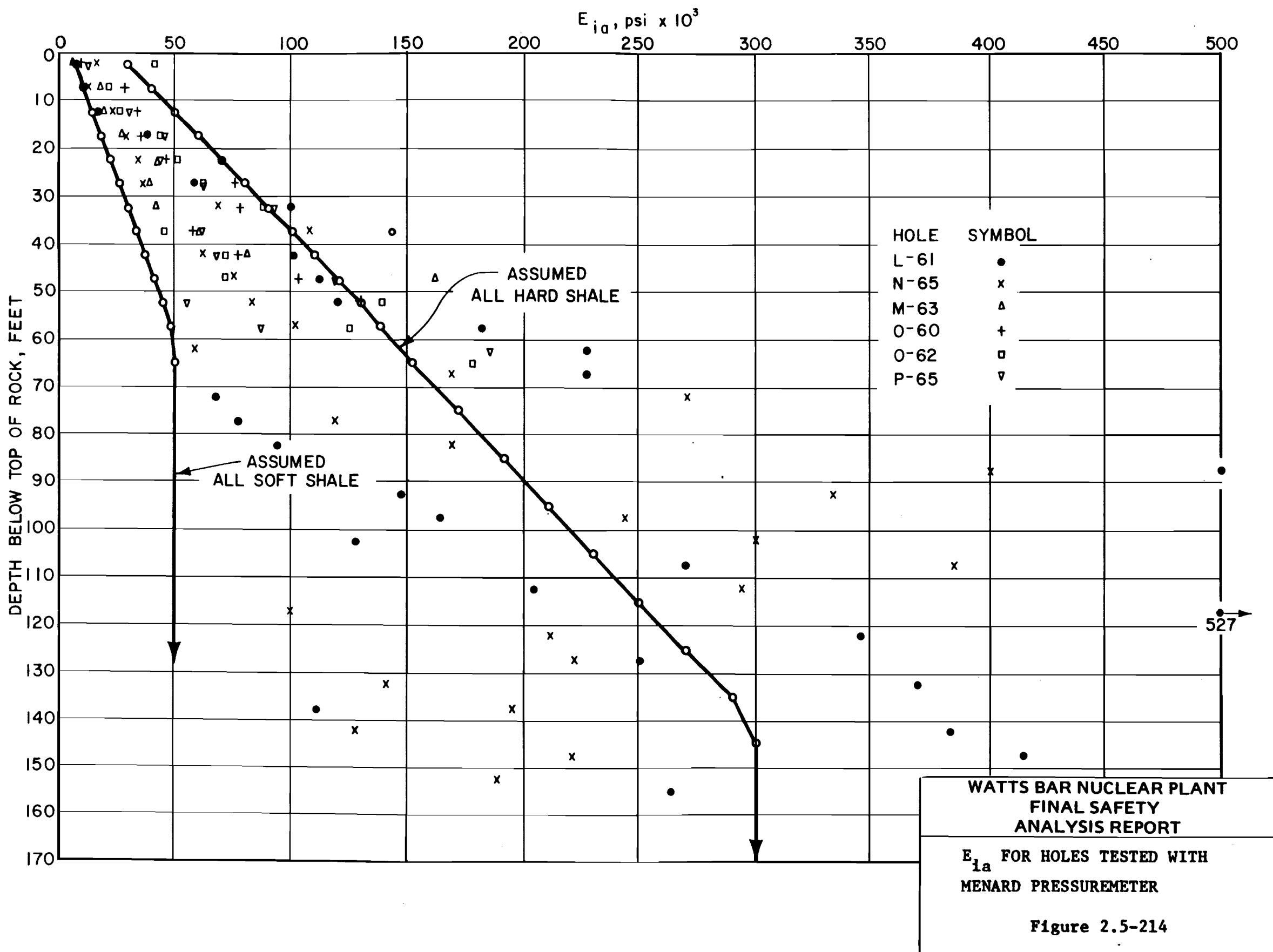


Figure 2.5-212 Comparison of Moduli Obtained With Menard Pressuremeter and Birdwell 3D Sonic Logger



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
INFLUENCE FACTORS FOR DETERMINING STRESSES BELOW THE CENTER OF FLEX- IBLE CIRCULAR FOOTING 10, 50, 100, AND 200 FT. IN DIAMETER
Figure 2.5-213

Figure 2.5-213 Influence Factors For Determining Stresses Below The Center of Flexible Circular Footing 10, 50, 100, and 200 Ft. in Diameter

Figure 2.5-214 E_{ia} For Holes Tested With Menard Pressuremeter

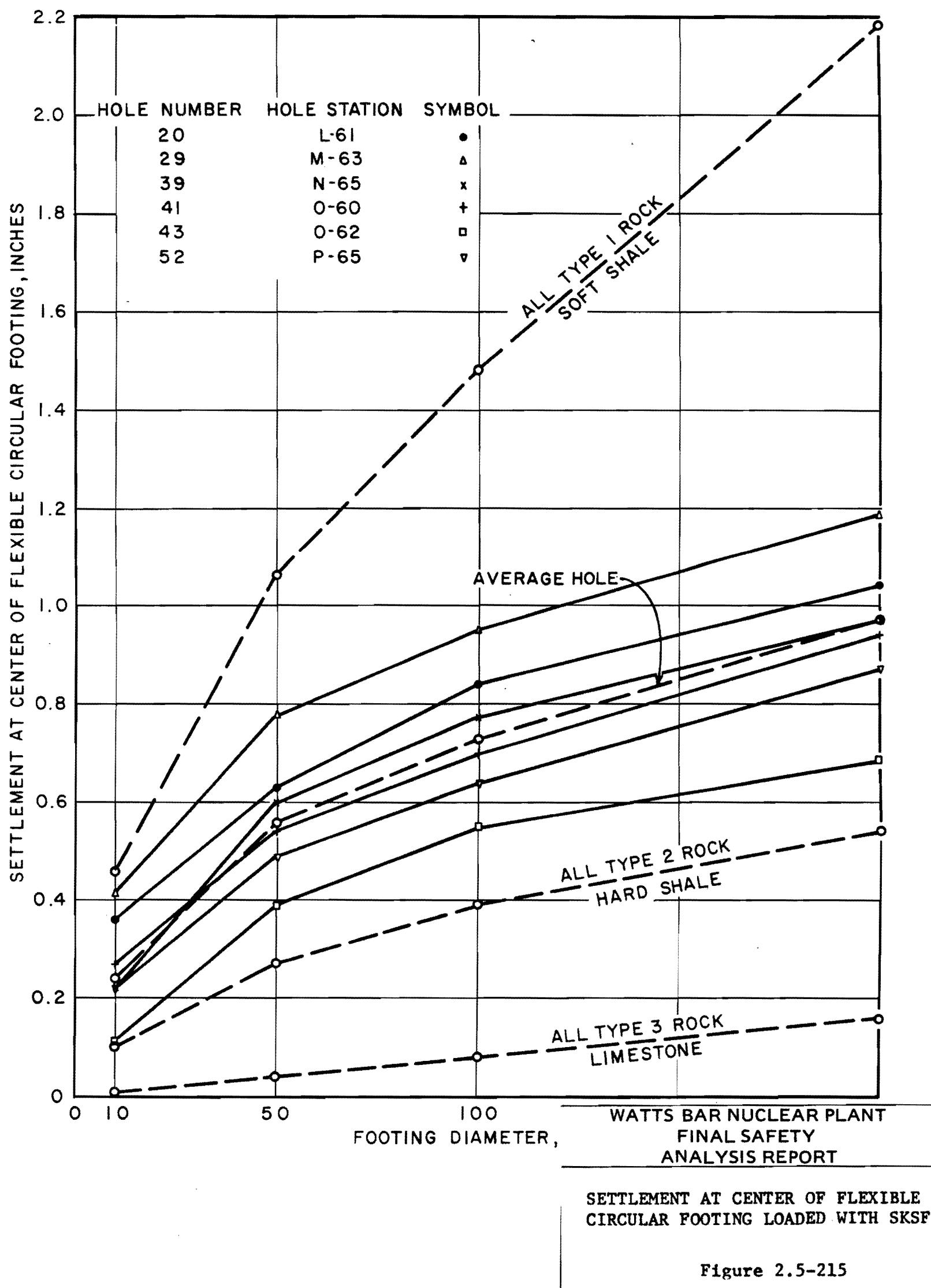
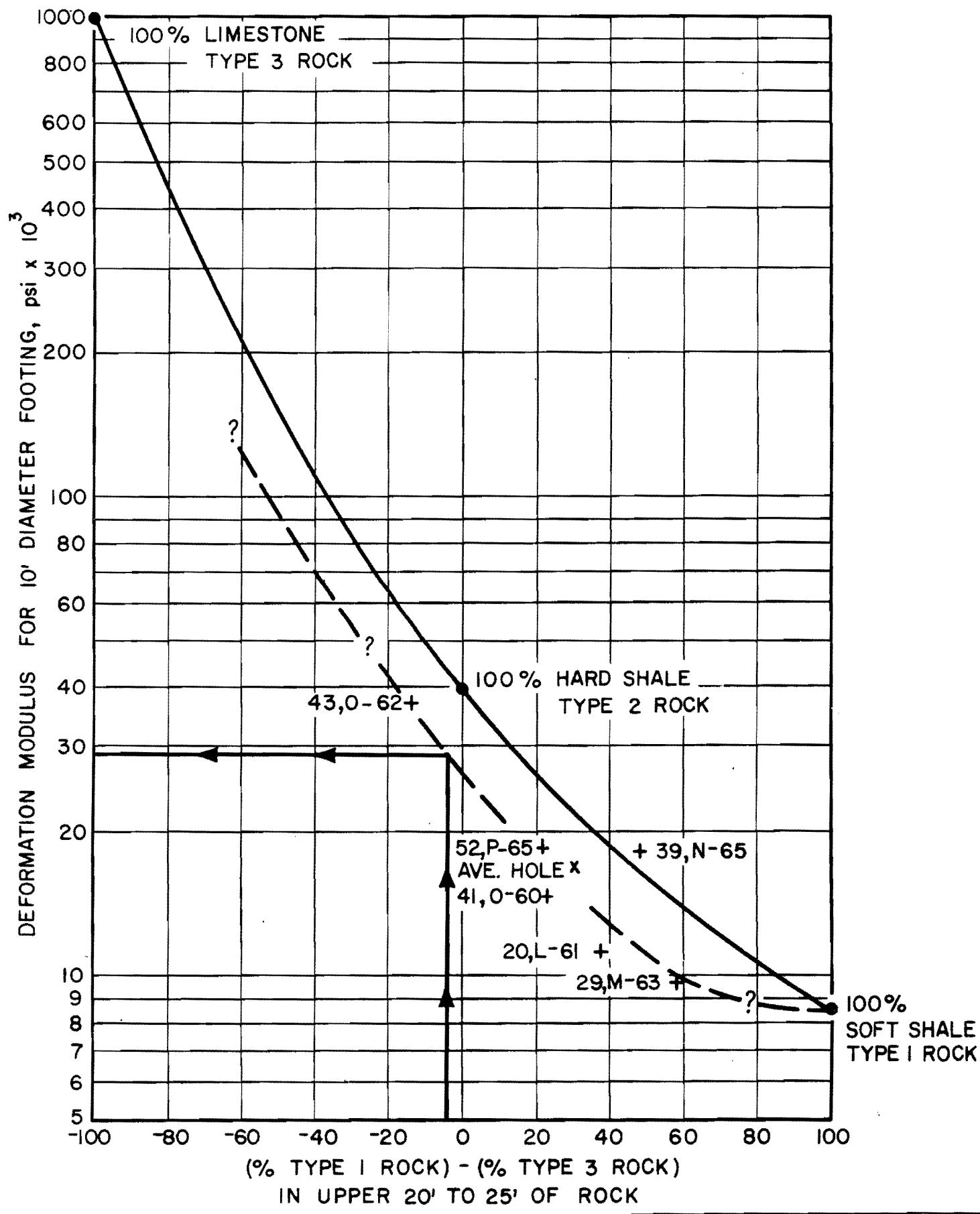


Figure 2.5-215 Settlement at Center of Flexible Circular Footing Loaded With SKSF

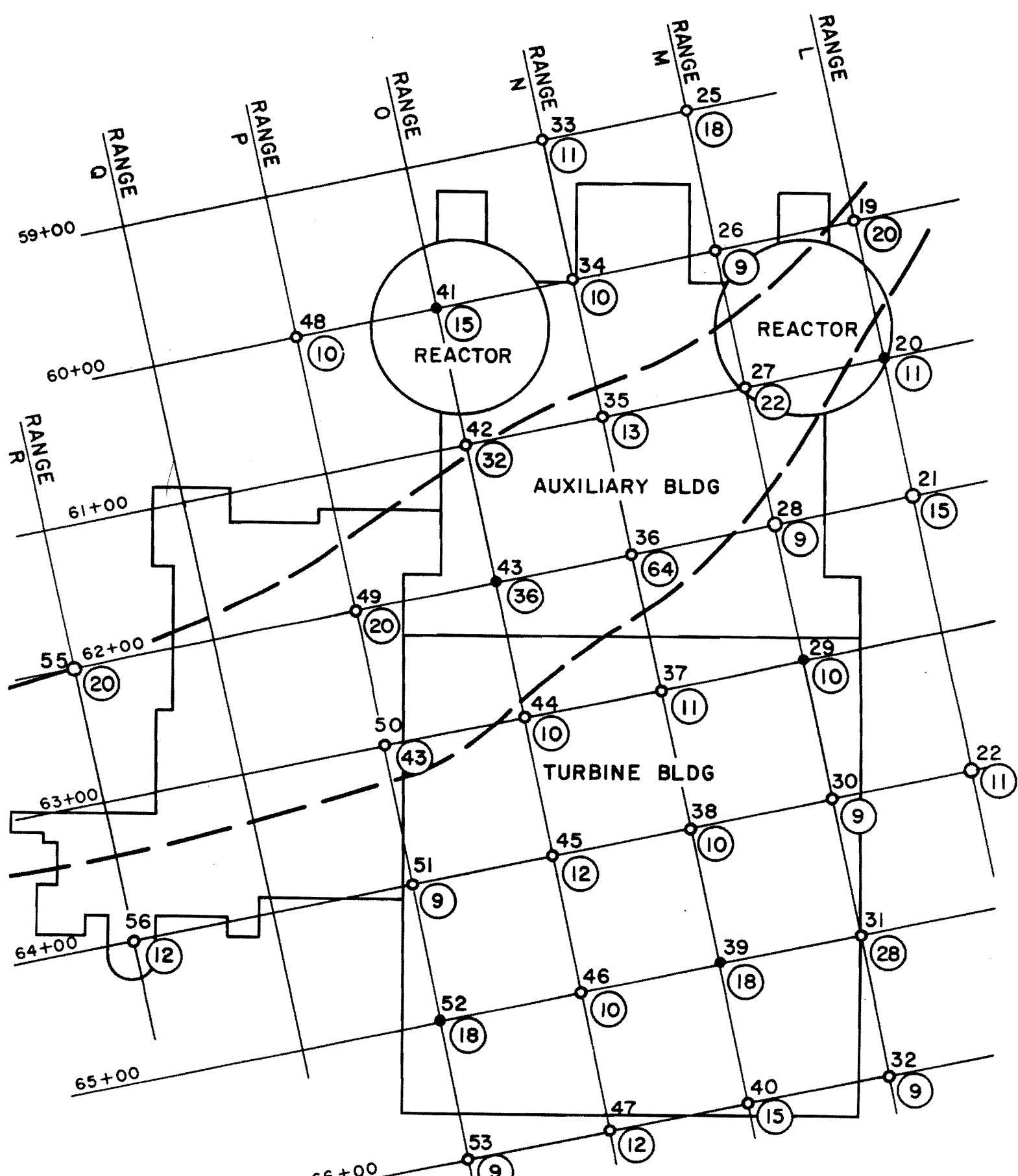


WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

CORRELATION USED TO ESTIMATE
AVERAGE MODULI FOR HOLES WHERE
DETAILED CALCULATIONS WERE NOT
MADE

Figure 2.5-216

Figure 2.5-216 Correlation Used To Estimate Average Moduli For Holes Where Detailed Calculations Were Not Made.



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

DISTRIBUTION OF DEFORMATION
MODULI FOR 10 FOOT DIAMETER
FOOTINGS

Figure 2.5-217

— — Approximate Limit of Zone of Higher
Modulus Surface Rock

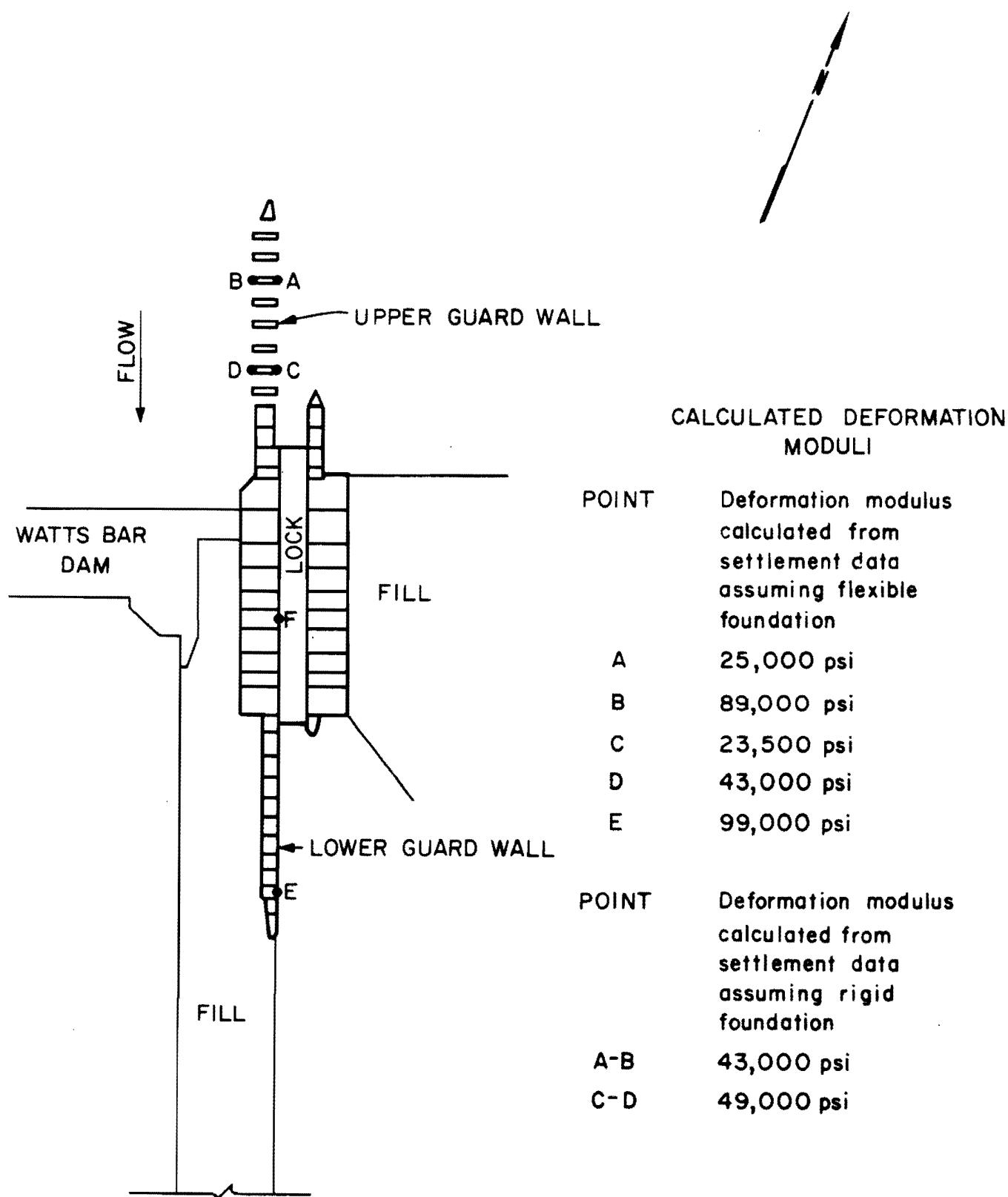
● 35 Hole Number

(13) Estimated Average Modulus for Top
20' of Rock, $\text{psi} \times 10^3$

● Hole Logged and Pressuremeter Tested

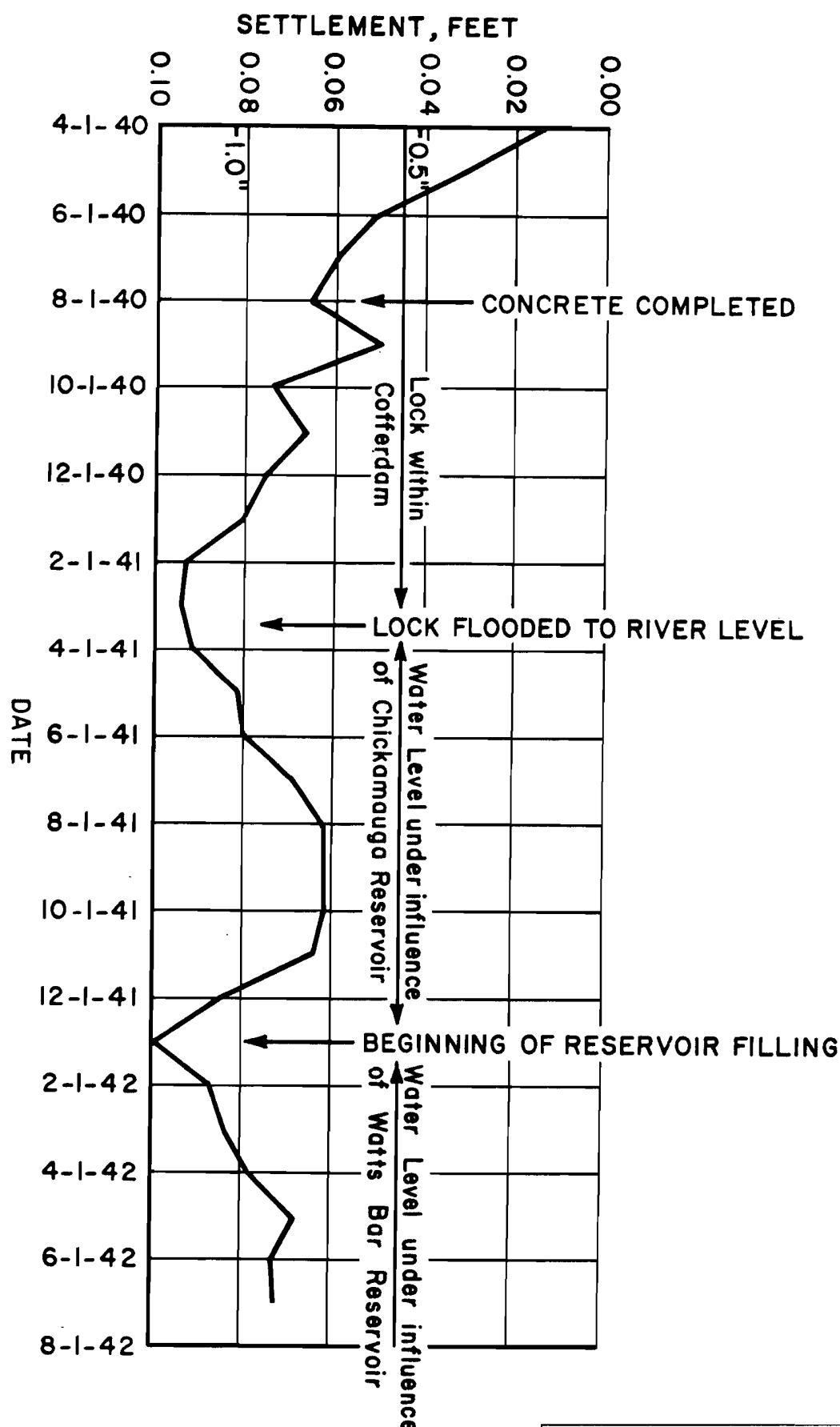
○ Hole Logged but not Pressuremeter Tested

Figure 2.5-217 Distribution of Deformation Moduli For 10 Foot Diameter Footings



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SIMPLIFIED PLAN OF LOCK FOUNDATION SHOWING LOCATION OF MODULUS CALCULATIONS
Figure 2.5-218

Figure 2.5-218 Simplified Plan of Lock foundation Showing Location of Modulus Calculations



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SETTLEMENT OF FACE OF BLOCK R-10 (Point F, fig. 16)
Figure 2.5-219

Figure 2.5-219 Settlement of Face of Block R-10 (Point F, fig. 16)

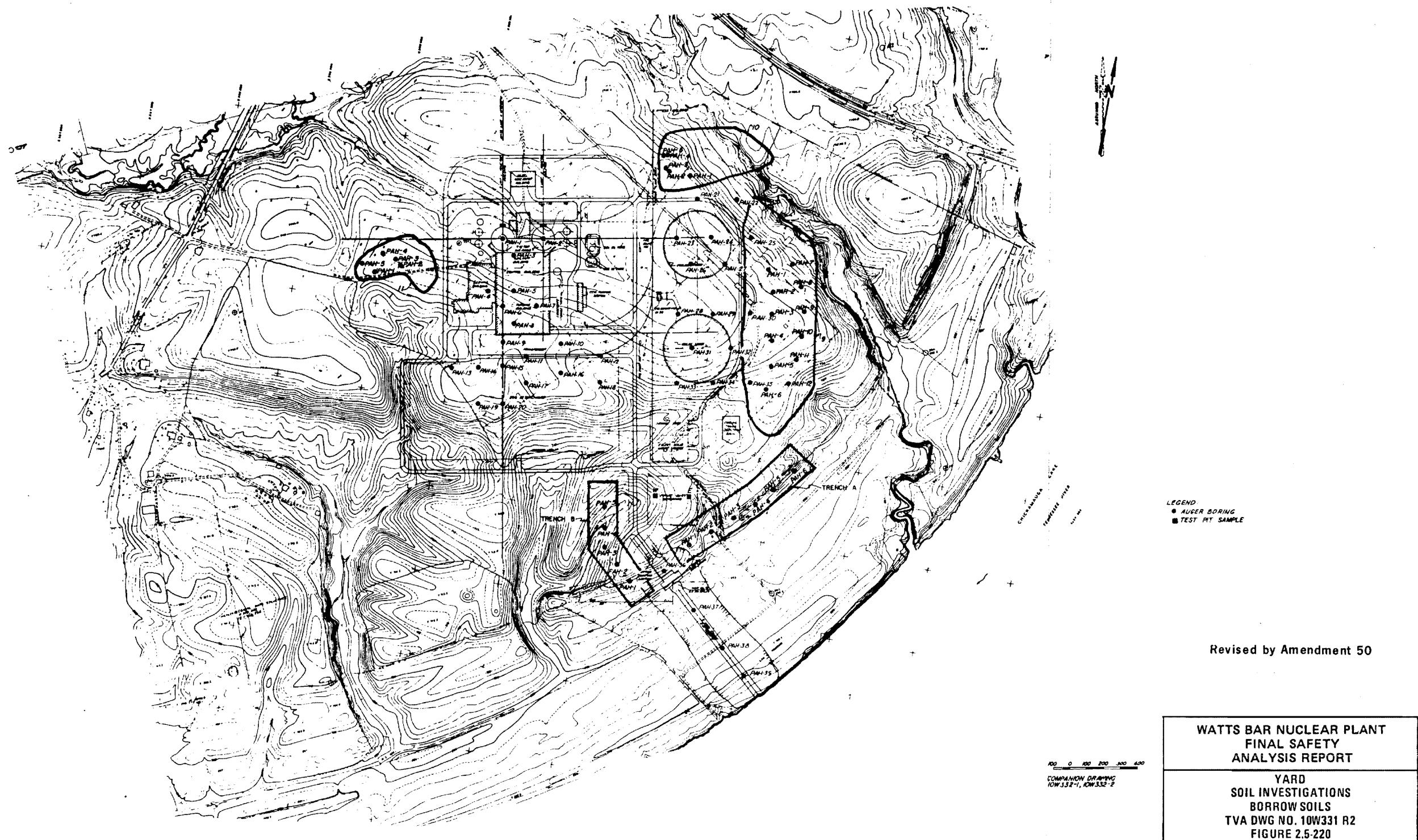


Figure 2.5-220 Yard Soil Investigations Borrow Soils

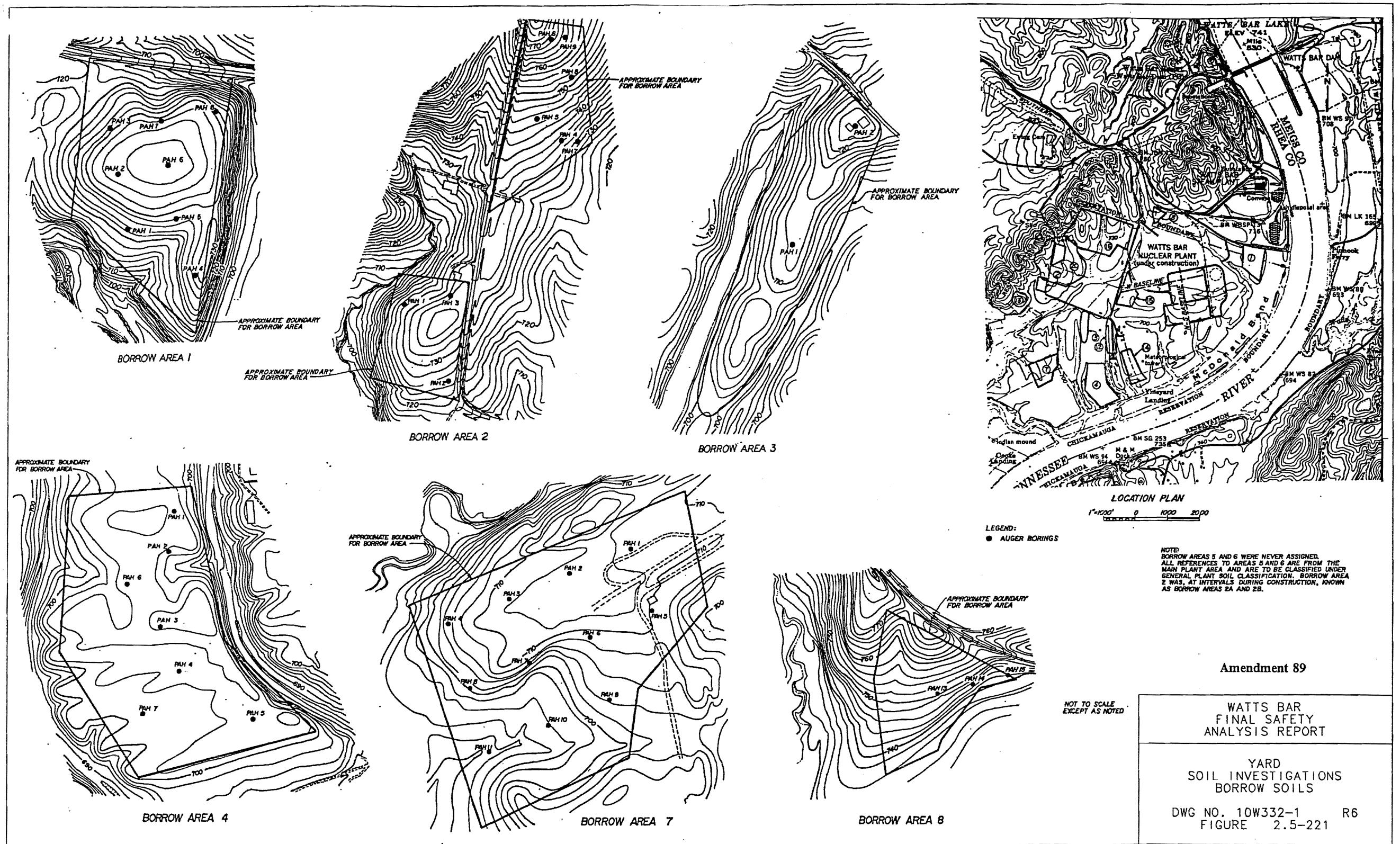


Figure 2.5-221 Yard Soil Investigations Borrow Soils

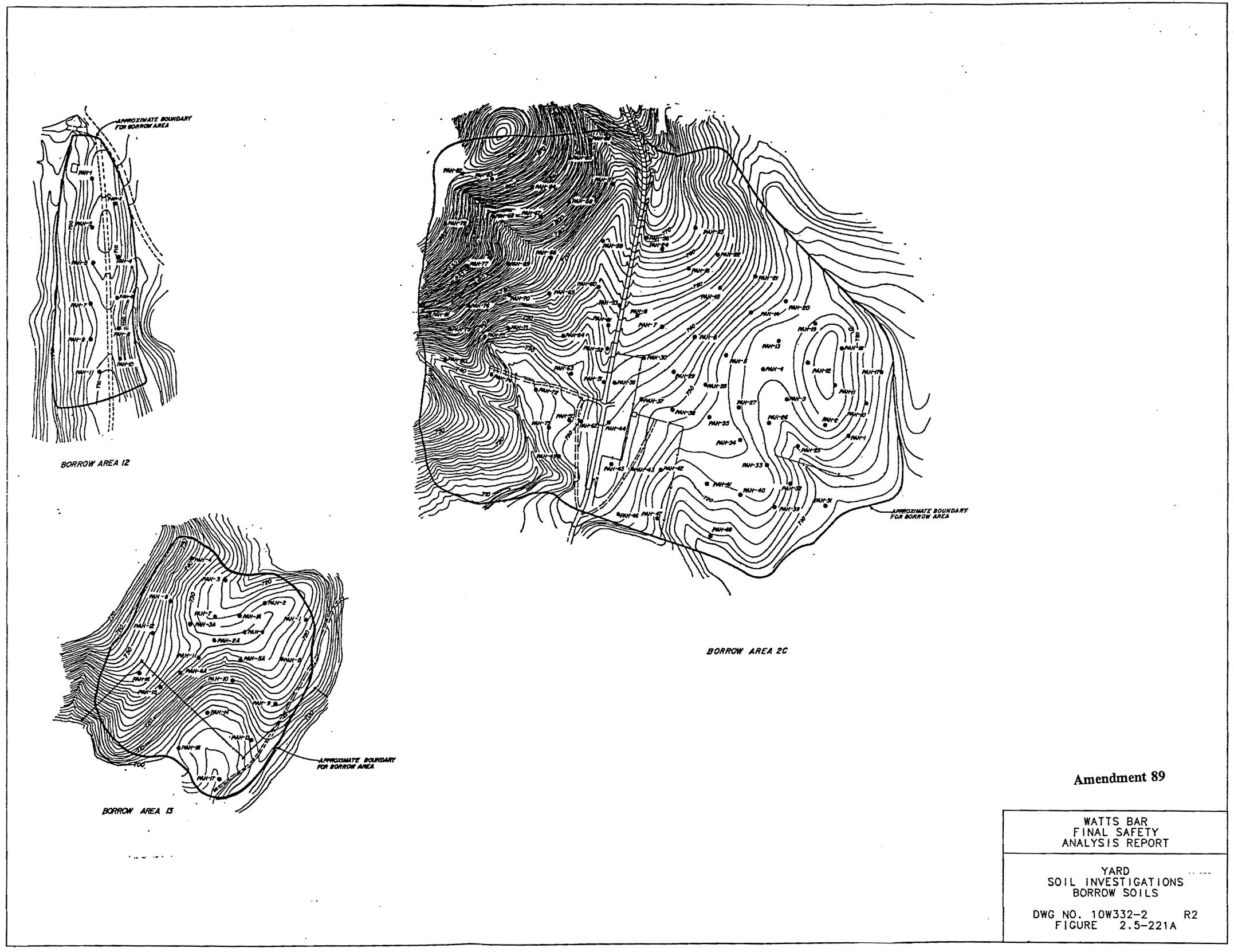


Figure 2.5-221a Yard Soil Investigations Borrow Soils

Figure 2.5-222 Borrow Investigation (Actual Figure Located in Oversized Figures File)

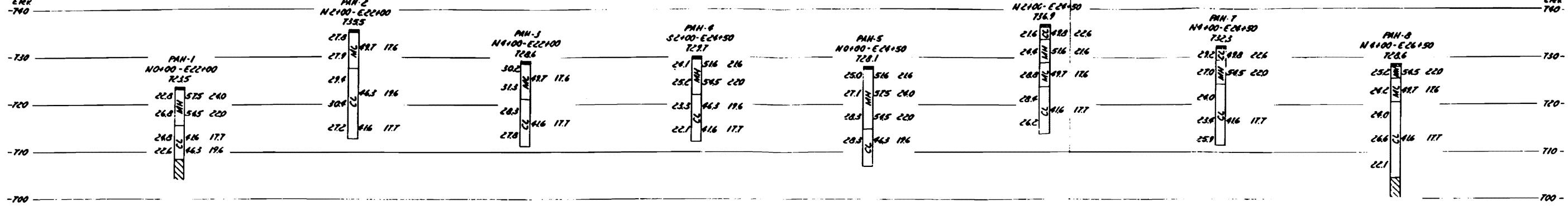
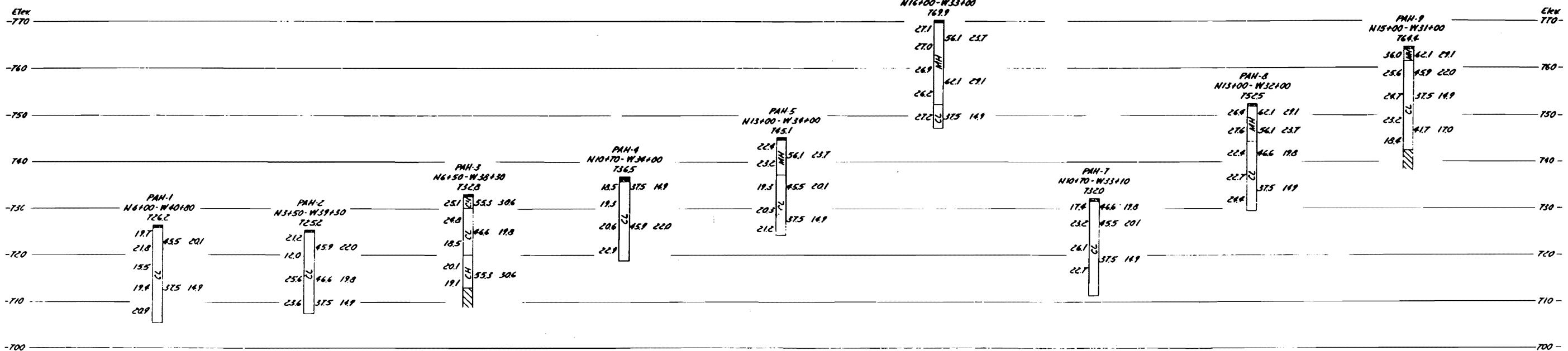
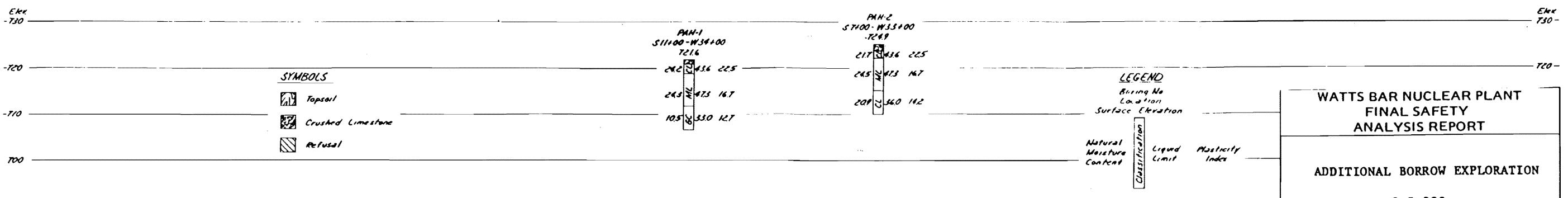
BORROW AREA 1BORROW AREA 2BORROW AREA 3

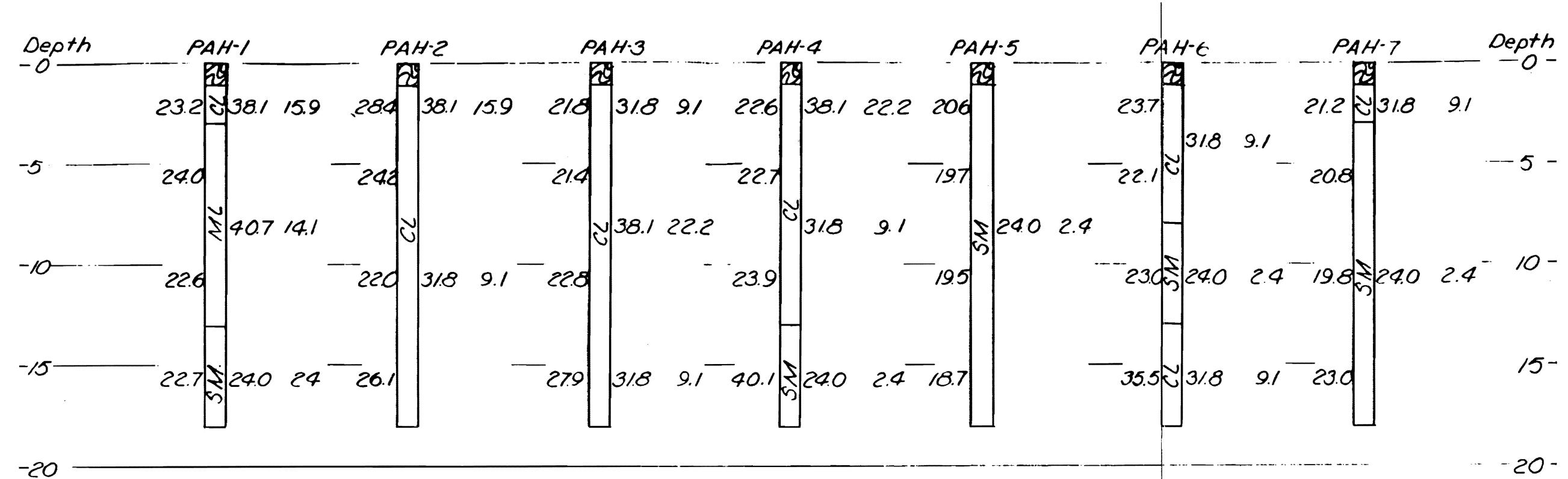
Figure 2.5-223 Additional Borrow Exploration

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ADDITIONAL BORROW EXPLORATION

Figure 2.5-223

Soil Classification	Natural Moisture Content	Liquid Limit	Plasticity Index
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SYMBOLS
Topsoil

LEGEND
Boring No.

Natural
Moisture
Content

Liquid
Limit

Plasticity
Index

CBR/CSS/PLC/LI

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ADDITIONAL BORROW AREA 4

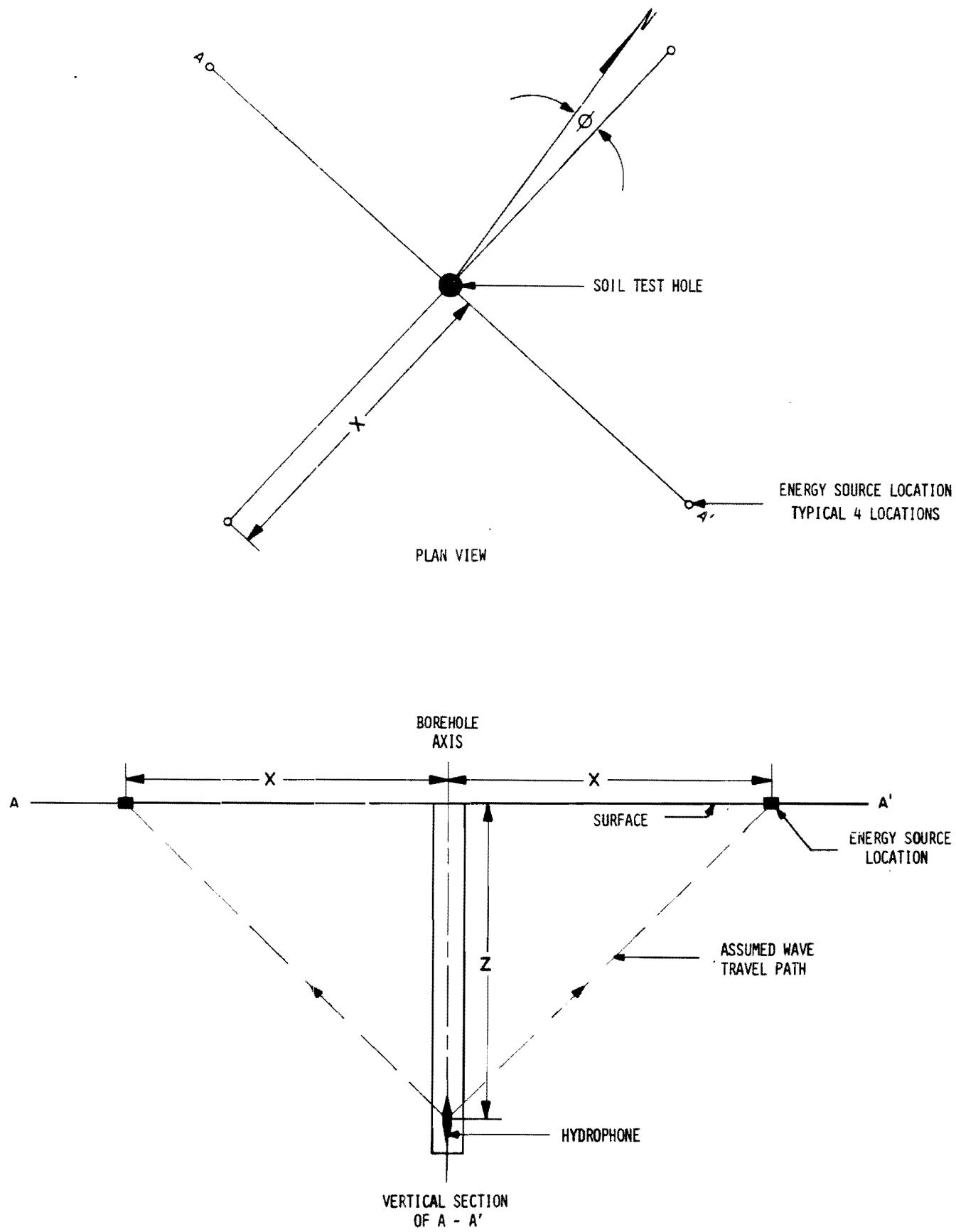
Figure 2.5-224

Figure 2.5-224 Additional Borrow Area 4

Figure 2.5-225 Main Plant Excavation & Backfill Category I Structures

Figure 2.5-226 Main Plant Excavation & Backfill Category I Structures

Figure 2.5-226a Excavation and Backfill Category I Structures

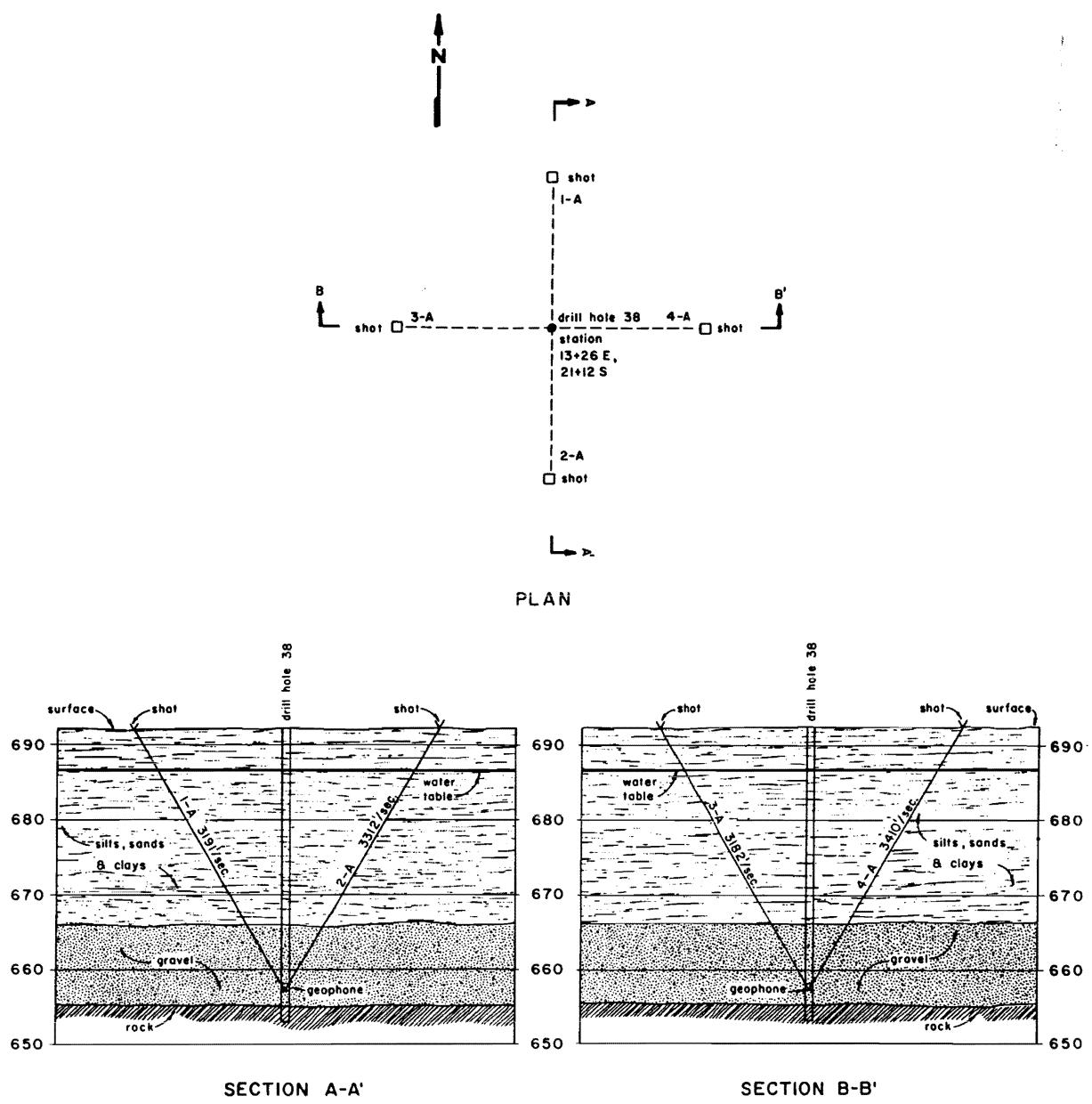
**NOTES:**

1. THIS DRAWING SHOWS A TYPICAL PLAN VIEW AND VERTICAL SECTION VIEW FOR ALL IN-SITU SOIL DYNAMIC MEASUREMENTS.
2. FOR DRILL HOLE LOCATIONS SEE FIGURE 2.5-185
3. COMPRESSIVE AND SHEAR WAVES WERE EITHER OBTAINED BY STRIKING A STEEL PLATE WITH A SLEDGEHAMMER OR BY EXPLDING TWO FEET OF PRIMACORD ONE FOOT BELOW GROUND.
4. FOR EACH BOREHOLE EITHER EXPLOSIVES OR SLEDGEHAMMER WAS USED AS THE ENERGY SOURCE. A SINGLE TYPE OF SOURCE WAS USED FOR EACH HOLE, AS CONDITIONS REQUIRED.
5. WHERE POSSIBLE, ENERGY SOURCE LOCATIONS ARE PLACED IN A 90° ARRAY AT HORIZONTAL DISTANCE X FROM BOREHOLE AND ORIENTED NORTH, SOUTH, EAST, AND WEST. OTHERWISE, THE WHOLE ARRAY MAY BE ROTATED ABOUT THE BOREHOLE AXIS BY THE ANGLE ϕ ABOVE.

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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**TYPICAL IN-SITU SOIL DYNAMICS
MEASUREMENT LAYOUT & SECTION
Figure 2.5-227**

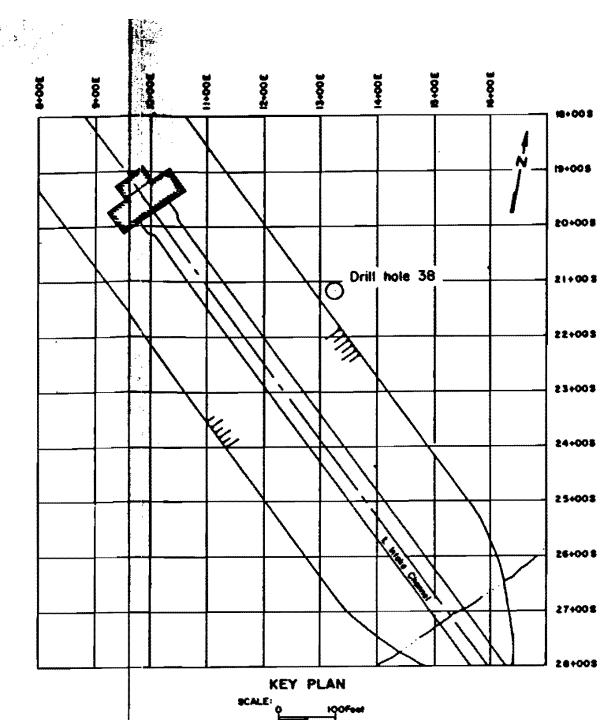
Figure 2.5-227 Typical In-Situ Soil Dynamics Measurements Layout & Section



SEISMIC LINE NUMBER	SEISMIC PATH DISTANCE (FEET)	COMPRESSIVE VELOCITY FT./SEC. MEASURED	SHEAR VELOCITY FT./SEC. CALCULATED	DENSITY LBS./CU.FT. ASSUMED	POISSON'S RATIO ASSUMED	DYNAMIC SHEAR MODULUS PSI X 10 ³ CALCULATED	DYNAMIC YOUNG'S MODULUS PSI X 10 ³ CALCULATED
1 - A	40.31	3191	962	90	0.45	17.97	52.11
2 - A	40.31	3312	999	90	0.45	19.36	56.13
3 - A	40.31	3182	959	90	0.45	17.87	51.81
4 - A	40.31	3410	1028	90	0.45	20.52	59.50
AVERAGE	40.31	3274	987	90	0.45	18.28	54.85

NOTES:

1. THE LINES ON THE SECTIONS BETWEEN SHOT POINTS AND GEOPHONE LOCATIONS INDICATE ONLY THE TRAVEL DIRECTION OF COMPRESSIVE WAVES.
2. THE TYPES OF SOILS ARE BASED ON GENERAL SOIL DATA OBTAINED FROM THE CONSTRUCTION SERVICES BRANCH.
3. THE EQUIPMENT USED IN MAKING THE TIME MEASUREMENTS CONSISTED OF A BISON SEISMOGRAPH 1570B AND RECORDER 1540, AND A HALL SEARS GEOPHONE MP-8.
4. USING ALL 4 SEISMIC LINES THE SHEAR MODULUS WITH A 67% CONFIDENCE INTERVAL IS 17.670 PSI TO 20.180 PSI AND WITH A 90% CONFIDENCE INTERVAL IT IS 16.410 PSI TO 21.440 PSI.

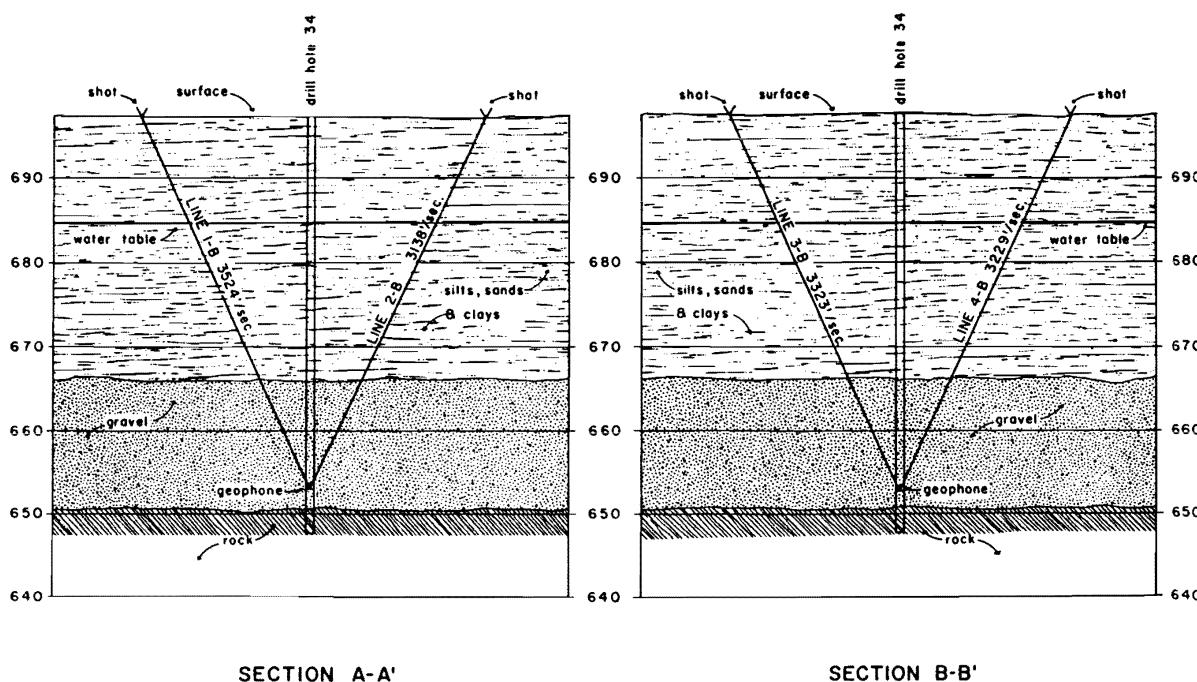
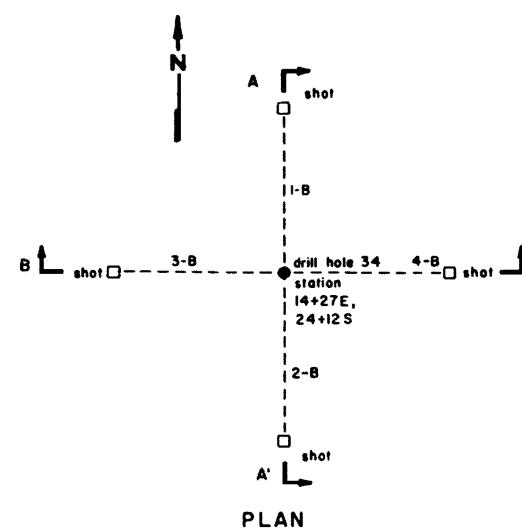


WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL DYNAMICS INTAKE CHANNEL STATION 13 + 26E, 21 + 12S

Figure 2.5-228

SCALE:
0 100 0 100 0 100 Feet

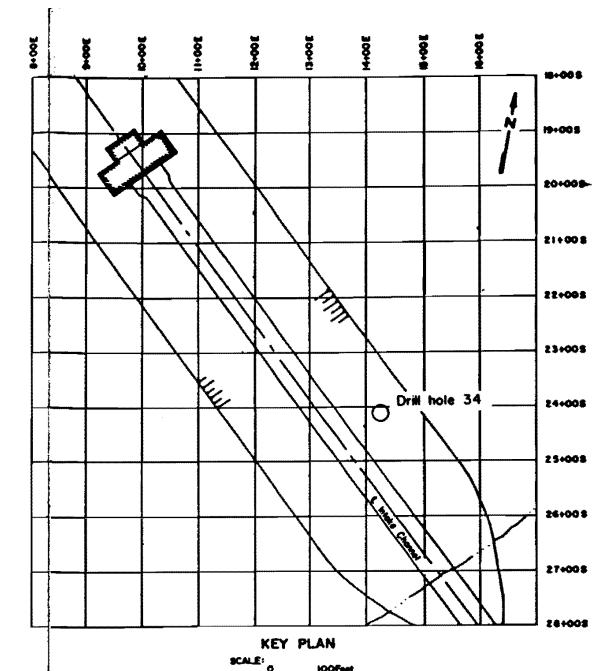
Figure 2.5-228 Soil Dynamics Intake Channel Station 13 + 26E, 21 + 12S



SEISMIC LINE NUMBER	SEISMIC PATH DISTANCE (FEET)	COMPRESSIVE VELOCITY FT./SEC. MEASURED	SHEAR VELOCITY FT./SEC. CALCULATED	DENSITY LBS/CU.FT. ASSUMED	POISSON'S RATIO ASSUMED	DYNAMIC SHEAR MODULUS PSI X 10 ³ CALCULATED	DYNAMIC YOUNG'S MODULUS PSI X 10 ³ CALCULATED
1 - B	49.24	3524	1062	90	0.45	21.91	63.55
2 - B	49.24	3138	946	90	0.45	17.38	50.39
3 - B	49.24	3323	1002	90	0.45	19.48	56.51
4 - B	49.24	3229	973	90	0.45	18.39	53.35
AVERAGE	49.24	3303	996	90	0.45	19.25	55.83

NOTES:

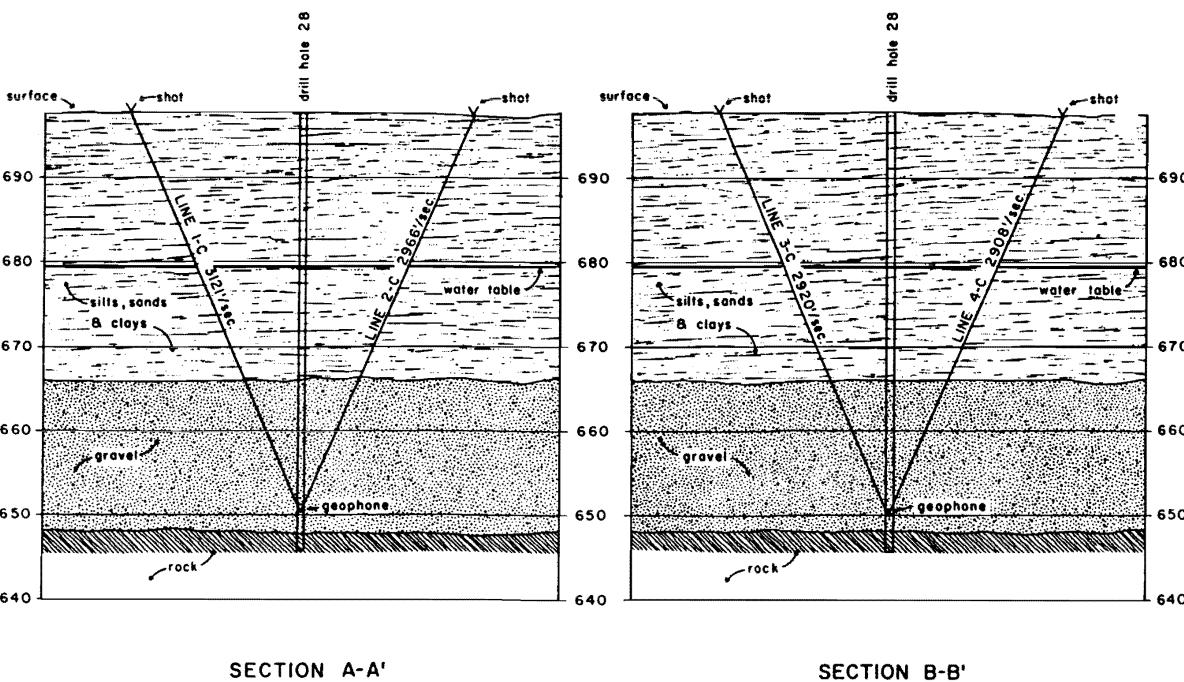
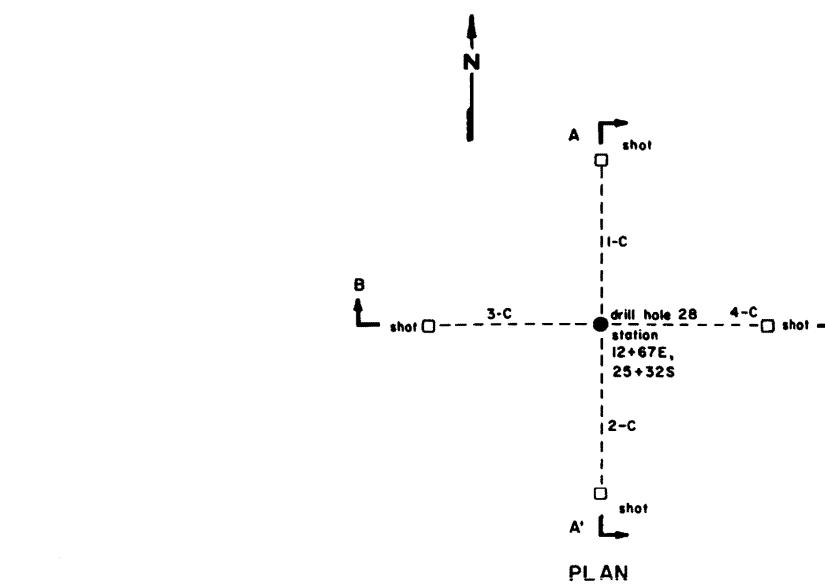
1. THE LINES ON THE SECTIONS BETWEEN SHOT POINTS AND GEOPHONE LOCATIONS INDICATE ONLY THE TRAVEL DIRECTION OF COMPRESSIVE WAVES.
2. THE TYPES OF SOILS ARE BASED ON GENERAL SOIL DATA OBTAINED FROM THE CONSTRUCTION SERVICES BRANCH.
4. THE EQUIPMENT USED IN MAKING THE TIME MEASUREMENTS CONSISTED OF A BISON SEISMOMETER 1570B AND RECORDER 1540, AND A HALL SEARS GEOPHONE MP-8.
5. USING ALL 4 SEISMIC LINES THE SHEAR MODULUS WITH A 67% CONFIDENCE INTERVAL IS 17,340 PSI TO 21,230 PSI AND WITH A 90% CONFIDENCE INTERVAL IT IS 15,390 PSI TO 23,180 PSI.



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL DYNAMICS INTAKE CHANNEL STATION 14 + 27E, 24 + 12S

Figure 2.5-229

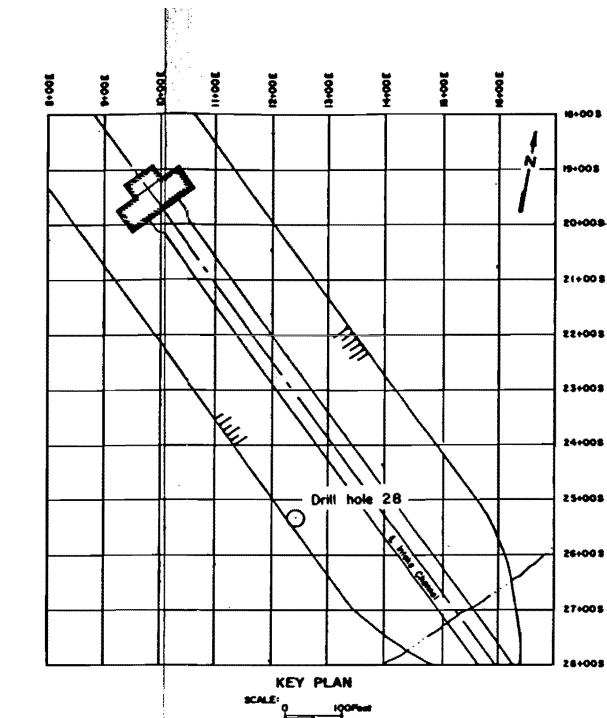
Figure 2.5-229 Soil Dynamics Intake Channel Station 14 + 27E, 24 + 12S



SEISMIC LINE NUMBER	SEISMIC PATH DISTANCE (FEET)	COMPRESSIVE VELOCITY FT./SEC. MEASURED	SHEAR VELOCITY FT./SEC. CALCULATED	DENSITY LBS/CU.FT. ASSUMED	POISSON'S RATIO ASSUMED	DYNAMIC SHEAR MODULUS PSI X 10 ³ CALCULATED	DYNAMIC YOUNG'S MODULUS PSI X 10 ³ CALCULATED
1 - C	52.0	3121	941	90	0.45	17.19	49.84
2 - C	52.0	2966	894	90	0.45	15.52	45.02
3 - C	52.0	2920	880	90	0.45	15.35	43.63
4 - C	52.0	2908	877	90	0.45	14.92	43.27
AVERAGE	52.0	2979	898	90	0.45	15.66	45.41

NOTES:

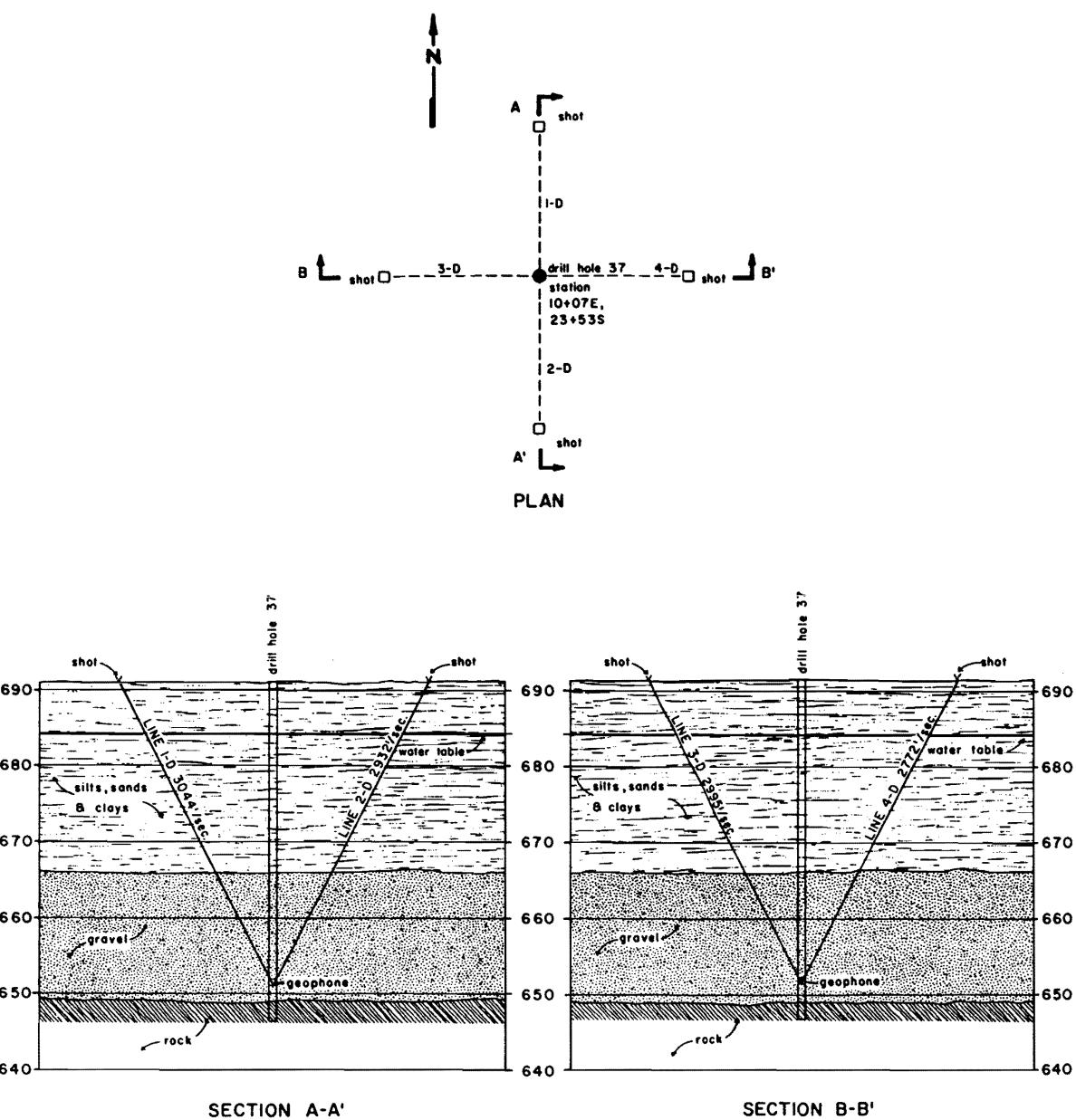
1. THE LINES ON THE SECTIONS BETWEEN SHOT POINTS AND GEOPHONE LOCATIONS INDICATE ONLY THE TRAVEL DIRECTION OF COMPRESSIVE WAVES.
2. THE TYPES OF SOILS ARE BASED ON GENERAL SOIL DATA OBTAINED FROM THE CONSTRUCTION SERVICES BRANCH.
4. THE EQUIPMENT USED IN MAKING THE TIME MEASUREMENTS CONSISTED OF A BISON SEISMOGRAPH 1570B AND RECORDER 1540, AND A HALL SEARS GEOPHONE MP-8.
5. USING ALL 4 SEISMIC LINES THE SHEAR MODULUS WITH A 67% CONFIDENCE INTERVAL IS 14,620 PSI TO 16,710 PSI AND WITH A 90% CONFIDENCE INTERVAL IT IS 13,570 PSI TO 17,760 PSI.



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL DYNAMICS INTAKE CHANNEL STATION 12 + 67E, 25 + 32S	

Figure 2.5-230

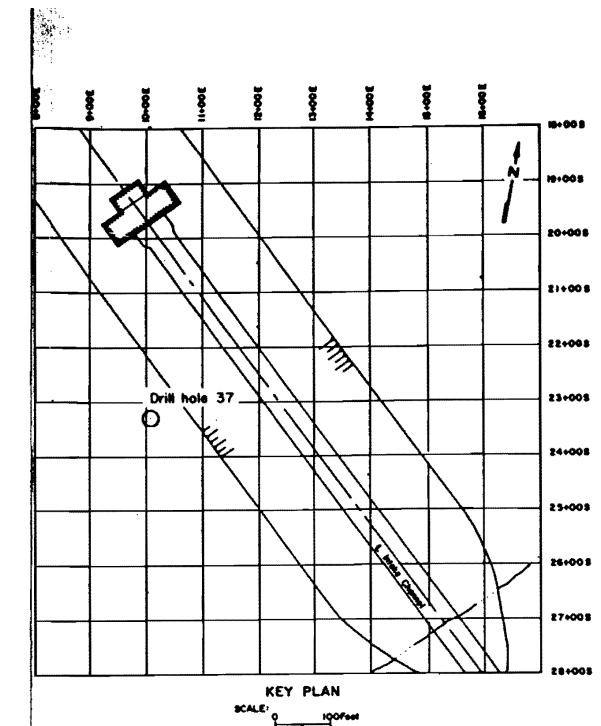
Figure 2.5-230 Soil Dynamics Intake Channel Station 12 + 67E, 25 + 32S



SEISMIC LINE NUMBER	SEISMIC PATH DISTANCE (FEET)	COMPRESSIVE VELOCITY FT./SEC. MEASURED	SHEAR VELOCITY FT./SEC. CALCULATED	DENSITY LBS/CU.FT. ASSUMED	POISSON'S RATIO ASSUMED	DYNAMIC SHEAR MODULUS PSI X 10 ³ CALCULATED	DYNAMIC YOUNG'S MODULUS PSI X 10 ³ CALCULATED
1 - u	44.72	3044	918	90	0.45	16.35	47.42
2 - D	44.72	2932	884	90	0.45	15.17	43.99
3 - D	44.72	2995	903	90	0.45	15.83	45.90
4 - D	44.72	2772	836	90	0.45	13.56	39.32
AVERAGE	44.72	2936	885	90	0.45	15.21	44.11

NOTES:

1. THE LINES ON THE SECTIONS BETWEEN SHOT POINTS AND GEOPHONE LOCATIONS INDICATE ONLY THE TRAVEL DIRECTION OF COMPRESSIVE WAVES.
2. THE TYPES OF SOILS ARE BASED ON GENERAL SOIL DATA OBTAINED FROM THE CONSTRUCTION SERVICES BRANCH.
4. THE EQUIPMENT USED IN MAKING THE TIME MEASUREMENTS CONSISTED OF A BISON SEISMOGRAPH 1570B AND RECORDER 1540, AND A HALL SEARS GEOPHONE MP-8.
5. USING ALL 4 SEISMIC LINES THE SHEAR MODULUS WITH A 67% CONFIDENCE INTERVAL IS 14,010 PSI TO 16,430 PSI AND WITH A 90% CONFIDENCE INTERVAL IT IS 12,800 PSI TO 17,650 PSI.

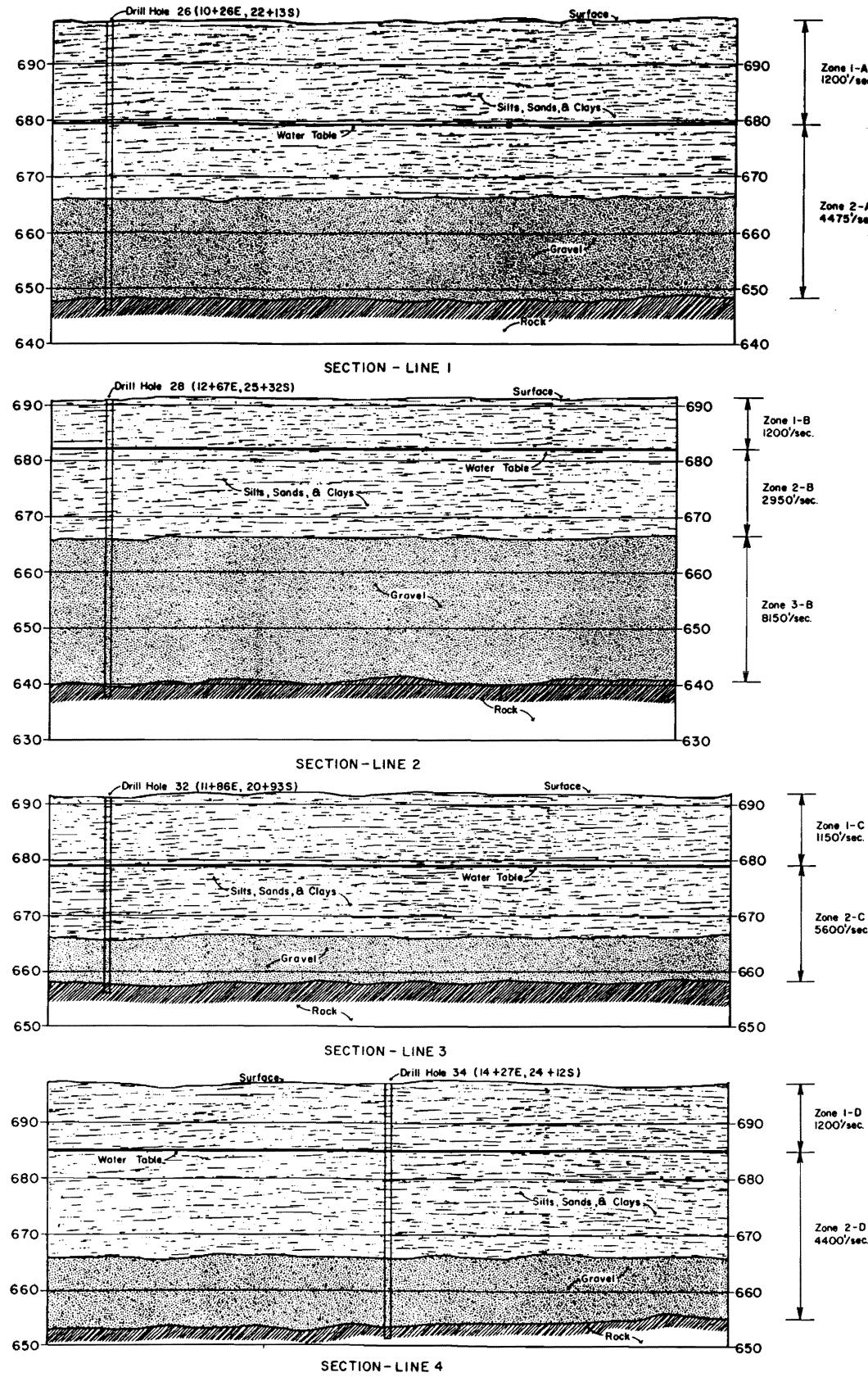


**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL DYNAMICS INTAKE CHANNEL
STATION 10 + 07E, 23 + 53S**

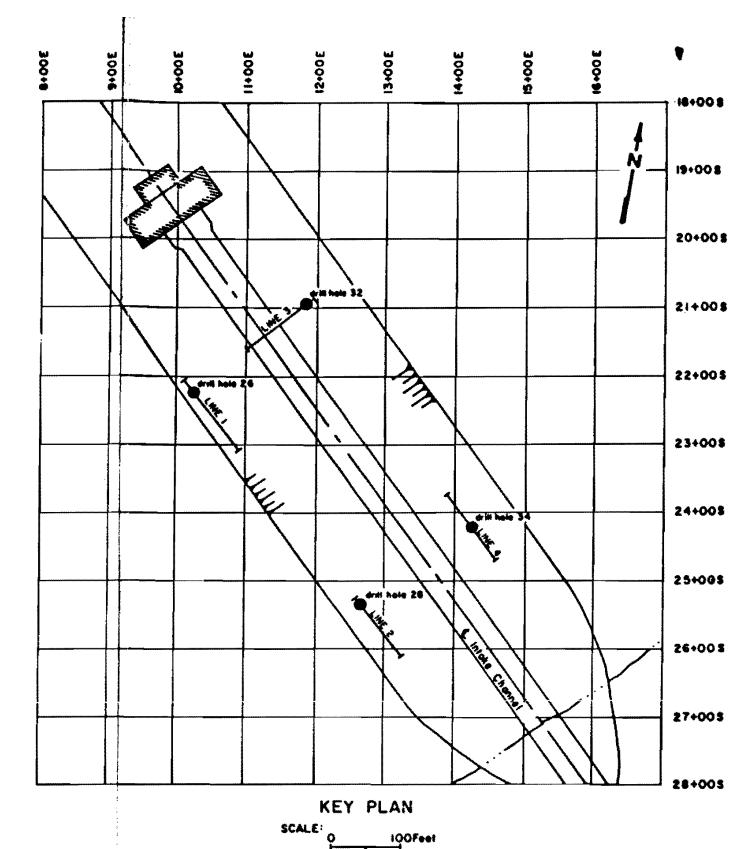
Figure 2.5-231

Figure 2.5-231 Soil Dynamics Intake Channel Station 10 + 07E, 23 + 53S



NOTES:

1. THE TYPES OF SOILS ARE BASED ON GENERAL SOIL DATA OBTAINED FROM THE CONSTRUCTION SERVICES BRANCH.
2. THE EQUIPMENT USED IN MAKING THE REFRACTION SURVEY CONSISTED OF A BISON SEISMOGRAPH 15708 AND RECORDER 1540.
3. THE REFRACTED COMPRESSIONAL VELOCITY OF 8150'/SEC. FOR LINE 2 IS ABNORMALLY HIGH FOR SATURATED GRAVELS. THIS VELOCITY IS NOT COMPATABLE WITH THE UP-HOLE SEISMIC VELOCITY MEASUREMENTS AND DOES NOT COMPARE FAVORABLE WITH LINES 1, 3 AND 4.
4. THE SOIL VELOCITIES BELOW THE WATER TABLE DO NOT DIFFERENTIATE BETWEEN SILTS AND GRAVELS. THIS MAY BE THE RESULT OF THE GRADATIONAL NATURE OF THE SOIL.
5. REFRACTED SHEAR VELOCITIES FOR ZONES 1 AND 2 ALONG LINES 1, 3 AND 4 WERE OBTAINED.
6. THE REFRACTION SEISMIC LINES WERE SURVEYED IN TWO DIRECTIONS WITH APPARENT VELOCITIES BEING AVERAGED FOR EACH LINE.

SEISMIC REFRACTION LINES
SOIL DYNAMIC PROPERTIES

SEISMIC REFRACTION LINE	VELOCITY ZONES ELEVATIONS	COMPRESSIVE VELOCITY FT./SEC. MEASURED	SHEAR VELOCITY FT./SEC.	DENSITY LBS./CU. FT. ASSUMED	POISSON'S RATIO CALCULATED	DYNAMIC YOUNG'S MODULUS PSI X 10 ³ CALCULATED
LINE 1	697 - 679 679 - 648	1200 4750	545 MEASURED 1150 MEASURED	90 90	0.37 0.46	5.77 32.44
LINE 2	691 - 682 682 - 666 666 - 640	1200 2950 8150	545 CALCULATED 803 CALCULATED 2218 CALCULATED	90 90 90	0.37 0.46 0.46	5.77 12.51 95.50
LINE 3	691 - 679 679 - 658	1150 5600	522 MEASURED 1524 MEASURED	90 90	0.37 0.46	5.29 45.09
LINE 4	697 - 685 685 - 654	1200 4400	545 MEASURED 1150 MEASURED	90 90	0.37 0.46	5.77 25.67

DYNAMIC SHEAR MODULUS
SEISMIC LINES 1, 3 AND 4
STANDARD DEVIATION

ZONE	67% CONFIDENCE INTERVAL PSI X 10 ³	90% CONFIDENCE INTERVAL PSI X 10 ³	AVERAGE PSI X 10 ³
1	5.33 to 5.88	5.05 to 6.16	5.61
2	9.85 to 24.54	14.68 to 54.11	34.40

**WATTS BAR NUCLEAR PLANT
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ANALYSIS REPORT**

**SEISMIC REFRACTION DYNAMIC
PROPERTIES INTAKE CHANNEL**

Figure 2.5-232

Figure 2.5-232 Seismic Refraction Dynamic Properties Intake Channel

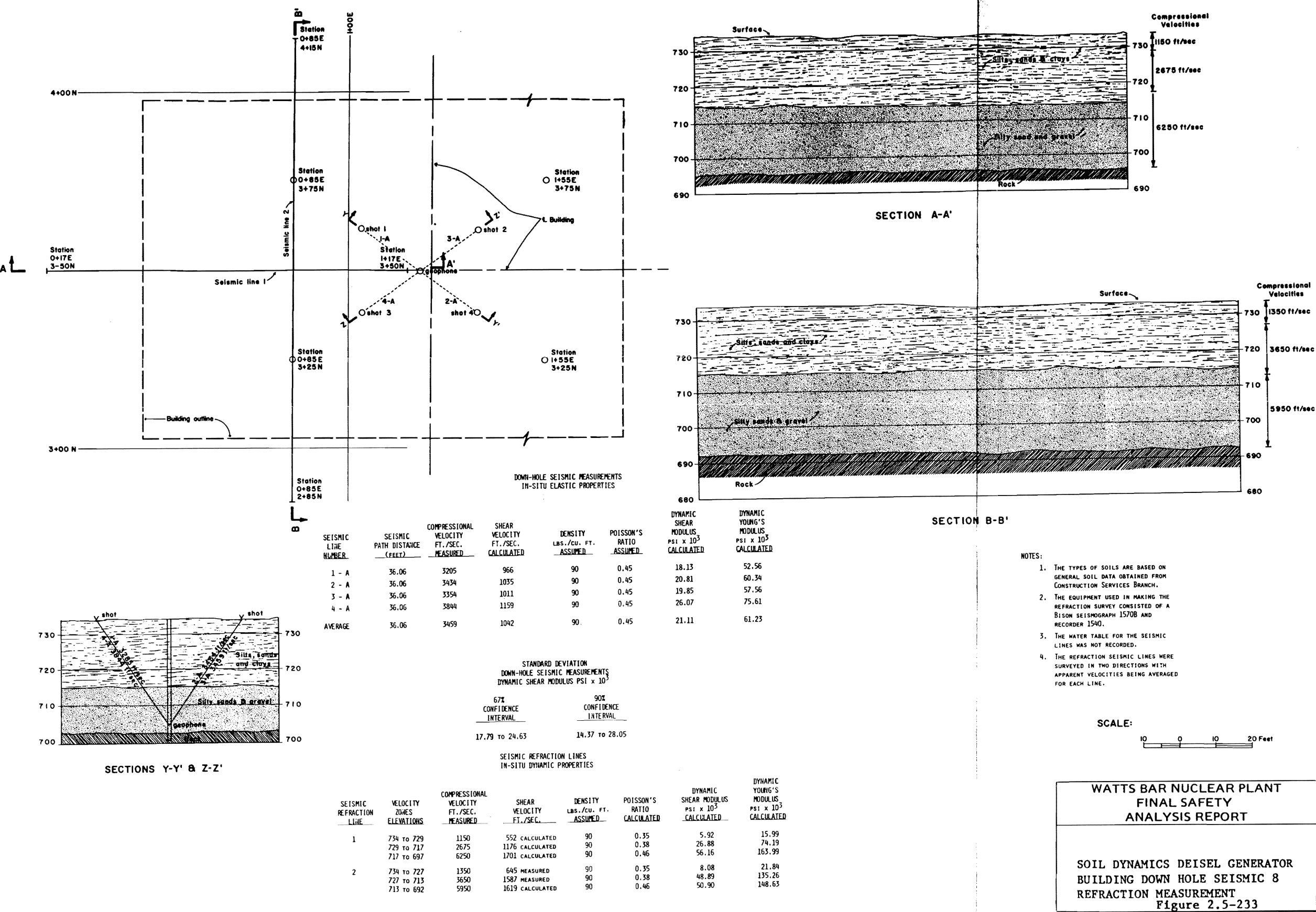
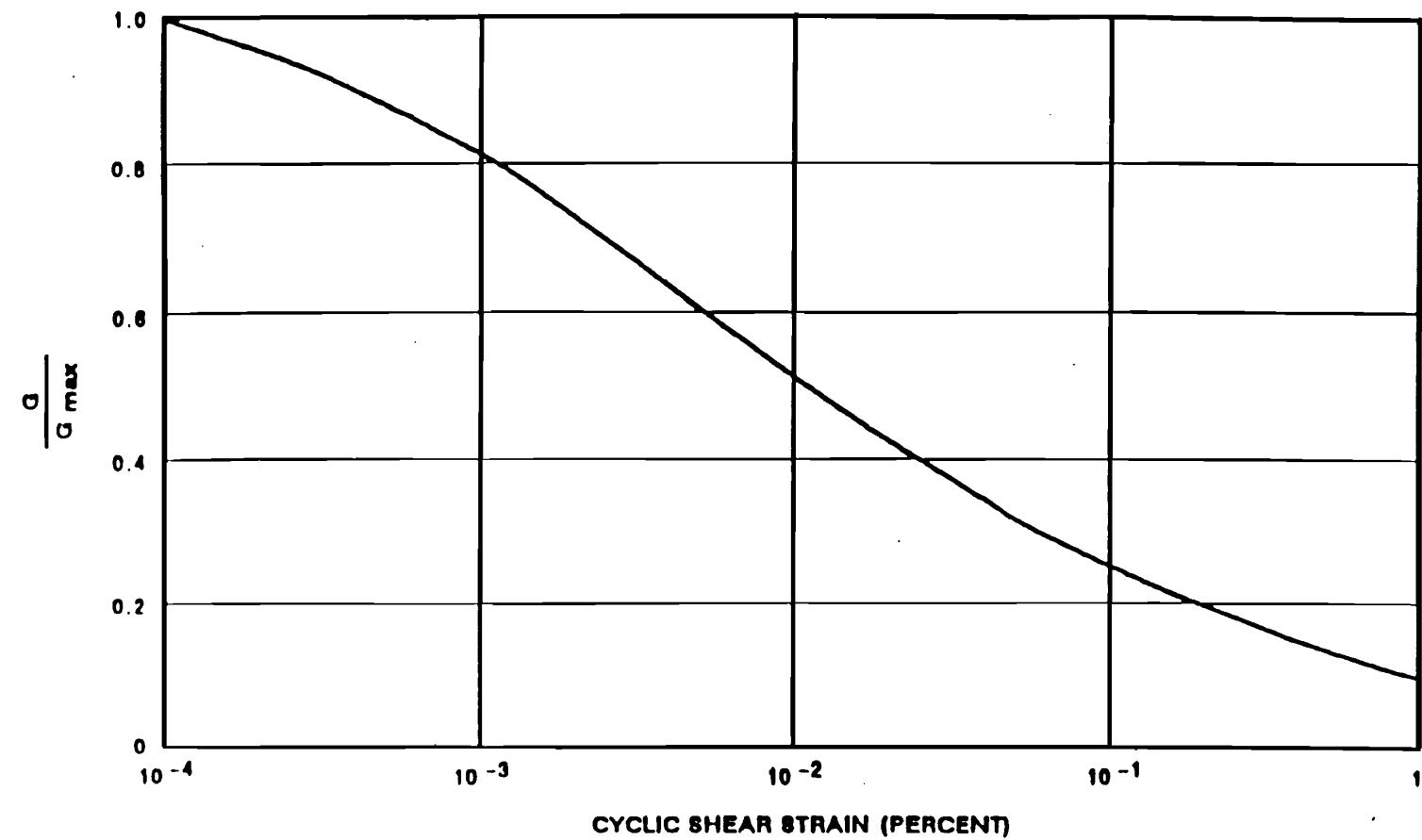


Figure 2.5-233 Soil Dynamics Diesel Generator Building Down Hole Seismic 8 Refraction Measurement



Amendment 63

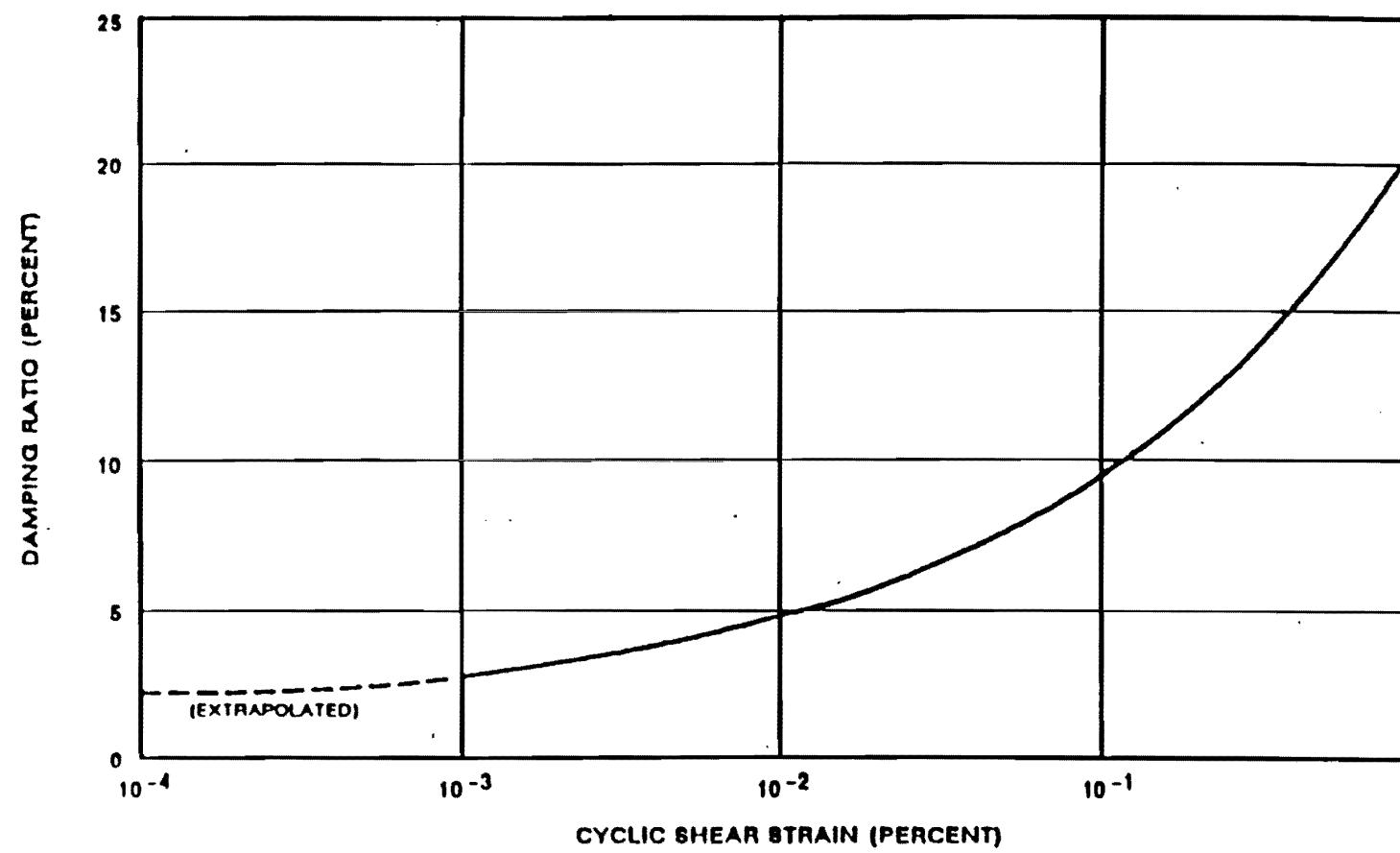
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

CLASS A BACKFILL

SHEAR MODULUS REDUCTION
WITH SHEAR STRAIN

Figure 2.5-233A

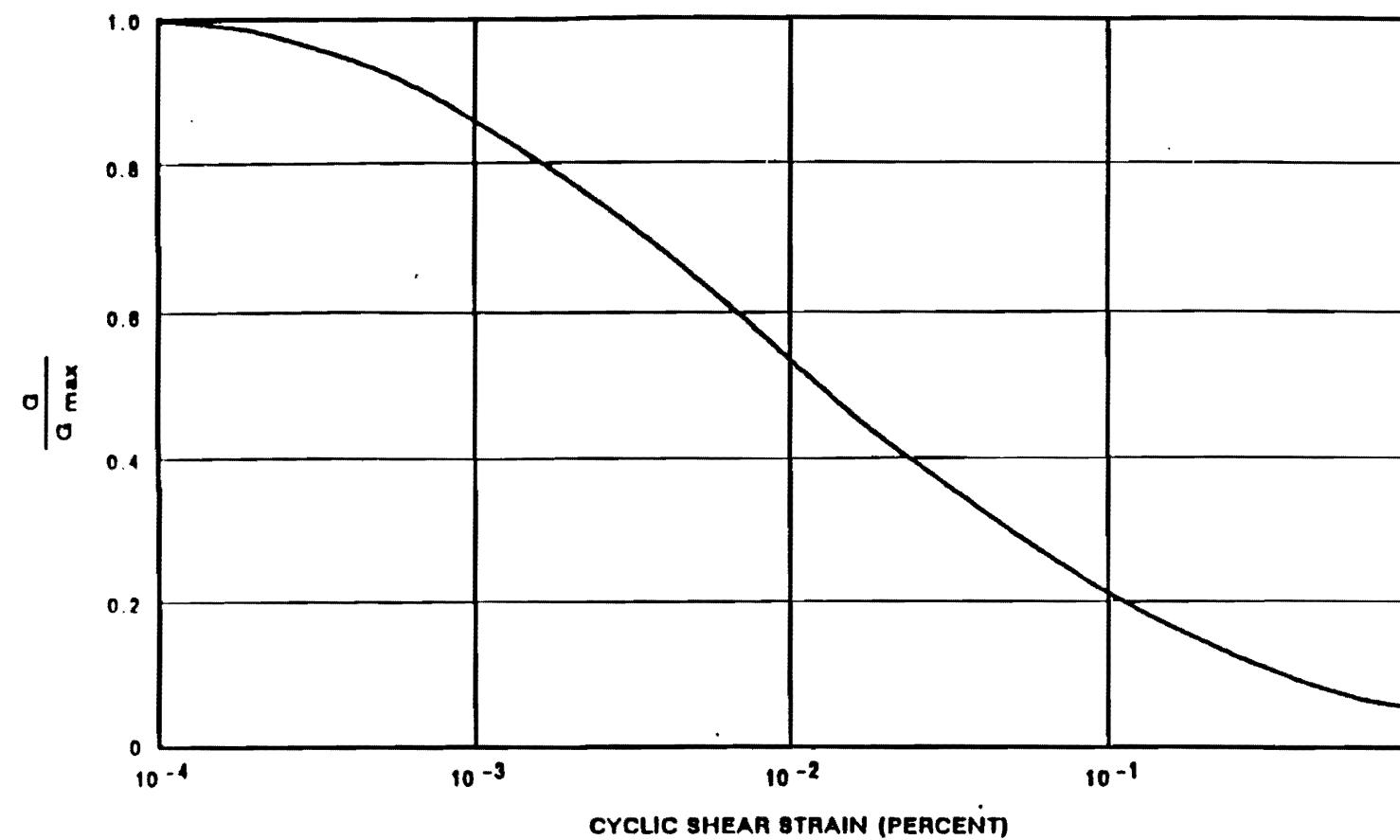
Figure 2.5-233a Class A Backfill -Shear Modulus Reduction with Shear Strain



Amendment 63

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT
CLASS A BACKFILL
DAMPING RATIO VARIATION
WITH SHEAR STRAIN
Figure 2.5-233B

Figure 2.5-233b Class A Backfill -Damping Ratio Variation with Shear Strain



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

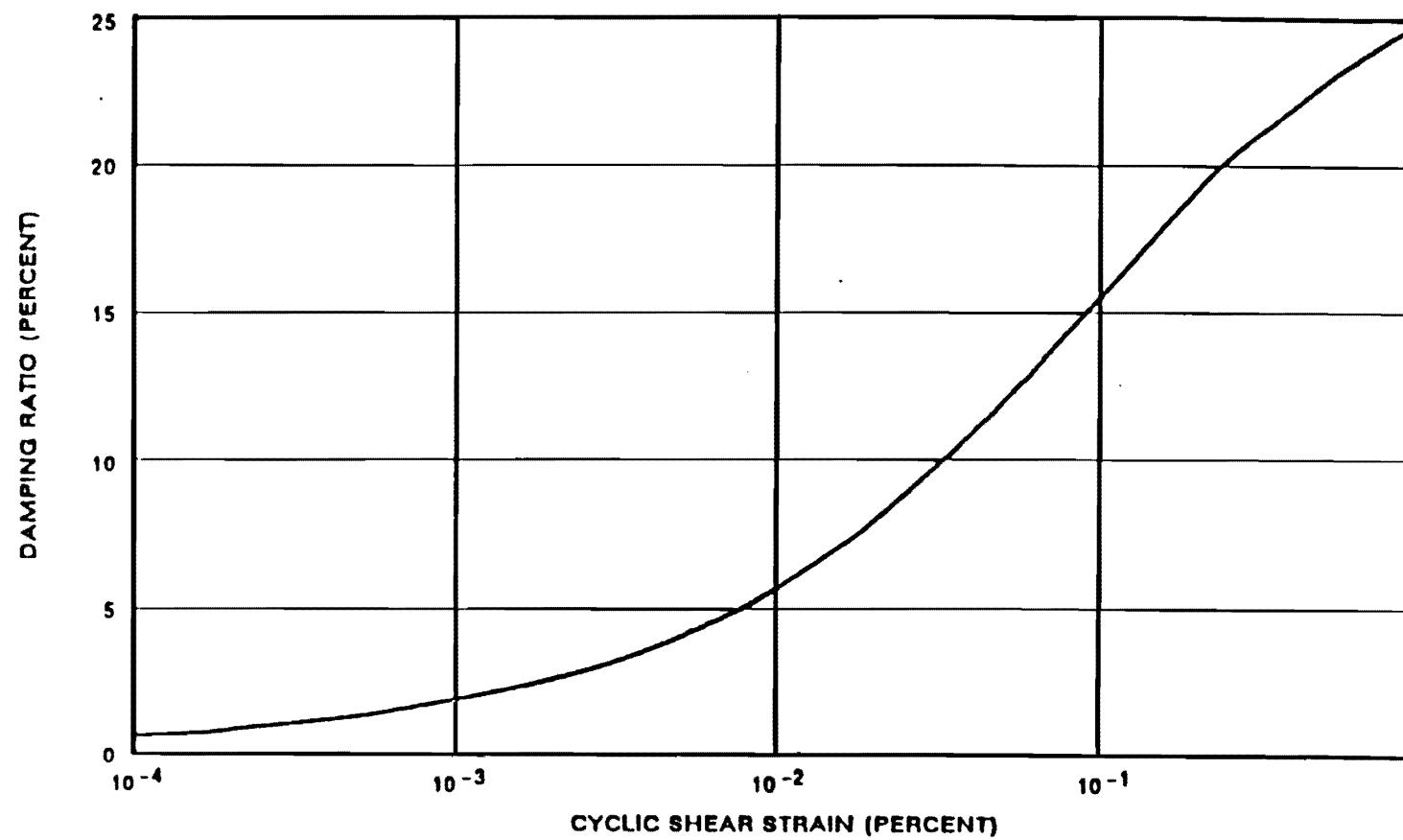
CRUSHED STONE BACKFILL

SHEAR MODULUS REDUCTION
WITH SHEAR STRAIN

Amendment 63

Figure 2.5-233C

Figure 2.5-233c Crushed Stone Backfill - Shear Modulus Reduction with Shear Strain



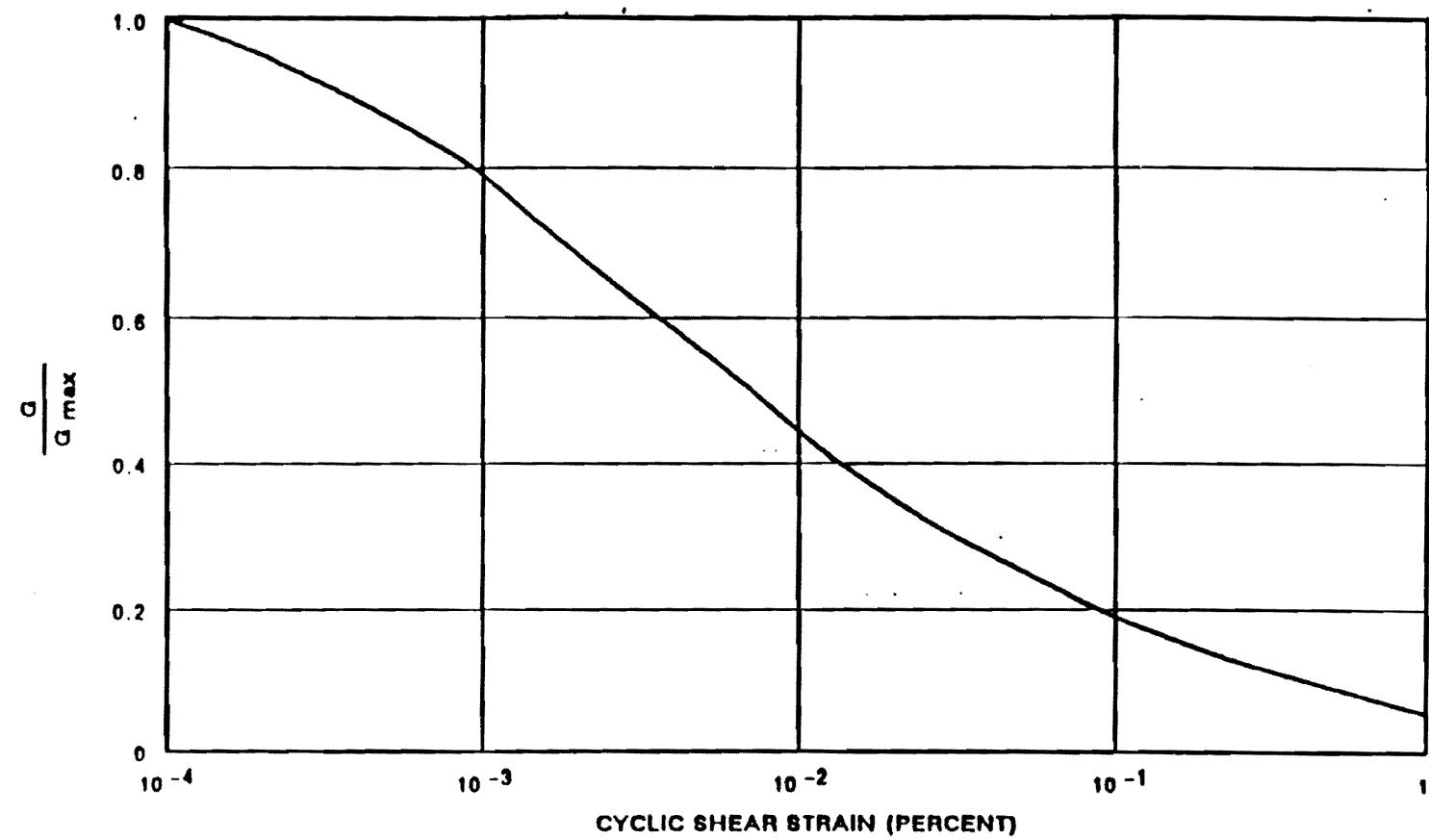
Amendment 63

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**CRUSHED STONE BACKFILL
DAMPING RATIO VARIATION
WITH SHEAR STRAIN**

Figure 2.5-233D

Figure 2.5-233d Crushed Stone Backfill - Damping Ratio Variation with Shear Strain



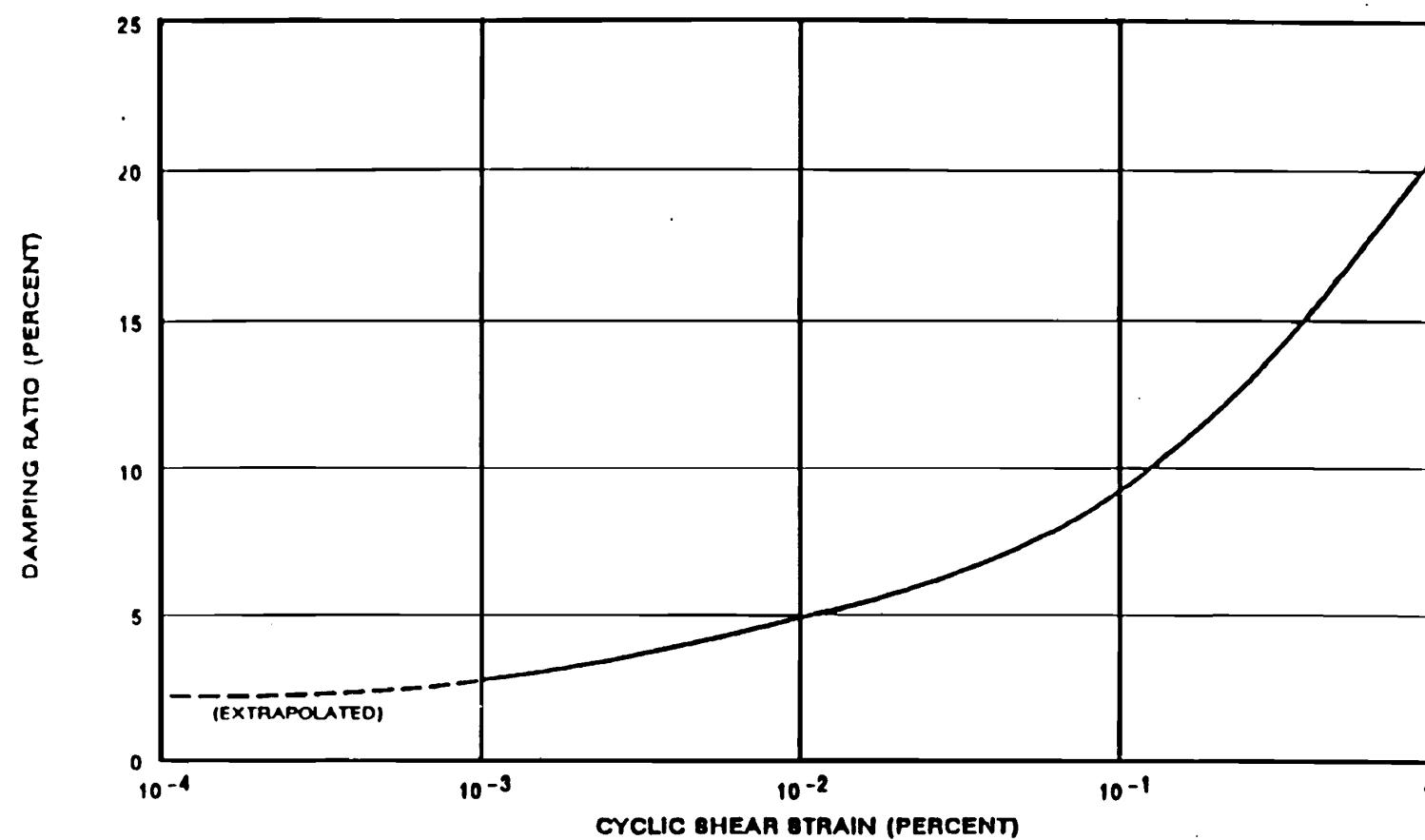
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

IN SITU COHESIVE SOILS
SHEAR MODULUS REDUCTION
WITH SHEAR STRAIN

Figure 2.5-233B

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Figure 2.5-233e In Situ Cohesive Soils - Shear Modulus Reduction with Shear Strain



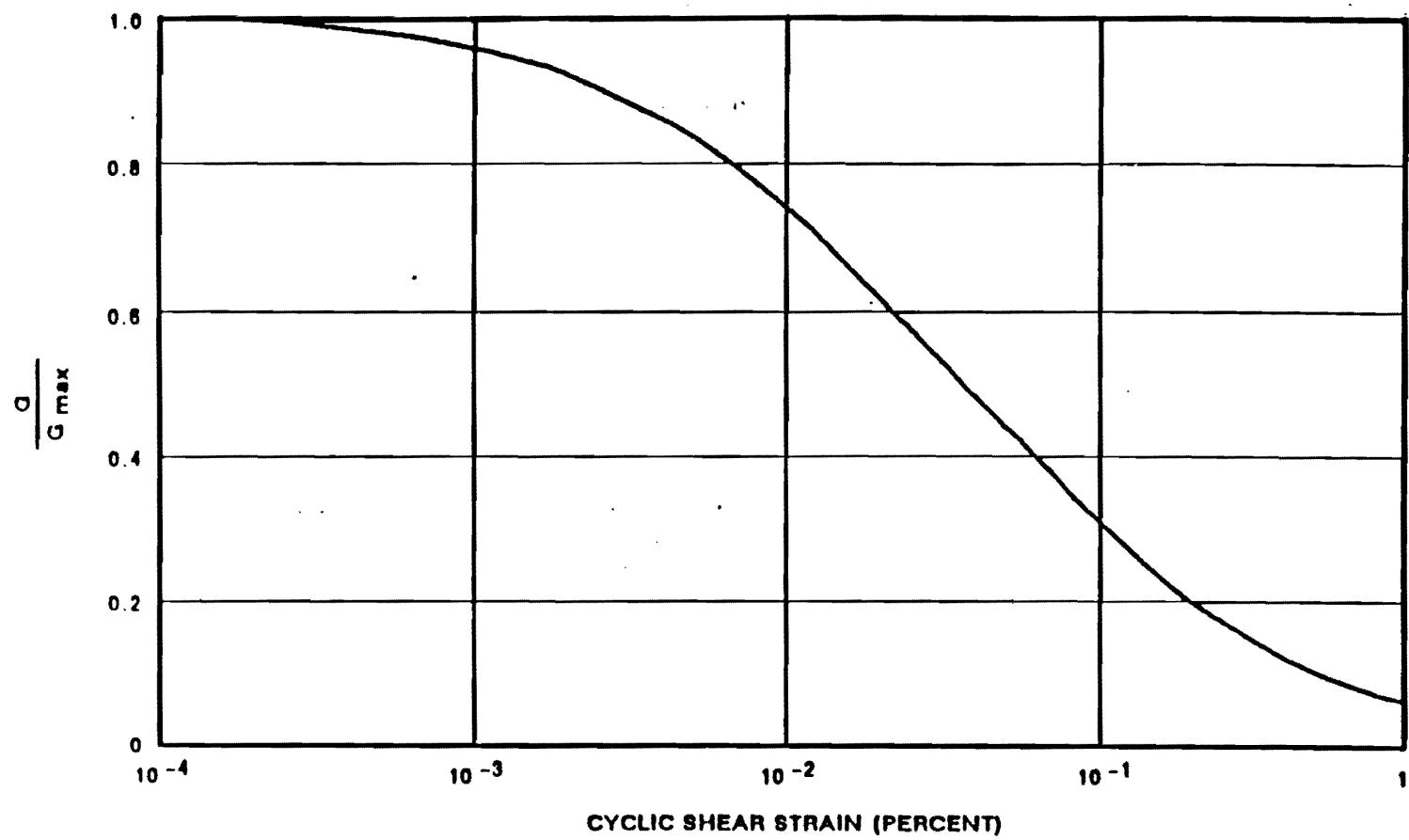
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

IN SITU COHESIVE SOILS
DAMPING RATIO VARIATION
WITH SHEAR STRAIN

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Figure 2.5-233F

Figure 2.5-233f In Situ Cohesive Soils - Damping Ratio Variation with Shear Strain



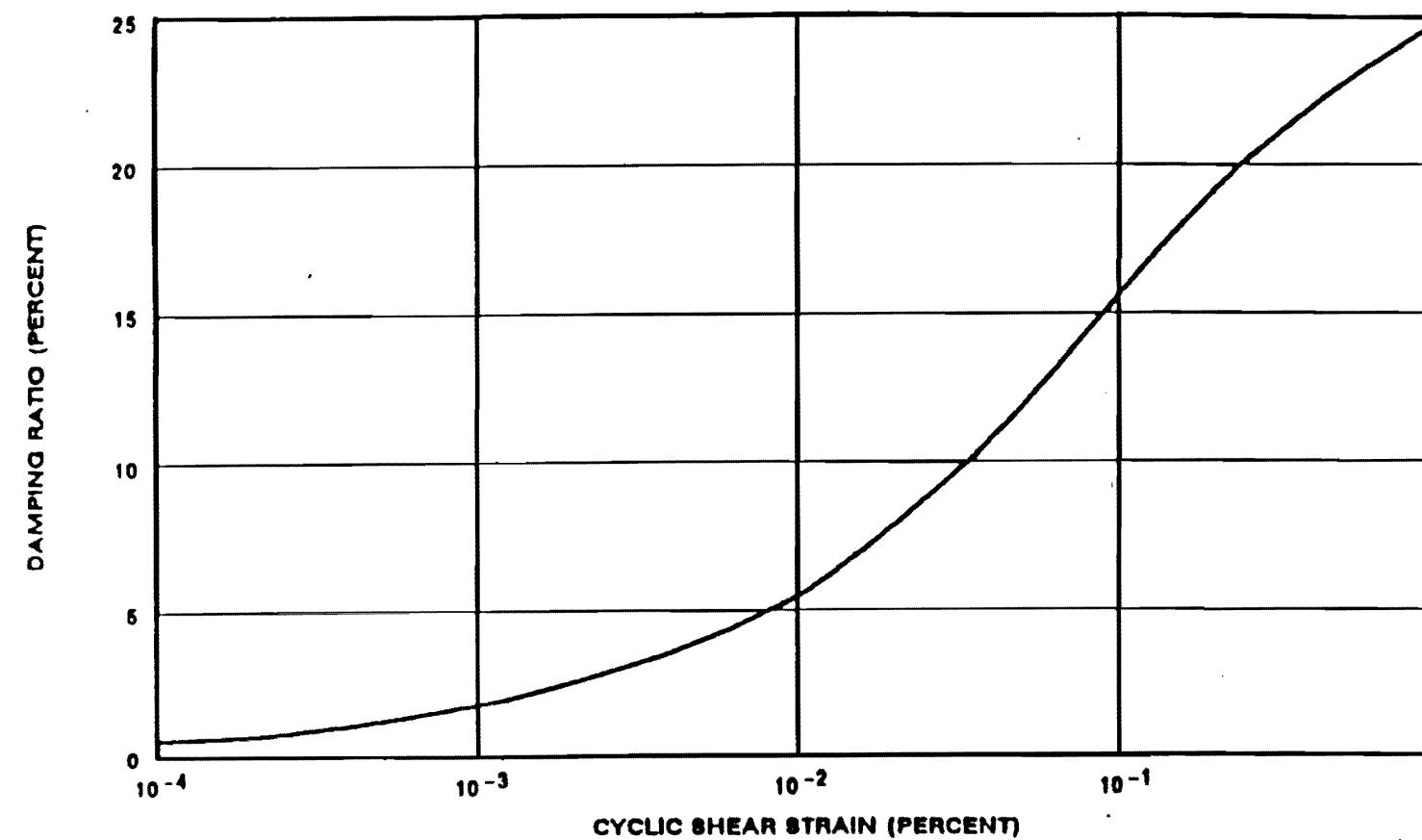
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

NON-PLASTIC IN SITU SOIL
SHEAR MODULUS REDUCTION
WITH SHEAR STRAIN

Amendment 63

Figure 2.5-233G

Figure 2.5-233g Non-Plastic In Situ Soil - Shear Modulus Reduction with Shear Strain



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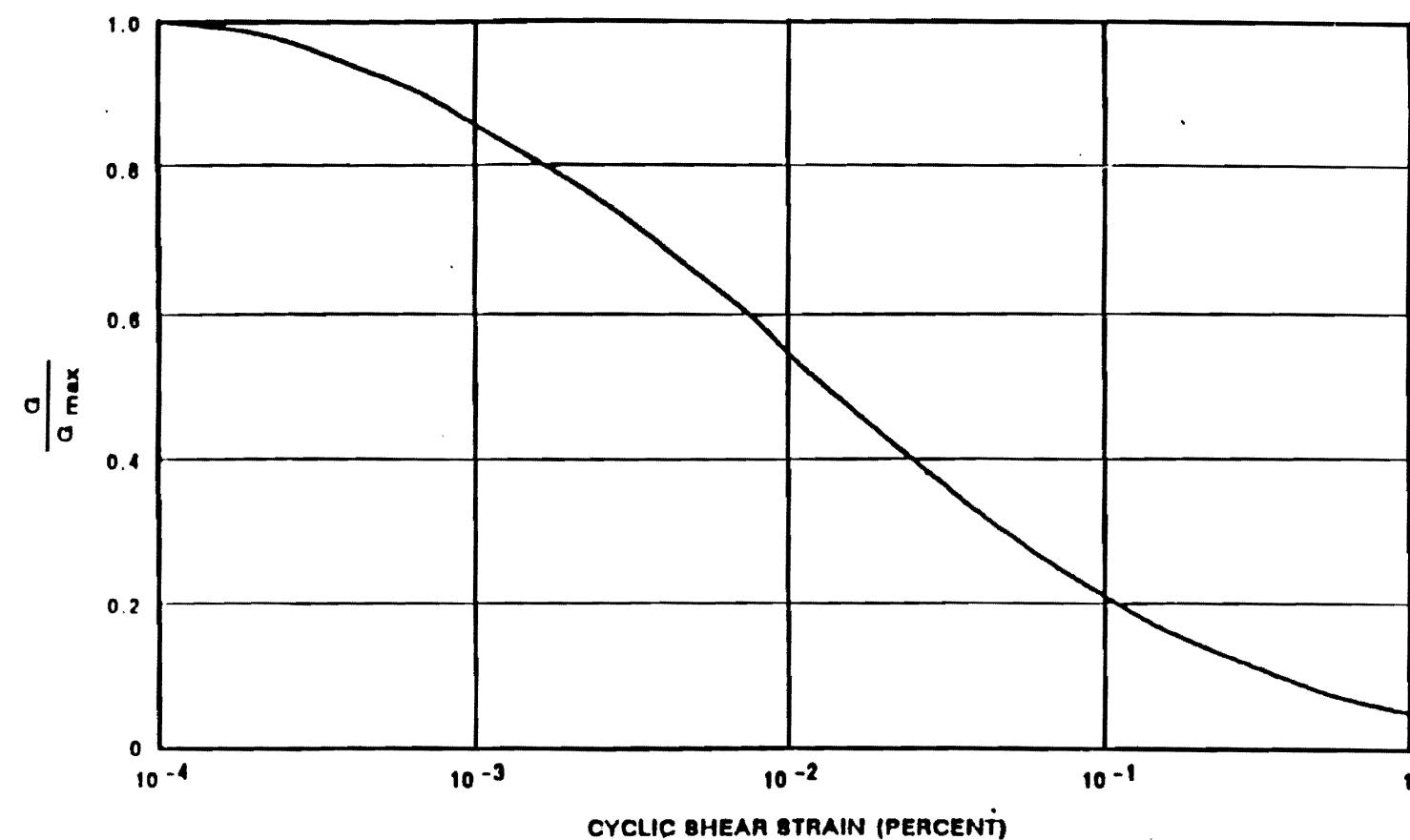
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

NON-PLASTIC IN SITU SOILS

DAMPING RATIO VARIATION
WITH SHEAR STRAIN

Figure 2.5-233H

Figure 2.5-233h Non-Plastic In Situ Soils - Damping Ratio Variation with Shear Strain



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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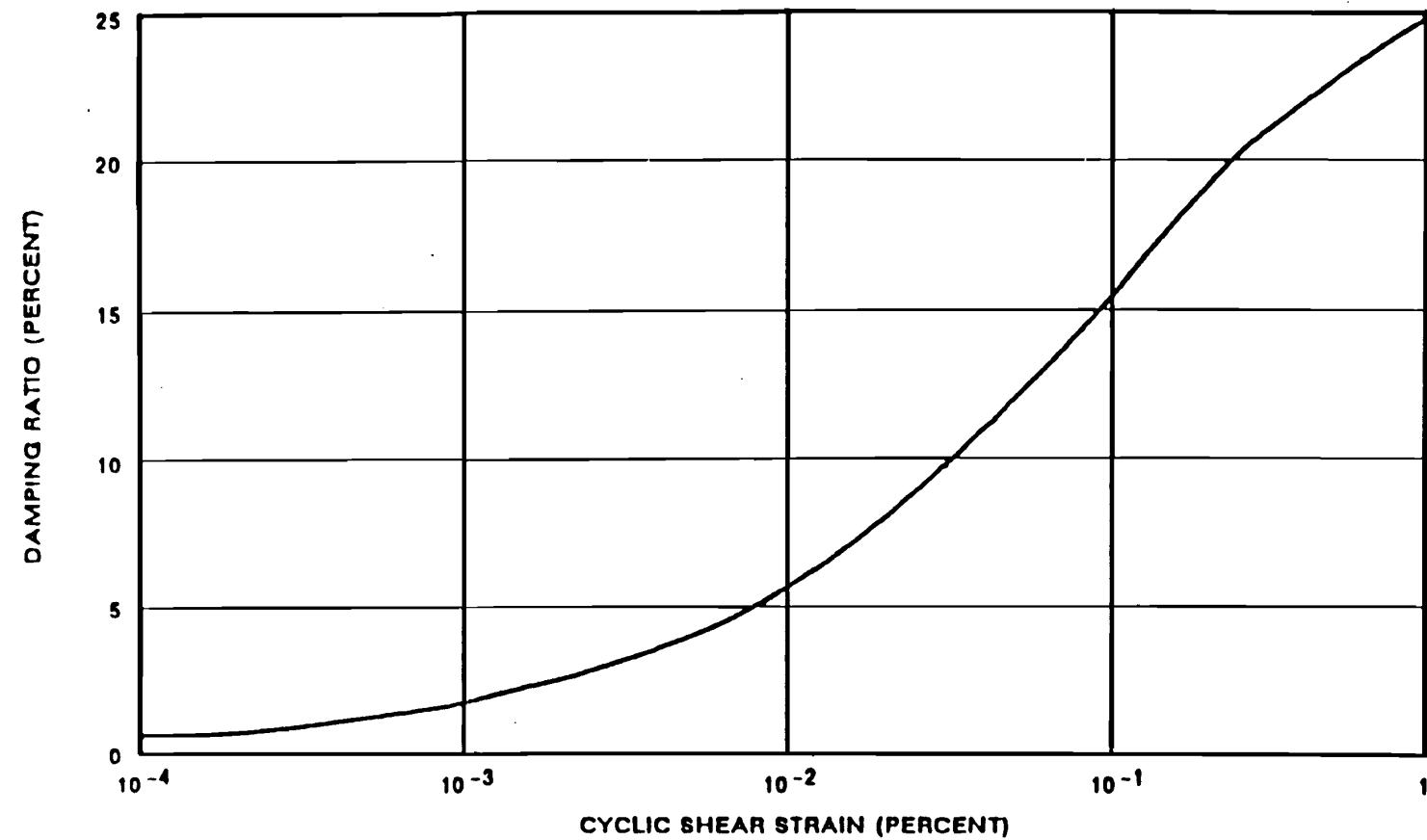
BASAL GRAVEL

SHEAR MODULUS REDUCTION
WITH SHEAR STRAIN

Amendment 63

Figure 2.5-233I

Figure 2.5-233i Basal Gravel - Shear Modulus Reduction with Shear Strain

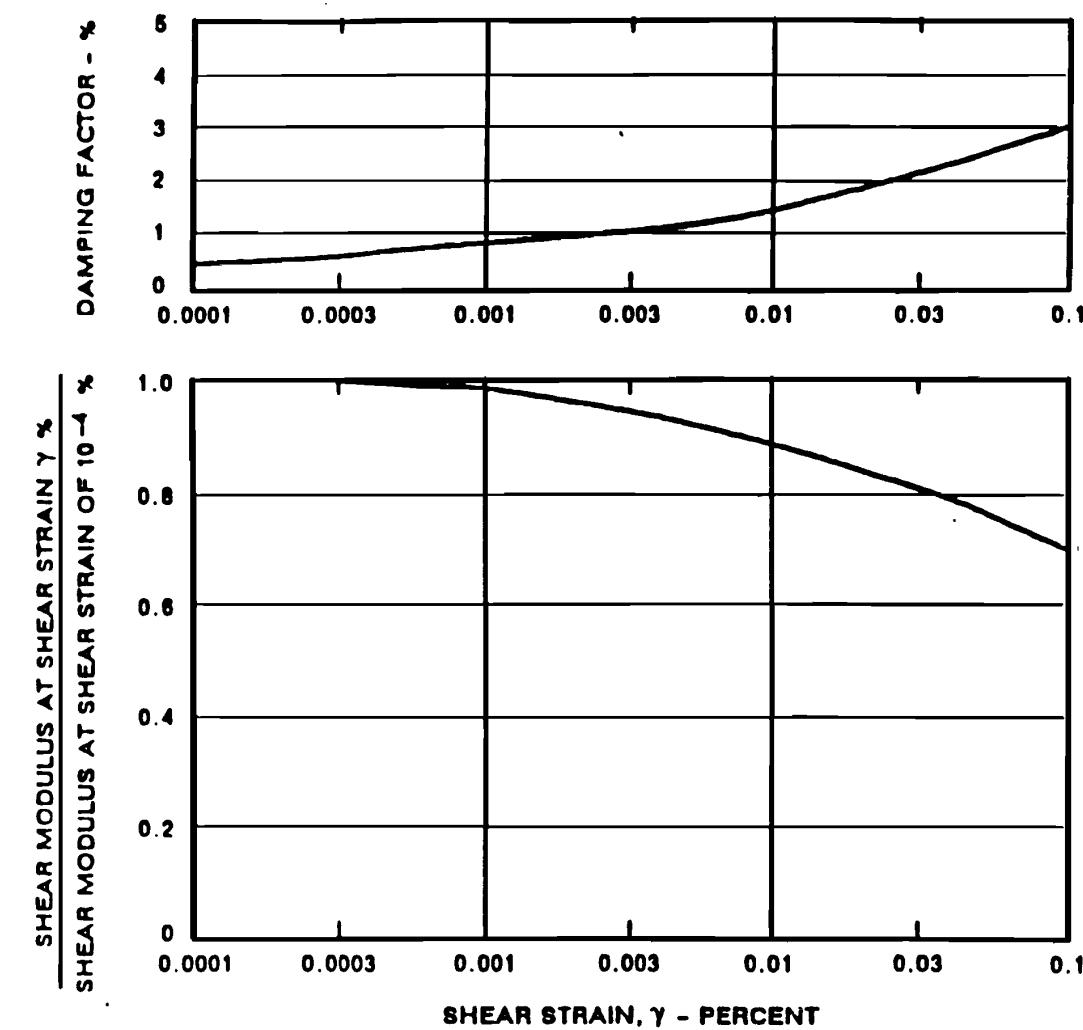


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WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT
BASAL GRAVEL
DAMPING RATIO VARIATION
WITH SHEAR STRAIN

Figure 2.5-233J

Figure 2.5-233j Basal Gravel - Damping Ratio Variation with Shear Strain

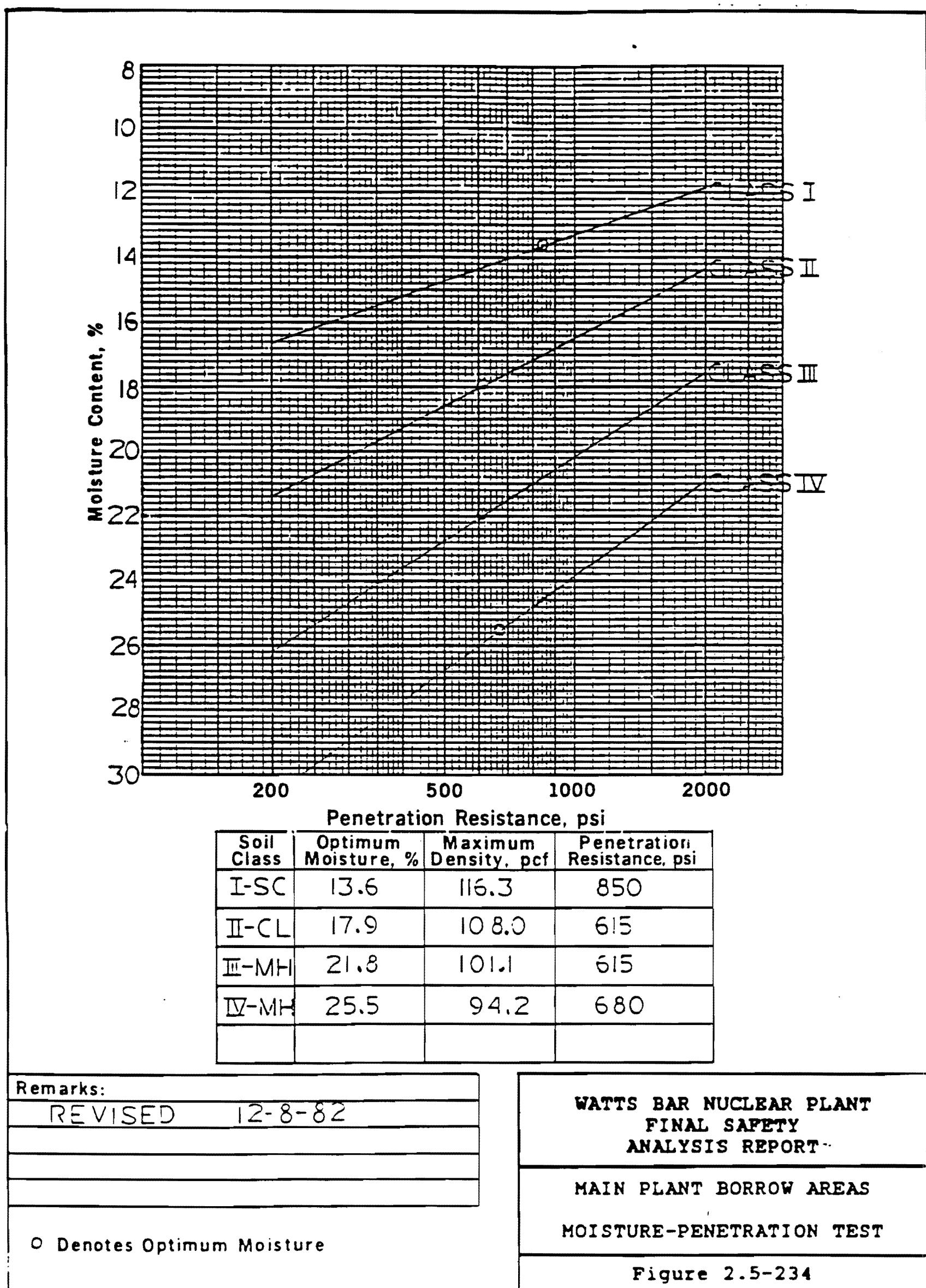


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**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**
WEATHERED SHALE
**SHEAR MODULUS AND DAMPING
VARIATION WITH SHEAR STRAIN**

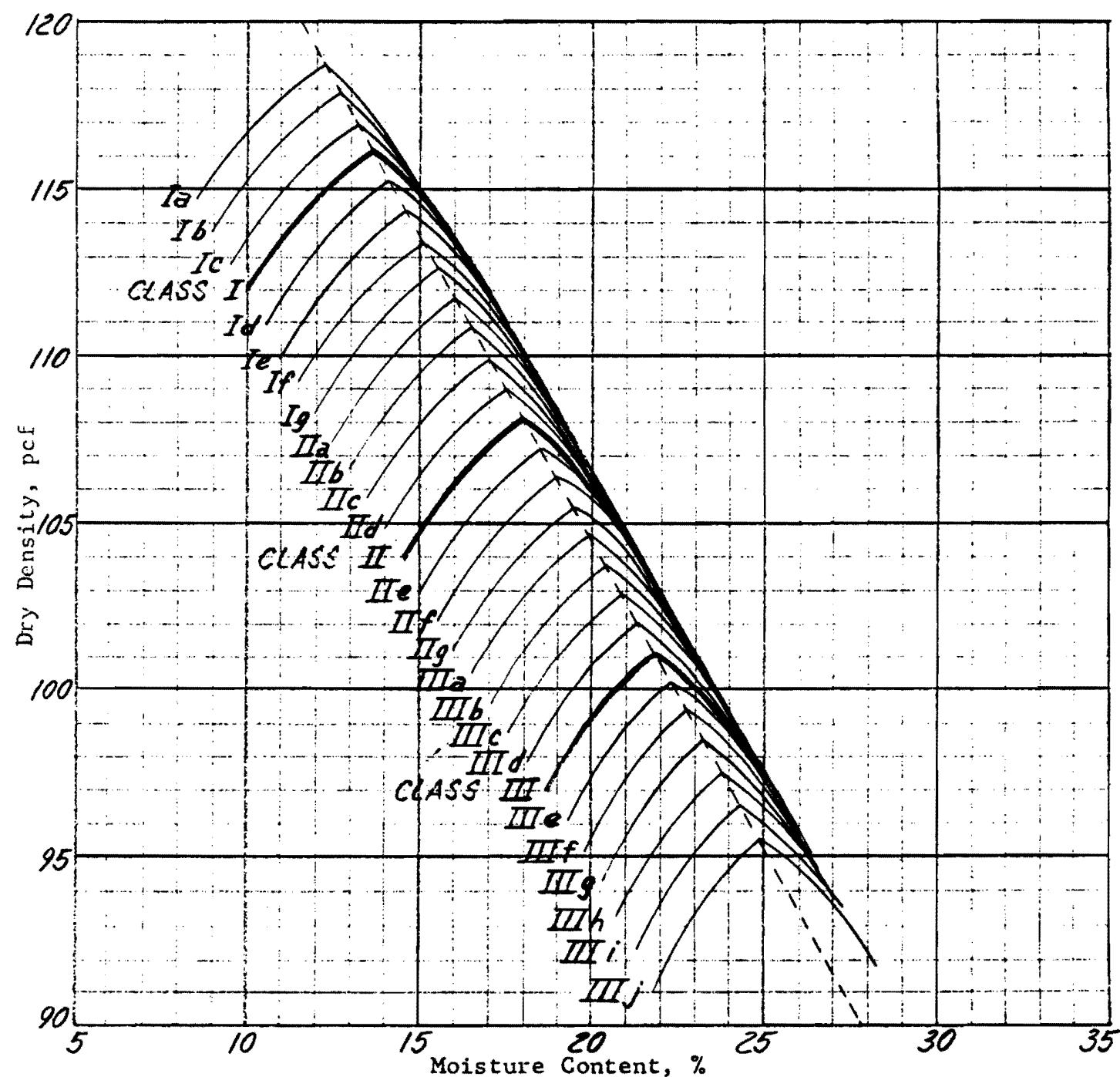
Figure 2.5-233K

Figure 2.5-233k Weathered Shale - Shear Modulus and Damping Variation with Shear Strain



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Figure 2.5-234 Main Plant Borrow Areas, Moisture - Penetration Test



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density pcf
I-SC	0	54	25	21	2.71	25.4	7.8	13.6	116.3
II-CL	0	35	29	36	2.73	41.9	18.6	17.9	108.0
III-MH	0	24	30	46	2.76	50.6	22.1	21.8	101.1

Plus No. 4 Specific Gravity, SSD	
Plus No. 4 Absorption, %	
Remarks:	

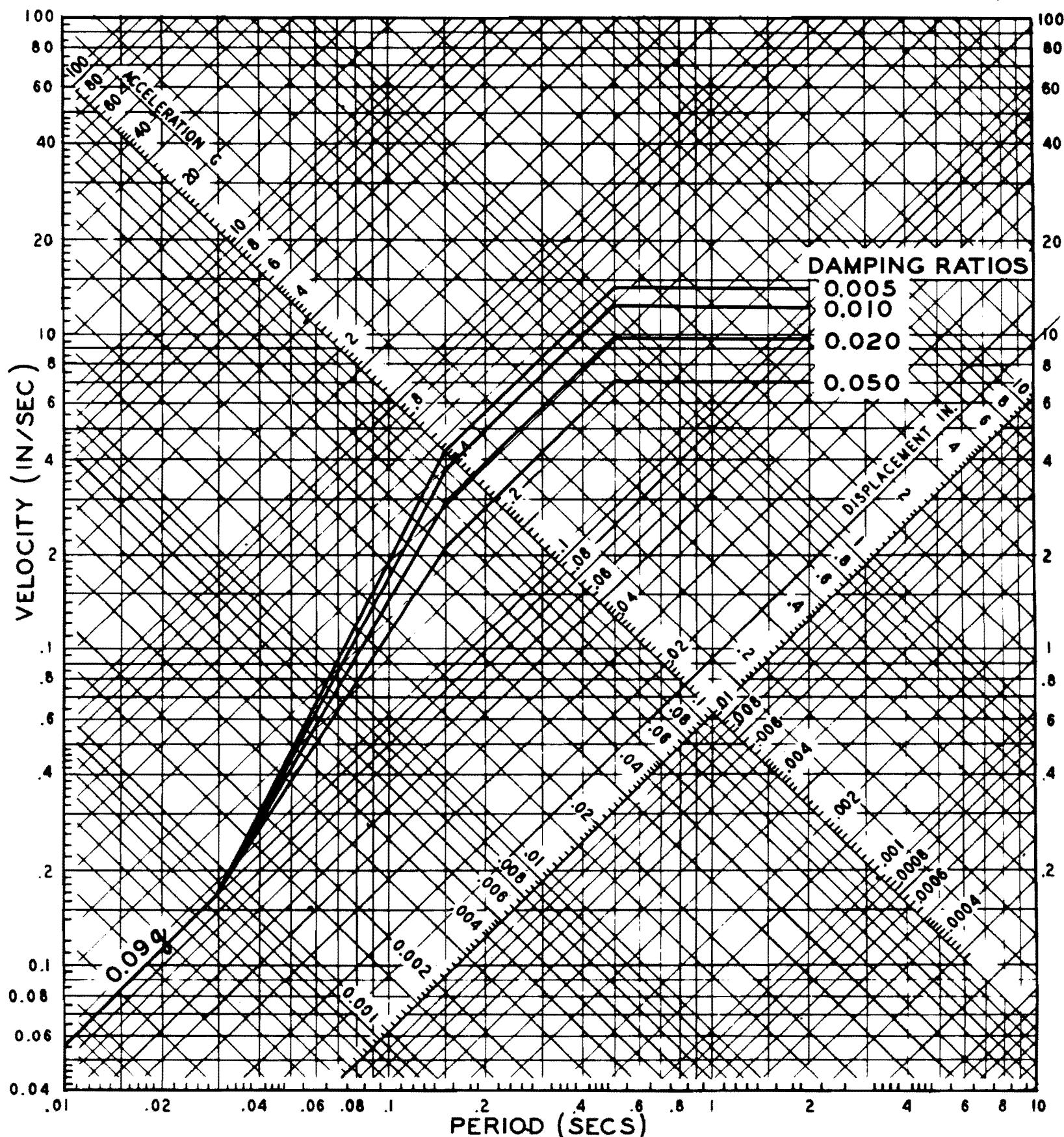
**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

COMPACTION TEST
BORROW AREAS (family of curves)
date tested 1-5-73

Figure 2.5-235

Soil Form 14

Figure 2.5-235 Compaction Test Borrow Areas (Family Of Curves)

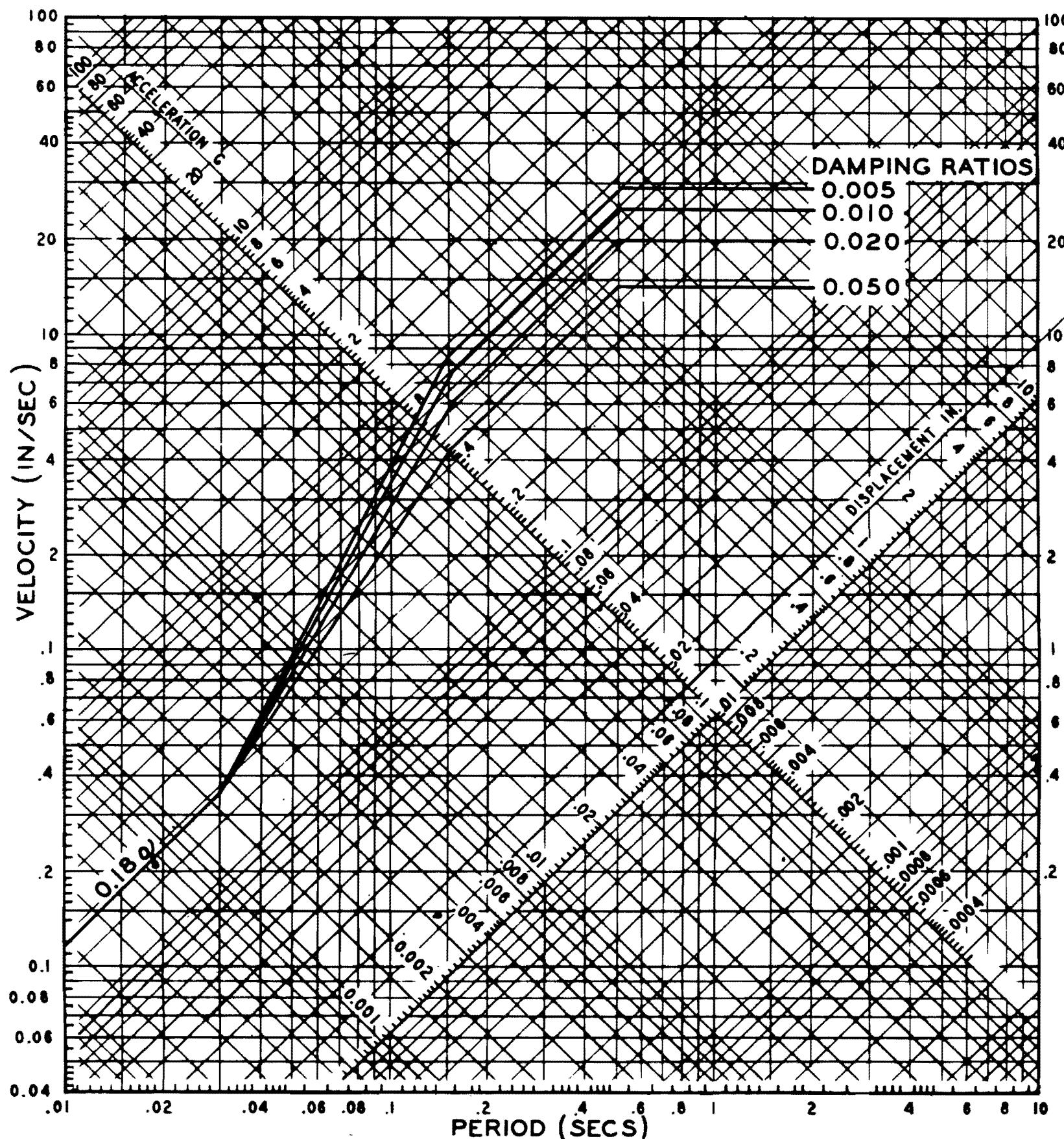


**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

OPERATING BASIS EARTHQUAKE
RESPONSE SPECTRA FOR ROCK SUPPORT
STRUCTURES

Figure 2.5-236a

Figure 2.5-236A Operating Basis Earthquake Response Spectra For Rock Support Structures



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SAFE SHUTDOWN EARTHQUAKE
RESPONSE SPECTRA FOR ROCK SUPPORT
STRUCTURES

Figure 2.5-236b

Figure 2.5-236b Safe Shutdown Earthquake Response Spectra For Rock Support Structures

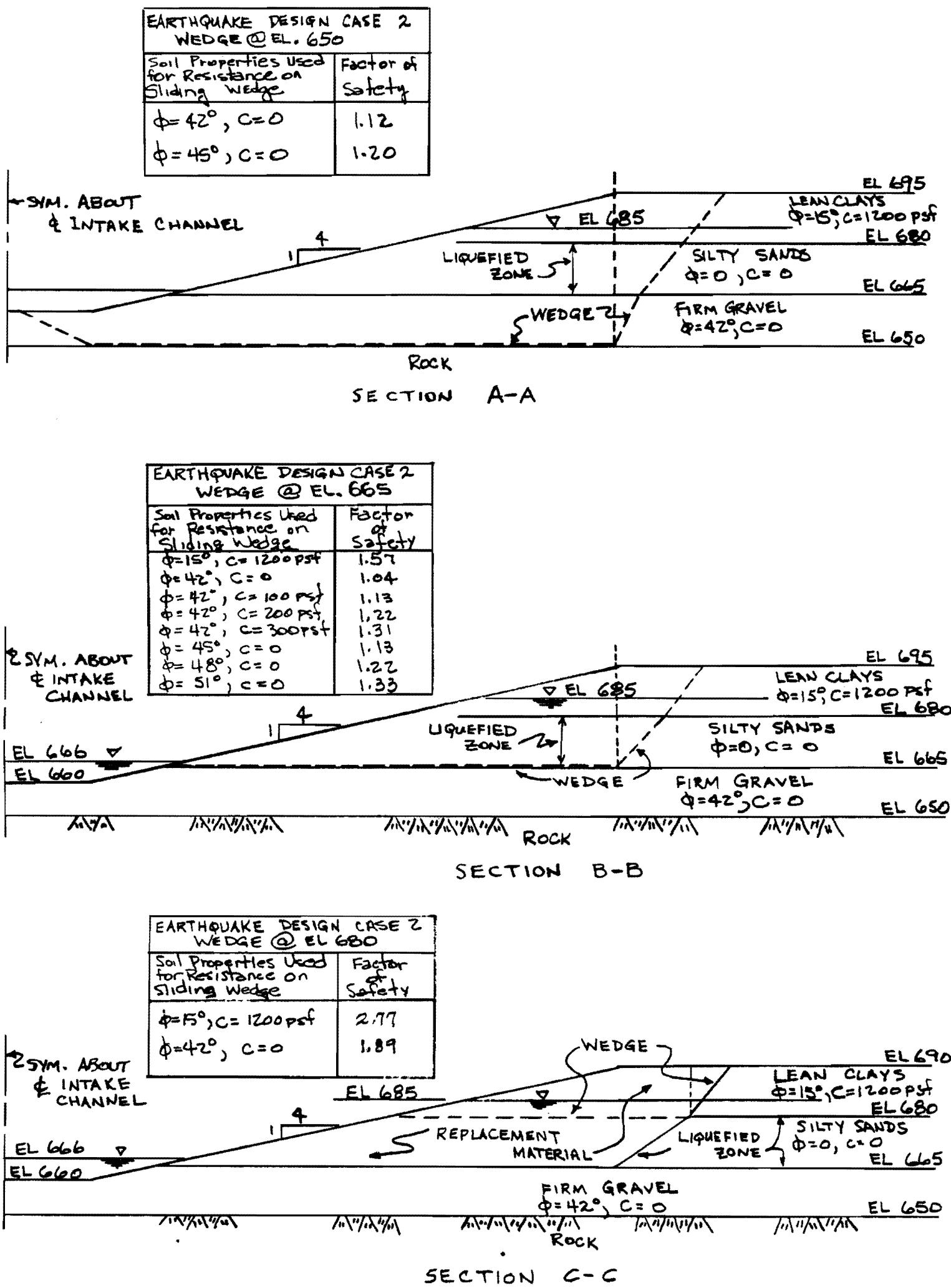
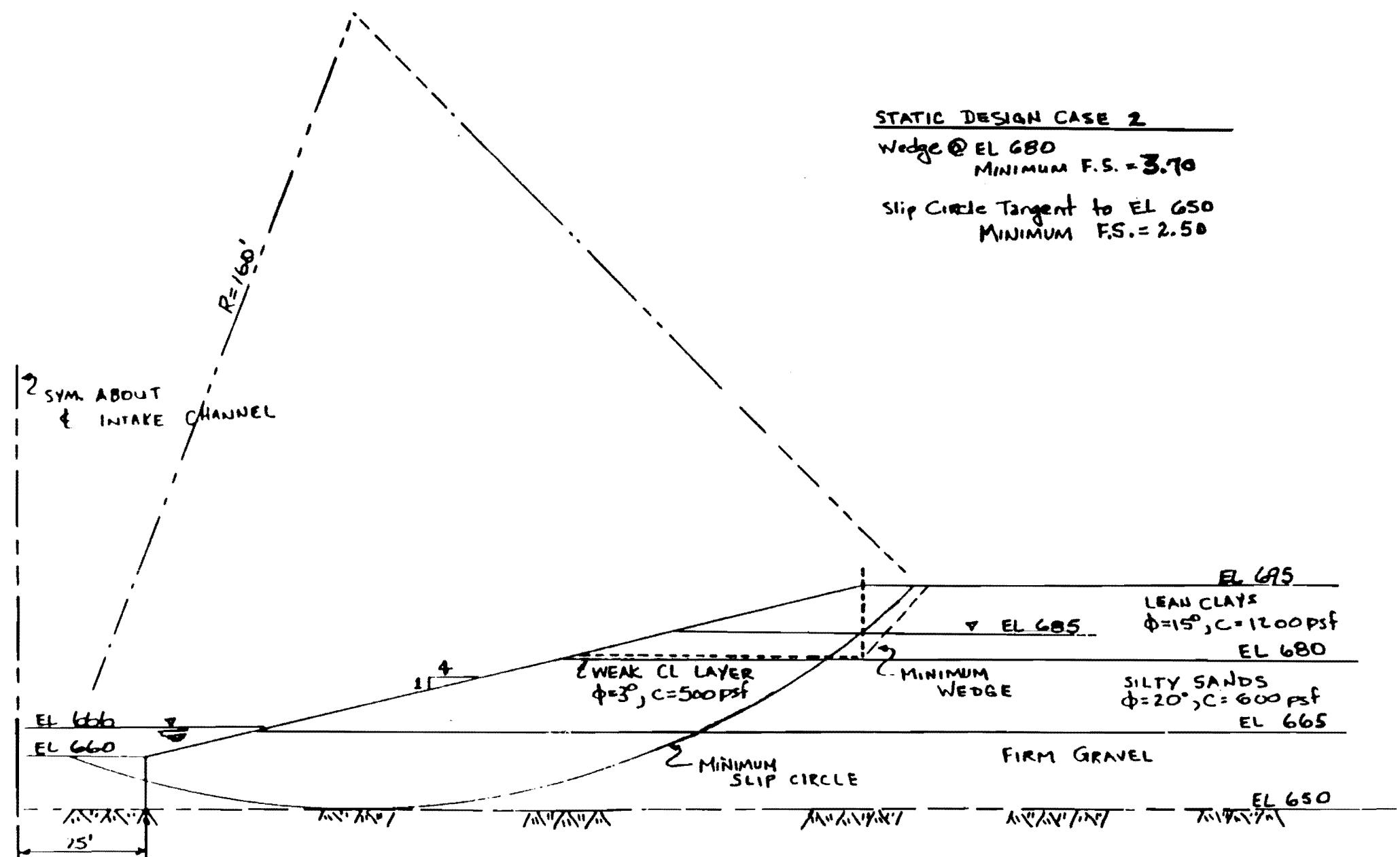


FIGURE 2.5-237
INTAKE CHANNEL
SEISMIC STABILITY ANALYSIS

NOTE:
Soils above firm gravel will be removed and replaced as compacted fill with controlled compaction density and moisture content at least as far back as the critical wedges shown.
See Figure 2.5-239

Figure 2.5-237 Intake Channel Seismic Stability Analysis



Amendment 63

FIGURE 2.5-238

Figure 2.5-238 Static Design Case 2

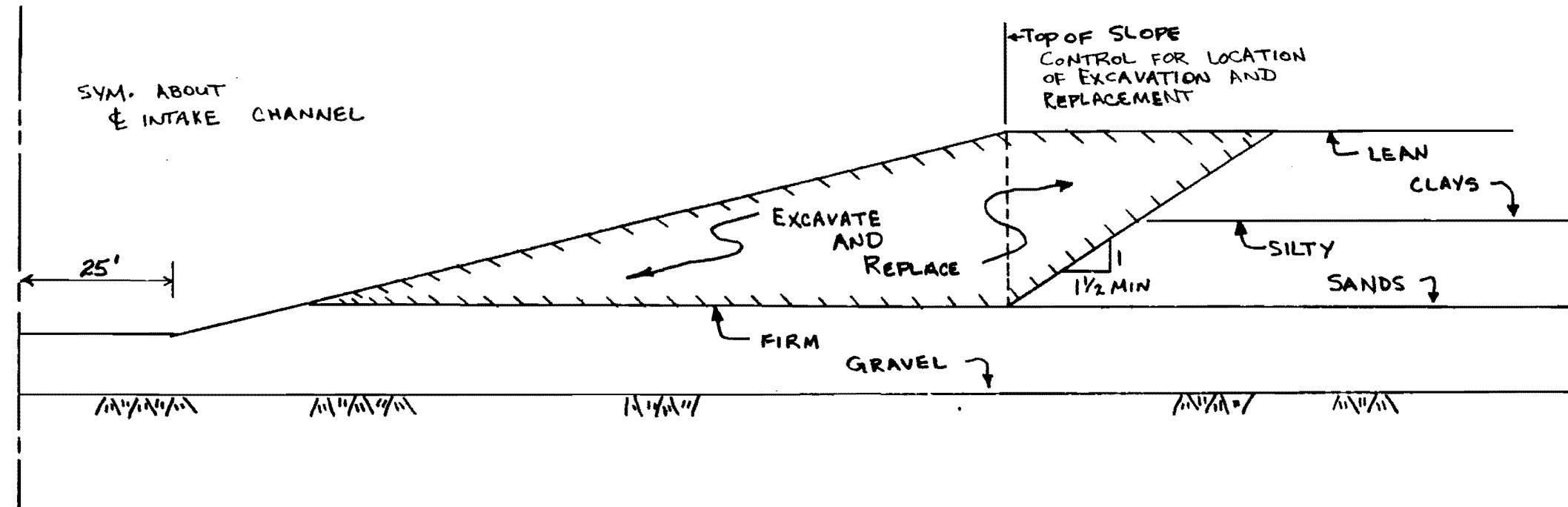
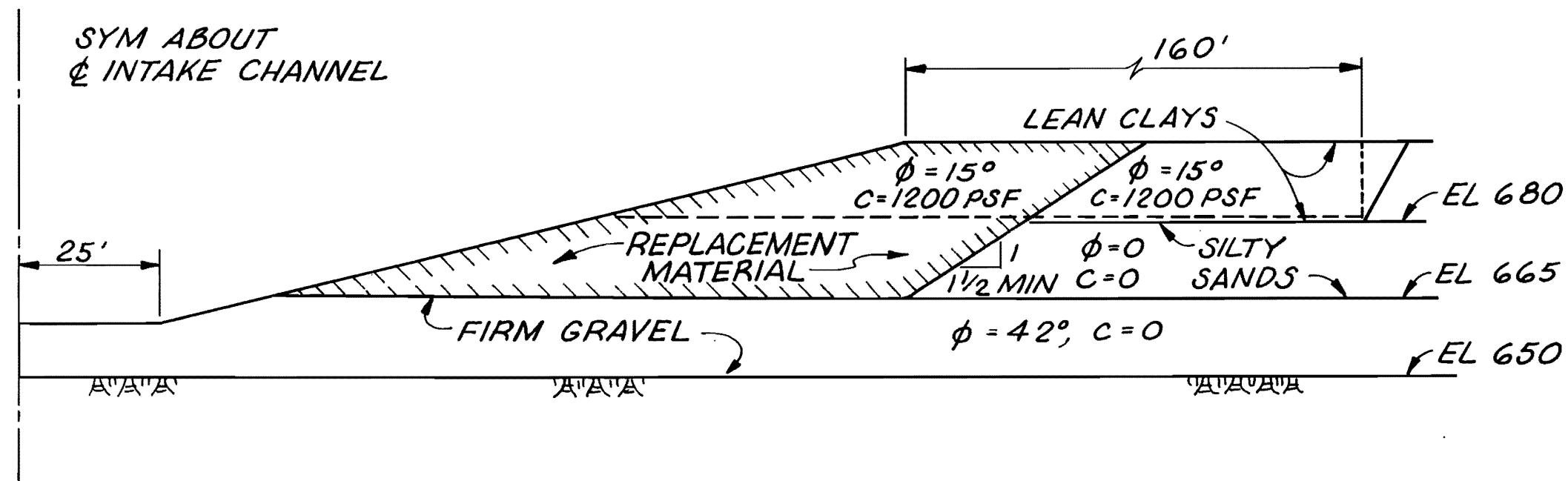


FIGURE 2.5-239
INTAKE CHANNEL - LATERAL
EXCAVATION & REPLACEMENT
ADDED BY AMENDMENT 28

Figure 2.5-239 Intake Channel-Lateral Excavation & Replacement



WEDGE USED TO DETERMINE HORIZONTAL
DISPLACEMENT OF THE INTAKE CHANNEL
BY NEWMARK'S METHOD

FIGURE 2.5-240
ADDED BY AMENDMENT 28

Figure 2.5-240 Wedge Used To Determine Horizontal Displacement of The Intake Channel By Newmark's Method

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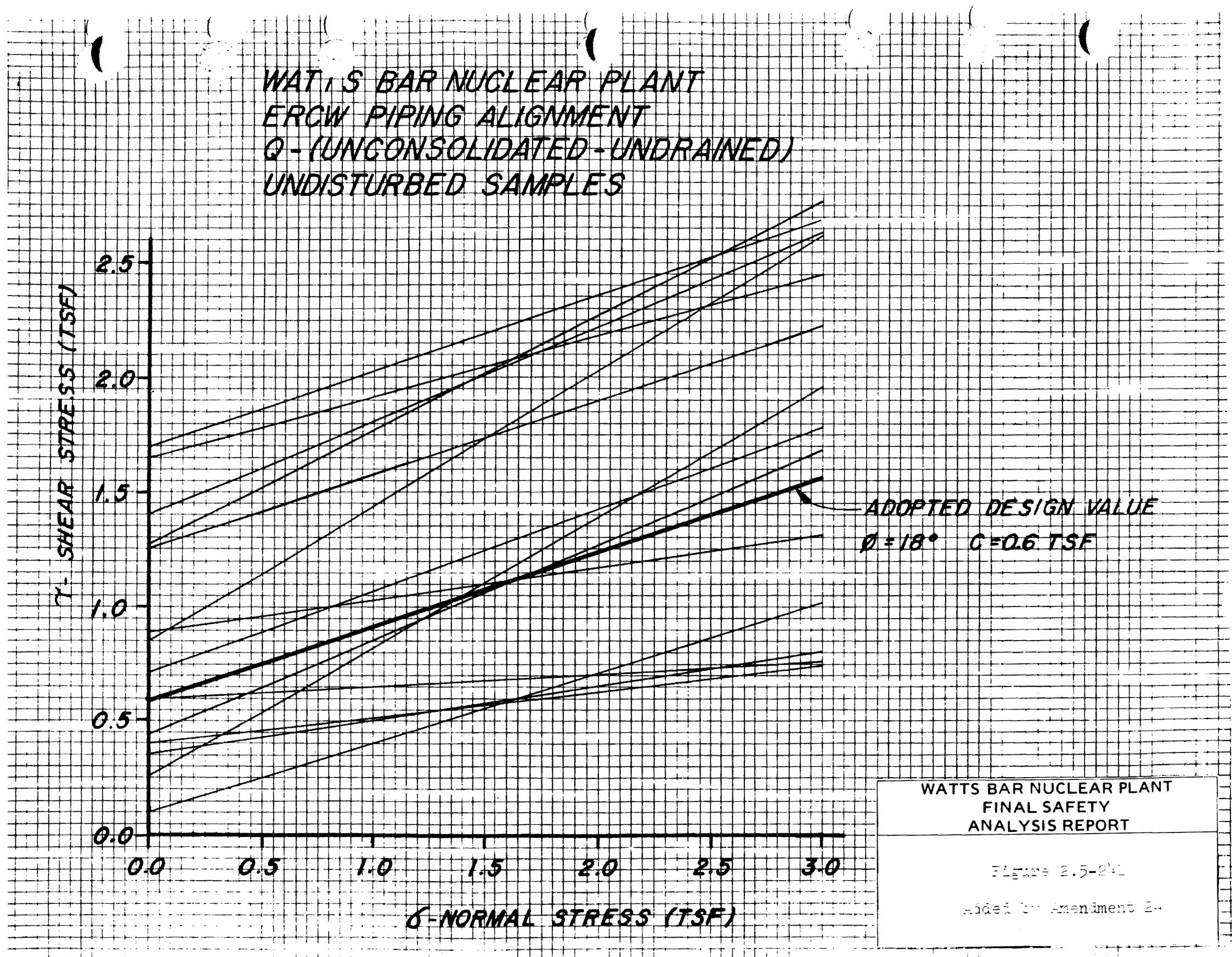


Figure 2.5-241 ERCW Piping Alignment Q (Unconsolidated Undrained - Undisturbed Samples)

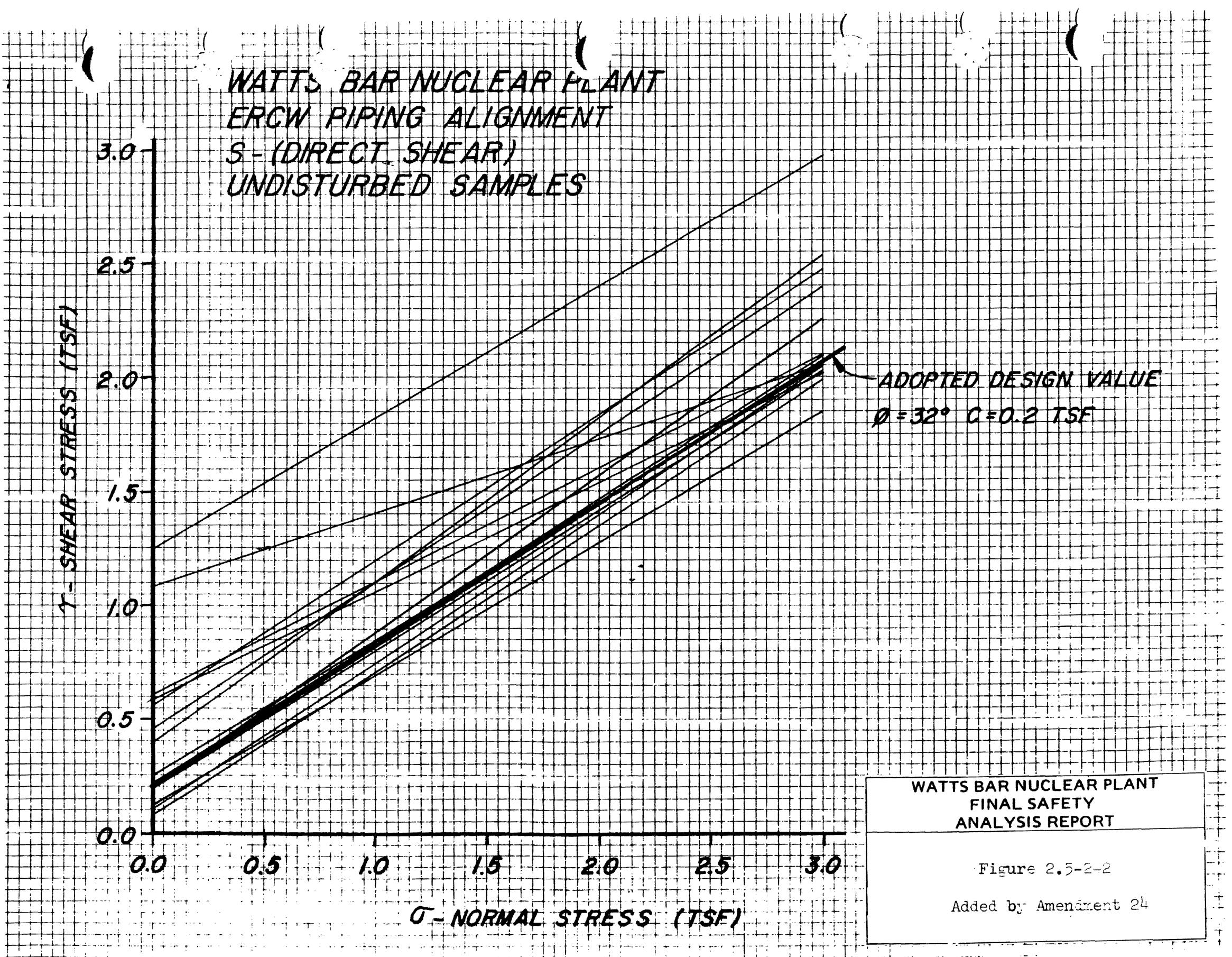


Figure 2.5-242 ERCW Piping Alignment S (Direct Shear) Undisturbed Samples

Figure 2.5-243 Deleted by Amendment 71

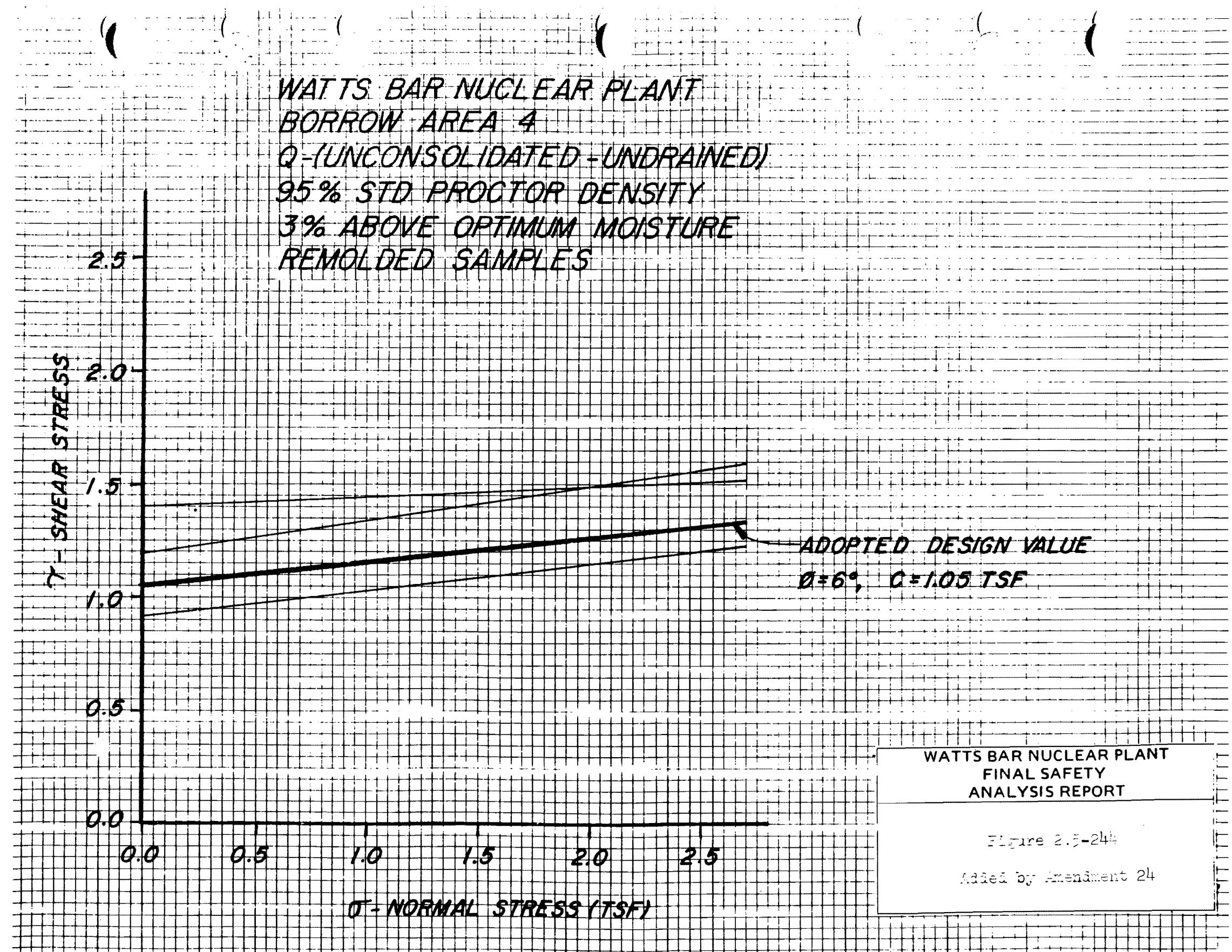


Figure 2.5-244 Borrow Area 4 Q - (Unconsolidated - Undrained) 95% STD Proctor Density 3% Above Optimum Moisture Remolded Samples

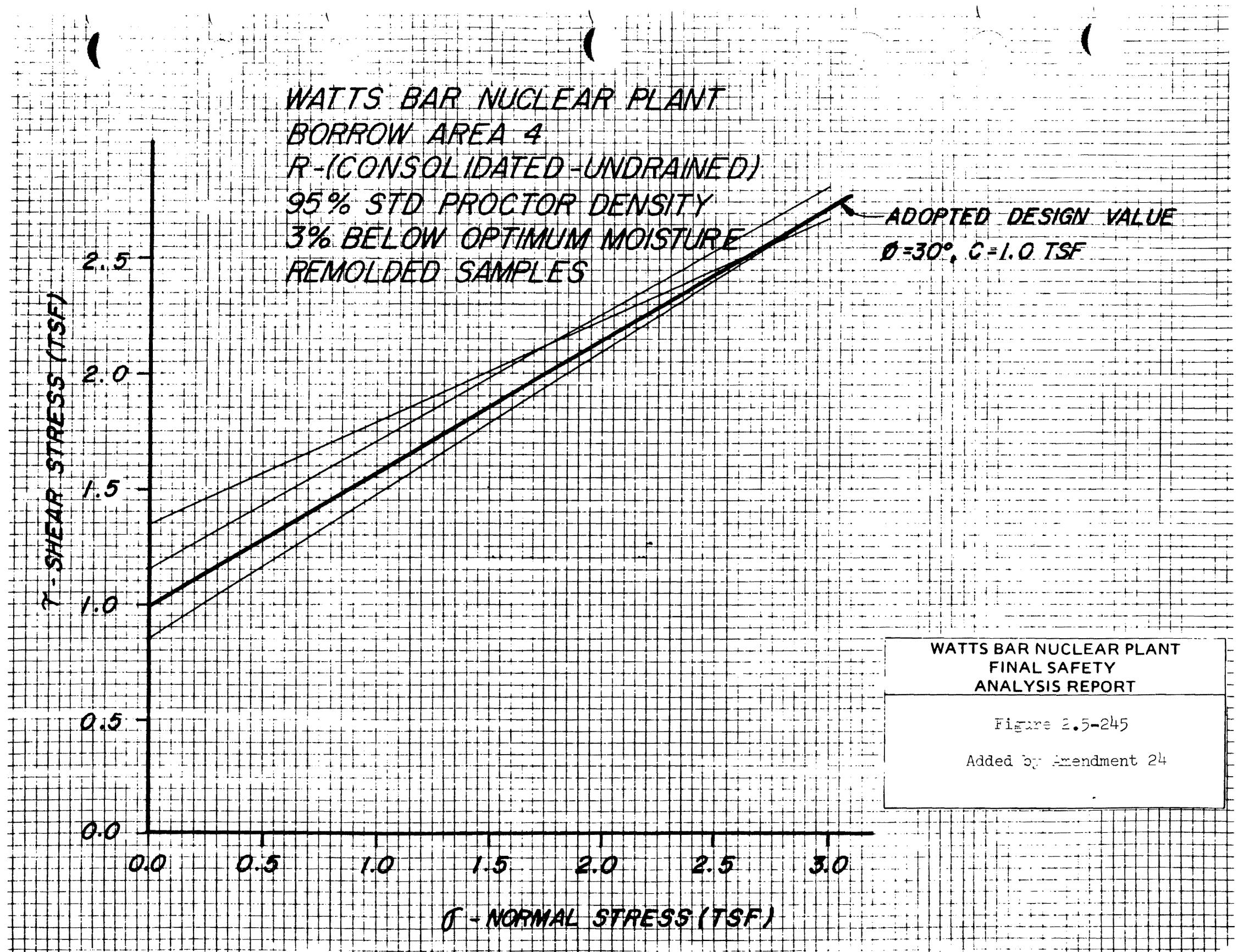


Figure 2.5-245 Watts Bar Nuclear Plant Borrow Area 4R - (Consolidate Undrained) 95% STD Proctor Density 3% Below Optimum Moisture Remolded Samples

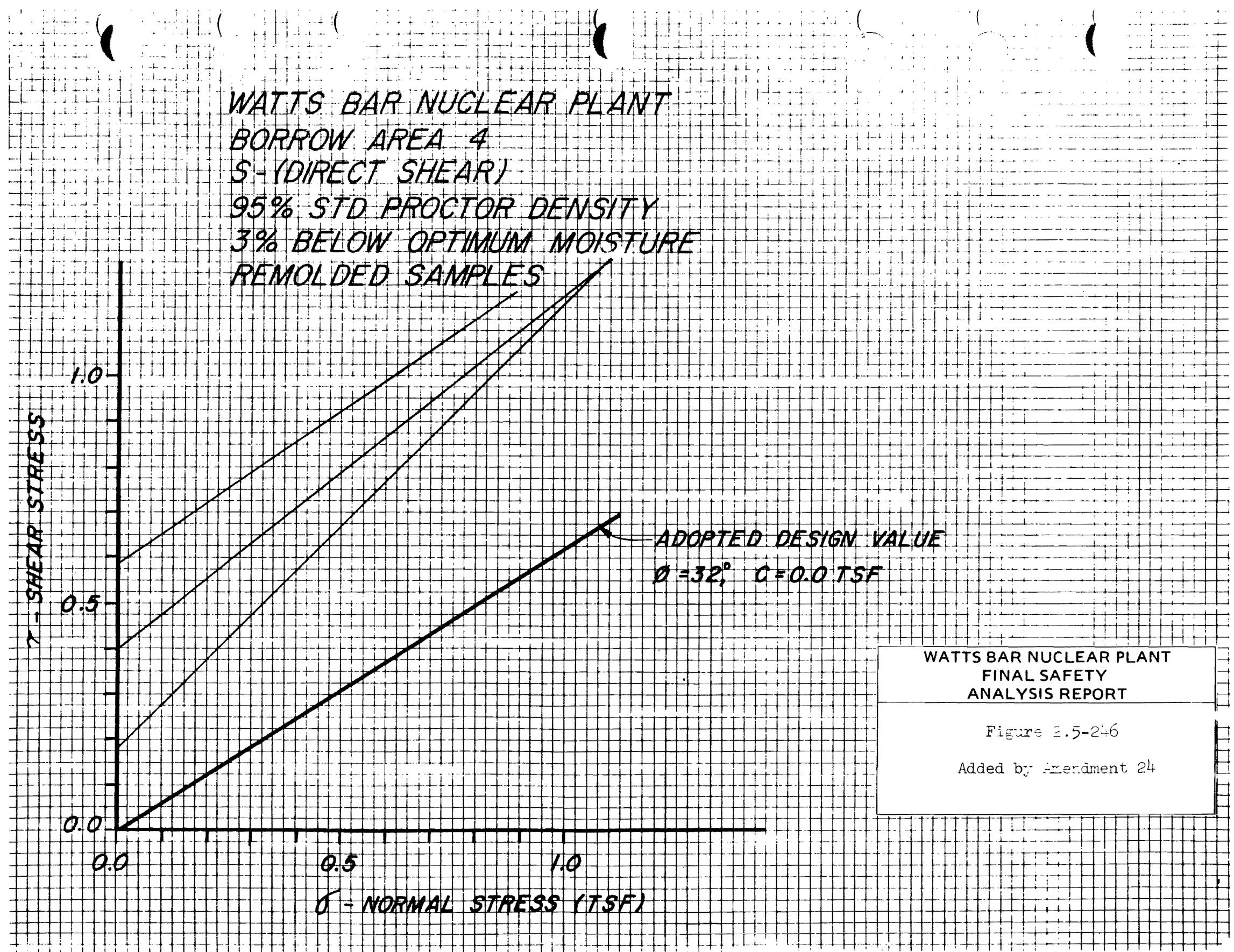


Figure 2.5-246 Borrow Area 4 S -(Direct Shear) 95% STD Proctor Density 3% Below Optimum Moisture Remolded Samples

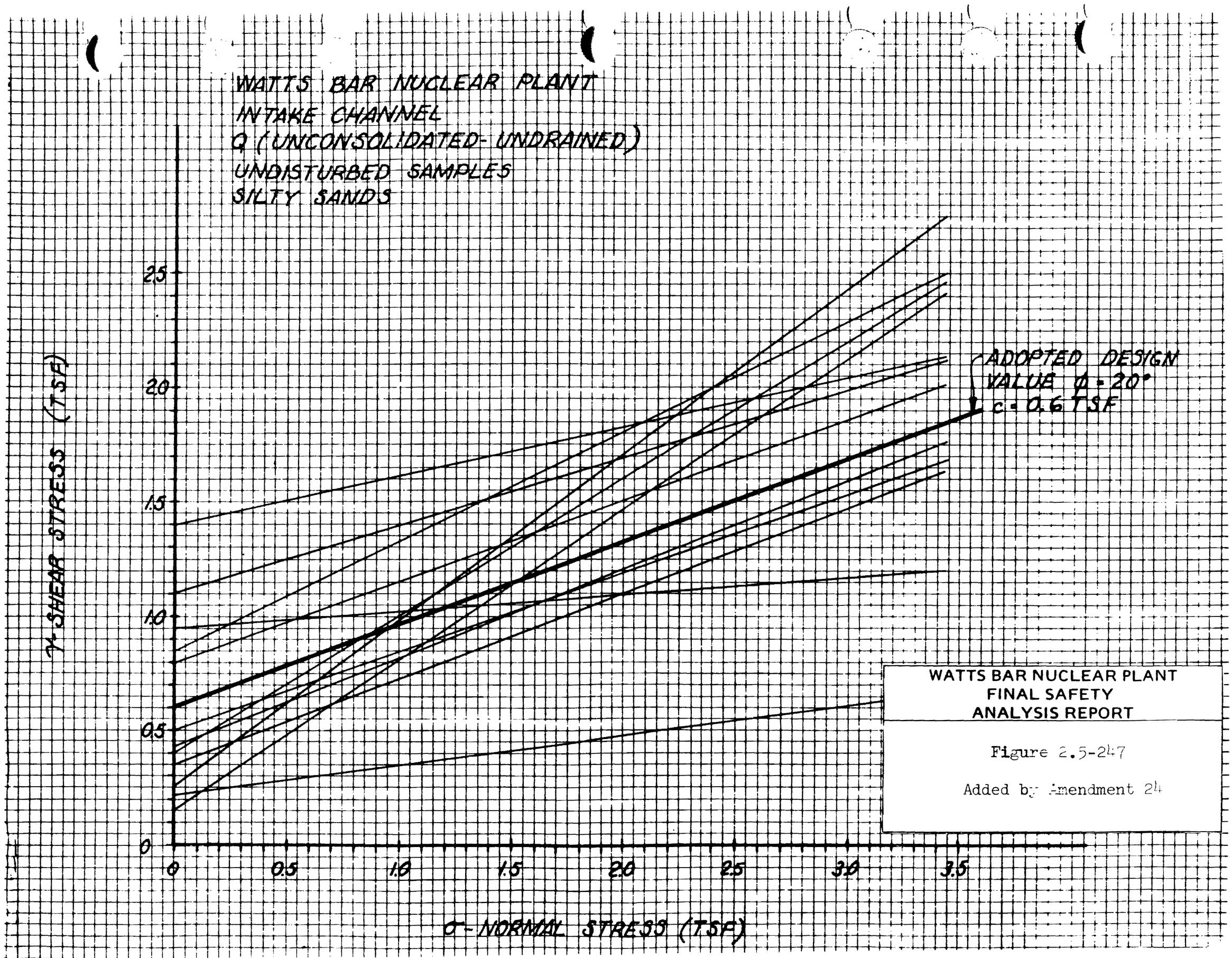


Figure 2.5-247 Intake Channel Q - (Unconsolidated - Undrained Samples) Silty Sands

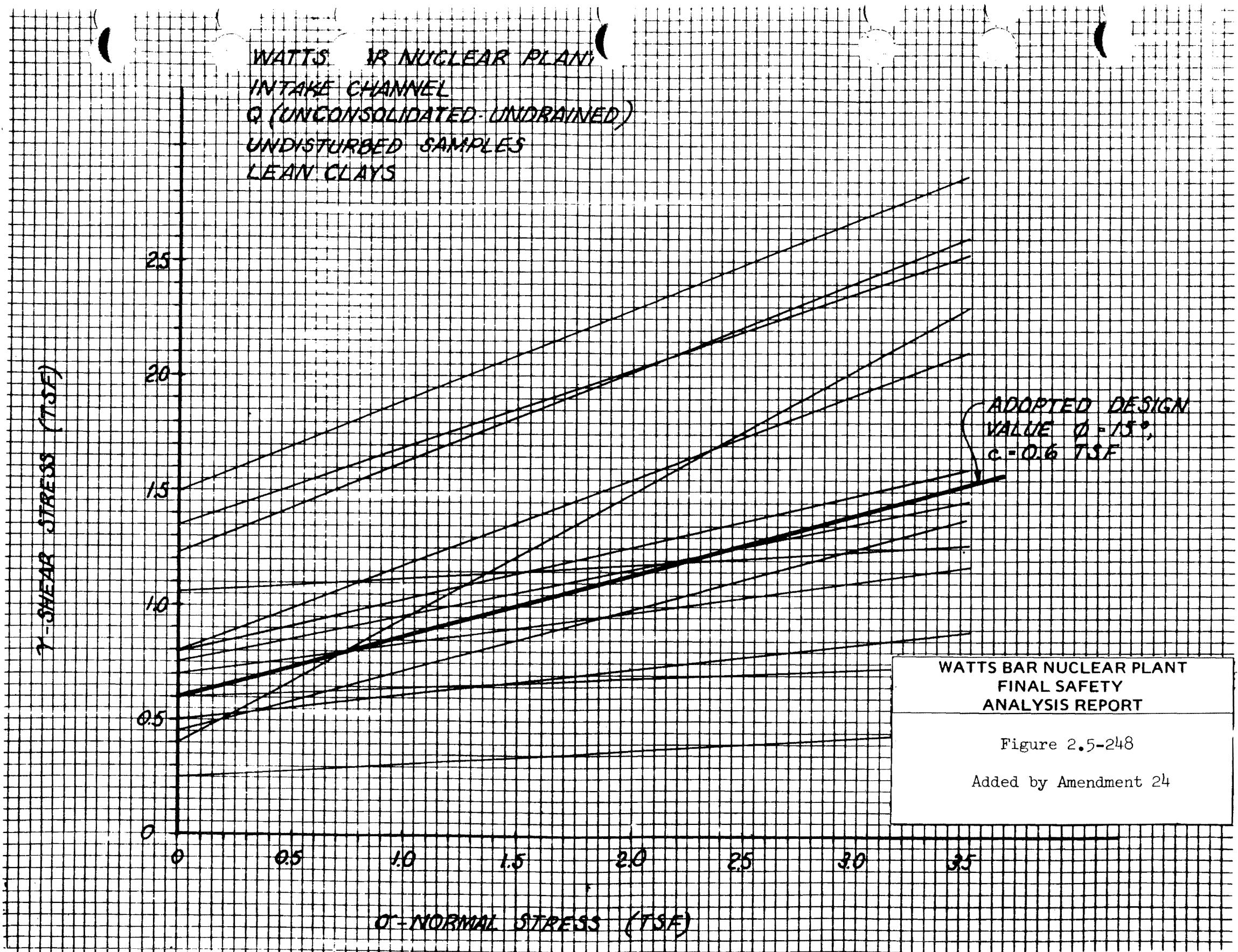


Figure 2.5-248 Intake Channel Q - (Unconsolidated-Undrained) Undisturbed Samples Lean Clays

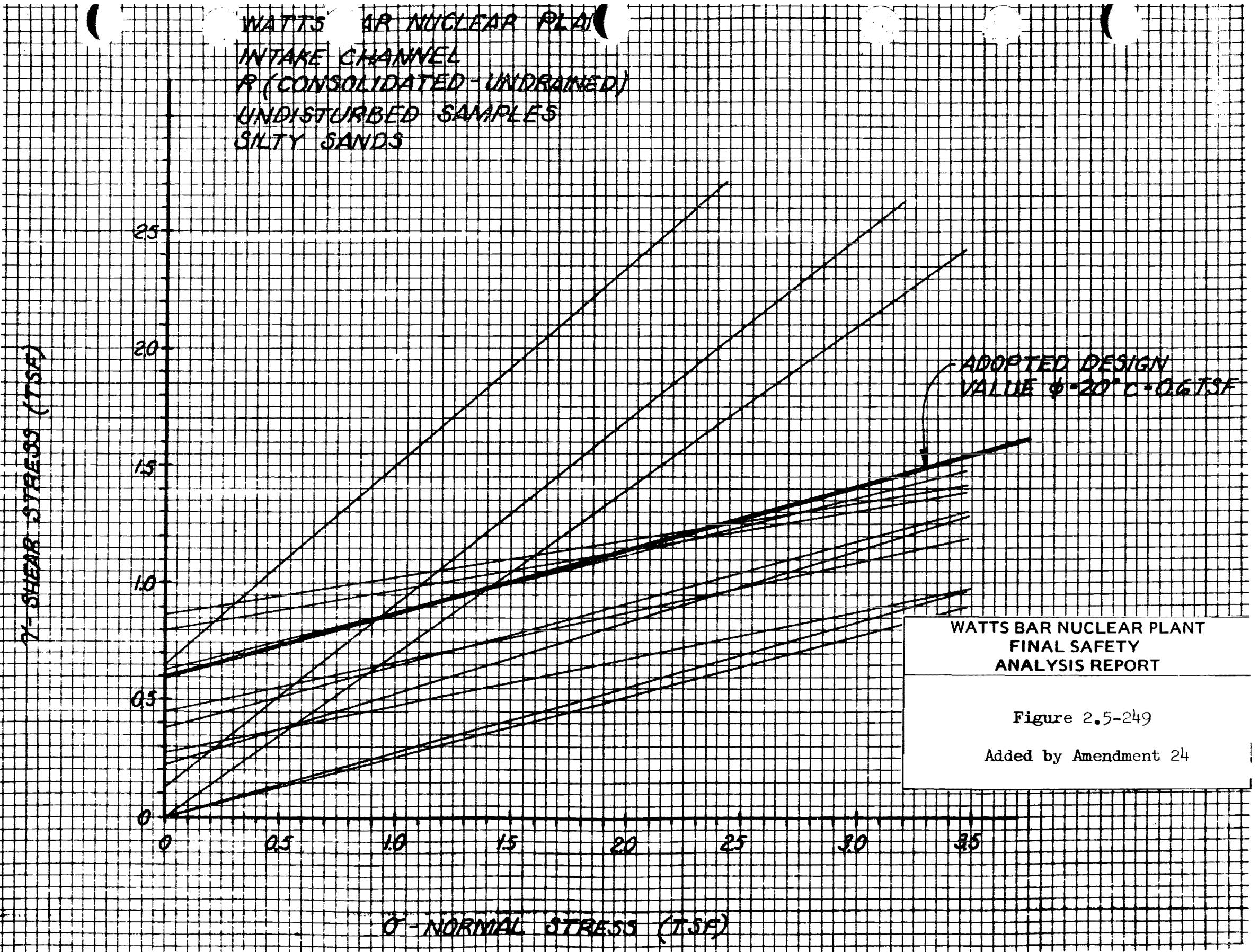


Figure 2.5-249 Intake Channel R - (Consolidated-Undrained) Undisturbed Samples Silty Sands

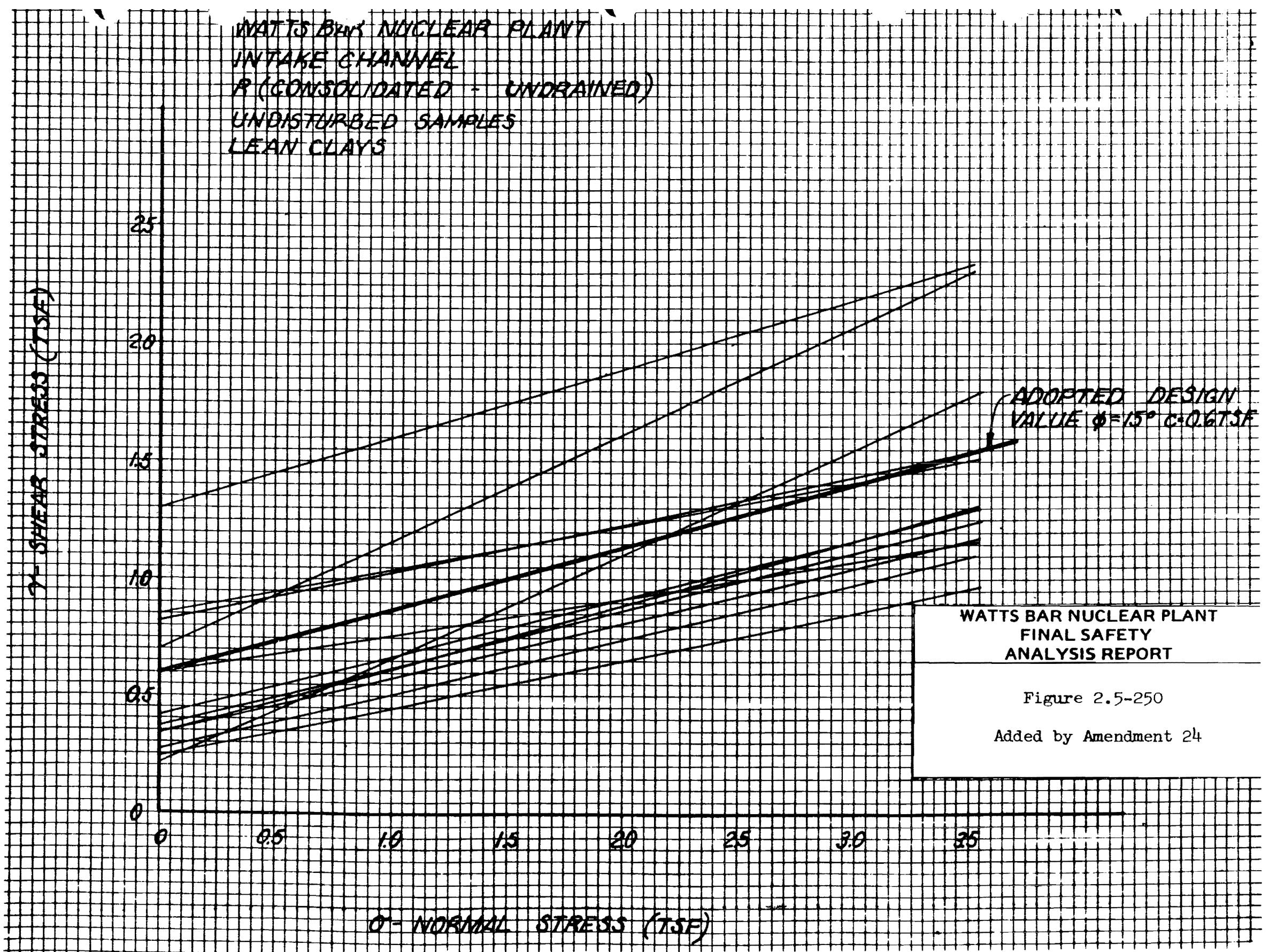


Figure 2.5-250 Intake Channel R - (Consolidated-Undrained) - Undisturbed Samples Lean Clays

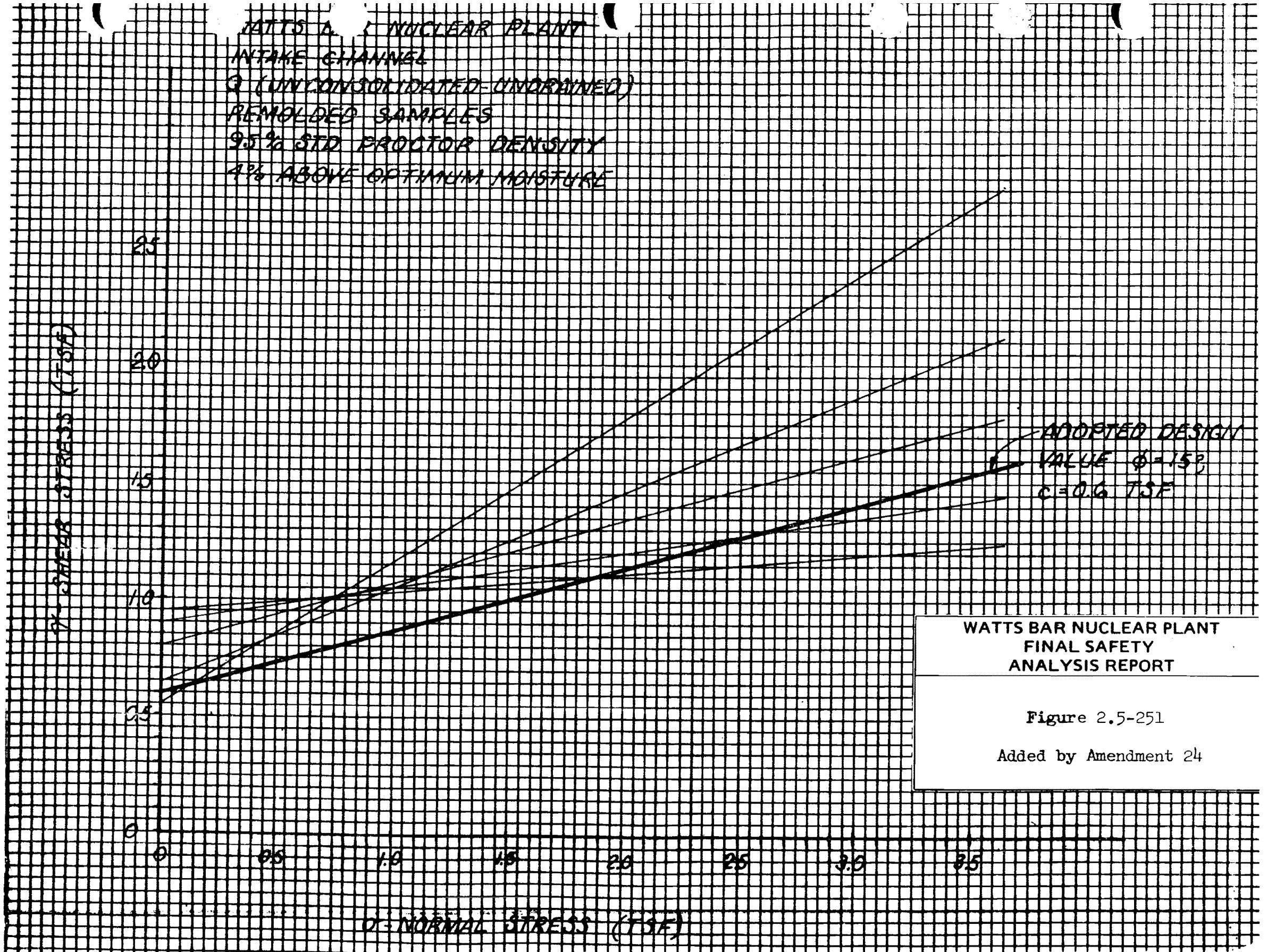
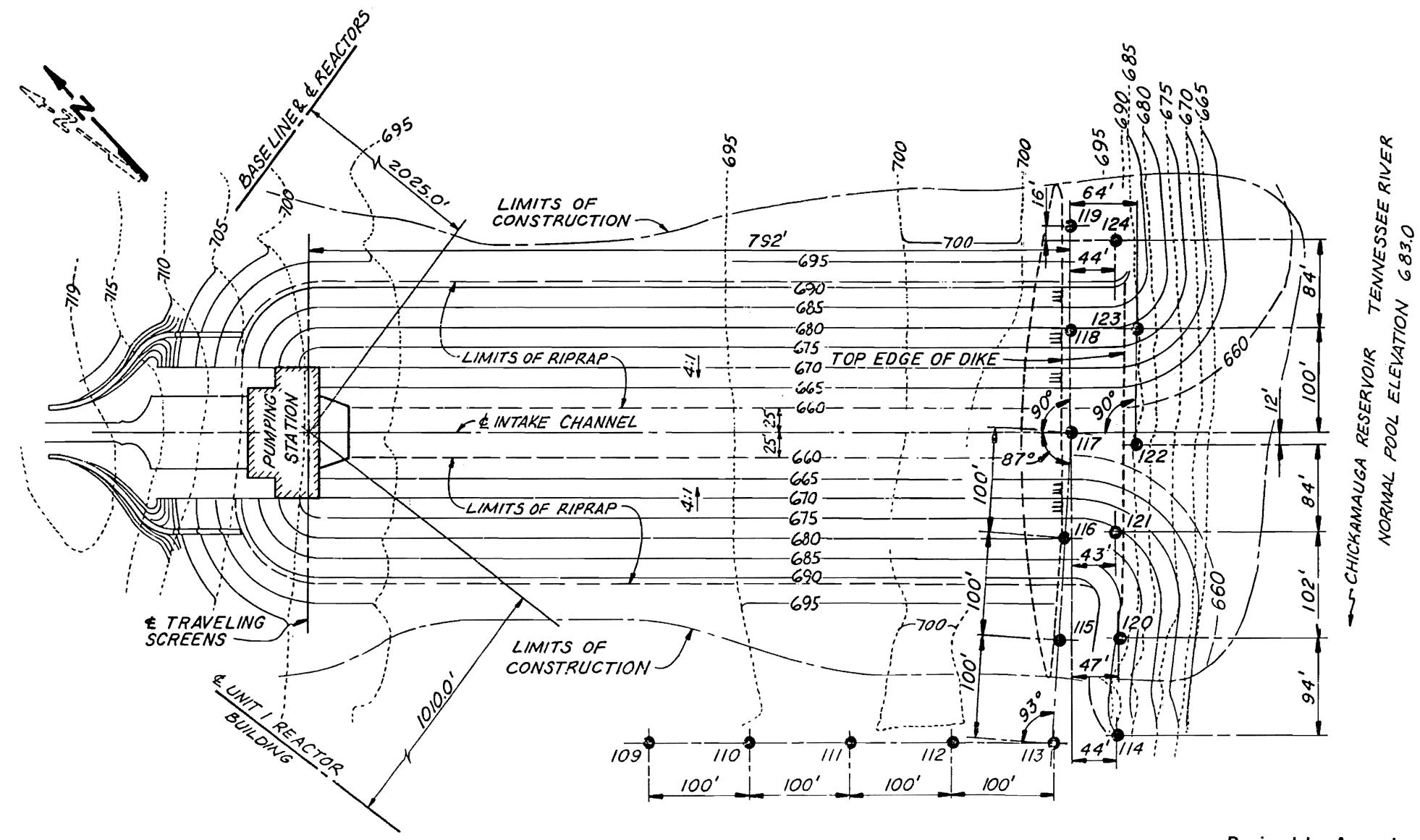


Figure 2.5-251

Added by Amendment 24

Figure 2.5-251 Intake Channel Q - (Unconsolidated Undrained) Remolded Samples 95% STD Proctor Density 4% Above Optimum Moisture



Revised by Amendment 44

LEGEND:

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SITE STUDIES
INTAKE CHANNEL
ADDITIONAL SOILS
INVESTIGATION
TVA DWG NO. 10B333 R1
FIGURE 2.5-252**

Figure 2.5-252 Site Studies Intake Channel Additional Soils Investigation

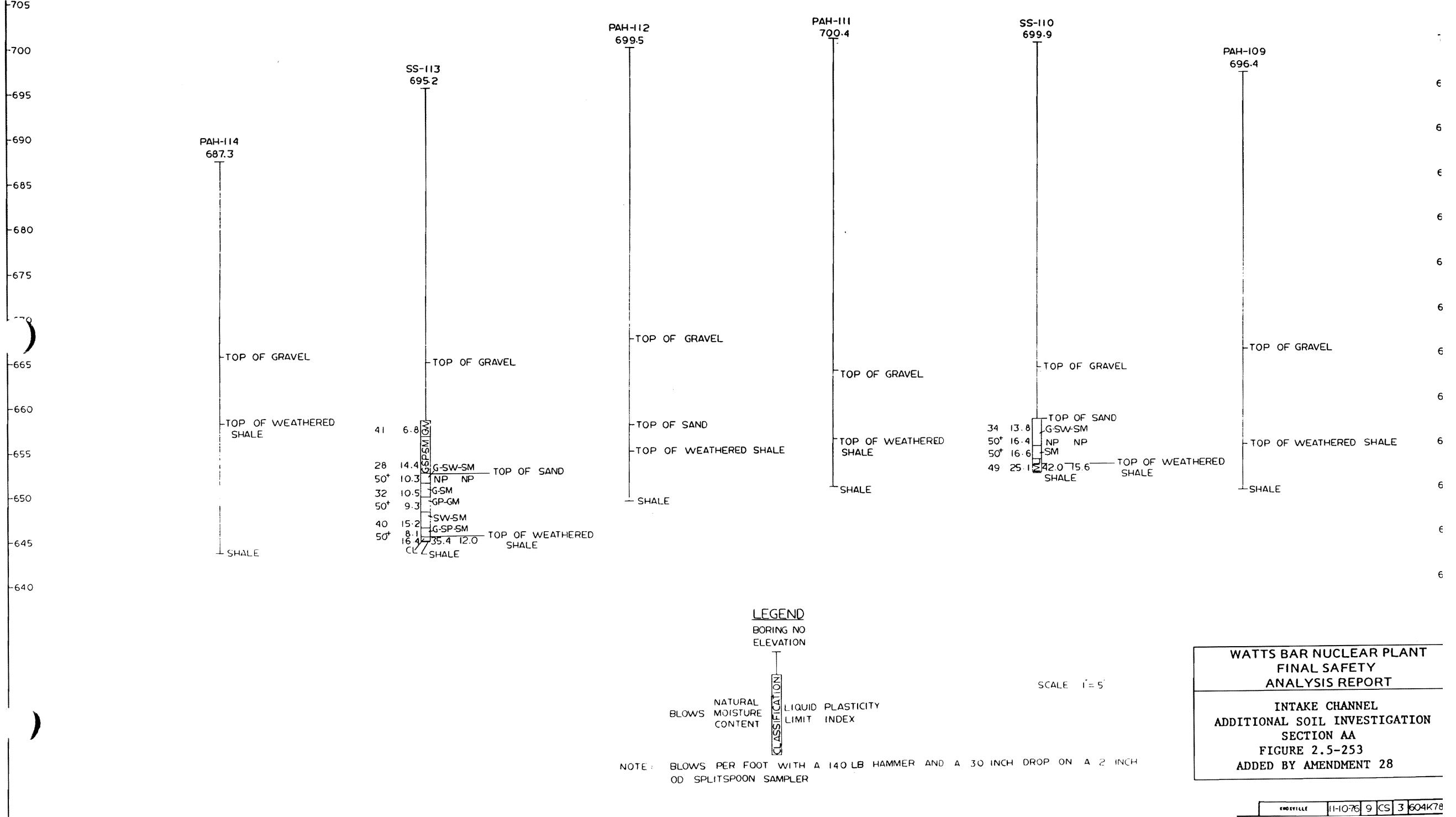


Figure 2.5-253 Intake Channel Additional Soil Investigation Section AA

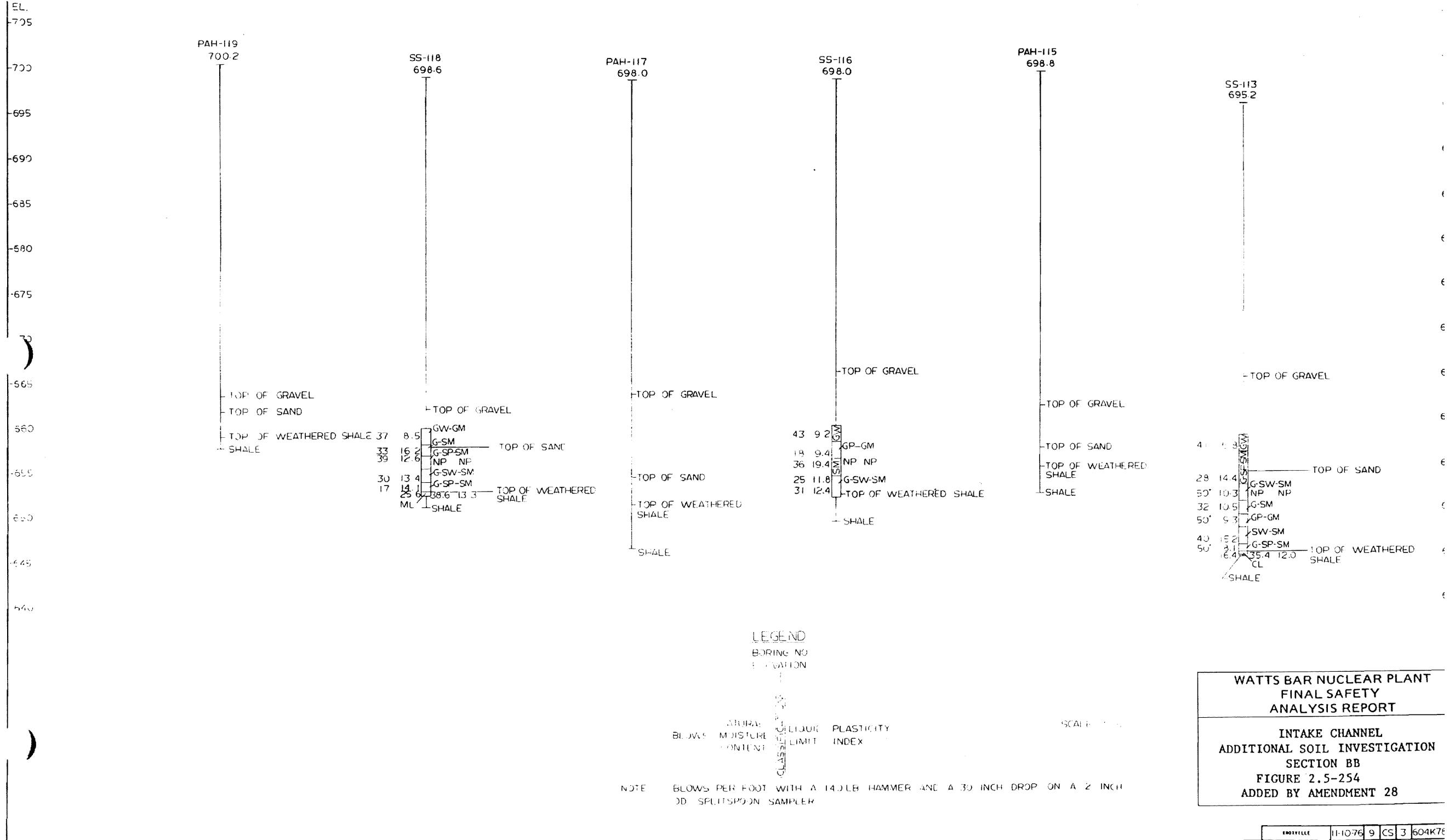


Figure 2.5-254 Intake Channel Additional Soil Investigation Section BB

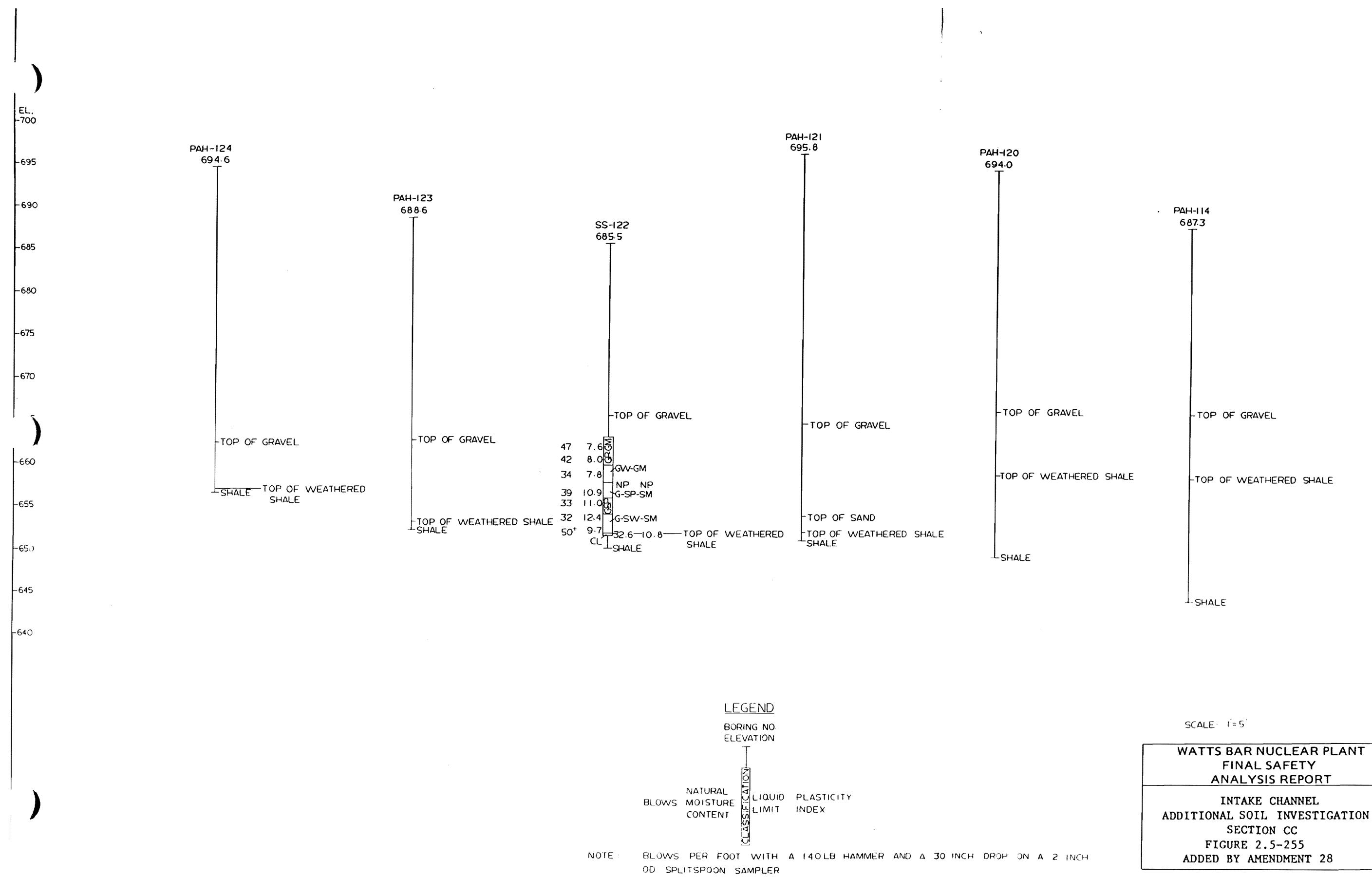
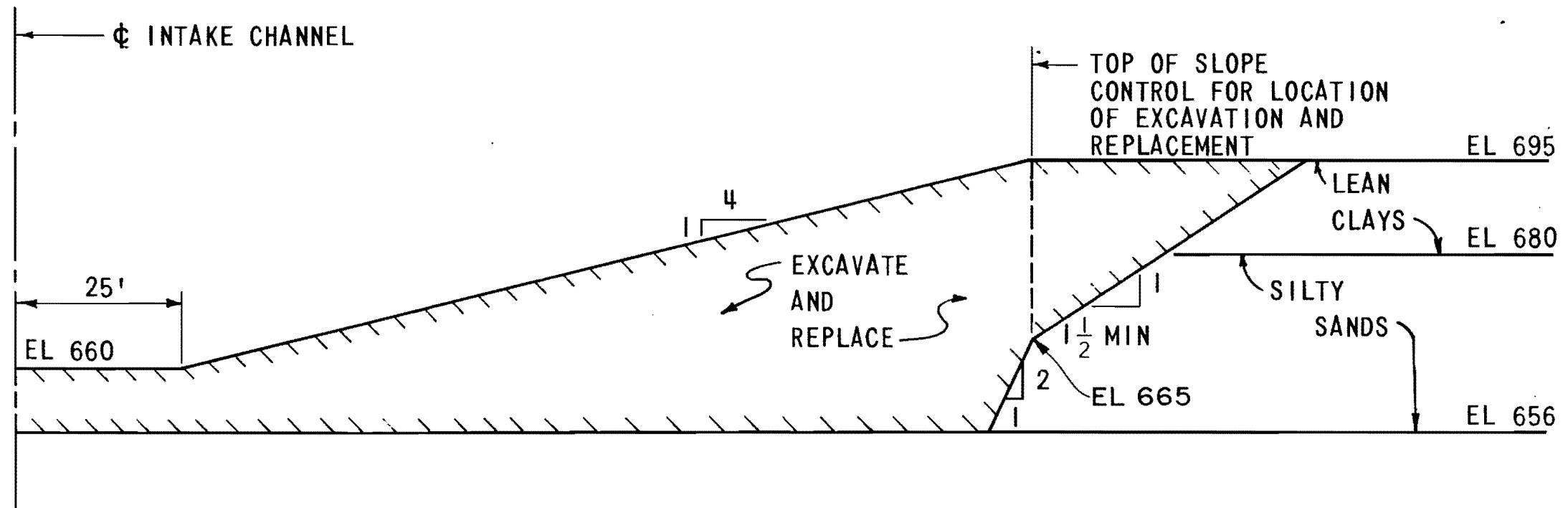


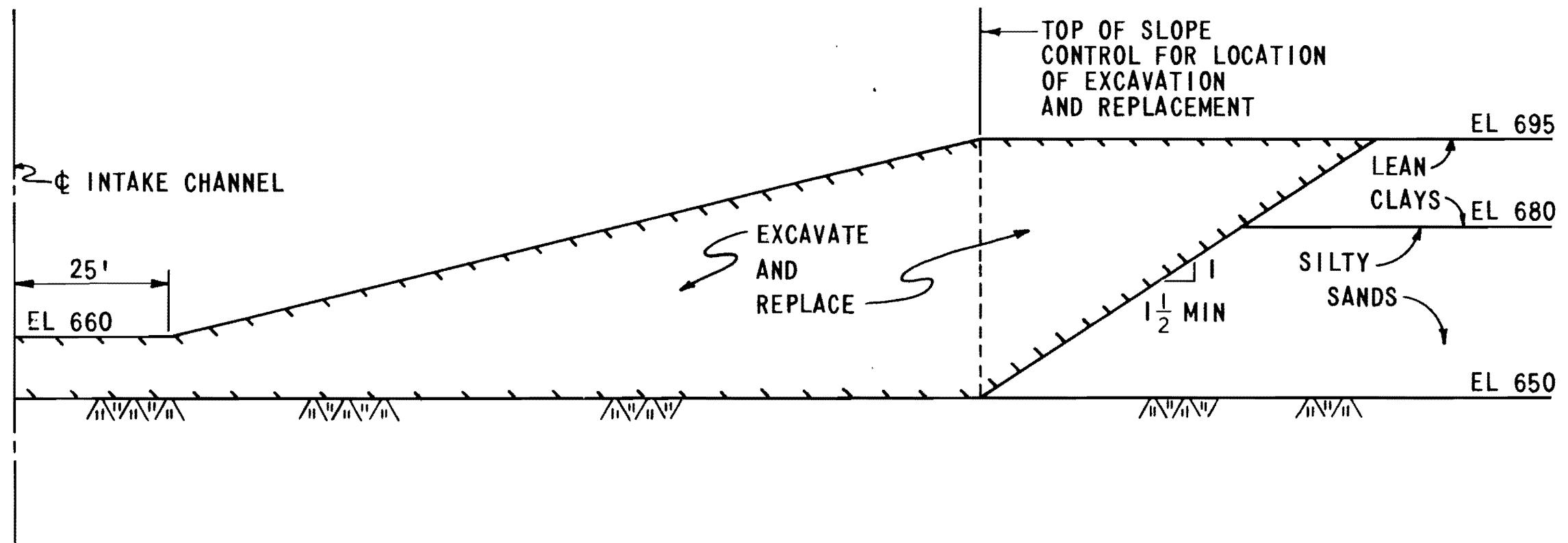
Figure 2.5-255 Intake Channel Additional Soil Investigation Section CC



INTAKE CHANNEL - LATERAL EXCAVATION AND REPLACEMENT
DOWNSTREAM SIDE OF INTAKE CHANNEL WITH BEDROCK AT 656

FIGURE 2.5-256
ADDED BY AMENDMENT 28

Figure 2.5-256 Intake Channel - Lateral Excavation and Replacement Downstream Side of Intake Channel with Bedrock at 656



INTAKE CHANNEL - LATERAL EXCAVATION AND REPLACEMENT
DOWNSTREAM SIDE OF INTAKE CHANNEL WITH BEDROCK AT 650

FIGURE 2.5-257
ADDED BY AMENDMENT 28

Figure 2.5-257 Intake Channel - Lateral Excavation and Replacement Downstream Side of Intake Channel with Bedrock at 650

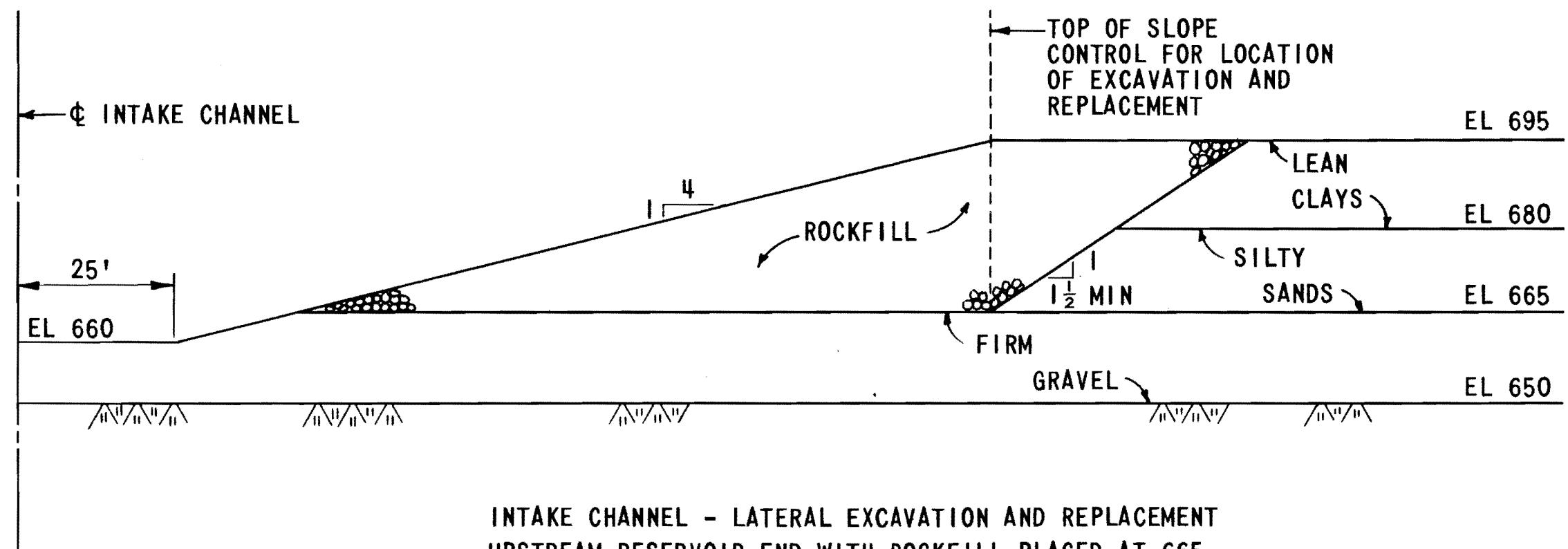


FIGURE 2.5-258
ADDED BY AMENDMENT 28

Figure 2.5-258 Intake Channel - Lateral Excavation and Replacement Upstream Reservoir End with Rockfill Placed at 665

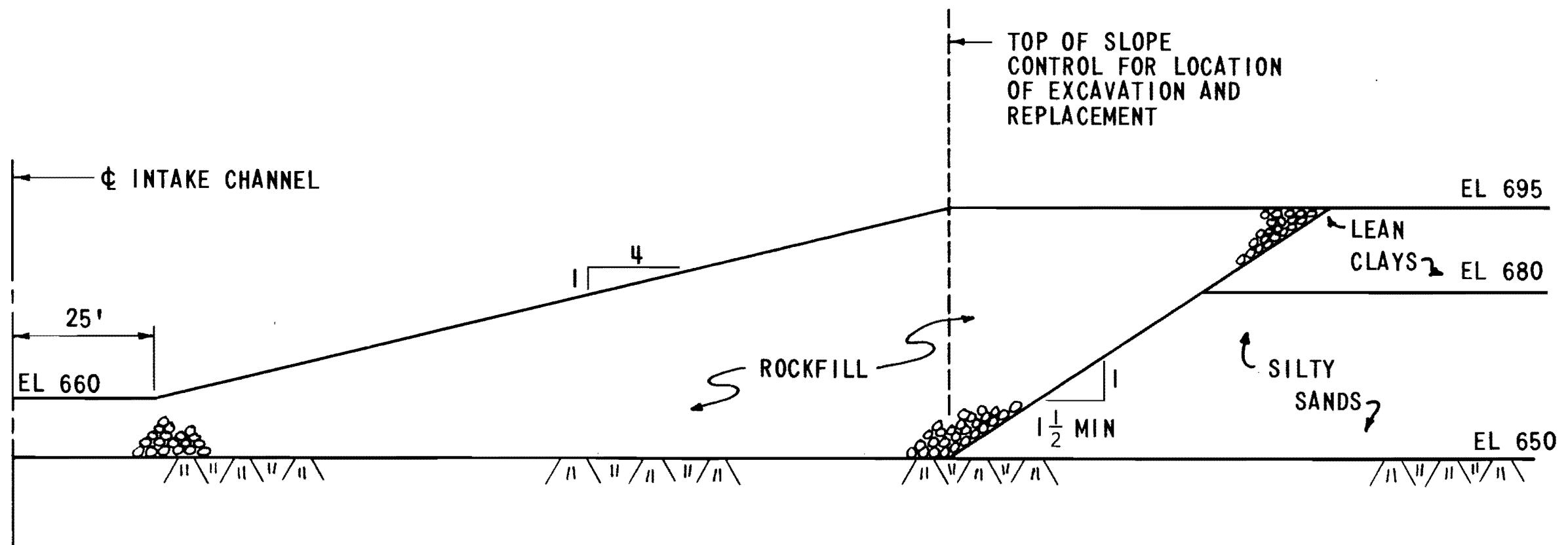


FIGURE 2.5-259
ADDED BY AMENDMENT 28

Figure 2.5-259 Intake Channel - Lateral Excavation and Replacement Downstream Reservoir End With Rockfill Placed at El. 650

TENNESSEE VALLEY AUTHORITY
INGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Sheet
1 Of 1

Project	WATTS	BAR	N. P.	Feature	BORROW AREA 7		
Boring	PAH-1	Station	15+53S	Range	43+82W	Surface Elevation	699.1
Date Drilled	10-6-80	To	10-6-80	Prepared By	JLB	Checked By	WJL
Depth	Elevation	SPT (N)	Log	W	LL	PI	X
1"=5'							
0							
-6.95			ML	23.4	42	14	
-5				21.2	33	4	
-6.90			CJ	23.1	35	13	
-10				24.2	30	9	
-6.85							▽
-15							DISCONTINUED
-20							
-25							
-30							
-35							

Added by Amendment 44

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE-BORROW AREA 7-BORING PAH-1 FIGURE 2.5-260

Figure 2.5-260 Soil Profile - Borrow Area 7, Boring PAH-1

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Shee
1 Of 1

Project <u>WATTS BAR</u> N. P.		Feature		BORROW AREA 7				
Boring	<u>PAH-2</u>	Station	<u>15 + 92S</u>	Range	<u>45 + 78W</u>	Surface E1	<u>693.3</u>	
Date Drilled <u>10 - 6 - 80</u> To <u>10 - 6 - 80</u>				Prepared By	<u>JLB</u>	Checked By	<u>✓</u>	
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0								
-6.95			CL-ML	20.4	41	15		
5			ML	20.8	33	12		
-6.90								
10				26.3	34	13		
-6.85								DISCONTINUED
15								
-6.80								
20								
-6.75								
25								
-6.70								
30								
-6.65								
35								

Added by Amendment 44

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE-BORROW AREA 7-BORING PAH-2
FIGURE 2.5.261

Figure 2.5-261 Soil Profile - Borrow Area 7, Boring PAH-2

**TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)**

Shee-
1 Of 1

Project WATTS BAR N. P. Feature BORROW AREA 7
 Boring PAH-3 Station 16+31S Range 47+74W Surface Elevation 695.2
 Date Drilled 10-7-80 To 10-7-80 Prepared By JLB Checked By ME

Depth	Elevation (E1)	SPT (N)	Liquid Limit (LL)	Plastic Limit (PI)	Shrinkage Limit (X)	Remarks
1"=5'						
0	-695					
5	-690	CL-M	21.9	36	12	
10	-685	CL	23.2	32	10	
15	-680		25.5	31	10	
20			26.2	32	12	
25						DISCONTINUED
30						
35						

Added by Amendment 44

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE-BORROW AREA 7-BORING PAH-3
FIGURE 2.5-262**

Figure 2.5-262 Soil Profile - Borrow Area 7, Boring PAH-3

**TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)**

Sheet 1 Of 1

Project WATTS BAR N. P. Feature BORROW AREA 7
 Boring PAH-4 Station 16+71S Range 49+70 Surface El 695.6
 Date Drilled 10-7-80 To 10-7-80 Prepared By JLB Checked By ME

Figure 2.5-263 Soil Profile - Borrow Area 7, Boring PAH-4

**TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)**

Sheet
1 Of 1

Project WATTS BAR N. P. Feature BORROW AREA 7
 Boring PAH-5 Station 17+51S Range 43+58W Surface Elevation 700
 Date Drilled 10-9-80 To 10-9-80 Prepared By JLB Checked By JLB

Depth	Elevation (E1)	SPT (N)	L o d	W	LL	PI	X	Remarks
1 " = 5'								
0	-700							
5	-695	ML		24.2	42	11		
10	-690	CL=ML		20.7	28	5		
15	-685			24.9	34	10		
20								
25								
30								
35								

NO RECOVERY - WET MATERIAL

DISCONTINUED

Added by Amendment 44

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE-BORROW AREA 7-BORING PAH-5
FIGURE 2.5-264**

Figure 2.5-264 Soil Profile - Borrow Area 7, Boring PAH-5

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Sheet
1 Of 1

Project WATTS BAR N. P Feature BORROW AREA 7 ...
 Boring PAH-6 Station 17+91S Range 45+54W Surface E1 693.
 Date Drilled 10-7-80 To 10-7-80 Prepared By JLB Checked By JLB

Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0								
-695			M	21.1	32	7		
-5			C	25.6	31	9		
-690			CL-M	24.1	27	6		
-10								
-685								
-15								
-680								
-20								
-25								
-30								
-35								

DISCONTINUED

Added by Amendment 44

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE-BORROW AREA 7-BORING PAH-6
FIGURE 2.5-265**

Figure 2.5-265 Soil Profile - Borrow Area 7, Boring PAH-6

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Sheet
1 Of 1

Project <u>WATTS BAR N. P.</u>			Feature		BORROW AREA 7		
Boring	<u>PAH - 7</u>	Station <u>18 + 30 S</u>	Range	<u>47 + 50 W</u>	Surface E1	<u>697 . 1</u>	
Date Drilled <u>10 - 7 - 80</u> To <u>10 - 7 - 80</u>			Prepared By <u>JLB</u>		Checked By <u>WZ</u>		
Depth	E1	SPT (N)	L o g	W	LL	PI	X
1"=5'							
0							
-6.95			CL-ML	21.9	49	18	
5				23.1	40	15	
-6.90			CL	25.7	34	12	
10							
-6.85							
15							
-6.80							
20							
-6.75							
25							
-6.70							
30							
-6.65							
35							

NO RECOVERY - WET MATERIAL
 DISCONTINUED

Added by Amendment 44

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE-BORROW AREA 7-BORING PAH-7
FIGURE 2.5-266**

Figure 2.5-266 Soil Profile - Borrow Area 7, Boring PAH-7

**TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)**

Sheet
1 Of 1

Project WATTS BAR N. P Feature BORROW AREA 7
 Boring PAH-8 Station 18 + 69S Range 49 + 46W Surface E1 697.1
 Date Drilled 10-7-80 To 10 - 7 - 80 Prepared By JLB Checked By

Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0	-695		CL	22.7	43	18		
5	-690		CL-ML	23.6	38	13		
10	-685		MH	26.9	53	23		
15	-680		CL	24.7	42	19		
20	-675							
25	-670							
30	-665							
35	-660							

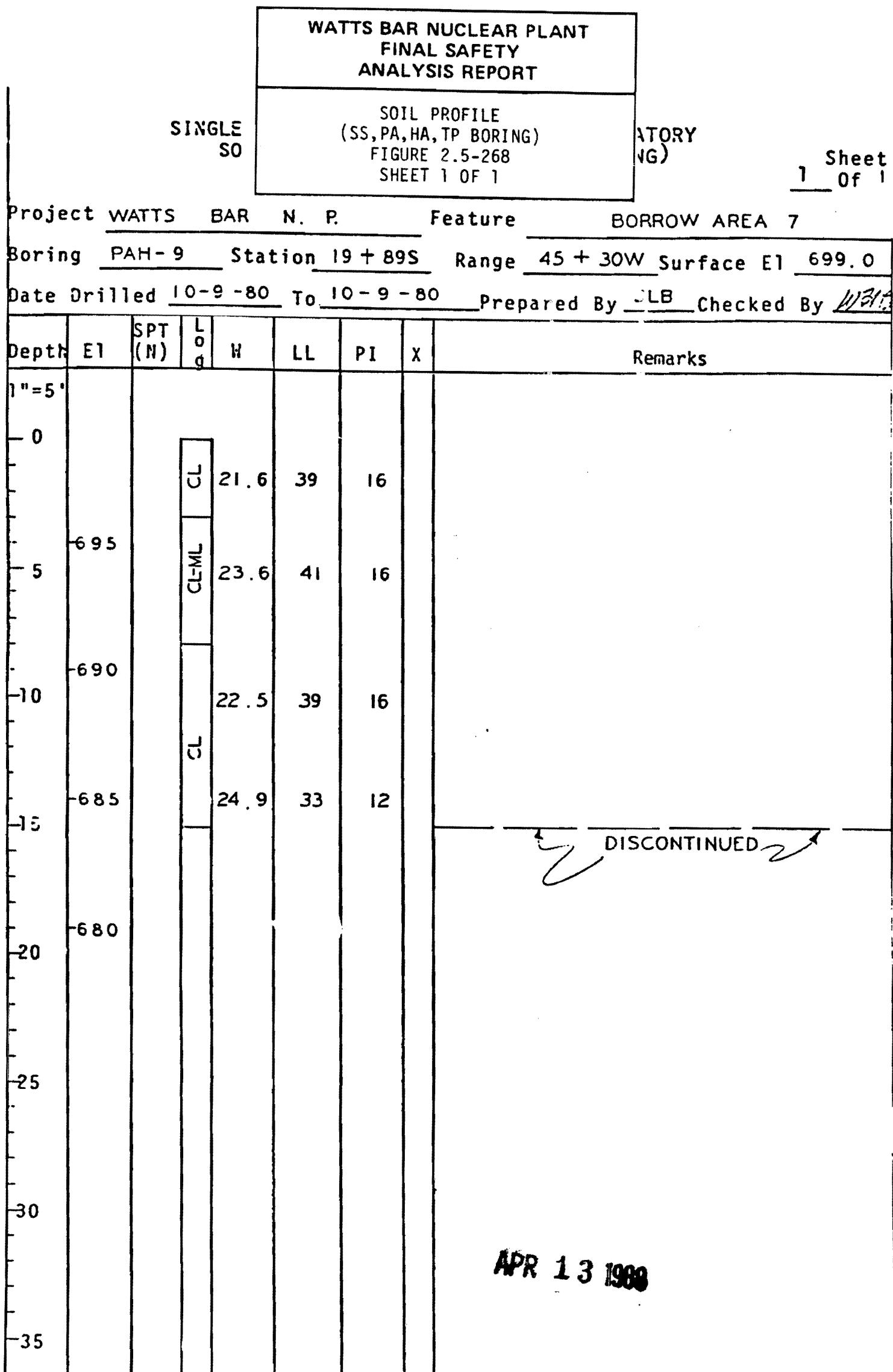
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Added by Amendment 44

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE-BORROW AREA 7-BORING PAH-8
FIGURE 2.5-267**

Figure 2.5-267 Soil Profile - Borrow Area 7, Boring PAH-8



Added by Amendment 62

Figure 2.5-268 Soil Profile - Borrow Area 7, Boring PAH-9 (SS, PA, HA, TP, Boring)

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Sheet:
1 Of 1

Project	WATTS	BAR	N. P.	Feature	BORROW AREA	7
Boring	PAH-10	Station	20+28S	Range	47+26W	Surface E1 698.2
Date Drilled 10-9-80 To 10-9-80			Prepared By JLB		Checked By WJ	

Depth	EI	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0								
-6.95								
5								
-6.90								
-10								
-6.85								
-15								
-6.80								
20								
-6.75								
-25								
-30								
-35								

CL CL ML CH MH CL

25.2 25.1 26.5 25.7

47 46 52 48

22 18 23 23

DISCONTINUED

Added by Amendment 44

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE-BORROW AREA 7-BORING PAH-10
FIGURE 2.5-269

Figure 2.5-269 Soil Profile - Borrow Area 7, Boring PAH-10

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

Sheet
1 Of 1

Project WATTS BAR N. P. Feature BORROW AREA 7
 Boring PAH-11 Station 20 + 68S Range 49 + 26W Surface Elevation 696.5
 Date Drilled 10-9-80 To 10-9-80 Prepared By JLB Checked By WES

Depth	Elevation (E1)	SPT (N)	Log	W	LL	PI	X	Remarks
1 " = 5 "								
0	-695			21.0	49	23		
-5	-690		C	21.2	44	19		
-10	-685			25.2	46	22		
-15	-680		CHMH	33.7	54	25		
-20	-675							
-25								
-30								
-35								

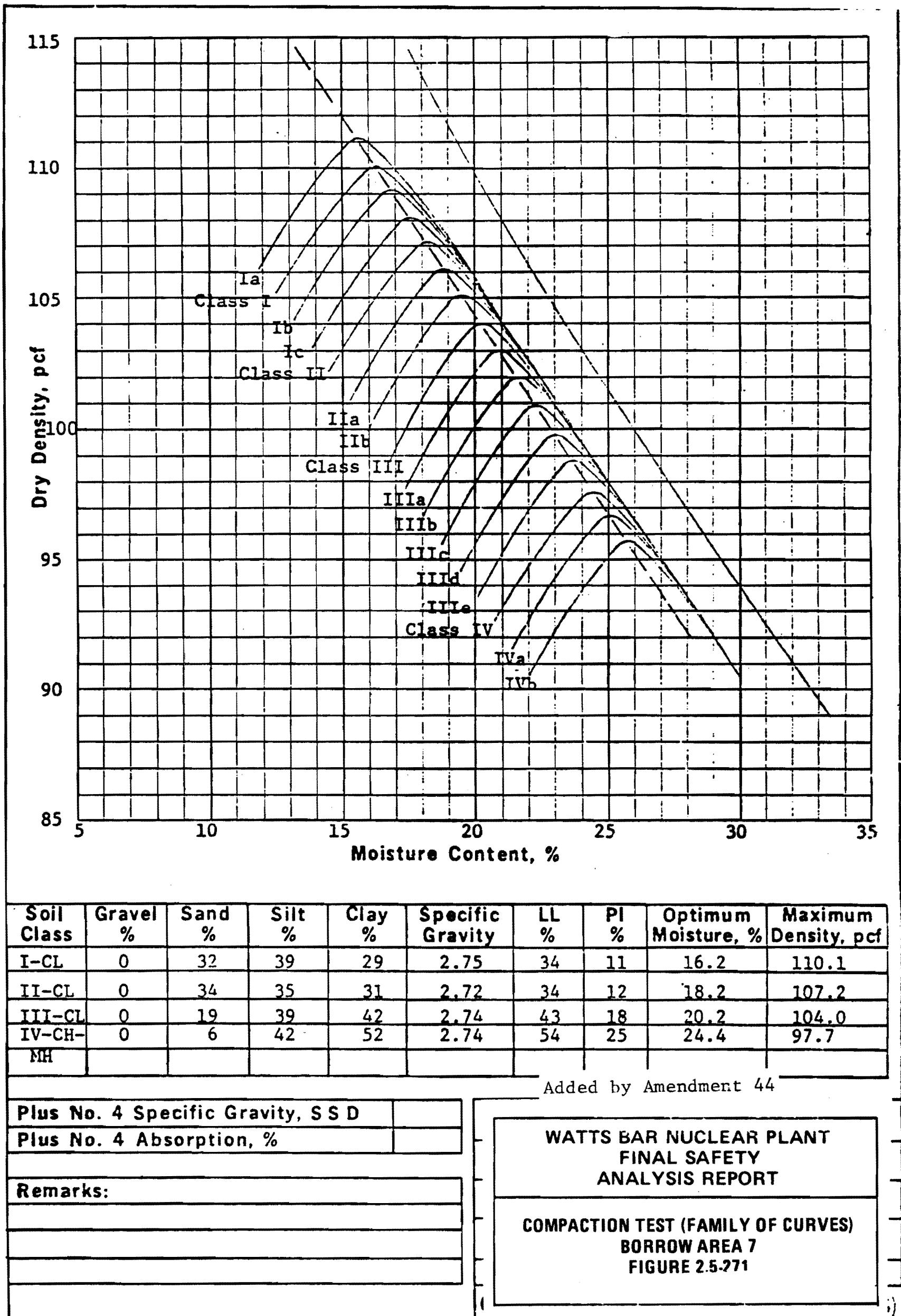
DISCONTINUED

Added by Amendment 44

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE-BORROW AREA 7-BORING PAH-11
FIGURE 2.5-270

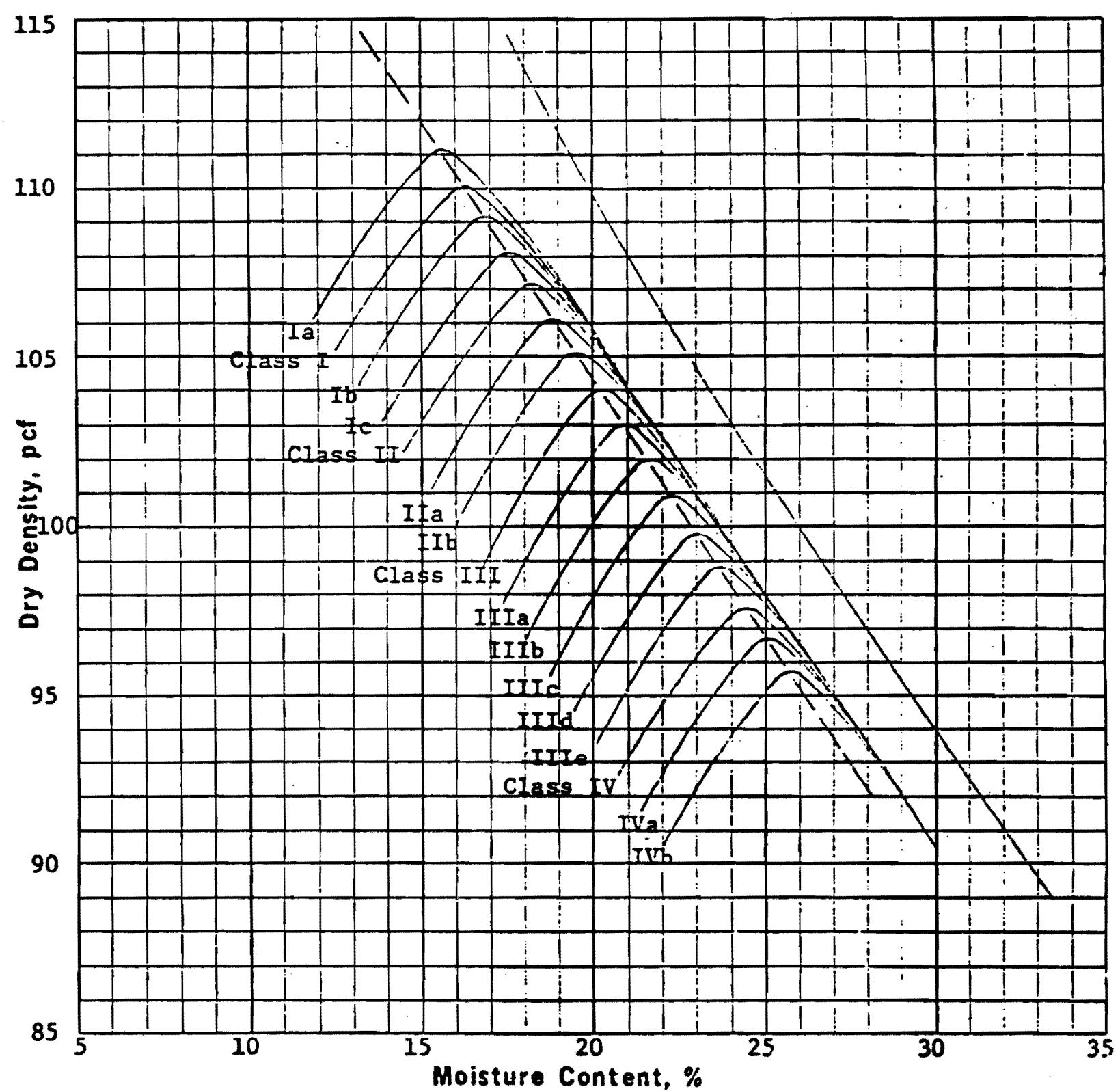
Figure 2.5-270 Soil Profile - Borrow Area 7, Boring PAH-11



TVA 10201 (CONST-12-76)

Tested by: CHFReviewed by: CHF

Figure 2.5-271 Compaction Test (Family of Curves) - Borrow Area 7



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-CL	0	32	39	29	2.75	34	11	16.2	110.1
II-CL	0	34	35	31	2.72	34	12	18.2	107.2
III-CL	0	19	39	42	2.74	43	18	20.2	104.0
IV-CH-	0	6	42	52	2.74	54	25	24.4	97.7
MH									

Added by Amendment 44

Plus No. 4 Specific Gravity, SSD	
Plus No. 4 Absorption, %	

Remarks:

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
COMPACTION TEST (FAMILY OF CURVES) BORROW AREA 7 FIGURE 2.5-271

TVA 10201 (CONST-12-76)

Tested by: CHFReviewed by: CE

Figure 2.5-272 Moisture - Penetration Test - Borrow Area 7

Figure 2.5-273 Yard Category I ERCW Piping and Conduits Plan

SOIL PROFILE (SS, PA, HA, TP BORING)

SHEET
1 OF 1

PROJECT WATTS BAR N. P. FEATURE 1E CONDUIT BANKS
 BORING SS-171 STATION 760:1E RANGE 1276.9 S SURFACE Elevation 721.2
 DATE DRILLED 11-25-81 TO 12-1-81 PREPARED BY JLB CHECKED BY HPM

DEPTH	Elevation	SPT (N)	LOG	W	LL	PI	REMARKS
1"=5'							
0	-720						
5	-715						
10	-710	20	SMSC	24.6	40	14	
15	-705	11		26.4	42	15	
20	-700	6		26.7			ALLUVIUM
25	-695	9		26.5			
30		9		NP			
35		12		24.1			
		50	SM	30.9			
		50	ML	19.7	37	11	WEATHERED SHALE
		50	M	23.4	NP	NP	
							BEDROCK
							Added by Amendment 49
							WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
							SOIL PROFILE (SS, PA, HA, TP BORING) 1E CONDUIT BANKS FIGURE 2.5-274

Figure 2.5-274 Soil Profile (SS, PA, HA, TP, Boring) 1E Conduit Banks

**SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)**

SHEET
OF

PROJECT	WATTS	BAR	N. P.	FEATURE	I E CONDUIT BANKS		
BORING	<u>SS-172</u>	STATION	<u>672.25E</u>	RANGE	<u>1227.75S</u>	SURFACE E1	<u>728.0</u>
DATE DRILLED	<u>12-7-81</u>	TO	<u>12-7-81</u>	PREPARED BY	<u>JLB</u>	CHECKED BY	<u>HJM</u>

DEPTH	E1	SPT (N)	G	W	LL	PI	REMARKS
1"=5'							
0							1032 - GRAVEL FILL
-725	17	CL		19.4	34	15	
5	14			20.9	36	16	BACKFILL
	8	CL		23.3	36	16	
-720	15			21.4	41	18	
10	17			19.9	36	13	
-715	34			19.2	38	15	
15	33	CLML		23.5	48	21	
							ALLUVIUM
-710	29			20.6	39	17	
20	15	D		26.1	40	17	
	15			23.7	42	18	
-705	30	G		13.8	34	9	
25	43			22.0	35	8	
	50	SM		22.5	36	10	
-700	50			21.2	35	11	
30	50	SMSG		21.9	36	12	WEATHERED SHALE Added by Amendment 49
-695	41	S		22.6	36	11	
35							WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
							SOIL PROFILE (SS, PA, HA, TP BORING) ID CONDUIT BANKS FIGURE 2.5-275

Figure 2.5-275 Soil Profile (SS, PA, HA, TP, Boring) 1E Conduit Banks

SOIL PROFILE (SS, PA, HA, TP BORING)

SHEI
OF

PROJECT WATTS BAR N. P. FEATURE IE CONDUIT BANKS
 BORING SS-173 STATION 583.3E RANGE 1177.8 S SURFACE E1 728.0
 DATE DRILLED 12-2-81 TO 12-3-81 PREPARED BY JLB CHECKED BY HJ

DEPTH	E1	SPT (N)	L.G	W	LL	PI	REMARKS
1"=5'							
0							1032-GRAVEL FILL
-725	18	D		22.3	46	20	
5	20		CL-ML	21.9	41	14	
-720	16	U		19.3	40	16	
10	23	M		20.4	39	13	ALLUVIUM
-715	25		SC	17.8	30	9	
15	37		SC	18.8	33	12	
-710	25	SC		25.0	49	17	
20	20		SMSC	20.9	35	13	
-705	28		SMSC	20.6	37	12	
25	28		CHMH	24.6	55	20	
-700	50		CHMH	22.9	57	27	
30	21			36.6	42	14	
-695	40	M		23.5	41	9	WEATHERED SHALE Added by Amendment 49
35	25			25.8	48	11	WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
	34			24.9	36	10	
	30	C		20.5	39	13	
							SOIL PROFILE (SS, PA, HA, TP BORING) ID CONDUIT BANKS FIGURE 2.5-276 (SHEET 1 OF 2)

Figure 2.5-276 Soil Profile (SS, PA, HA, TP, Boring) IE Conduit Banks Sheet 1 of 2

DEPTH	E1	ST ^r (N)	OG	W	LL	PI	REMARKS
1' = 5' 35		50	SMSC	17.6	33	10	
6.90	50			18.5	29	7	
40	50			17.0	30	9	
685							BEDROCK
45							
50							
55							
60							
65							
70							
75							
80							

Added by Amendment 49

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
(SS, PA, HA, TP BORING)
ID CONDUIT BANKS**

FIGURE 2.5-276 (SHEET 2 OF 2)

Figure 2.5-276 Soil Profile (SS, PA, HA, TP, Boring) ID Conduit Banks Sheet 2 of 2

SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

1 OF 1

PROJECT WATTS BAR N.P. FEATURE I E CONDUIT BANKS
BORING SS-174 STATION 490.75E RANGE 1123.75S SURFACE E1 728.0
DATE DRILLED 12-3-81 TO 12-4-81 PREPARED BY JLB CHECKED BY HPN

DEPTH	E1	SPT (N)	L G	W	LL	PI	REMARKS
1"=5'							
0							1032 - GRAVEL FILL
-725	40	M		21.5	43	15	
5	18	C		19.4	39	18	
-720	33	M		21.9	44	15	
47	C			19.1	40	18	BACKFILL
10	47	M		25.4	44	15	
-715	45			21.3	38	12	
15	40	S		15.5	32	13	
-710	41	CL ML		19.0	39	15	
20	50	SM		18.3	NP	NP	ALLUVIUM
-705	50	G		14.2	—	—	
25	50	CL ML		21.3	44	16	
-700	50	—		—	—	—	
30	50	W		21.6	40	13	WEATHERED SHALE
-695	50	S		21.6	38	12	Added by Amendment 49
-35	50	SM-SC		18.8	32	8	<p>WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p> <p>SOIL PROFILE (SS, PA, HA, TP BORING) ID CONDUIT BANKS FIGURE 2.5-277</p>

Figure 2.5-277 Soil Profile (SS, PA, HA, TP, Boring) ID Conduit Banks

CHEROKEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

SHEE
OF

PROJECT	WATTS BAR N. P.	FEATURE	I E CONDUIT BANKS	
BORING	<u>SS - 175</u>	STATION <u>405.75E</u>	RANGE <u>1072.85</u>	SURFACE E1 <u>728.0</u>
DATE DRILLED	<u>12-3-81</u>	TO <u>12-4-81</u>	PREPARED BY <u>JLB</u>	CHECKED BY <u>HDA</u>

DEPTH	E1	SPT (N)	L G	W	LL	PI	REMARKS
1"=5'							
0							
-725							1032 - GRAVEL FILL
5							
-720	14	SC	15.9		37	17	
	21	CL ML	24.5		47	20	
10	19	SC	17.8		37	16	
-715	31	ML	20.8		40	13	
	38	SC	15.5		32	12	
15	22	CH	33.0		54	26	
-710	33		25.0		38	10	
20	47		23.6		39	12	WEATHERED SHALE
-705	42	SM	23.1		43	15	
	30		31.4				
25	41		25.7		NP	NP	
-700							DISCONTINUED
30							
35							

Added by Amendment 49

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
(SS, PA, HA, TP BORING)
ID CONDUIT BANKS
FIGURE 2.5-278

Figure 2.5-278 Soil Profile (SS, PA, HA, TP, Boring) ID Conduit Banks

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP BORING)

SHEET
1 OF 1

PROJECT	WATTS	BAR N. P.	FEATURE	I E CONDUIT BANKS	
BORING	<u>SS-176</u>	STATION <u>377.25E</u>	RANGE	<u>968 . 75S</u>	SURFACE E1 <u>728.0</u>
DATE DRILLED	<u>12-7-81</u> TO <u>12-8-81</u>		PREPARED BY	JLB	CHECKED BY HPM

DEPTH	E1	SPT (N)	L G	W	LL	PI	REMARKS
1"=5'							
0	-725	35	SC	15.5	32	12	1032 - GRAVEL FILL
5		29	SS	11.0	20	1	BACKFILL
		47		SP-SM			
		50		5.3			
10	-720	50	SS	11.1	NP	NP	
				SM-SC			
		50		27.2			
		50		7.8			
		50		GP-GM			
		50		13.3			
15	-715	50	GM	11.5	NP	NP	ALLUVIUM
		50		13.0			
20	-710	50	CL-ML	27.5	41	16	
		47	SM-SC	21.5	39	13	
		50		19.6	36	12	WEATHERED SHALE
25	-705	50	CL-ML	23.8	40	13	
		50	SM-SC	20.6	36	11	
30	-700						DISCONTINUED
35							Add'd by Amendment 49

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
(SS, PA, HA, TP BORING)
ID CONDUIT BANKS
FIGURE 2.5-279

Figure 2.5-279 Soil Profile (SS, PA, HA, TP, Boring) ID Conduit Banks

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS,PA,HA,TP BORING)

SHEET
1 OF _____

PROJECT	WATTS BAR N.P.			FEATURE	I.E. CONDUIT BANKS				
BORING	SS-177		STATION	353.25E		RANGE	753.75S	SURFACE E1	728.0
DATE DRILLED	12-10-81		TO	12-10-81		PREPARED BY	JLB	CHECKED BY	HPN

DEPTH	E1	SPT (N)	L G	W	LL	P1	REMARKS		
1" = 5'									
0							1032-GRAVEL FILL		
725	50+	C		16.7	34	15	BACKFILL		
	50			8.5	NP	NP			
720	50+	SM		13.8					
	50+			14.2					
715	50+	SP-SM		9.2					
	50+			16.3			ALLUVIUM		
710	50+	SM		11.2					
	50+			SP-SM					
	50+			11.7					
705	50+	SM		13.1					
	50+			12.1			WEATHERED SHALE		
	50+	GP-GM							
700	50+	8.2			26	6			
	50+	SM-SC					BEDROCK		
							Added by Amendment 50		
							WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT		
							SOIL PROFILE (SS, PA, HA, TP BORING) ID CONDUIT BANKS FIGURE 2.5-280		
35									

Figure 2.5-280 Soil Profile (SS, PA, HA, TP, Boring) ID Conduit Banks

Figure 2.5-281 (Actual Figure Located in Oversized Figures File) (Sheet 1 of 2)

Figure 2.5-281 (Actual Figure Located in Oversized Figures File) (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-49						Boring SS - 49A						Prepared by <u>JLB</u>
Station 1821.9 S Range 868.7 E						Station 1820.3 S Range 871.93 E						Checked by <u>HPM</u>
Surface El 716.9						Surface El 711.7						
Date Drilled 7- 7-75 to 7- 7-75						Date Drilled 11-16-81 to 11-18-81						
El	SPT (N)	L O G	W	LL	PI	SPT (N)	L O G	W	LL	PI	REMARKS	
-715	30		23.6	56.0	22.1							
	27	I	27.2	60.9	25.1							
-710	30		26.8	53.1	21.4							ROADBED GRAVEL
	24	S	15.4	29.4	5.4	17	CL-ML	21.1	32	8		
-705	23	X	20.0	36.2	11.9	14		21.4	30	6		
	19	SM	21.2	36.0	11.6	9		24.6	29	3		
-700	18		26.7	34.0	10.2	5	SM	26.5 21.6	28	3		
	13	SM-SC	25.1	28.3	6.5	5	SM	26.5 29.0	NP	NP		ALLUVIUM
-695	14	ML	26.1	28.8	5.3	6		29.9	23	1		
	12	ML	26.8			5		31.8 32.4	NP	NP		
-690	9	ML-CL	31.9	27.4	7.0	6	ML	28.3 28.0	22	3		
	11	ML	29.1			5	CL	27.8 28.7	NP	NP		
-685	6	SM	29.0			6	SM	30.0	NP	NP		
	4	SM	28.0			17		31.2 21.2	NP	NP		
-680	31		25.3			50		18.9 SM-SC	37	13		WEATHERED SHALE
	50	SC	13.7									DISCONTINUED
-675	50	SC	14.8	37.5	14.9							
	50		12.7									
	50		13.5									
	50	GM	13.5									

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-282

Added by Amendment 50

Figure 2.5-282 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-283
SHEET 1 OF 2**

Project WATTS BAR N. P. Feature ERCW ALIGNMENT
 Boring SS-131 Station 1755.0S Range 805.0 E Surface E1 713.9
 Date Drilled 6-1-79 To 6-4-79 Prepared By JLB Checked By LL

Depth	E1	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5'								
0								ASPHALT
710	25	Σ		24.3	48.8	18.4		
5	25			19.5	39.0	14.7		LEAN CLAY AND SILT FILL
705	21		CL	19.3	35.2	11.5		
10	18			20.7				
700	10			25.9	37.1	13.3		ALLUVIAL LEAN CLAY AND SILT
15	7	M		22.2	28.5	5.2		
695	4			28.1	30.8	6.9	▽	
20	5			30.1	25.9	3.3	▽	
690	5	SM		29.7				ALLUVIAL SAND
25	7			26.2				
685	7			24.0	NP	NP		
30	50	GSM		20.6				ALLUVIAL GRAVEL
680	50	CL		17.2	38.0	14.9		
35	50			15.8				
	50	SC		15.9	32.7	11.2		WEATHERED SHALE
	50			14.9				
	16			14.1				Added by Amendment 50

Figure 2.5-283 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u> Boring <u>SS - 131</u>								
Depth	E1	SPT (N)	L O D	W	LL	PI	X	Remarks
1"=5'								
-35		50	U	10.8	32.7	11.2		WEATHERED SHALE
-675								BEDROCK
-40								
-670								
-45								
-50								
-55								
-60								
-65								
-70								
-75								
-80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-283
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-283 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-50						Boring SS-50A						Prepared by	
Station 1664.7S Range 787.5E						Station 1668.7S Range 787.8E						JLB	
Surface El 721.8						Surface El 717.2						Checked by HPM	
Date Drilled 7-23-75 to 7-23-75						Date Drilled 11-18-81 to 11-19-81							
El	SPT (N)	L G	W	LL	PI	SPT (N)	L G	W	LL	PI	REMARKS		
-720	25		18.0	40.5	17.8								
	18	C	22.5	43.3	18.5								
	23		21.3										ROADBED GRAVEL
-715	13		20.0	44.2	16.0	22		CL-ML	19.9	43	16		
	16		24.2			16		M	19.8	42	15		FILL
-710	25	ML	23.5	46.4	16.8	22			21.5	41	13		
	17		22.1	42.8	13.6	25			20.9				
	14		22.8			22			24.4	38	11		
-705	10		22.1	37.5	11.3	20			25.3	35	9		ALLUVIUM
	10	SM	22.4	34.1	7.6	14	SM		25.5	NP	NP		
-700	8	C	25.6	36.3	12.0	11			28.8	27	NP	2	
	5		28.2			13			26.9	NP			
	8	SM	29.1			9			27.4	26	2		
	2		31.5	NP	NP	5			28.8	NP			
-695	10	G-SM	23.7			3		ML	33.5	29	3		
	37	SC	19.6			23			34.5	NP	NP		
	50	C	15.4	34.0	10.9	50		M	38.4	29	3		
-690	50		15.2	36.9	13.5				34.8	NP	NP		
	50		12.0			23			25.1	37	10		WEATHERED SHALE
	50		14.9			50		SM-SC	20.1	35	12		DISCONTINUED
-685	30	G-SC	15.2	29.3	9.1								
	50		17.1	32.7	12.2								
-680	50		5.1	25.5	7.8								
-675	50		7.3	—	—								
-670													

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-284

Figure 2.5-284 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-285
SHEET 1 OF 2**

Project WATTS BAR N. P.				Feature	ERCW	ALIGNMENT
Boring	SS-132	Station	1560.0 S	Range	E 785.0 E	Surface E1 719 . 1
Date Drilled	6-4-79	To	6-5-79	Prepared By	JLB	Checked By <i>AC</i>
Depth	E1	SPT (N)	L O g	W	LL	PI
1"=5						X
0						
-715	22	19.6				
-5	22	20.3				
-710	19	22.3				
-10	14	21.3				
-705	15	21.8				
-15	13	23.5				
-20	14	23.6	44.7	17.9		
-25	13	25.7	42.0	17.8		
-30	15	25.7	43.1	15.2		
-35	15	23.4	45.8	17.5		
-40	5	25.9	40.4	16.8		
-45	50		—	—		
-50	18	22.7				
-55	CL	40.8	16.6			
-60	29	19.3				
-65	50	20.2				
-70	50	16.5				
-75	50	37.1	12.9			
-80	50	15.6				
-85	48	16.6				
-90						
-95						
-100						
-105						
-110						
-115						
-120						
-125						
-130						
-135						
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-770						
-775						
-780						
-785						
-790						
-795						
-800						
-805						
-810						
-815						
-820						
-825						
-830						
-835						
-840						
-845						
-850						
-855						
-860						
-865						
-870						
-875						
-880						
-885						
-890						
-895						
-900						
-905						

Project <u>WATTS BAR N. P.</u> Boring <u>SS-132</u>								
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5' -35								
-35		37	SC	19.1	37.1	12.9		NO SAMPLE RECOVERY
-40		50+	/ / /					BEDROCK
-45								
-50								
-55								
-60								
-65								
-70								
-75								
-80								

WATTS BAR NUCLEAR PLANT
 FINAL SAFETY
 ANALYSIS REPORT
 SOIL PROFILE
 FIGURE 2.5-285
 SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-285 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-286
SHEET 1 OF 2**

Project WATTS BAR N. P.				Feature	ERCW	ALIGNMENT		
Boring	SS - 133	Station	1361.0S	Range	785.0 E	Surface E1 725 . 0		
Date Drilled	6 - 4 - 79	To	6 - 4 - 79	Prepared By	JLB	Checked By		
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0	-725							AUGER
		23		15.7				
5	-720	18		16.6	39.9	20.5		
		16		18.9				
		12		19.7	42.6	17.4		LEAN CLAY TO SANDY LEAN CLAY,
10	-715	12	O	22.9				FILL
		11		21.7	43.9	19.2		
		9		22.5				
		2		23.6	37.7	16.3		
		4		32.9	39.1	16.7		
20	-705	19	GSM	17.3	NP	NP		ALLUVIAL GRAVEL
		48		20.1	42:8	13.8		
25	-700	28	ML	28.3				
		40		24.0	35.1	1.5		WEATHERED SHALE
		50		20.8				
30	-695	50	SM	18.0				
		50		32.3				
		50		16.1				
35	-690	50	C	12.7	31.7	11.0		Added by Amendment 50

Figure 2.5-286 Soil Profile (Sheet 1 of 2)

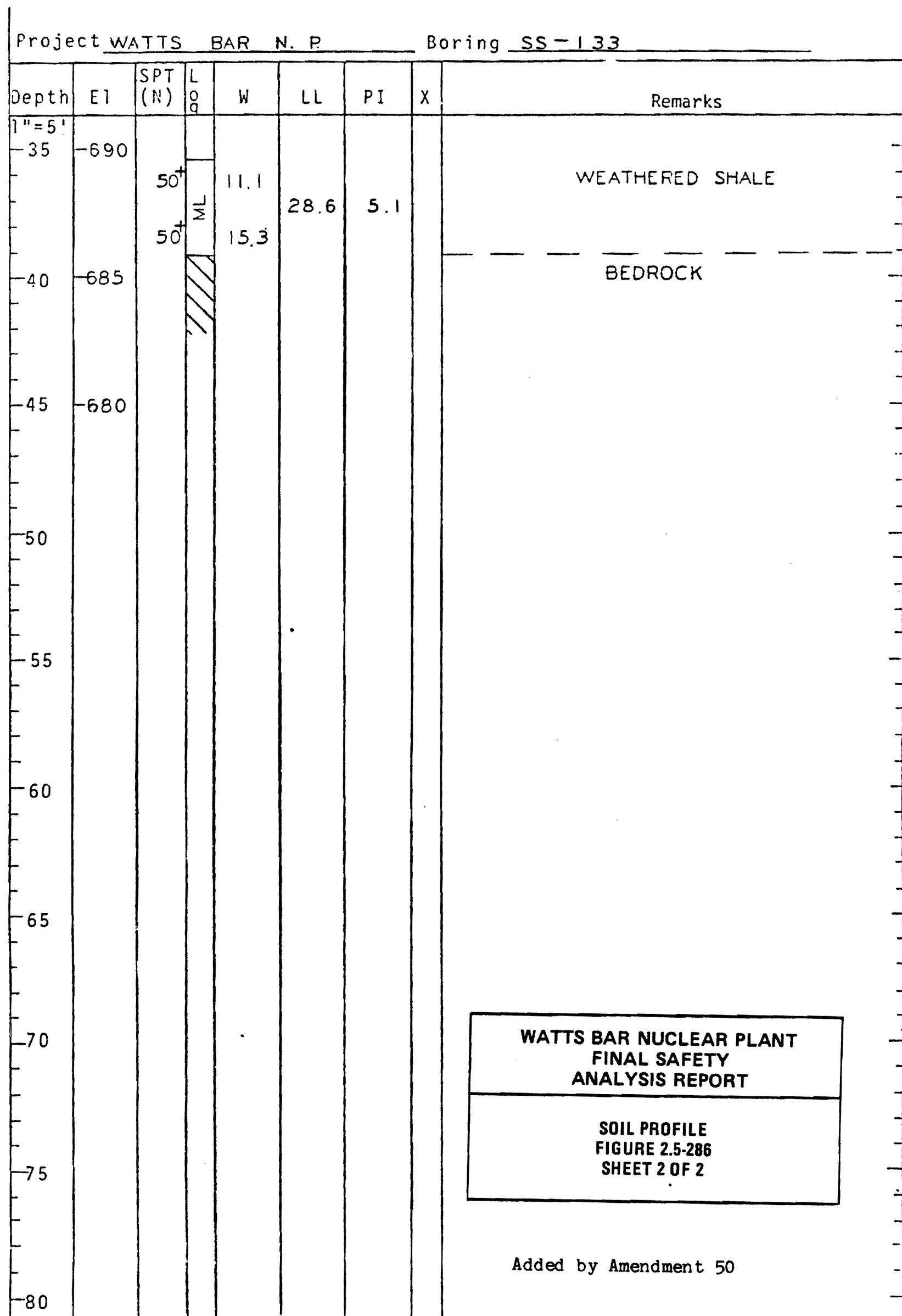


Figure 2.5-286 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-287
SHEET 1 OF 2**

Project <u>WATTS BAR N.P.</u>		Feature <u>ERCW</u>		ALIGNMENT	
Boring	<u>SS-134</u>	Station	<u>1373.0 S</u>	Range	<u>900.0 E</u>
Date Drilled <u>6-6-79</u>		To <u>6-7-79</u>		Prepared By	<u>JLB</u> Checked By <u>CDQ</u>
Depth	EI	SPT (N)	L o g	W	LL PI X
1"=5'					
0	-725	10		20.0	
		16		16.9	28.0 8.4
5	-720	14		18.9	
		15	D	18.7	36.2 17.1
		8		21.7	
10	-715	13		20.9	
		2		23.8	39.1 19.5
		3	SM	29.3	
15	-710	8		27.5	
		NP			NP
		27		11.4	
20	-705	50	GM	10.0	
		50		18.1	
		50		18.1	39.3 15.2
25	-700	50	D	16.5	
		50		16.6	
		50		20.4	
30	-695	SC		36.7	13.5
		42		16.2	
35					Added by Amendment 50

Figure 2.5-287 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N.P.</u>				Boring <u>SS-134</u>				
Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5'								
-35								
-690		50+	CL	15.2	35.6	13.3		
		50		15.8	37.2	13.4		WEATHERED SHALE
-40								
-685		50	SC	14.7				
		50		35.6		12.1		
-45		50	CL	15.1				
		50		18.7	33.4	11.4		NO SAMPLE RECOVERY
-680			Hatched	—	—	—		BEDROCK
-50								
-55								
-60								
-65								
-70								
-75								
-80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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SOIL PROFILE
FIGURE 2.5-287
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-287 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-134						Boring SS-134A						Prepared by <u>JLB</u>	
Station 1370.0 S Range 900.0 E						Station 1370.0 S Range 905.0 E						Checked by <u>HPM</u>	
Surface El 726.5						Surface El 725.5							
Date Drilled 6-6-79 to 6-7-79						Date Drilled 11-6-81 to 11-9-81							
El	SPT (N)	L G	W	LL	PI	SPT (N)	L G	W	LL	PI	REMARKS		
725	10		20.0			13		13.4	29	10			
	16		16.9	28.0	8.4	25		16.1	32	12			
	14		18.9			17		15.6	35	17			
	15	C	18.7	36.2	17.1	13	C	19.8	31	12			
	8		21.7			10		21.8	41	20			
	13		20.9	39.1	19.5	12		19.4	34	15			
	2		23.8			4		25.3	42	17			
	3		29.3			4		30.0	23	NP			
	8	SM	27.5	NP	NP	9	SM	27.9	24	2			
	27		11.4			27		28.9	24	NP			
	50	GM	10.0			27		31.9	27	2			
	50		10.0			39		16.3	NP				
	50		18.1			39		11.2	NP				
	50	CL	18.1	39.3	15.2	50		GRGM					
	50		16.5			50		SM-SC					
	50		16.6			50		20.7	40	15			
	50	SC	20.4										
	42		16.2										
	50	CL	15.2	35.6	13.3								
	50		15.8	37.2	13.4								
	50	SC	14.7										
	50		15.1										
	50	CL	18.7	33.4	11.4								
	50		—	—	—								
680													

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-288

Figure 2.5-288 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-289
SHEET 1 OF 2**

Project WATTS BAR N.P. Feature ERCW ALIGNMENT
 Boring SS-135 Station 1370.0 S Range 1000.0 E Surface El 726.9
 Date Drilled 5-30-79 To 6-1-79 Prepared By JLB Checked By CB

Depth	El	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5"								
0	-725	7		—	30.9	12.2		
		13	C	19.4	32.7	9.7		SANDY LEAN CLAY FILL
5	-720	13		19.3	37.8	19.6		
		21		—	48.0	19.6		ALLUVIAL SANDY SILT
10	-715	14	M	26.7	46.5	16.5		
		12		26.3	42.2	13.8		
15	-710	11		23.6	34.1	8.7		
		12		20.1	30.0	4.4		
20	-705	SM		—				
		8		—				
25	-700	8		NP	NP			
		8		25.3				
		CL		32.3	11.8			LAMINATED RESIDUAL CLAY
30	-695	22	SM	28.9	44.5	15.8		
		48	G	25.7	43.5	16.7		
		50		20.4	38.9	12.7		WEATHERED SHALE
35	-35	48	SM	21.3	38.6	12.4		
		43		23.3	37.9	10.5		Added by Amendment 50

Figure 2.5-289 Soil Profile (Sheet 1 of 2)

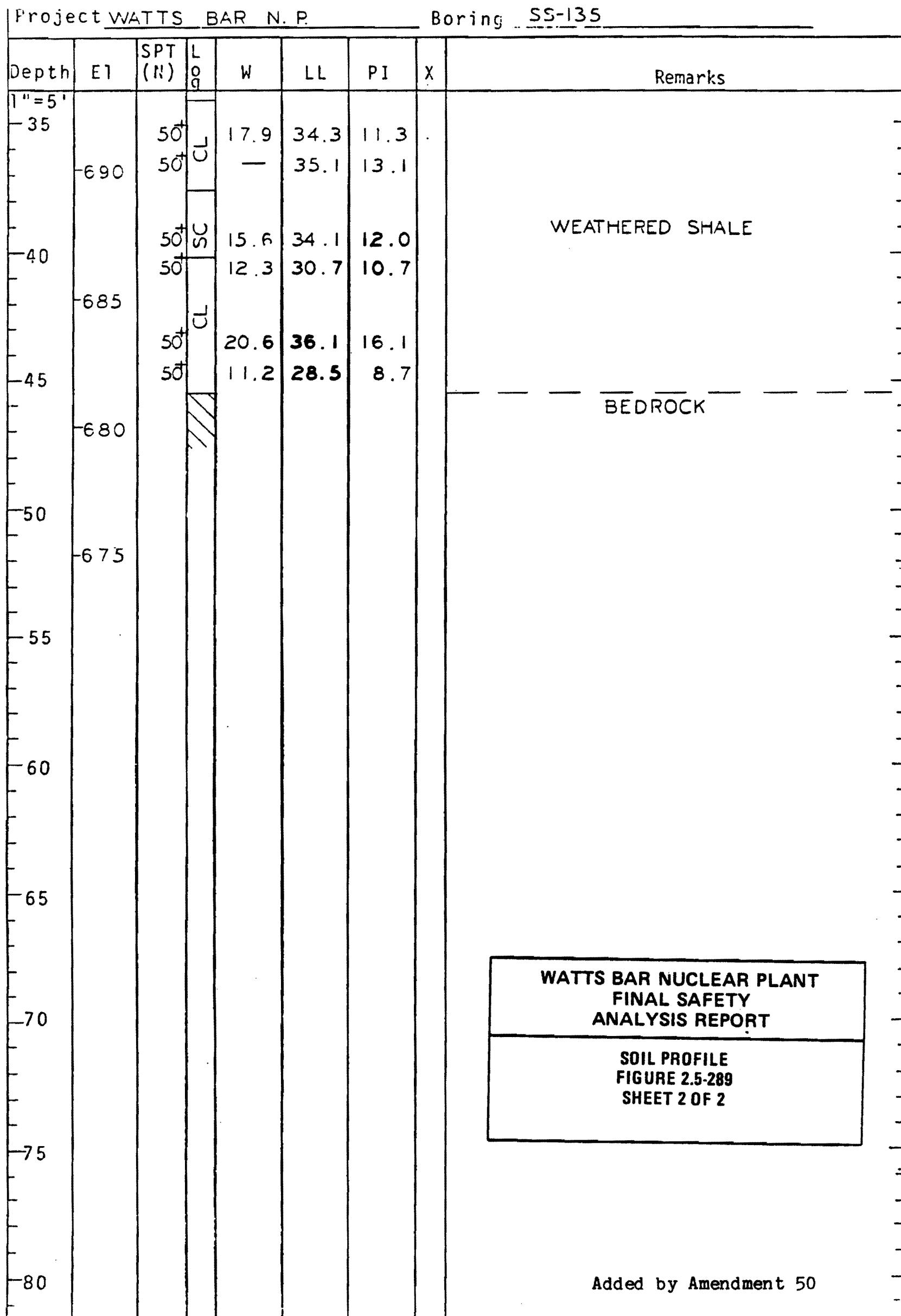


Figure 2.5-289 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-135						Boring SS-135A						Prepared By JLB	
Station 1373.0 S Range 1000.0 E						Station 1363.3 S Range 1004.5 E						Checked By HJM	
Surface Elev 726.9						Surface Elev 726.5							
Date Drilled 5-30-79 To 6-1-79						Date Drilled 11-9-81 To 11-10-81							
El	SPT (N)	L G	W	LL	PI	SPT (N)	L G	W	LL	PI	REMARKS		
725	7		—	30.9	12.2	19		16.1	28	7			
	13	CL	19.4	32.7	9.7	20		16.6	33	13			
	13		19.3	37.8	19.6	21		CML					FILL
	21		—	48.0	19.6	19		19.8	40	15			
	14	ML	26.7	46.5	16.5	19		ML	24.7	41	13		
	12		26.3	42.2	13.8	13			26.7	41	12		
	11		23.6	34.1	8.7	7			24.3	31	3		
	12		20.1	30.0	4.4	7			22.8				
710	8	SM	—	—	—	7	SM	24.3	NP	NP			
	8		—	—	—	5		34.2					
	8		NP	NP		8		27.0	22				
	8		25.3			8		32.1	27				
	8		—	—		7	ML	32.1	39				
	8		CL	32.3	11.8	50	SM	30.9	25				
	22		28.9	44.5	15.8	36	GM	16.7	NP				
		G-SM						GM-GC					
	26		25.7	43.5	16.7				30.1	46	14		DISCONTINUED
695	50	SM	20.4	38.9	12.7								
	48		21.3	38.6	12.4								
	43		23.3	37.9	10.5								
	50		17.9	34.3	11.3								
	50		—	35.1	13.1								
	50	SC	15.6	34.1	12.0								
	50		12.3	30.7	10.7								
	50	CL	20.6	36.1	16.1								
	50		11.2	28.5	8.7								
680													

Added by Amendment 50

SOIL PROFILE
FIGURE 2.5-290

Figure 2.5-290 Soil Profile

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS - 65						Boring SS - 65B						Prepared by <u>JLB</u>
Station <u>1374.8S</u> Range <u>1097.5E</u>						Station <u>1362.3S</u> Range <u>1091.0E</u>						Checked by <u>HPM</u>
Surface El <u>726.0</u>						Surface El <u>727.2</u>						
Date Drilled <u>7-25-75</u> to <u>7-25-75</u>						Date Drilled <u>11-13-81</u> to <u>11-13-81</u>						
El	SPT (N)	L O G	W	LL	PI	SPT (N)	L O G	W	LL	PI	REMARKS	
725	50	GCL	15.4	36.3	15.6	11	SC	14.1	28	6	FILL	
	35	D	12.9	35.6	14.1	20	C	12.5	32	14		
720	24	M	28.2	50.7	17.7	25	MH	28.3	55	8		
	21	M	24.9			18	MH	28.9	51	15		
715	13	M	24.5	40.4	13.0	12	ML	29.1	42	12		
	16	M	29.2	46.1	15.6	14	ML	26.7	35	6	ALLUVIUM	
710	12	21.5	33.1	6.6		9	ML	25.7	29	2		
	10	SM	15.7	NP	NP	6	ML	27.5	25	1		
705	7	SM	23.7	30.1	5.1	3	SM	33.1	NP	NP		
	5	SM	28.2	28.9	3.5	5	SM	32.5	25	1		
700	8	—	—	—		7	SM	27.1	26	2		
	20	GM	13.5	32.5	9.0	37	SM	30.8	25	1		
695	18	SM	24.8	46.4	18.2		21	7	NP	NP	WEATHERED SHALE	
	16	SM	24.7	43.4	15.9		21	9	44	14	DISCONTINUED	
690	16	GS-M	25.5									
	11	SC	40.7	47.1	13.4							
685	30	M	30.8	42.2	13.9							
	48	SC	19.8	34.4	11.2							
680	50	SC	14.3									
	16	SC	36.6	12.0								
675	41	SC	19.1									
	45	SC	22.6									
675	50	SC	17.1									
	50	SC	15.4									
675	50	SC	15.3									

Added by Amendment 50

SOIL PROFILE
FIGURE 2.5-291

Figure 2.5-291 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-292
SHEET 1 OF 2**

Project WATTS BAR N.P. Feature ERCW ALIGNMENT
Boring SS-136 Station 1373.7 S Range 1215.0 E Surface El 726.9
Date Drilled 6-22-79 To 6-22-79 Prepared By JLB Checked By AC

Depth	E1	SPT (N)	L o g	W	LL	PI	X.	Remarks
0								TOPSOIL
-725	19	R		19.2	38.8	20.3		LEAN CLAY FILL
	6	C		22.5	49.7	24.2		
-720	14	MH		25.8	51.1	20.4		
	17			26.5				ALLUVIAL SANDY SILT
-715	14			25.8				
	11	ML		23.7				
	9			32.8		5.7		
-710	5			25.0				
	8	SM		26.3				
	8			28.5				ALLUVIAL SAND
-705	12			NP				
	50	GRGM		NP				
	50	ML-CL		21.9				ALLUVIAL GRAVEL
-700	50			15.1				
	50			19.1				
	50			41.7		16.7		
-695	34	CL		17.2				
	34			20.3	37.2	13.4		WEATHERED SHALE
-695	31			21.6				
	50	SM		36.3				
	50			16.9				
-695	50			17.4	34.0	7.0		

Figure 2.5-292 Soil Profile (Sheet 1 of 2)

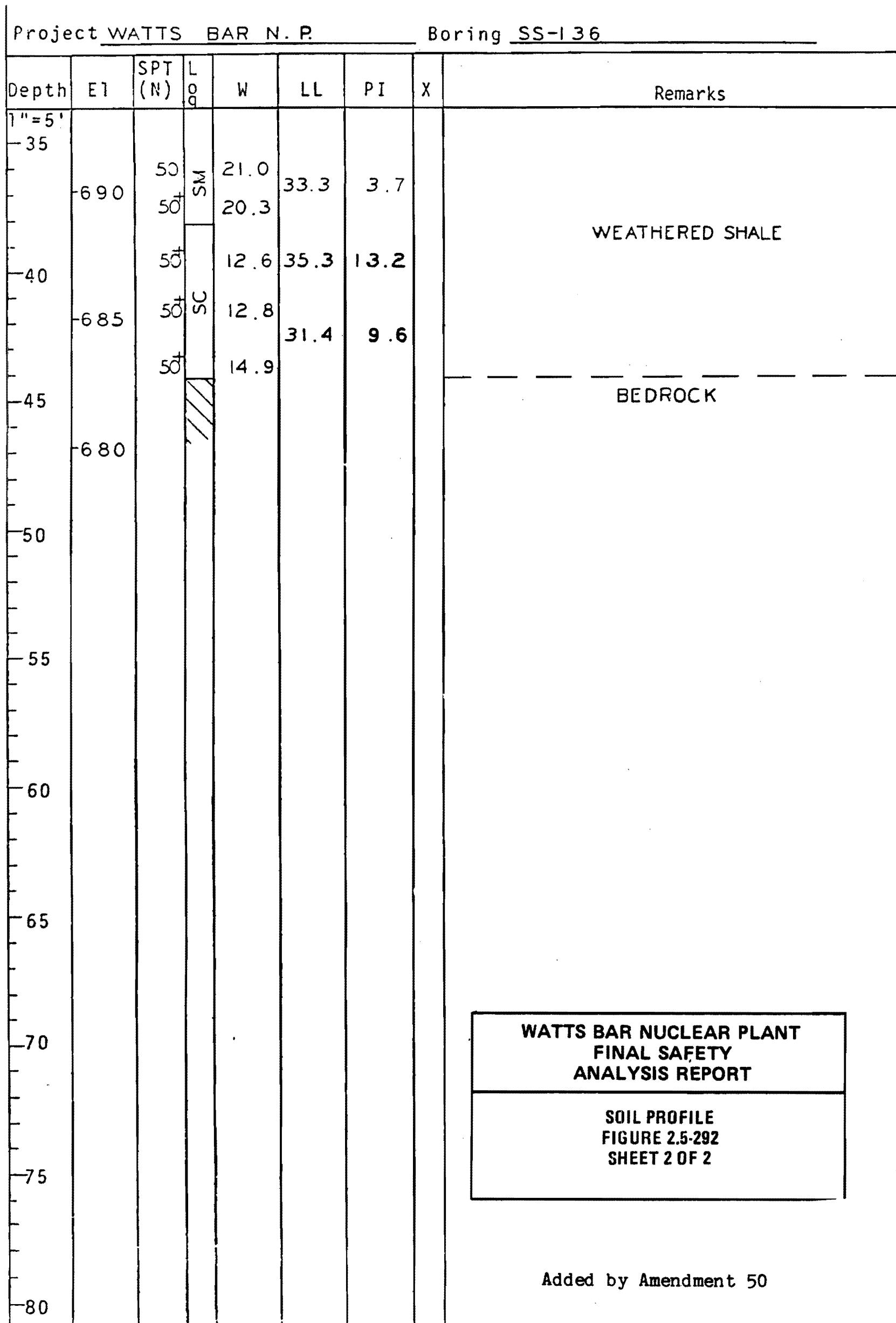


Figure 2.5-292 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-293
SHEET 1 OF 1**

Project <u>WATTS BAR N. P.</u>				Feature <u>ERCW ALIGNMENT</u>				
Boring	<u>SS-137</u>	Station	<u>1375.0 S</u>	Range	<u>1300.0 E</u>	Surface	<u>E1</u> <u>726.9</u>	
Date Drilled	<u>6 - 7 - 79</u>	To	<u>6 - 8 - 79</u>	Prepared By	<u>JLB</u>	Checked By	<u>JCL</u>	
Depth	E1	SPT (N)	Log	W	LL	PI	X	
1"=5								
0	-725	20	ML	19.0	35.2	10.9		TOPSOIL
5	-720	7		21.2				ALLUVIAL SANDY LEAN CLAY OR SILT
10	-715	11	CL	21.0	42.0	17.1		
15	-710	16		26.5				
20	-705	14	ML	25.1	43.9	14.1		ALLUVIAL SANDY SILT
25	-700	11	ML	24.2	35.6	9.6		ALLUVIAL SAND
30	-695	9	SM	20.7	25.9	1.8		
35		7		25.0				
		8	ML	31.7				ALLUVIAL LEAN CLAY OR SILT
		3	CL	25.3				
		32	GM	33.9	34.7	10.7		ALLUVIAL GRAVEL
		41		9.6	NP	NP		
		50	ML	21.1	42.6	14.9		
		50		22.8				
		39		23.0				WEATHERED SHALE
		50	CL	40.8				
		50		20.4				
		50		16.9	36.5	13.0		
								BEDROCK
								Added by Amendment 50

Figure 2.5-293 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-294
SHEET 1 OF 2**

Project WATTS BAR N.P.				Feature	ERCW	ALIGNMENT		
Boring	SS-138	Station	1373.0 S	Range	1400.0 E	Surface E1		
Date Drilled 6-8-79 To 6-11-79				Prepared By	JLB	Checked By		
Depth	E1	SPT (N)	L O g	W	LL	PI	X	Remarks
1"=5'								
0								TOPSOIL
-725	18	C		15.7	34.3	16.9		ALLUVIAL LEAN CLAY TO FAT SILT
-5	23	MH		28.5	55.0	24.1		
-720	15			27.5				
-10	13			30.1	48.0	19.7		ALLUVIAL SANDY SILT
-715	10	M		25.6	40.2	14.5		
-15	9			22.3	31.6	7.8		ALLUVIAL SAND
-710	6	SM		23.4	28.1	2.5		
-20	7			24.5				
-705	5	ML-CL		28.4	32.7	5.9		ALLUVIAL SANDY SILT OR SANDY LEAN CLAY
-25	13	SM		29.6	27.0	5.1		
-30	16			15.0	26.4	2.3		ALLUVIAL SAND
-700	43	GSM		26.8				
-32				26.7				
-50	32			NP	NP			WEATHERED SHALE
-50	50	SM		29.3				
-695	50			20.4				
-35	50	SC		14.6				
				20.5	34.9	12.0		Added by Amendment 50

Figure 2.5-294 Soil Profile (Sheet 1 of 2)

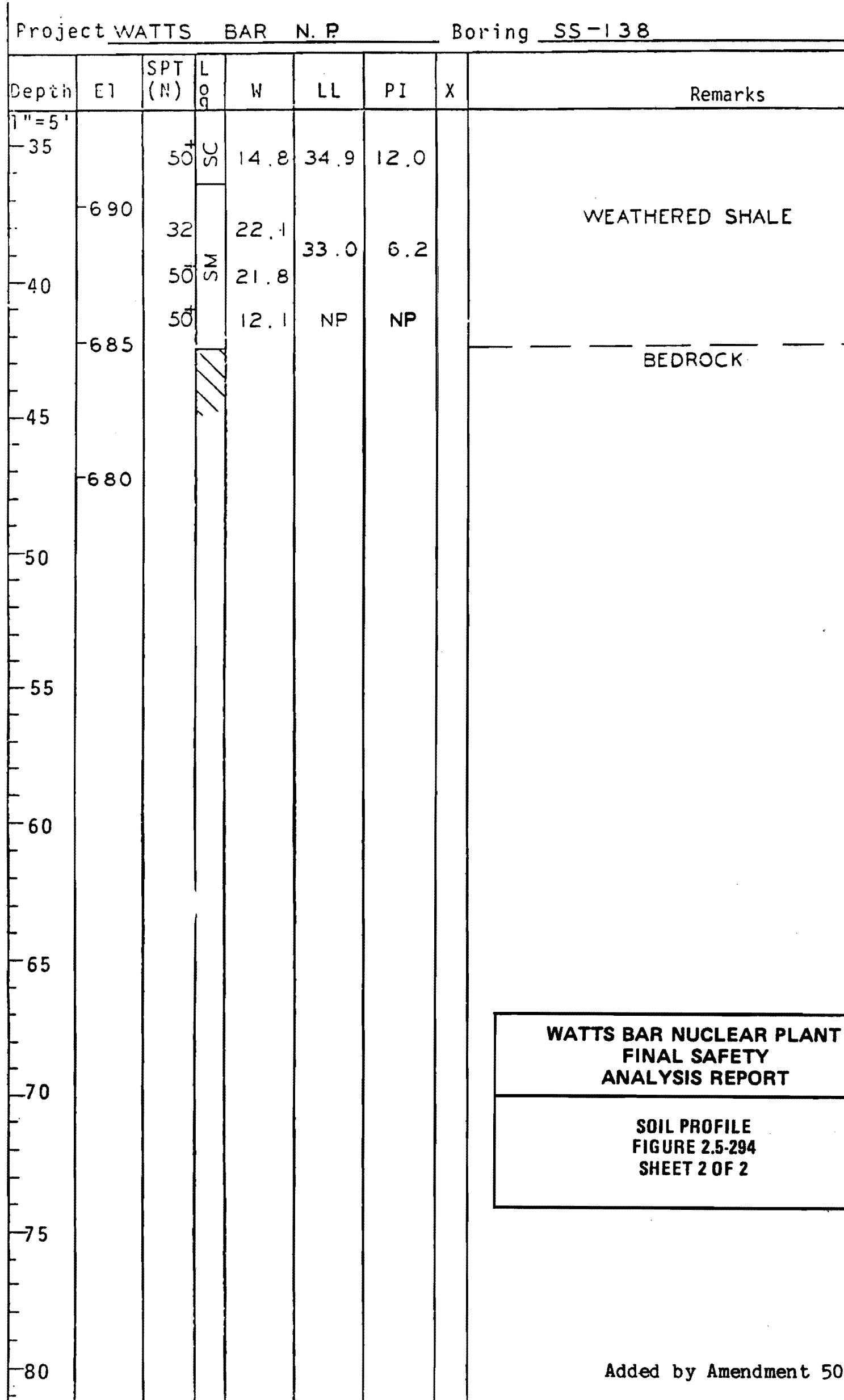


Figure 2.5-294 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-138						Boring SS - 138A						Prepared by JLB	
Station 1373.0S Range 1400.0E						Station 1368.8S Range 1406.5E						Checked by HPM	
Surface El 727.2						Surface El 726.7							
Date Drilled 6-8-79 to 6-11-79						Date Drilled 11-12-81 to 11-12-81							
El	SPT (N)	L O G	W	LL	PI	SPT (N)	L O G	W	LL	PI	REMARKS		
725	18	C	15.7	34.3	16.9	50	GC	6.7	35	18	FILL		
	23		28.5	55.0	24.1	32	ML-MH	27.3	50	19			
	15		27.5			19		30.9	48	18			
720	13		30.1	48.0	19.7	16	M	27.1	39	13			
	10		25.6	40.2	14.5	12		25.1	33	6			
715	9		22.3	31.6	7.8	8		25.1	29	3	ALLUVIUM		
	6	SM	23.4	28.1	2.5	8		22.1	NP	NP			
	7		24.5			12	SM	27.1	29	1			
710	7	ML	28.4	32.7	5.9	4		35.6	29	2			
	5	ML-CL	29.6	27.0	5.1	9		28.1	25	2			
705	13	SM	15.0	26.4	2.3	22		27.8	22	1			
	16		26.8			22	SM	29.1	NP	NP			
	43	SM	26.7			50	SM	10.6	NP	NP			
700	32	G-SM	29.3	NP	NP	50		38.4	NP	NP	WEATHERED SHALE		
	50		20.4			25.8		25.8	36	2	DISCONTINUED		
695	50	SM	14.6										
	50	SC	20.5	34.9	12.0								
690	32	SC	14.8										
	50	SM	22.1	33.0	6.2								
685	50	SM	21.8										
	50	SC	12.1	NP	NP								
680													

Added by Amendment 50

SOIL PROFILE
FIGURE 2.5-295

Figure 2.5-295 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-296
SHEET 1 OF 2**

Project WATTS BAR N.P.		Feature ERCW ALIGNMENT						
Boring	SS-139	Station	1375.0 S	Range	1500.0E	Surface E1	727 5	
Date Drilled	6-11-79	To	6-12-79	Prepared By	JLB	Checked By	CCH	
Depth	E1	SPT (N)	L o g	W	LL	PI	X	
1"=5'								
0	-725	16	CL	15.8	34.7	17.3		TOPSOIL
5	-720	11		14.4				SANDY LEAN CLAY FILL
10	-715	9	CL-CH	22.0	50.1	25.0		ALLUVIAL LEAN TO FAT CLAY
15	-710	10	CL	25.9				
20	-705	15		26.4	47.2	17.7		ALLUVIAL SANDY SILT
25	-700	13	ML	23.8	36.9	11.0		
30	-695	9	ML	19.2				
35	-695	8	SM	15.5	NP	NP		ALLUVIAL SANDY SILT
		9	SM	18.2				AND SILTY SAND
		7	ML	32.8	31.0	3.9	▽	
		14	SM	22.1	NP	NP		
		50	GM	7.5				ALLUVIAL GRAVEL
		49	CL	17.0	36.7	14.6		
		50		18.9	33.1	11.5		
		50	SC	13.7				WEATHERED SHALE
		50		16.0	32.9	12.6		
		50		11.8				
								Added by Amendment 50

Figure 2.5-296 Soil Profile (Sheet 1 of 2)

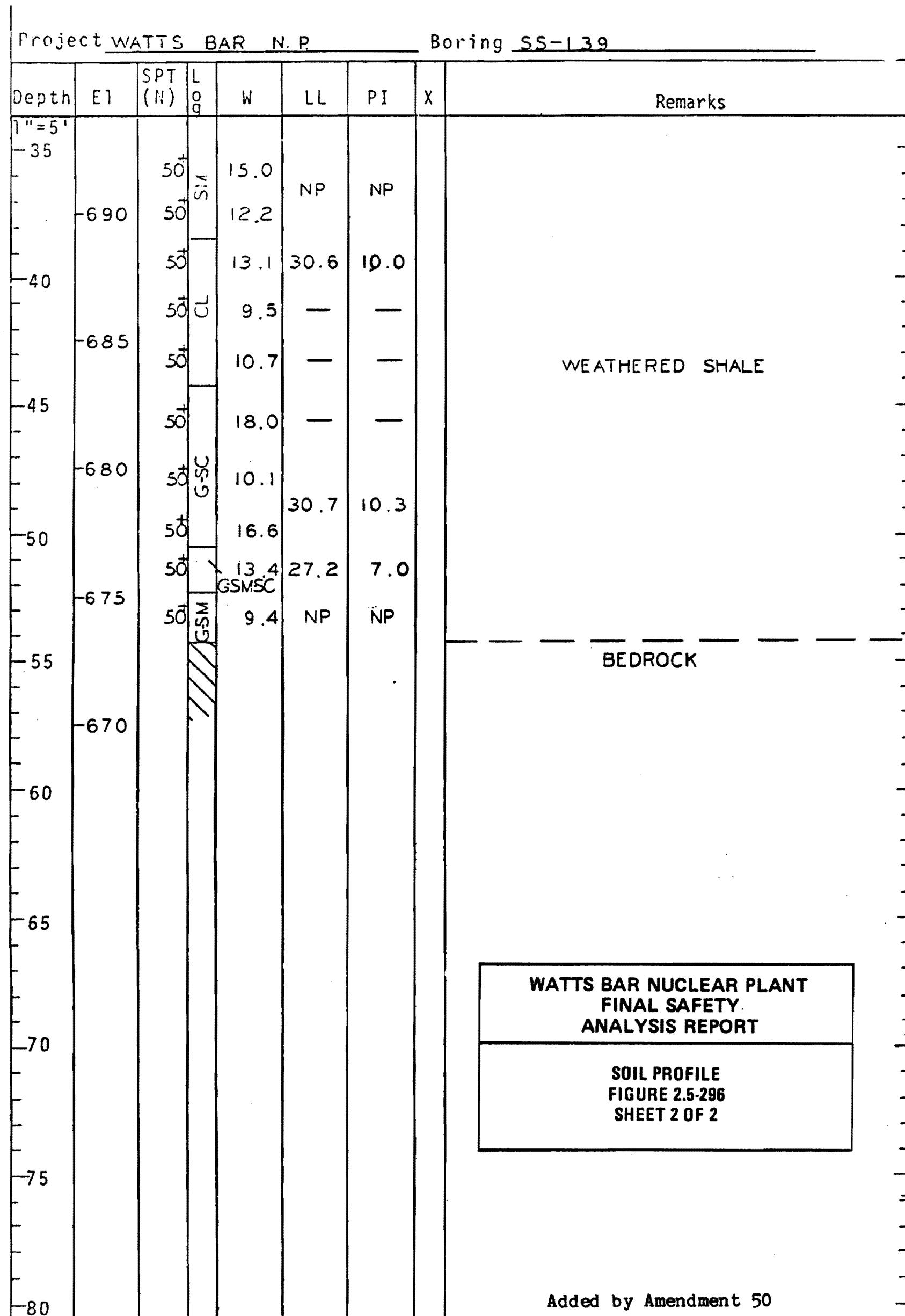


Figure 2.5-296 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-297
SHEET 1 OF 2**

Project <u>WATTS BAR N. P.</u>				Feature <u>ERCW ALIGNMENT</u>			
Boring	<u>SS-140</u>	Station	<u>1334.2S</u>	Range	<u>1560.8 E</u>	Surface E1	<u>726.7</u>
Date Drilled	<u>6-11-79</u>	To	<u>6-11-79</u>	Prepared By	<u>JLB</u>	Checked By	<u>JCL</u>
Depth	E1	SPT (N)	L o g	W	LL	PI	X
1"=5'							
0	-725	21	R	12.7	35.0	17.4	
		8	CL	13.9	—	—	
5	-720	9		20.0	43.1	19.0	
		16	CHMH	27.4	60.9	30.0	ALLUVIAL SILT AND CLAY
10	-715	11		22.0	36.5	7.4	
		8		24.3			
		7	M	24.6	34.1	6.2	
15	-710	12		25.0			
		3		17.4			
		4	SM	38.7	NP	NP	ALLUVIAL SAND
20	-705	29	CL	17.4	43.1	18.4	LAMINATED RESIDUUM
		44	ML	18.3	44.2	18.7	
25	-700	40	ML	21.9	35.2	6.1	WEATHERED SHALE
		50	CL	16.8	36.9	14.0	
30	-695	41	SM	22.3	37.4	7.4	
		50	CL-ML	20.0	36.3	13.2	
		50	ML-CL	18.7	35.4	10.8	
35							Added by Amendment 50

Figure 2.5-297 Soil Profile (Sheet 1 of 2)

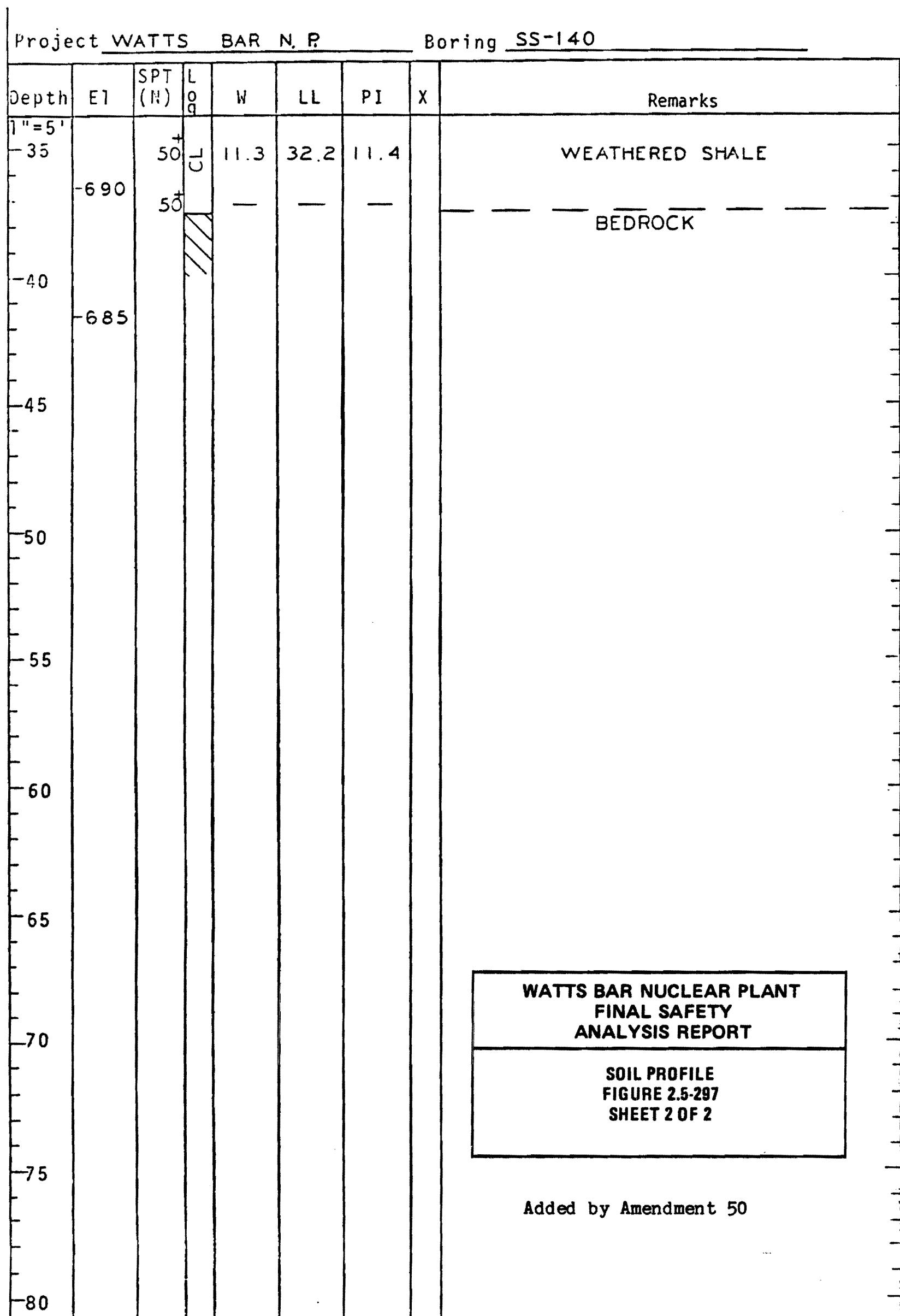


Figure 2.5-297 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-298
SHEET 1 OF 2**

Project <u>WATTS BAR N. P.</u>				Feature <u>ERC W ALIGNMENT</u>			
Boring	<u>SS-141</u>	Station	<u>1187.5 S</u>	Range	<u>1707.5 E</u>	Surface E1	<u>724.6</u>
Date Drilled <u>6-11-79</u> To <u>6-12-79</u>				Prepared By <u>JLB</u> Checked By <u>ACZ</u>			
Depth	E1	SPT (N)	L o g	W	LL	PI	X
1"=5							
0							
-720	14	16	CL	14.6	29.7	13.8	
5		16	GCL	15.7	32.1	15.7	ALLUVIAL CLAY
-715		16		9.9	35.1	18.6	
-10		16		11.8	34.5	18.0	
-710	18	9	CL	19.3	36.2	16.6	
15		1		24.7			
-710	18	SPSM		19.0	27.4	5.9	ALLUVIAL SAND
15		14	CL	23.7	27.6	7.2	ALLUVIAL CLAY
-705	23	GSM		8.5			ALLUVIAL GRAVELLY SAND
20		17		NP	NP		
-700	31		CL	7.8			
25		10		16.6			LAMINATED RESIDUUM
-700	21		ML	22.6			
25		21		20.7	36.7	6.8	
-695	50		CL	14.2	34.7	11.8	
30		50		12.2	33.2	11.8	WEATHERED SHALE
-690	50		ML	17.2	36.9	11.7	
35		50		8.7	28.0	5.4	
							Added by Amendment 50

Figure 2.5-298 Soil Profile (Sheet 1 of 2)

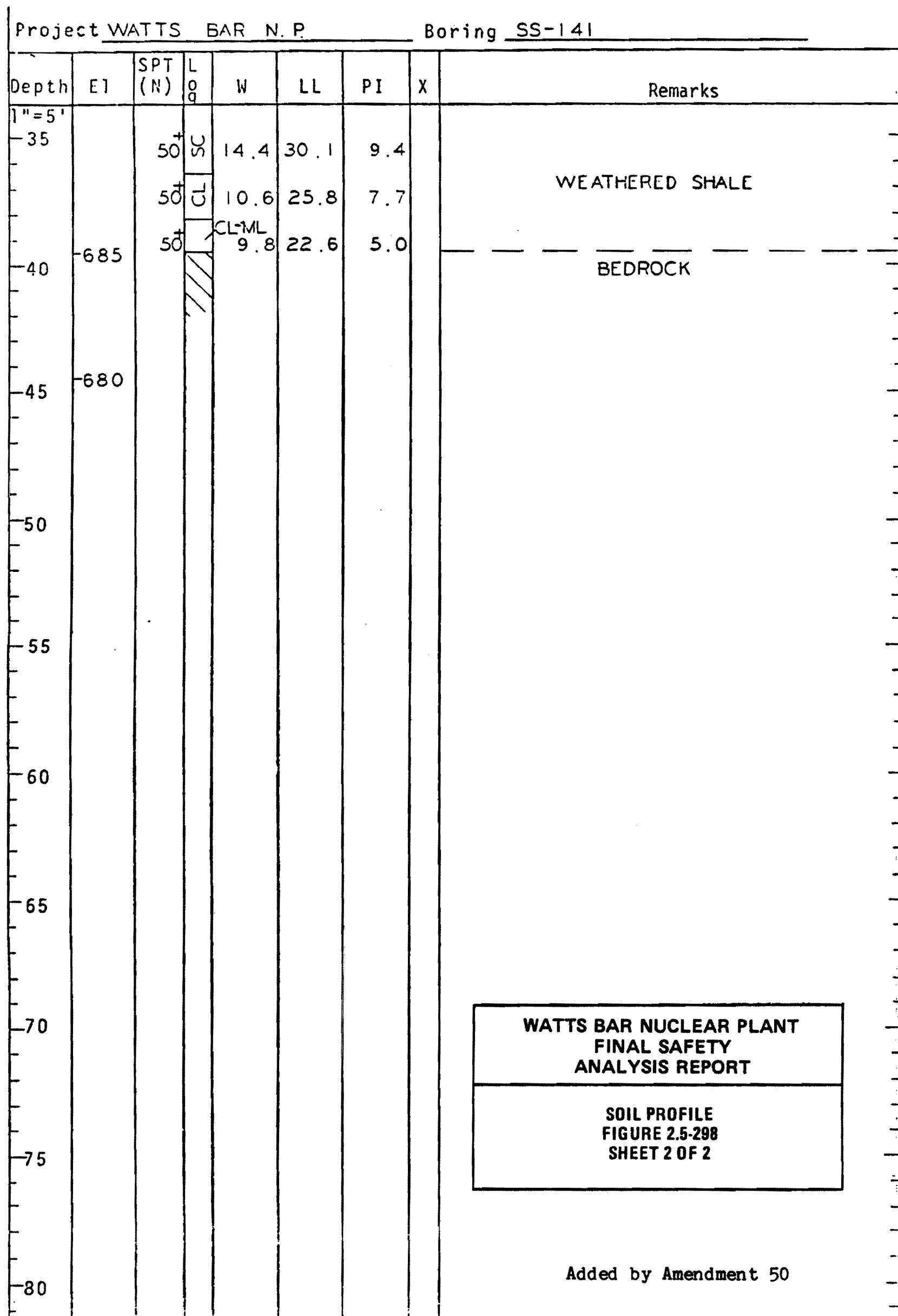


Figure 2.5-298 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-299
SHEET 1 OF 2**

<u>Project</u>	<u>WATTS</u>	<u>BAR</u>	<u>N.P.</u>	<u>Feature</u>	<u>ERCW ALIGNMENT</u>
Boring	SS-142	Station	1012.5 S	Range	1882.5 E Surface El 721.8
Date Drilled	6-12-79	To	6-13-79	Prepared By	JLB Checked By <u>CCJ</u>

Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5'								
0	-720	13	CL	14.1	33.9	19.0		
		24	GCL	13.9	31.7	14.2		
5	-715	18	CL	14.0	36.1	17.9		
		11	ML-CL	14.8	37.9	-19.2	▽	▽
10	-710	12	ML-CL	20.1				
		15		38.7	13.5			ALLUVIAL CLAY
15	-705	11	CL	22.4				
		12		—				
20	-700	10	CL	38.4	15.0			
		16		23.3				
25	-695	9	CL	21.9				
		4		36.7	16.4			
		16	ML-CL	17.0				
30	-690	9	CL	24.1	41.3	17.6		
		4		26.2	42.0	20.2		
		11	ML-CL	19.0	48.4	26.6		
		33	CL	15.1	35.4	13.7		LAMINATED RESIDUUM
35	-690	24	ML-CL	17.9	35.8	12.3		
		50	CL	13.0	35.6	15.7		
		49	ML-CL	15.7	34.4	10.0		WEATHERED SHALE

Figure 2.5-299 Soil Profile (Sheet 1 of 2)

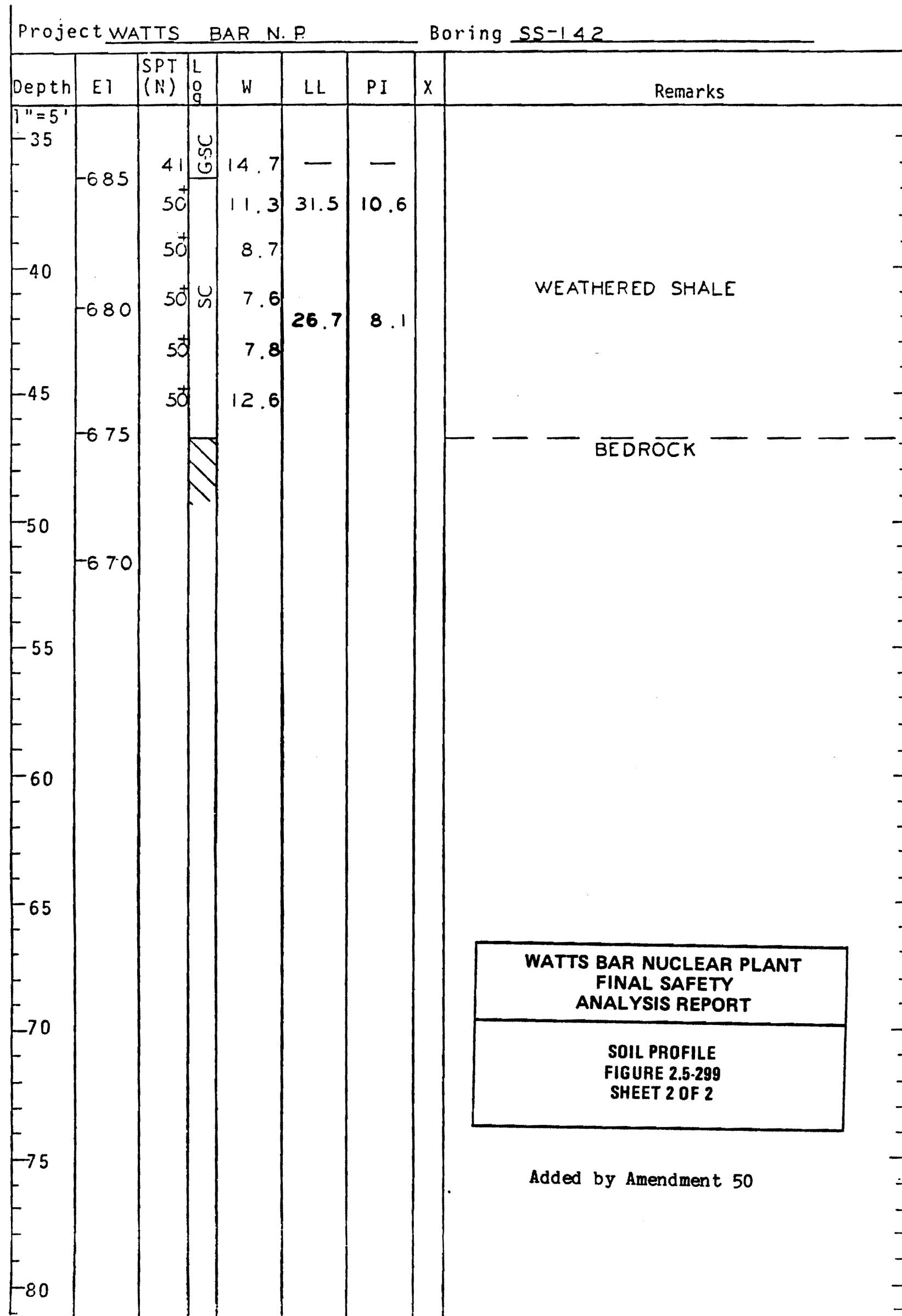


Figure 2.5-299 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-300
SHEET 1 OF 2**

Project WATTS BAR N.P. Feature ERCW ALIGNMENT
 Boring SS-143 Station 965.0 S Range 1923.2 E Surface Elevation 723.1
 Date Drilled 6-14-79 To 6-14-79 Prepared By JLB Checked By JCB

Depth	Elevation (E)	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5								
0								
-720		10		16.3	31.9	16.8		
5		24		16.4	30.5	12.7		
-715		13	D	15.9	35.3	17.0		
-10		10		20.9				
		9		35.4				
		9		19.4				
		9		22.4	37.4	13.6		
-710		9		22.9	38.9	13.3		
15		9		22.7	36.2	11.5		
-705		6		21.8				
		6		39.3				
20		7		25.0				
-700		3	D	29.0				
25		4		42.2				
-695		7		25.6				
		4		29.0	35.2	16.2		
		4						NO SAMPLE RECOVERY
30		9		GSPSM				
-690		2	D	13.5	NP	NP		
		2						ALLUVIAL GRAVELLY SAND
-35		17		—	31.2	15.5		
		17		11.4	—	—		ALLUVIAL CLAY
								Added by Amendment 50

Figure 2.5-300 Soil Profile (Sheet 1 of 2)

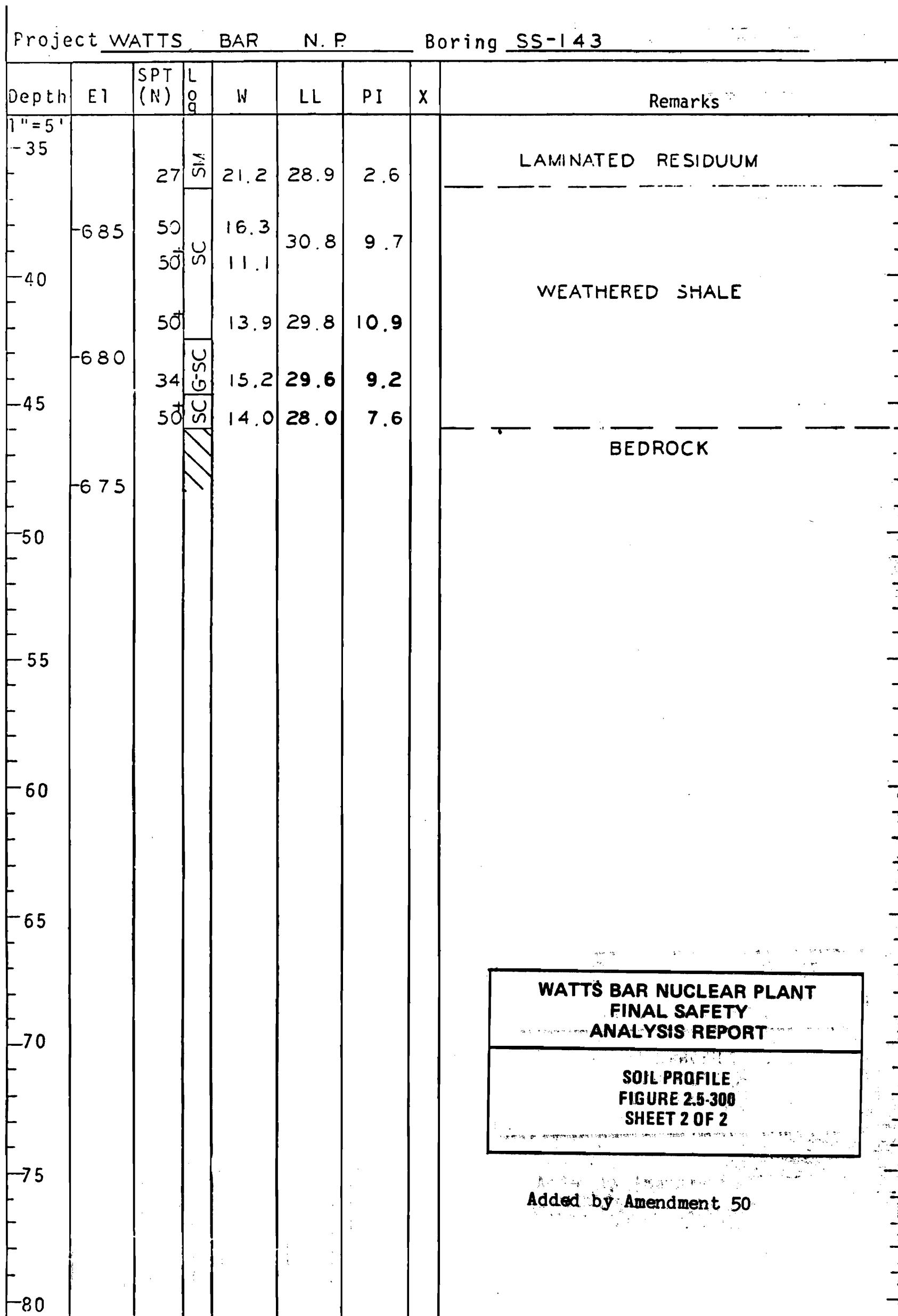


Figure 2.5-300 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

ISSUED JUN 26 1987

Boring SS-143						Boring SS-143A						Prepared by	
Station 969.0S Range 1923.2E			Station 975.0S Range 1930.0E									<u>JLB</u>	
Surface El 723.1			Surface El 723.0									<u>HOM</u>	
Date Drilled 6-14-79 to 6-14-79			Date Drilled 11-19-81 to 11-20-81										
El	SPT (N)	L G	W	LL	PI	SPT (N)	L G	W	LL	PI	REMARKS		
720	10	CL	16.3	31.9	16.8	12	SC	15.0	33	16			
	24	CL	16.4	30.5	12.7	20	SC	13.3	31	13			
	13	CL	15.9	35.3	17.0	13	CL	19.6	35	16			
715	10	CL	20.9	35.4	16.1	12	CL	21.8	33	10			
	9	CL	19.4			9	SC	22.4	29	10			
	9	CL	22.4	37.4	13.6	4	ML	36.5	43	20			
710	9	ML	22.9	38.9	13.3	2	ML	21.6	39	11			
	9	ML	22.7	36.2	11.5	8	CL	37.2	36	19			
705	6	CL	21.8			1	SC	29.1	38	18			
	7	CL	25.0	39.3	18.2	0	SC	41.4	39	20			
700	3	CL	29.0			3	SMSC	21.2	21	5			
	4	CL	25.6	42.2	22.4	4	CL	24.9	25	8			
	4	CL	29.0	35.2	16.2	8	SC	43.1	37	11			
695	7	CL	—	—	—	16	SC	33.8	34	12			
	9	GSP-SC	13.5	NP	NP	31	SC	25.9	NP	NP	WEATHERED SHALE		
690	2	CL	—	31.2	15.5								
	17	CL	11.4	—	—								
	27	SM	21.2	28.9	2.6								
685	50	SC	16.3	30.8	9.7								
	50	SC	11.1										
	50	SC	13.9	29.8	10.9								
680	34	SC	15.2	29.6	9.2								
	50	SC	14.0	28.0	7.6								
675													

Added by Amendment 50

Figure 2.5-301 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	SOIL PROFILE FIGURE 2.5-301
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SOIL PROFILE (SS, PA, HA, TP BORING)

Project WATTS BAR N. P.				Feature ERCW ALIGNMENT			
Boring	SS-144	Station	865. 1S	Range	1923. 2 E	Surface E1	729.0
Date Drilled	6-13-79	To	6-14-79	Prepared By	JLB	Checked By	GCO
Depth	E1	SPT (N)	Lg	W	LL	PI	X
1"=5'							
0							
-725	11	CL		17.2	41.8	25.8	
	16			14.0	39.0	20.5	
5	19			20.8			
-720	20	ML-CL		20.2	36.6	-12.8	
-10	22			17.4			
	18			19.9			ALLUVIAL CLAY
-715	20	CL		18.9	37.7	14.8	
	20			20.2			
-15	15			25.3	41.8	25.8	
-710	19	CL		24.7			
	8	ML-CL		43.5		16.7	
-20				20.9			
-705	5	CL		24.4	42.6	16.7	
	3			27.0	38.0	15.8	
-25							
-700	14	CL-CH		21.1	50.6	24.6	
	17	ML		22.6	—	—	
-30	37	ML	SC	18.3	39.8	14.9	
-695	16	SC		26.4	35.1	11.5	
-35							Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-302
SHEET 1 OF 2

Figure 2.5-302 Soil Profile (Sheet 1 of 2)

Project <u>WATTS</u>		<u>BAR</u>	<u>N. P.</u>	Boring <u>SS-144</u>				
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5' -35		17	UC	19.2				LAMINATED RESIDUUM
		30	SMSC	17.2				
-690	42	CL		18.8	36.7	13.9		WEATHERED SHALE
	50	U		19.8	36.0	13.7		
-685	50	SMSC		17.5	31.7	9.0		
	50	CL		5.7	26.6	7.5		BEDROCK
-680			---					
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-302
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-302 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-303
SHEET 1 OF 2**

Project WATTS BAR N.P.		Feature ERCW ALIGNMENT					
Boring	SS-145	Station	665.0 S	Range	1923.2 E	Surface	E1 737.1
Date Drilled	6-14-79	To	6-19-79	Prepared By	JLB	Checked By	GJS
Depth	E1	SPT (N)	L o g	W	LL	PI	X
1"=5"							
0	-735	15	C	17.3	41.6	23.2	
5	-730	21	ML-CL	19.0	39.1	14.3	CLAY FILL
		25		17.9			
	-725	23	ML	22.8	47.2	-19.1	
10	-720	20		18.6	42.1	16.1	ALLUVIAL FILL
15	-715	17	ML-CL	19.0	41.3	16.6	
		16		17.3			
		9		17.1			
	-710	10	SM	13.7	NP	NP	ALLUVIAL SILTY SAND
20	-705	14		9.3			
		21	GS-PSM	11.0			
		22	GSM	14.5	23.8	3.6	ALLUVIAL GRAVELLY SAND
25	-705	50		7.1			
		37	GS-PSM	8.7			
30	-705	50	GM	8.5	NP	NP	
		35	GRGM	8.2			ALLUVIAL GRAVEL
35	-705	33		8.2			
							Added by Amendment 50

Figure 2.5-303 Soil Profile (Sheet 1 of 2)

Project <u>WATTS</u> <u>BAR</u> N.P.							Boring <u>SS-145</u>	
Depth	E1	SPT (N)	L g	W	LL	PI	X	Remarks
1"=5' -35		50 ⁺		13.4	38.7	16.2		
-700		50 ⁺		13.7	33.0	11.4		WEATHERED SHALE
-40		50 ⁺		8.4	26.8	8.1		
-695			Hatched					BEDROCK
50								
45								
55								
60								
65								
70								
75								
80								

Figure 2.5-303 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-304
SHEET 1 OF 2**

Project	WATTS	BAR	N. P.	Feature	ERCW	ALIGNMENT
Boring	SS-146	Station	565.0 S	Range	1923.2 E	Surface El 741.4
Date Drilled	6-19-79	To	6-20-79	Prepared By	JLB	Checked By <i>[Signature]</i>

Figure 2.5-304 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR</u> N. P.		Boring <u>SS-146</u>						
Depth	E1	SPT (N)	L Q	W	LL	PI	X	Remarks
1"=5' -35	-705	50	GSP	4.6				ALLUVIAL GRAVELLY SAND
		41	GM	5.5				▽ ▽ ALLUVIAL GRAVEL
-40	-700	47	GSM	7.2	NP	NP		ALLUVIAL GRAVELLY SAND
		36	GM	6.6				ALLUVIAL GRAVEL
		26		7.8				
-45	-695	22	GSP	12.1	35.9	4.1		
		19	ML	27.4	38.6	12.6		LAMINATED RESIDUUM
-50	-690	50	SC	14.0	36.8	13.6		WEATHERED SHALE
		16		19.5	38.5	14.3		
-55	-685	39	ML	18.5	49.7	18.6		
		13		16.8	37.6	11.6		LAMINATED RESIDUUM
-60	-680	26	ML	17.7				
		9		14.5	32.0	4.5		
				19.2				
-65	-675	22		16.8				
		31	CL	15.4	33.0	10.8		
		30		15.0				WEATHERED SHALE
-70	-670	50	SM	17.3	NP	NP		
		50	MECL	7.6	23.3	6.4		BEDROCK
-75	-665							
-80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-304
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-304 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-305
SHEET 1 OF 2**

Project <u>WATTS BAR N.P.</u>				Feature <u>ERCW ALIGNMENT</u>			
Boring	<u>SS-147</u>	Station	<u>464.1S</u>	Range	<u>1866.4 E</u>	Surface El	<u>741.7</u>
Date Drilled	<u>6-20-79</u>	To	<u>6-21-79</u>	Prepared By	<u>JLB</u>	Checked By	<u>JCL</u>
Depth	El	SPT (N)	L o g	W	LL	PI	X
1"=5							
0							
-740	16	15.2					
-735	22	16.3	30.4	12.0			CLAY FILL
-735	16	17.1					
-735	38	CL	14.3	34.1	17.6		
-730	31	I	24.0	51.3	24.5		
-730	20	20.4	43.1	17.4			ALLUVIAL CLAY
-725	25	CML	20.5	39.7	15.1		
-725	15	17.4	—	—			
-720	10	14.4					
-720	11	SM	15.9				ALLUVIAL SAND
-720	11	14.0	NP	NP			
-715	12	GSM	17.4				ALLUVIAL GRAVELLY SAND
-715	14	SM	11.0				ALLUVIAL SAND
-715	15	GMGC	12.2	24.6	4.8		
-710	28	GSPSM	5.8	NP	NP		
-710	40	GSMSC	11.7	23.4	4.3		
-710	50	GSPSM	7.6	NP	NP		
-35							Added by Amendment 50

Figure 2.5-305 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N.P.</u>				Boring <u>SS-147</u>				
Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5' 35	-705	50	+ GRGM	7.7				ALLUVIAL GRAVEL
		29		8.5	NP	NP		
40	-700	18	GSM	17.1				
		47		28.5	36.8	5.2		WEATHERED SHALE
45	-695	30		21.8	39.2	12.0		LAMINATED RESIDUUM
		20	ML	34.1	48.2	10.5		
		50		19.0	42.5	15.2		WEATHERED SHALE
50	-690	43		20.5	37.8	11.9		
		21		25.0	44.4	16.8		
55	-685	24	CL	17.8	35.2	13.1		LAMINATED RESIDUUM
		28		16.1	28.6	7.9		WEATHERED SHALE
		50	H	10.7	29.1	7.3		BEDROCK
60	-680							
65	-675							
70	-670							
75	-665							
80	-660							

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-305
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-305 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-306
SHEET 1 OF 1**

Project WATTS BAR N.P.

Feature ERCW ALIGNMENT

Boring SS-148A Station 265.0 S Range 1923.0 E Surface Elevation 715.4Date Drilled 6-19-79 To 6-19-79 Prepared By JLB Checked By JKL

Depth	Elevation (E)	SPT (N)	Load	W	LL	PI	X	Remarks
1"=5								
-0	-715	10	4	12.3	27.2	10.9		
-5	-710	16		15.3	33.7	16.5		ALLUVIAL CLAY
-10	-705	17		15.3				
-15	-700	25	U	15.8	28.3	10.4		
-20		19		12.5	29.4	14.3		
-25		30		11.9	30.2	12.7		
-30		50		16.6	31.4	13.4		
-35								DISCONTINUED

Added by Amendment 50

Figure 2.5-306 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-307
SHEET 1 OF 2**

Project WATTS BAR N.P. Feature ERCW ALIGNMENT
 Boring SS-148B Station 259.0 S Range 1865.5 E Surface El 736.6
 Date Drilled 6-19-79 To 6-21-79 Prepared By JLB Checked By QD

Depth	El	SPT (N)	L o d	W	LL	PI.	X	Remarks
1"=5"								
0	-735							
5	-730							NO SAMPLING ALLUVIAL CLAY
10	-725							
15	-720	38 GSM	8.2	NP	NP	▽	▼	ALLUVIAL GRAVELLY SAND
20	-715	26 GWGM 23	11.2 7.0	NP	NP			ALLUVIAL GRAVEL
25	-710	25 ML 50 50	20.3 17.1 19.4 19.4	44.8 45.9 36.3 10.2	16.1 18.9			LAMINATED RESIDUUM
30	-705	37 CLM 46 41	20.1 17.6 14.8	38.8 40.9 34.9	11.2 15.2 12.3			WEATHERED SHALE
35								Added by Amendment 50

Figure 2.5-307 Soil Profile (Sheet 1 of 2)

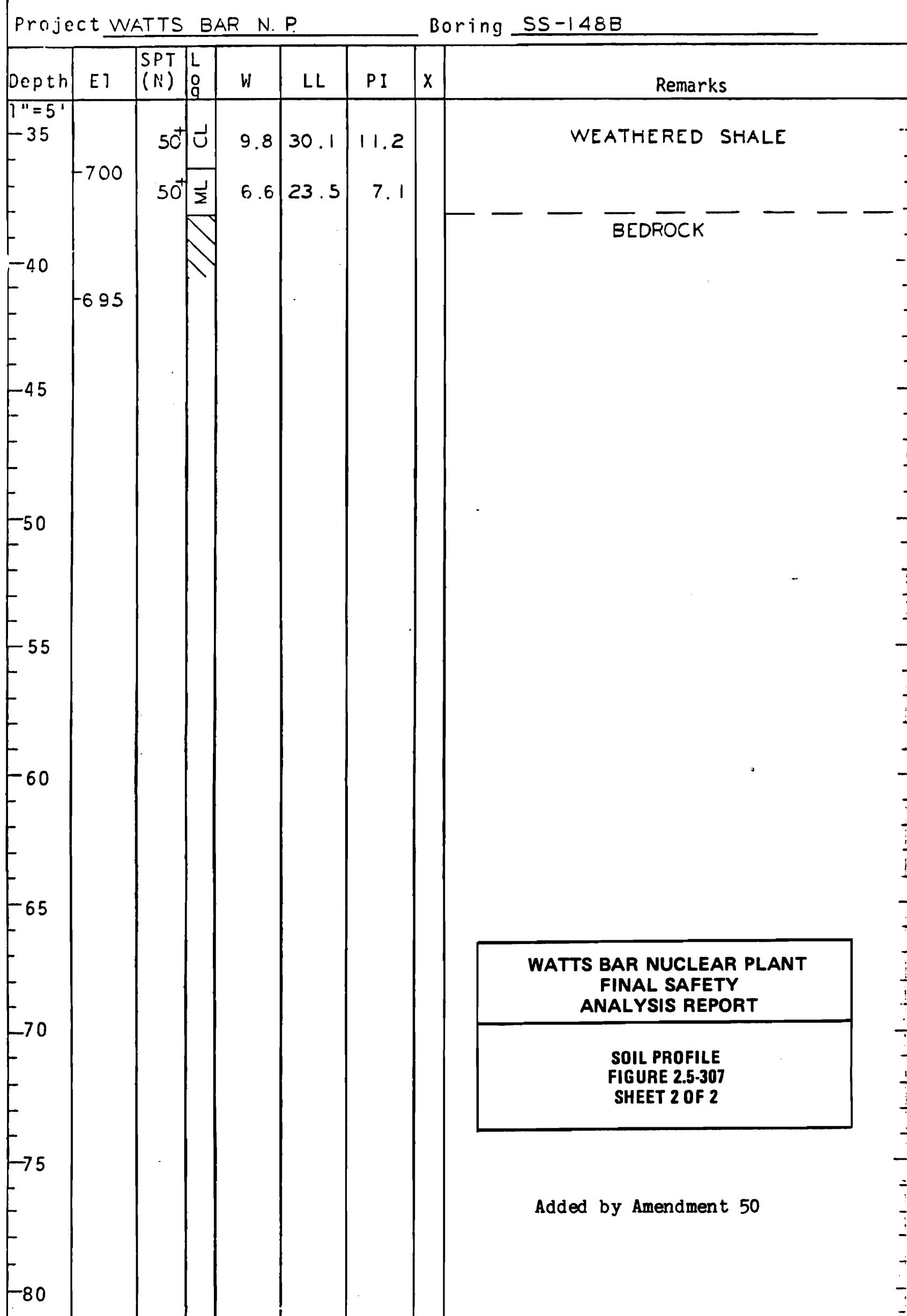


Figure 2.5-307 Soil Profile (Sheet 2 of 2)

TENNESSEE VALLEY AUTHORITY
SINGLETON MATERIALS ENGINEERING LABORATORY
SOIL PROFILE (SS, PA, HA, TP DORING)

Sheet
1 Of 2

Project WATTS BAR NF		Feature ERCW ALIGNMENT					
Boring	SS-149	Station	65 OS	Range	1923.5 E	Surface Elevation	705.9
Date Drilled	E-20-79	To	6-21-79	Prepared By	JLE	Checked By	CCD
Depth	Elevation	SPT (N)	L o d	W	LL	PI	X
1"=5'							
-0	-705	7	SC	14.4	32.5	16.8	
-5	-700	11	CL	18.2	31.9	11.0	ALLUVIAL CLAY
-10	-695	10	SC	20.5	36.1	16.0	
-15	-690	13	SC	17.3	30.9	11.7	ALLUVIAL CLAYEY SAND
-20	-685	23		23.7	43.4	15.0	
-25	-680	16	ML	25.8	36.4	4.9	
-30	-675	29		21.9	38.6	8.1	
-35		40	CL	19.3	45.0	19.3	
		25		22.9			
		35	ML	20.5	36.2	8.5	
		30	CL-M	17.4	32.4	8.8	WEATHERED SHALE
		43	SM	15.7	28.9	3.2	
		50		GSMSC	12.7	29.1	6.1
		50			9.5	31.4	10.4
		50	ML	14.9	27.8	3.6	
		50		8.0	22.3	5.0	
		50	SMSC	11.7			

Amendment 63

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE

Figure 2.5-308
SHEET 1 OF 2

Figure 2.5-308 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u>							Boring <u>SS-149</u>	
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5' 35	-670	50 ⁺ GSM	/	4.2	NP	NP		WEATHERED SHALE
								BEDROCK
40	-665							
45								
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-308
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-308 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-309
SHEET 1 OF 1**

Project WATTS BAR N. P. Feature ERCW ALIGNMENT
 Boring SS-150 Station 135.0 N Range 1923.2 E Surface El 709.1
 Date Drilled 6-22-79 To 6-22-79 Prepared By JLB Checked By ZCX

Depth	EI	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5"								
0	-705	22		14.8	27.3	8.9		
5	-705	13	U	17.5				ALLUVIAL CLAY
		16		17.8	33.0	13.7		
	-700	50	M		20.7			
10	-700	50		17.3	30.5	4.5		
		34		14.9	33.2	11.4		
	-695	50	U	16.2	37.2	13.5		
15	-695	50		12.8	29.4	9.0		
		50		6.3				WEATHERED SHALE
	-690	50	SMSC		23.7	6.7		
20	-690	50		8.3				BEDROCK
	-685							
25								
30								
35								

Added by Amendment 50

Figure 2.5-309 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-310
SHEET 1 OF 1**

Project	WATTS	BAR	N.P.	Feature	ERCW	ALIGNMENT	
Boring	<u>SS-151</u>	Station	<u>285.8 N</u>	Range	<u>1824.9 E</u>	Surface E1	<u>717.5</u>
Date Drilled	<u>6-25-79</u>	To	<u>6-25-79</u>	Prepared By	<u>JLB</u>	Checked By	<u>CCP</u>

Figure 2.5-310 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-311
SHEET 1 OF 1**

Project WATTS BAR N.P.Feature ERCW ALIGNMENTBoring SS-152 Station 465.1N Range 1693.1 E Surface El 719.6Date Drilled 6-25-79 To 6-25-79 Prepared By JLB Checked By JCB

Depth	El	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5'								
0		23	C	12.6	32.3	14.9		
5	-715	21	C	17.8	27.9	10.6		ALLUVIAL CLAY
		19		17.5	34.8	18.7		
		22		15.6	30.1	-11.1		
10	-710	50	GSM	4.6				
			GSPSM	NP	NP			
		23		13.9				ALLUVIAL GRAVELLY SAND
15	-705	24	S	24.6	37.1	10.4		
			ML-CL	22.4	41.3	16.0		
		19						LAMINATED RESIDUUM
20	-700	27		26.2	40.8	17.0		
		50	CL	15.3				
				32.7	11.8			
		50		.14.5				WEATHERED SHALE
25	-695	50		9.4	26.0	9.3		
		50	ML-CL	5.9	24.0	6.7		
								BEDROCK
30	-690							
35								
								Added by Amendment 50

Figure 2.5-311 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-312
SHEET 1 OF 1**

Project WATTS BAR N.P.

Feature ERCW ALIGNMENT

Boring SS-153 Station 585.0N Range 1540.0 E Surface El 719.7

Date Drilled 6-26-79 To 6-26-79 Prepared By JLB Checked By PC

Depth	El	SPT (N)	L o d	W	LL	PJ	X	Remarks
1"=5'								
0								FILL
-715	49	GCL		14.8	31.3	15.9		
5	18	CH		19.4	49.1	28.6		
	32			13.5	23.5	7.5		ALLUVIAL CLAY
	13	CL		14.7	28.3	11.8		
-710	50	GSPSM						
		—						
	15	GSWSM		NP	NP			ALLUVIAL GRAVEL
	10.8							
	MECL							
-705	48	CL-ML		20.2	48.5	21.4		
	50			16.3	38.1	13.3		
	50			14.8				
-700	50	C		37.3	14.7			WEATHERED SHALE
	12.7							
	50			8.3	28.9	9.4		
	50			5.7				
-695	50	SC		24.2		7.5		
	4.7							BEDROCK
-690								
30								
35								
								Added by Amendment 50

Figure 2.5-312 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-313
SHEET 1 OF 1**

Project <u>WATTS BAR N.P.</u>				Feature <u>ERCW ALIGNMENT</u>			
Boring	<u>SS-154</u>	Station	<u>633.5 N</u>	Range	<u>1444.4 E</u>	Surface Elevation	<u>719.7</u>
Date Drilled	<u>6-26-79</u>	To	<u>6-26-79</u>	Prepared By	<u>JLB</u>	Checked By	<u>JO</u>
Depth	Elevation	SPT (N)	Log	W	LL	PI	X
1"=5'							
0		25		14.8	31.6	13.7	
5	-715	25	C	13.2	27.6	10.7	ALLUVIAL CLAY
		23		14.1	23.0	9.2	
		20		13.1			
		50	GSM	8.8			
		29	GSPSM	10.2	NP	NP	ALLUVIAL GRAVELLY SAND
		20		17.4	38.2	15.6	
10	-710	27		17.6			LAMINATED RESIDUUM
15	-705	27		9.6			
20	-700	50	C	8.0	29.4	10.8	
		50		6.1			
		50	SC	5.5	26.0	8.5	WEATHERED SHALE
		50		5.3			
		50	C	8.7	24.0	7.5	
25	-695	50		5.4	—	—	
		50	M-CL	7.2	23.0	6.9	
30	-690	50	ML-CL				BEDROCK
35	-685		/				Added by Amendment 50

Figure 2.5-313 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-314
SHEET 1 OF 1**

Project WATTS BAR N.P.		Feature ERCW ALIGNMENT						
Boring	SS-155	Station	664.1 N	Range	1410.0 E	Surface Elevation	719.5	
Date Drilled	6-26-79	To	6-26-79	Prepared By	JLB	Checked By	CSC	
Depth	Elevation	SPT (N)	Liq	W	LL	PI	X	Remarks
1"=5								
0								FILL
-715		22	CL	16.3	26.8	10.7		ALLUVIAL CLAY
5		35	CL	12.9				
		20	CL-ML	14.9	35.9	20.5		
		21	CL	12.3	19.7	4.7		
-710		32	GSM	17.5				ALLUVIAL GRAVELLY SAND
10		23	GSM	12.5	NP	NP		
		36	GSPSM	11.7				
-705		28	CL	16.0	38.0	16.0		LAMINATED RESIDUUM
15		50	CL	5.6				
		50	WE	15.5	26.6	8.8		WEATHERED SHALE
-700		50	MECL	6.5	23.7	6.3		
20								DISCONTINUED
-695								
25								
30								
-35								
Added by Amendment 50								

Figure 2.5-314 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-315
SHEET 1 OF 1**

Project	WATTS BAR N.P.	Feature	ERCW ALIGNMENT
Boring	SS-156	Station	664.8 N
		Range	1210 0 E
		Surface El	720.4
Date Drilled	6-26-79	To	6-26-79
		Prepared By	JLB
		Checked By	<u>GCJ</u>

Figure 2.5-315 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-316
SHEET 1 OF 1**

Project WATTS BAR N.P.				Feature ERCW ALIGNMENT			
Boring	SS-157	Station	664.8 N	Range	1110.0 E	Surface Elevation	723.5
Date Drilled	6-27-79	To	6-27-79	Prepared By	JLB	Checked By	OCL
Depth	Elevation	SPT (N)	Log	W	LL	PI	X
1"=5							
0							
-720	10	15.4	29.3	13.1			LIMESTONE-GRAVEL
-720	20	12.4	24.0	8.1			CLAY FILL
-715	19	18.6	38.7	17.7			
-715	17	17.9	33.2	16.3			ALLUVIAL CLAY
-710	20	18.3					
-710	13	22.6	37.6	17.2			
-710	39	13.3					
-710	33	9.2					
-705	33	23.2					ALLUVIAL GRAVELLY SAND
-705	43	21.8	N0	NP			
-700	50	15.1					WEATHERED SHALE
-700	50	16.4					
-695	50	10.6					BEDROCK
-695							
-35							
Added by Amendment 50							

Figure 2.5-316 Soil Profile (Sheet 1 of 1)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-317
SHEET 1 OF 1**

Project WATTS BAR N.P.

Feature ERCW ALIGNMENT

Boring SS-158 Station 664.8 N Range 1010.0 E Surface El 727.5

Date Drilled 6-26-79 To 6-27-79 Prepared By JLB Checked By AC

Depth	El	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5								
0								
-725	8	13.6						CLAY FILL
5	17	15.4		28.0	9.8			
-720	13	19.1						
10	11	17.3						
-715	9	18.4						ALLUVIAL CLAY
15	23.0							
-710	7	34.0		11.0				
20	3	27.6						
-705	2	32.2	SM	22.9	2.5			ALLUVIAL SAND
25	39	27.6	GSM					
-700	9.7	NP		NP				ALLUVIAL GRAVELLY SAND
30	49	21.5						
-695	28	24.7	ML					WEATHERED SHALE
35	50	18.7	Q-ML	30.8	8.8			
-700	50	11.3		26.6	5.4			
	50	6.7		24.2	8.2			BEDROCK
								Added by Amendment 50

Figure 2.5-317 Soil Profile

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	SOIL PROFILE FIGURE 2.5-318
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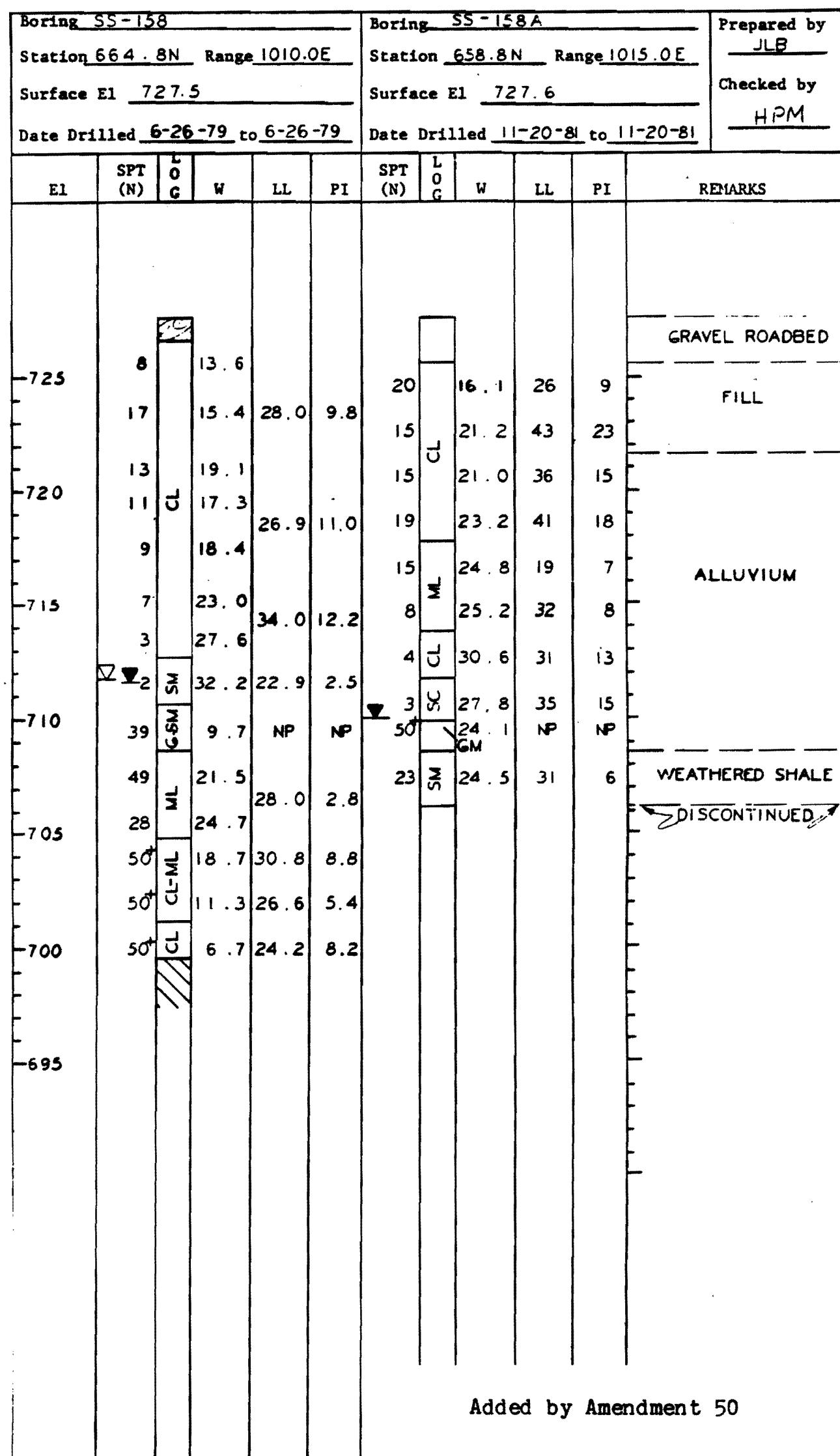


Figure 2.5-318 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-319
SHEET 1 OF 1**

Added by Amendment 50

Project WATTS BAR N. P.			Feature ERCW ALIGNMENT				
Boring	SS-159	Station 640.0 N	Range 810.0 E	Surface El 731.7			
Date Drilled 6-27-79 To 6-27-79			Prepared By JLB Checked By QCL				
Depth	El	SPT (N)	L _o g	W	LL	PJ	X
1"=5							
-0							
-730	11	16.4		31.2	11.8		
-725	21	25.6		—	—		
-725	17	26.6		—	—		
-725	18	23.8		39.5	13.2		
-720	14	25.6		—	—		
-720	11	25.8	32.8	13.4			
-720	6	29.4	26.8	4.2			
-715	5	27.1	34.6	16.1			
-715	3	25.6	29.3	13.3			
-710	20	13.7		NP	NP		
-710	50	9.9					
-705	43	20.2	38.7	16.4			
-705	43	28.4	36.1	12.6			
-700	41	21.3	39.4	15.7			
-700	50	18.4	37.0	14.3			
-700	43	9.7	31.4	11.9			
-700	50	10.6					
-35							

Remarks

GRAVEL

ALLUVIAL CLAY

ALLUVIAL GRAVEL

WEATHERED SHALE

DISCONTINUED

Figure 2.5-319 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-320
SHEET 1 OF 1**

Project WATTS BAR N. P.		Feature ERCW ALIGNMENT					
Boring	SS-160	Station	566.0 N	Range	740.0 E	Surface El	732.9
Date Drilled	6-27-79	To	6-27-79	Prepared By	JLB	Checked By	JCE
Depth	El	SPT (N)	Lg	W	LL	PI.	X.
1"=5							
0							
-730	13	21.5	35.8	17.9			CLAY FILL
-5	21	CL	22.8	39.2	16.1		ALLUVIAL CLAY
-725	15	21.4	14.7	30.2	6.0		
-10	13	24.0	24.0	30.0	6.0		
-720	15	SM	22.5	NP	NP		ALLUVIAL SAND
-15	7	23.8	24.2	1.7			
-715	12	25.8	27.0	3.0			
-20	5	SM-SC	30.2	32.1	8.5		
-710	21	GM	22.0	26.2	2.2		ALLUVIAL GRAVEL
-25	5	24.3					
-705	50	GRGM	9.6	NP	NP		
-30	39	SMSC	16.8	29.5	7.5		
-700	29	CL	21.1	38.7	16.3		WEATHERED SHALE
-35	50	ML	16.9	30.6	6.7		
	50	CL-ML	15.1	23.7	15.9		
	50	CL	10.1				
							DISCONTINUED
							Added by Amendment 50

Figure 2.5-320 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-321
SHEET 1 OF 2**

Project WATTS BAR N. P.

Feature ERCW ALIGNMENT

Boring SS-161 Station 488.0N Range 670.0 E Surface El 732.4

Date Drilled 6-28-79 To 6-28-79 Prepared By JLB Checked By JCB

Depth	EI	SPT (N)	L o d	W	LL	PI	X	Remarks
1"=5'								
0								
-730	20	I U		26.2	57.6	30.0		
-725	14	M H		21.1	41.2	14.4		
	9	C-L-M		25.1	43.0	16.5		ALLUVIAL SAND TO CLAY
	8	S C		28.2	34.4	11.9		
-720	5	C L		25.3	29.7	8.4		
	6	S C		25.3	30.8	9.4		
-715	9	SM		18.4	NP	NP	▽	ALLUVIAL SILT & SAND
	10			21.5				
	3	C-L-M-L		35.8	36.8	13.2		
-710	5	M L		30.9	25.7	2.3		
	37	G-SM	GM	11.1	NP	NP		ALLUVIAL GRAVEL
	19	G-SM		12.7				
-705	45			21.0				
	50	CL-M-L		16.8	41.1	16.6		
-700	50			18.6				WEATHERED SHALE
	25			19.8	38.9	14.3		
	50	CL		22.2	46.1	20.4		
-35	50	U		12.2	29.1	9.6		Added by Amendment 50

Figure 2.5-321 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u> Boring <u>SS-161</u>								
Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5' -35		50	SC	7.7	29.1	9.6		WEATHERED SHALE
-695	50			6.3				DISCONTINUED
40								
-690								
45								
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-321
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-321 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-161						Boring SS-161A						Prepared by	
Station 488.0 N Range 670.0 E						Station 488.0N Range 675.0E						Checked by	
Surface El 732.4						Surface El 732.9							
Date Drilled 6-28-79 to 6-28-79						Date Drilled 11-23-81 to 11-23-81							
El	SPT (N)	L O G	W	LL	PI	SPT (N)	L O G	W	LL	PI	REMARKS		
730	20	CH	26.2	57.6	30.0	33	T	28.4	62	34			
	14	M	21.1	41.2	14.4	26	M	19.2	39	12			
	9	CL-ML	25.1	43.0	16.5	13	C	24.3	36	13			
	8	SC	28.2	34.4	11.9	12	SM-SC	21.8	32	8			
	5	CL	23.3	30.8	9.4	9	X	22.4	28	8	ALLUVIUM		
	6	SC	25.3	29.7	8.4	10	SM	23.8	26	2			
	9		18.4	NP	NP	13	SM	17.8	NP	NP			
	10	SM	21.5			23	X	14.0	29	9			
	3	CL-ML	35.8	36.8	13.2	5	X	35.7	38	12			
	5	M	30.9	25.7	2.3	5	CL	33.0	32	13			
	37	GM	11.1	NP	NP	50	CL	32.4	27	9			
	19	G-SM	12.7			40	SM	15.4	NP	NP			
	45		21.0			16	GP-GM	10.3					
	50	CL-ML	16.8	41.1	16.6		SM	44.2					
	50		18.6										
	25	CL	19.8	38.9	14.3								
	50*	CL	22.2	46.1	20.4								
	50*	SC	12.2										
	50*	SC	7.7	29.1	9.6								
	50*		6.3										
695													
690													

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-322

Figure 2.5-322 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-323
SHEET 1 OF 1**

Project WATTS BAR N.P.

Feature ERCW ALIGNMENT

Boring SS-162 Station 488.0 N Range 560.0 E Surface El 733.8

Date Drilled 6-28-79 To 6-28-79 Prepared By JLB Checked By *JLB*

Depth	El	SPT (N)	L O G	W	LL	PI	X	Remarks
1"=5								
0								LIMESTONE GRAVEL
-730	13	CJ		14.4	37.1	21.4		
-5	17	CH		21.6				ALLUVIAL CLAY
-725	14			28.4	67.1	41.7		
-10	20	SM		16.4	31.6 - 7.1			
-720	34	SM		22.7	31.0	6.6		
-15	27	GSM		20.7	29.1	3.8		ALLUVIAL SAND
-715	36			23.0	31.6	4.9		
-20	20			27.7	28.3	1.6		
-710	19	SM		30.2	27.6	3.0		
-25	5			34.3				
-705	5	GSWSM						
-30	11			20.4				
-700	50	GM		10.9				ALLUVIAL SAND & GRAVEL
-35	50	SM		12.3				
	50			18.6				
	50	CL-ML						WEATHERED SHALE
	50			38.6	13.9			
	50	CL		14.3				
	50			12.0	32.0	10.8		
								DISCONTINUED
								Added by Amendment 50

Figure 2.5-323 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-324
SHEET 1 OF 1**

Project WATTS BAR N. P.				Feature ERCW ALIGNMENT				
Boring	SS-163	Station 488.0 N	Range 450.0 E	Surface Elevation	737.0			
Date Drilled	6-28-79	To 6-28-79	Prepared By JLB	Checked By GCD				
Depth	Elevation	SPT (N)	Log	W	LL	PI	X	
1"=5								
0	-735	19	C	18.3	31.7	13.3		GRAVEL
		17		GPGM 3.4				ALLUVIAL CLAY
		18	H	25.2	54.0	NP		ALLUVIAL GRAVEL
5	-730	10	CML	24.7				
		9		27.7	40.0	20.9		ALLUVIAL CLAY & SILT
10	-725	5	SM	19.7		NP		
		5		27.1				
15	-720	5	SSC	28.4	30.4	7.1		ALLUVIAL SAND
		6		26.9				
20	-715	3	SM	31.1	27.2	3.3		
		4		33.5	29.7	4.7		
		17	GSM	27.3	28.7	3.8		
25	-710	50		7.8				ALLUVIAL GRAVEL
		50		12.1				
		50		GPGM				
30	-705	50	M	18.5	43.6	16.2		WEATHERED SHALE
		50		21.2	37.3	9.0		
		50		2.7				
35								DISCONTINUED

Added by Amendment 50

Figure 2.5-324 Soil Profile

WATTS BAR NUCLEAR PLANT ERCW
SOIL PROFILE

Boring SS-163						Boring SS-163A						Prepared by <u>JLB</u>
Station 488.0 N Range 450.0E						Station 480.5N Range 441.0E						Checked by <u>HPM</u>
Surface El 737.0						Surface El 737.5						
Date Drilled 6-28-79 to 6-28-79						Date Drilled 11-24-81 to 11-24-81						
El	SPT (N)	L O G	W	LL	PI	SPT (N)	L O G	W	LL	PI	REMARKS	
735	19	CL	18.3	31.7	13.3							ASPHALT
	17	GP-GM	3.4	NP	NP							GRAVEL ROADBED
730	18	MH	25.2	54.0	20.9	25	M	31.9	60	24		CLAY FILL
	10	CL-M	24.7	40.0	15.3	23	SM-SC	22.6	37	13		
	9	SM	27.7			23	SC	22.5	33	10		
725	5	SM	19.7	NP	NP	15	SM	18.8	30	9		ALLUVIUM
	5	SM	27.1			9	SM	25.8	31	6		
	5	SM-SC	28.4	30.4	7.1	7	SM	28.9	31	7		
720	6	SM	26.9			11	SRSM	28.2	NP	NP		
	3	SM	31.1	27.2	3.3	4	SM	36.3	30	3		
715	4	SM	33.5	29.7	4.7	5	CL	33.0	31	9		
	17	GSM	27.3	28.7	3.8	5	SM	34.3				
	50	GP-GM	7.8			50	SP-SM	16.2				
710	50	GP-GM	12.1			40	GP-GM	16.4	NP	NP		
	50	ML	18.5	43.6	16.2	50	SM	13.9				
705	50	ML	21.2	37.3	9.0	50	SM	13.2	40	12	WEATHERED SHALE	
	50	ML	2.7	—	—	50	SM	20.5			DISCONTINUED	
700												

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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SOIL PROFILE
FIGURE 2.5-325

Figure 2.5-325 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-326
SHEET 1 OF 2**

Added by Amendment 50

Project WATTS BAR N.H.		Feature CRRVV ALIGNMENT					
Boring	SS-164	Station	488.0 N	Range	230.0 E	Surface E.I.	741.0
Date Drilled	6-28-79	To	6-29-79	Prepared By	JLB	Checked By	JLB
Depth	E.I.	SPT (N)	L O G	W	LL	P.I.	X
1"=5'							
0	-740		GCL	6.9	28.3	10.5	
	20		SMSC	16.7	27.0	5.4	ALLUVIAL SAND & GRAVEL
	14		G-SM	1.7	NP	NP	
5	-735	50	CHMH CL-M	24.7	48.7	21.3	ALLUVIAL CLAY & SILT
	20			52.7	24.5		
	31		SMSC	20.8	38.6	12.7	ALLUVIAL SAND
10	-730	21		22.3	39.4	13.1	
	15		ML	25.6			ALLUVIAL CLAY & SILT
	-725	16		9	60.3	36.3	
	9		Q	26.2			
	-720	6	CML	28.2	36.0	12.1	
	9		SMSC	27.4	31.5	8.6	
20	-715	15		16.2			
	20		SPSM	NP	NP		
	11		SM	20.9			ALLUVIAL SAND & GRAVEL
25	-710	50		11.0			
	50		SPSM	14.9	NP	NP	
30	-710	26	CL	13.2	46.7	22.7	WEATHERED SHALE
35							

Figure 2.5-326 Soil Profile (Sheet 1 of 2)

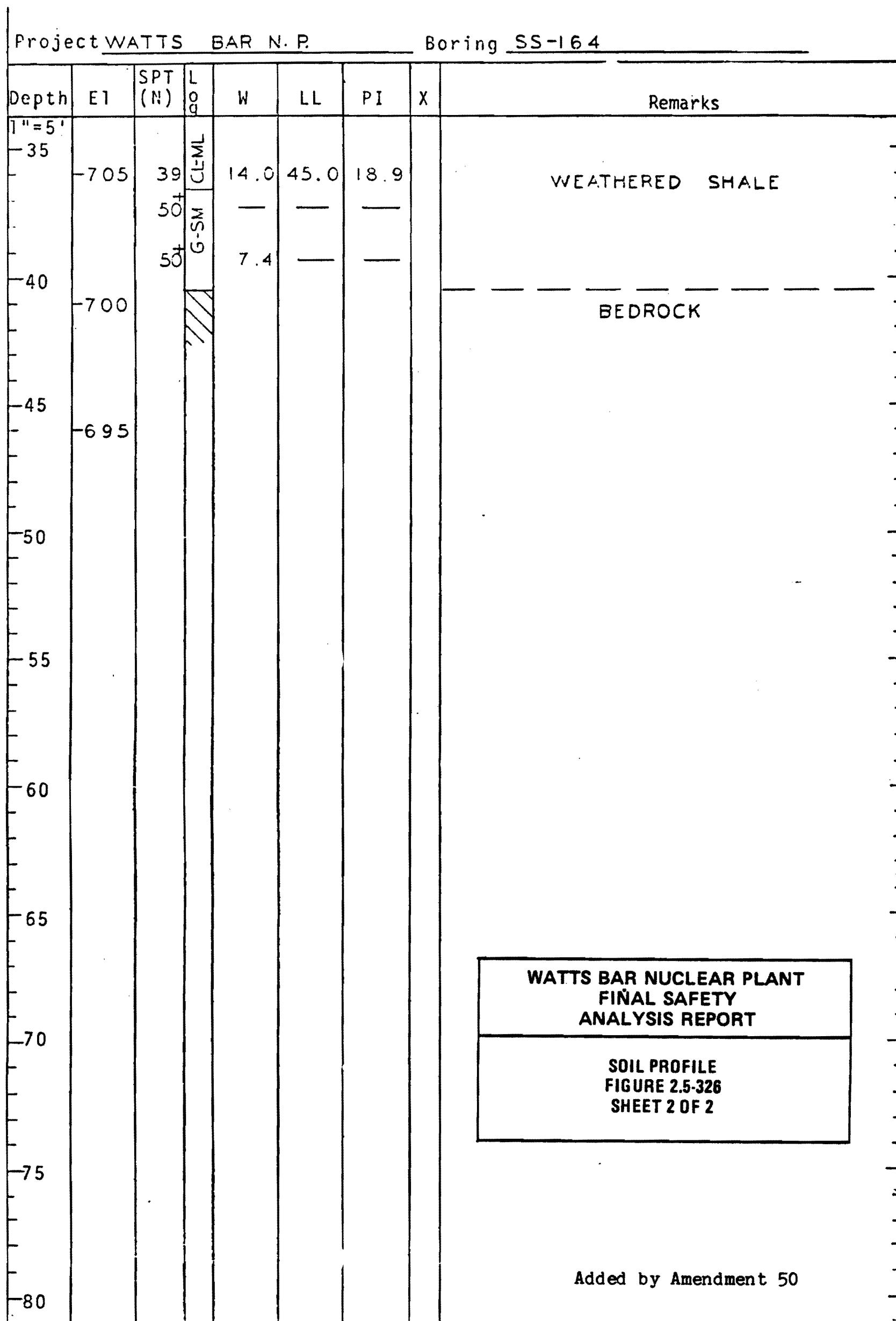


Figure 2.5-326 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-327
SHEET 1 OF 2**

Project WATTS BAR N. P. Feature ERLW ALIGNMENT
 Boring SS-165 Station 488.0 N Range 120.0 E Surface El 740.7
 Date Drilled 6-29-79 To 6-29-79 Prepared By JLB Checked By ac

Depth	ET	SPT (N)	L o g	W	LL	PI	X	Remarks
1 " = 5								
0								SANDY SILT
-740		50						
5		13	CL	19.8	31.2	13.0		
-735		20		CL=CH	27.2	50.6	23.6	
10		18	ML	20.7	44.7	16.3		ALLUVIAL CLAY & SILT
-730		11		CL=ML	22.9	35.8	12.2	
15		13	ML	28.5	44.5	16.6		
-725		11	CL	26.7	36.7	14.4		
20		12	SM	21.8	34.1	9.2		
-720		5	ML	31.9	37.4	11.5		
25		6	CL=ML	31.2	39.0	14.2	▽	ALLUVIAL SAND & SILT
-715		3	SMSC	33.3			▽	
30		2		30.7	8.1			
-710		27	GSC	34.4				
35		50	GR-GM	17.7				ALLUVIAL GRAVEL
-		47		10.5	NP	NP		
-		34	GWGM	11.6				
								Added by Amendment 50

Figure 2.5-327 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u>				Boring <u>SS-165</u>				
Depth	E1	SPT (N)	L og	W	LL	PI	X	Remarks
1"=5'								
35	-705	49	72	19.0	37.1	11.6		LAMINATED RESIDUUM
		50	+	7.9	27.6	7.7		NO SAMPLE RECOVERY
		50	GSC	—	—	—		LAMINATED RESIDUUM
40	-700	50	+	8.7	27.6	7.7		DISCONTINUED
45	-695							
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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SOIL PROFILE
FIGURE 2.5-327
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-327 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-328
SHEET 1 OF 2**

Project WATTS BAR N. P. Feature ERCW ALIGNMENT
 Boring SS-166 Station 488.0 N Range 10.0 E Surface El 740.5
 Date Drilled 6-29-79 To 6-29-79 Prepared By JLB Checked By gcb

Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5								
0	-740	12	CL	20.5	38.5	18.4		
		50		GSM 3.0				FILL
5	-735	24		X	NP	NP		
		17		O 7 GRGM				
10	-730	17		25.1				
		21	CL	24.0	48.1	21.1		
		12	ML	25.8	39.6	15.9		
15	-725	18	CL-ML	24.2	30.0	5.6		
		16	ML	23.4	33.2	10.8		ALLUVIAL SILT & CLAY
		13	CL-ML	28.1	40.3	14.6		
20	-720	11	ML	29.6				
		6	CL-ML	32.2	48.8	19.8		
		6	CL-ML	28.4	31.4	9.1		
25	-715	5	CL	29.3	36.8	14.3		
		5	SC	27.1	26.7	9.6		
30	-710	50	GSPSM	12.6				ALLUVIAL SAND OR GRAVEL
		50		NP	NP			
		50	CL-ML	10.1				
		50		15.2	34.1	10.7		WEATHERED SHALE

Figure 2.5-328 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u> Boring <u>SS-166</u>								
Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5'								
-35	-705	50 ⁺	ML	13.8	31.5	7.4		WEATHERED SHALE
		50 ⁺		12.9	—	—		DISCONTINUED
-40	-700							
-45								
-50								
-55								
-60								
-65								
-70								
-75								
-80								

WATTS BAR NUCLEAR PLANT
 FINAL SAFETY
 ANALYSIS REPORT

SOIL PROFILE
 FIGURE 2.5-328
 SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-328 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-329
SHEET 1 OF 1**

Added by Amendment 50

Project WATTS BAR N. P.

Feature ERCW ALIGNMENT

Boring SS-167 Station 420.0N Range 83 . 3 W Surface Elevation 739.7

Date Drilled 7-2-79 To 7-2-79 Prepared By JLB Checked By CCH

Depth	Elevation (E)	SPT (N)	Lo	W	LL	PI	X	Remarks
1"=5								
0								
-735	18	CE-ML		17.0	27.7	6.2		
5	12	CL		13.4	29.8	10.4		FILL
	13	GSC		21.8	43.2	25.0		
-730	25	G		23.7	—	—		
10	23	CHM		25.6	—	—		
	21	H		22.6	—	—		
-725	16	CL-ML		25.1	43.4	18.5		
	14	CL-ML		27.4	46.0	19.4		ALLUVIAL CLAY
	14			27.3	—	—		
-720	13			46.5	21.6			
20				28.8	—	—		
	10	CL		30.2	—	—		
-715	6			32.1	—	—		
25	5			31.8	32.7	12.1		
	2			34.1	31.0	15.2		
-710	50	GSM		10.1	NP	NP		ALLUVIAL GRAVELLY SAND
30				12.8	26.2	4.6		
	50	CL-ML		10.9	30.1	7.2		WEATHERED SHALE
-35	50	CL-ML						BEDROCK

Figure 2.5-329 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-330
SHEET 1 OF 2**

Project WATTS BAR N. P.		Feature ERCW ALIGNMENT					
Boring	SS-168	Station	319.8 N	Range	65.3 W	Surface E1	739.6
Date Drilled	7-2-79	To	7-3-79	Prepared By	JLB	Checked By	QCP
Depth	E1	SPT (N)	L o d	W	LL	PI.	X
1"=5'							
0							
-735	11	17	C-ML	15.5	28.9	6.2	
-730	8	12		16.5			
-725	14	12	C	16.9	27.4	7.0	
-720	11	12	C	17.3			
-715	7	8	D	16.6	29.6	9.5	
-710	50	18	C	20.1	43.6	22.8	
-705	50	9	C	25.9	50.7	27.2	
-705	50	7	D	25.6	41.8	20.5	ALLUVIAL CLAY
-705	50	11	D	28.6			
-705	50	7	D	31.1			
-705	50	2	C	43.7	19.5		
-705	50	1	C	29.0	36.7	18.6	
-705	50	1	C	28.4	25.5	9.0	
-705	50	50	GP-GM				
-705	50	50	9.5				
-705	50	50	GW-GM				
-705	50	50	8.9				
-705	50	50	NP				ALLUVIAL GRAVEL
-705	50	50	NP				
-705	50	50	17.2	36.2	13.7		WEATHERED SHALE
-705	50	50	13.9	34.1	13.1		
-35							
							Added by Amendment 50

Figure 2.5-330 Soil Profile (Sheet 1 of 2)

Project WATTS BAR N.P. Boring SS-168

Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1 " = 5'								
-35		50	SC	8.5	27.3	8.0		WEATHERED SHALE
		50		7.3				DISCONTINUED
-40								
-45								
-50								
-55								
-60								
-65								
-70								
-75								
-80								

WATTS BAR NUCLEAR PLANT
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SOIL PROFILE
FIGURE 2.5-330
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-330 Soil Profile (Sheet 2 of 2)

Figure 2.5-331 Blank Page

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-332
SHEET 1 OF 2**

Project WATTS BAR N. P.		Feature ERCW ALIGNMENT					
Boring	SS-169	Station	320.0 N	Range	348.0 E	Surface E1	741.1
Date Drilled	7-2-79	To	7-2-79	Prepared By	JLB	Checked By	ECD
Depth	E1	SPT (N)	L o g	W	LL	PI	X
0							
-740	17	16.7		31.2	11.8		
-735	18	14.9					
-730	16	18.4	C	32.6	13.6		ALLUVIAL CLAY
-725	13	17.9					
-720	14	16.8					
-715	19	24.5	H	51.5	29.3		
-710	15	21.0		44.6	24.7		
-705	10	26.9		43.3	20.1		
-700		ML CL					
-695	10	27.6		42.1	17.3		
-690	13	32.3	M	48.4	17.2		
-685	8	31.8	CEML	43.0	17.0		
-680		34.3					ALLUVIAL SILT
-675	6						
-670	6	32.3					
-665	5	33.1	M	40.8	13.7		
-660		GSM					
-655	50	10.4					
-650	50	9.7		NP	NP		ALLUVIAL GRAVEL
-645	50	GRGM					
-640		14.7		36.8	12.0		
-635		CL=ML					WEATHERED SHALE
							Added by Amendment 50

Figure 2.5-332 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N.P.</u>				Boring <u>SS-169</u>				
Depth	E1	SPT (N)	Lg	W	LL	PI	X	Remarks
1"=5' 35	-705	50	C	17.0	38.1	14.5		WEATHERED SHALE
		50	SC	11.0	29.0	9.8		
		50		6.3				DISCONTINUED
40	-700							
45								
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-332
SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-332 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-333
SHEET 1 OF 2**

Project WATTS BAR N. P.		Feature ERCW ALIGNMENT					
Boring	SS-170	Station	420.0 N	Range	348.0 E	Surface Elevation	741.2
Date Drilled	7-2-79	To	7-2-79	Prepared By	JLB	Checked By	<i>JLB</i>
Depth	Elevation	SPT (N)	Liquidity Index	W	LL	PI	X
1"=5"							
0	-740	18	C=ML	15.6	30.1	8.5	
		14		16.2			
5	-7.35	15		15.8	27.8	6.0	
		24	C	17.6	31.8	12.3	ALLUVIAL CLAY
10	-730	21	C	25.2	61.5	34.2	
		13	CL	19.3	44.0	21.2	
		7		23.5	33.4	13.7	
15	-725	14	M=CL	25.5			
		14		29.5	44.5	27.5	
20	-720	12	SM	21.9	32.6	7.4	
		4	GSMSC	29.1			
		17		34.8	11.5		
25	-715	18	GSWSM	23.6			
				19.2			
		31	GSM	12.1			ALLUVIAL SAND & GRAVEL
30	-710	50	GSWSM	42.5			
		50		NP			
		21	GSM	10.4			
-35			GM	17.8	—	—	Added by Amendment 50

Figure 2.5-333 Soil Profile (Sheet 1 of 2)

Project <u>WATTS BAR N. P.</u>				Boring <u>SS-170</u>				
Depth	E1	SPT (N)	L o g	W	LL	PI	X	Remarks
1"=5' -35	-705	28	Σ	21.6	42.7	15.9		
		50	CL	11.5	32.9	11.4		WEATHERED SHALE
-40	-700	50	CL	15.6	37.0	13.5		BEDROCK
45								
50								
55								
60								
65								
70								
75								
80								

WATTS BAR NUCLEAR PLANT
 FINAL SAFETY
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SOIL PROFILE
 FIGURE 2.5-333
 SHEET 2 OF 2

Added by Amendment 50

Figure 2.5-333 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-334
SHEET 1 OF 2

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
 BORING: SS-1 STATION: 1 RANGE: G SURFACE EL: 741.7
 DATE DRILLED: 6-14-82 TO 6-14-82 PREPARED BY: MHD CHECKED BY:

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740	26		13.3			TOPSOIL SI SD, DK BRN, MST, MIC, HOMO, (FL)
5		21	L 0	15.6	29	12	CL SI SD, MD-DK BRN, MST, MIC, HOMO (FL)
	735	16		16.1			CL SI SD, DKBRN, MST, MIC, HOMO, (FL)
		50+		18.6			SD CL SI, DKBRN, MST, MIC, HOMO, (FL) 1032 GRAVEL - NO SAMPLE
10		24	L 0	24.7	43	18	SI CL, MD-LT TN, MOTT, MST, HOMO, MIC (CALL.)
	730	22		22.1			SI SD, MD TN-YEL TN, MOTT, MST, HOMO (CALL.)
15		14		24.2			CL SI, MD TN-YEL TN, MOTT, MST, HOMO (CALL.)
	725	18	L 0 1 Σ	29.1	39	14	CL SD SI, MD TN-YEL TN, MOTT, MST, HOMO (CALL.)
20		5	Σ 0	31.0	30	2	SD CL SI, MD TN, MST, HOMO, MIC, (CALL.)
25		10	Σ 0	25.2	25	3	SI SD, MD TN, V MST, HOMO, MIC, (CALL.)
30		50+	0 1 Σ 0 0	10.2	NP	NP	GV SD, MD TN-BLK BRN, W, STRAT. (CALL.)
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-334 Soil Profile (Sheet 1 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-334
SHEET 2 OF 2**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-1 STATION: 1 RANGE: G SURFACE EL: 741.7
DATE DRILLED: 6-14-82 TO 6-14-82 PREPARED BY: MHD CHECKED BY:

DEPTH ft.	EL	SPT (C _N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	705	37	ΣU $0 \cdot 0$	24.5	38	12	WTH SH, MD TN-BLK GY, MST, LAM-STRAT.
40	700						BEDROCK (EL. 704.0)
45	695						
50	690						
55	685						
60	680						
65	675						
70							
1' = 5'	* Lab. Classif.						

Figure 2.5-334 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-335
SHEET 1 OF 2**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-2 STATION: 1 RANGE: C SURFACE EL: 741.5
DATE DRILLED: 6-11-82 TO 6-11-82 PREPARED BY: MHD CHECKED BY:

Figure 2.5-335 Soil Profile (Sheet 1 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-335 SHEET 2 OF 2

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
 BORING: SS-2 STATION: 1 RANGE: C SURFACE EL: 741.5
 DATE DRILLED: 6-11-82 TO 6-11-82 PREPARED BY: MHD CHECKED BY:

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	705	30	U I Σ	26.5	28	20	MD CL, MD BRN-GRN, MST, STRAT- SHLY (RES.)
40							REFUSAL (EL. 704.3)
700							
45							
695							
50							
690							
55							
685							
60							
680							
65							
675							
70							
1' = 5'							
* Lab. Classif.							
Added by Amendment 50							

Figure 2.5-335 Soil Profile (Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-336
SHEET 2 OF 2**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-3 STATION: 6 RANGE: D SURFACE EL: 741.5
DATE DRILLED: 6-8-82 TO 6-9-82 PREPARED BY: MHD CHECKED BY:

Figure 2.5-336 Soil Profile (Sheet 1 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-336
SHEET 2 OF 2**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-3 STATION: 6 RANGE: D SURFACE EL: 741.5
DATE DRILLED: 6-8-82 TO 6-9-82 PREPARED BY: MHD CHECKED BY:

Figure 2.5-336 Soil Profile (Sheet 2 of 2)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-4 STATION: 9 RANGE: H SURFACE EL: 740.7
DATE DRILLED: 6-15-82 TO 8-16-82 PREPARED BY: MHD CHECKED BY:

Added by Amendment 50

Figure 2.5-337 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

PROJECT: WATTS BAR N.P. FEATURE: VOL REDUC & SOLID SYS BLDG
BORING: SS-5 STATION: 9 RANGE: B SURFACE EL: 737.1
DATE DRILLED: 6-9-82 TO 6-10-82 PREPARED BY: MHD CHECKED BY:

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	735	11	U	17.7	28	11	GRAVELLY ROADBED CL SI, DK BRN, MST, HOMO, MIC (W/TR LS GV)(FL) CL SI, DK BRN, MST, HOMO, MIC(FL) 1032 - NO SAMPLE RECOVERED
5		6	O	21.4			
5		50+					
10	730	16	U	22.8	38	19	CL SD SI, BRN-GY, MST, STRAT, MIC (CALL.)
10		15	O	19.3			CL SI SD, LT BRN-GY, MST, STRAT (CALL.)
10	725	18	U	25.9	35	12	CL SI SD, LT BRN-GY, MST (CALL.)
15		23		26.8			CL SI SD, MD BRN-CRM, MST, BLKY (CALL.)
15	720	18	Σ	30.0	48	18	SI CL, MD-LT BRN, MOTT, MST, HOMO (CALL.)
20							
20	715	4	U	30.7	32	15	CL SD SI, MD BRN-TN, W, HOMO, MIC (CALL.)
25							
25	710	50+	U Σ O O	20.2	NP	NP	GV SD (\pm 40% SB RD GV) MD BRN, W, HOMO (CALL.)
30							
30	705	50+	Σ U S S	15.9	34	10	WTH LS & CL, LT BLU-DK BRN-BLK, MST, LAM (3-IN. THK)(RES.)
35							
35							REFUSAL (EL. 703.8)
1' = 5'			* Lab. Classif.				

Added by Amendment 50

Figure 2.5-338 Soil Profile

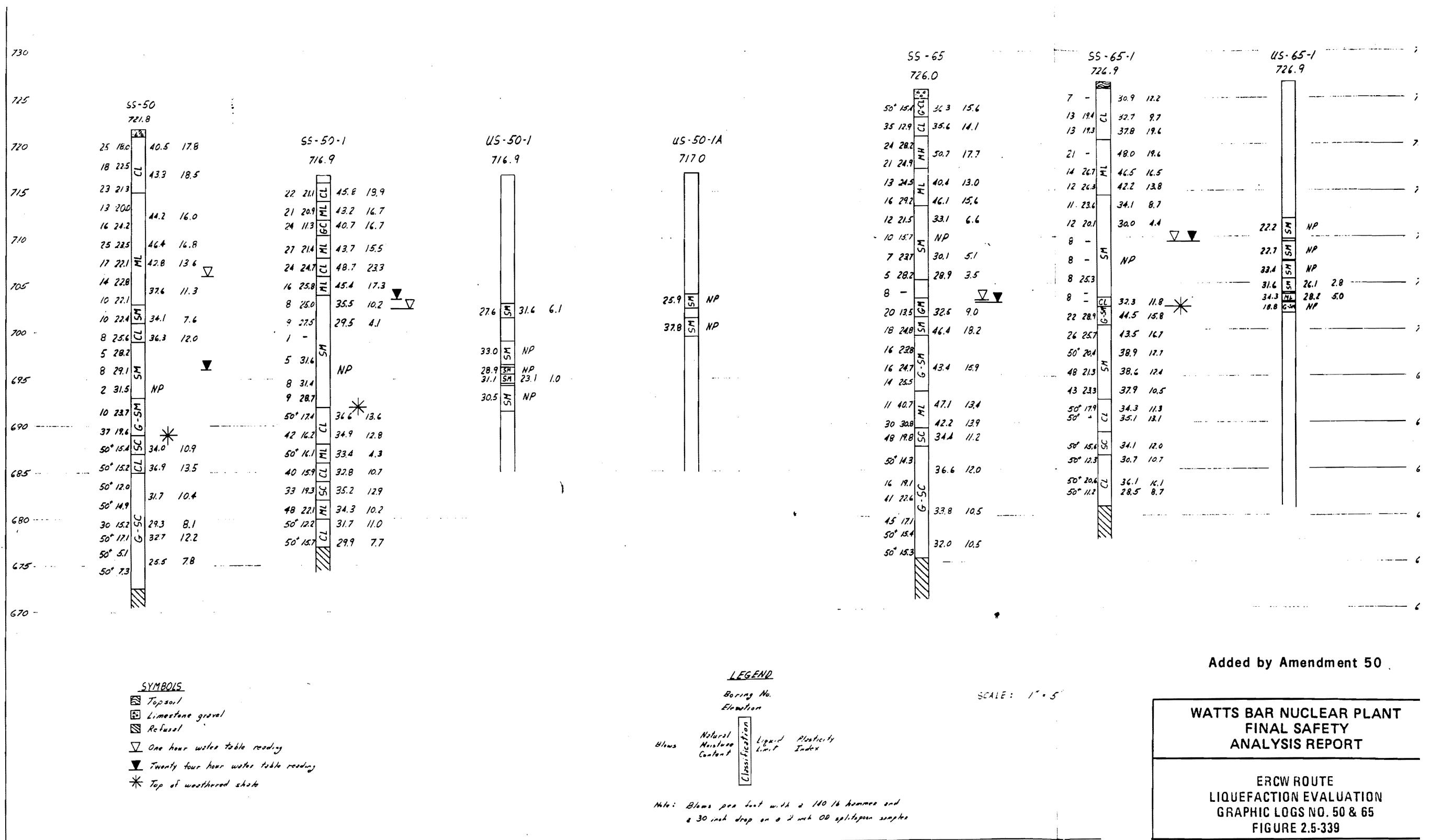
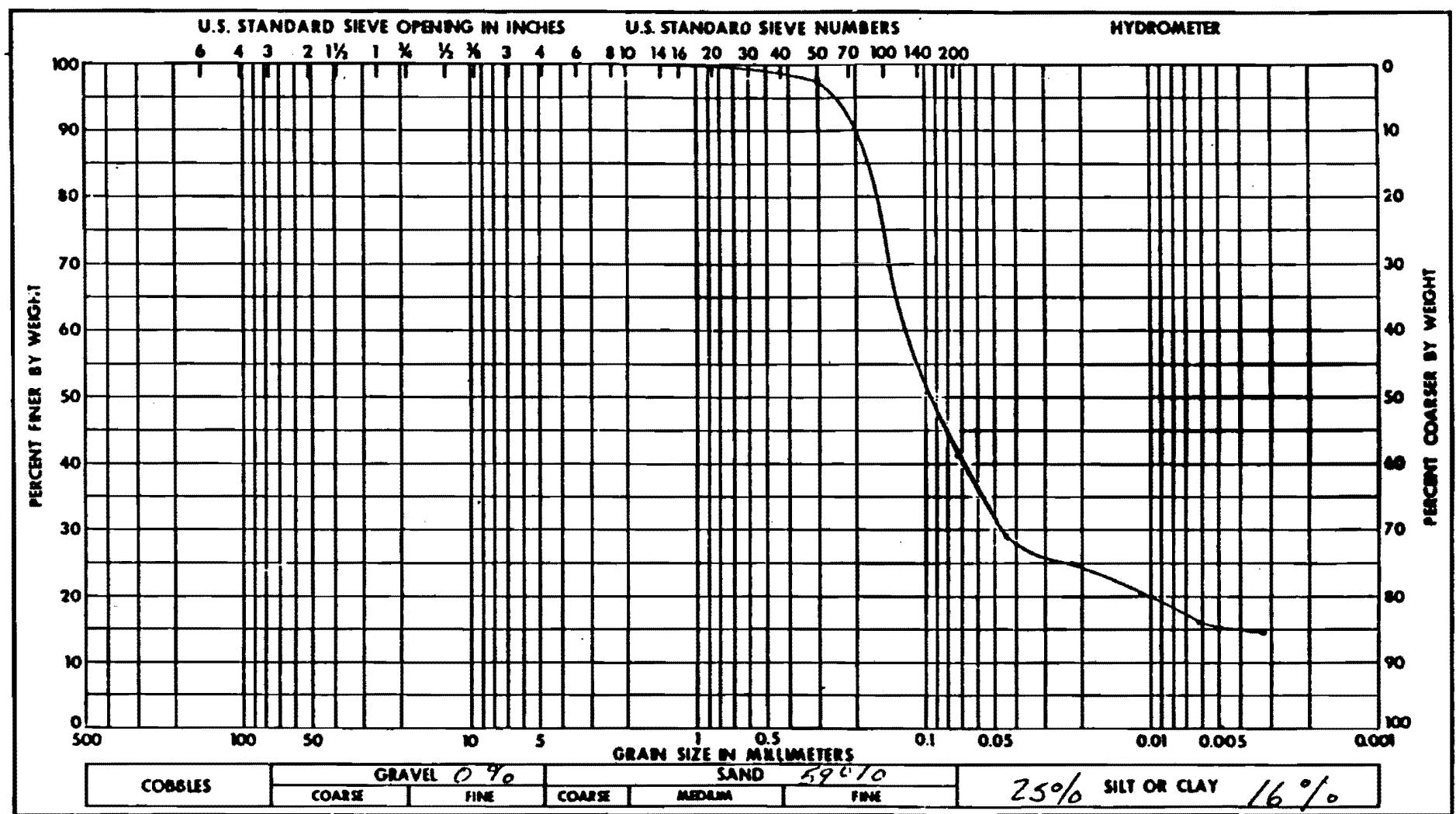


Figure 2.5-339 ERCW Route Liquefaction Evaluation Graphic Logs No. 50 & 65

Added by Amendment 50



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT
ERCW LIQUEFACTION
FIGURE 2.5-340

Soil Symbol	SM	Liquid Limit, %	31.6
Moisture Content, %	27.6	Plastic Limit, %	25.5
Specific Gravity	2.73	Plasticity Index, %	6.1
		Shrinkage Limit, %	

Remarks:

.....

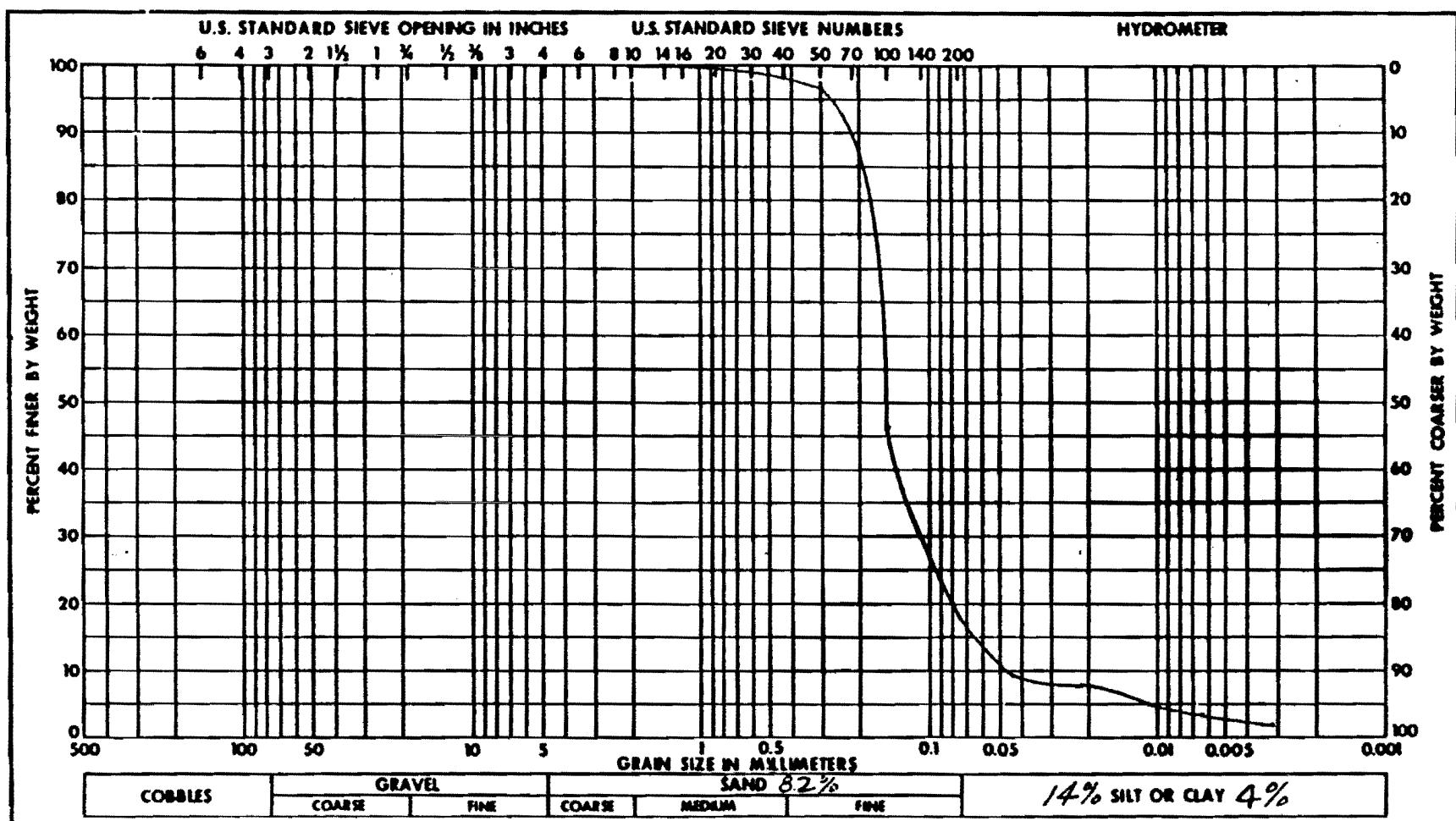
.....

.....

Project WATTS BAR NP	
Feature ERCW LIQUEFACTION	
Boring No 11S-50-1	Sample No. 1
Station 1650.0 S	Range 785.0 E
Date 8-1-79	Elevation 701.4-700.7
GRAIN SIZE ANALYSIS	

Figure 2.5-340 ERCW Liquefaction

ATTACHMENT 6
CONST-QCP 5.3



Added by Amendment 50

Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	33.0	Plastic Limit, %	NP
Specific Gravity	2.70	Plasticity Index, %	NP
		Shrinkage Limit, %	

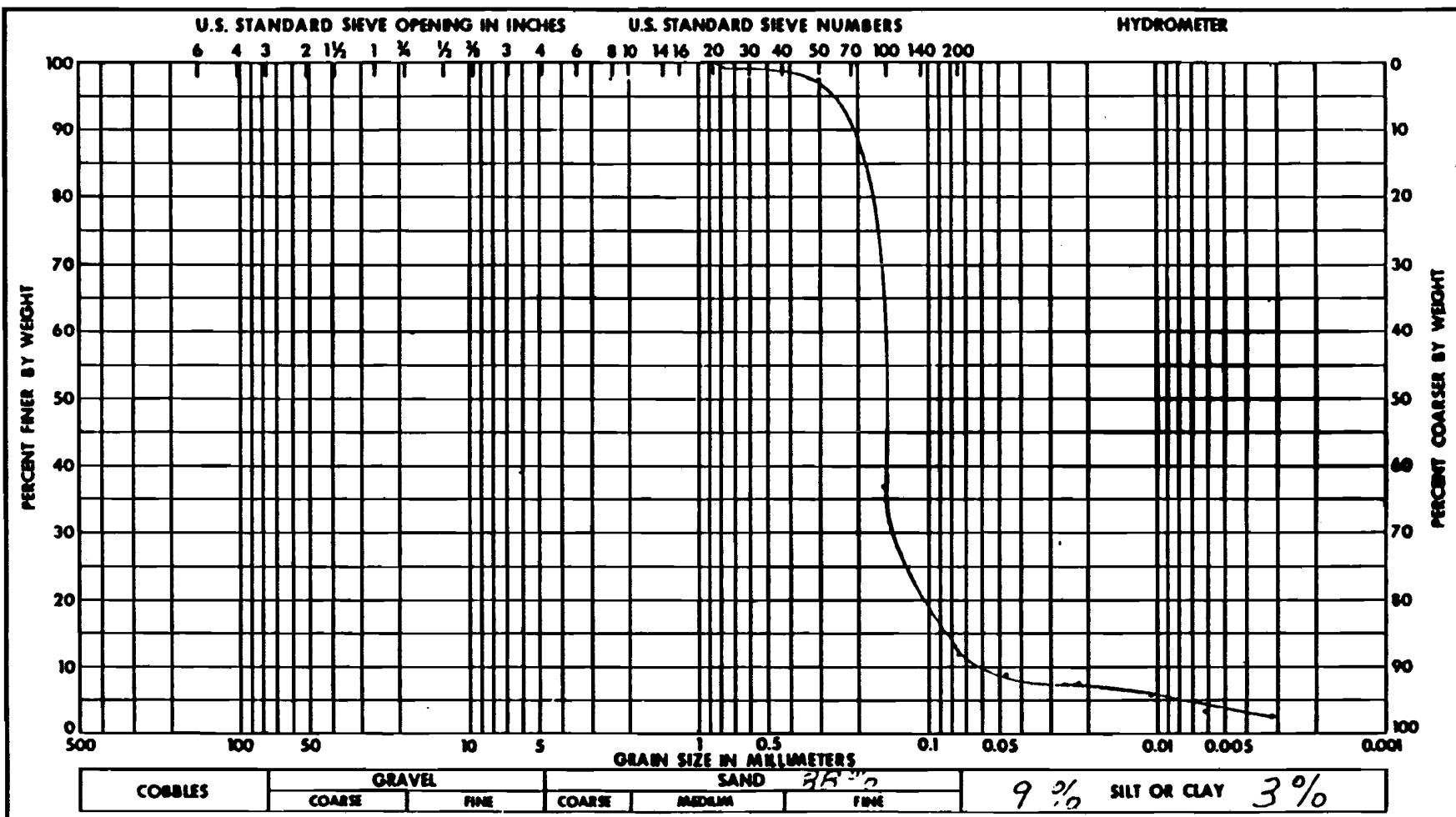
Remarks:

Project	WATTS BAR NP
Feature	ERCW LIQUEFACTION
Boring No.	65-50-1
Station	1650.0 S
Date	7-20-79
Sample No.	2
Range	785.0 E
Elevation	698.9-696.6

GRAIN SIZE ANALYSIS

Figure 2.5-341 ERCW Liquefaction

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
LIQUEFACTION FIGURE 2.5-342

Soil Symbol	5M	Liquid Limit, %	N.p.
Moisture Content, %	28.9	Plastic Limit, %	N.p.
Specific Gravity	2.73	Plasticity Index, %	N.p.

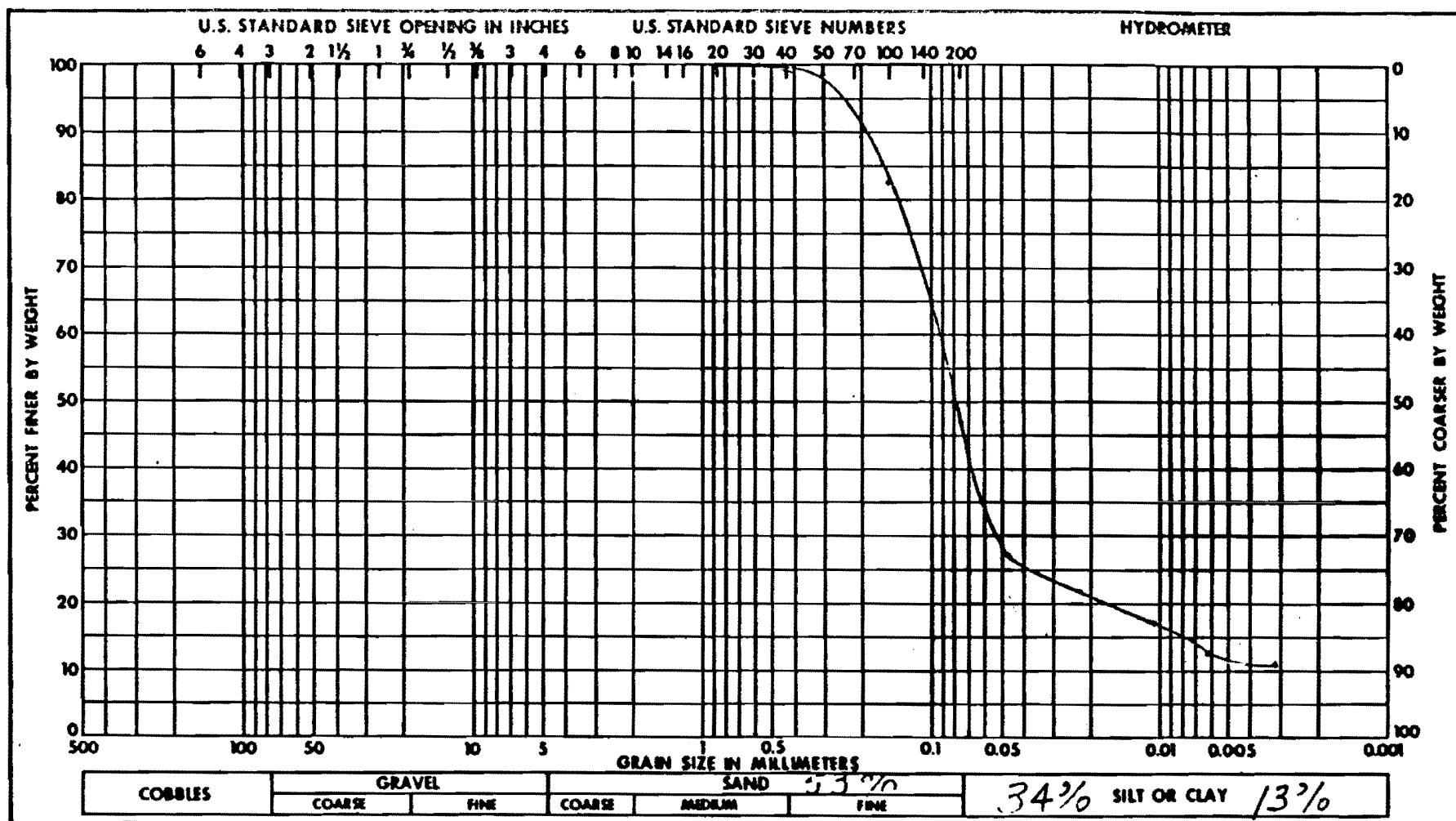
Remarks:

Project Watts Bar N.p.	
Feature	Liquefaction
Boring No.	US-50-1
Station	1650.0 S
Date	7-16-79
Sample No.	3
Range	785.0 E
Elevation	696.4-695.3

GRAIN SIZE ANALYSIS

Figure 2.5-342 Liquefaction

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION FIGURE 2.5-343	

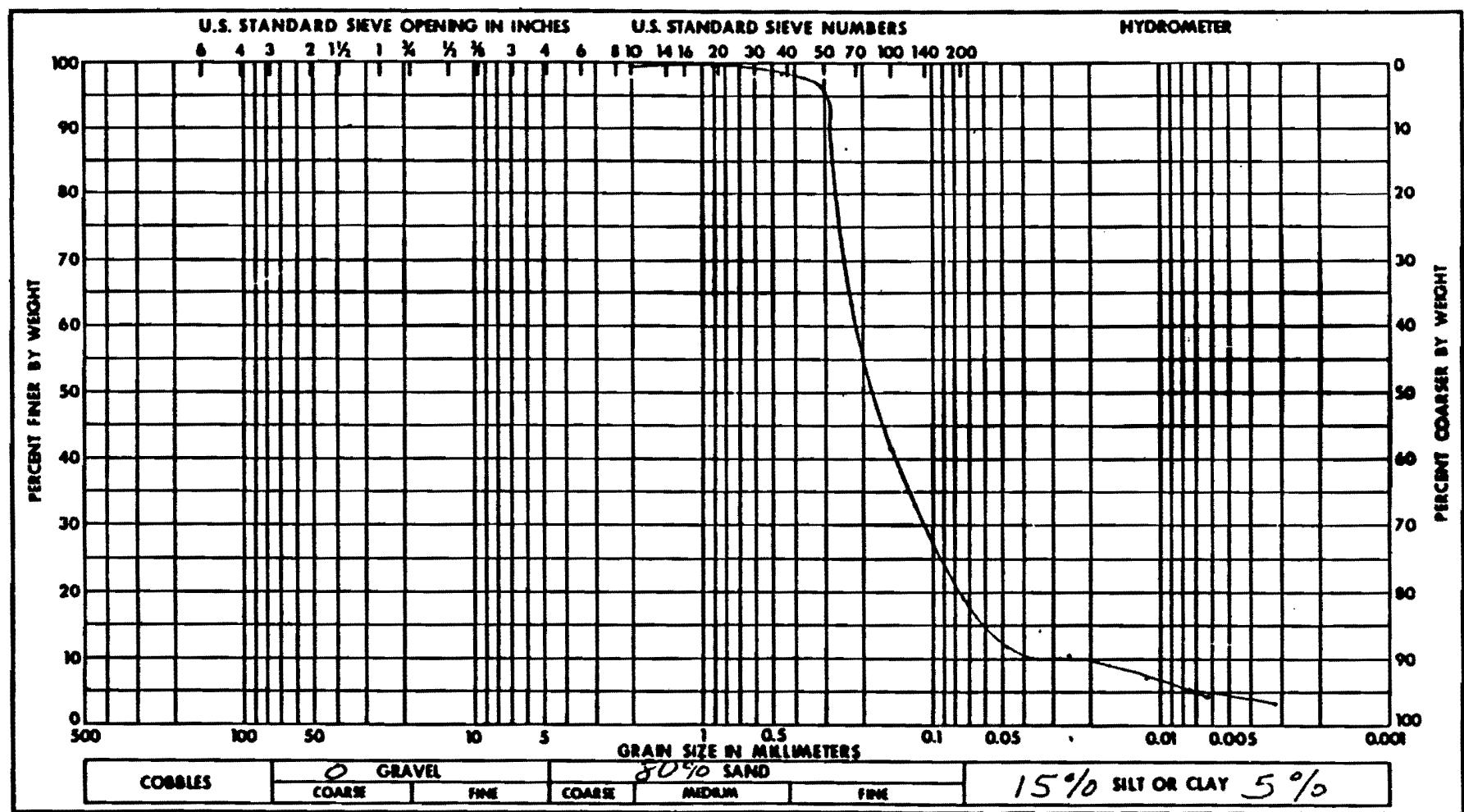
Soil Symbol	SM	Liquid Limit, %	23.1
Moisture Content, %	31.1	Plastic Limit, %	22.1
Specific Gravity	2.70	Plasticity Index, %	1.0
		Shrinkage Limit, %	

Remarks:

Project Watts Bar N.P.	
Feature Liquefaction	
Boring No. US-50-1	Sample No. 3
Station 1650.0 S	Range 785.0 E
Date 7-16-79	Elevation 695.3-694.5
GRAIN SIZE ANALYSIS	

Figure 2.5-343 Liquefaction

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION FIGURE 2.5-344	

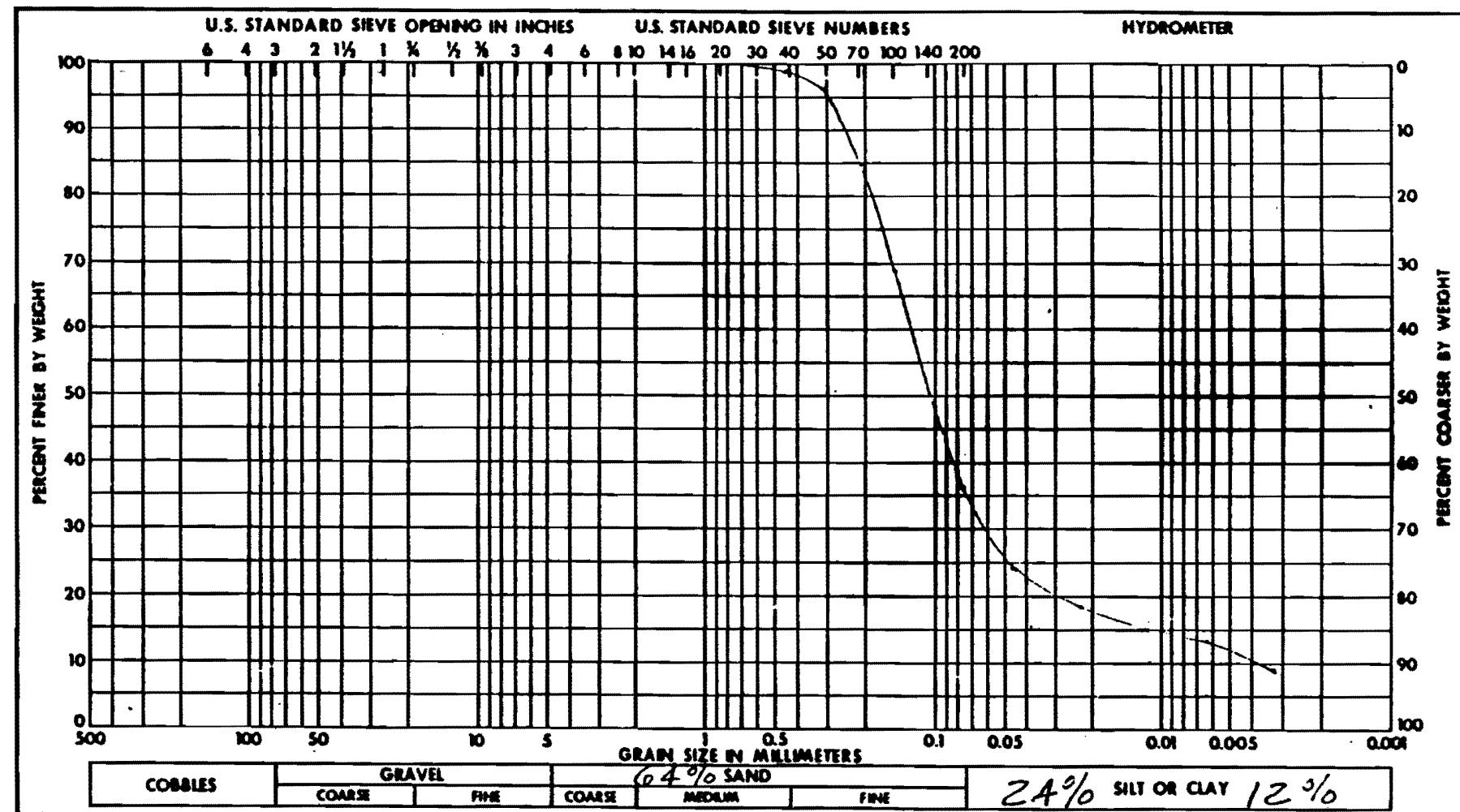
Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	30.5	Plastic Limit, %	NP
Specific Gravity	2.74	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:	

Project Watts Bar N.P.	
Feature Liquefaction	
Boring No. US-50-1	Sample No. 4
Station 1650.05	Range 785.0 E
Date 7-13-79	Elevation 694.2-692.1
GRAIN SIZE ANALYSIS	

Figure 2.5-344 Liquefaction

Added by Amendment 50



**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**LIQUEFACTION
FIGURE 2.5-345**

Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	25.9	Plastic Limit, %	NP
Specific Gravity	2.73	Plasticity Index, %	NP
		Shrinkage Limit, %	

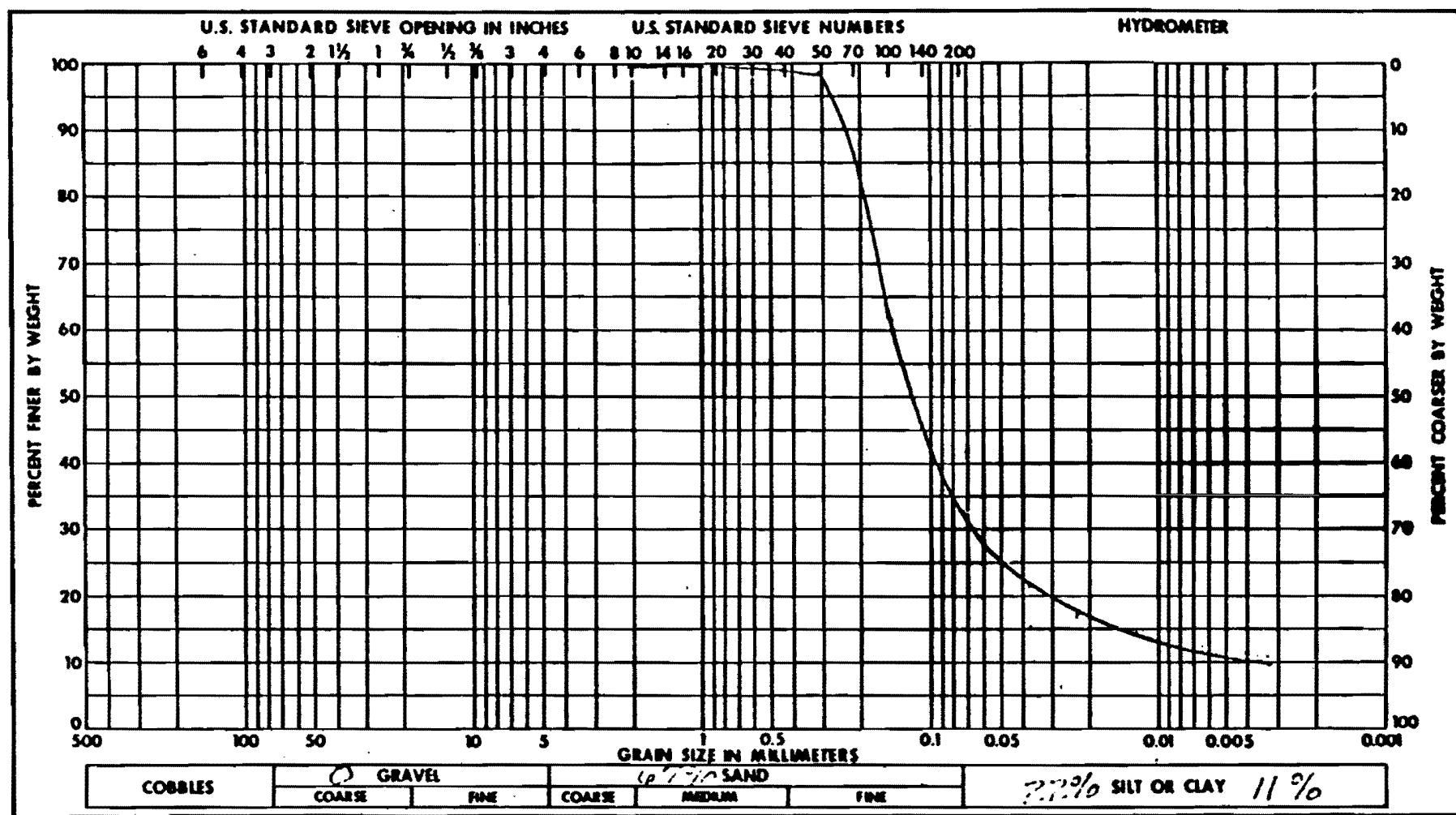
Remarks:

Project	Watts Bar N.P.
Feature	Liquefaction
Boring No.	US-50-1A
Sample No.	1
Station	1645.0E
Range	785.0E
Date	7-13-79
Elevation	1039.702

GRAIN SIZE ANALYSIS

Figure 2.5-345 Liquefaction

Added by Amendment 50



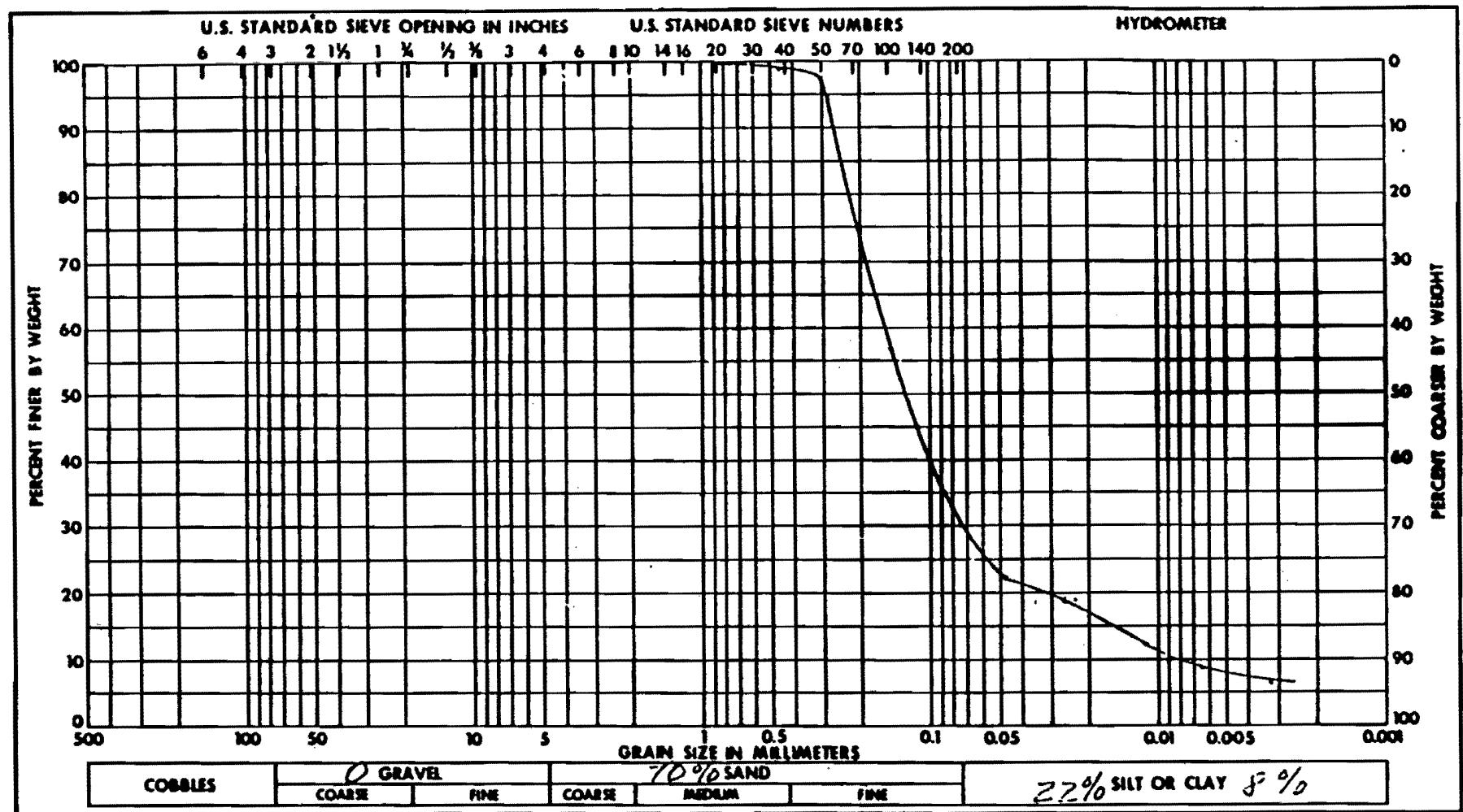
Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	37.8	Plastic Limit, %	NP
Specific Gravity	2.73	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:

Project Watts Bar N. P.	
Feature Liquefaction	
Boring No. 15-50-1A	Sample No. 2
Station 1645.0S	Range 785.0 E
Date 7-13-79	Elevation 701.6-699.4
GRAIN SIZE ANALYSIS	

Figure 2.5-346 Liquefaction

Added by Amendment 50



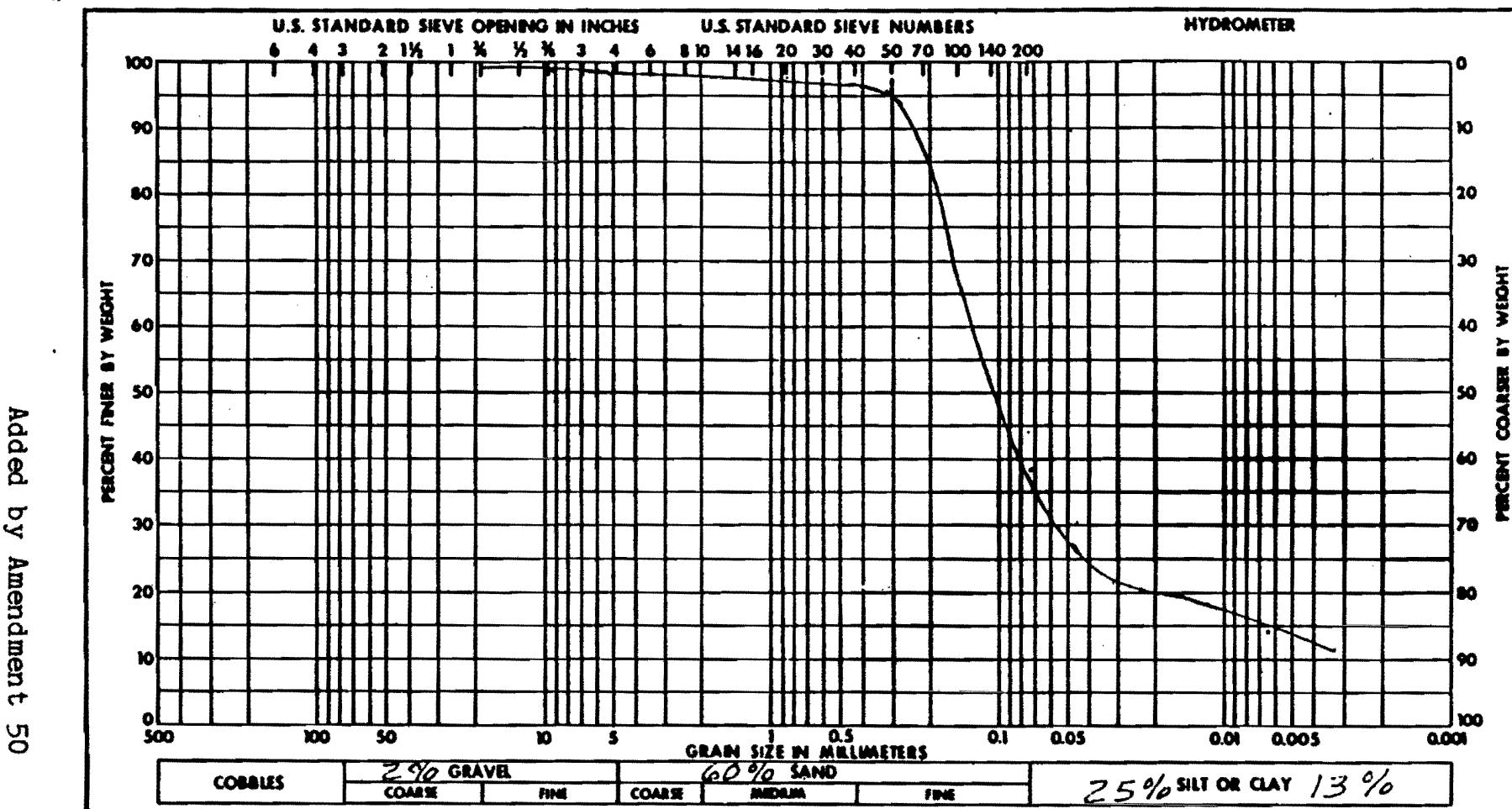
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION FIGURE 2.5-347	

Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	22.2	Plastic Limit, %	NP
Specific Gravity	2.70	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:

Project Watts Bar N. P.	
Feature	Liquefaction
Boring No	15-65-1
Station	1367.0 S
Date	7-13-79
Sample No. 1	
Range	1005.7 E
Elevation	711.9-709.6
GRAIN SIZE ANALYSIS	

Figure 2.5-347 Liquefaction



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT LIQUEFACTION FIGURE 2.5-348

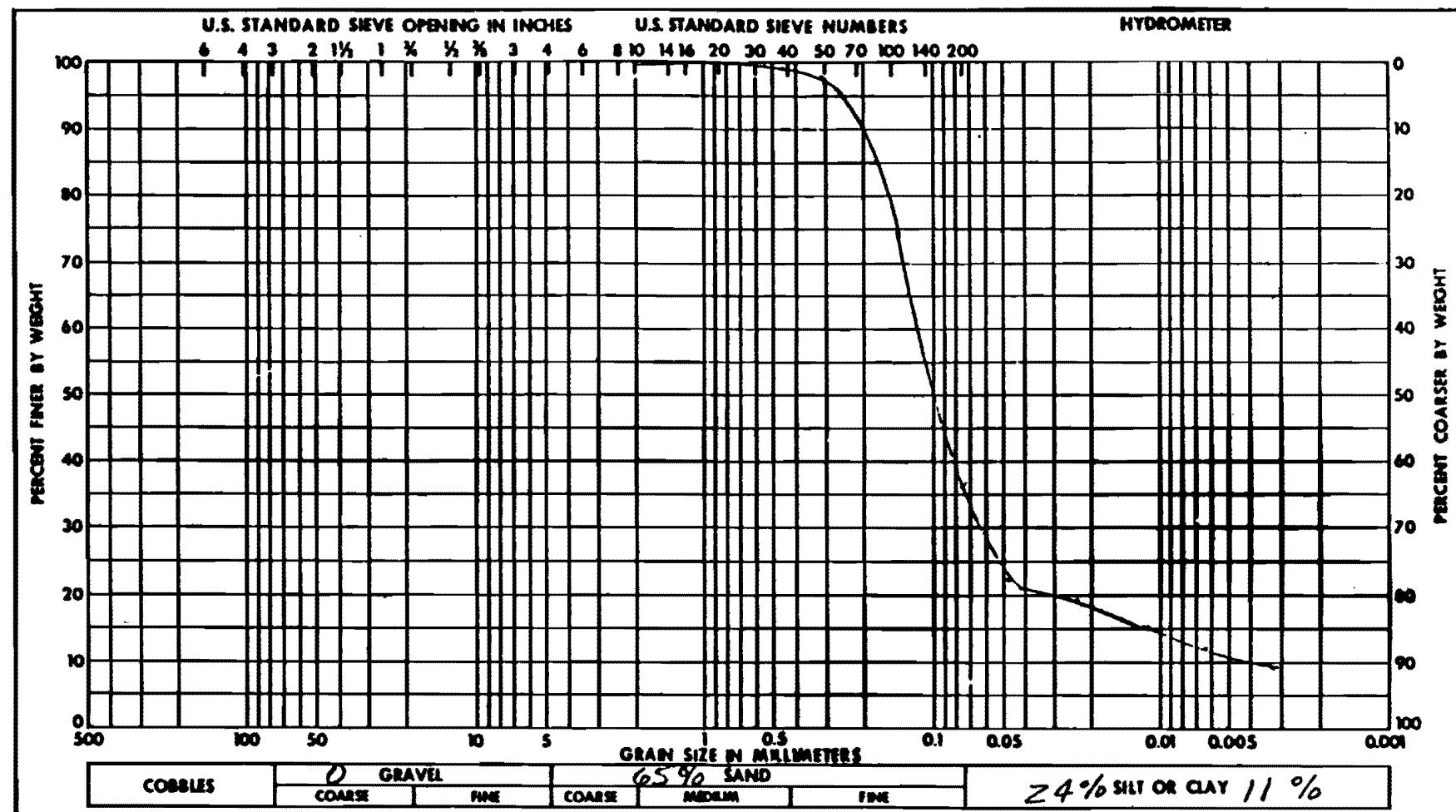
Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	22.7	Plastic Limit, %	NP
Specific Gravity	2.72	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:	

Project Watts Bar N.P.	
Feature Liquefaction	
Boring No. US-65-1	Sample No. 2
Station 1367.0 5	Range 1005.7 E
Date 7-13-79	Elevation 709.4-707.3
GRAIN SIZE ANALYSIS	

Figure 2.5-348 Liquefaction

Added by Amendment 50

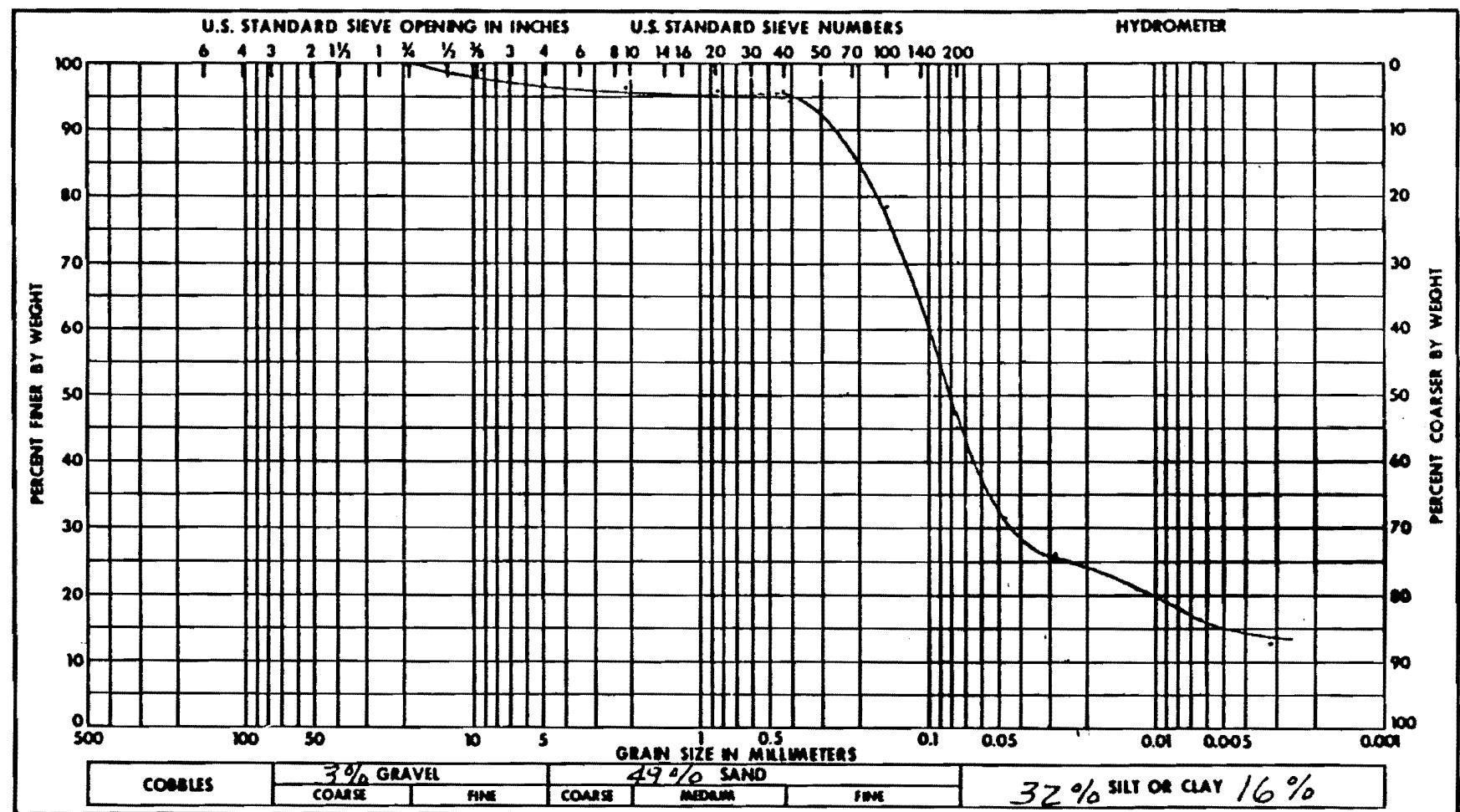


Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %	33.4	Plastic Limit, %	NP
Specific Gravity	2.72	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:

Project Watts Bar N.P.	
Feature	Liquefaction
Boring No.	15-65-1
Sample No.	3
Station	1367.0 S
Range	1005.7 E
Date	7-13-79
Elevation	707.2-705.8
GRAIN SIZE ANALYSIS	

Figure 2.5-349 Liquefaction



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION FIGURE 2.5-350	

Soil Symbol	SM	Liquid Limit, %	36.1
Moisture Content, %	31.6	Plastic Limit, %	23.3
Specific Gravity	2.71	Plasticity Index, %	2.8
		Shrinkage Limit, %	

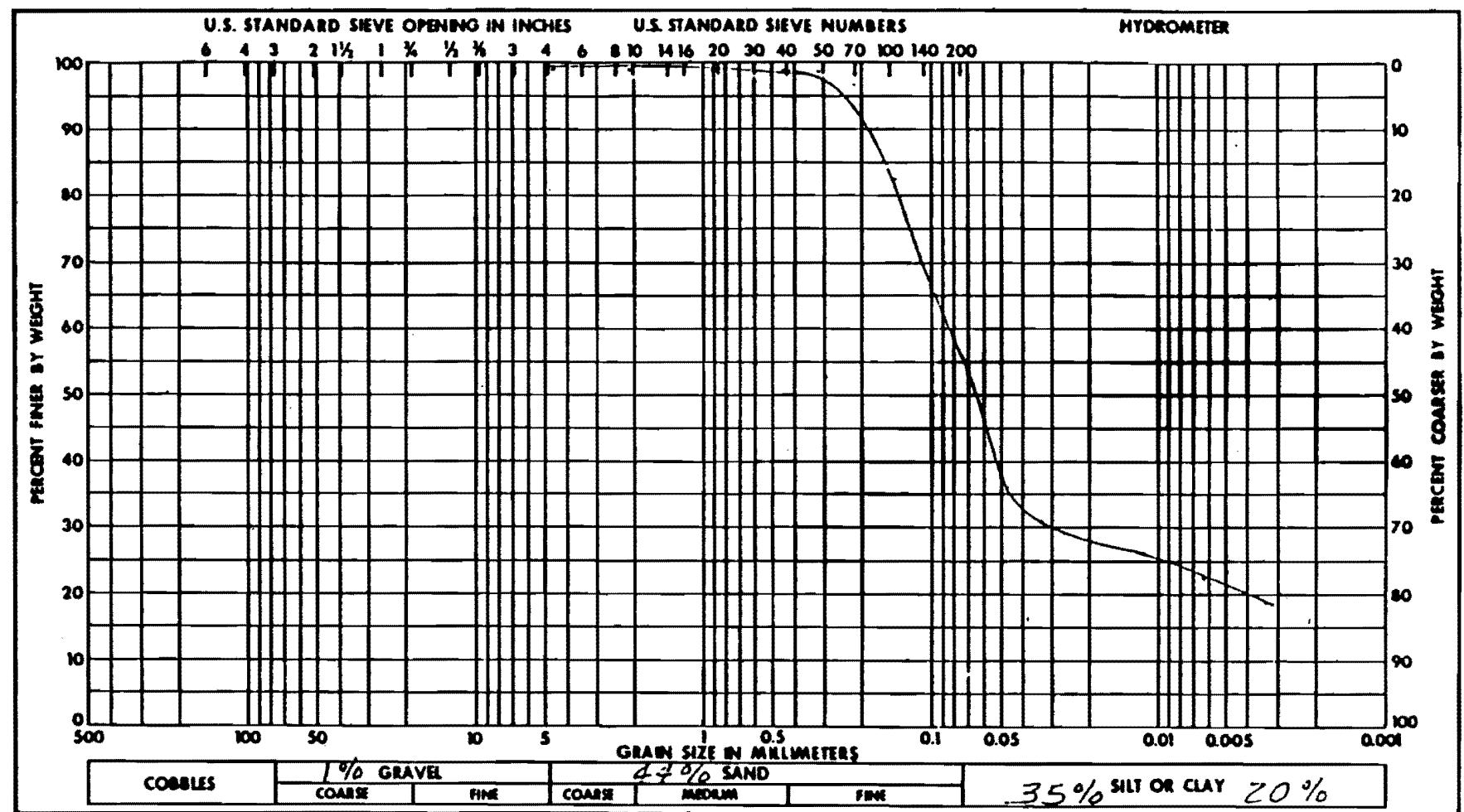
Remarks:

Project	Watts B.11 xi. P.
Feature	LIQUEFACTION
Boring No.	15-65-1
Station	1367.0 S
Date	11-13-71
Sample No.	4
Range	1005.7 E
Elevation	705.2-704.0

GRAIN SIZE ANALYSIS

Figure 2.5-350 Liquefaction

Added by Amendment 50



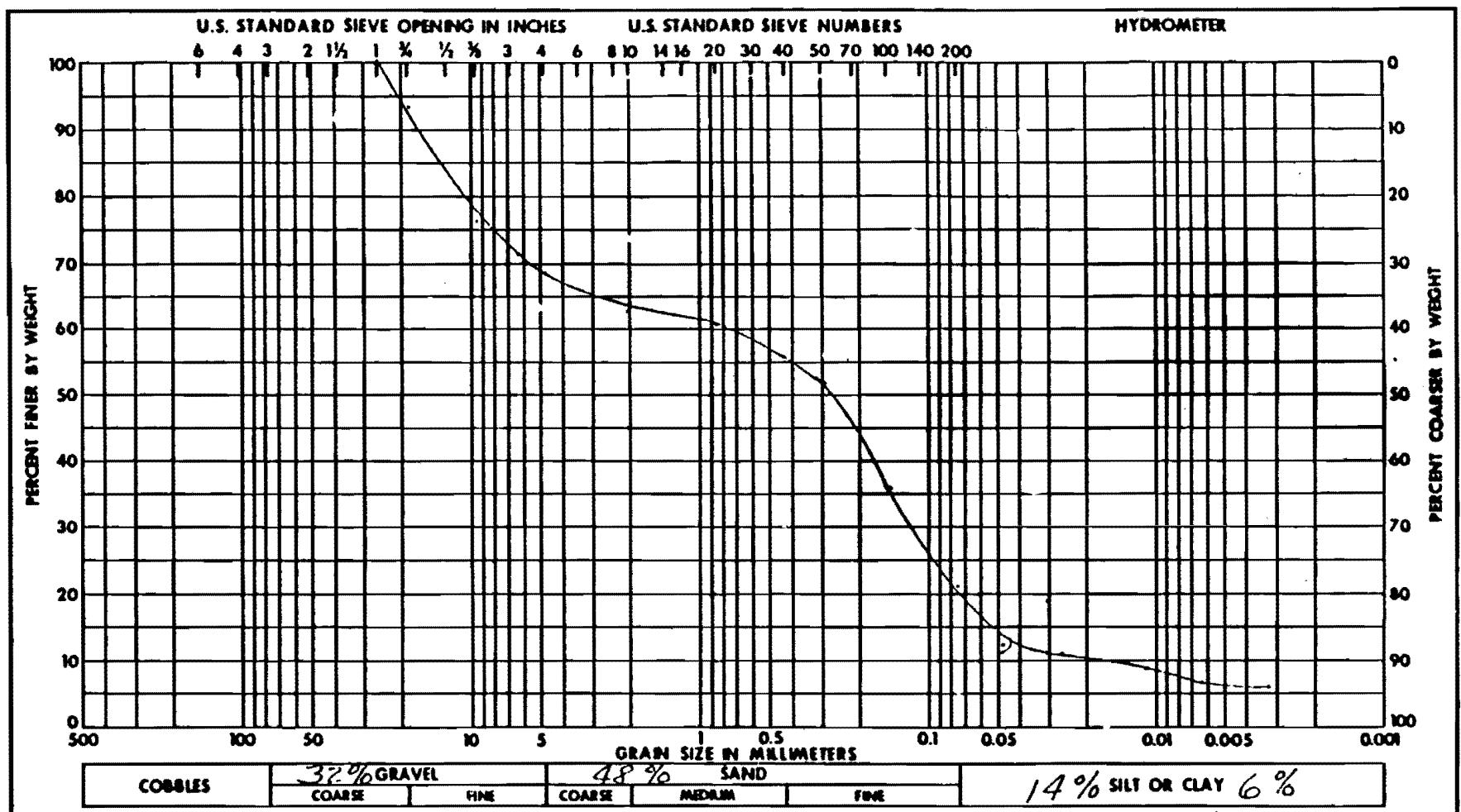
Soil Symbol	ML	Liquid Limit, %	28.2
Moisture Content, %	34.3	Plastic Limit, %	23.2
Specific Gravity	2.71	Plasticity Index, %	5.0
		Shrinkage Limit, %	

Remarks:

Project Watts Bar N.P.	
Feature Liquefaction	
Boring No. US-65-1	Sample No. 5
Station 1367.0 S	Range 1005.7 E
Date 7-13-77	Elevation 703.8-703.2
GRAIN SIZE ANALYSIS	

Figure 2.5-351 Liquefaction

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION FIGURE 2.5-352	

Soil Symbol	G-SM	Liquid Limit, %	NP
Moisture Content, %	18.6	Plastic Limit, %	NP
Specific Gravity	2.70	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:
-
-
-

Project	Watts Bar N.P.	
Feature	Liquefaction	
Boring No.	US-65-1	Sample No. 6
Station	1367.0 S	Range 1005.7 E
Date	7-13-79	Elevation 703.0-701.8
GRAIN SIZE ANALYSIS		

Figure 2.5-352 Liquefaction

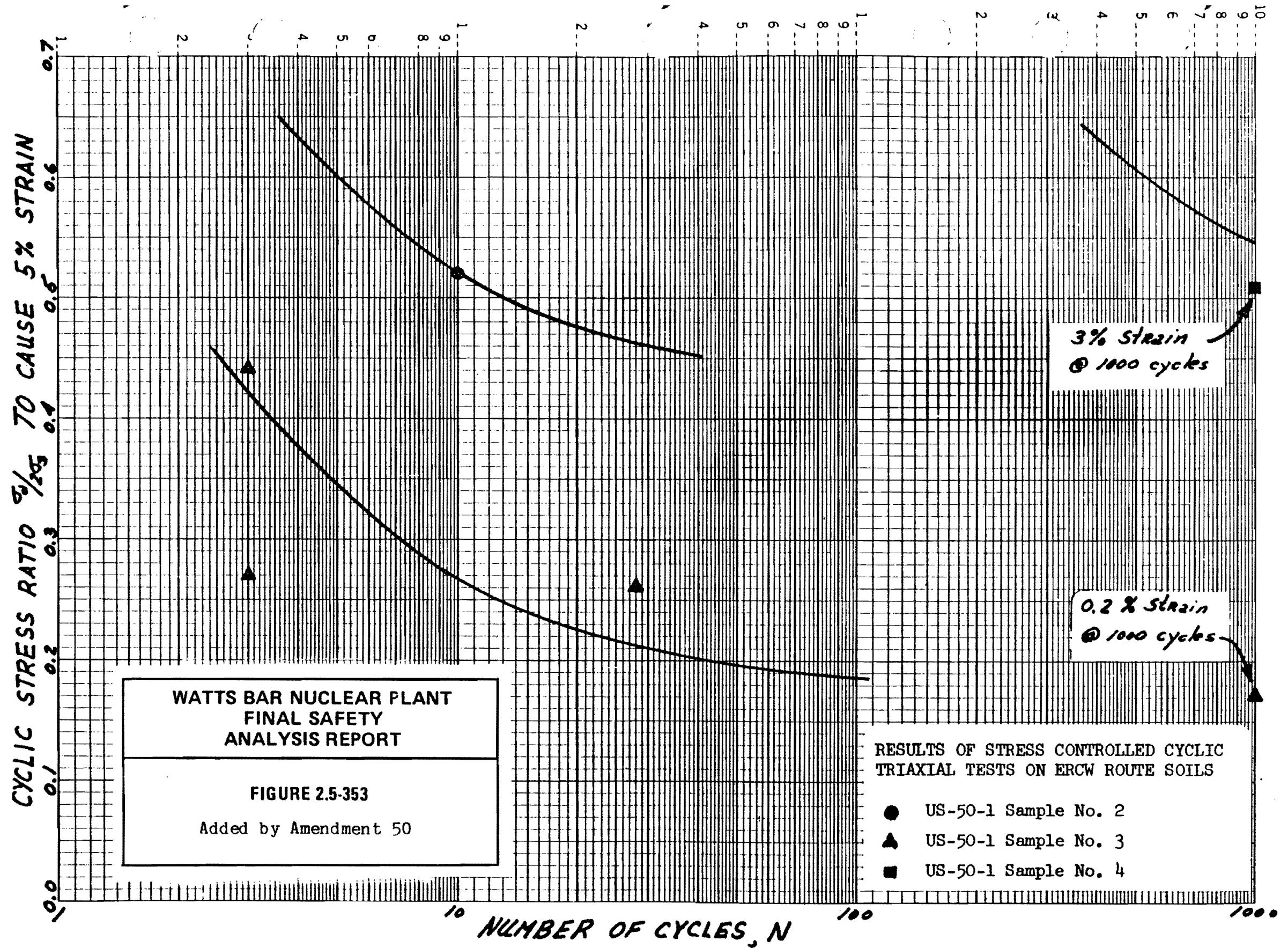
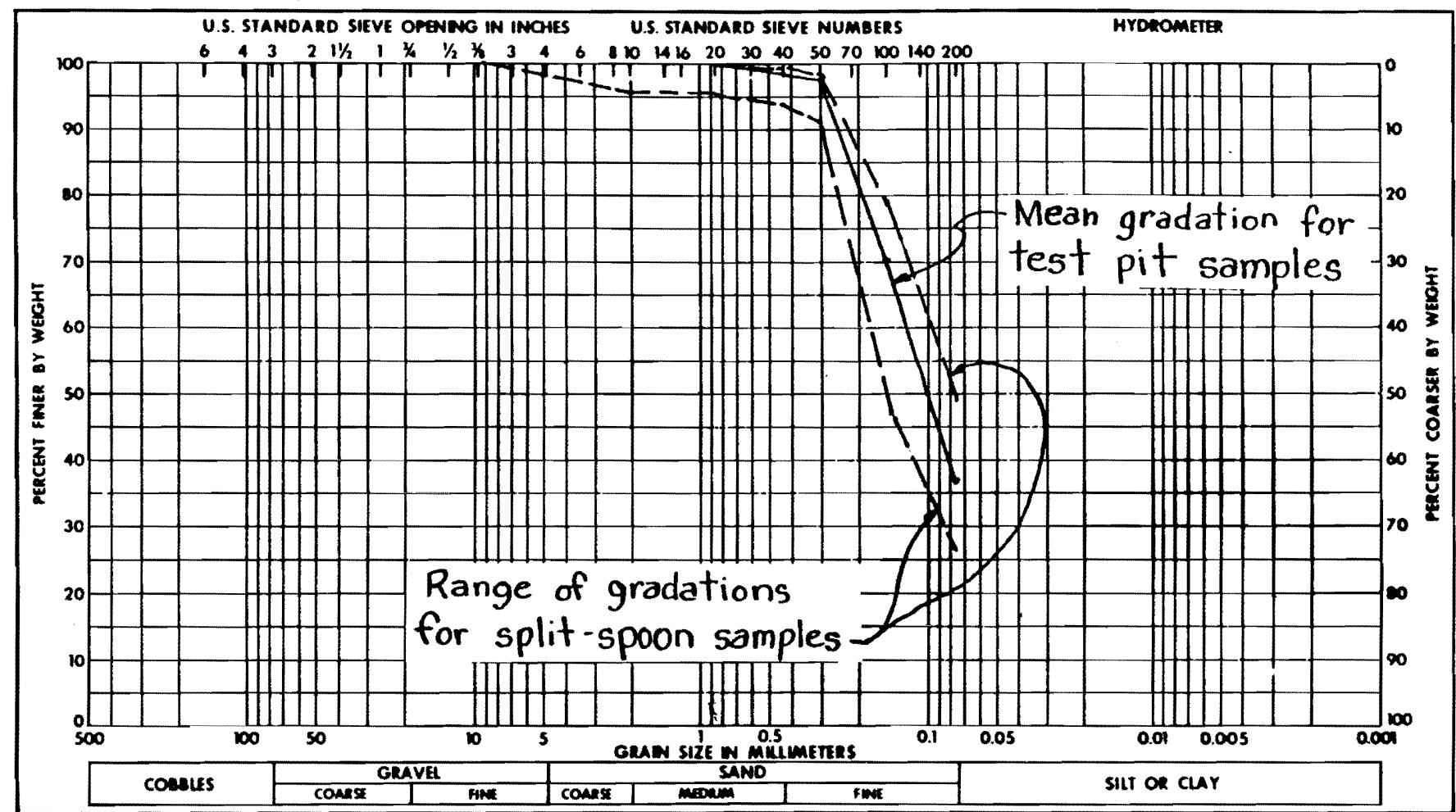


Figure 2.5-353 Results Of Stress Controlled Cyclic Triaxial Tests On ERCW Route Soils

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
LIQUEFACTION STUDY ERCW PIPELINE FIGURE 2.5-354	

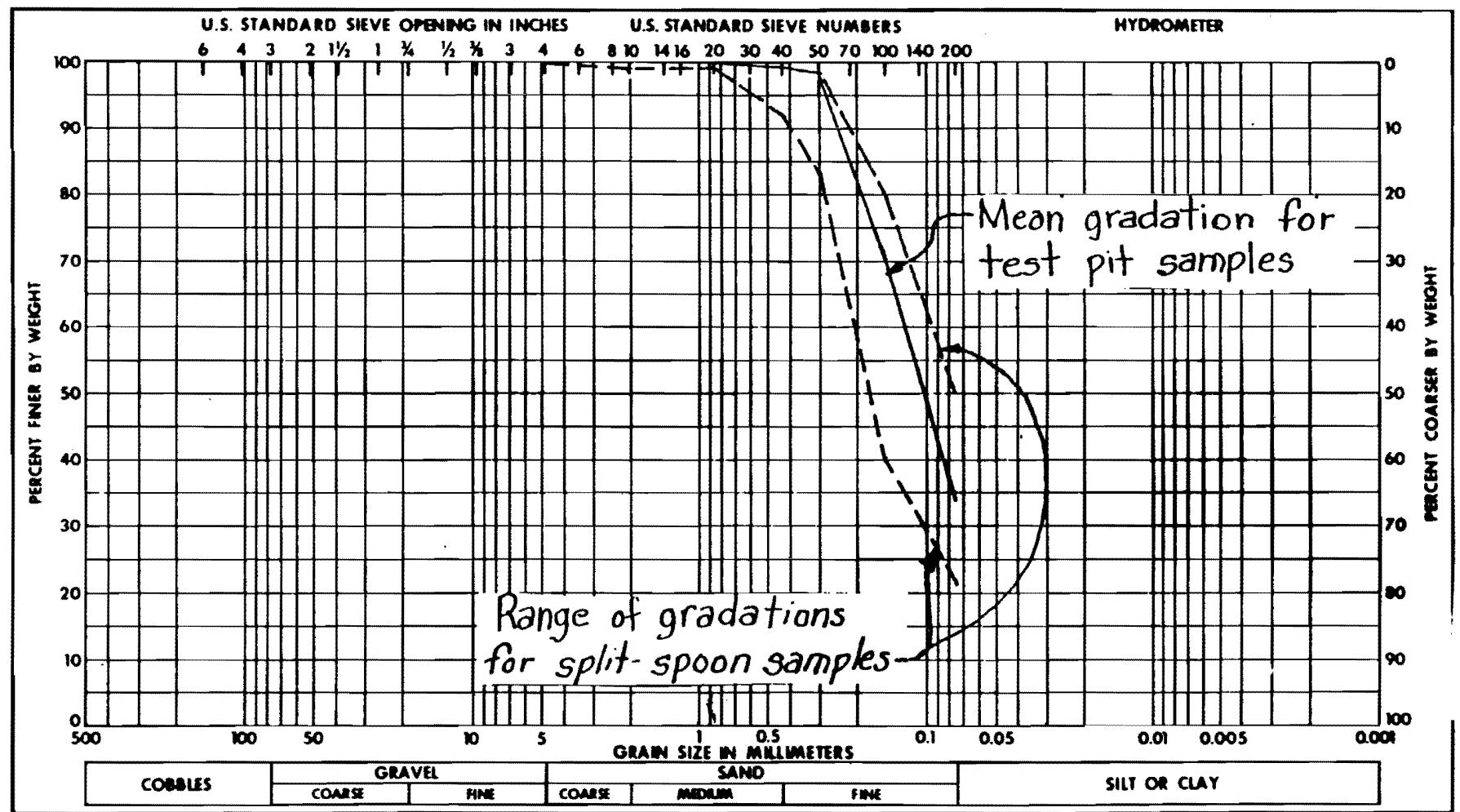
Soil Symbol		Liquid Limit, %	
Moisture Content, %		Plastic Limit, %	
Specific Gravity		Plasticity Index, %	
		Shrinkage Limit, %	

Remarks: Comparison of Test Pit #1 samples with SM samples from split-spoon borings 134, 134A, & 135A

**Project Watts Bar Nuclear Plant
Liquefaction Study
Feature ERCW Pipeline**
Figure 1
GRAIN SIZE ANALYSIS

Figure 2.5-354 Liquefaction Study ERCW Pipeline

Added by Amendment 50



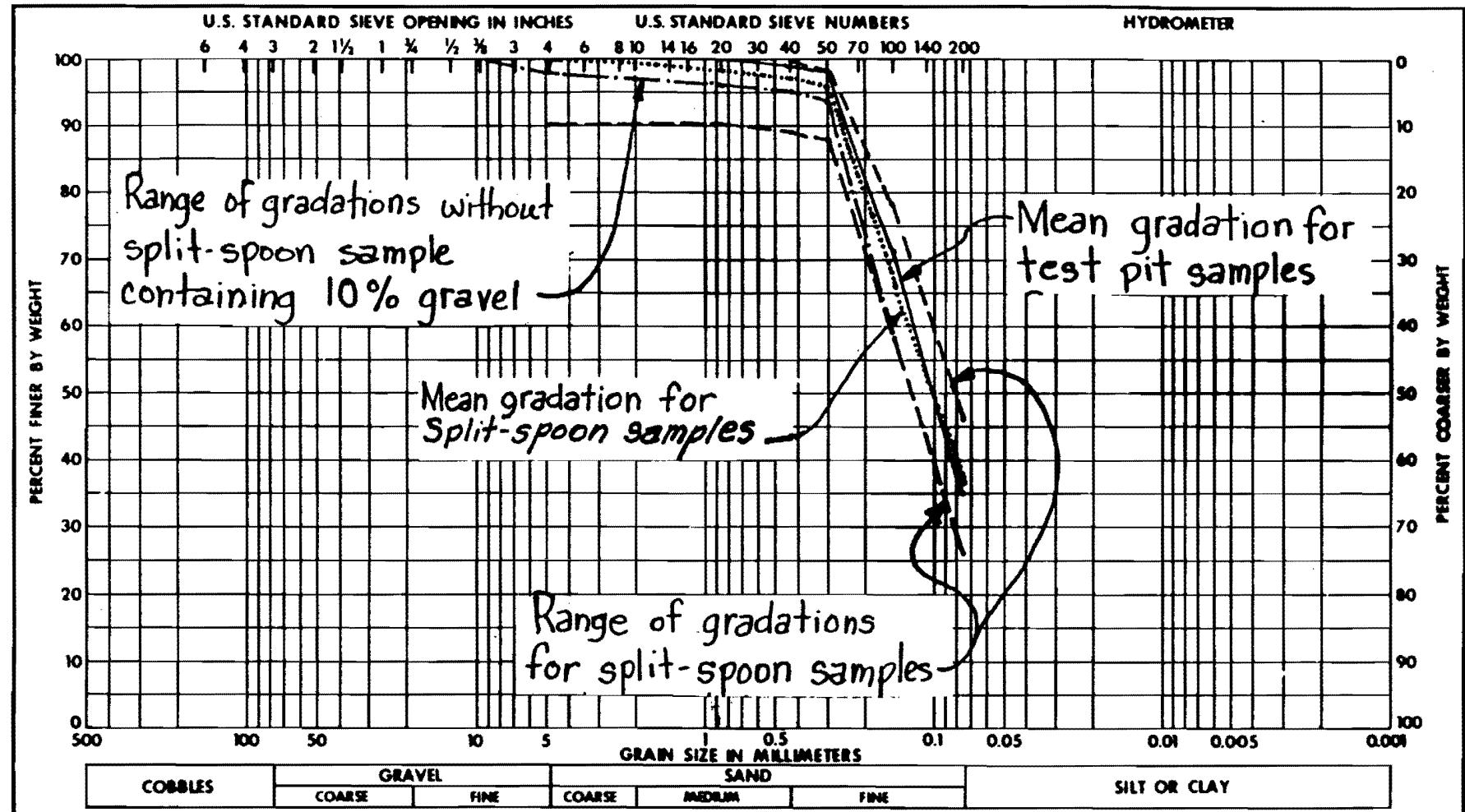
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT		
LIQUEFACTION STUDY ERCW PIPELINE		
FIGURE 2.5-355		

Soil Symbol		Liquid Limit, %	
Moisture Content, %		Plastic Limit, %	
Specific Gravity		Plasticity Index, %	
		Shrinkage Limit, %	

Remarks: Comparison of Test Pit #2 samples with SM (without gravel) samples from split-spoon borings 138, 138A, 138B, 138C, & 139

Figure 2.5-355 Liquefaction Study ERCW Pipeline

Added by Amendment 50



**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**
**LIQUEFACTION STUDY
ERCW PIPELINE**
FIGURE 2.5-356

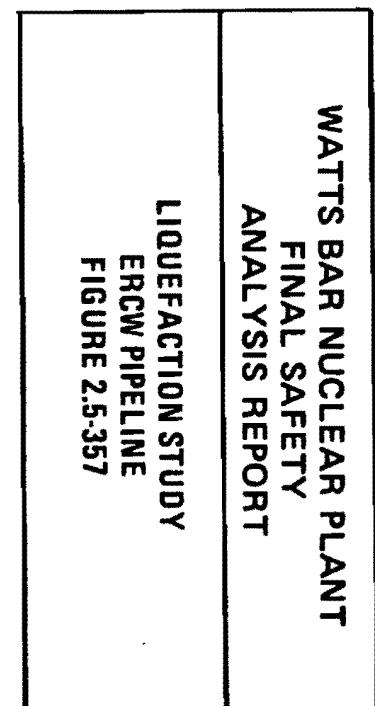
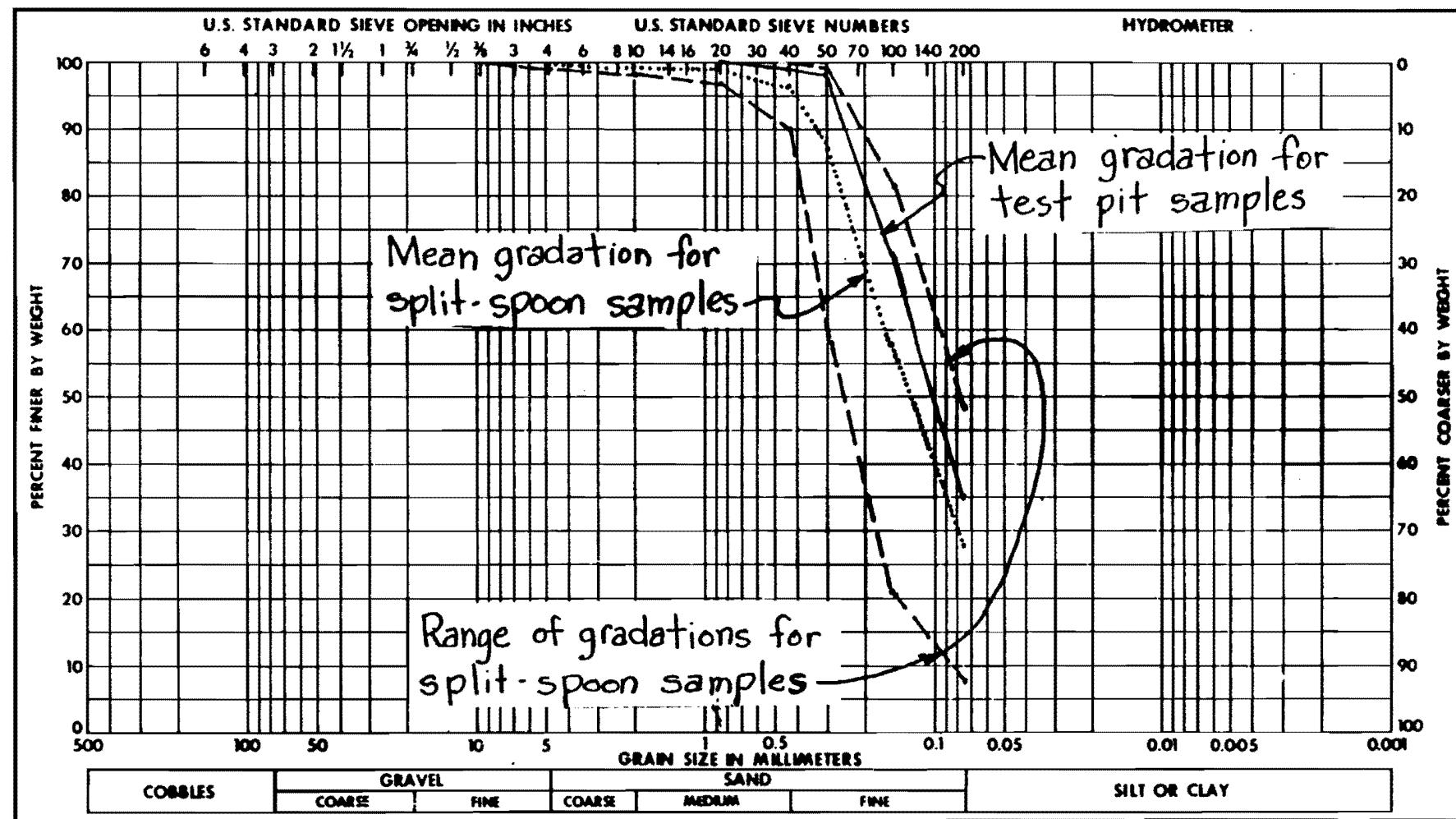
Soil Symbol		Liquid Limit, %	
Moisture Content, %		Plastic Limit, %	
Specific Gravity		Plasticity Index, %	
		Shrinkage Limit, %	

Remarks: Comparison of test pit samples with split-spoon samples from south of the cooling towers

Project Watts Bar Nuclear Plant
Liquefaction Study
Feature ERCW Pipeline
Figure 3
GRAIN SIZE ANALYSIS

Figure 2.5-356 Liquefaction Study ERCW Pipeline

Added by Amendment 50



Soil Symbol		Liquid Limit, %	
Moisture Content, %		Plastic Limit, %	
Specific Gravity		Plasticity Index, %	
		Shrinkage Limit, %	

Remarks: Comparison of test pit samples with split-spoon samples from the main plant area

Figure 2.5-357 Liquefaction Study ERCW Pipeline

Figure 2.5-358 Additional Soil Investigations Category I Soil Supported Structures

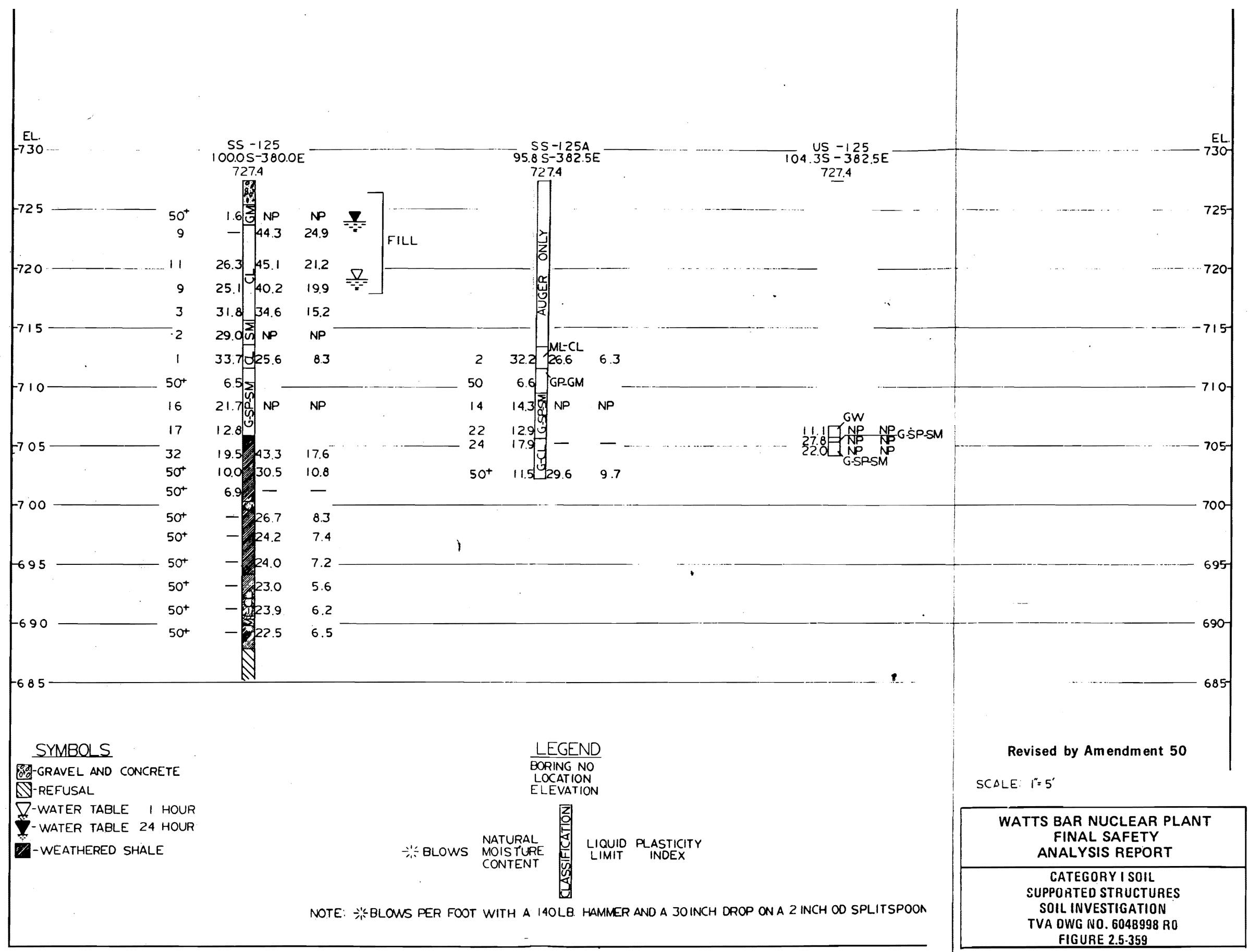


Figure 2.5-359 Category I Soil Supported Structures Soil Investigation

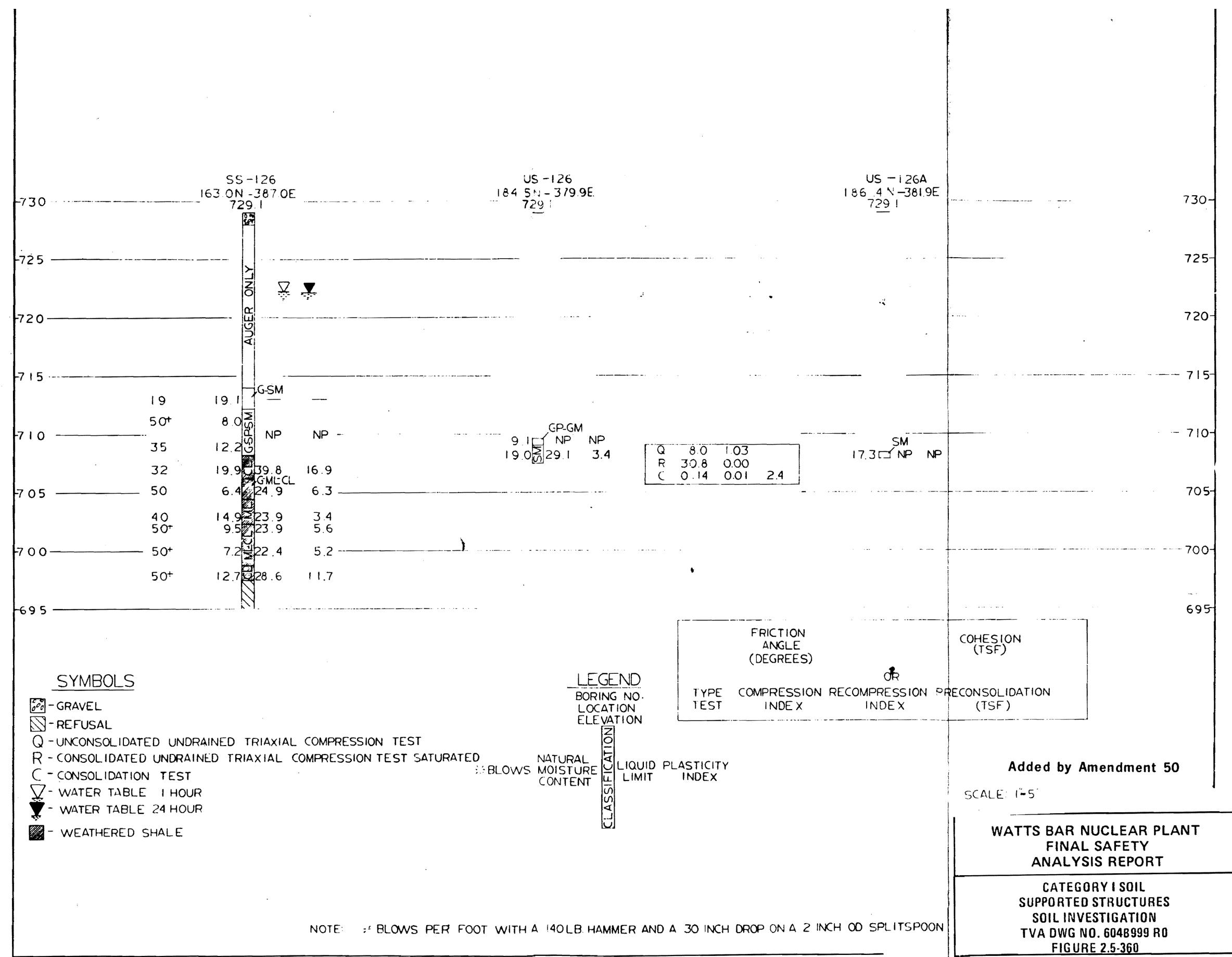


Figure 2.5-360 Category I Soil Supported Structures Soil Investigation

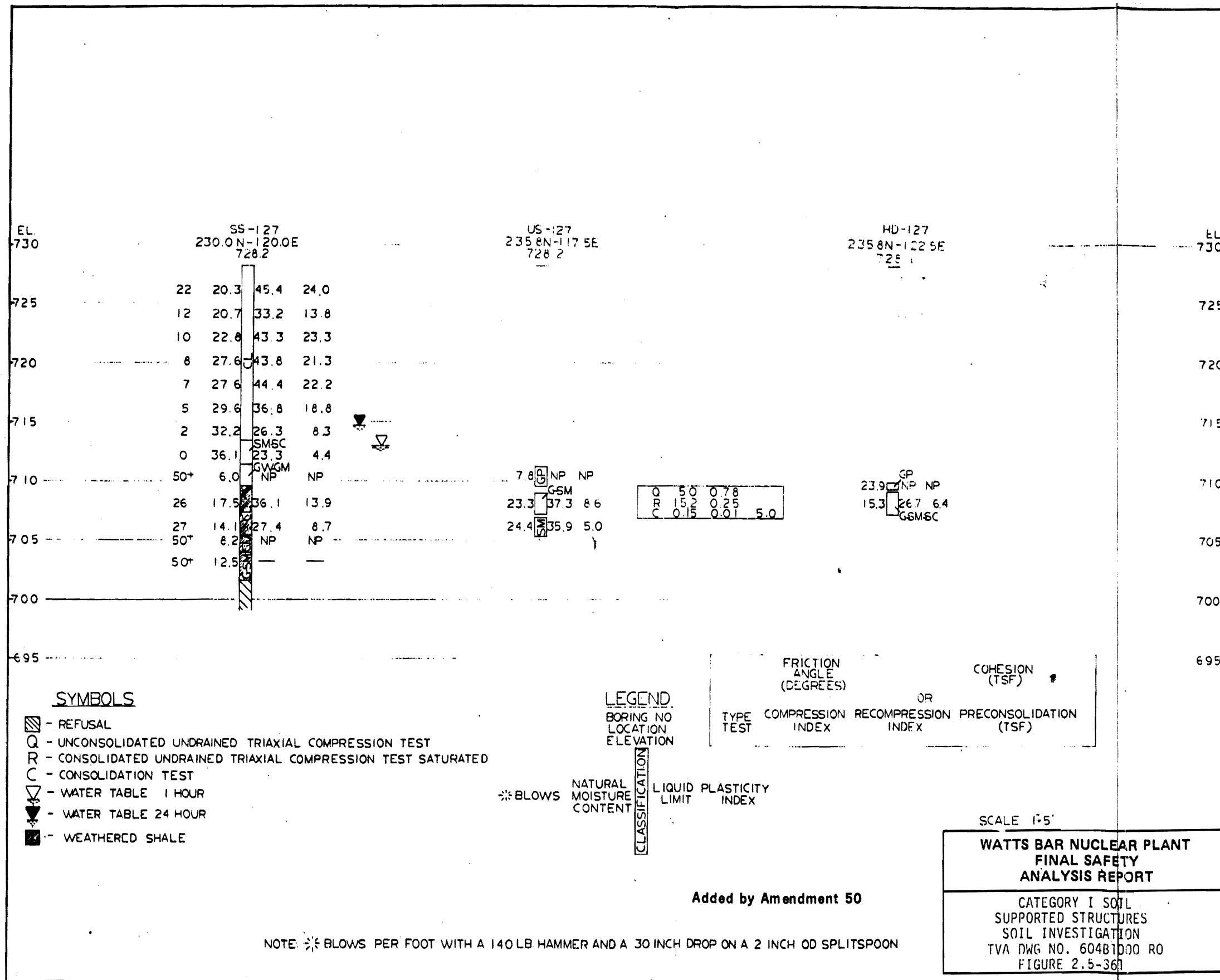


Figure 2.5-361 Category I Soil Supported Structures Soil Investigation

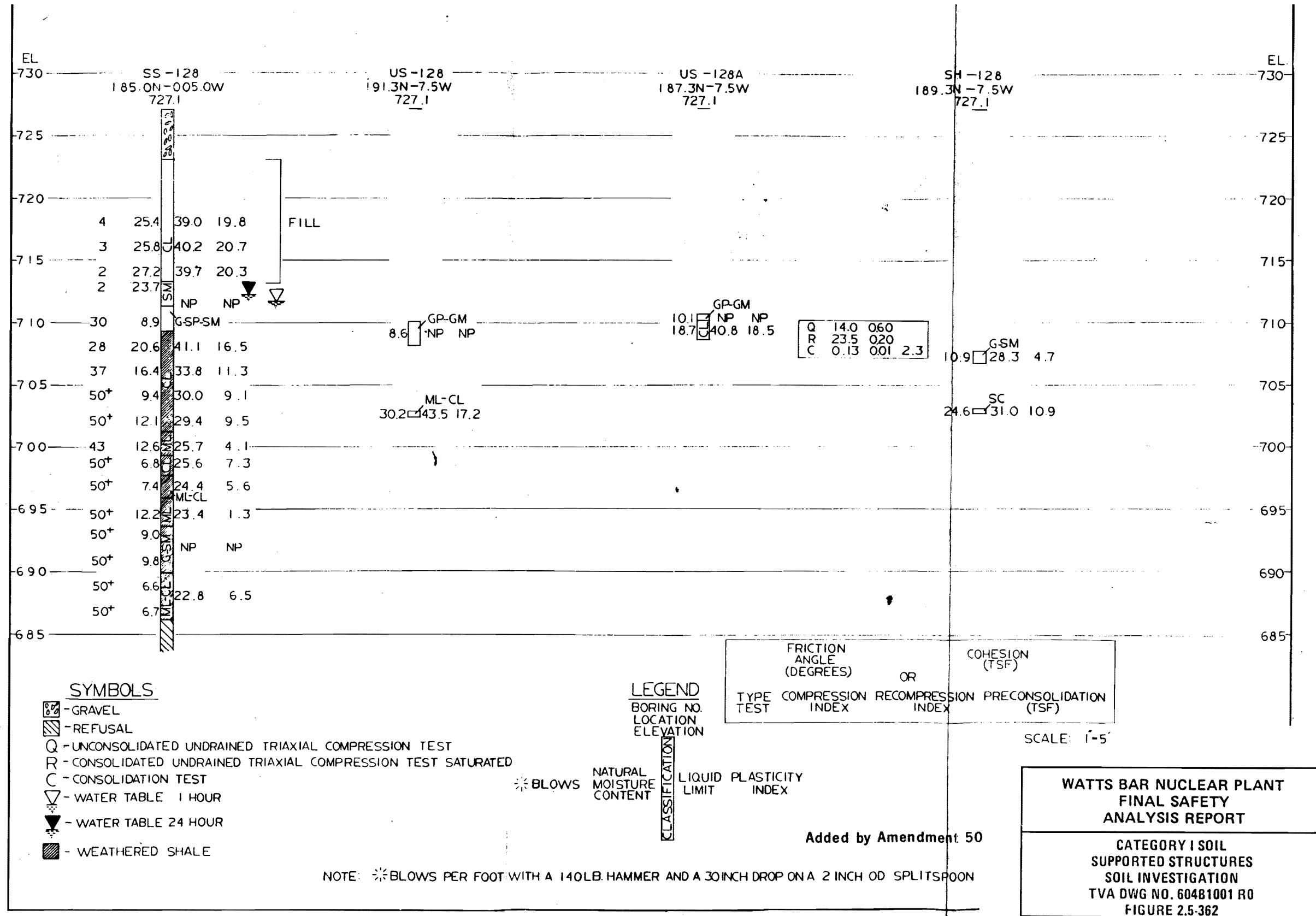


Figure 2.5-362 Category I Soil Supported Structures Soil Investigation

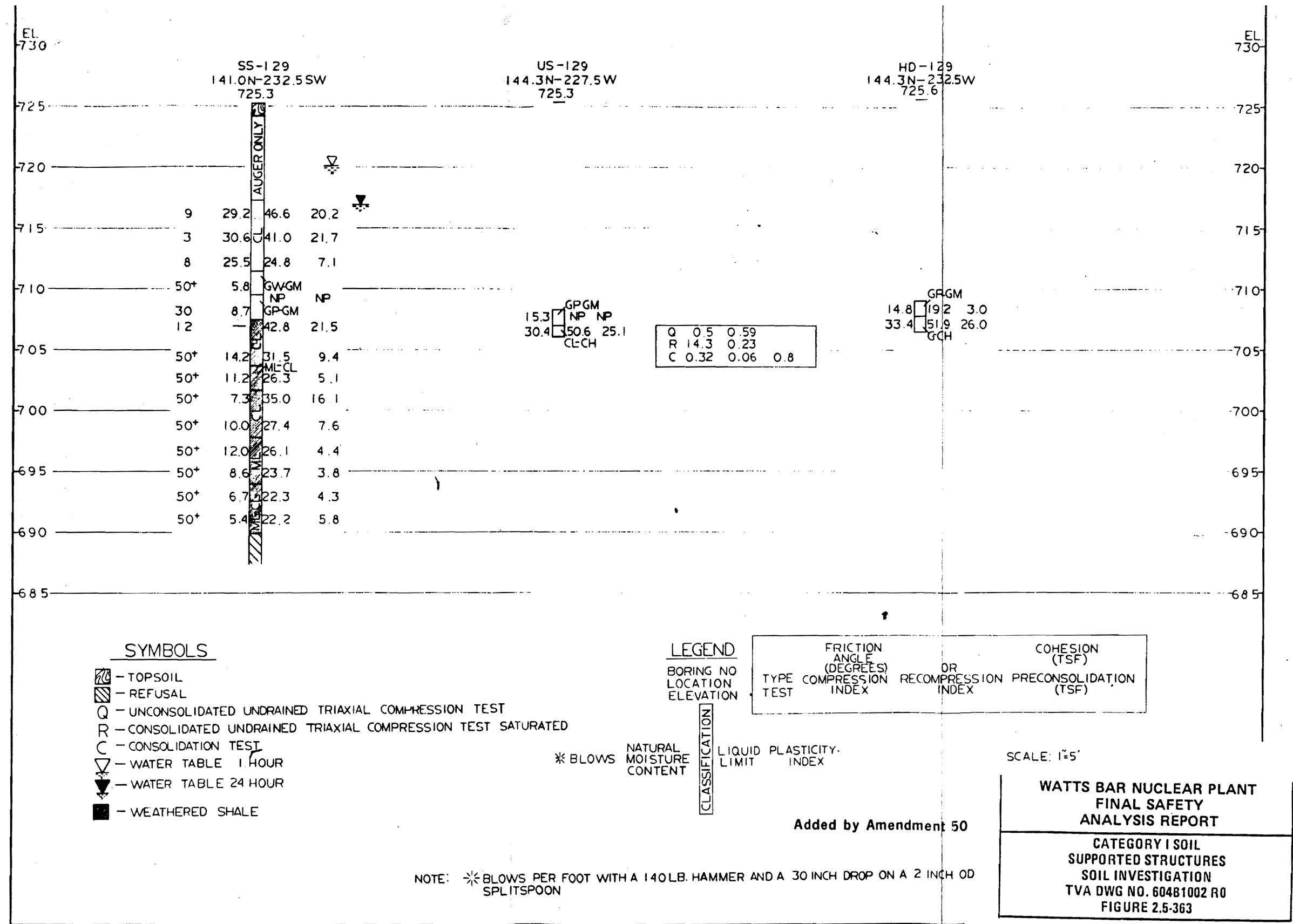


Figure 2.5-363 Category I Soil Supported Structures Soil Investigation

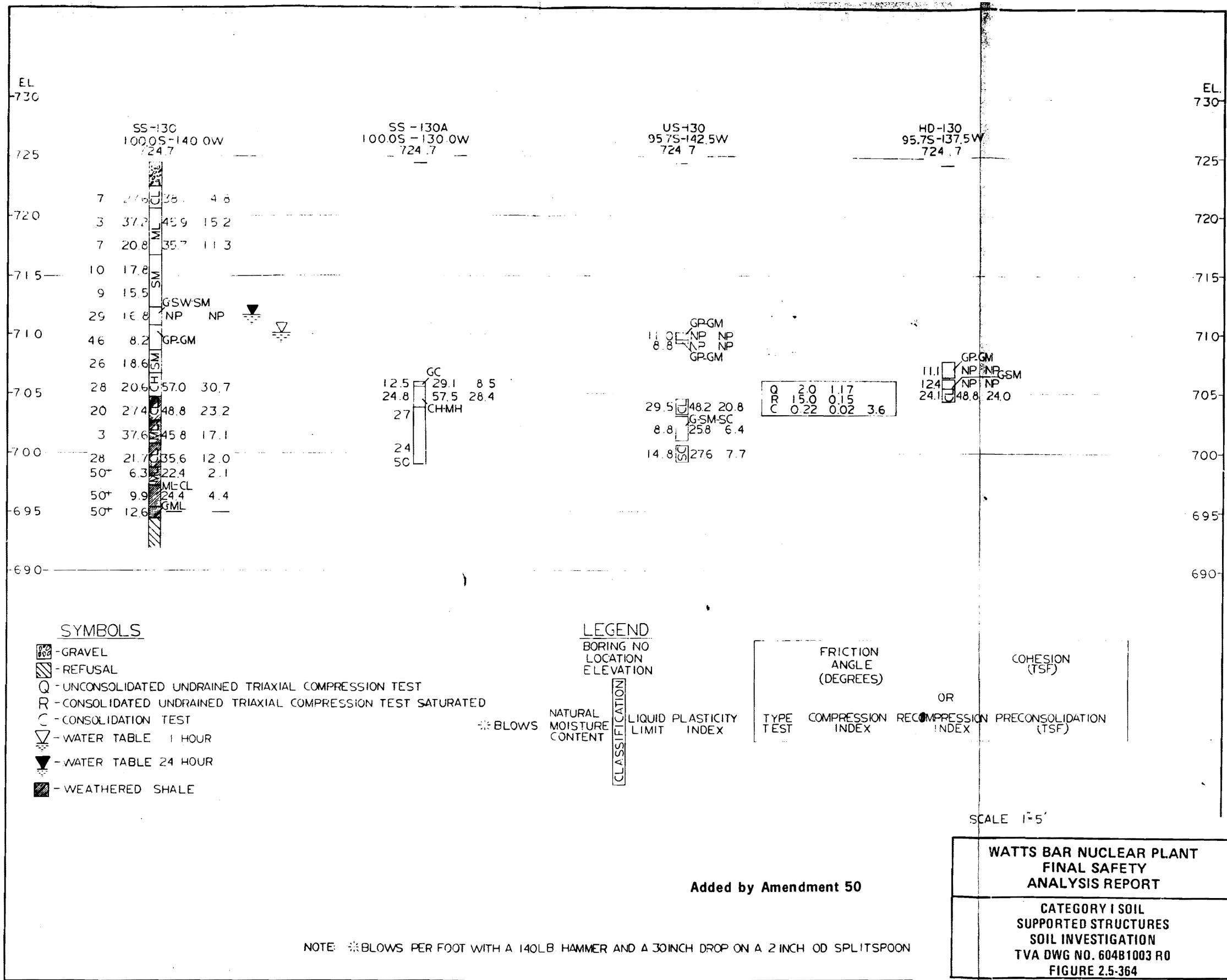


Figure 2.5-364 Category I Soil Supported Structures Soil Investigation

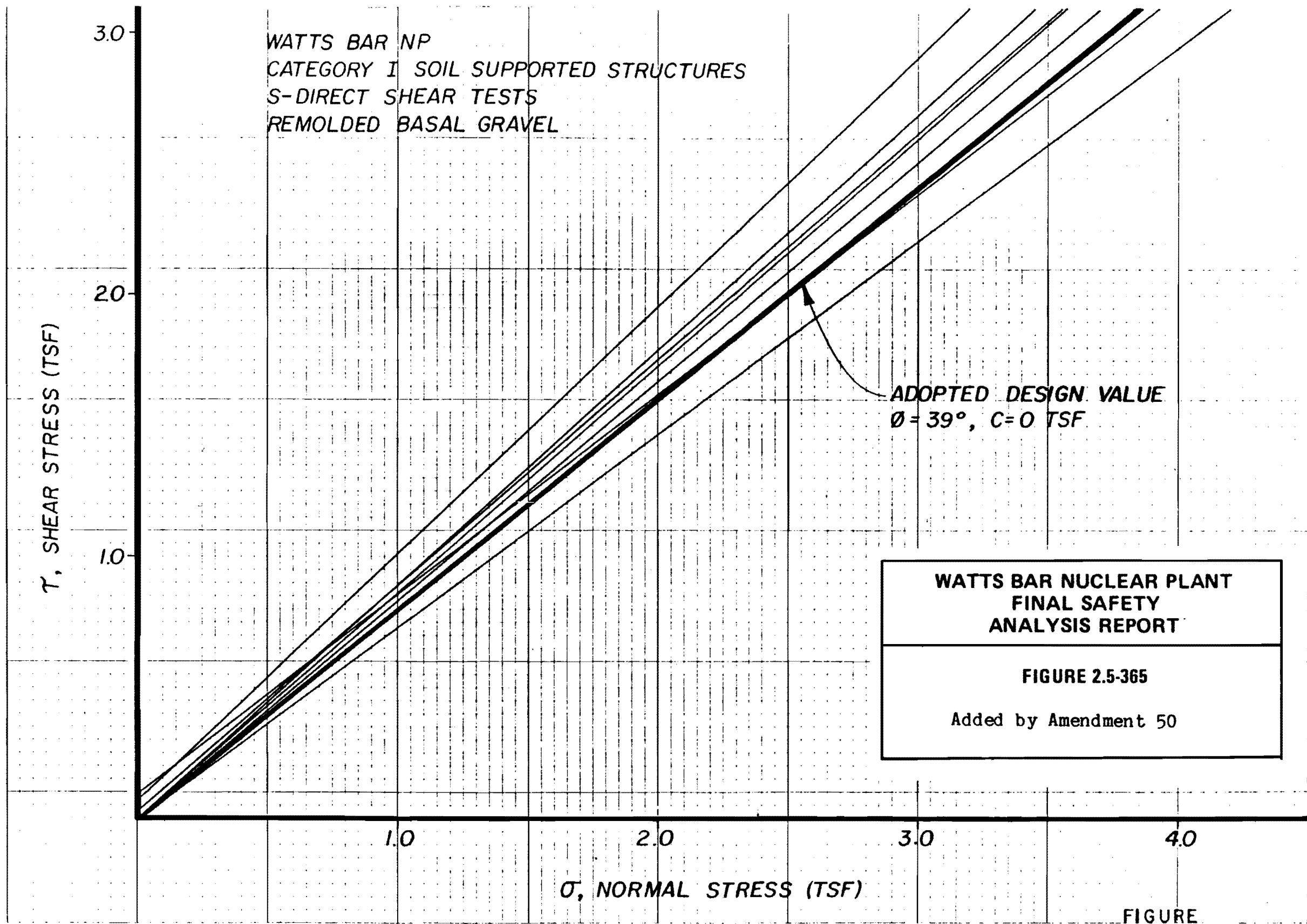
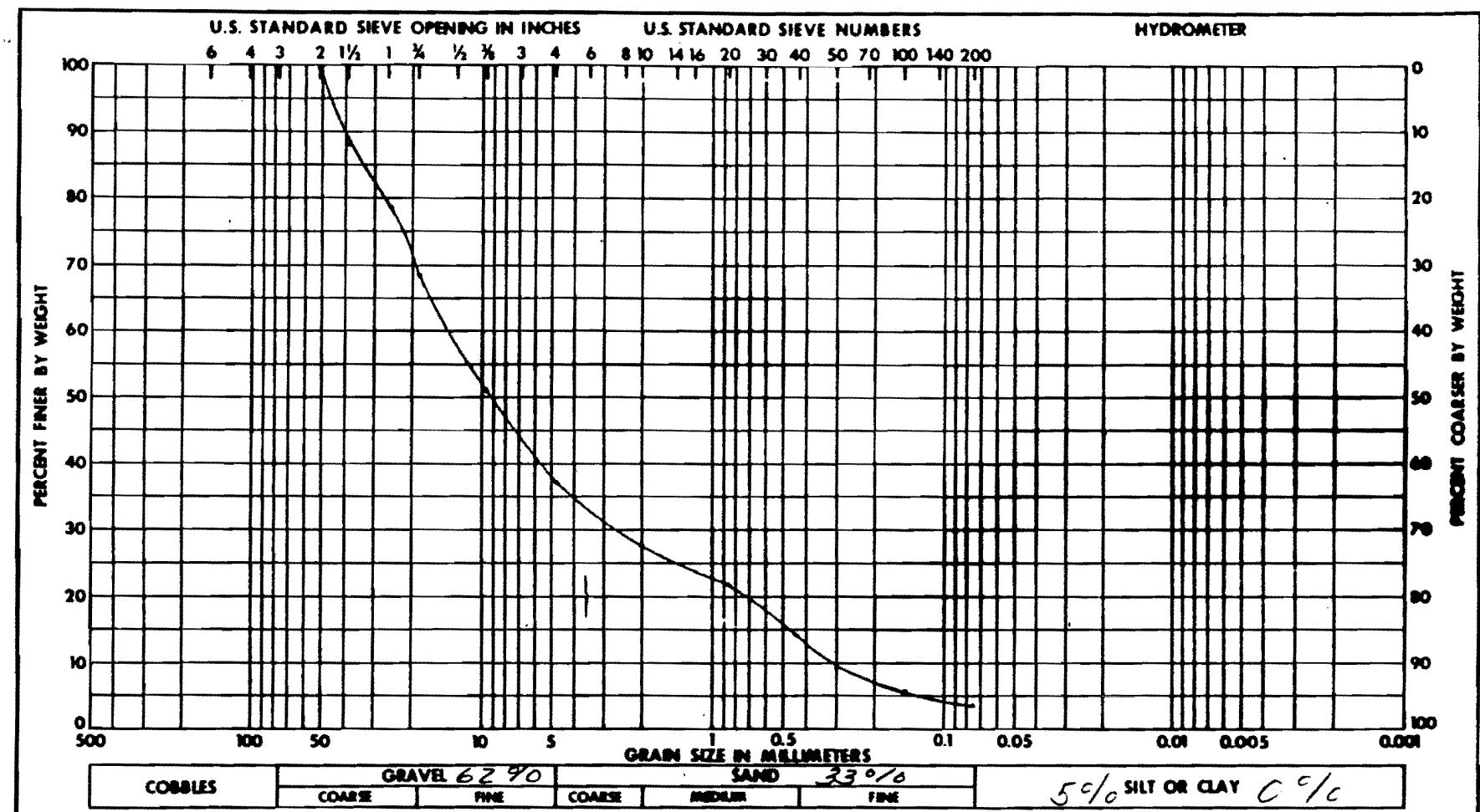


Figure 2.5-365 Category I Supported Structures S-Direct Shear Test Remolded Basal Gravel

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL SUPPORTED STRUCTURES FIGURE 2.5-366	

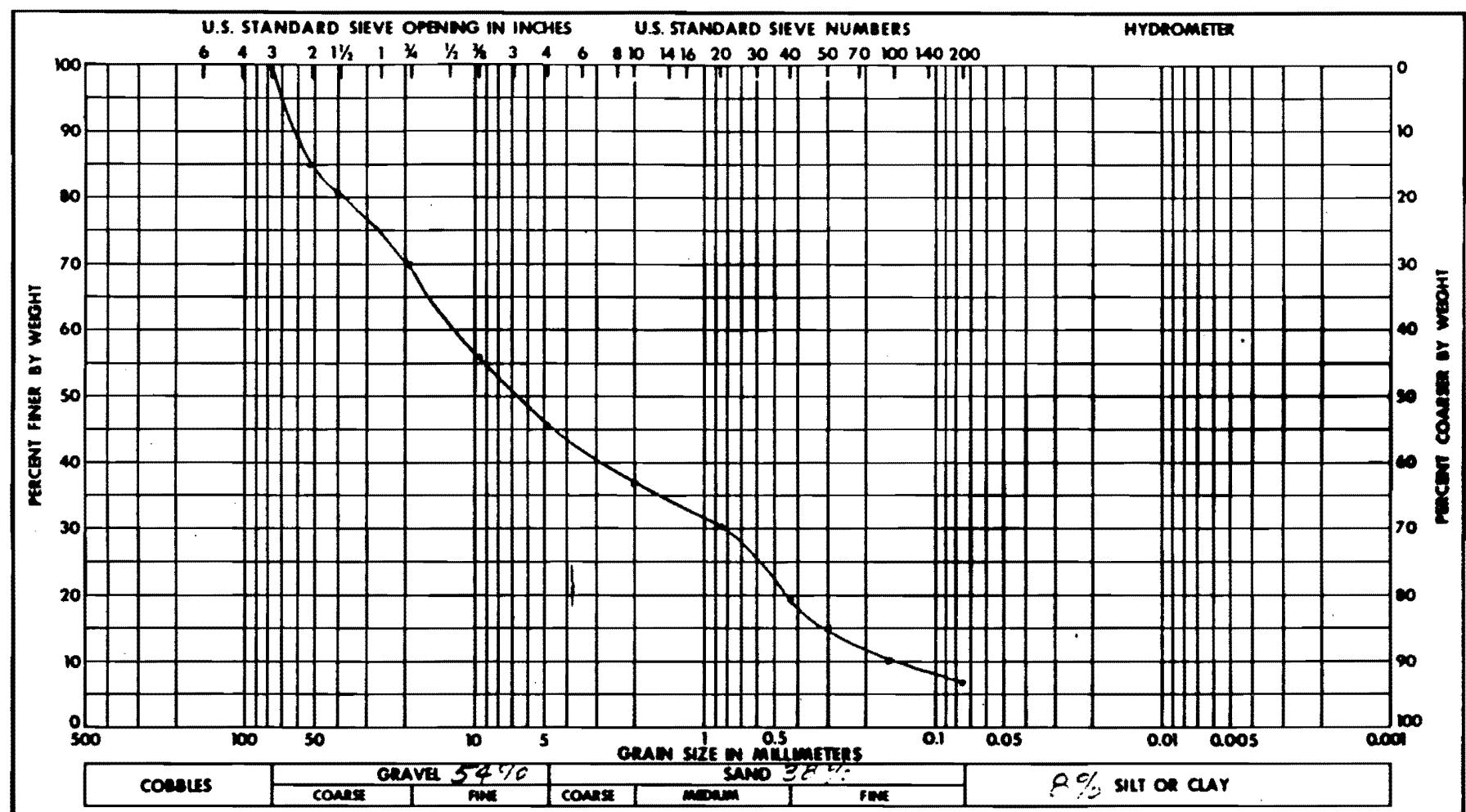
Soil Symbol	GW	Liquid Limit, %	NP
Moisture Content, %	11.1	Plastic Limit, %	NP
Specific Gravity	2.58	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:
- - -
- - -
- - -
- - -

Project WATTS BAR NP	
Feature Soil Supported Structures	
Boring No. 15-125	Sample No. 3, PT. 2
Station 104.35	Range 382.5E
Date 8-3-79	Elevation 706.8-705.8
GRAIN SIZE ANALYSIS	

Figure 2.5-366 Soil Supported Structures

Added by Amendment 50

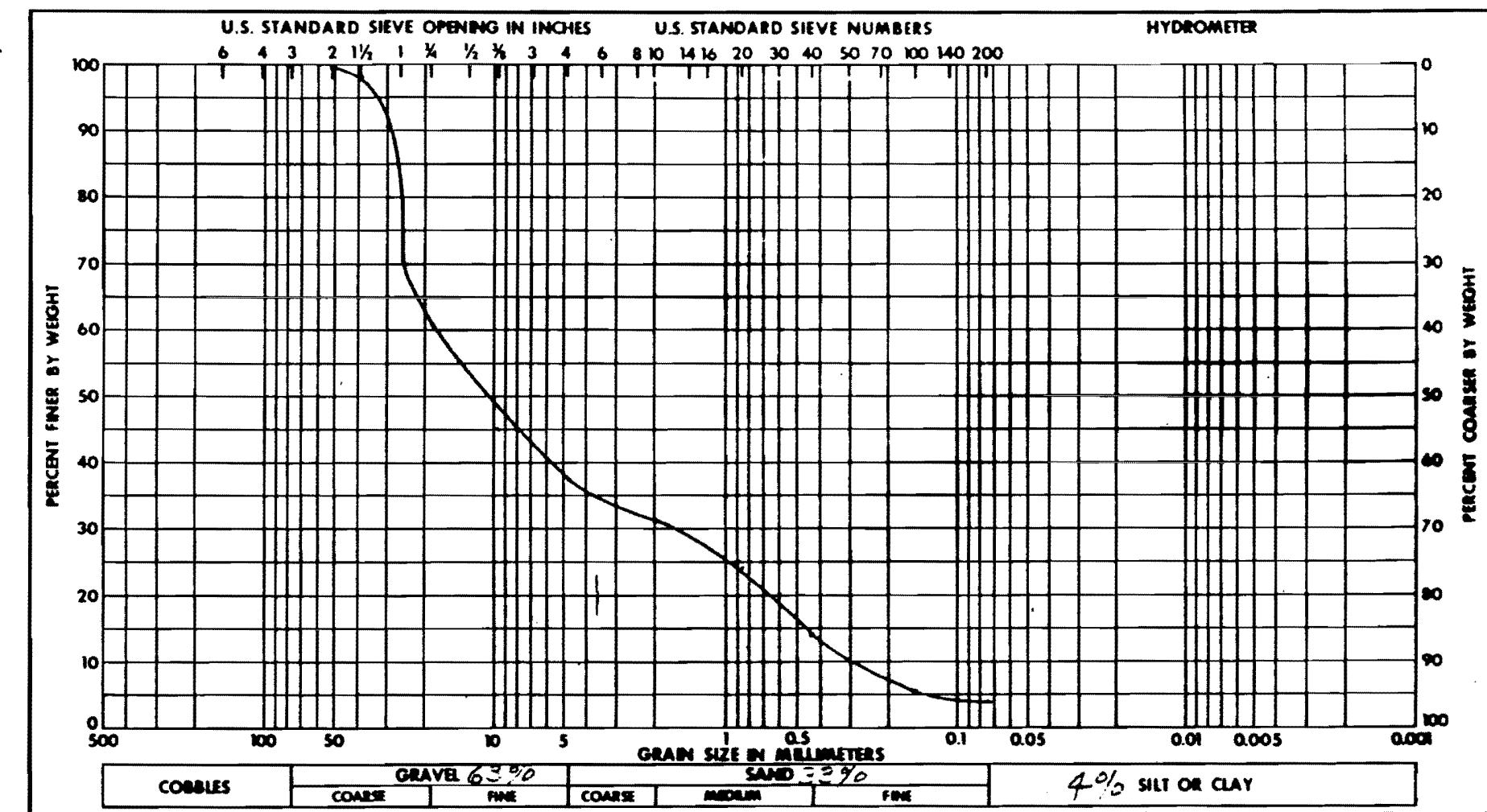


Soil Symbol	GP-GM	Liquid Limit, %	NP
Moisture Content, %	9.1	Plastic Limit, %	NP
Specific Gravity	2.61	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:

Project	WATTS BAR 1-P
Feature	Soils SUPPORTED STRUCTURE
Boring No.	US-126
Sample No.	4 RI
Station	184.5N
Range	379.9E
Date	8-31-79
Elevation	709.6 -709.1
GRAIN SIZE ANALYSIS	

Figure 2.5-367 Soil Supported Structures



Added by Amendment 50

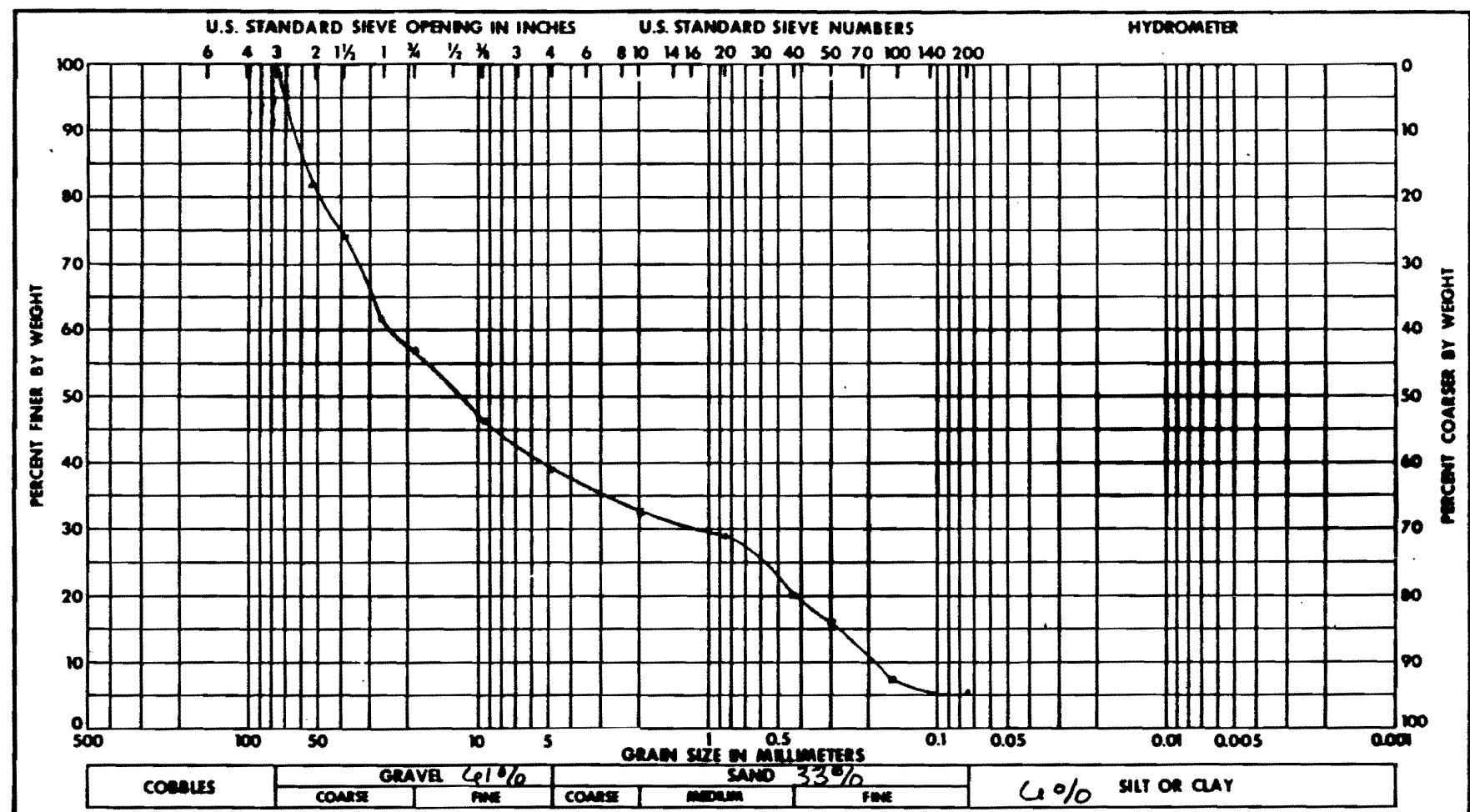
Soil Symbol	<i>GP</i>	Liquid Limit, %	<i>NP</i>
Moisture Content, %	<i>7.8</i>	Plastic Limit, %	<i>NP</i>
Specific Gravity	<i>2.58</i>	Plasticity Index, %	<i>NP</i>
		Shrinkage Limit, %	

Remarks:

Project <i>WATTS BAR NP</i>	
Feature <i>SOIL SUPPORTED STRUCTURES</i>	
Boring No <i>115-122</i>	Sample No. <i>1</i>
Station <i>235.8 N</i>	Range <i>117.5 E</i>
Date <i>8-6-73</i>	Elevation <i>742-709.6</i>
GRAIN SIZE ANALYSIS	

Figure 2.5-368 Soil Supported Structures

Added by Amendment 50



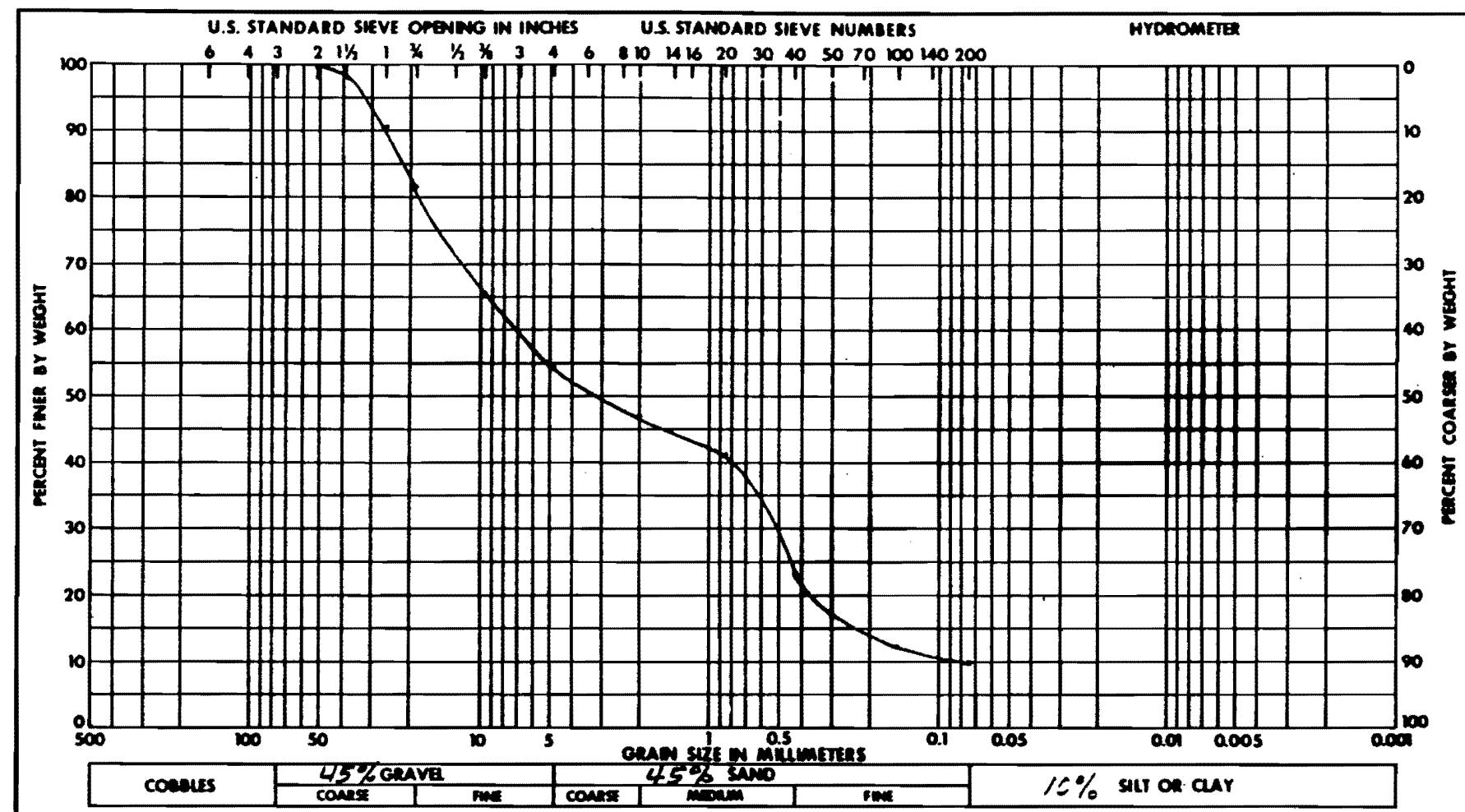
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL SUPPORTED STRUCTURES FIGURE 2.5-369	

Soil Symbol	GP-GM	Liquid Limit, %	NP
Moisture Content, %	8.4	Plastic Limit, %	NP
Specific Gravity	2.62	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:	

Project	WATTS BAR-UP
Feature	Soil Supported Structures
Boring No.	US-138
Station	191.3 N
Date	8-31-79
Sample No.	2
Range	7-5 W
Elevation	7104-7084
GRAIN SIZE ANALYSIS	

Figure 2.5-369 Soil Supported Structures



Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL SUPPORTED STRUCTURES	
FIGURE 2.5-370	

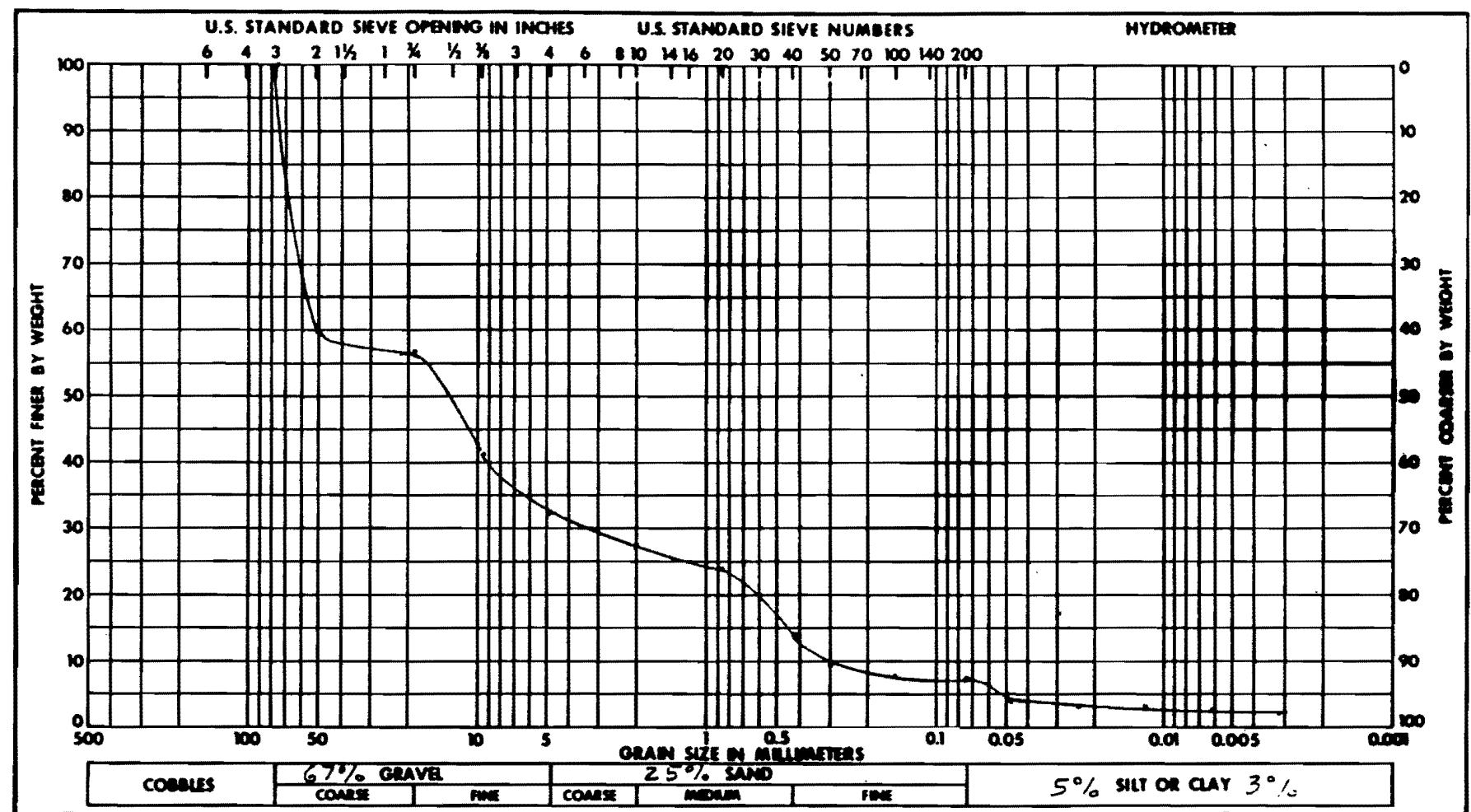
Soil Symbol	GP-611	Liquid Limit, %	NP
Moisture Content, %	15.3	Plastic Limit, %	NP
Specific Gravity	2.62	Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:	

Project Watts Bar. N.P	
Feature Soil Support Structures	
Boring No. 4S-129	Sample No. 3 P-2
Station 144.3 N	Range 227.5 W
Date 9-4-79	Elevation 708.3-707.0
GRAIN SIZE ANALYSIS	

Figure 2.5-370 Soil Supported Structures

Added by Amendment 50



WATTS BAR NUCLEAR PLANT	
FINAL SAFETY	
ANALYSIS REPORT	
SOIL SUPPORTED STRUCTURES	
FIGURE 2.5-371	

Soil Symbol	GP.GM	Liquid Limit, %	NP
Moisture Content, %	8.8	Plastic Limit, %	NP
Specific Gravity	2.59	Plasticity Index, %	NP
		Shrinkage Limit, %	--

Remarks:

Project	WATTS BLDG. 1-F
Feature	Soil Supported Structure
Boring No.	US-130
Sample No.	2, P-2
Station	95.75
Range	142.5' W
Date	9-4-79
Elevation	709.7-709.4

GRAIN SIZE ANALYSIS

Figure 2.5-371 Soil Supported Structures



**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**GRAVEL BORING NO. 125
FIGURE 2.5-372**

Added by Amendment 50

Figure 2.5-372 Gravel Boring No. 125



Added by Amendment 50

Figure 2.5-373 Gravel Boring No. 129

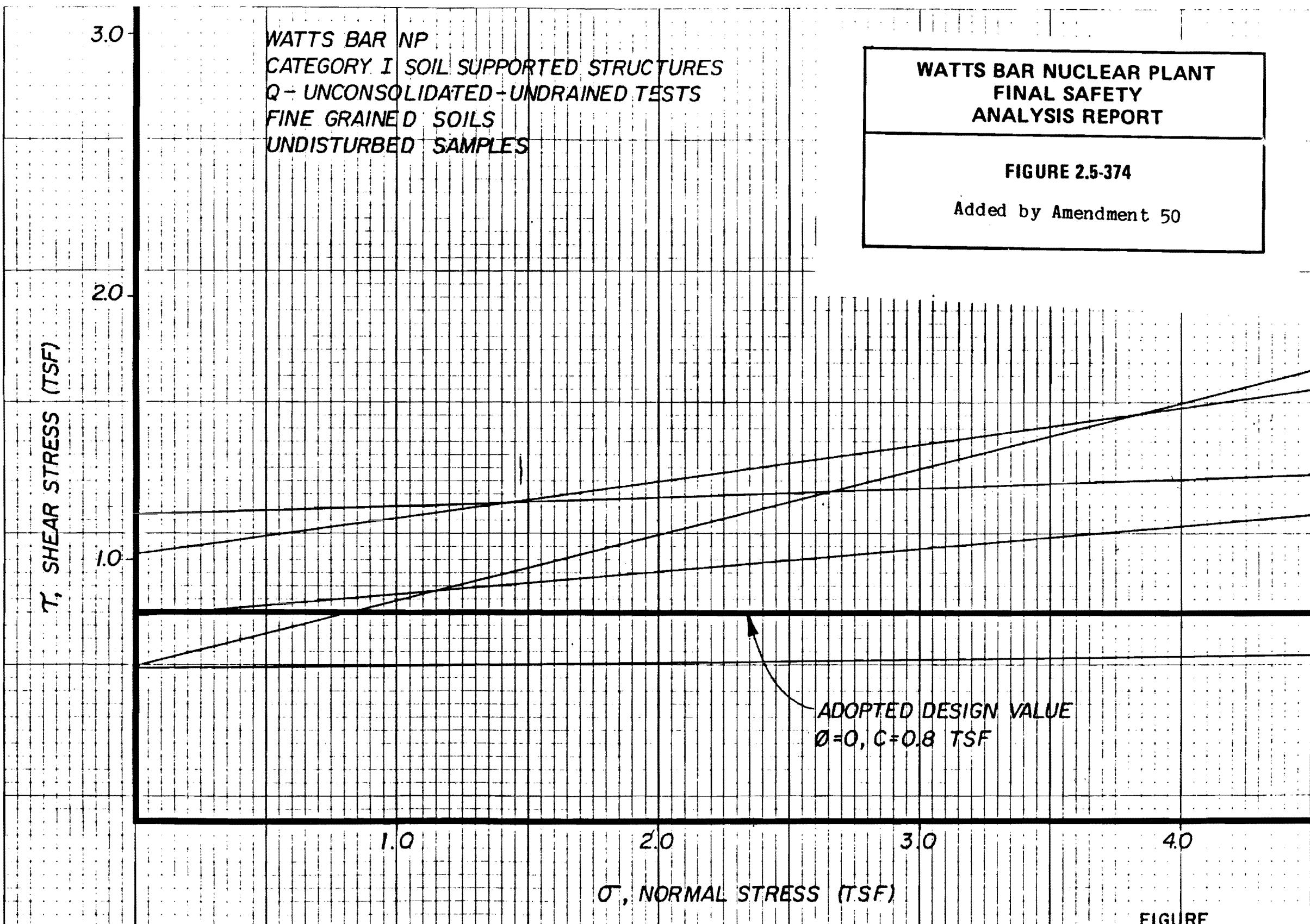


Figure 2.5-374 Watts Bar Nuclear Plant Category I Soil Supported Structures Q - (Unconsolidated - Undrained)
Test Fine Grained Soils (Undisturbed Samples)

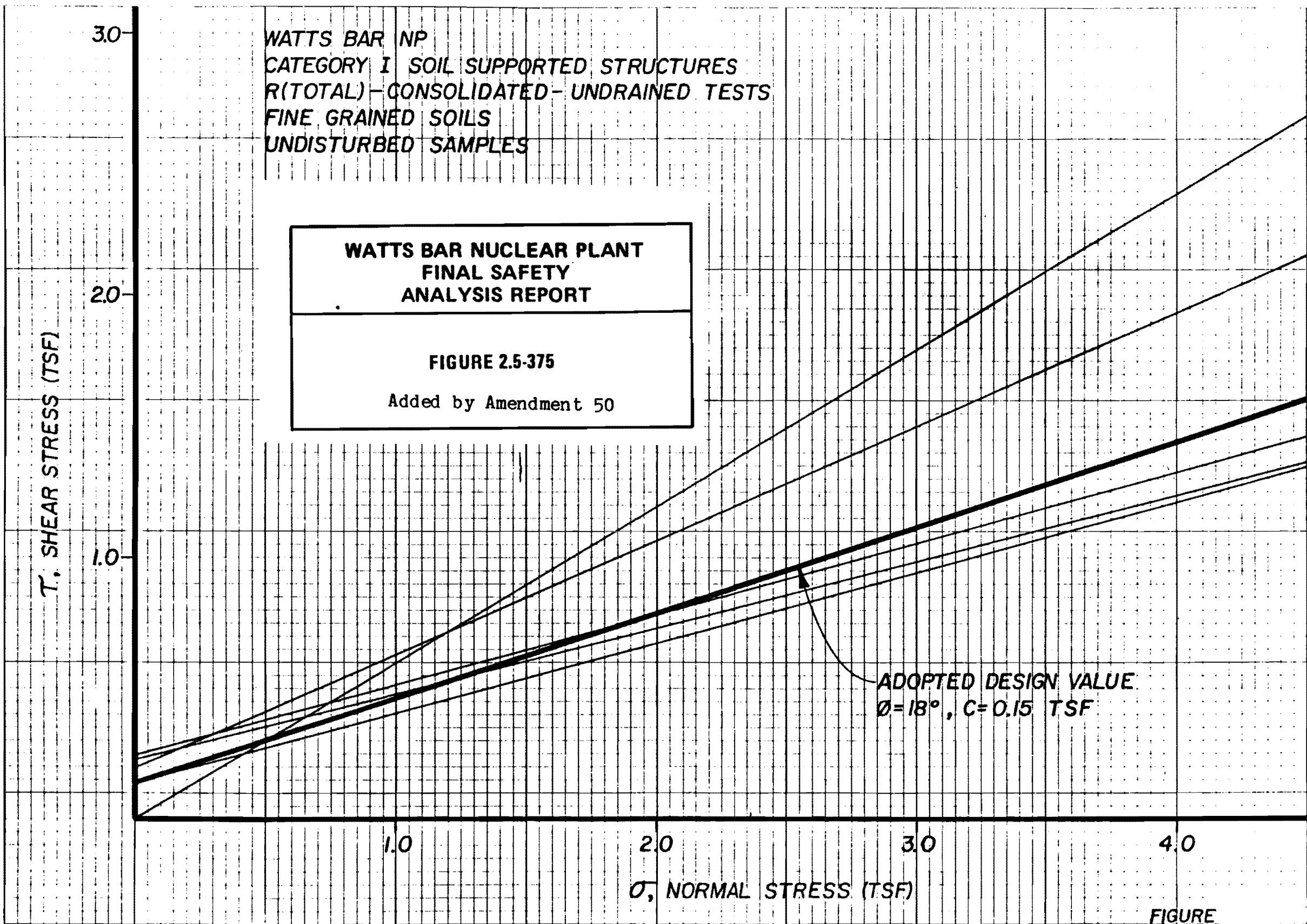


Figure 2.5-375 Watts Bar Nuclear Plant Category I Soil Supported Structures R (Total) - (Consolidated - Undrained)
Test Fine Grained Soils (Undisturbed Samples)

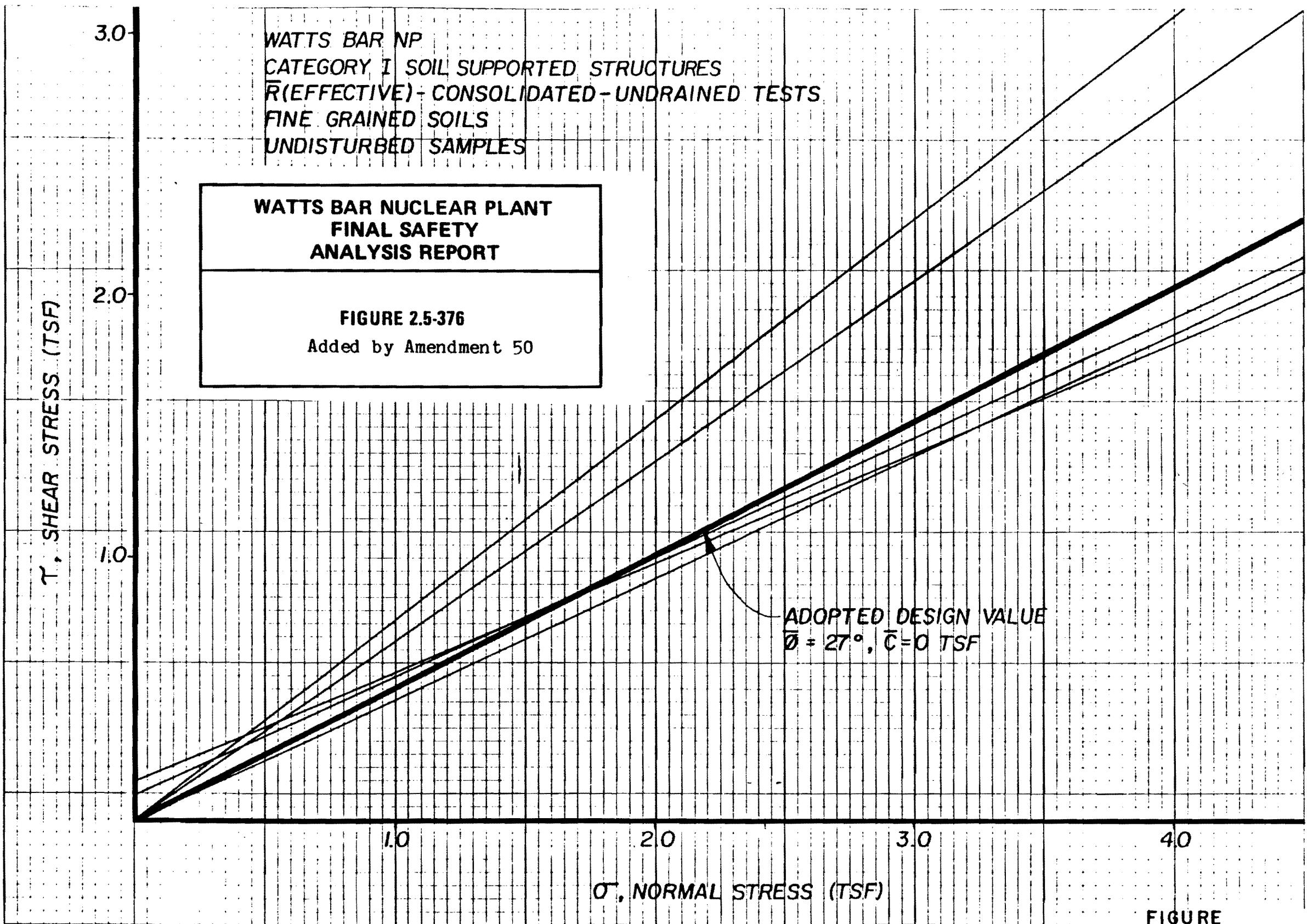


Figure 2.5-376 Watts Bar Nuclear Plant Category I Soil Supported Structure R (Effective) -
(Consolidated -Undrained) Test Fine Grained Soils (Undisturbed Samples)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-377
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P. FEATURE: ERCW TRENCH A
BORING: PAH-1 STATION: 8+85.2 RANGE: SURFACE EL: 730.2
DATE DRILLED: 5/30/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	730						TOPSOIL
5	725		U S	12.2	29	12	GV CL, BRN, MST, SP FL
10	720		U S	13.0	29	12	GV CL, BRN, V MST, SP FL
15	715			8.8			(SHALE SHOTROCK) CL GV, GY, MST, SP FL
20	710			7.3			(SHALE SHOTROCK) CL GV, GY, MST, SP FL
25	705		Σ U S	25.8	29	7	SD SI, R-BRN, MST, MIC, ALL ORIG SOIL
30	700		Σ S U	16.5	NP	NP	SI SD, R-BRN, V MST, ALL SI SD, ±20% GV, R-BRN, W, ALL
35				10.6	33	14	ROU AUGG - GV <u>WEATHERED SHALE</u>
				26.3			DISCONTINUED. EL 700.7

Figure 2.5-377 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-378
SHEET 1 OF 1

Added by Amendment 50

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION: 7+00
DATE DRILLED: 5/27/83 TO

FEATURE: ERCW TRENCH A
RANGE: SURFACE EL: 733.4
PREPARED BY: MHD CHECKED BY: EA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	730		U G	11.8	30	13	SD GV, BRN-GY, WOOD, MST, SP FL
10	725		U G	10.3	30	13	SD GV, BRN; WOOD, WIRE & PLASTIC DBR, MST, SP FL
15	720		U G	12.1	30	13	GV SI CL, BRN, MST, SP FL
20	715		U G	20.3	30	13	SI CL, TR GV, BRN, V MST, SP FL
25	710		SC	16.2	30	13	GV CL, BRN, MST, SP FL
30	705		U G	22.0	30	13	SI CL, BRN, MST, ALL, ORIG SOIL
35	700		Σ U G	32.5	27	5	SD SI, R-BRN, V MST, ALL, MIC
40			Σ U G	32.3	27	5	SD SI, R BRN, V MST, ALL, MIC
							WEATHERED SHALE
							DISCONTINUED EL 697.2
1' = 5'			* Lab. Classif.	18 ft.			

Figure 2.5-378 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-379
SHEET 1 OF 1

Added by Amendment 50

PROJECT: WATTS BAR N.P.
BORING: PAH-3 STATION: 5+50
DATE DRILLED: 5/27/83 TO

FEATURE: ER CW TRENCH A
RANGE: SURFACE EL: 728.9
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	725		U S	12.0	30	13	SPOIL FILL GV CL, BRN-GY, MST, WOOD, SP FL
10	720		U S	15.5	33	14	SI CL, BRN, MST, SP FL
15	715		U S	22.6	30	13	SI CL - FT CL MIX, BRN-GY, V MST, SP FL
20	710		U S	18.9	30	13	SI CL, BRN, MST, ALL, ORIG SOIL
25	705		U S	20.0	30	13	SI CL, BRN, MST, ALL
30	700		U S Σ I U S	18.8	30	13	SI CL, BRN, V MST, ALL
35	695		CH	24.5	29	7	CL SI SD, BRN, W, ALL
1' = 5'				34.9 17.6	54	35	FT CL, GY, V MST, MIC, ALL <u>WEATHERED SHALE</u>
							DISCONTINUED. EL 696.5
							* Lab. Classif.

Figure 2.5-379 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-380
SHEET 1 OF 1

Added by Amendment 50

PROJECT: WATTS BAR N.P.
BORING: PAH-4 STATION: 4+00
DATE DRILLED: 5/27/83 TO

FEATURE: ERCW TRENCH A
RANGE: SURFACE EL: 720.5
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	720						SOD - TOPSOIL
5	715		U S	10.4	25	8	GV CL SD, GY-R, MST, SP FL
10	710		U S	11.2	25	8	GV CL SD, GY-R, MST, SP FL
15	705		U	17.7	27	11	SI SD, GY, V MST, ALL
20	700		U	20.1	27	11	SI SD CL, BRN, W, ALL
25	695		U	20.5	27	11	SD CL, TR GV, BRN, V MST, ALL
30	690		SP-SM	28.3	NP	NP	SI SD, BRN, W, ALL
35							REFUSAL - SHALE. EL 698.5
1' = 5'			* Lab. Classif.				

Figure 2.5-380 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-381
SHEET 1 OF 1

Added by Amendment 50

PROJECT: WATTS BAR N.P.
BORING: PAH-5 STATION: 2+50
DATE DRILLED: 5/31/83 TO

FEATURE: ERCW TRENCH A
RANGE: SURFACE EL: 712.3
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	710		U	21.1	36	16	TOPSOIL SI CL, BRN, MST, ALL
5	705		U	23.0	36	16	SI CL, BRN, MST, ALL
10	700		U	22.7	36	16	SI CL, BRN, MST, ALL
15	695		U	22.9	36	16	SI CL, TR RD GV, BRN, MST, ALL
20	690		U	20.0	36	16	SI CL, TR RD GV, BRN, V MST, ALL
25	685		U	20.8	27	11	SI CL, DK BRN, V MST, ALL
30	680		U	26.2	27	11	CL SI, DK BRN, W, ALL
35				17.9			<u>WEATHERED SHALE</u>
1' = 5'							DISCONTINUED. EL 685.8
							* Lab. Classif.

Figure 2.5-381 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5.382
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-6 STATION: 1+00
DATE DRILLED: 5/31/83 TO

FEATURE: ERCW TRENCH A
RANGE: SURFACE EL: 707.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	705		U	17.7	33	14	GV CL, BRN, MST, SP FL
10	700		Σ U \emptyset \emptyset	22.4	29	7	SD CL, TN, MST, ALL (ORIG SOIL)
15	695		Σ U \emptyset \emptyset	23.7	29	7	SD CL, TN V MST, ALL
20	690		Σ U \emptyset \emptyset	35.8	27	5	CL SD, TR RD FN GV, TN, W, ALL
				17.8			WEATHERED SHALE
							DISCONTINUED. EL 688.1
30	685						
35	680						
40	675						
45							
50							
55							
60							
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70							
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850							
855							

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-383 SHEET 1 OF 2	

PROJECT: WATTS BAR N.P.
BORING: PAH-1 STATION: 1+00
DATE DRILLED: 5/31/83 TO

FEATURE: ERCW TRENCH B
RANGE: SURFACE EL: /12.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	710		U	18.4	26	8	SD SI CL, BRN, MST, FL
5			U	14.7	35	13	SI CL, BRN, MST, TR GV, FL
	705		U	17.2	35	13	SD CL, BRN, MST, ALL CORIG SOIL
10			U	20.6	26	8	SD CL, BRN, MST, ALL
15			U	25.0	26	8	SI CL, BRN, MST, ALL
20			Σ 60	25.1	27	3	ALT STRATA - SI SD & CL SI, TN-BRN, V MST, ALL
25			Σ 60	30.2	NP	NP	ALT STRATA - SI SD & CL SI, TN-BRN, W, ALL
30			Σ 60	26.7	NP	NP	SI SD, GY-TN, V MST, ALL
35			Σ 60	21.0	NP	NP	SI SD, TN, V MST, ALL
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-383 Soil Profile
(Sheet 1 of 2)

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-383
SHEET 1 OF 2

PROJECT: WATTS BAR N.P.
BORING: PAH-1 STATION: 1+00
DATE DRILLED: 5/31/83 TO

FEATURE: ERCW TRENCH B
RANGE: SURFACE EL: /12.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	710		L 0	18.4	26	8	SD SI CL, BRN, MST, FL
5			L 0	14.7	35	13	SI CL, BRN, MST, TR GV, FL
-	705		L 0	17.2	35	13	SD CL, BRN, MST, ALL (ORIG SOIL)
10			L 0	20.6	26	8	SD CL, BRN, MST, ALL
-	700		L 0	25.0	26	8	SI CL, BRN, MST, ALL
15			L 0	25.1	27	3	ALT STRATA - SI SD & CL SI, TN-BRN, V MST, ALL
-	695		L 0	30.2	NP	NP	ALT STRATA - SI SD & CL SI, TN-BRN, W, ALL
20			L 0	26.7	NP	NP	SI SD, GY-TN, V MST, ALL
-	690		L 0	21.0	NP	NP	SI SD, TN, V MST, ALL
25							Added by Amendment 50
30							
35							
1' = 5'			* Lab. Classif.				

Figure 2.5-383 Soil Profile
(Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-384
SHEET 1 OF 2

PROJECT: WATTS BAR N.P. FEATURE: ERCW TRENCH B
 BORING: PAH-2 STATION: 2+25 RANGE: SURFACE EL: 713
 DATE DRILLED: 6/1/83 TO PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	710		L 0	19.2	35	13	SI CL, TR GV, BRN, MST, FL
10	705		L 0	21.3	35	13	SI CL, BRN, MST, ALL
15	700		L 0	24	35	13	SI CL, BRN, MST, ALL
20	695		Σ L Σ 0	27.4	31	8	CL SD, BRN, W, ALL
25	690		Σ S	27.5	NP	NP	ALT STRATA - SI SD & CL SI, TN-BRN, V MST, ALL
30	685		Σ S	26.7	NP	NP	ALT STRATA - SI SD & CL SI, TN-BRN, V MST, ALL
35	680		L Σ S	17.3	NP	NP	GV SD, BRN-TN, W, ALL
* Lab. Classif.							

Figure 2.5-384 Soil Profile
(Sheet 1 of 2)

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-384
SHEET 2 OF 2

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION: 2+25
DATE DRILLED: 6/1/83 TO

FEATURE: ERCW TRENCH B
RANGE: SURFACE EL: 713
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	- 675			12.8			WEATHERED SHALE
40							DISCONTINUED. EL 674.0
45	670						
50	665						
55	660						
60	655						
65	650						
70	645						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-384 Soil Profile
(Sheet 2 of 2)

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-385 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-3 STATION: 3+50
DATE DRILLED: 6/1/83 TO

FEATURE: ERCW TRENCH B
RANGE: SURFACE EL: 701.3
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	700		Σ U 0 0	24.2	31	8	SD SI CL, BRN, MST, ALL
5	695		Σ 0	37.0	28	4	SD SI, BRN, V MST, ALL
10	690		Σ U 0 0	26.4	31	8	SD SI, TN, V MST, ALL
15	685		SM	29.2 20.3	28	4	SI SD, R-TN, V MST, ALL <u>WEATHERED SHALE</u>
20							DISCONTINUED. EL 684.8
25	680						
30	675						
35	670						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-385 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-386
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-4 STATION: 4+75
DATE DRILLED: 6/2/83 TO

FEATURE: ERCW TRENCH B
RANGE: SURFACE EL: 700.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	700		L 0	28.2	26	8	SD SI CL, GY, W, ALL
5	695		Σ S	18.0	NP	NP	SD SI, GY, W, ALL
10	690		CL-M 26.7 24.9	23	5		SD SI, GY, W, ALL <u>WEATHERED SHALE</u>
15	685						DISCONTINUED. EL 688.9
20	680						
25	675						
30	670						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-386 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-387 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-5 STATION: 6+00
DATE DRILLED: 6/2/83 TO

FEATURE: ER CW TRENCH B
RANGE: SURFACE EL: 702.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	700		L 0	20.6	26	8	SD SI CL, TN-GY, MST, ALL
5							
-	695		L 0	30	26	8	SL SD SI, TN-GY, V MST, ALL
10							
-	690		C L 22.9 15.3	30	30	13	LAM RESD CL, MST <u>WEATHERED SHALE</u>
15							
20							
25							
30							
35							
1' = 5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-387 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-388 SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-1 STATION: 1592.0E RANGE: 190.6S SURFACE EL: 738.8
 DATE DRILLED: 06/02/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL - GV
5	735		U	15.3	28	13	SI CL, TR GV, TN, MST, FL
10	730		Σ	22.0	43	14	SI CL, R, MST, ALL
15	725		Σ	24.0	41	14	SI CL, R-BRN, MST, ALL
							DISCONTINUED. EL 723.8
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-388 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-389
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION: 1618.7E DATE DRILLED: 6/2/83

FEATURE: ERCW BORROW AREA 9
RANGE: 323.5S SURFACE EL: 740.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						TOPSOIL
5	735		Σ	18.8	43	14	SI CL, GY-TN, MOTT, MST, ALL
10	730		Σ	24.6	41	14	SI CL, R, MST, ALL
15	725		Σ	23.2	41	14	SD CL, R, MST, ALL
							DISCONTINUED. EL 725.4
20	720						
25	715						
30	710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-389 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-390
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-3 STATION: 1605.2E RANGE: 465.2S SURFACE EL: 742.1
 DATE DRILLED: 6/2/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						TOPSOIL
5			Σ	21.4	43	14	SD SI CL, R, MST, ALL
10	735		Σ	24.4	41	14	SD SI CL, R, MST, ALL
15	730		Σ	18.4	41	14	SD CL, R-BRN, MST, ALL
	725						DISCONTINUED. EL 727.1
20							
25							
30							
35							
1' = 5'							
			* Lab. Classif.				Added by Amendment 50

Figure 2.5-390 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-391A SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-4 STATION: 1606.0E RANGE: 616.6S SURFACE EL: 743.3
 DATE DRILLED: 6/2/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL - MIXED W/GRAVEL
5	740		M	20.3	43	14	SD SI, R, MST, ALL
10	735		M	23.2	41	14	SD SI CL, R, MST, ALL
15	730		M	21.0	41	14	SD SI CL, R, MST, ALL
							DISCONTINUED. EL 728.3
20	725						
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-391a Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-392
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-5 STATION: 1604.9E RANGE: 767.3S SURFACE EL: 737.8
 DATE DRILLED: 6/2/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	735		U O	18.5	33	17	TOPSOIL SI CL, BRN, MST, ALL
10	730		U O	20.8	33	17	SI CL, BRN, MST, ALL
15	725		Σ	22.9	43	14	SD CL SI, R, MST, ALL
							DISCONTINUED. EL 723.8
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-392 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-393
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ER CW BORROW AREA 9
BORING: PAH-6 STATION: 1576.3E RANGE: 902.2S SURFACE EL: 735.6
DATE DRILLED: 6/2/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	- 735						TOPSOIL
5	- 730		10	15.4	29	14	SI CL, TN-BRN, MST, FL
10	- 725		10	20.4	33	17	(BURIED TOPSOIL) SI TO SI CL, TN-BRN, MST-V MST, ALL
15	- 720		1Σ	24.0	43	14	SI CL, BRN, MST, ALL
							DISCONTINUED. EL 720.6
20	715						
25	710						
30	705						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-393 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-394
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-7 STATION: 1730.2E RANGE: 160.1S SURFACE EL: 735.7
 DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735		10	16.3	29	14	TOPSOIL SI CL, BRN, MST, ALL
5	730		10	17.8	33	17	SI CL, GY, MST, ALL
10	725		10	20.4	33	17	SI CL, GY, MST, ALL
15	720		14.6	41	14		SD SI, GY, MST, ALL
							DISCONTINUED. EL 720.7
20	715						
25	710						
30	705						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-394 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-395
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-8 STATION: 1785.7E RANGE: 290.0S SURFACE EL: 737.3
 DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	735		10	20.3	28	13	TOPSOIL SI CL, TN, MST, ALL
5	730		10	18.8	35	17	SI CL, BRN, MST, ALL
10	725		MU	20.5	41	14	SI CL, R, MST, ALL
15							DISCONTINUED. 723.3
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-395 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-396 SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-9 STATION: 1802.0E RANGE: 439.7S SURFACE EL: 740.0
 DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL ft.	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						
5	735		L O	13.6	28	13	SI CL, BRN, MST, ALL
10	730		L O	23.0	43	14	SI CL, R, MST, ALL
15	725		M L	20.9	41	14	SD SI CL, R, MST, ALL
							DISCONTINUED. EL 726.0
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-396 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-397
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
BORING: PAH-10 STATION: 1787.1E RANGE: 584.7S SURFACE EL: 744.2
DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	740		10	13.2	28	13	TOPSOIL SI CL, TR GV, BRN, MST, FL
10	735		10	17.7	29	14	SI CL, BRN, MST, ALL CORIG SOILS
15	730		Σ	22.8	43	14	SI CL, R, MST, ALL
							DISCONTINUED. EL 730.2
20	725						
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-397 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-398 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-11 STATION: 1750.5E RANGE: 726.7S SURFACE EL: 740.9
 DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						TOPSOIL
5	735		L O	16.8	29	14	SI CL, BRN, MST, ALL
10	730		L O	18.1	33	17	SI CL, BRN, MST, ALL
15	725		L O Σ	19.8	35	17	SI CL, BRN, V MST, ALL
	720			22.3	43	14	SD SI, BRN, V MST, ALL
	715						DISCONTINUED. EL 725.9
30	710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-398 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-399
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: ERCW BORROW AREA 9
 BORING: PAH-12 STATION: 1708.3E RANGE: 866.6S SURFACE EL: 739.1
 DATE DRILLED: 6/3/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	735		10	13.7	28	13	TOPSOIL SI CL, BRN, MST, ALL
10	730		10	25.1	35	17	SI CL, BRN, V MST, ALL
15	725		10	22.4	35	17	SI CL, BRN, V MST, ALL
							DISCONTINUED. EL 725.1
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-399 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-400
SHEET 1 OF 1**

PROJECT: WATTS BAR N. P.
BORING: PAH-1 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 10

1+23.2E RANGE: 3+68.2N SURFACE EL: 733.8
PREPARED BY: MHD CHECKED BY: PA

PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	730		0 1 Σ	25.2	41	15	TOPSOIL SI CL, R-BRN, MST, ALL
10	725		0 1 Σ	24.0	41	15	SI CL, R-BRN, MST, ALL
15	720		0 1 Σ	23.9	41	15	SI CL, R-BRN, MST, ALL
20	715						
25	710						
30	705						
35	700						
1' = 5'	* Lab. Classif.						APR 13 1988

Revised by Amendment 62

Figure 2.5-400 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-401 SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 10
 BORING: CH-2 STATION: 9+72.1E RANGE: 4+08.5N SURFACE EL: 737.2
 DATE DRILLED: 6/7/83 TO PREPARED BY: MHD CHECKED BY: *JA*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735		U I U 0 Σ	26.1	41	15	TOPSOIL SI CL, R, MST, ALL
5			U I U 0 Σ	21.5	41	15	SI CL, R, MST, ALL
10							-----
15	725						
20	720						
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				APR 13 1988

Revised by Amendment 62

Figure 2.5-401 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-402
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 10
 BORING: CH-3 STATION: 9+84.6E RANGE: 4+91.1N SURFACE EL: 734.5
 DATE DRILLED: 6/7/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	730		11 01Σ	22.7	41	15	SI CL, BRN, MST, ALL
			11 01Σ	27.6	45	19	FT CL, BRN, MST, ALL
10	725						
15	720						
20	715						
25	710						
30	705						
35	700						AFT. 12 1988
1' = 5'			* Lab. Classif.				

Added by Amendment 62

Figure 2.5-402 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-403
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.

FEATURE: BORROW AREA 11

BORING: PAH-1 STATION: 6+06.9W

RANGE: 1+48.4S SURFACE EL: 736.1

DATE DRILLED: 6/6/83 TO

PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	- 735		Σ	28.1	44	16	CL SI, R, MST, ALL
5	- 730		Σ	30.4	45	16	CI SI, R, MST, ALL
10	- 725		Σ	28.7	45	16	CL SI, BRN, V MST, ALL
15	- 720						
20	- 715						
25	- 710						
30	- 705						
35							
1' = 5'			*	Lab. Classif.			Added by Amendment 50

Figure 2.5-403 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-404
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 11
 BORING: PAH-2 STATION: 7+60.1W RANGE: 1+89.0S SURFACE EL: 742.0
 DATE DRILLED: 6/6/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						GRAVEL
5			Σ	27.1	44	16	SI CL, R, MST, ALL
10	735		Σ	33.7	45	16	CL SI, R-BRN, MST, ALL
15	730		Σ	27.9	45	16	CL SI, R-BRN, MST, ALL
20	725						
25	720						
30	715						
35	710						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-404 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-405 SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 11
 BORING: PAH-3 STATION: 6+93.1W RANGE: 1+15.2S SURFACE EL: 741.9
 DATE DRILLED: 6/6/83 TO PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						GRAVEL
5	735		Σ	23.4	44	16	SI CL, R-BRN, MST, ALL
10	730		Σ	26.7	44	16	SI CL, R-BRN, MST, ALL
15	725		Σ	23.2	44	16	SI CL, BRN, MST, ALL
20	720						
25	715						
30	710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-405 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-406
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 11
 BORING: PAH-4 STATION: 7+16.8W RANGE: 0+83.0S SURFACE EL: 741.1
 DATE DRILLED: 6/6/83 TO PREPARED BY: MHD CHECKED BY: EA

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						GRAVEL
5	735		Σ	26.8	44	16	CL SI, R-BRN, MST, ALL
10	730		Σ	27.8	44	16	CL SI, R-BRN, MST, ALL
15	725		Σ	27.0	44	16	CL SI, R-BRN, MST, ALL
20	720						
25	715						
30	710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-406 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-407 SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA 11
 BORING: PAH-5 STATION: 8+39.7W RANGE: 1+40.2S SURFACE EL: 738.7
 DATE DRILLED: 6/6/83 TO PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	735		Σ	22.6	45	16	GRAVEL SI CL, R-BRN, MST, ALL
10	730		Σ	26.8	49	15	SI CL, R-BRN, MST, ALL
15	725		Σ	22.8	45	16	SD SI CL, BRN, MST, ALL
20	720						
25	715						
30	710						
35	705						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-407 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-408 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-1 STATION:
DATE DRILLED: 6/3/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 709.6
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	705		10	25.7	40	17	SI CL, BRN, MST, ALL
10	700		10	27.1	40	17	SI CL, BRN, MST, ALL
15	695		10	26.6	40	17	SI CL, BRN, V MST, ALL
							DISCONTINUED.
20	690						
25	685						
30	680						
35	675						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-408 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-409
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION:
DATE DRILLED: 6/3/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 708.3
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	705		Σ	24.7	40	13	SI CL, R-BRN, MST, ALL
10	700		Σ	27.4	40	13	SI CL, R-BRN, MST, ALL
15	695		Σ	25.6	40	13	SI CL, R-BRN, V MST, ALL
							DISCONTINUED.
20	690						
25	685						
30	680						
35	675						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-409 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-410 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-3 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 711.5
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	710		L O	25.1	40	17	FT CL, R, MST, ALL
5	705		M L	23.7	40	13	FT CL, R, MST, ALL
10	700		L O	25.7	40	17	SI CL, R-BRN, MST, ALL
15	695						DISCONTINUED.
20	690						
25	685						
30	680						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-410 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-411 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-4 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 707.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	705		Σ	23.2	40	13	TOPSOIL
5	700		Σ	24.1	40	13	SI CL, R-BRN, MST, ALL
10	695		Σ	25.9	40	13	SI CL, BRN, V MST, ALL
15	690						DISCONTINUED.
20	685						
25	680						
30	675						
35							
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-411 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-412
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-5 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 709.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	705		Σ	26.7	40	13	FT CL, R, MST, ALL
10	700		Σ	23.8	40	13	SI CL, R-BRN, MST, ALL
15	695		Σ	25.2	40	13	SI CL, R-BRN, MST, ALL
							DISCONTINUED.
20	690						
25	685						
30	680						
35	675						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-412 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-413
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-6 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 705.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	705						TOPSOIL
5	700		L O	26.2	48	17	FT CL, BRN, MST, ALL
10	695		L O	26.1	48	17	FT CL, BRN, MST, ALL
15	690		L O	23.7	40	17	SI CL, BRN, MST, ALL
							DISCONTINUED.
20	685						
25	680						
30	675						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-413 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-414 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-7 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 706.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	705						
5	700		0	25.7	40	17	FT CL, R-BRN, MST, ALL
10	695		M	25.8	40	13	SI CL, R-BRN, MST, ALL
15	690		M	23.6	40	13	SI CL, BRN, MST, ALL
20	685						DISCONTINUED.
25	680						
30	675						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-414 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-415
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-7 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 744.0 est.
PREPARED BY: MHD CHECKED BY: EA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	740		U	22.5	42	18	FT CL, R, MST, ALL
10	735		U	24.9	42	18	SI CL, R, MST, ALL
15	730		U	20.1	35	14	CL SI, TN, MST, RESD
20	725		U	22.0	35	14	CL SI, TN, MST, RESD
25	720						DISCONTINUED.
30	715						
35	710						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-415 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-416
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-8 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 706.3
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	705						TOPSOIL
5	700		Σ	23.7	40	13	FT CL, R, MST, ALL
10	695		Σ	23.3	40	13	SI CL, BRN, MST, ALL
15	690		Σ	23.5	40	17	SI CL, BRN, MST, ALL
20	685						DISCONTINUED.
25	680						
30	675						
35							
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-416 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-417
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-9 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 703.7
PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	700		U	22.3	40	17	SI CL, R-BRN, MST, ALL
10	695		Σ	25.6	40	13	MD CL, R-BRN, MST, ALL
15	690		Σ	24.6	40	13	SI CL, BRN, V MST, ALL
							DISCONTINUED.
20	685						
25	680						
30	675						
35	670						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-417 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-418
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-10 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 706.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	705						
5			Σ				
-	700		Σ 10 00 00	25.1	30	8	SI CL, R-BRN, MST, ALL
10	695		Σ 10 00 00	20.2	29	6	SI CL, BRN, MST, ALL
15	690						DISCONTINUED.
20	685						
25	680						
30	675						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-418 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-419 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-11 STATION:
DATE DRILLED: 6/6/83 TO

FEATURE: BORROW AREA 12
RANGE: SURFACE EL: 710.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	710						
5	705		Σ	24.9	48	13	SI CL, R-BRN, MST, ALL
10	700		Σ U S I G	21.6	29	6	SD SI CL, R-BRN, MST, ALL
15	695		Σ U S I G	19.5	29	6	SI SD, R-BRN, MST, ALL
							DISCONTINUED.
20	690						
25	685						
30	680						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-419 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-420
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-1 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 723.1
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	720		J I I 0 I Σ	21.3	35	11	TOPSOIL SI CL, BRN, MST, RESD
10	715		J O	23.0	43	20	SI CL, BRN, MST, RESD
15	710		J O	22.3	43	20	SI CL, BRN, MST, RESD
20	705		J O	20.4	43	20	SI CL, BRN, MST, RESD
							DISCONTINUED.
25	700						
30	695						
35	690						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-420 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-421 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 728.6
PREPARED BY: MHD CHECKED BY: CEG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL, SPOIL GRAVEL
5	725		J 0	27.6	36	13	SI CL, PURP, MST, RESD
10	720		J 0	23.9	36	13	SI CL, PURP, MST, RESD
15	715		J 0	20.2	36	13	SI CL, PURP, MST, RESD
20	710						DISCONTINUED.
25	705						
30	700						
35	695						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-421 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-422 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-3 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 723.4
PREPARED BY: MHD CHECKED BY: CEG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720		111 01Σ	14.9	35	11	SI CL, BRN, MST, RESD
5			0				
	715		0	31.9	43	20	SI CL, BRN, SAT, RESD
10							
	710						DISCONTINUED (WET).
15							
	705						
20							
	700						
25							
	695						
30							
	690						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-422 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-423
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-4 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 742.1
PREPARED BY: MHD CHECKED BY: *BB*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740		U I U	14.9	35	11	TOPSOIL CL SI, BRN, MST, RESD
5	735		U I U	22.5	35	11	CL SI, BRN, MST, RESD
10	730		U I U	25.7	45	17	CL SI, BRN, MST, RESD
15	725		U I U	28.3	45	17	CL SI, BRN, MST, RESD
20	720						DISCONTINUED.
25	715						
30	710						
35							
1' = 5'	Added by Amendment 50						
	* Lab. Classif.						

Figure 2.5-423 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-424
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-5 STATION:
DATE DRILLED: TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 723.5
PREPARED BY: MHD CHECKED BY: CEG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	720		Σ	22.2	42	14	CL SI, BRN, MST, RESD
10	715		Σ	23.1	42	14	CL SI, BRN, MST, RESD
15	710		Σ	20.9	42	14	CL SI, BRN, MST, RESD
20	705		Σ	22.1	42	14	CL SI, BRN, MST, RESD
							DISCONTINUED.
25	700						
30	695						
35	690						
1' = 5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-424 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-425 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-6 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 730.5
PREPARED BY: MHD CHECKED BY: CBL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						TOPSOIL
5	725		Σ	22.3	42	14	CL SI, BRN, MST, RESD
10	720		Σ	15.3	42	14	CL SI, BRN, MST, RESD
15	715		Σ	17.2	36	13	CL SI, PUR-BRN, MST, RESD
20	710		Σ	13.7	36	13	CL SI, PUR-BRN, MST, RESD
25	705						DISCONTINUED.
30	700						
35							
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-425 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-426
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-7 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 728.8
PREPARED BY: MHD CHECKED BY: CBF

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	725		U I U Σ	18.1	35	11	CL SI, BRN, MST, RESD
10	720		Σ	19.9	42	14	CL SI, LT BRN, MST, RESD
15	715		U	21.5	36	13	CL SI, PUR-BRN, MST, RESD
20	710		U	18.0	36	13	CL SI, PUR-BRN, MST, RESD
							DISCONTINUED.
25	705						
30	700						
35	695						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-426 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-427
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-8 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 740.1
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740						TOPSOIL
5	735		CL	22.6	36	13	CL SI, BRN, MST, RESD
10	730		CL	24.8	36	13	CL SI, BRN, MST, RESD
15	725		CL	24.2	36	13	CL SI, BRN, MST, RESD
20	720		CL IΣ	21.5	45	17	CL SI, BRN, V MST, RESD
25	715						DISCONTINUED.
30	710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-427 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-428 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-9 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 714.2
PREPARED BY: MHD CHECKED BY: CBY

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	710		U	18.9	43	20	CL SI, LT BRN, MST, RESD
10	705		U	20.9	43	20	CL SI, LT BRN, MST, RESD
15	700		U ₁ Σ	17.7	37	12	CL SI, LT BRN, MST, RESD
20	695		U ₁ Σ	18.0	37	12	CL SI, LT BRN, MST, RESD
							DISCONTINUED.
25	690						
30	685						
35	680						
1' = 5'		*Lab. Classif.					Added by Amendment 50

Figure 2.5-428 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-429
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-10 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 713.0
PREPARED BY: MHD CHECKED BY: CBY

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	710						SPOIL FILL
5			U I U 0 Σ	21.0	37	12	CL SI, LT BRN, MST, RESD
10	705		U I U 0 Σ	20.8	37	12	CL SI, LT BRN, MST, RESD
15	700		U I U 0 Σ	16.3	37	12	CL SI, LT BRN, MST, RESD
20	695		U I U 0 Σ	18.5	37	12	CL SI, LT BRN, MST, RESD
							DISCONTINUED.
25	690						
30	685						
35	680						
1' = 5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-429 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-430
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-11 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 730.5
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						TOPSOIL
5	725		0 1 Σ	21.0	35	11	CL SI, BRN, MST, RESD
10	720		0 1 Σ	18.4	35	11	CL SI, TR GV, BRN, MST, RESD
15	715		0 1 Σ	17.4	35	11	CL SI, BRN, MST, RESD

20	710						DISCONTINUED
25	705						
30	700						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-430 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-431
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-12 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 745.8
PREPARED BY: MHD CHECKED BY: CLG

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	745						TOPSOIL
5	740		I Σ	18.2	35	11	CL SI, BRN, MST, RESD
10	735		I Σ	25.6	52	17	CL SI, BRN, MST, RESD
15	730		I Σ	27.4	52	17	CL SI, TR BENT, BRN, MST, RESD
20	725		I Σ	29.7	52	17	CL SI, BRN, MST, RESD
25	720						
30	715						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-431 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-432
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-13 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 701.0
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	700			23.1	44	16	TOPSOIL, SPOIL CL SI, BRN, MST, RESD
5	695		L	19.1	44	16	CL SI, BRN, MST, RESD
10	690		ML	16.4	44	16	SI CL IR BENT BRN MST RESD
							DISCONTINUED.
15	685						
20	680						
25	675						
30	670						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-432 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-433
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-14 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 698.9
PREPARED BY: MHD CHECKED BY: CLG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	695		U I U U I U	16.6	35	11	TOPSOIL CL SI, BRN, MST, RESD
5			U O	21.3	40	18	SI CL, TR BENT, BRN, MST, RESD
10	690		U O	22.1	40	18	SI CL, TR BENT, BRN, MST, RESD
15	685		U O	20.4	40	18	SI CL, TR BENT, BRN, MST, RESD
20	680						DISCONTINUED.
25							
30							
35	665						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-433 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-434
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BOREING: PAH-15 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 733.1
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730		Σ	26.4	44	16	CUT SURFACE, TOPSOIL SI CL, TR BENT, BRN, MST, RESD
5	725		0	28.6	40	18	SI CL, TR BENT, BRN, MST, RESD
10	720		0 Σ	18.6	35	11	CL SI, BRN, MST, RESD
15	715		0 Σ	20.0	35	11	CL SI, BRN, MST, RESD
20							DISCONTINUED.
25	710						
30	705						
35	700						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-434 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-435
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-16 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 745.3
PREPARED BY: MHD CHECKED BY: *CBG*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	745						TOPSOIL
5	740		U I U Σ	17.3	35	11	CL SI, BRN, MST, RESD
10	735		U I U Σ	24.1	35	11	CL SI, BRN, MST, RESD
15	730		Σ	27.1	44	16	CL SI, BRN, MST, RESD
20	725		Σ	28.6	44	16	CL SI, BRN, MST, RESD
							DISCONTINUED.
25	720						
30	715						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-435 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-436
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-17 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 693.0
PREPARED BY: MHD CHECKED BY: *LLC*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	690						TOPSOIL
5			Σ	23.5	44	16	SI CL, BRN, MST, RESD
	685		Σ	25.7	44	16	SI CL, BRN-GY, MST, RESD
10			Σ	19.6	40	18	SI CL, BRN-GY, MST, RESD
	680						DISCONTINUED (GV).
15							
20							
25							
30							
35							
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-436 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-437
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-18 STATION:
DATE DRILLED: 8/26/83 TO

FEATURE: BORROW AREA 13
RANGE: SURFACE EL: 697.9
PREPARED BY: MHD CHECKED BY: CLG

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	695		Σ	19.7	44	16	CL SI, BRN, MST, RESD
10	690		Σ	26.7	44	16	CL SI, TN, MST, RESD
15	685		Σ	22.3	44	16	CL SI, TN, MST, RESD
20	680		Σ	20.3	44	16	CL SI, TN, MST, RESD
							DISCONTINUED.
25	675						
30	670						
35	665						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-437 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-438
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: FAH-1 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 714.2
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	710		10	18.2	29	12	SI CL, TN-BRN, MST, ALL
10	705		$\Sigma 10$ 610	20.5	26	7	CL SD, $\pm 20\%$ FN RD GV, TN, V MST, ALL
15	700		10	19.5	29	12	SD GV, $\pm 40\%$ FN RD GV, ALL
20	695						FT SI, GRN-GY, MST, RESD
25	690						WT H GY SHL
30	685						DISCONTINUED.
35	680						
1' = 5'		* Lab. Classif.					
							Added by Amendment 50

Figure 2.5-438 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-439
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-2 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 722.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5			U I U Σ	27.5	38	13	SI CL, R, MST, ALL
	715		U I U Σ	29.6	38	13	SI CL, R-BRN, MST, ALL
10							
	710		U S	27.2	34	14	SI CL, R-TN, V MST, ALL
15			U S	27.9	34	14	CL SI SD, BRN, V MST, ALL
	705						<u>W ST SD</u> — — — — — — — —
20							DISCONTINUED.
	700						
25							
	695						
30							
	690						
35							
1' '=5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-439 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-440
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-3 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 717.2
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	715		U I U U Σ	20.8	38	13	SI CL, TN, MST, ALL
5	710		U G	24.3	34	14	SI CL, TN, MST, ALL
10			U G	26.1	34	14	SD SI CL, TN, V MST, ALL
	705						W SD SI CL — — — — —
15	700						DISCONTINUED.
20	695						
25	690						
30	685						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-440 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-441 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-4 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 718
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	715		10	21.1	29	12	SI CL, TN-BRN, V MST, ALL
							DISCONTINUED.
10	710						
15	705						
20	700						
25	695						
30	690						
35	685						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-441 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-442
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-5 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 723.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5			U I U O I Σ	19.6	42	16	CL SI, TN, MST, ALL
10	715		O	24.8	42	18	CL SI, TN, MST, ALL
15	710						W CL SI
							DISCONTINUED.
20	705						
25	700						
30	695						
35	690						
! ''=5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-442 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-443
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-6 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 735.6
PREPARED BY: MHD CHECKED BY: BAI

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735						TOPSOIL
5	730		11 0 Σ	28.4	42	16	FT CL, R, MST, ALL
10	725		10	23.3	35	14	SI CL, TN, MST, ALL
15	720		10	22.7	35	14	SI CL, TN, MST, ALL
20	715		10	22.9	31	11	CL SI, TN, V MST, ALL
							DISCONTINUED.
25	710						
30	705						
35							
1' = 5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-443 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-444
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-8 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 749.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	745		0	20.8	33	13	SI CL, BRN, MST, ALL
10	740		0 1 Σ	23.7	42	16	SI CL, R, MST, ALL
15	735		0 1 Σ	25.6	42	16	FT CL, R, MST, RESD
20	730		0	20.8	39	16	FT SI, DK R, MST, RESD (SL AUGG)
25	725						DISCONTINUED.
30	720						
35	715						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-444 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-445 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-10 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 713.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	710		0	17.4	29	12	CL SI, TN, MST, RESD
10	705		0	14.3	29	12	CL SI, GRN-TN, MST, RESD
							DISCONTINUED.
15	700						
20	695						
25	690						
30	685						
35	680						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-445 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-446 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BOREHOLE: PAH-11 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 723.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (C/N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	720		U I U Σ	25.3	38	13	SI CL, R-BRN, MST, ALL
10	715		U I U Σ	24.3	38	13	CL SI SD, BRN, MST, ALL
15	710						SI CL SD, W
							DISCONTINUED.
20	705						
25	700						
30	695						
35	690						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-446 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-447
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-12 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 724.3
PREPARED BY: MHD CHECKED BY: BN

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	720		U I U U Σ	26.2	38	13	SI CL, R-BRN, MST, ALL
10	715		U I U U Σ	26.4	38	13	CL SI SD, R-BRN, V MST, ALL
15	710						W CL SI SD
							DISCONTINUED.
20	705						
25	700						
30	695						
35	690						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-447 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-448 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-13 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 718.7
PREPARED BY: MHD CHECKED BY: B/H

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	715		10	19.3	34	14	SI CL, BRN, V MST, ALL
10	710						SI CL V -----
15	705						DISCONTINUED.
20	700						
25	695						
30	690						
35	685						
1' = 5'		* Lab. Classif.					Added by Amendment 50

Figure 2.5-448 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-449 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-14 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 730.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL ft.	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						SPOIL FILL & BURIED TOPSOIL
5	725						
10	720		10	20.3	39	18	SI CL, TN-BRN, MST, ALL
15	715		10	26.5	39	18	FT CL, R-BRN, MST, ALL
20	710		10 ¹ _Σ	25.9	42	16	SI CL, R-BRN, MST, ALL
							DISCONTINUED.
25	705						
30	700						
35	695						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-449 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-450
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-15 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 739.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5 - 735			11 Σ	25.0	42	16	FT CL, R, MST, RESD
10 - 730			10	23.6	39	18	FT CL, R, MST, RESD
15 - 725			10	23.0	42	18	FT SI, TN, MST, RESD
20 - 720			10	22.8	39	18	FT SI, TN, MST, RESD
							DISCONTINUED.
25 - 715							
30 - 710							
35 - 705							
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-450 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-451
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-16 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 749.8
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
-			I II U Σ				
5 - 745				30.5	64	31	FT SI, DK R, MST, RESD
			U	27.1	39	16	FT SI, DK R, MST, RESD
10 - 740			U	27.6	39	16	FT SI, DK R, MST, RESD
15 - 735			U	25.0	39	16	FT SI, DK R, MST, RESD
20 - 730							DISCONTINUED.
25 - 725							
30 - 720							
35 - 715							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-451 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-452
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-17 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 713.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL - V MST
5	710		Σ	17.1	NP	NP	SD SI, LT TN, V MST, ALL
10	705						DISCONTINUED.
15	700						
20	695						
25	690						
30	685						
35	680						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-452 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

**SOIL PROFILE
FIGURE 2.5-453
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-18 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 722.9
PREPARED BY: MHD CHECKED BY: PD

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	- 720		U I U Σ	25.7	38	13	SD SI CL, R-BRN, MST, ALL
10	- 715		U I U Σ	26.8	38	13	CL SD SI, R-BRN, V MST, ALL
15	- 710						DISCONTINUED.
20	- 705						
25	- 700						
30	- 695						
35	- 690						

Figure 2.5-453 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-454 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-19 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 721.8
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	720						
5			10	21.8	34	14	SI CL, R-TN, MST, ALL
10	715		10	25.6	34	14	SI CL, R-TN, V MST, ALL
15	710						W CL SD
20	705						DISCONTINUED.
25	700						
30	695						
35	690						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-454 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-455 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-20 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 722.5
PREPARED BY: MHD CHECKED BY: BH

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						
5	715		10	18.6	34	14	CL SI, BRN, MST, ALL
10	710		10	23.2	34	14	SI CL, BRN, V MST, ALL
15	705						DISCONTINUED.
20	700						
25	695						
30	690						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-455 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-456
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-21 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 733.2
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730	-					TOPSOIL
5		-	10	23.3	39	18	SI CL, R-BRN, MST, ALL
10	725	-	10	28.5	33	13	CL SI, DK R, MST, RESD
15	720	-	10 10 Σ	26.2	42	16	SI CL, TN-BRN, MST, RESD
20	715						DISCONTINUED.
25	710						
30	705						
35	700						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-456 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-457
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-22 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 747.8
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	745		I I U Σ	32.6	64	31	FT SI, DK R, MST, RESD
10	740		U	31.2	39	16	FT SI, DK R, MST, RESD
15	735		U	26.9	39	16	FT SI, DK R, MST, RESD
20	730		U	24.3	39	16	FT SI, DK R, MST, RESD
							DISCONTINUED.
35	715						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-457 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-458
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-23 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 759.9
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
			U I Σ				
5	755		U I Σ	22.8	42	16	SI CL, R, MST, ALL
10	750		U I Σ	27.5	42	16	FT CL, R, MST, ALL
15	745		U I Σ	29.4	42	16	FT CL, R, MST, ALL
20	740		U	23.2	39	16	FT SI, DK R, MST, RESD
							DISCONTINUED.
25	735						
30	730						
35	725						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-458 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-459 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-24 STATION:
DATE DRILLED: 6/7/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 757.3
PREPARED BY: MHD CHECKED BY: BN

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	755		CL O	24.3	42	18	FT SI, R-BRN, MST, ALL
10	750		CL O	28.4	42	18	FT SI, R-BRN, MST, ALL -
15	745		CL O	29.2	35	14	SI CL, R, V MST, ALL
20	740		CL O	28.7	39	18	CL SI, GY-TN, MST, RESD
							DISCONTINUED.
1' = 5'	725		* Lab. Classif.				Added by Amendment 50

Figure 2.5-459 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-460
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-25 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 714.2
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	710		Σ	26.2	18	1	TOPSOIL SD SI, GY, W, ALL
10	705						DISCONTINUED.
15	700						
20	695						
25	690						
30	685						
35	680						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-460 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-461
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-26 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 716.0
PREPARED BY: MHD CHECKED BY: *JA*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	715						TOPSOIL
5	710		U	18.8	29	12	SI SD CL, BRN, V MST, ALL
							<u>W GY-TN SI SD</u> — — — — —
10	705						DISCONTINUED.
15	700						
20	695						
25	690						
30	685						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-461 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-462
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-27 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 720.7
PREPARED BY: MHD CHECKED BY: BN

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5	715		0	19.9	29	12	SI CL, BRN, V MST, ALL
10	710		0 1 Σ	23.2	38	13	SI CL, BRN, V MST, ALL
15	705						W SD CL
20	700						DISCONTINUED.
25	695						
30	690						
35							
1' = 5'							
			* Lab. Classif.				Added by Amendment 50

Figure 2.5-462 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-463
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-28 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 727.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	725						TOPSOIL
5			0	20.5	39	18	SI CL, TN-BRN, MST, ALL
10	720		0	20.9	35	14	SI CL, TN-BRN, MST, ALL
15	715		0	25.0	35	14	CL SI, TN, V MST, ALL
20	710						W CL SI
25	705						DISCONTINUED.
30	700						
35	695						
1' = 5'			* Lab. Classif.				

Added by Amendment 50

Figure 2.5-463 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-464
SHEET 1 OF 1**

SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-29 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 733.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	730		0	21.4	42	18	SI CL, TN, MST, ALL
10	725		0	28.3	39	18	FT CL, TN, MST, RESD
15	720		0	30.0	42	18	FT SI, TN, MST, RESD
20	715		0	25.9	42	18	FT SI, TN, MST, RESD
25	710						DISCONTINUED.
30	705						
35	700						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-464 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-465
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-30 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 740.5
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	- 740						TOPSOIL
5	- 735		10	20.9	39	18	SI CL, TN, MST, ALL
10	- 730		10	19.1	39	18	CL SI, TN, MST, RESD
15	- 725		10	22.6	35	14	SI CL, TN, MST, RESD
20	- 720		10	21.5	42	18	SI CL, TN, MST, RESD
							DISCONTINUED.
25	- 715						
30	- 710						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-465 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-466
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-31 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 743.0 est:
PREPARED BY: MHD CHECKED BY: BH

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	740		U I U Σ	22.2	42	16	SI CL, R, MST, ALL
10	735		U I U Σ	21.7	42	16	SI CL, R, MST, ALL
15	730		U	21.2	39	18	SI CL, BRN, MST, RESD
20	725		U	20.1	43	20	SI CL, BRN, MST, RESD
							DISCONTINUED.
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				

Added by Amendment 50

Figure 2.5-466 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-467
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-32 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 713.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	710						
			10				CL SI, TN, V MST, ALL
10	705						
							U CL SI
15	700						DISCONTINUED.
20	695						
25	690						
30	685						
35	680						
1' = 5'			* Lab. Classif.				
							Added by Amendment 50

Figure 2.5-467 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-468
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-33 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 721.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5			U I Σ	23.5	38	13	SI CL, R-BRN, MST, ALL
	715		U I Σ	26.1	38	13	SD SI CL, R, MST, ALL
10			U	27.6	34	14	SD CL SI, TN, V MST, ALL
	710						W SD SI
15							DISCONTINUED.
	705						
20							
25							
30							
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-468 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-469 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-34 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 722.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	720		U I U 0 I Σ	23.1	38	13	TOPSOIL SI CL, R-BRN, MST, ALL
10	715		U I U 0 I Σ	26.0	38	13	SI CL, R-BRN, MST, ALL
15	710		U 0	27.3	34	14	SI CL, R-TN, V MST, ALL
20	705						W ST CL
25	700						DISCONTINUED.
30	695						
35	690						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-469 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-470
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-35 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 724.6
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5 - 720			U I U Σ	19.9	38	13	SI CL, BRN, MST, ALL
10 - 715			U I U Σ	26.1	38	13	SI CL, BRN-TN, MST, ALL
15 - 710			U 0	26.3	34	14	SI CL, TN, V MST, ALL
							W CL SD -----
							DISCONTINUED.
20 - 705							
25 - 700							
30 - 695							
35 - 690							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-470 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-471
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-36 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 728.2
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	725		10	20.2	35	14	TOPSOIL SI CL, TN-BRN, MST, ALL
5	720		10	22.0	42	18	CL SI, R-BRN, MST, RESD
10	715		10	21.5	42	18	CL SI, R-BRN, MST, RESD
15	710		10	21.7	35	14	CL SD SI, TN, MST, RESD
20							DISCONTINUED.
25	705						
30	700						
35	695						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-471 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-472
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-37 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 733.3
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	730		CL 0	21.0	35	14	SI CL, TN, MST, ALL
10	725		CL 0	23.0	42	18	SI CL, TN, MST, ALL
15	720		CL 0	23.7	39	18	CL SI, TN, MST, RESD
20	715						DISCONTINUED.
25	710						
30	705						
35	700						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-472 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-473 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-38 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 738.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							GV DBR & TOPSOIL
5	735		U I Σ	22.1	42	16	SI CL, TN, MST, ALL
10	730		U O	21.9	42	18	CL SI, TN, MST, RESD
15	725		U O	23.0	42	18	CL SI, TN, MST, RESD
20	720						DISCONTINUED.
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-473 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-474
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-39 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 716.5
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	715						TOPSOIL
5			U I U 0 I Σ	20.7	38	13	SD SI CL, R-BRN, V MST, ALL
10	710						
10			U I U 0 I Σ	19.2	38	13	SD SI CL, TR GV, R-BRN, V MST, ALL
15	705						
15							W CL SD
15	700						DISCONTINUED.
20							
25	695						
30	690						
35	685						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-474 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-475
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-40 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 721.1
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5			U I U Σ	24.6	38	13	SI CL, R-BRN, MST, ALL
	715		U I U Σ	24.8	38	13	SI CL, R-BRN, MST, ALL
10							<u>W ST CL</u>
	710						DISCONTINUED.
15	705						
20	700						
25	695						
30	690						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-475 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-476 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-41 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 720.6
PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5	715		U I U Σ	25.4	38	13	SI CL, R-BRN, MST, ALL
10	710		U I U Σ	27.4	38	13	SI CL, R-BRN, V MST, ALL
15	705						<u>U ST CL</u>
20	700						DISCONTINUED.
25	695						
30	690						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-476 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-477 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-42 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 723.0
PREPARED BY: MHD CHECKED BY: EA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	720		U I U 0 Σ	22.3	42	16	SI CL, BRN, MST, ALL
10	715		U O	19.7	42	18	CL SI, R-TN, MST, ALL
15	710		U O	24.7	42	18	CL SI, TN, V MST, ALL
							W CL SI
							DISCONTINUED.
20	705						
25	700						
30	695						
35	690						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-477 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-478
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-43 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 730.6
PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						
5	725		U I Σ	21.8	42	16	SI CL, R-BRN, MST, ALL
10	720		U I Σ	21.4	42	16	CL SI, TN-BRN, MST, RESD
15	715		U O	20.0	33	13	CL SI, DK R, MST, RESD
20	710						DISCONTINUED.
25	705						
30	700						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-478 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-479
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-44 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 736.1
PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735						ROADBED GRAVEL
5			0	18.3	39	18	SI CL, TN-BRN, MST, ALL
	730		010	26.5	42	16	SI CL, R, MST, ALL
10			0	23.6	42	18	CL SI, TN, MST, ALL
15			010	22.8	42	16	CL SI, TN, MST, ALL
20							SD & GV
25	715						DISCONTINUED.
30	710						
35	705						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-479 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-480
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-45 STATION:
DATE DRILLED: 6/8/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 736.4
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735						GRAVEL - SPOILED SOILS
5	730	10	23.4	42	18		SI CL, R, MST, ALL
10	725	10	21.4	42	18		CL SI, R, MST, ALL
15	720	10	24.1	42	18		CL SI, TN, MST, RESD
20	715	10	22.7	42	18		CL SI, TN, MST, RESD
							DISCONTINUED.
25	710						
30	705						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-480 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-481
SHEET 1 OF 1**

PROJECT: WATTS BAR N.P.
BORING: PAH-46 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 729.0 est
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	725		U	22.5	33	13	SI CL, BRN, MST, ALL
10	720		U	23.2	42	18	CL SI, R-BRN, MST, ALL
15	715		U	25.0	42	18	CL SI, R-BRN, MST, ALL
20	710		U	24.8	42	18	CL SI, R-BRN, MST, ALL
							DISCONTINUED.
25	705						
30	700						
35	695						
1''=5'		Added by Amendment 50					
* Lab. Classif.							

Figure 2.5-481 Soil Profile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SOIL PROFILE
FIGURE 2.5-482
SHEET 1 OF 1**

SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-47 STATION:
DATE DRILLED: 6/10/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 721.0 est.
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						TOPSOIL
5	715		U I U U Σ	21.2	38	13	SI CL, R-BRN, MST, ALL
10	710		U	28.0	29	12	SI CL, R-BRN, MST, ALL
							W SI CL (NO SAMPLE)
							DISCONTINUED.
15	705						
20	700						
25	695						
30	690						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-482 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-483
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-48 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 713.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	710		10	19.4	29	12	SI CL, BRN-TN, MST, ALL SD SI CL, TN, W
10	705						DISCONTINUED.
15	700						
20	695						
25	690						
30	685						
35	680						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-483 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-484
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-49 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 729.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-							
5 - 725			10	19.6	43	20	SI CL, BRN, MST, ALL
			10	23.4	33	13	SI CL, DK BRN-TN, MST, ALL
10 - 720			11	22.9	42	16	SI CL, R, MST, ALL
15 - 715			10	22.7	42	18	CL SI, TN-BRN, MST, ALL
20 - 710							WL CL SI
							DISCONTINUED.
25 - 705							
30 - 700							
35 - 695							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-484 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-485 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-50 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 730.0
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL ft.	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						
5	725		10	18.4	43	20	SI CL, TR FN GV, TN-BRN, MST, ALL
10	720		10	18.6	39	18	CL SI, TN, MST, RESD
15	715		10	19.2	35	14	CL SI, TN, V MST, RESD
20	710						W SI
25	705						DISCONTINUED.
30	700						
35	695						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-485 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-486
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-51 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 739.8
PREPARED BY: MHD CHECKED BY: PA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							ROADFILL
5	735		U	21.3	39	18	SI CL, R-BRN, MST, ALL
10	730		U I U Σ	22.9	42	16	SI CL, R, MST, ALL
15	725		U I U Σ	24.2	42	16	SI CL, R, MST, ALL
20	720						DISCONTINUED.
25	715						
30	710						
35	705						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-486 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-487
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-52 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 743.7
PREPARED BY: MHD CHECKED BY: BA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	740						RANDOM ROADFILL
5			U I U Σ	23.1	42	16	SI CL, R-BRN, MST, ALL
10	735		U I U Σ	22.7	42	16	SI CL, R-BRN, MST, ALL
15	730		U	21.9	39	18	SI CL, R-BRN, MST, ALL
20	725						DISCONTINUED.
25	720						
30	715						
35	710						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-487 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-488
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-53 STATION:
DATE DRILLED: 6/9/83 TO

FEATURE: BORROW AREA 2C
RANGE: SURFACE EL: 750.6
PREPARED BY: MHD CHECKED BY: PMA

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	750						RANDOM ROADFILL
5	745		U I U Σ	23.5	42	16	SI CL, R-BRN, MST, ALL
10	740		U I U Σ	23.6	42	16	SI CL, R, MST, ALL
15	735		U I U Σ	37.1	42	16	SI CL, R V MST, ALL
20	730						W ST CL
25	725						DISCONTINUED.
30	720						
35							
!''=5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-488 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-489 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-56 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 769.0 est
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
							CUT SURFACE; SP FL
5	765		10	23.2	44	19	FT CL, BRN, MST, RESD
10	760		10 1/2	24.2	42	16	FT CL, BRN, MST, RESD
15	755		10 1/2	26.7	48	21	FT CL, BRN, MST, RESD
20	750						
25	745						
30	740						
35	735						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-489 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-490 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-57 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 774.1
PREPARED BY: MHD CHECKED BY: *CBG*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	770		10	11.5	33	11	CUT SURFACE CL SI, BRN, MST, RESD
10	765		10	20.4	44	19	CL SI, BRN, MST, RESD
15	760		01Σ	20.6	40	14	CL SI, BRN, MST, RESD
20	755		01Σ	24.9	36	12	CL SI, BRN, V MST, RESD
							DISCONTINUED.
25	750						
30	745						
35	740						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-490 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-491 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-58 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 798.0
PREPARED BY: MHD CHECKED BY: LCE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	795		I I 0 Σ	26.6	53	24	CUT SURFACE CL SI, BRN, MST, RESD
5	790		I I 0 Σ	21.3	36	12	CL SI, BRN, MST, RESD -
10	785		I I 0 Σ	26.3	40	14	CL SI, BRN, MST, RESD
15	780		I 0	22.6	39	17	CL SI, TN-BRN, MST, RESD
20	775						
25	770						
30	765						
35							Added by Amendment 50
1' = 5'	*	Lab. Classif.					

Figure 2.5-491 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-492 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-59 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 755.0
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL ft.	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	755		0	12.7	33	11	SI CL, BRN, MST, RESD
5	750		0	21.4	45	22	SI CL, BRN, MST, RESD
10	745		0	18.8	48	21	SI CL, TN, TR LS GV, MST, RESD
15	740		0	22.2	42	16	CL SI, GRN-TN, MST, RESD
20	735		0 1 1 Σ				DISCONTINUED.
25	730						
30	725						
35	720						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-492 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-493
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-60 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 748.2
PREPARED BY: MHD CHECKED BY: *OBG*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	745		10	17.5	44	20	(PREVIOUSLY CUT SURFACE) SI CL, TN, MST, TERRACE ALL
5			Σ	16.1	37	11	GV SI, DK BRN, MST, TERRACE ALL
10	740		Σ 10 0 0	17.9	35	11	SI CL, BRN, TR GV
15	735		11 0 Σ	20.1	40	14	CL SI, R-BRN, MST, RESD
20	730						DISCONTINUED.
25	725						
30	720						
35	715						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-493 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-494 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-61 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 745.0 est
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL ft.	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	745						CUT SURFACE
	740		Σ 10 σ 10	15.5	35	11	GV CL, DK BRN, MST, TERRACE ALL
5	740						
	735		Σ 11 σ 11	20.3	40	14	GV CL, DK BRN, MST, TERRACE ALL
10	735						
	730						DISCONTINUED.
15	730						
20	725						
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-494 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-495
SHEET 1 OF 1

Added by Amendment 50

PROJECT: WATTS BAR N.P.
BORING: PAH-62 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 731.0 es
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730		I I 0 Σ	23.1	53	24	CUT SURFACE SI CL, BRN, MST, RESD
5	725		I I 0 Σ	23.3	53	24	CL SI, BRN, MST, RESD
10	720		I I 0 Σ	22.2	53	24	CL SI, BRN, MST, RESD
							REFUSAL. BEDROCK.
15	715						
20	710						
25	705						
30	700						
35							
1' = 5'			* Lab. Classif.				

Figure 2.5-495 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-496
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-63 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 730.8
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	730		Σ U 0 0	16.4	35	11	CUT SURFACE CL SI, BRN, MST, RESD
5	725		I I U I Σ	24.6	53	24	FT CL, LT BRN, MST, RESD
10	720		Σ	18.0	37	11	CL SI, R-BRN, MST, RESD
15	715		M	16.7	37	11	CL SI, R-BRN, MST, RESD
20	710						DISCONTINUED.
25	705						
30	700						
35							
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-496 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-497 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-64 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 744.1
PREPARED BY: MHD CHECKED BY: CDP

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	740		Σ	19.0	37	11	SI CL, BRN, D, RESD
10	735		Σ	23.6	37	11	SI CL, BRN, MST, RESD
15	730		Σ	23.3	37	11	SI CL, BRN, MST, RESD
							V MST W/SH & W/BENTANITE
							DISCONTINUED.
20	725						
25	720						
30	715						
35	710						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-497 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-498 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-65 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 766.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	765		U I Σ	14.3	40	14	SI CL, R-BRN, MST, RESD
5	760		I Σ	19.8	67	29	SI CL, R-BRN, MST, RESD
10	755		U I Σ	15.8	40	14	SI CL, R-BRN, MST, RESD, TR GV
15	750		U	15.7	44	19	SI CL, TR GV, R-BRN, MST, RESD
20	745						DISCONTINUED.
25	740						
30	735						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-498 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-499 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-66 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 776.9
PREPARED BY: MHD CHECKED BY: CBY

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	775		U I U 0 I Σ	13.6	40	14	CUT SURFACE SI CL, R-BRN, MST, RESD
5	770		U I U 0 I Σ	19.1	40	14	SI CL, R-BRN, MST, RESD
10	765		U I U 0 I Σ	16.1	37	12	CL SI, TR GV, BRN, MST, RESD
15	760		U I U 0 I Σ	17.5	37	12	CL SI, TR GV, BRN, MST, RESD
20							DISCONTINUED.
25	755						
30	750						
35	745						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-499 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-500
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-67 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 815.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL ft.	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	815		I Σ	29.2	67	29	FT CL, R, MST, RESD
5	810		I Σ	32.7	67	29	FT CL, R, MST, RESD
10	805		I Σ	24.7	44	20	CL SI, TN, MST, RESD
15	800		I Σ	22.1	44	20	CL SI, TN, MST, RESD
20	795						DISCONTINUED.
25	790						
30	785						
35	780						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-500 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-501 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-68 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 824.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	820		I 0	12.9	35	15	CUT SURFACE CL SI, TN, MST, RESD
10	815		I I 0 Σ	19.5	53	24	CL SI, YEL-TN, MST, RESD
15	810		I 0	20.6	39	17	CL SI, TN, MST, RESD
20	805		I 0 Σ	14.5	36	12	CL SI, TN, MST, RESD
25	800						DISCONTINUED.
30	795						
35	790						
1' = 5'	* Lab. Classif.						Added by Amendment 50

Figure 2.5-501 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-502 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-69 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 802.2
PREPARED BY: MHD CHECKED BY: JES

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		10	11.2	35	15	CUT SURFACE SI CL, R-BRN, D, RESD
5			10	21.3	44	19	SI CL, TR GV, D, RESD
795			II 0 Σ	20.1	53	24	CL SI, MST, RESD
790			II 0 Σ	18.3	36	12	CL SI, MST, RESD
785							DISCONTINUED.
20							
780							
25							
775							
30							
770							
35							
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-502 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-503
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-70 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 772.0
PREPARED BY: MHD CHECKED BY: JBC

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	770		U 0	17.3	33	11	CUT SURFACE SI CL, R-BRN, MST, RESD
5	765		I I U Σ	24.7	53	24	SI CL, R-BRN, MST, RESD
10	760		U 0	24.8	44	20	SI CL, R-BRN-WHT, MST, RESD
15	755		U 0	24.4	44	20	SI CL, R-BRN-WHT, MST, RESD
20	750						DISCONTINUED.
25	745						
30	740						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-503 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-504
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-71 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 742.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740		U	8.9	33	11	CUT SURFACE CL SI, BRN, D, RESD
5	735		U	13.4	35	15	CL SI, BRN, MST, RESD
10	730		U I Σ	17.2	37	12	CL SI, BRN, MST, RESD
15	725		U	20.3	45	22	SI CL, BRN, MST, RESD
20							DISCONTINUED.
25	720						
30	715						
35	710						
1'''=5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-504 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-505 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-72 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 725.8
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	725						FL SP
5	720		U	15.8	39	17	CL SI, BRN, MST, RESD
			U	16.9	39	17	CL SI, LT BRN-BRN, MST, RESD
			U	26.4	45	22	CL SI, BRN, MST,
19	715						DISCONTINUED.
15	710						
20	705						
25	700						
30	695						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-505 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-506 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-73 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 721.0
PREPARED BY: MHD CHECKED BY: JES

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720						CUT SURFACE
5	715		0 1 Σ	23.0	40	14	CL SI, BRN, MST, RESD
			ML	19.0	22	2	CL SI, GY, V MST, RESD
			Σ	18.7	22	2	SI CL, BRN, MST, RESD
10	710		0 1 Σ	17.4	37	12	SI CL, DK BRN, MST, RESD
							DISCONTINUED.
15	705						
20	700						
25	695						
30	690						
35							
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-506 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-507
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-74 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 736.5
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735		I I U Σ	34.4	53	24	CUT SURFACE CL SI, TN, V MST, RESD
5	730		U	39.6	48	21	CL SI, TN, V MST, RESD
10	725		U	40.4	48	21	CL SI, TN, V MST, RESD
15	720		U	26.8	22	2	SI CL, (BENT), GRN-TN, V MST, RESD
20	715						DISCONTINUED.
25	710						
30	705						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-507 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-508 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-75 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 742.3.
PREPARED BY: MHD CHECKED BY: J.E.D.

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
-	740		10	8.7	34	13	CUT SURFACE SL CI, TN, D, RESD
5	735		11 Σ	14.5	37	12	CL SI, TN, MST, RESD
10	730		11 Σ	24.2	37	12	CL SI, TN, MST, RESD
15	725		11 Σ	24.3	42	16	
20							----- DISCONTINUED.
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-508 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SOIL PROFILE FIGURE 2.5-509 SHEET 1 OF 1	

PROJECT: WATTS BAR N.P.
BORING: PAH-76 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 787.0
PREPARED BY: MHD CHECKED BY: JCG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	785		0	16.6	34	13	CUT SURFACE SI CL, TR GV, D, RESD
5	780		0 1 1 Σ	16.2	36	12	CL SI, MST, RESD
10	775		0	17.8	30	11	CL SI, MST, BRN, RESD
15	770		0	16.8	30	11	CL SI, MST, BRN, RESD
20							DISCONTINUED.
25	765						
30	760						
35	755						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-509 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-510
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-77 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 836.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	835		0	20.1	34	13	CUT SURFACE SI CL, TN, MST, RESD
5	830		0	16.9	33	12	SI CL, PK-TN, MST, RESD
10	825		0 1 0	12.1	36	12	SI CL, TN, MST, RESD, TR GV
15	820		0 1 0	14.6	36	12	SI CL, TN, MST, RESD
20	815						DISCONTINUED.
25	810						
30	805						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-510 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-511 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-78 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 882.3
PREPARED BY: MHD CHECKED BY: CBF

DEPTH ft.	EL	SPT (CND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	880		0 S	12.4	40	16	CUT SURFACE CL SI, TN, MST, RESD
5	875		0 S	10.3	40	16	CL SI, TN, MST, RESD
10	870		11 0 Σ	9.9	36	12	CL SI, TN, TR GV, MST, RESD
15	865		11 0 Σ	8.6	36	12	CL SI, TN, TR GV, MST, RESD
20	860						DISCONTINUED.
25	855						
30	850						
35							
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-511 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-512
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-79 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 777.0
PREPARED BY: MHD CHECKED BY: CEG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	775						TOPSOIL
5			L O	15.5	33	12	CL SI, BRN, MST, RESD
	770		L O	14.6	34	12	CL SI, TR GV, BRN, MST, RESD
10							
	765		L O	16.5	34	12	CL SI, TR GV, R-BRN, MST, RESD
15							
	760		L O	16.7	34	12	CL SI, BRN, MST, RESD
20							
	755						DISCONTINUED.
25							
	750						
30							
	745						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-512 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-513
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-80 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 744.0
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							CUT SURFACE
5	740		10	13.8	34	13	CL SI, TN, MST, RESD
10	735		10	22.6	39	17	CL SI, TN, MST, RESD
15	730		10	21.9	44	20	CL SI, TN, MST, RESD
20	725		10	21.4	44	20	CL SI, TN, MST, RESD
							DISCONTINUED.
25	720						
30	715						
35	710						
1' = 5'		*	Lab. Classif.				Added by Amendment 50

Figure 2.5-513 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-514 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-81 STATION:
DATE DRILLED: 8/24/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 802.0
PREPARED BY: MHD CHECKED BY: CBE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		10	7.8	33	12	CUT SURFACE CL SI, TR GV, TN, MST, RESD
5	795		10	11.1	30	11	CL SI, TR GV, TN, MST, -RESD
10	790		10	14.2	30	11	CL SI, TR LS GV, R-BRN, MST, RESD
15	785		10	12.3	30	11	CL SI, TR LS GV, R-BRN, MST, RESD
							DISCONTINUED.
20	780						
25	775						
30	770						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-514 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-515
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-82 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 884.0
PREPARED BY: MHD CHECKED BY: *[Signature]*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
			O S	11.4	48	16	CUT SURFACE CL SI, D, RESD
5	880		O S	11.6	48	16	CL SI, D, RESD
10	875		O S	12.8	48	16	CL SI, TR GV, D, RESD
15	870		O S	12.4	48	16	CL SI, D, RESD
20	865						DISCONTINUED.
25	860						
30	855						
35	850						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-515 Soil Profile

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SOIL PROFILE FIGURE 2.5-516 SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-83 STATION:
DATE DRILLED:

TO 8/25/83

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 872.0
PREPARED BY: MHD CHECKED BY: *LBC*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	870		U	16.7	35	15	CUT SURFACE CL SI, R-BRN, D, RESD
5	865		S	10.1	22	1	CL SI, TR GV, TN, MST, RESD
10	860		U	10.2	33	12	CL SI, TR GV, BRN, MST, RESD
15	855		U	8.1	30	11	CL SI, GV, BRN
20							DISCONTINUED.
25	850						
30	845						
35	840						
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-516 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-517
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-84 STATION:
DATE DRILLED:

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 846.0
TO 8/25/83 PREPARED BY: MHD CHECKED BY: CEC

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	845		11	20.3	36	12	CUT SURFACE CL SI, BRN, MST, RESD
5	840		0	21.4	33	11	CL SI, R-BRN, MST, RESD
10	835		0	22.5	34	12	SI CL, BRN, MST, RESD
15	830		0	21.0	44	19	SI CL, BRN, MST, RESD
20	825		0	19.7	34	12	SI CL, R-BRN, MST, RESD
							DISCONTINUED.
25	820						
30	815						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-517 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-518
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-85 STATION:
DATE DRILLED:

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 834.0
TO 8/25/83 PREPARED BY: M.J. CHECKED BY: G.S.

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							CUT SURFACE
5	830		0	18.8	34	13	CL SI, TN, MST, RESD
10	825		0 1 Σ	12.3	36	12	CL SI, TN, MST, RESD
15	820		0 1 Σ	13.0	36	12	CL SI, TN, MST, RESD
20	815		0	13.4	33	12	CL SI, YEL-TN, MST, RESD
							DISCONTINUED.
25	810						
30	805						
35	800						
1' = 5'	*	Lab. Classif.					Added by Amendment 50

Figure 2.5-518 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-519
SHEET 1 OF 1

PROJECT: WATTS BAR N.P.
BORING: PAH-86 STATION:
DATE DRILLED: 8/25/83 TO

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 802.0
PREPARED BY: MHD CHECKED BY: CCE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		0	13.6	34	13	CUT SURFACE CL SI, TN, MST, RESD
5	795		01Σ	18.5	36	12	CL SI, TN, MST, RESD
10	790		01Σ	18.7	36	12	CL SI, TN, MST, RESD
15	785		01Σ	16.4	36	12	CL SI, TN, MST, RESD
20	780						DISCONTINUED.
25	775						
30	770						
35							
1' = 5'			* Lab. Classif.				Added by Amendment 50

Figure 2.5-519 Soil Profile

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-520

Added by Amendment 50

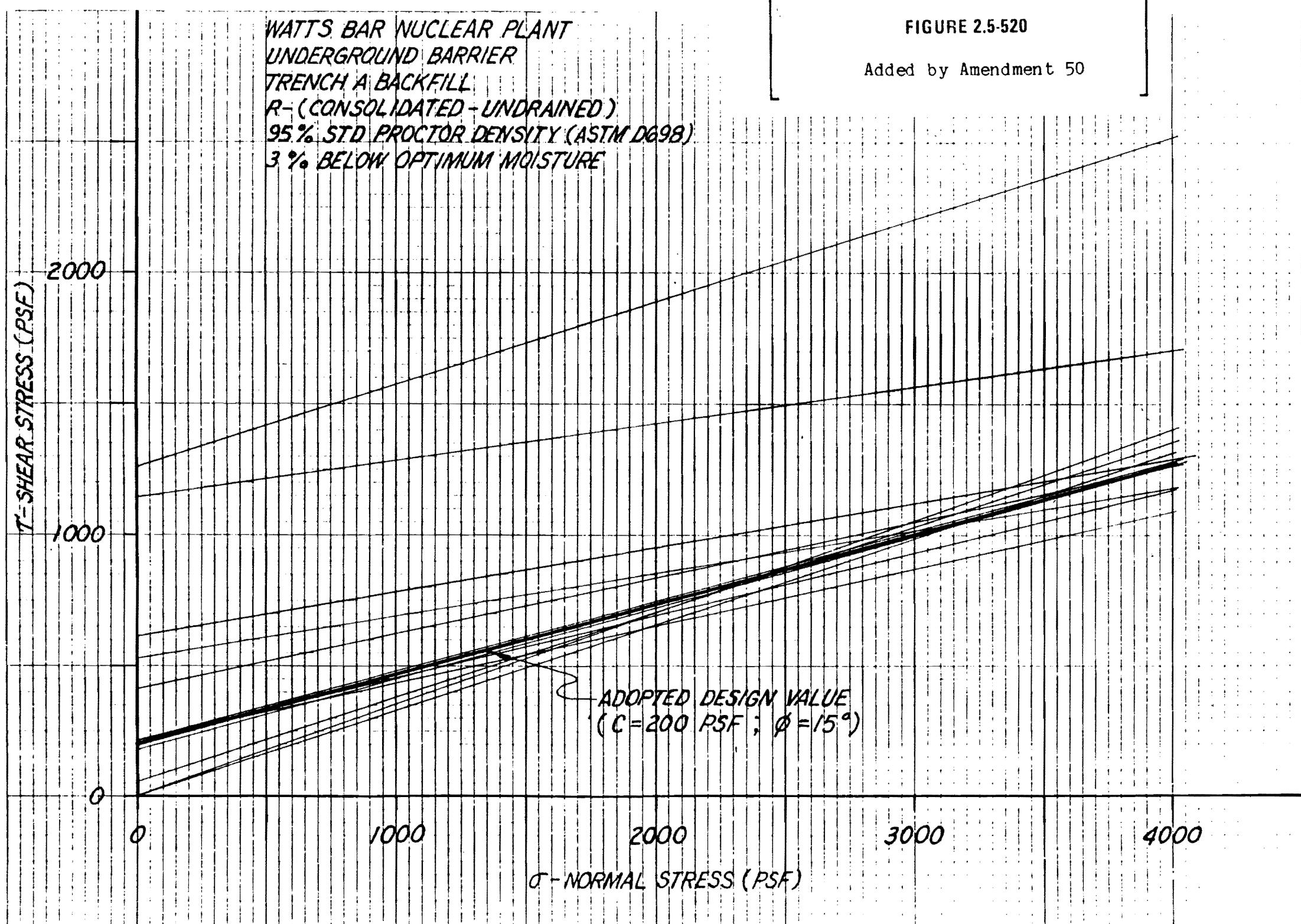


Figure 2.5-520 Watts Bar Nuclear Plant Underground Barrier Trench A Backfill R - (Consolidated -Undrained) 95% STD Proctor Density (ASTM D698) 3% Below Optimum Moisture

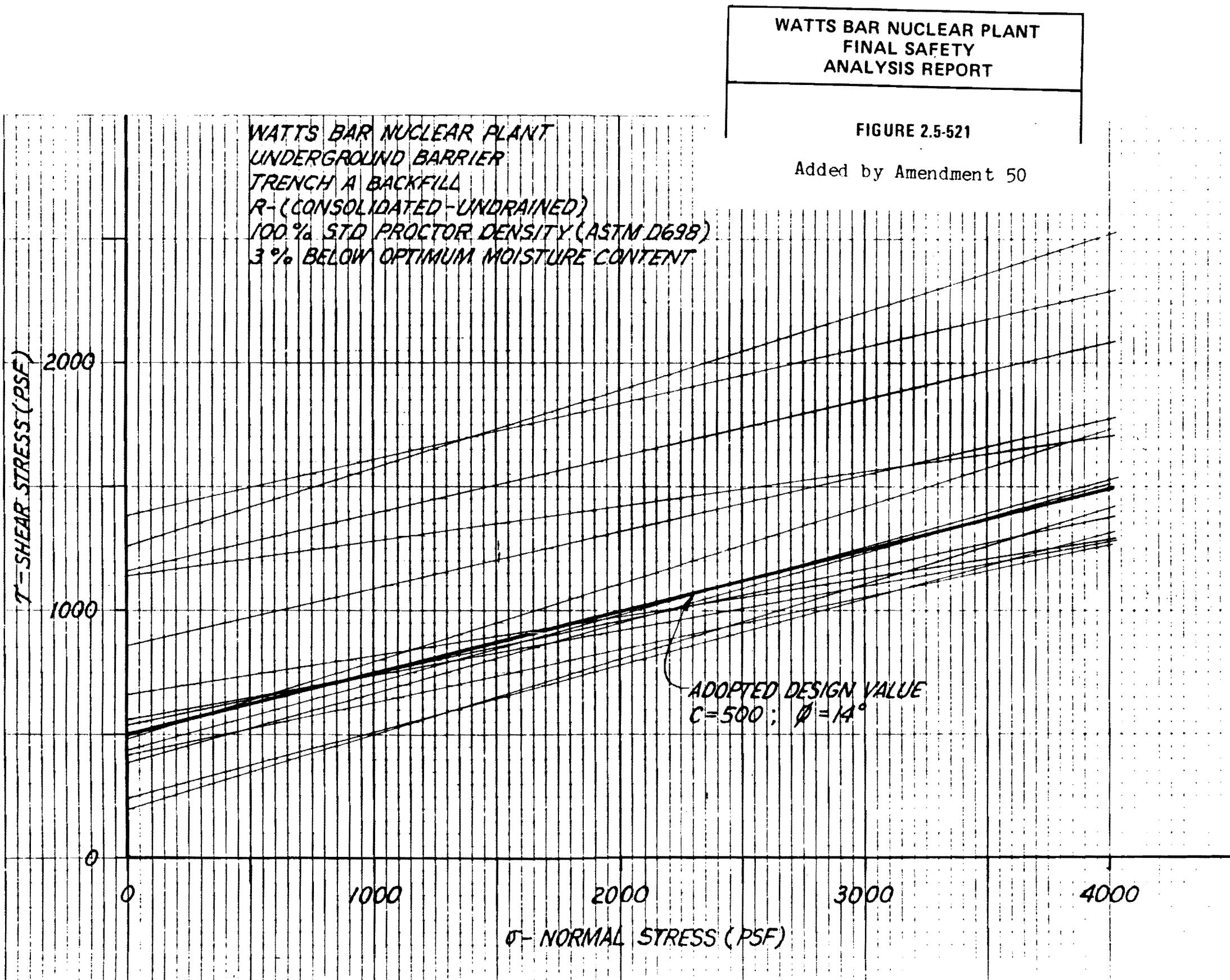


Figure 2.5-521 Watts Bar Nuclear Plant Underground Barrier Trench A Backfill R (Consolidated -Undrained) 100% STD Proctor Density (ASTM D698) 3% Below Optimum Moisture Content

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-522

Added by Amendment 50

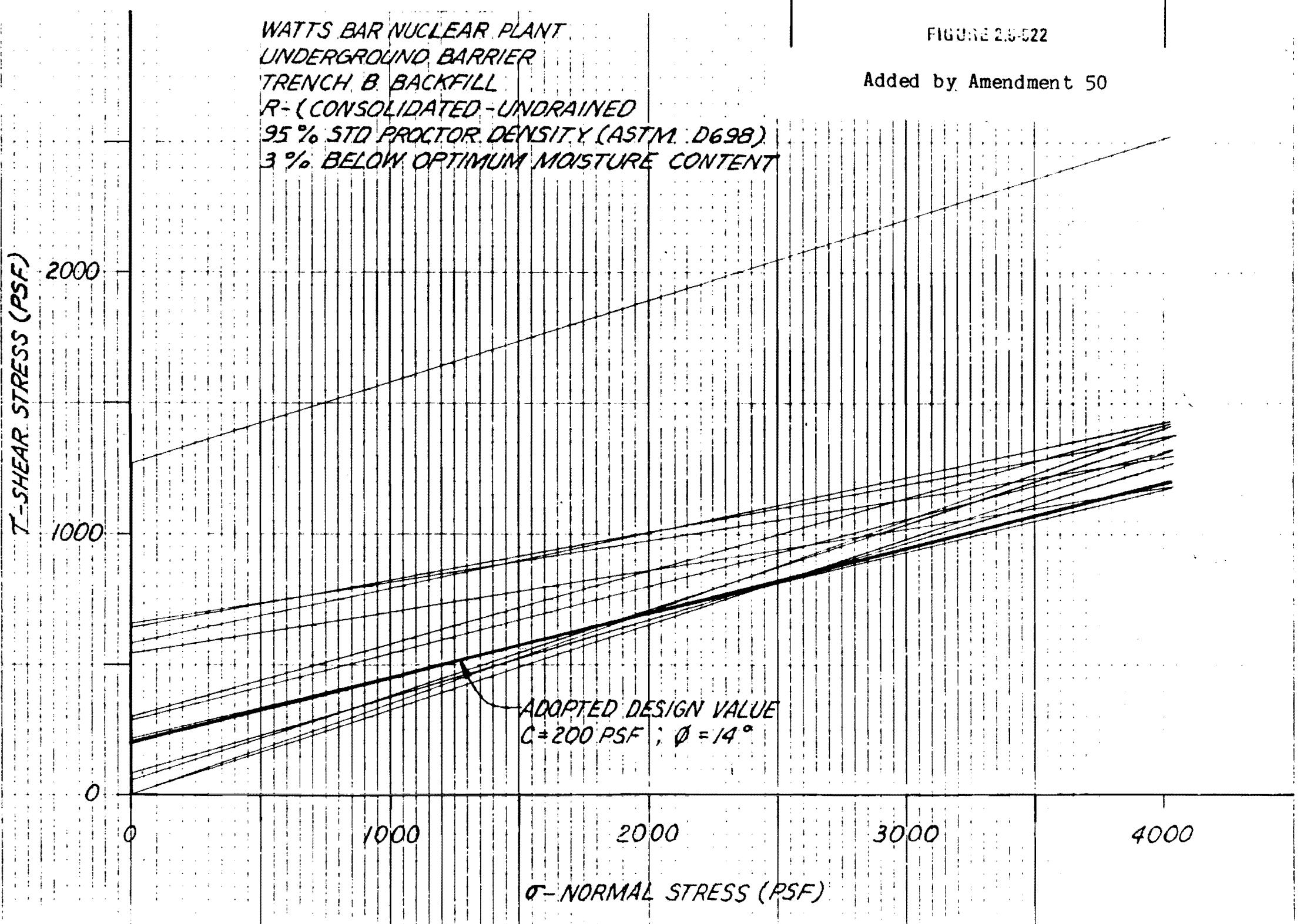


Figure 2.5-522 Watts Bar Nuclear Plant Underground Barrier Trench B Backfill R (Consolidated - Undrained) 95% STD Proctor Density (ASTM D698) 3% Below Optimum Moisture Content

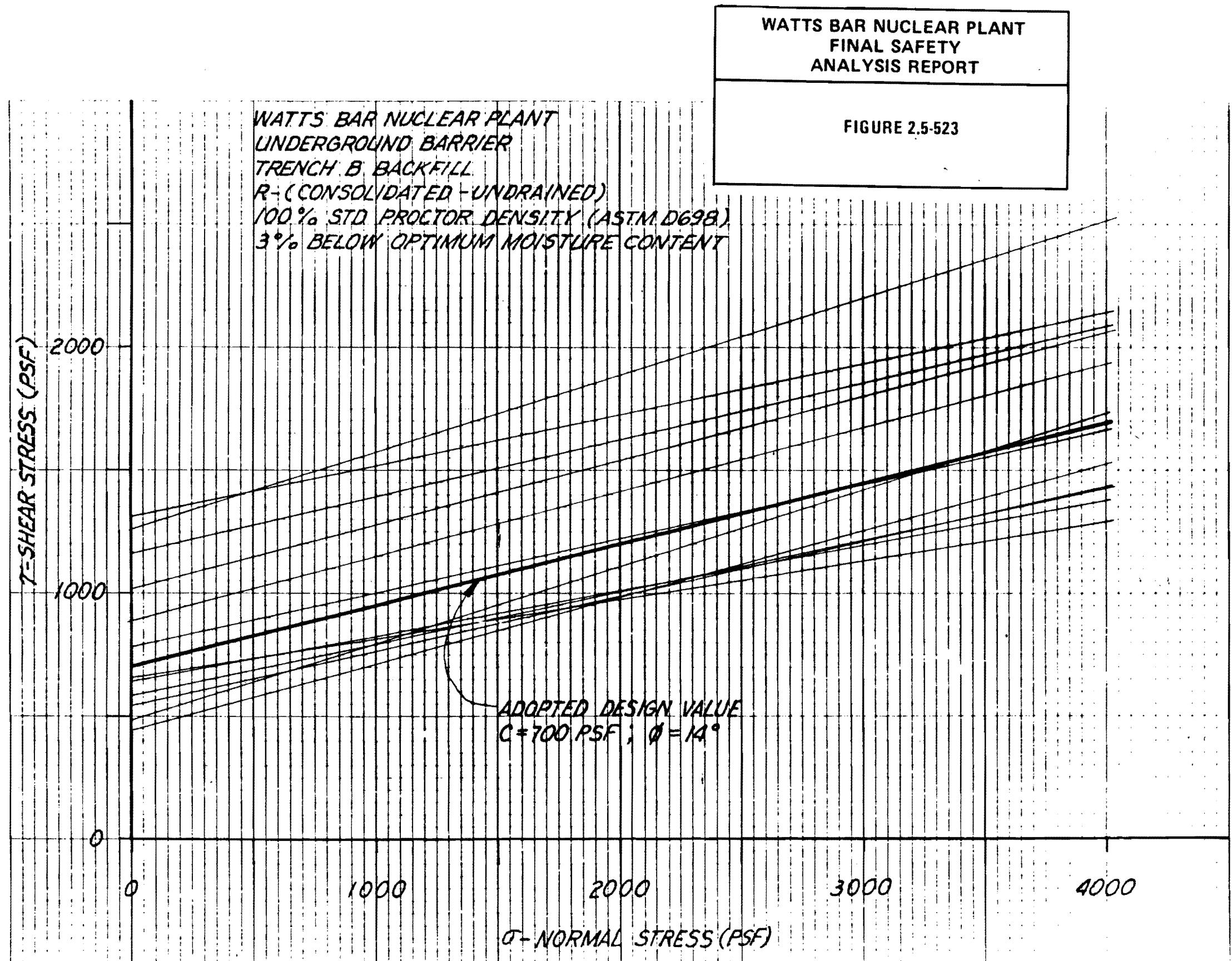
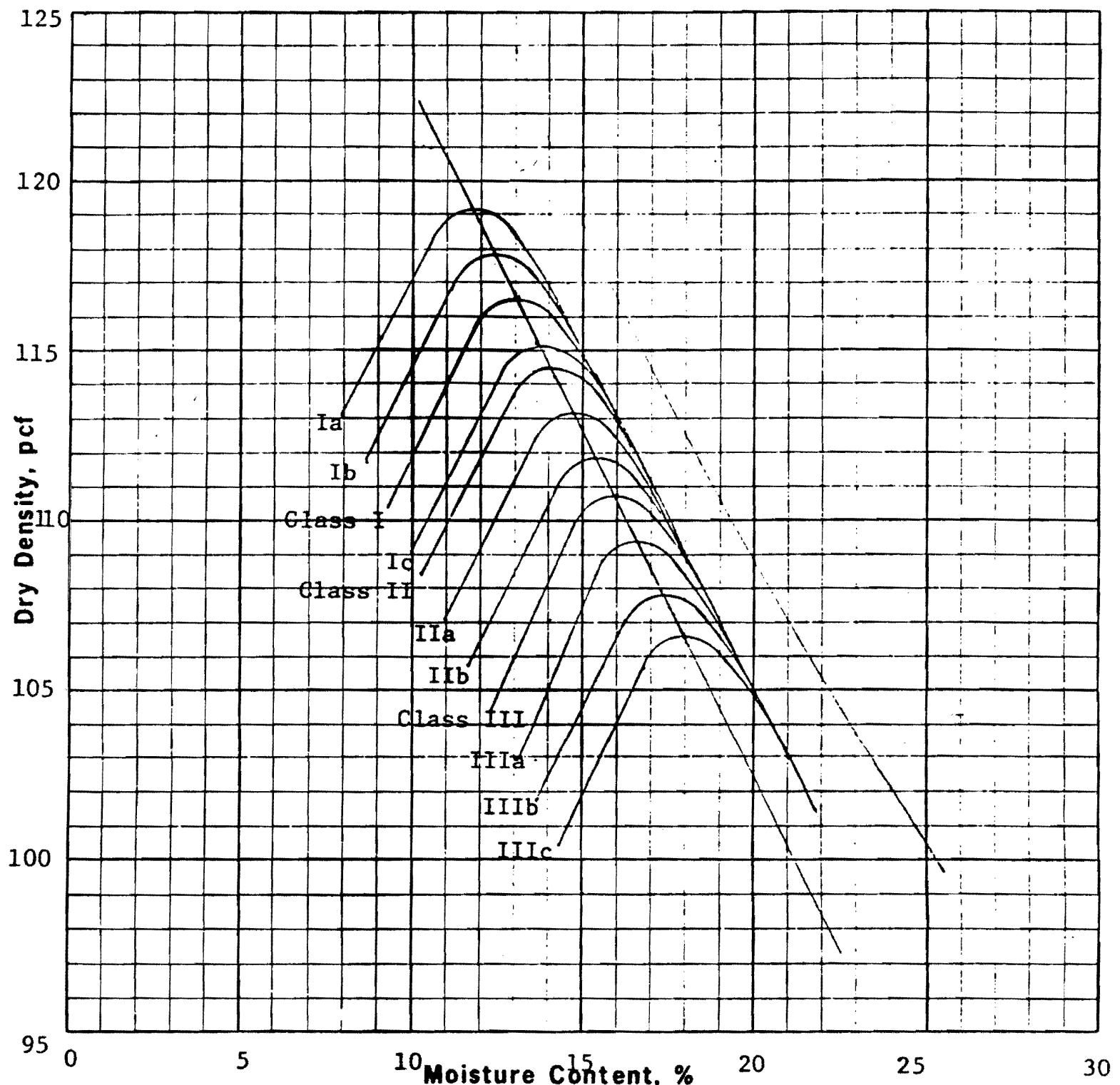


Figure 2.5-523 Watts Bar Nuclear Plant Underground Barrier Trench B Backfill R (Consolidated -Undrained) 100% STD Proctor Density (ASTM D698) 3% Below Optimum Moisture Content



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-SM-SC	0	70	15	15	2.66	24	5	13.1	116.6
II-SC	0	51	24	25	2.69	28	11	14.1	114.4
III-CL	0	40	29	31	2.69	34	15	15.9	110.8

Plus No. 4 Specific Gravity, S S D	---
Plus No. 4 Absorption, %	---

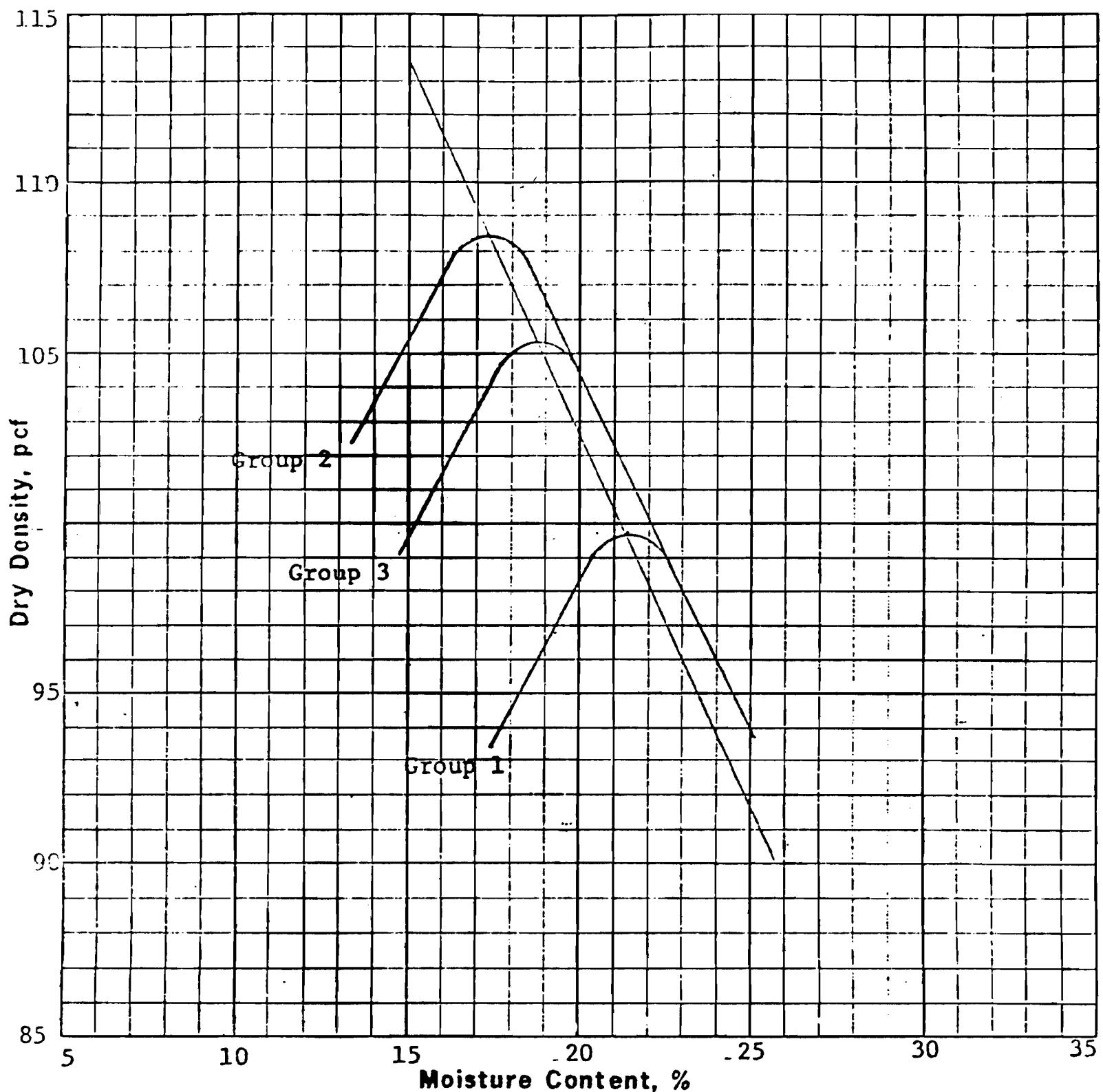
Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
TRENCH A, BORROW
FIGURE 2.5-524

Figure 2.5-524 ERCW Liquefaction Trench A Borrow



Soil Group	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
1-NL	0	16	44	.40	2.73	47	18	21.4	99.7
2-SM	0	54	31	15	2.72	26	1	17.3	108.4
3-ML	0	43	35	22	2.73	34	8	18.8	105.3

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

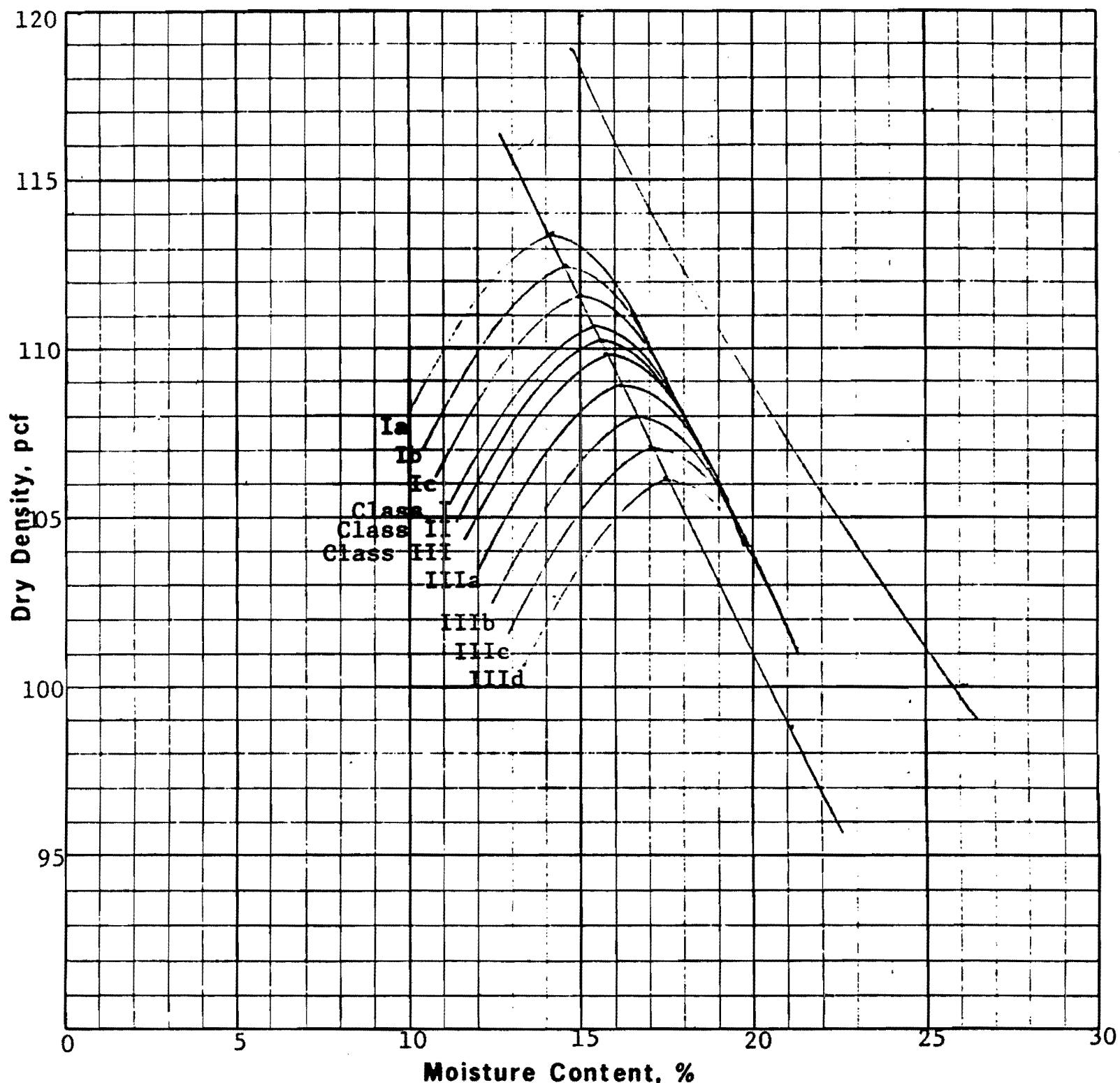
Remarks:
Group 1 Silty sand fraction, upper
Group 2 Sand fraction, lower
Group 3 Composite, stockpile

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION, TRENCH A
SUPPLEMENTAL BORROW
FIGURE 2.5-525**

Added by Amendment 50

Figure 2.5-525 ERCW Liquefaction Trench A Supplemental Borrow



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-SM	0	66	22	12	2.65	NP	NP	15.3	110.7
II-SM-\$C	0	55	24	21	2.67	28	6	15.6	110.3
III-CL	0	43	28	29	2.69	30	11	15.8	109.8

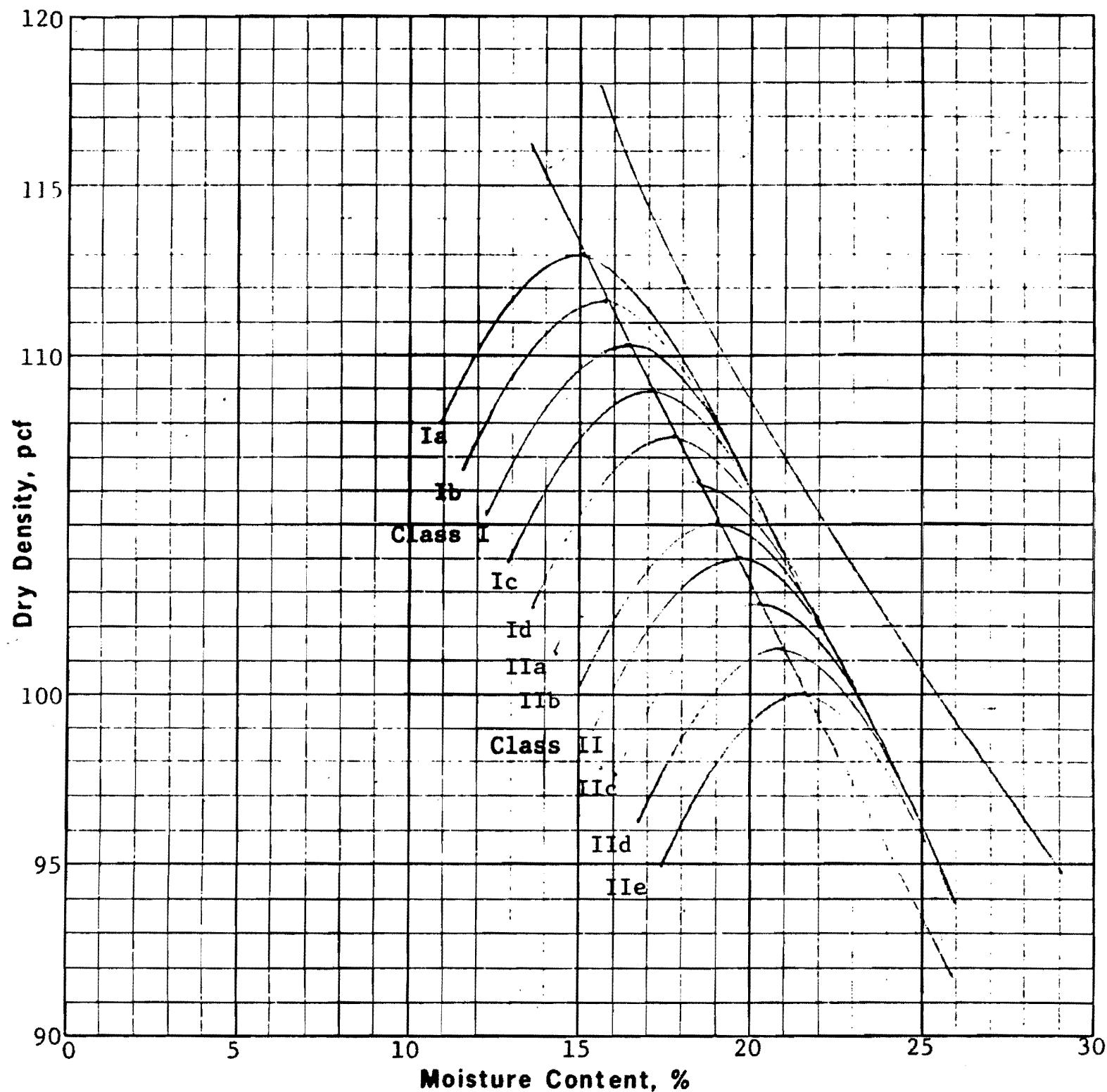
Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW LIQUEFACTION TRENCH B FIGURE 2.5-526

Figure 2.5-526 ERCW Liquefaction Trench B



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-CL	0	24	40	.36	2.66	31	16	16.4	110.3
II-CL-ML	0	32	27	41	2.70	40	15	19.6	104.0

Plus No. 4 Specific Gravity, S S D	--
------------------------------------	----

Plus No. 4 Absorption, %	--
--------------------------	----

Remarks:

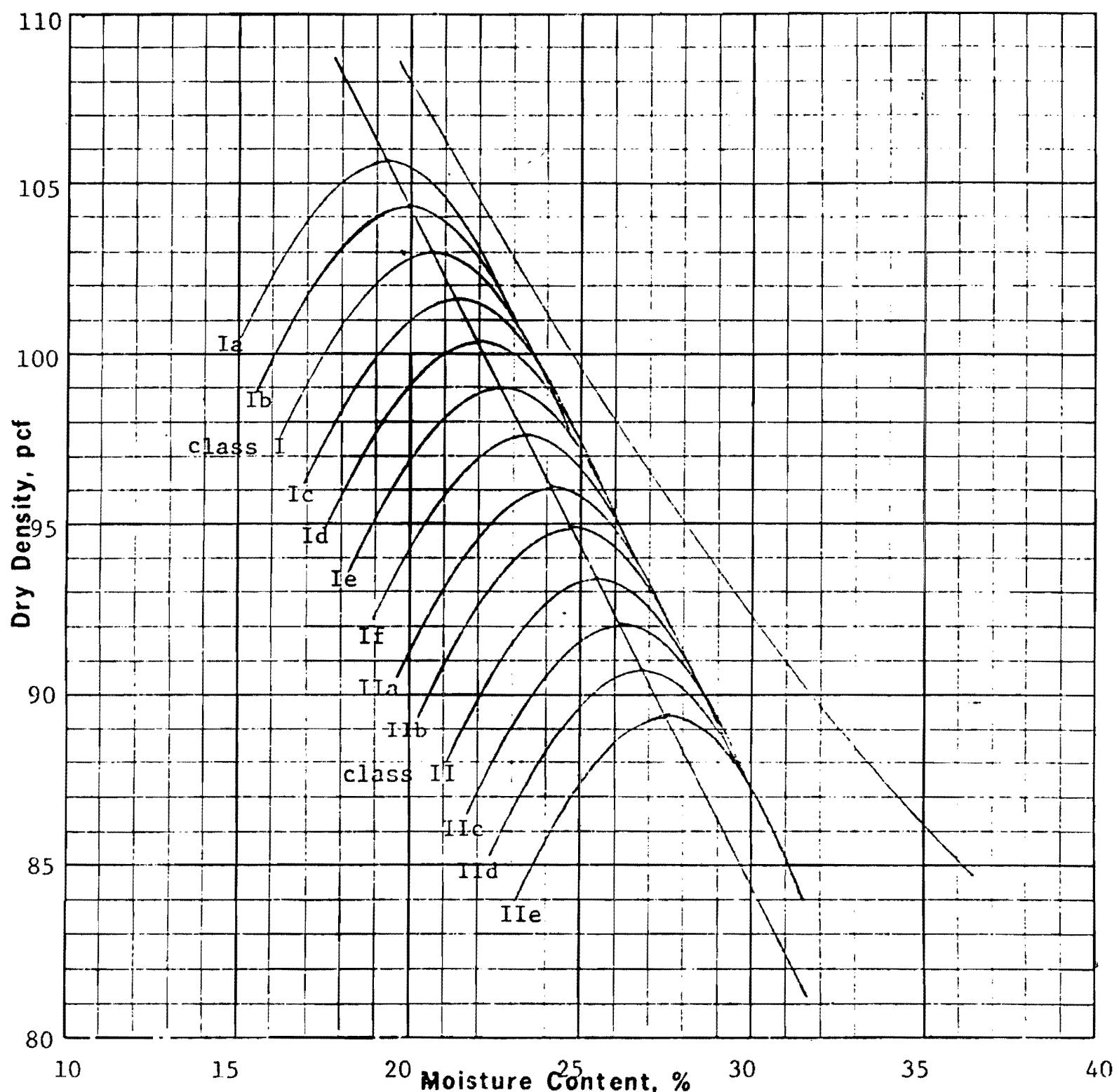
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Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 9
FIGURE 2.5-527

Figure 2.5-527 ERCW Liquefaction Borrow Area 9



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-CL	0	33	31	36	2.65	39	16	20.6	103.0
II-CL-ML	0	19	33	48	2.65	45	19	25.4	93.3

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

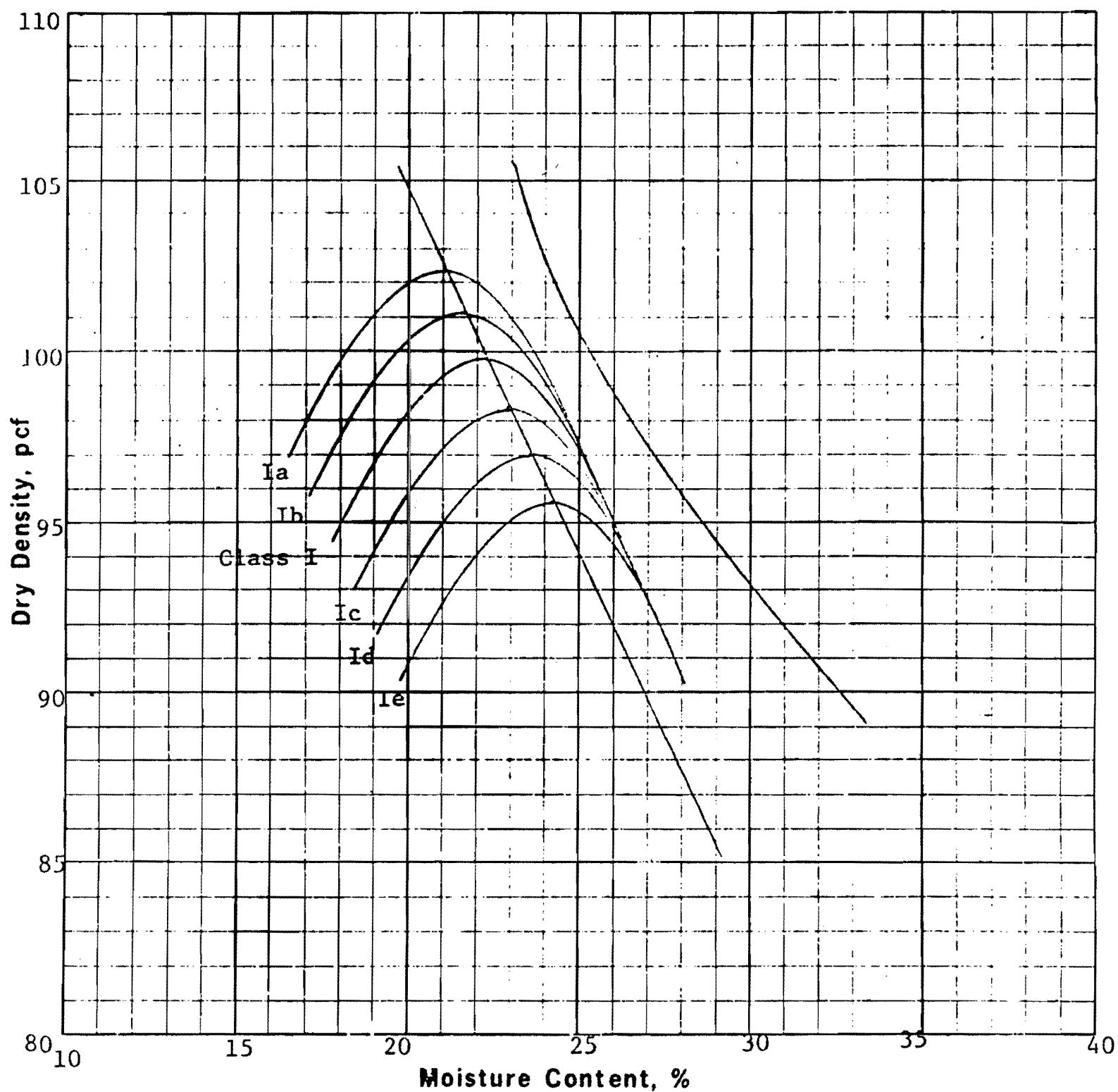
Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW LIQUEFACTION BORROW AREA 10 FIGURE 2.5-528

TIA 10001 (CONET 6-77)

Figure 2.5-528 ERCW Liquefaction Borrow Area 10



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML	0	21	35	44	2.71	44	15	22.2	99.8

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

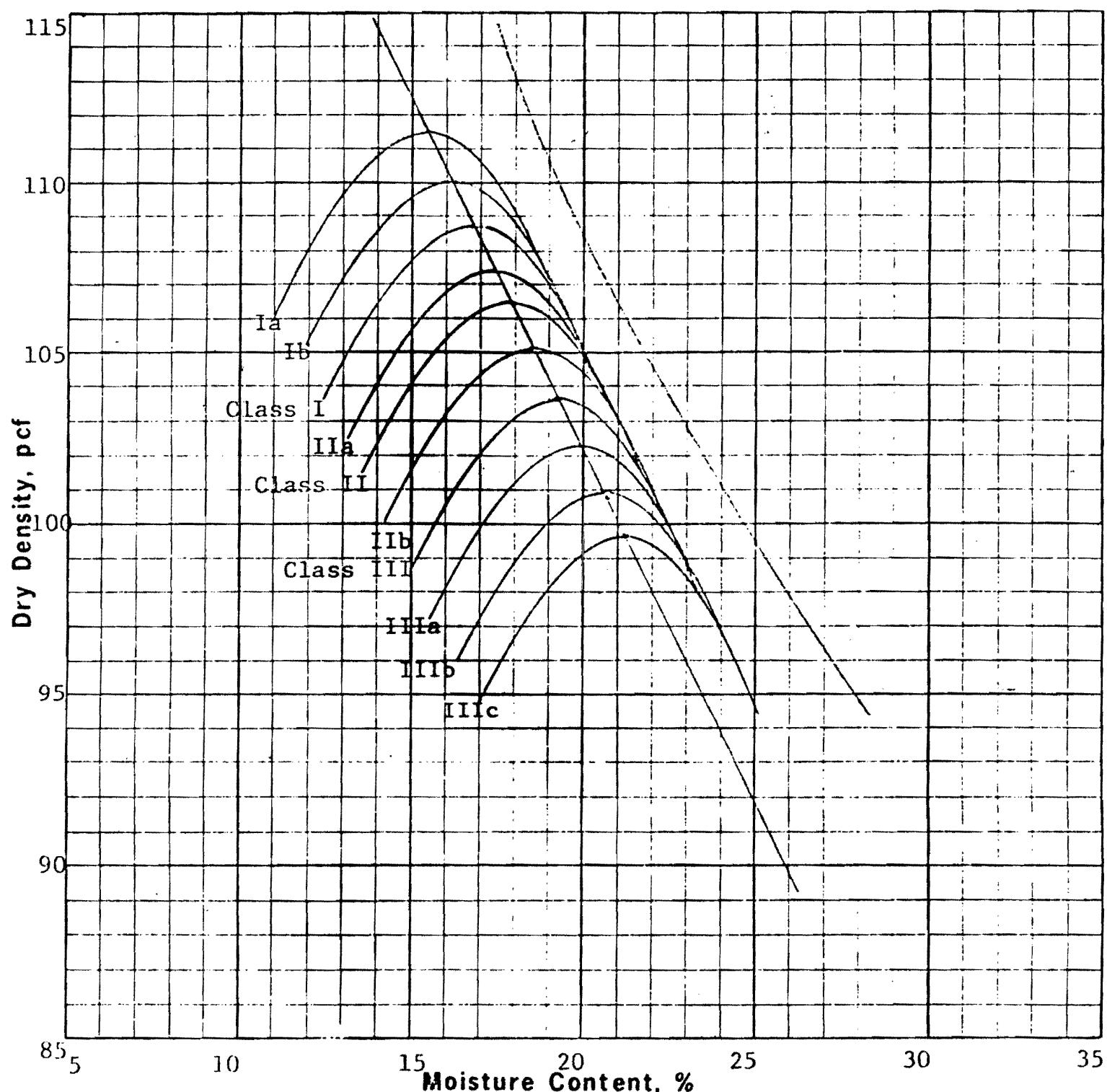
Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 11
FIGURE 2.5-529

Figure 2.5-529 ERCW Liquefaction Borrow Area 11



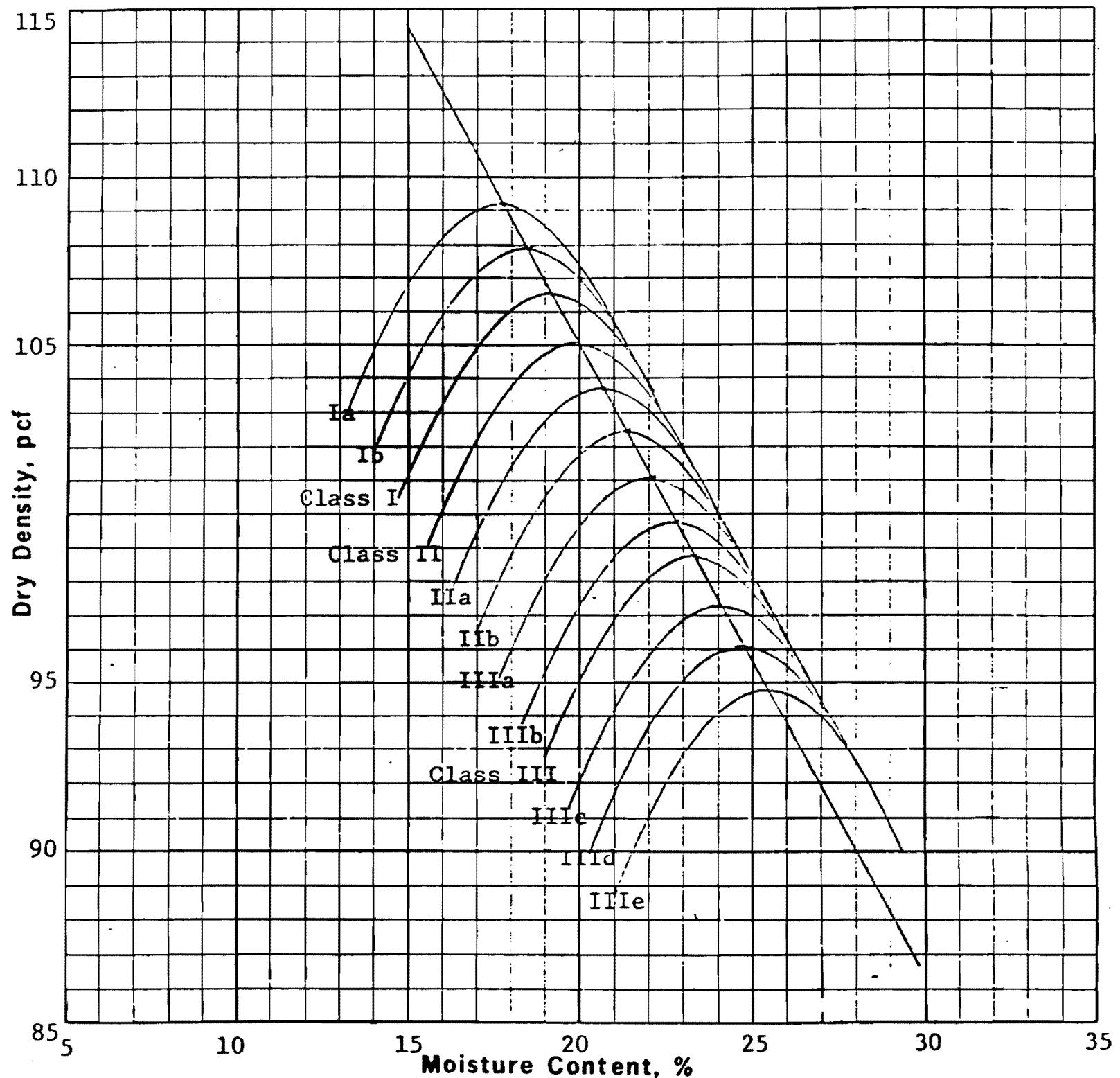
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-SM	0	50	26	.24	2.69	32	7	16.8	108.8
II-CL-NL	0	22	39	39	2.70	40	15	17.8	106.5
III-ML-CL	0	22	40	38	2.66	42	16	19.2	103.7

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--
Remarks:	

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
ERCW LIQUEFACTION BORROW AREA 12 FIGURE 2.5-530	

Figure 2.5-530 ERCW Liquefaction Borrow Area 12



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML	0	24	42	34	2.71	37	11	19.2	106.6
II-ML	0	23	39	38	2.73	41	14	20.0	105.1
III-MH	0	12	41	47	2.74	52	17	23.3	98.8

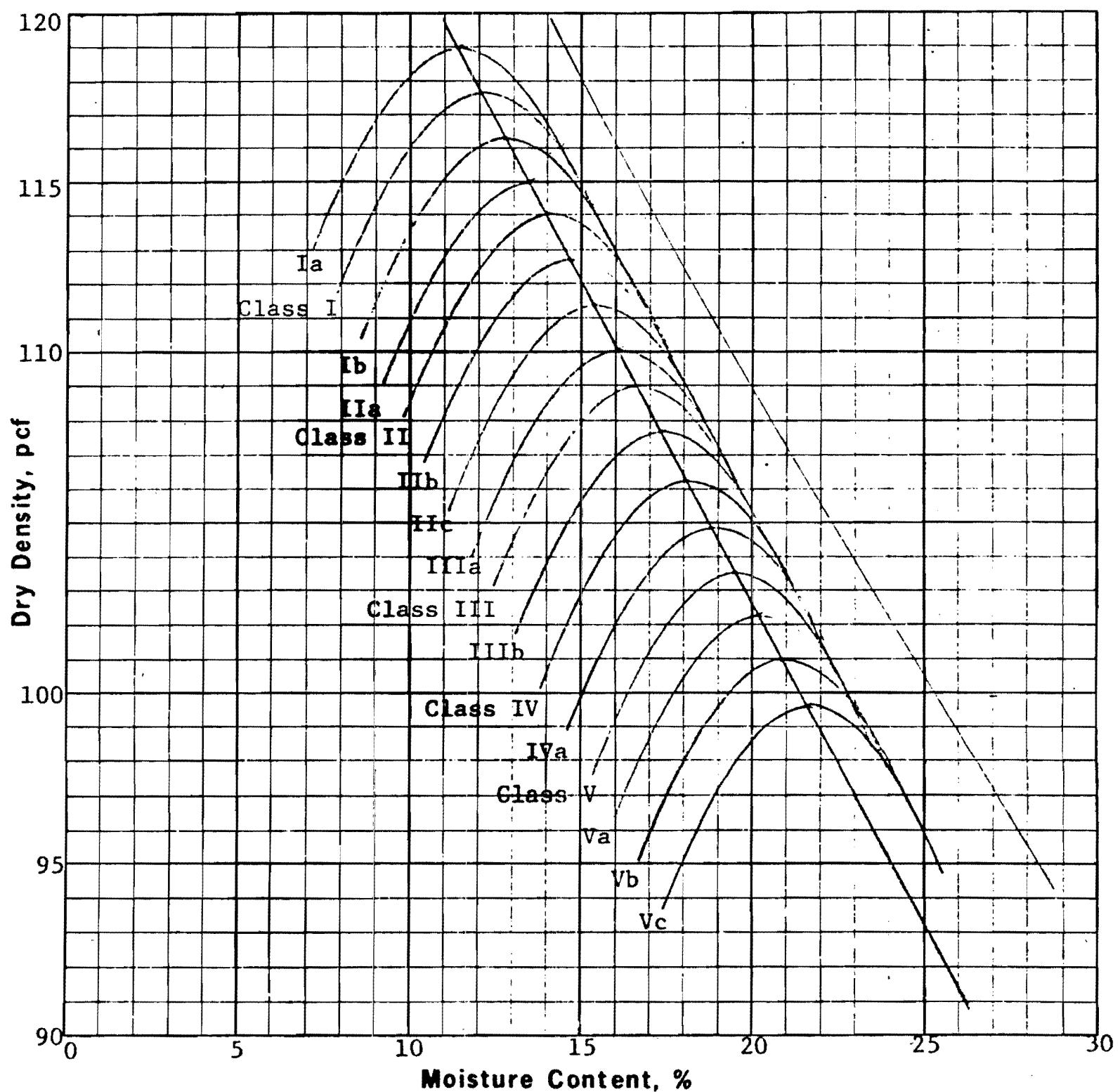
Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW LIQUEFACTION BORROW AREA 13 FIGURE 2.5-531

Figure 2.5-531 ERCW Liquefaction Borrow Area 13



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML	0	48	40	12	2.63	NP	NP	12.1	117.7
II-SM-SC	0	65	16	19	2.68	25	6	13.9	114.0
III-CL	0	48	23	29	2.67	36	14	16.6	109.0
IV-CL	0	30	34	36	2.68	41	17	18.1	106.2
V-CL-ML	0	23	39	38	2.70	44	17	19.5	103.5

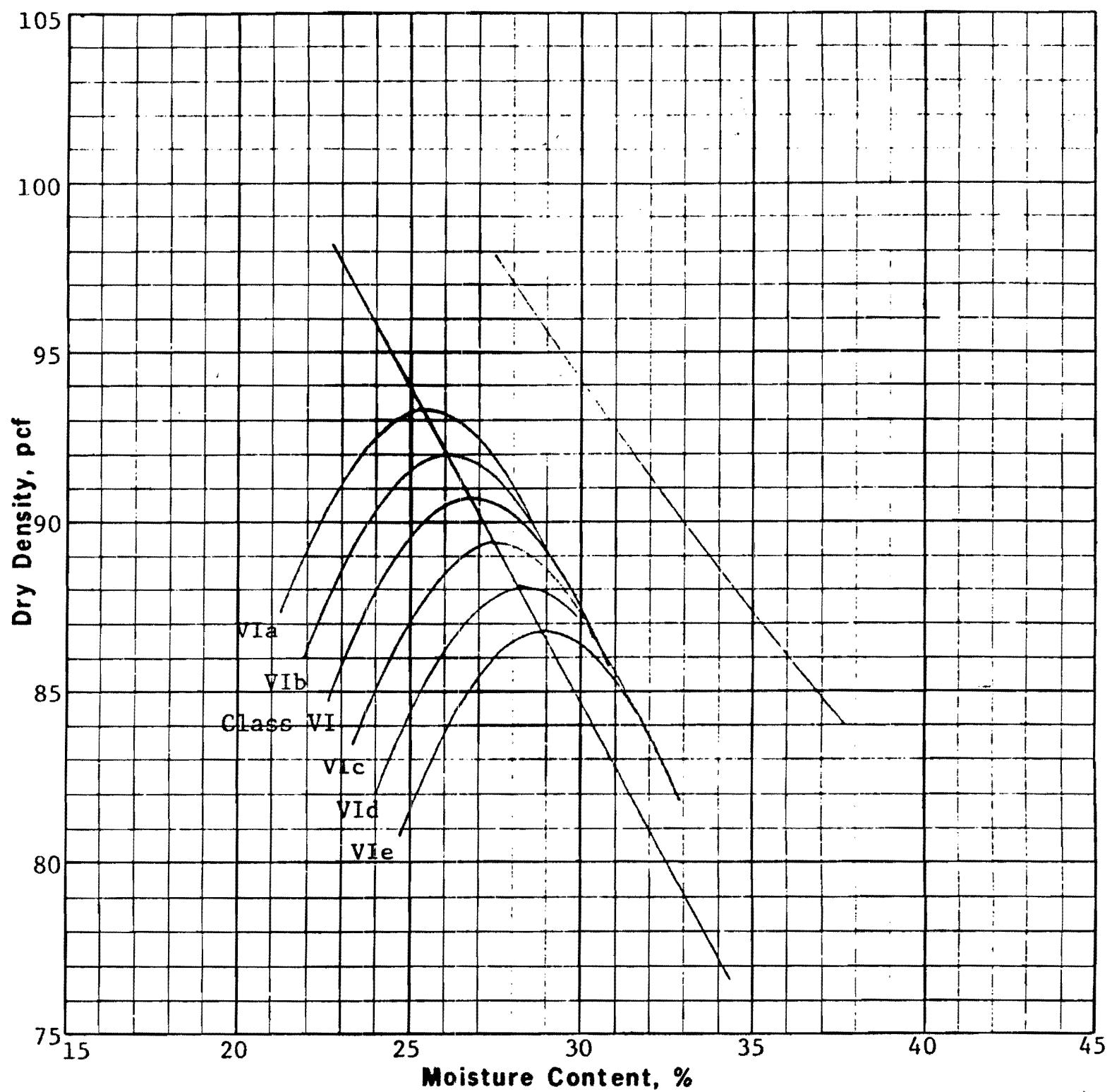
Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW LIQUEFACTION BORROW AREA 2C FIGURE 2.5-532

Figure 2.5-532 ERCW Liquefaction Borrow Area 2C



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
VI-MH	0	5	40	.55	2.74	62	27	26.8	90.8

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

Added by Amendment 50

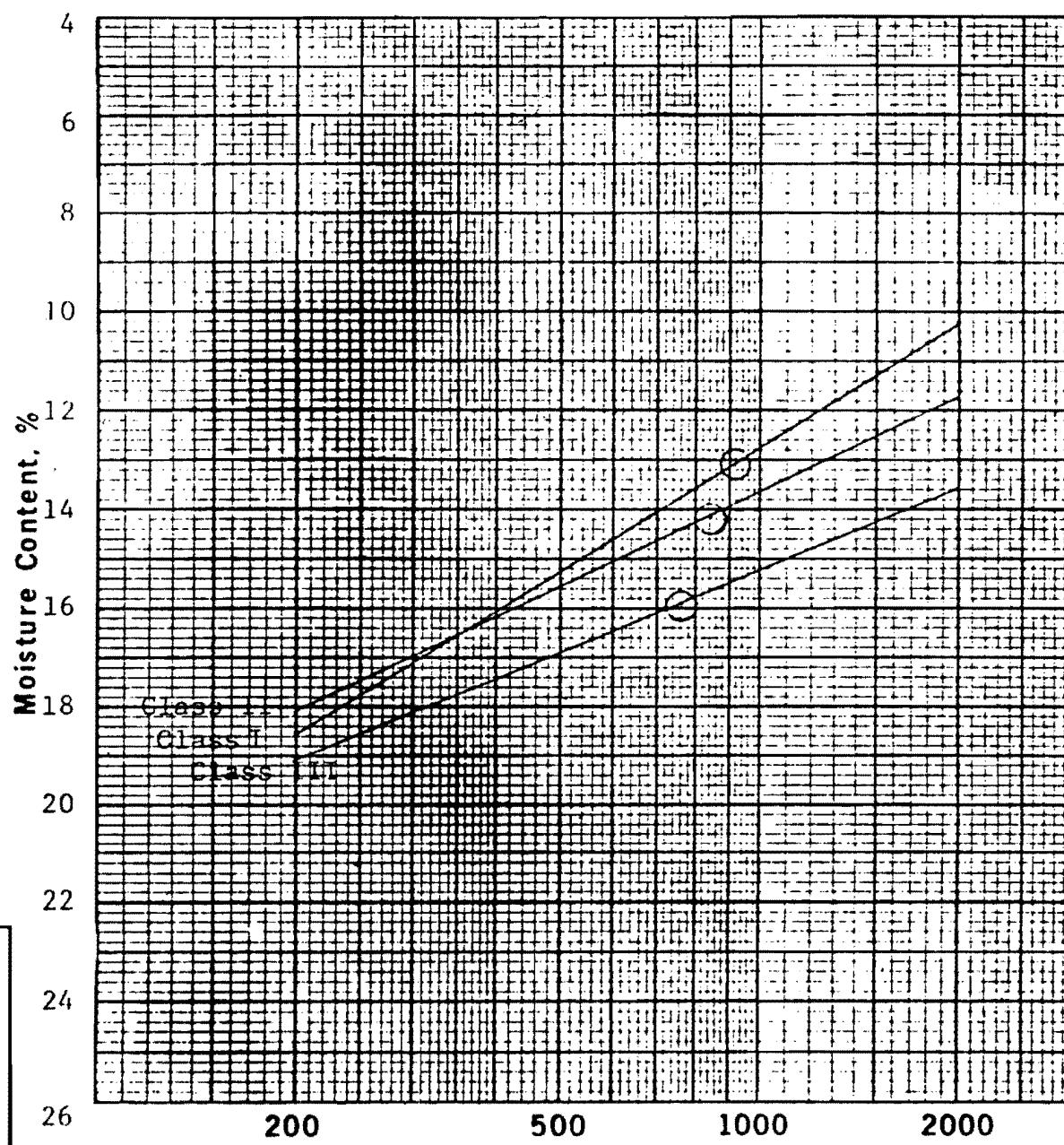
**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION
BORROW AREA 2C
FIGURE 2.5-533**

Figure 2.5-533 ERCW Liquefaction Borrow Area 2C

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
TRENCH A
FIGURE 2.5-534



Remarks:

Project Watts Bar Nuclear Plant

ERCW Liquefaction

Feature Trench A

ASTM Designation D 698A

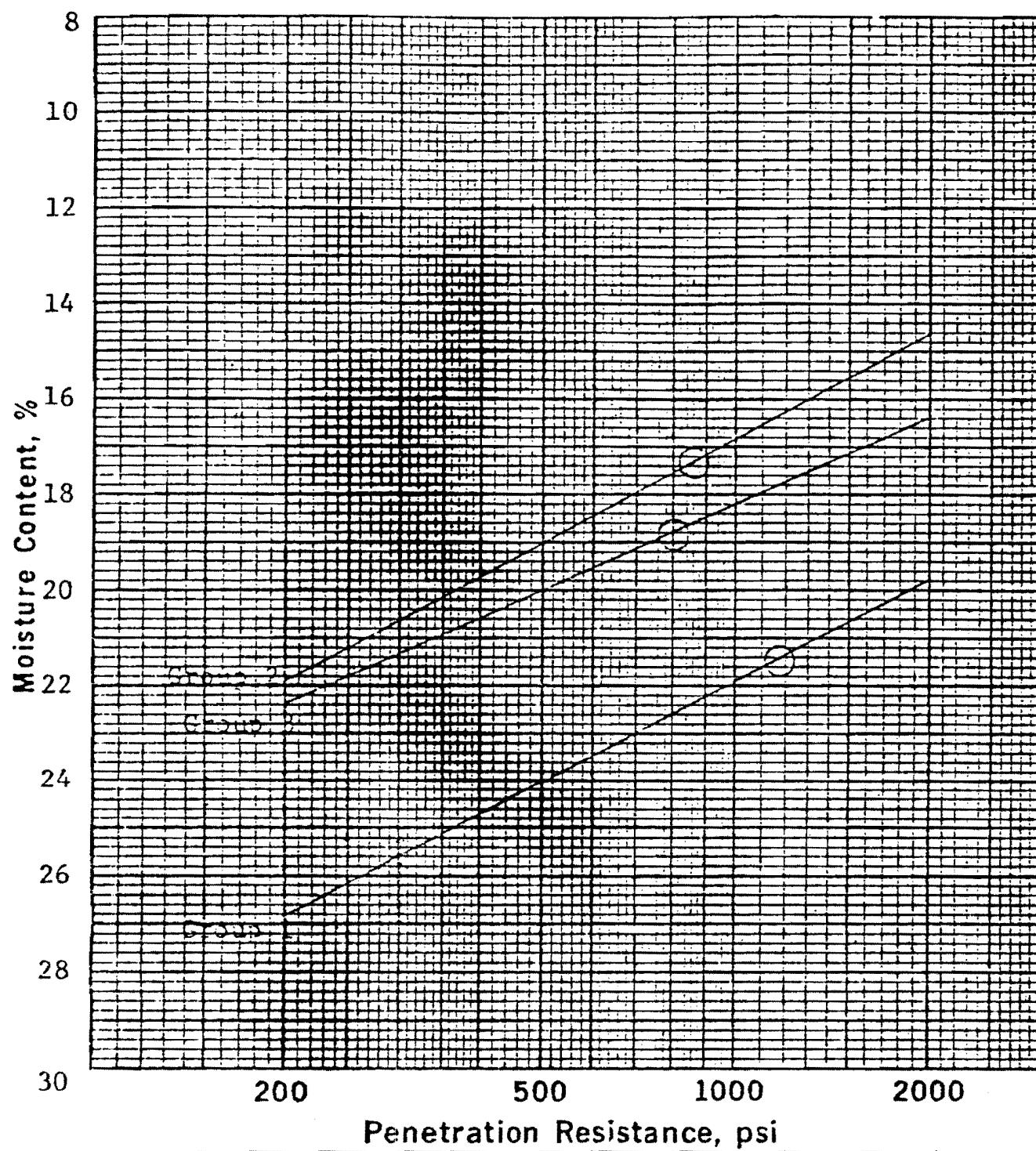
Date Tested 6-6-83

MOISTURE - PENETRATION TEST

○ Denotes Optimum Moisture

Added by Amendment 50

Figure 2.5-534 ERCW Liquefaction Trench A



Added by Amendment 50

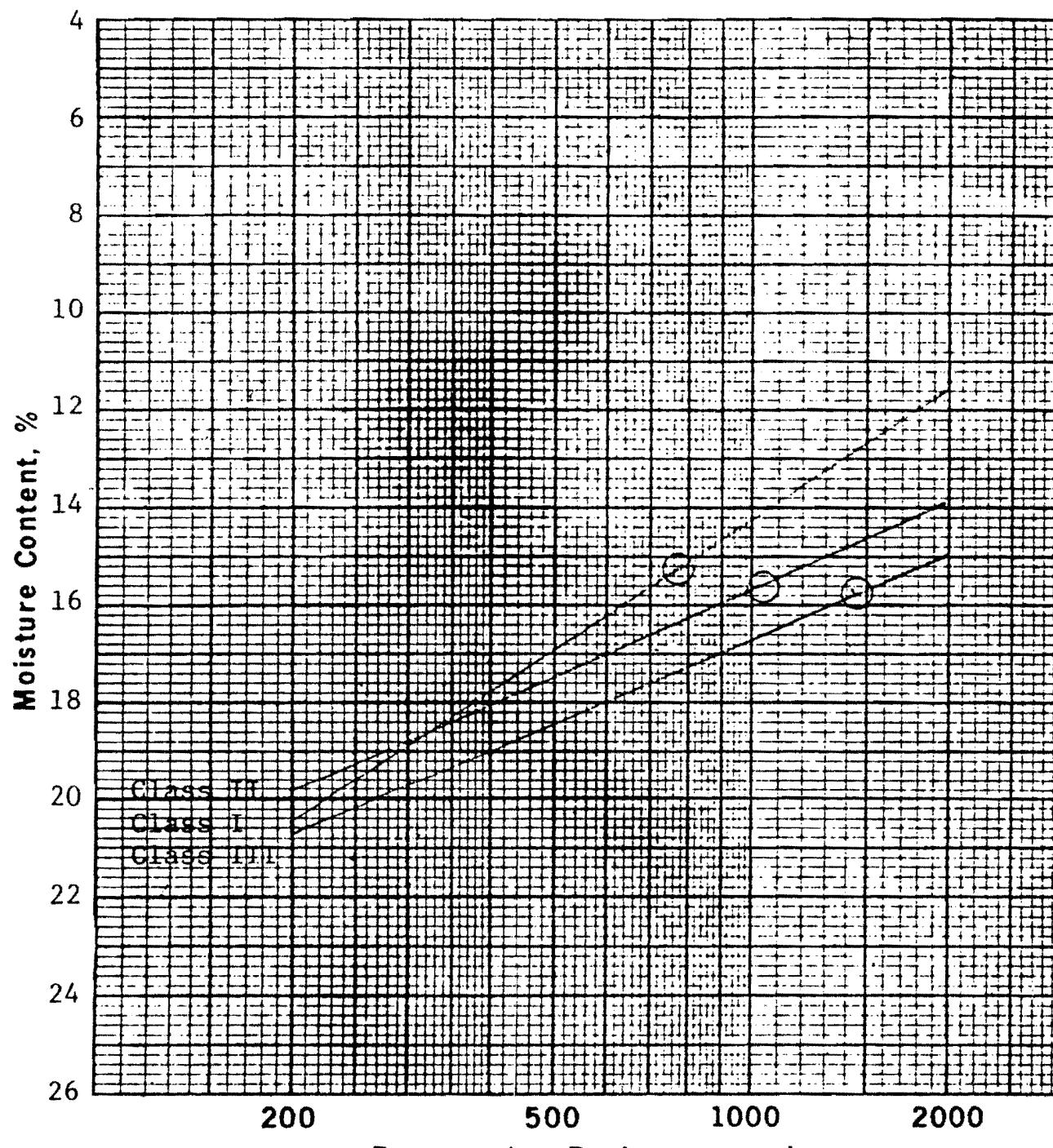
Remarks:

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION, TRENCH A
SUPPLEMENTAL BORROW
FIGURE 2.5-535**

○ Denotes Optimum Moisture

Figure 2.5-535 ERCW Liquefaction Trench A Supplemental Borrow



Soil Class	Optimum Moisture, %	Maximum Density,pcf	Penetration Resistance, psi
I-SM	15.3	110.7	770
II-SM-SC	15.6	110.3	1025
III-CL	15.8	109.8	1425

Remarks:

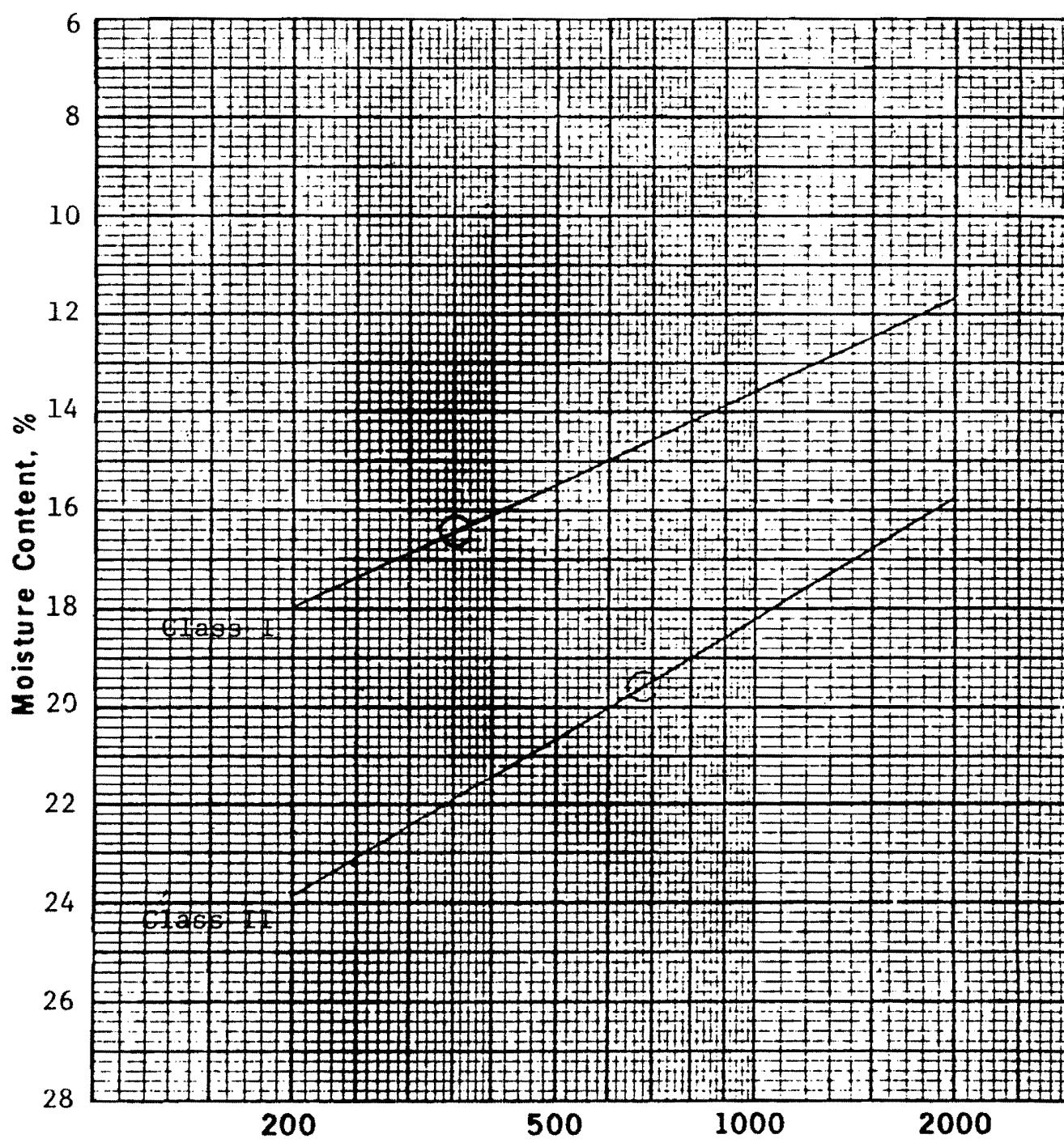
Added by Amendment 50

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
TRENCH B
FIGURE 2.5-536

Figure 2.5-536 ERCW Liquefaction Trench B



Added by Amendment 50

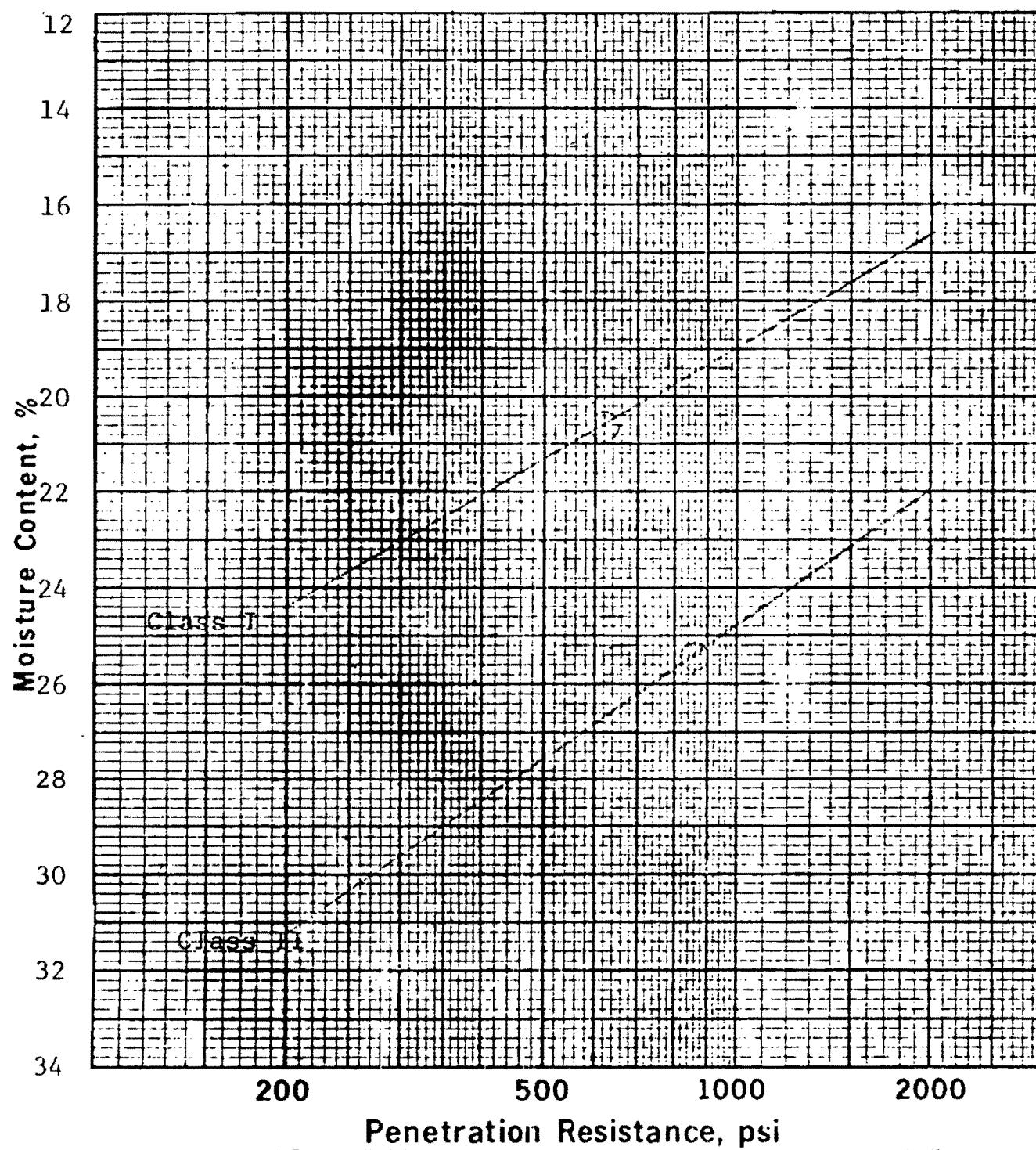
Remarks:

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION
BORROW AREA 9
FIGURE 2.5-537**

Denotes Optimum Moisture

Figure 2.5-537 ERCW Liquefaction Borrow Area 9



Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-CL	20.6	103.0	620
II-CL-ML	25.4	93.3	860

Added by Amendment 50

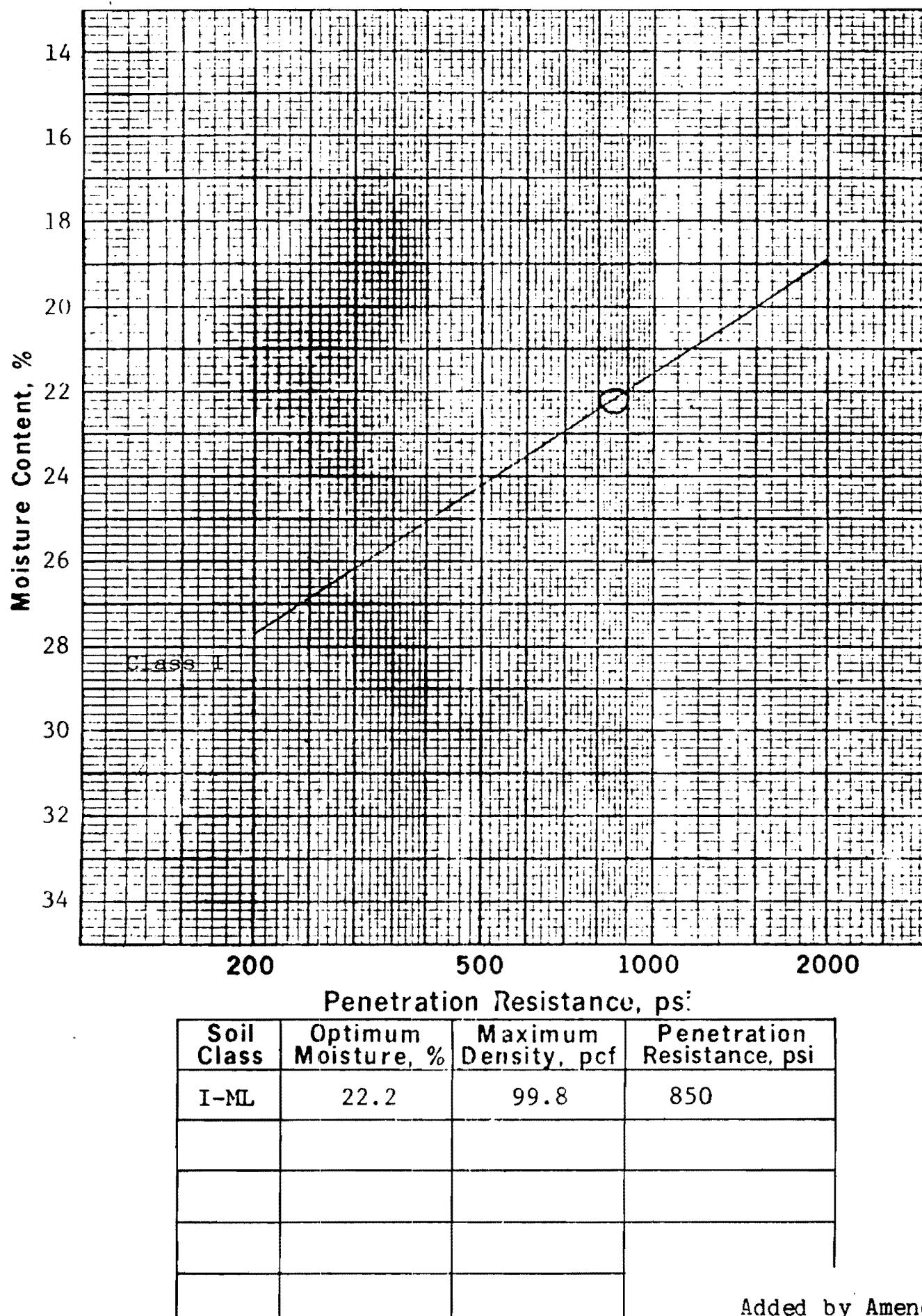
Remarks:

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 10
FIGURE 2.5-538

Figure 2.5-538 ERCW Liquefaction Borrow Area 10



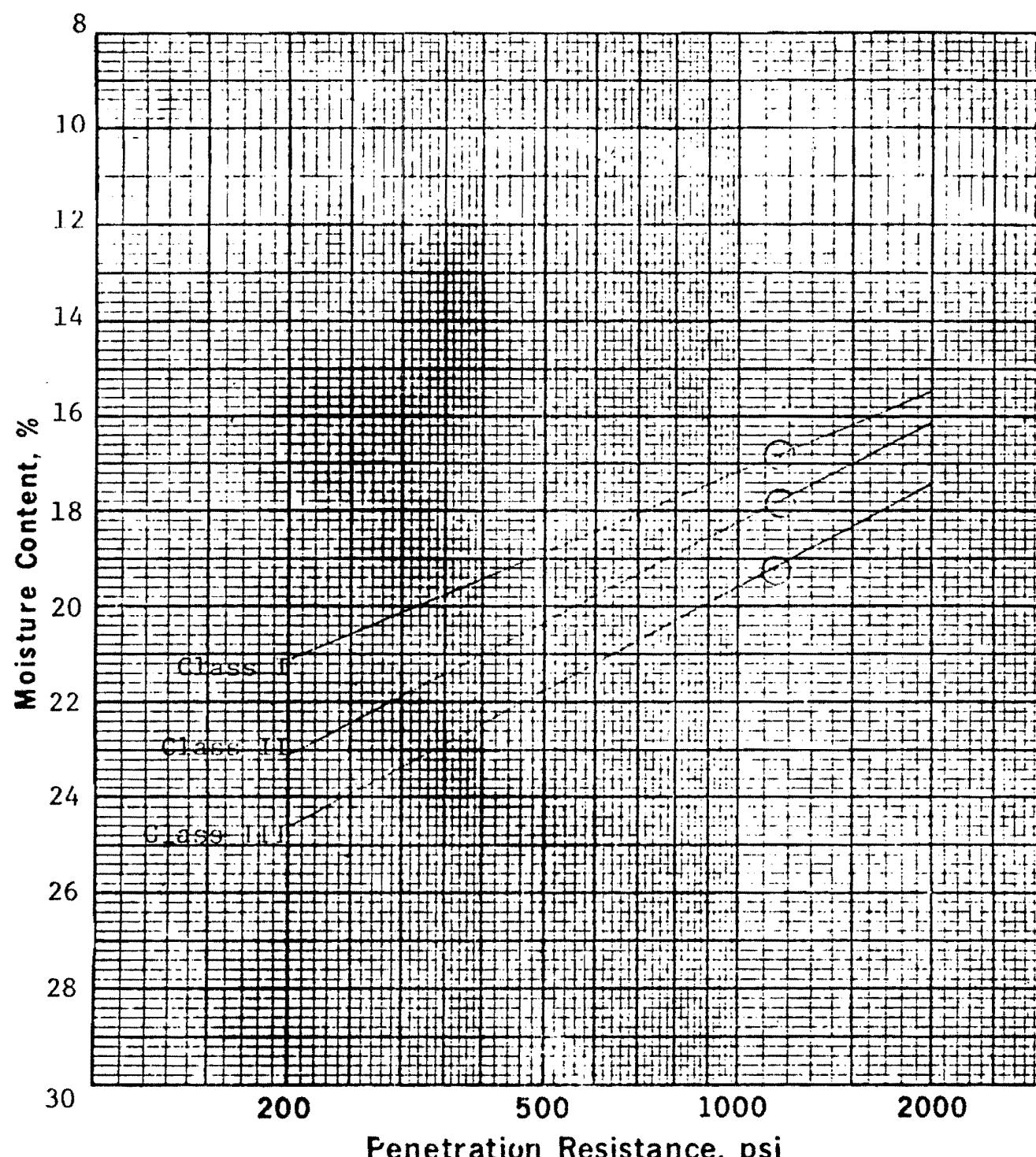
Remarks:

○ Denotes Optimum Moisture

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION
BORROW AREA 11
FIGURE 2.5-539**

Figure 2.5-539 ERCW Liquefaction Borrow Area 11



Added by Amendment 50

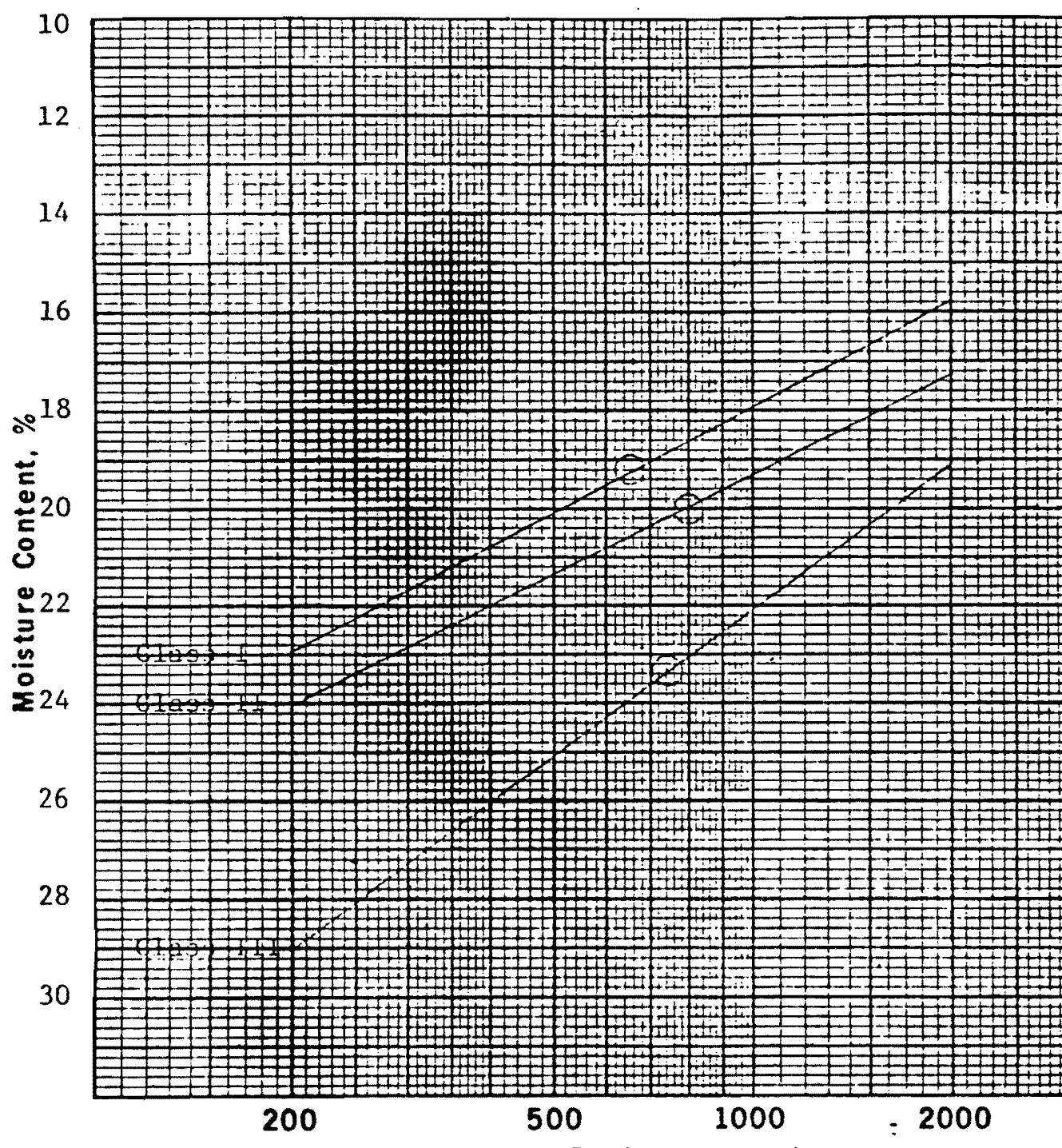
Remarks:

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION
BORROW AREA 12
FIGURE 2.5-540**

○ Denotes Optimum Moisture

Figure 2.5-540 ERCW Liquefaction Borrow Area 12



Added by Amendment 50

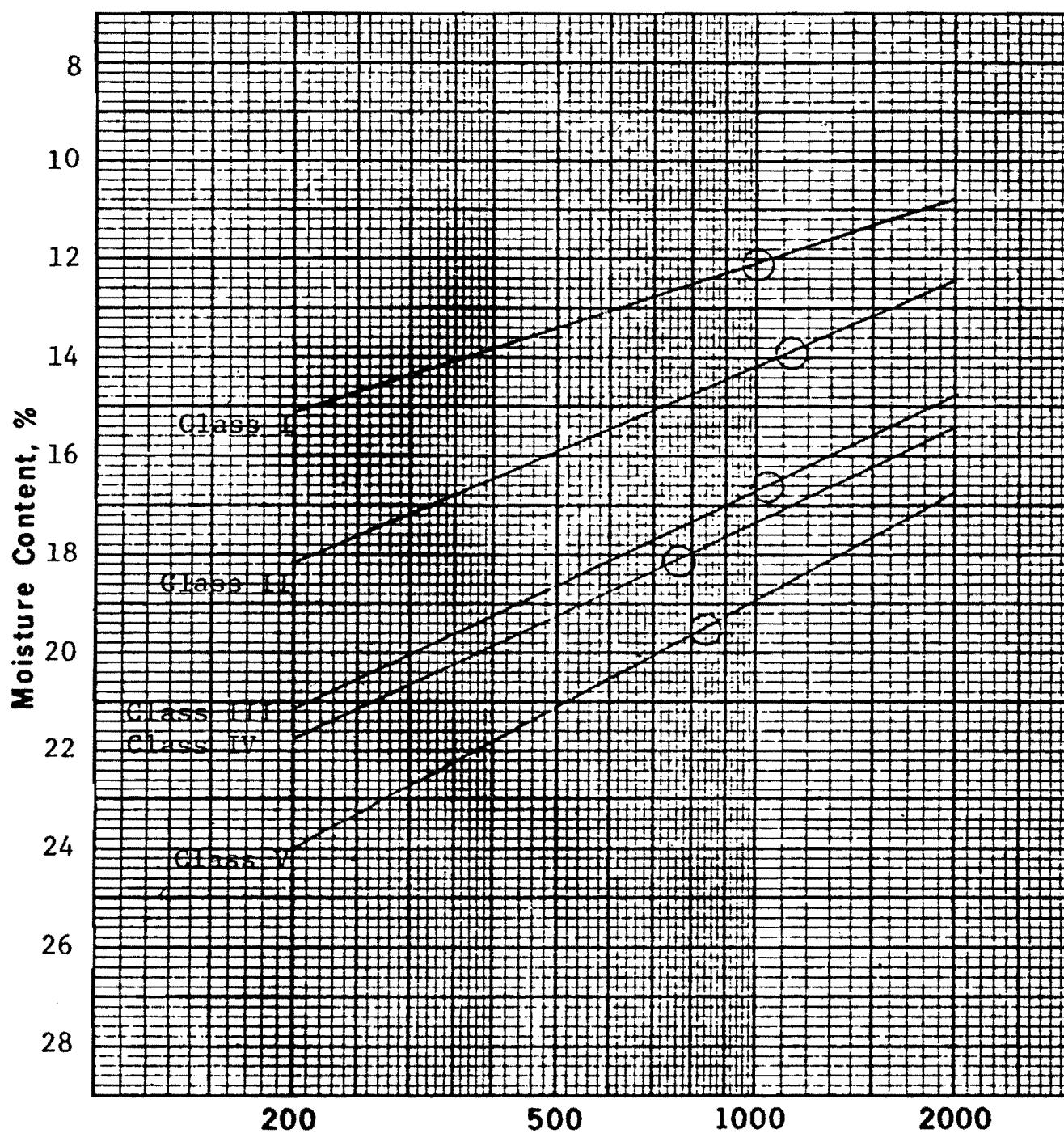
Remarks:

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 13
FIGURE 2.5-541

Denotes Optimum Moisture

Figure 2.5-541 ERCW Liquefaction Borrow Area 13



Added by Amendment 50

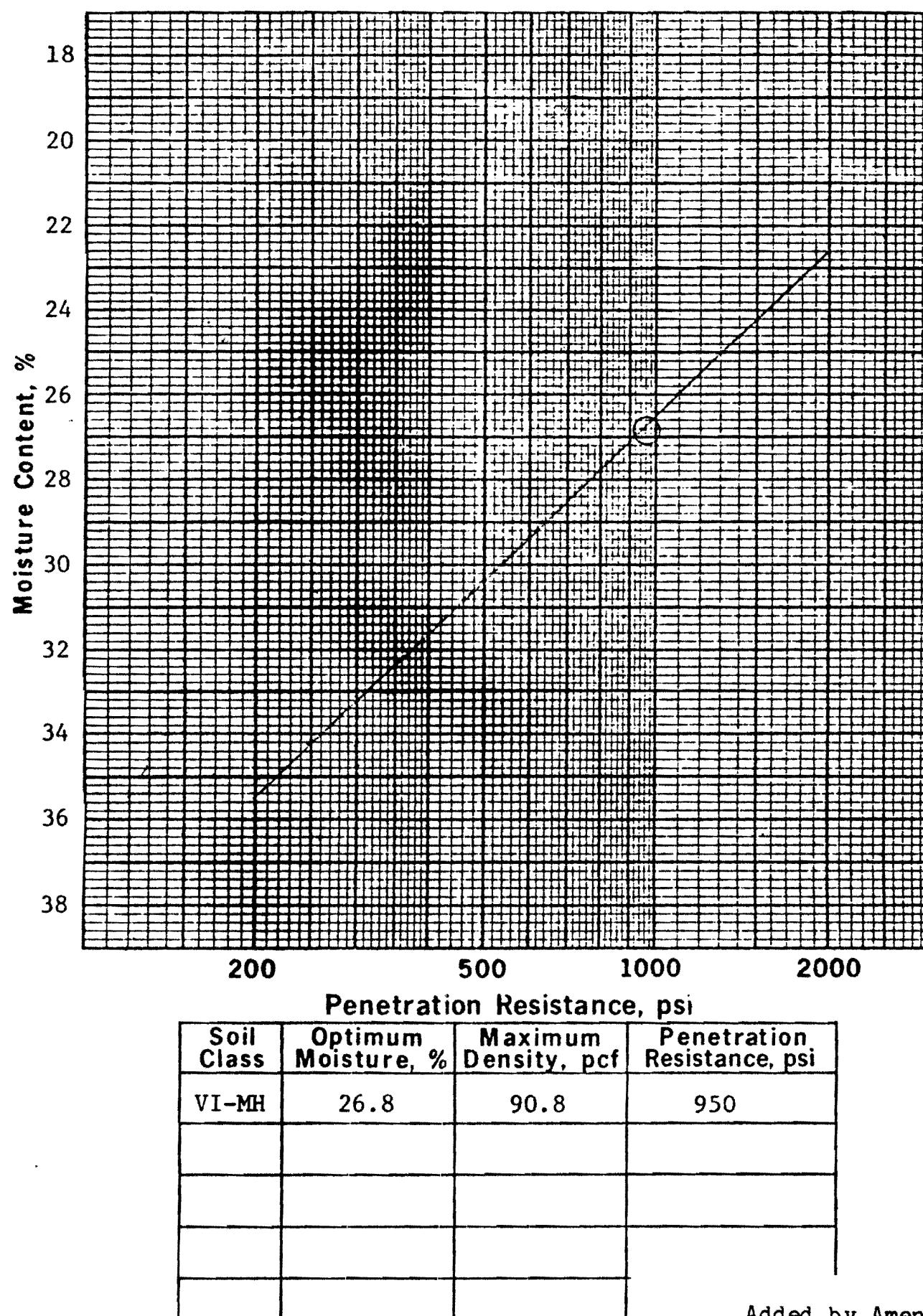
Remarks:

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**ERCW LIQUEFACTION
BORROW AREA 2C
FIGURE 2.5-542**

○ Denotes Optimum Moisture

Figure 2.5-542 ERCW Liquefaction Borrow Area 2C



Remarks:

Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 2C
FIGURE 2.5-543

Figure 2.5-543 ERCW Liquefaction Borrow Area 2C

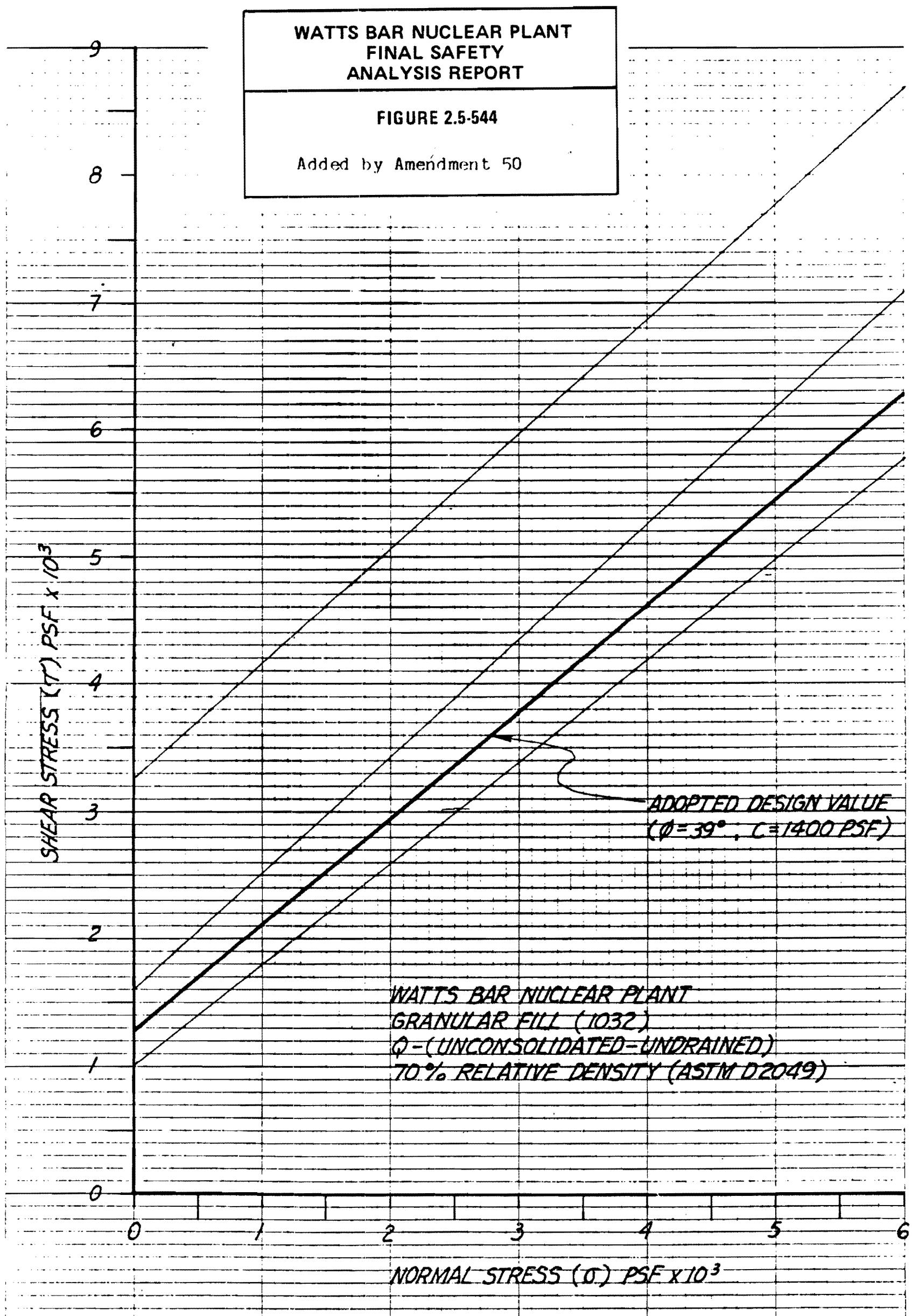


Figure 2.5-544 Watts Bar Nuclear Plant Granular Fill (1032) Q-(Unconsolidated-Undrained) 70% Relative Density (ASTM D2049)

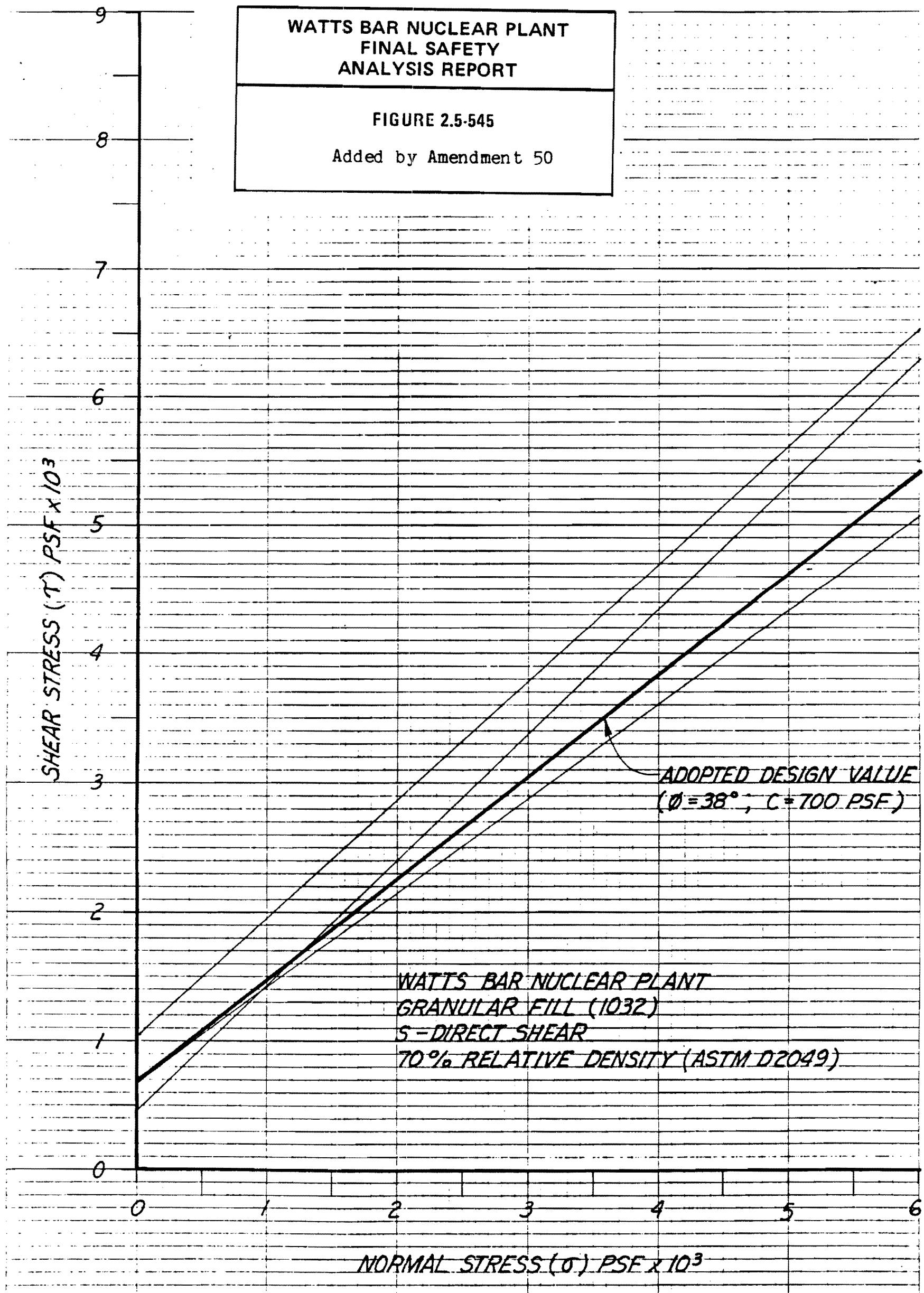


Figure 2.5-545 Watts Bar Nuclear Plant Granular Fill (1032) S-Direct Shear 70% Relative Density (ASTM 02049)

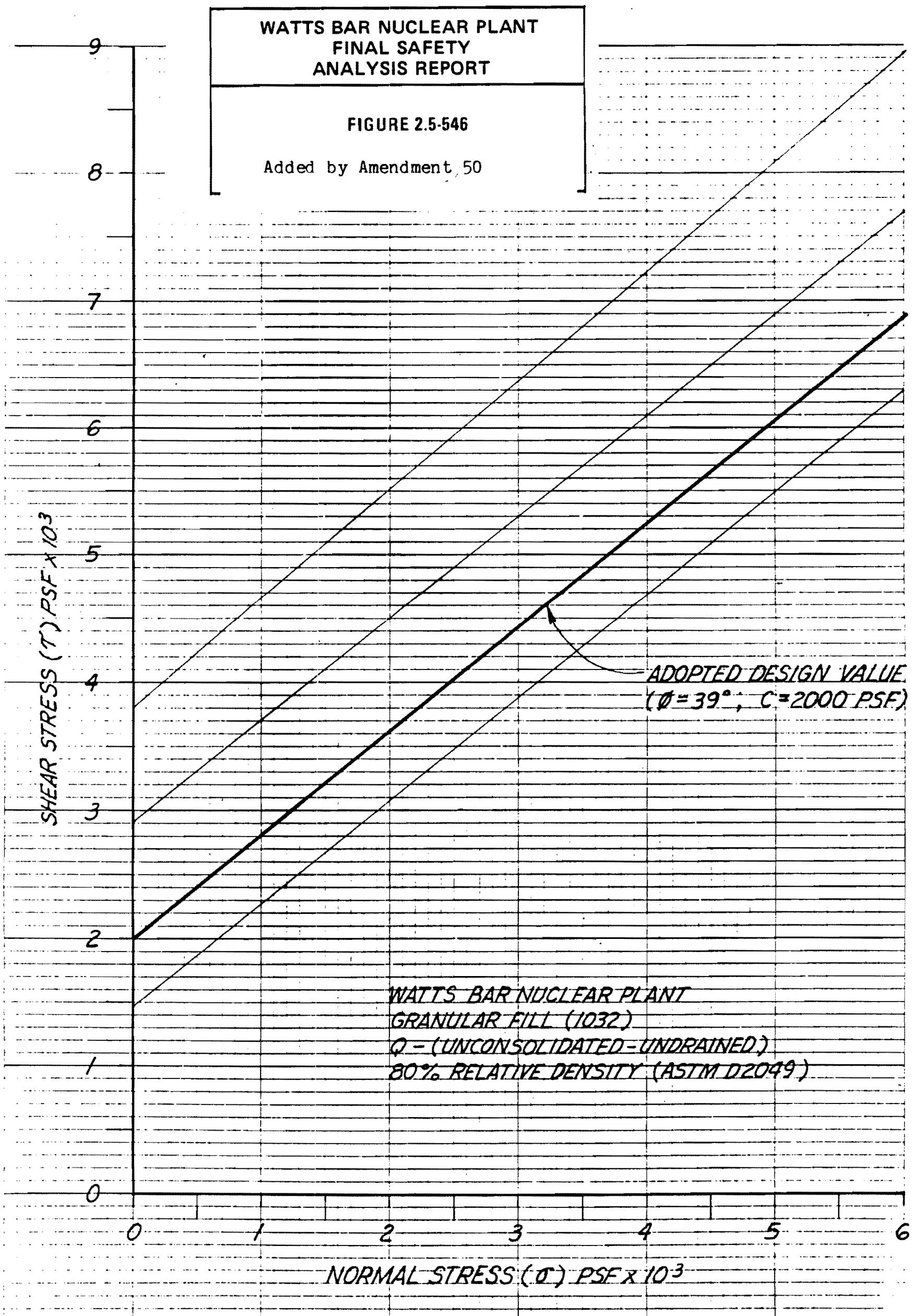


Figure 2.5-546 Watts Bar Nuclear Plant Granular Fill (1032) Q- (Unconsolidated - Undrained) 80% Relative Density (ASTM D2049)

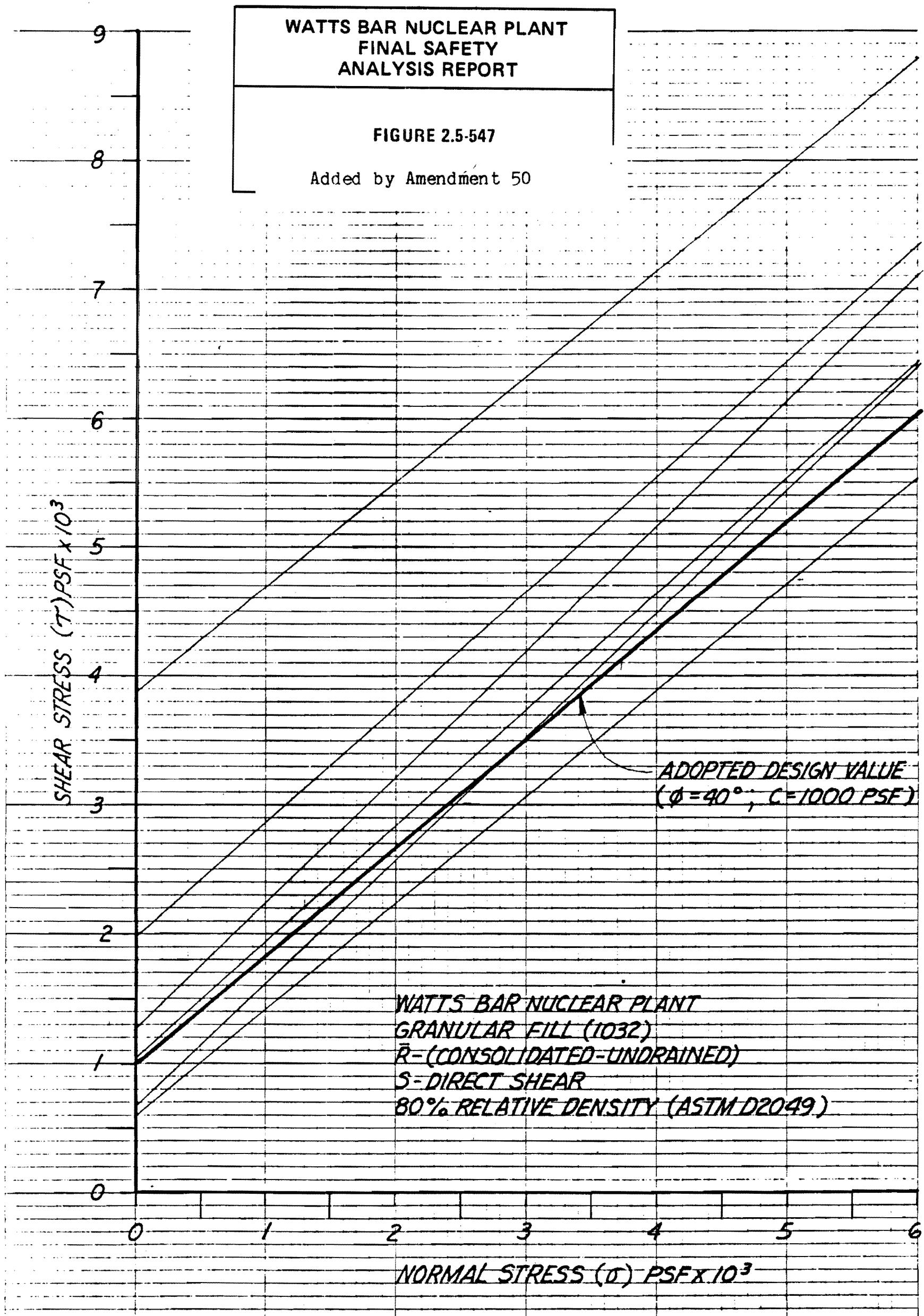


Figure 2.5-547 Watts Bar Nuclear Plant Granular Fill (1032) R- (Consolidated-Undrained) S-Direct: Shear 80% Relative Density (ASTM D2049)

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

FIGURE 2.5-548

Summary of granular fill test data - relative density

Feature: DIESEL GENERATOR BUILDING

Period: 3-28-75 to 4-24-75 Test No. _____ to _____

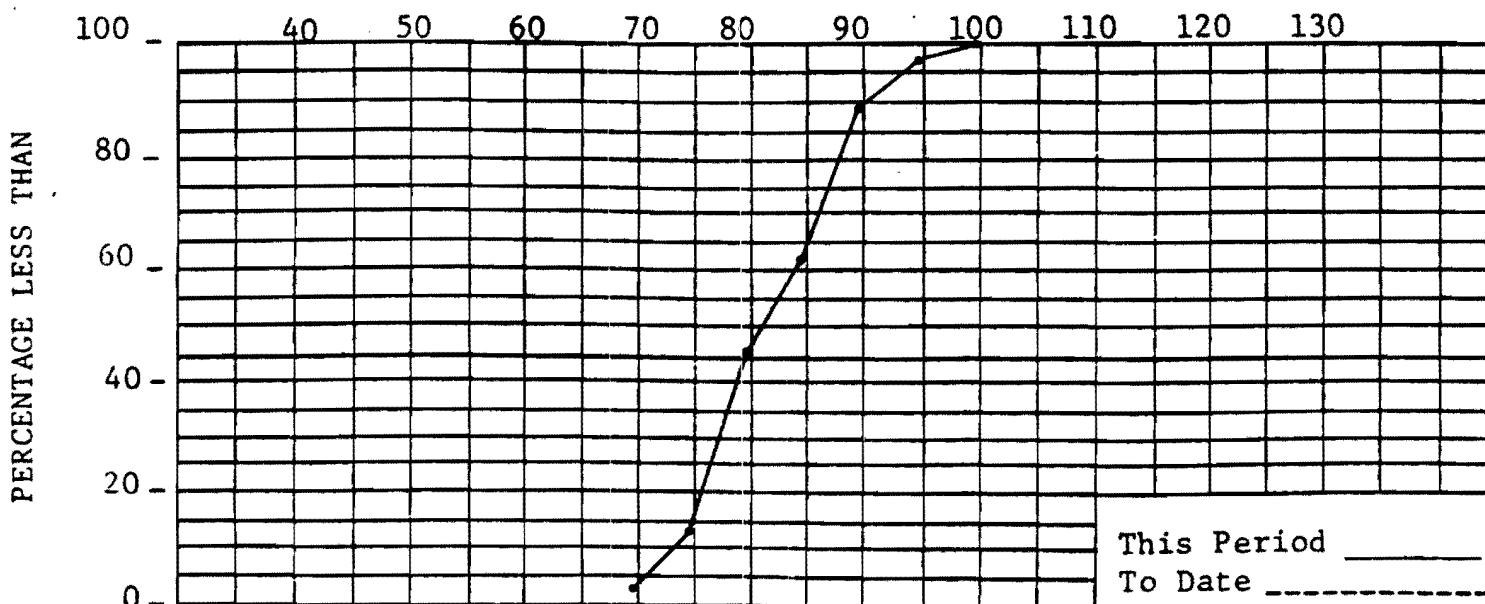
Part II Section _____ Prepared by _____

PLOT THIS COLUMN	PREV. CUM. F	THIS PERIOD				TO DATE		
		FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %
55.0	59.9							
60.0	64.9							
65.0	69.9	1	1	1	2.7			
70.0	74.9	1111	4	5	13.5			
75.0	79.9	1111 11	12	17	45.9			
80.0	84.9	1111 1	6	23	62.2			
85.0	89.9	1111 11	10	33	89.2			
90.0	94.9	111	3	36	97.2			
95.0	99.9	1	1	37	100.0			
100.0	104.9							
105.0	109.9							
TOTALS		--	--	37	--	--	--	--

Specification Source 1032 MATERIAL

PREV.	THIS PERIOD	TO DATE
Avg. Relative Density		81.0%

Specified Min. 70 % AS DETERMINED BY ASTM D2049



Remarks THESE TESTS COVER ALL DENSITY TESTS FOR THE CRUSHED STONE

PLACED BELOW THE DIESEL GENERATOR BUILDING AT WATTS BAR NUCLEAR
PLANT.

Added by Amendment 50

Figure 2.5-548 Summary of Granular Fill Test Data -Relative "Density Diesel Generator Building

Figure 2.5-549 ERCW Pipeline Section A-A (Actual Figure Located in Oversized Figures File) (Sheet 1 of 4)

Figure 2.5-549 ERCW Pipeline Section A-A (Actual Figure Located in Oversized Figures File) (Sheet 2 of 4)

Figure 2.5-549 ERCW Pipeline Section A-A (Actual Figure Located in Oversized Figures File) (Sheet 3 of 4)

Figure 2.5-549 ERCW Pipeline Section A-A (Actual Figure Located in Oversized Figures File) (Sheet 4 of 4)

Figure 2.5-550 ERCU Pipeline Section B-B (Actual Figure Located in Oversized Figures File)

Figure 2.5-551 ERCU Pipeline Section C-C (Actual Figure Located in Oversized Figures File)

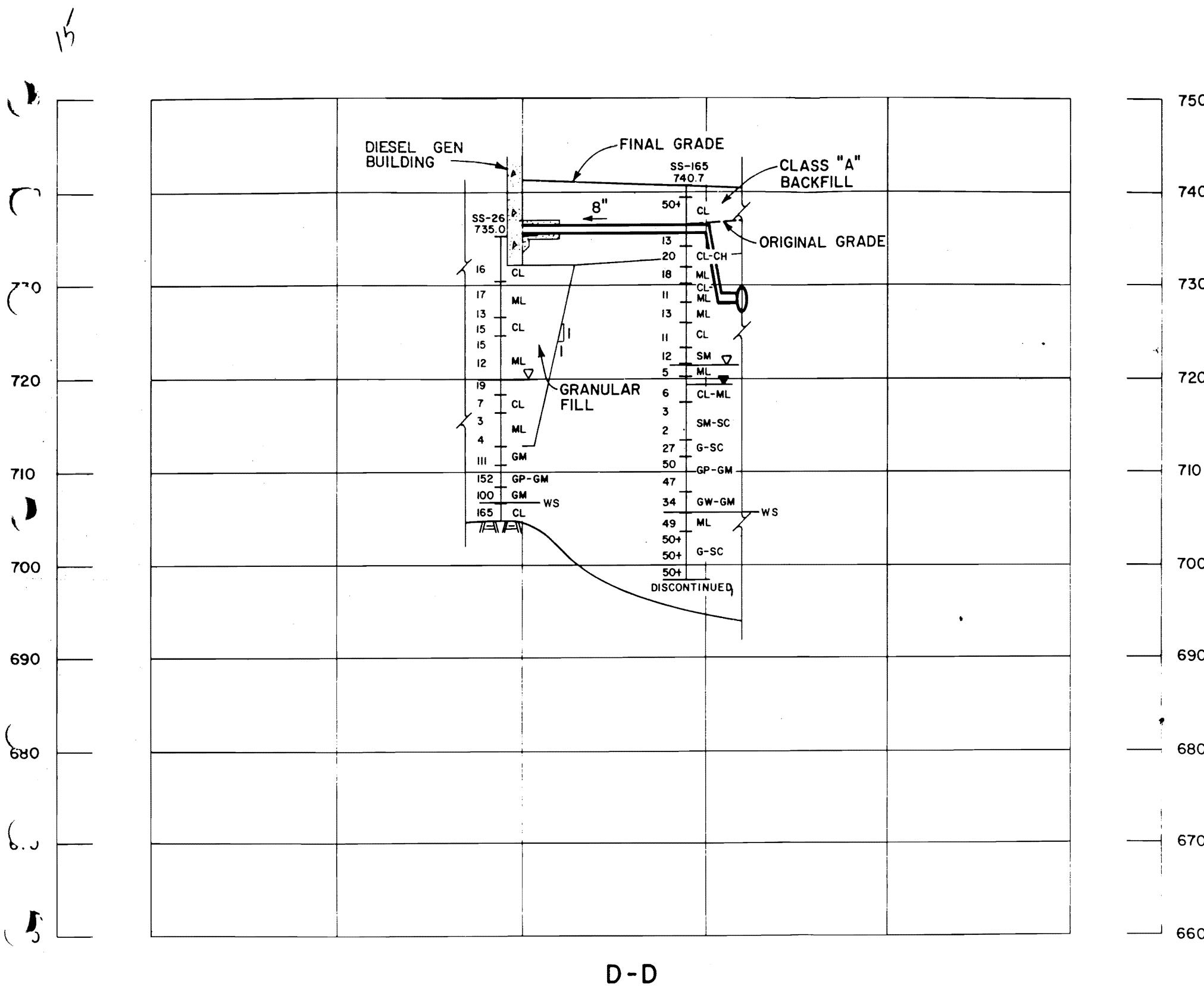


Figure 2.5-552 ERCW Pipeline Section D-D

- DESIGN WATER TABLE
- ▼ WATER TABLE (24 HR)
- MH SOIL CLASSIFICATION
- I3 BLOW COUNT
- ▨ POTENTIALLY LIQUEFIALE
(SEE NOTE)
- WS WEATHERED SHALE

NOTE: LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.22g AND SEED-IDRISS (1981) CORRELATION FOR SANDS.

Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW PIPELINE SECTION D-D FIGURE 2.5-552

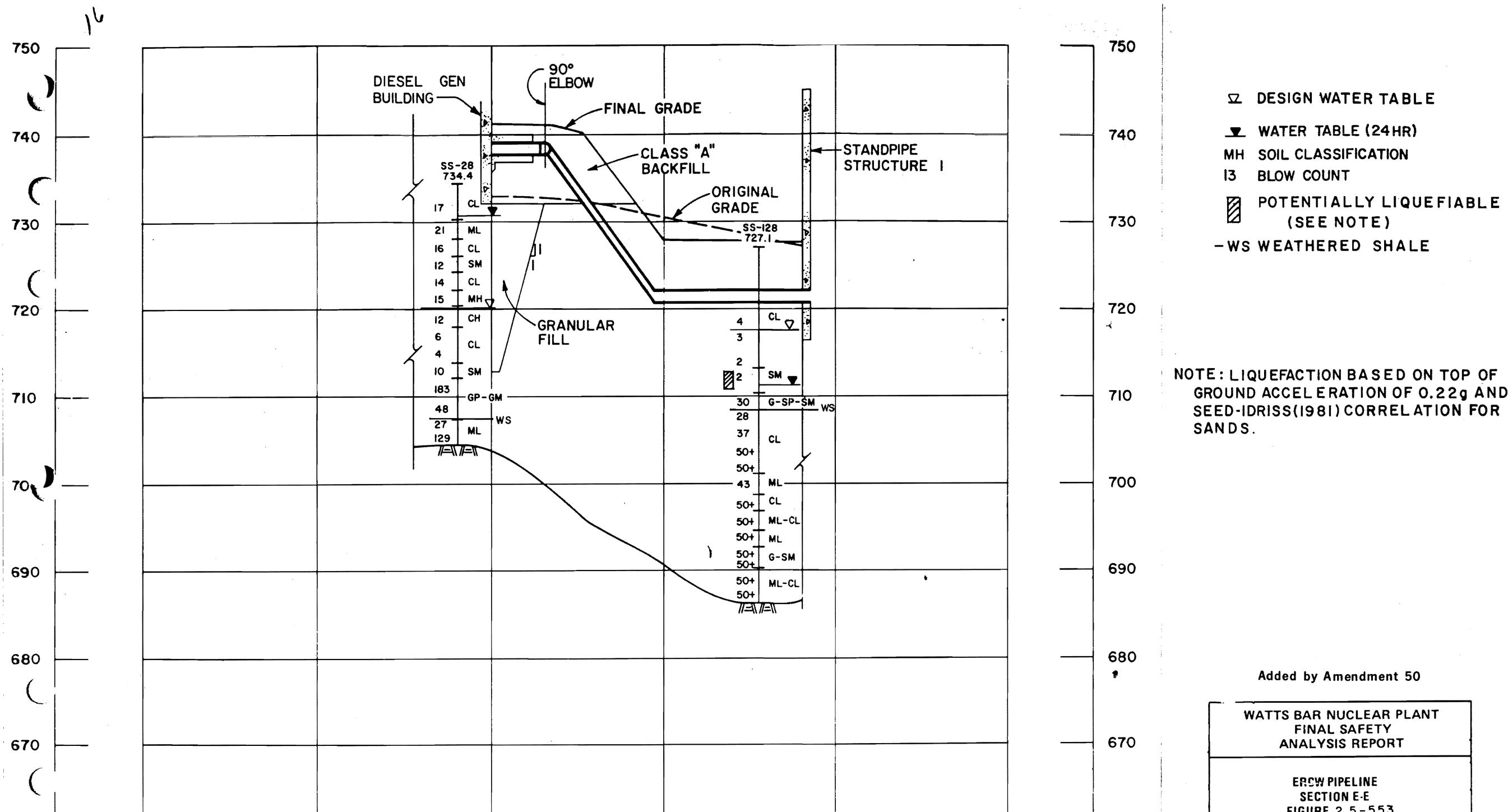


Figure 2.5-553 ERCW Pipeline Section E-E

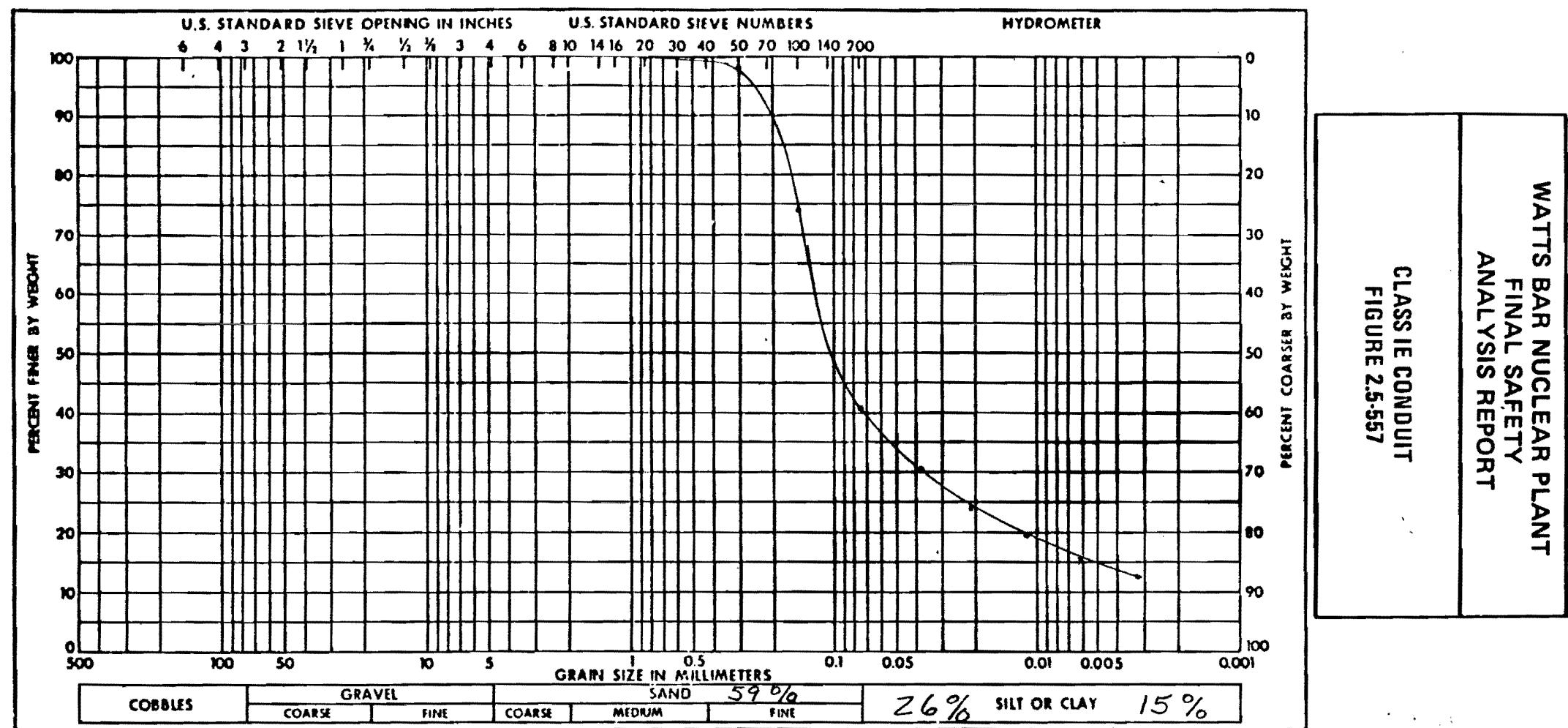
Figure 2.5-554 Category I Electrical Conduits Section F-F (Actual Figure Located in Oversized Figures File)(Sheet 1 of 2)

Figure 2.5-554 Category I Electrical Conduits Section F-F (Actual Figure Located in Oversized Figures File)(Sheet 2 of 2)

Figure 2.5-555 Category I Electrical Conduits Section G-G (Actual Figure Located in Oversized Figures File)

Figure 2.5-556 Category I Electrical Conduits Section H-H (Actual Figure Located in Oversized Figures File)

Added by Amendment 50

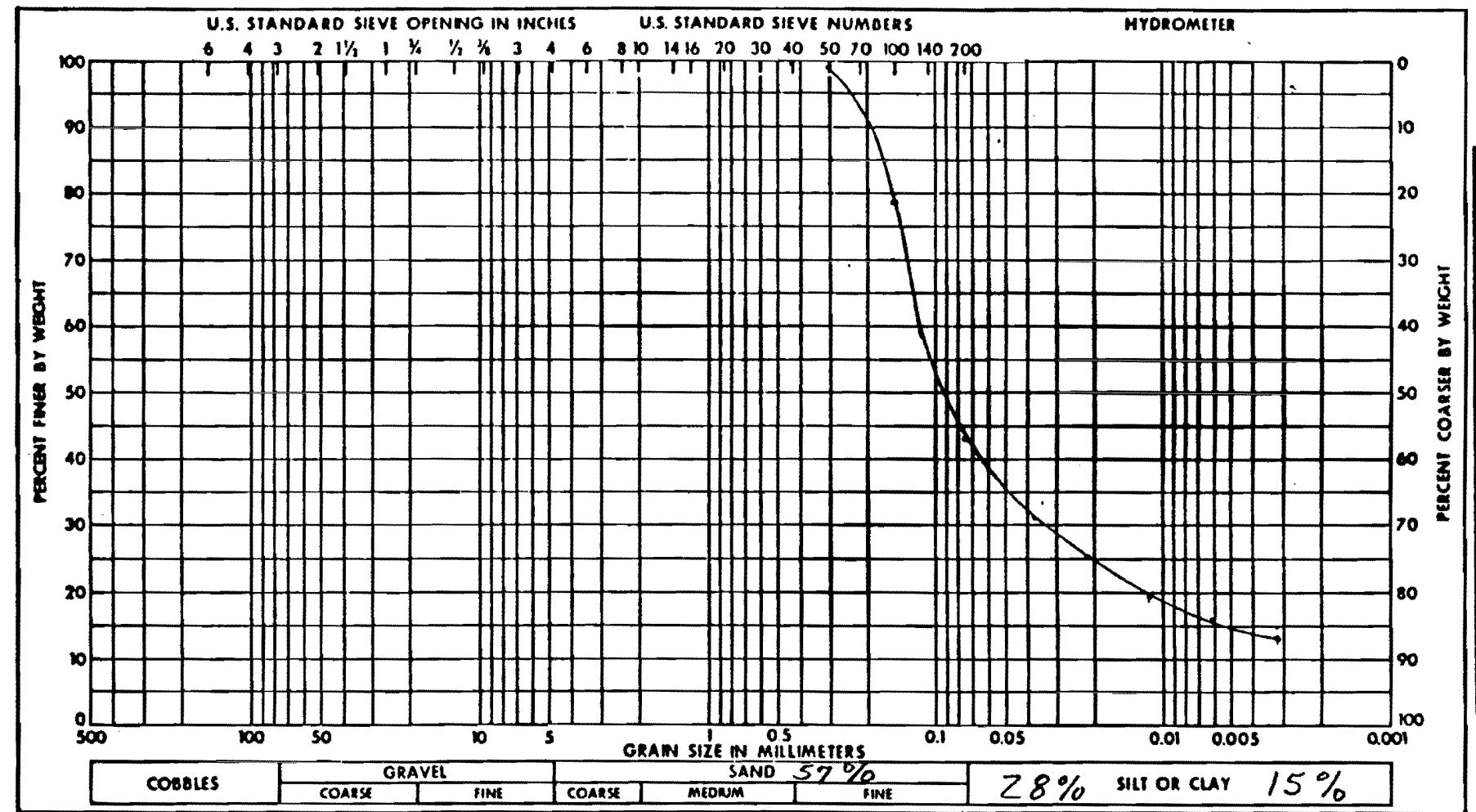


Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %		Plastic Limit, %	NP
Specific Gravity		Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:
N=5
w=28.2

Project WATTS BAR N.P.	
Feature CLASS IE CONDUIT	
Boring No. SC-50	Sample No. GP.9
Station	Offset
Date 10-1-75	Elevation
GRAIN SIZE ANALYSIS	

Figure 2.5-557 Class IE Conduit



Added by Amendment 50

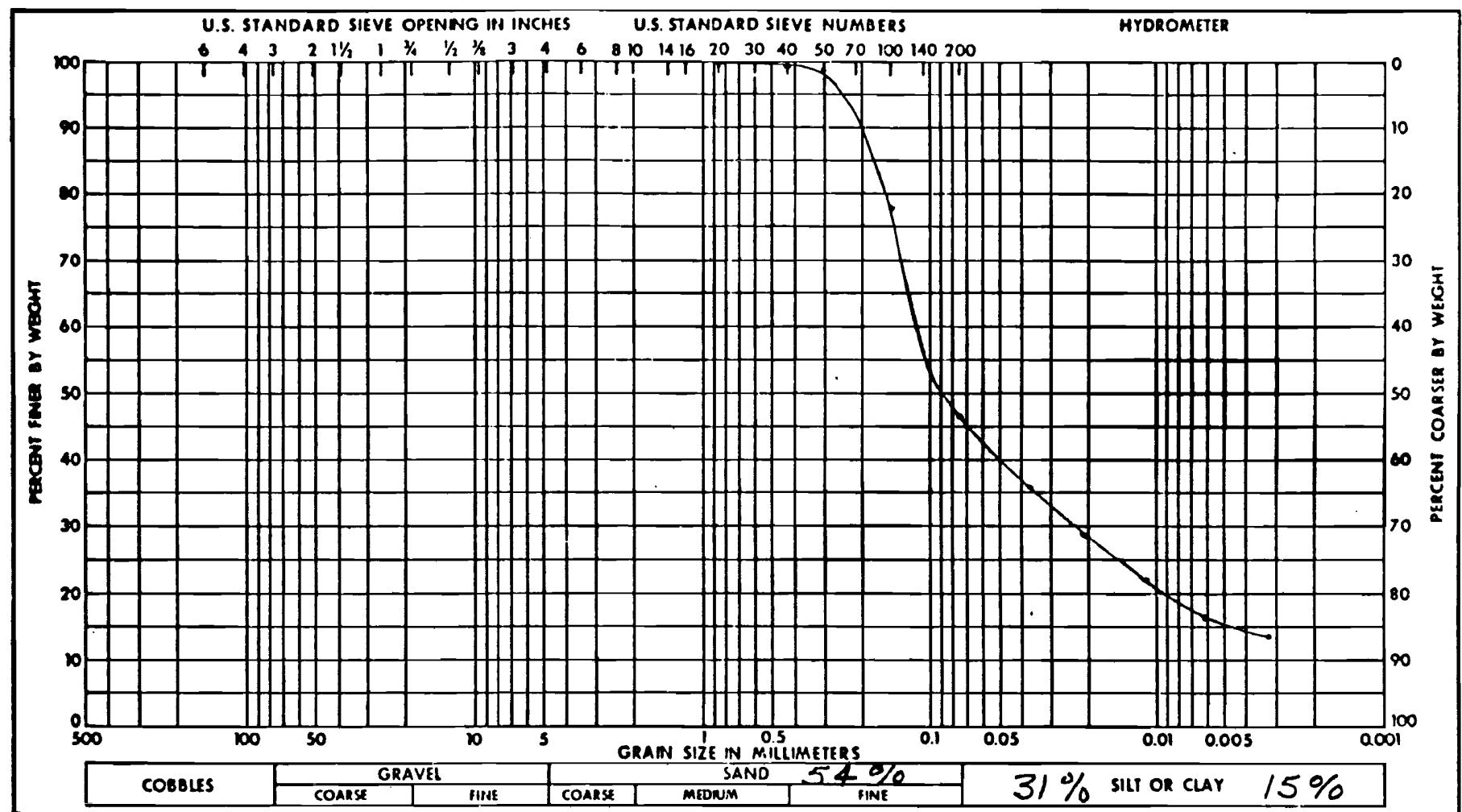
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
CLASS IE CONDUIT FIGURE 2.5-558	

Soil Symbol	<i>SM</i>	Liquid Limit, %	<i>NP</i>
Moisture Content, %		Plastic Limit, %	<i>NP</i>
Specific Gravity		Plasticity Index, %	<i>NP</i>
		Shrinkage Limit, %	

Remarks:
<i>N = 8</i>
<i>w = 29.1</i>

Figure 2.5-558 Class IE Conduit

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
CLASS IE CONDUIT FIGURE 2.5-559	

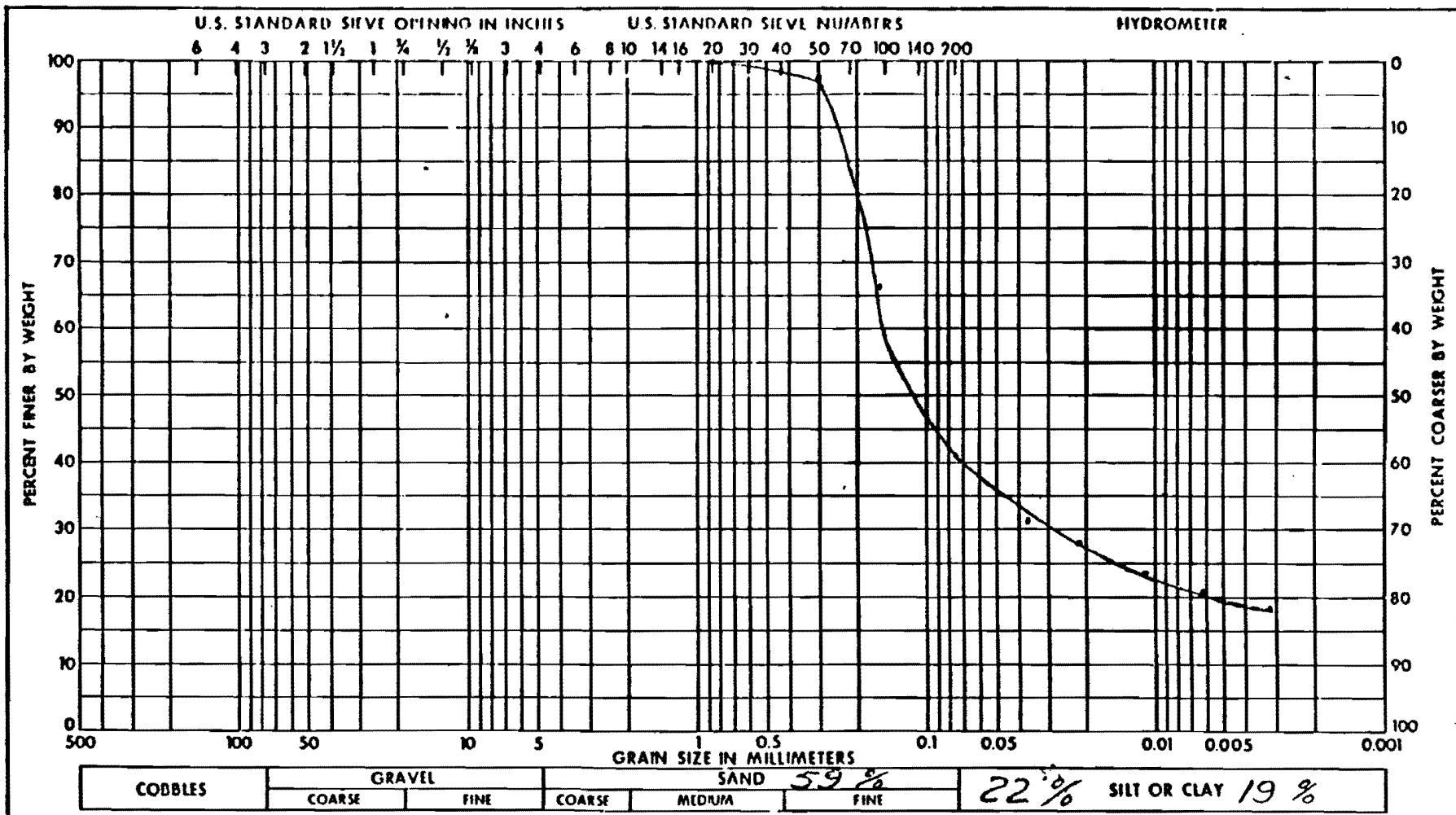
Soil Symbol	SM	Liquid Limit, %	NP
Moisture Content, %		Plastic Limit, %	NP
Specific Gravity		Plasticity Index, %	NP
		Shrinkage Limit, %	

Remarks:
N = 2
w = 31.5

Project WATTS BAR N.P.	
Feature CLASS IE CONDUIT	
Boring No. SS-50	Sample No. GP. II
Station	Offset
Date 10-7-75	Elevation
GRAIN SIZE ANALYSIS	

Figure 2.5-559 Class IE Conduit

Added by Amendment 50



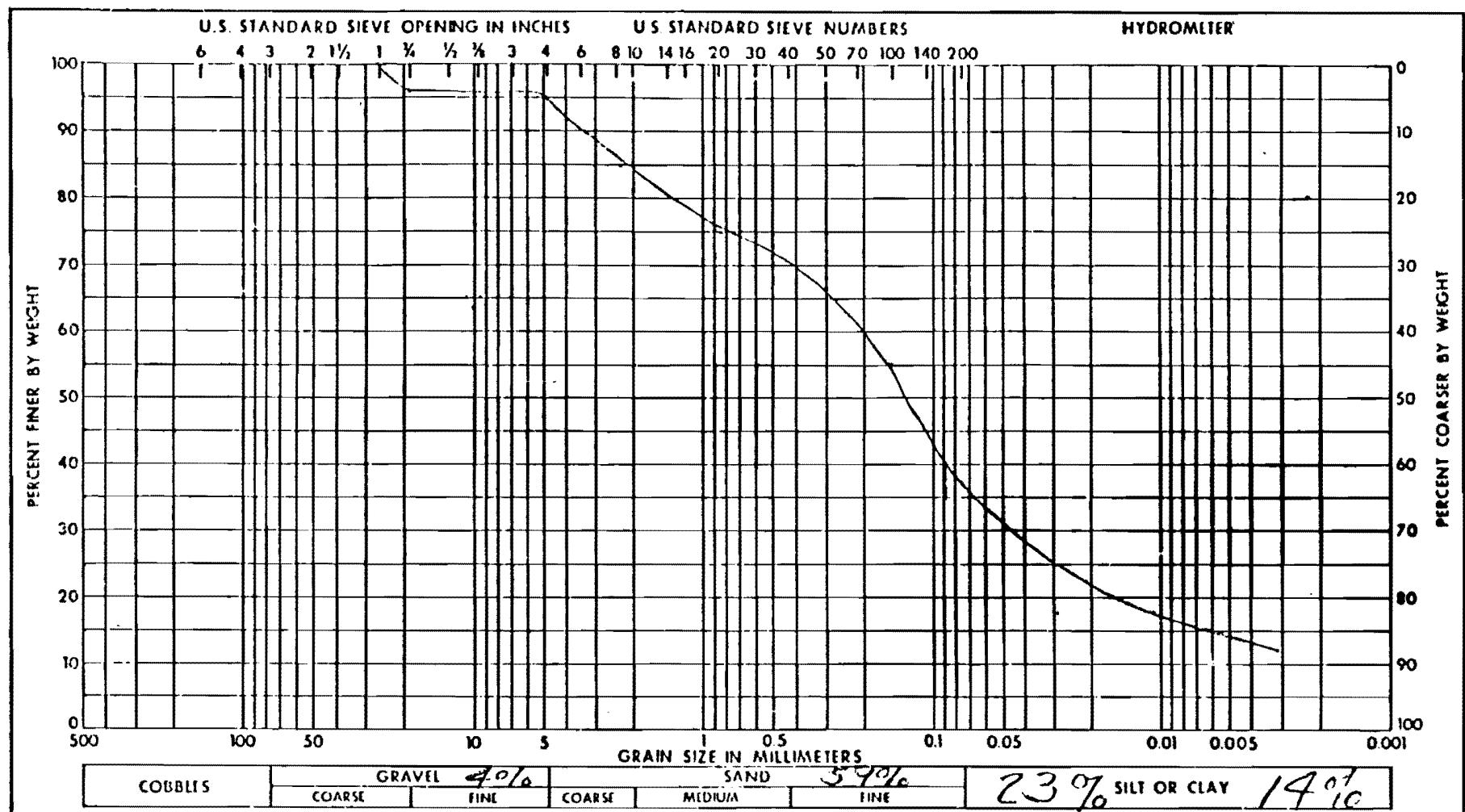
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
IE CONDUIT FIGURE 2.5-560	

Soil Symbol	SM	Liquid Limit, %	29.7
Moisture Content, %		Plastic Limit, %	28.1
Specific Gravity		Plasticity Index, %	1.6
		Shrinkage Limit, %	

Remarks:
<i>N = 15</i>
<i>w = 20.9</i>

Figure 2.5-560 Class IE Conduit

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
IE CONDUIT FIGURE 2.5-561	

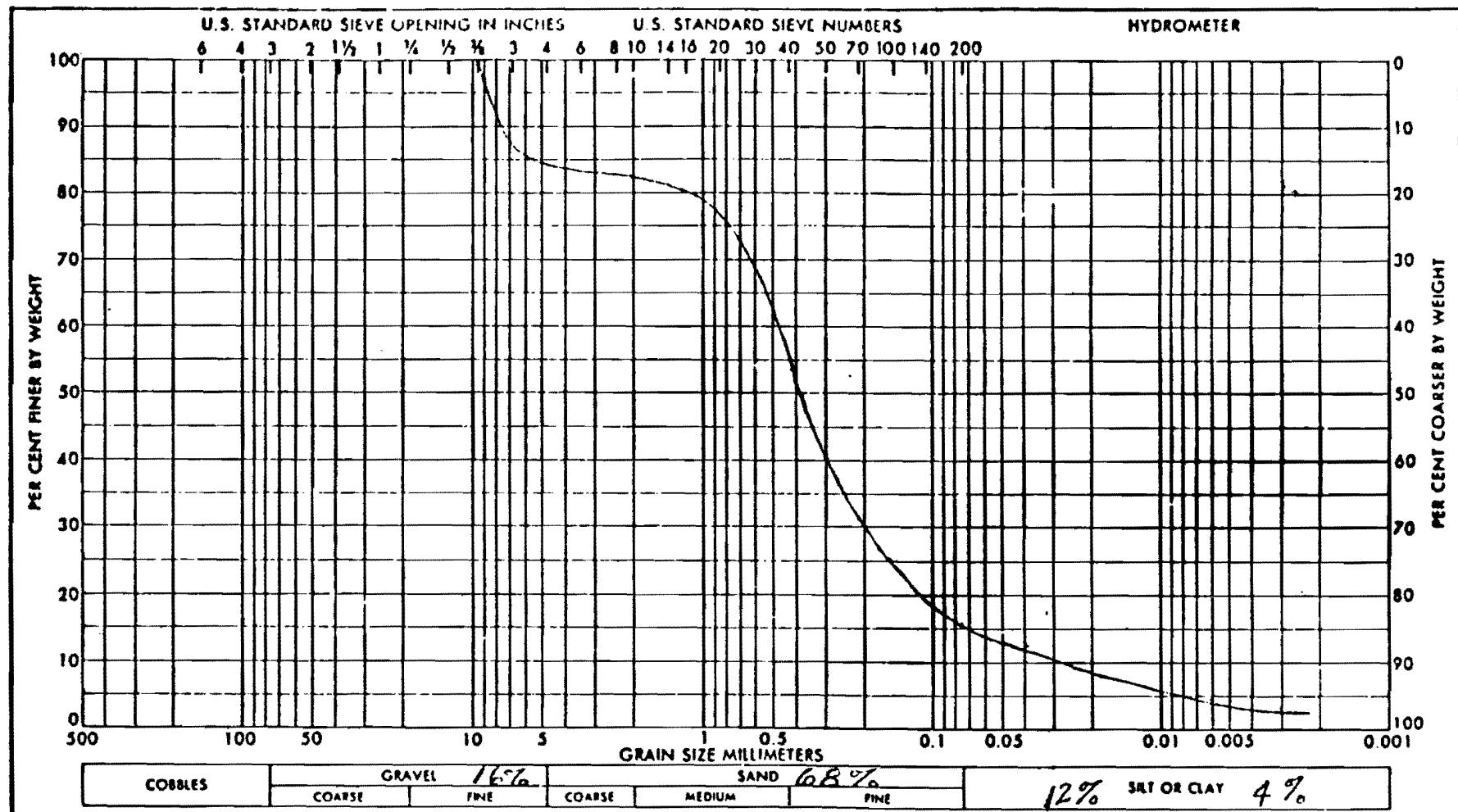
Soil Symbol	<i>SM</i>	Liquid Limit, %	<i>NP</i>
Moisture Content, %		Plastic Limit, %	<i>NP</i>
Specific Gravity		Plasticity Index, %	<i>NP</i>
		Shrinkage Limit, %	

Remarks:
<i>N=12</i>
<i>w=16.7</i>

Project <i>Watts Bar N.P.</i>	
Feature <i>IE CONDUIT</i>	
Boring No. <i>SS-61</i>	Sample No. <i>10A</i>
Station	Offset
Date <i>1-16-76</i>	Elevation
GRAIN SIZE ANALYSIS	

Figure 2.5-561 Class IE Conduit

**WATTS BAR NUCLEAR PLANT
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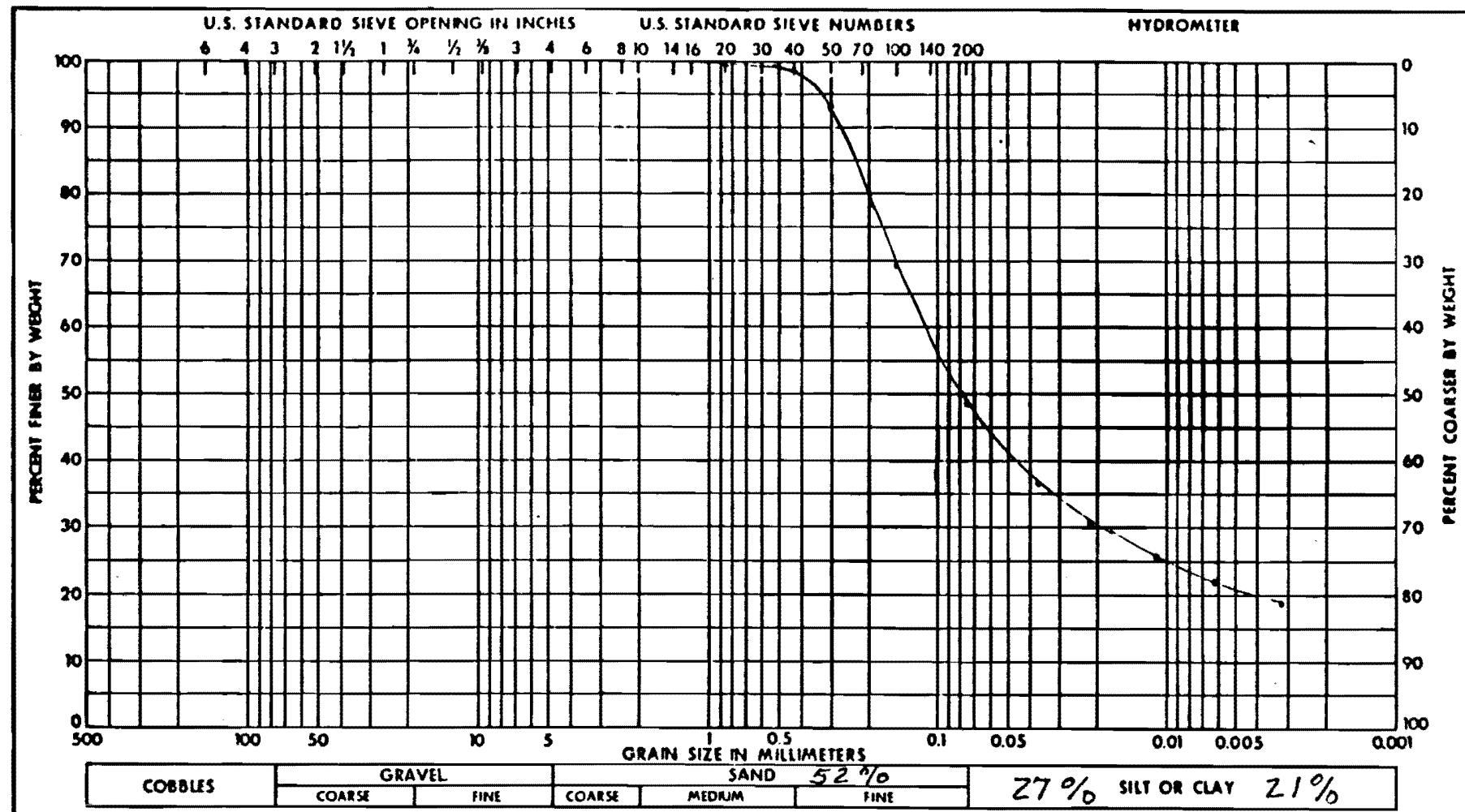
Added by Amendment 50

Soil Symbol	<u>1-5M</u>	Liquid Limit, %	<u>N.F.</u>
Moisture Content, %		Plastic Limit, %	<u>N.P.</u>
Specific Gravity		Plasticity Index, %	<u>N.P.</u>
		Shrinkage Limit, %	

Remarks:

Project <u>WATTS EARTH N.P.</u>	
<u>Feature</u>	
Boring No. <u>SS-66</u>	Sample No. <u>11A</u>
Station	Offset
Date <u>8-7-75</u>	Elevation
GRAIN SIZE ANALYSIS	

Figure 2.5-562 Class IE Conduit



Added by Amendment 50

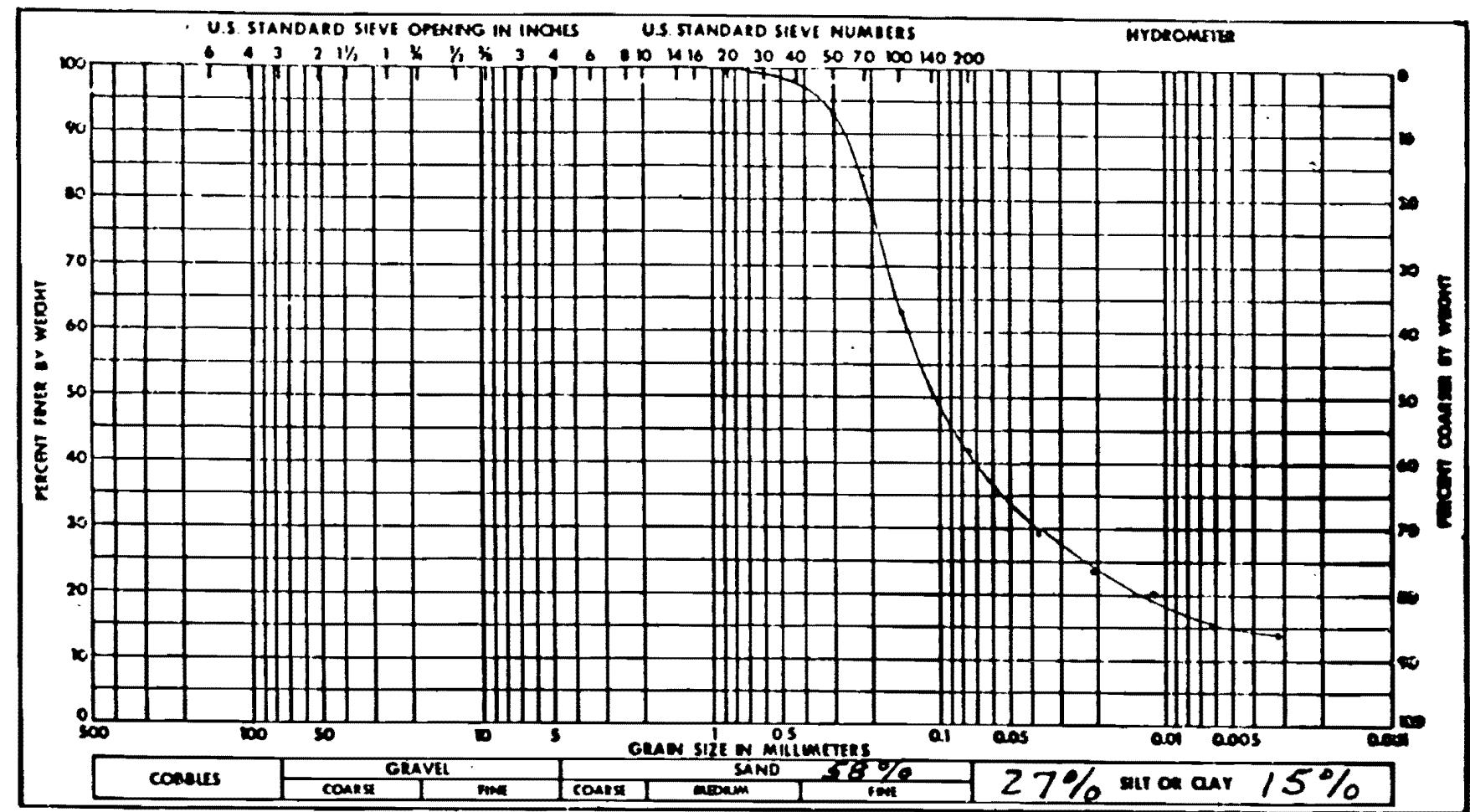
Soil Symbol	SM	Liquid Limit, %	36.0
Moisture Content, %		Plastic Limit, %	26.0
Specific Gravity		Plasticity Index, %	10.0
		Shrinkage Limit, %	

Remarks:

Project WATTS BAR N.P	
Feature CLASS 1E CONDUIT	
Boring No. SS-63	Sample No. G-5
Station	Offset
Date 10-11-15	Elevation
GRAIN SIZE ANALYSIS	

Figure 2.5-563 Class IE Conduit

Added by Amendment 50



WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW & HPFP SYSTEM FIGURE 2.5-564

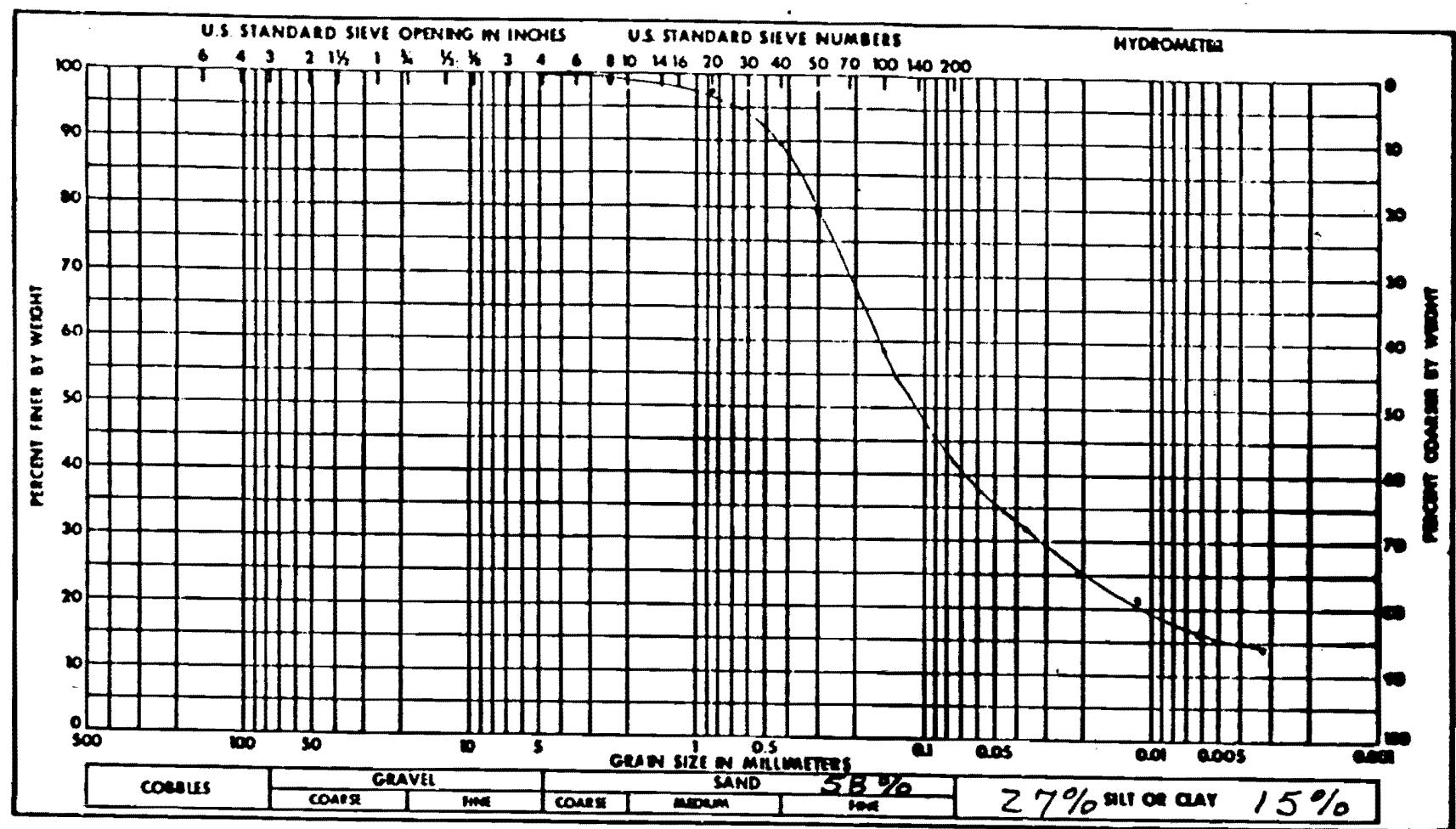
Soil Symbol	SM	Liquid Limit, %	28.0
Moisture Content, %		Plastic Limit, %	22.8
Specific Gravity		Plasticity Index, %	5.2
		Shrinkage Limit, %	

Remarks:
N = 5

Project WATTS BAR N.P.	
Feature ERCW & HPFP SYSTEM	
Boring No. SS-92	Sample No. 3A,4A
Station	Offset
Date 11-26-75	Elevation 719,720.5
GRAIN SIZE ANALYSIS	

Figure 2.5-564 ERCU & HPFP System

Added by Amendment 50



Soil Symbol	SM	Liquid Limit, %	26.0
Moisture Content, %	20.1	Plastic Limit, %	22.1
Specific Gravity		Plasticity Index, %	3.9
		Shrinkage Limit, %	

Remarks:

Project WATTS BAR N.P.	
Feature	ERCU & HPFP SYSTEM
Boring No.	SS-92
Station	Offset
Date	11-26-75
Sample No.	5A
Elevation 716.9	
GRAIN SIZE ANALYSIS	

Figure 2.5-565 ERCU & HPFP System

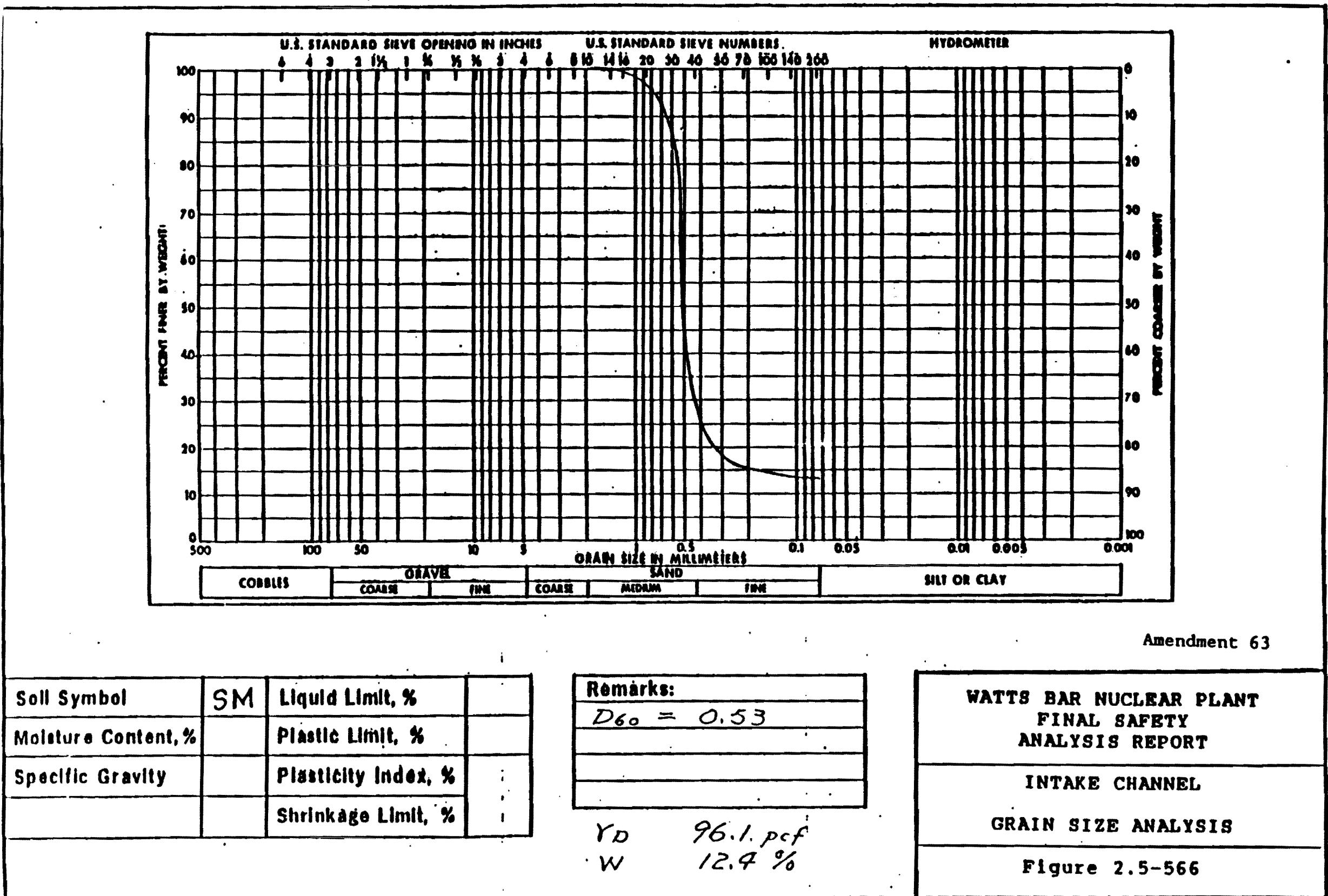


Figure 2.5-566 Intake Channel Grain Size Analysis

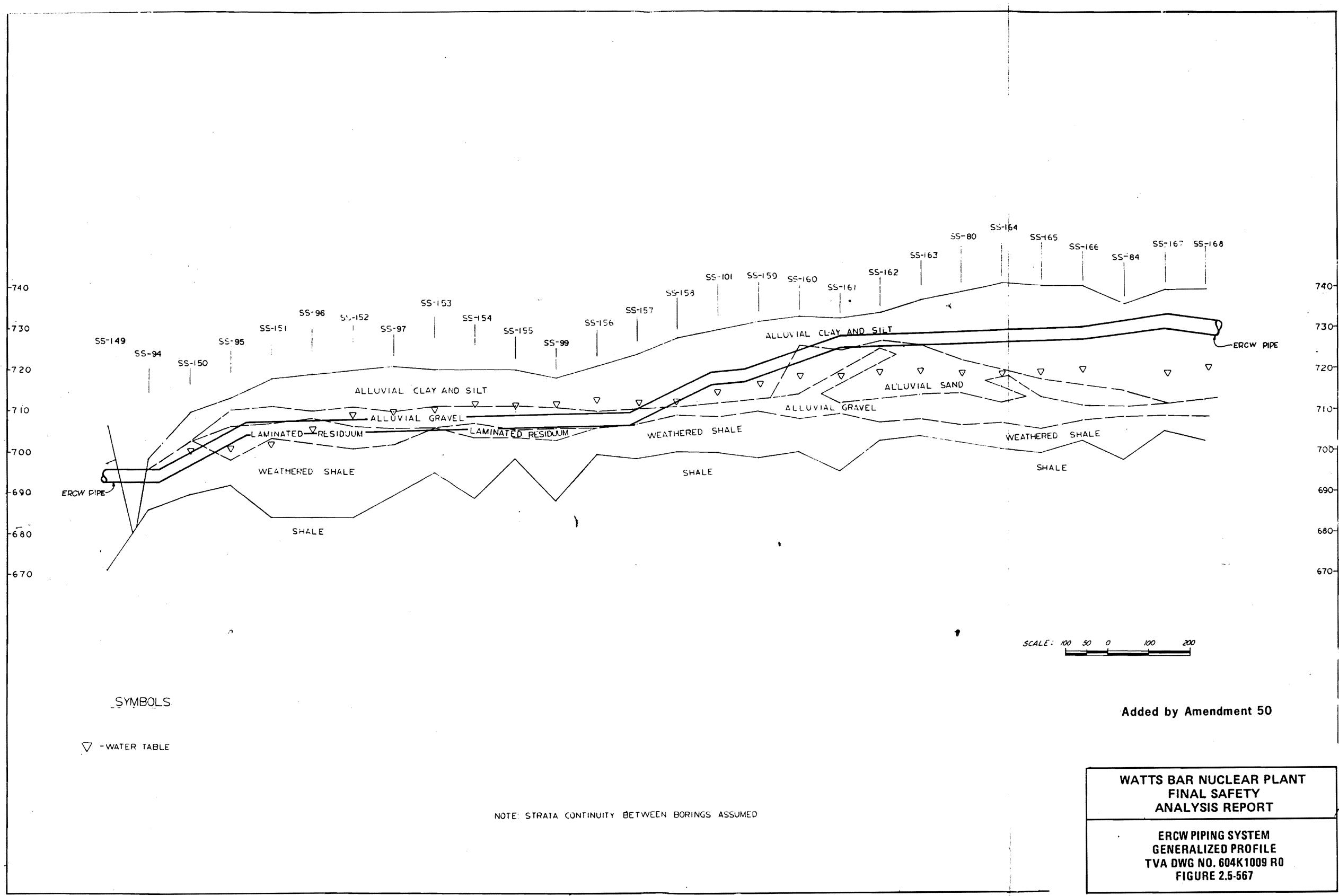


Figure 2.5-567 ERCW Piping System - Generalized Profile TVA DWG NO. 604K1009 RO

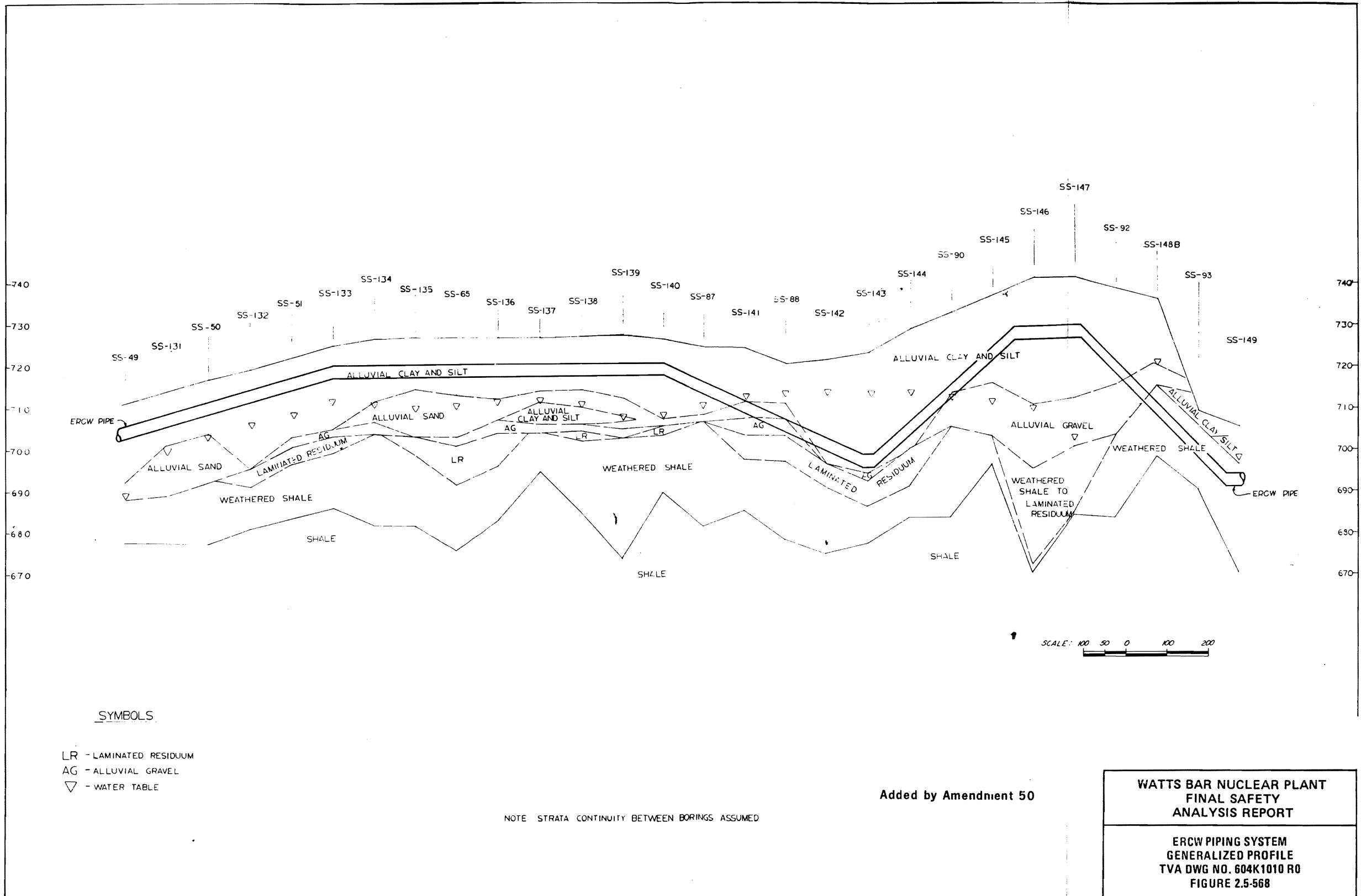
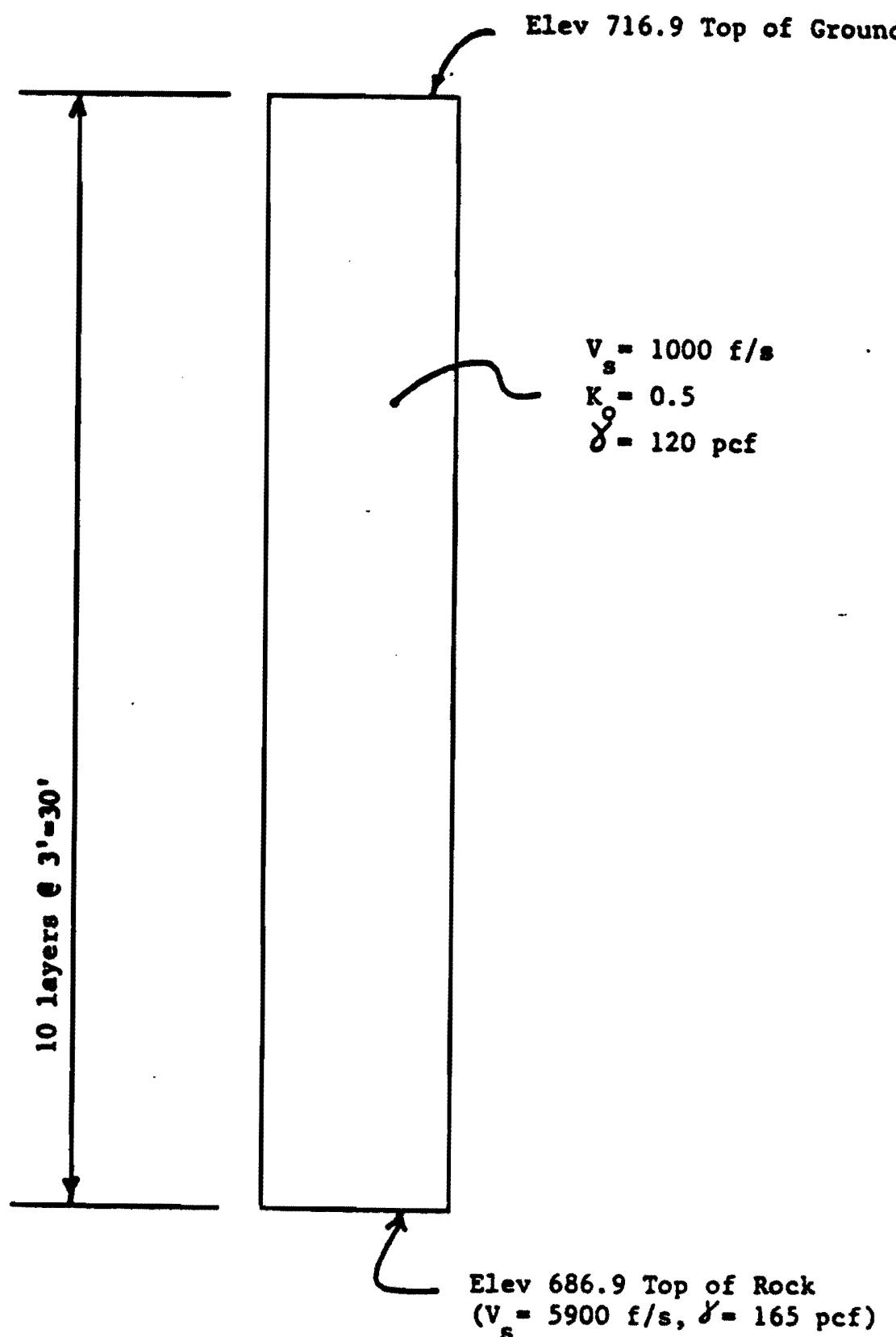


Figure 2.5-568 ERCW Piping System - Generalized Profile TVA DWG NO. 604K1010 RO



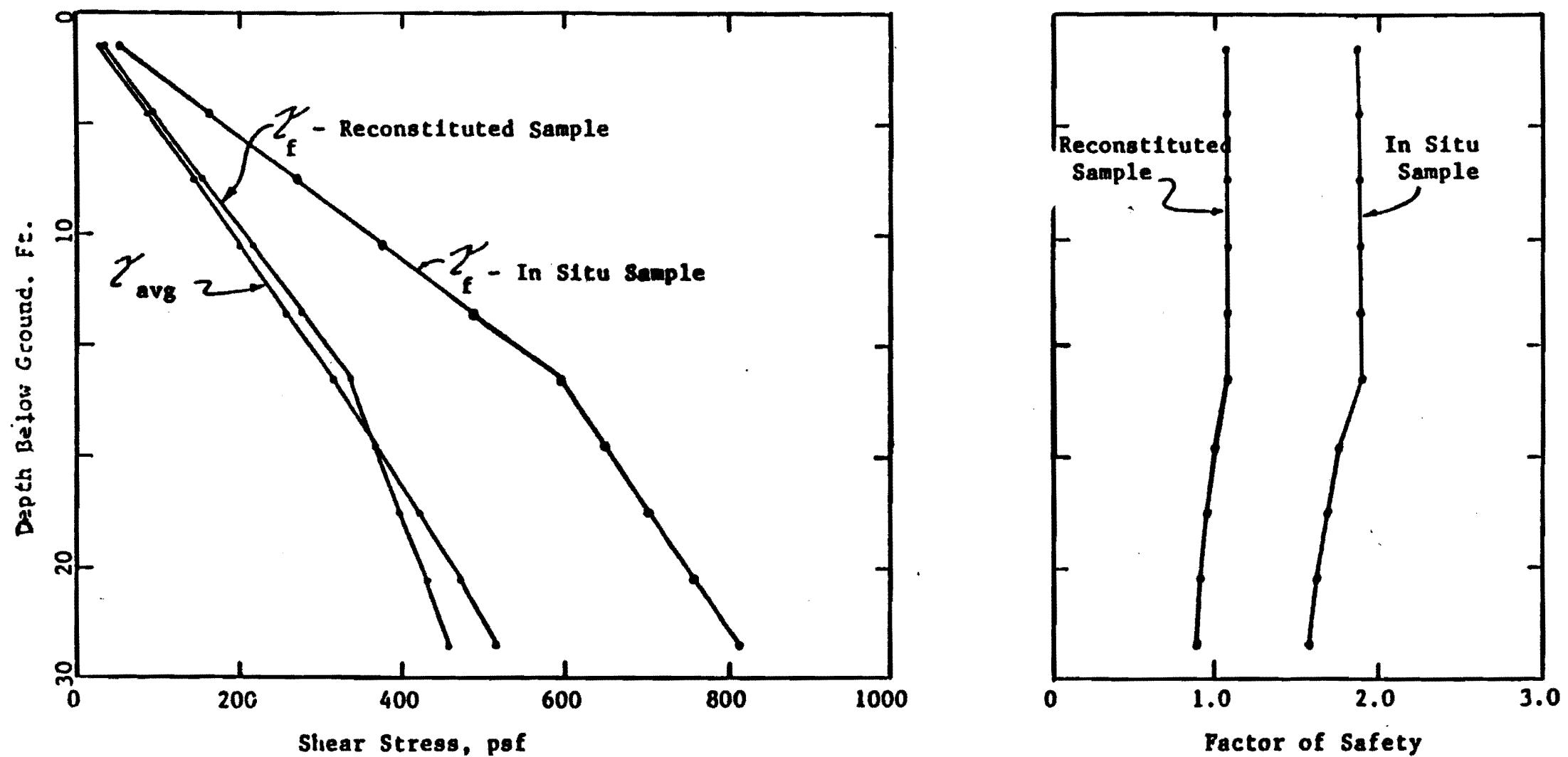
One-Dimensional Soil Profile Used for Liquefaction Evaluation

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-569

Figure 2.5-569 One-Dimensional Soil Profile Used for Liquefaction Evaluation



Comparison of Induced Shear Stress (γ_{avg}) and Shear Stress Required to cause 5% strain (γ_f) and Resulting Factors of Safety with Depth Below Ground Surface.

Added by Amendment 50

WATTS BAR NUCLEAR PLANT
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FIGURE 2.5-570

Figure 2.5-570 Comparison of Induced Shear Stress and Shear Stress Required to Cause 5% Strain and Resulting Factors Of Safety With Depth Below Ground Surface

**Figure 2.5-571 ERCW Pipeline Section A-A
(Actual Figure Located in Oversized Figures File)(Sheet 1 of 4)**

**Figure 2.5-571 ERCW Pipeline Section A-A
(Actual Figure Located in Oversized Figures File)(Sheet 2 of 4)**

**Figure 2.5-571 ERCW Pipeline Section A-A
(Actual Figure Located in Oversized Figures File)(Sheet 3 of 4)**

**Figure 2.5-571 ERCW Pipeline Section A-A
(Actual Figure Located in Oversized Figures File)(Sheet 4 of 4)**

Figure 2.5-572 ERCW Pipeline Section B-B

Figure 2.5-573 (Actual Figure Located in Oversized Figures File)

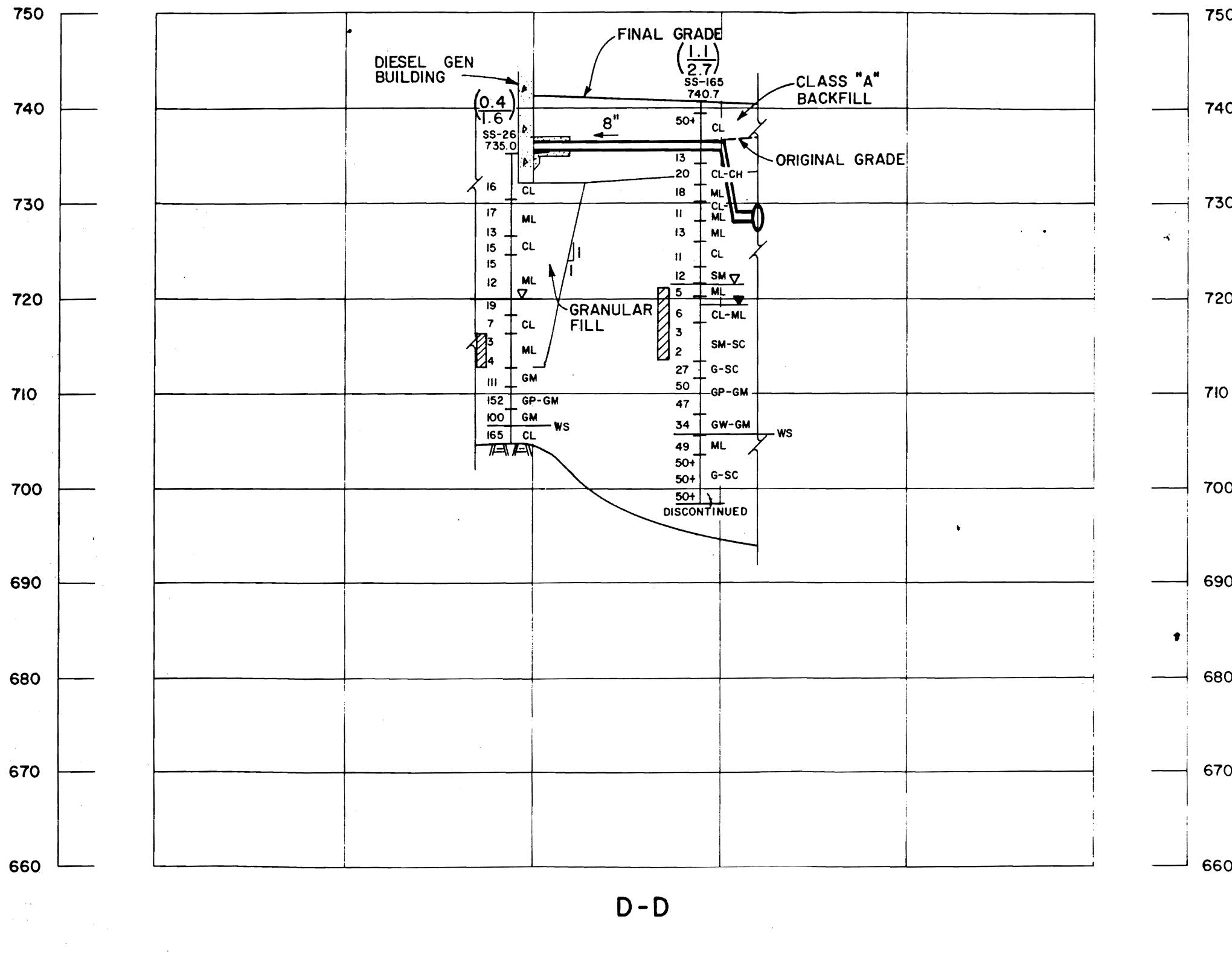


Figure 2.5-574 ERCW Pipeline Section D-D

POTENTIAL SETTLEMENT BASED
ON 1.5 % ϵ CRITERIA (INCHES)
POTENTIAL SETTLEMENT BASED
ON 6 % ϵ CRITERIA (INCHES)

- DESIGN WATER TABLE
 - WATER TABLE (24 HR)
 - MH SOIL CLASSIFICATION
 - I3 BLOW COUNT
 - POTENTIALLY LIQUEFIALE SOIL
(SEE NOTE)
 - WS WEATHERED SHALE

NOTE:

- I. LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.4g AND SEED - IDRISI (1971) CORRELATION FOR SANDS.

Added by Amendment 50

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
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**ERCW PIPELINE
SECTION D-D
FIGURE 2.5-574**

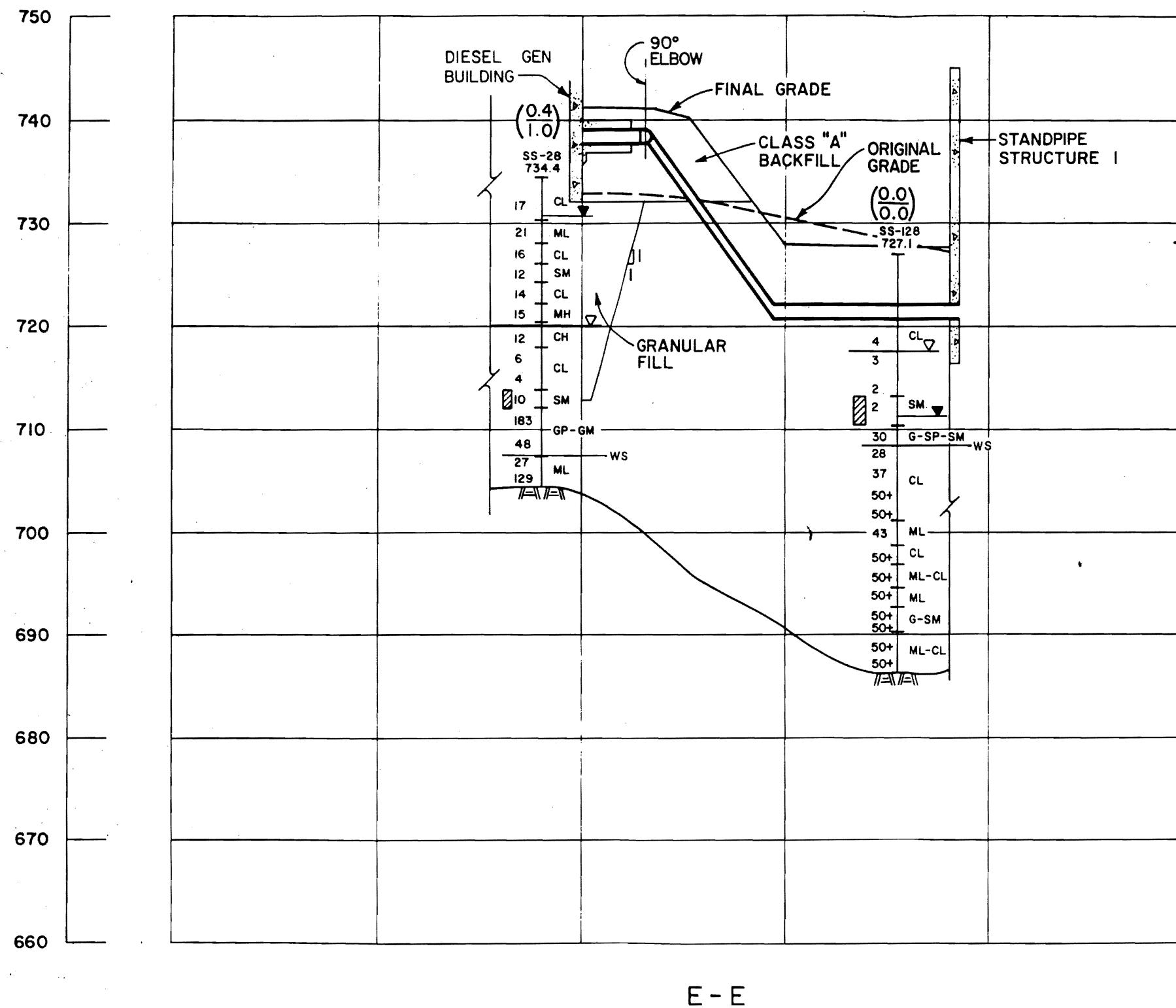
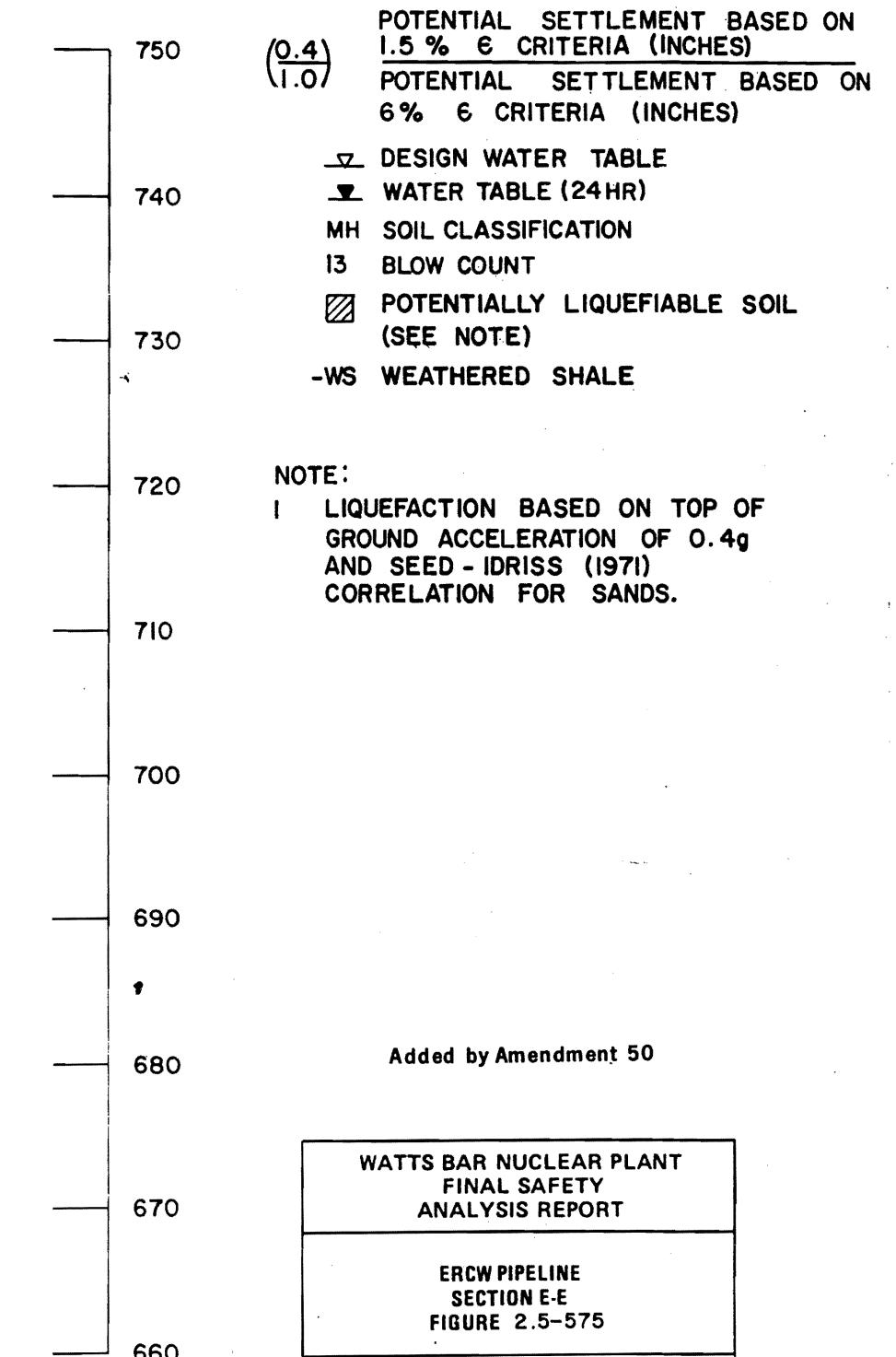


Figure 2.5-575 ERCW Pipeline Section E-E



**Figure 2.5-576 Category I Electrical Conduits Section F-F
(Actual Figure Located in Oversized Figures File)(Sheet 1 of 2)**

**Figure 2.5-576 Category I Electrical Conduits Section F-F
(Actual Figure Located in Oversized Figures File)(Sheet 2 of 2)**

**Figure 2.5-577 Category I Electrical Conduits Section G-G
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-578 Category I Electrical Conduits Section H-H
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-579 Miscellaneous ERCW Piping and IE Conduit Soil Borings
(Actual Figure Located in Oversized Figures File)**

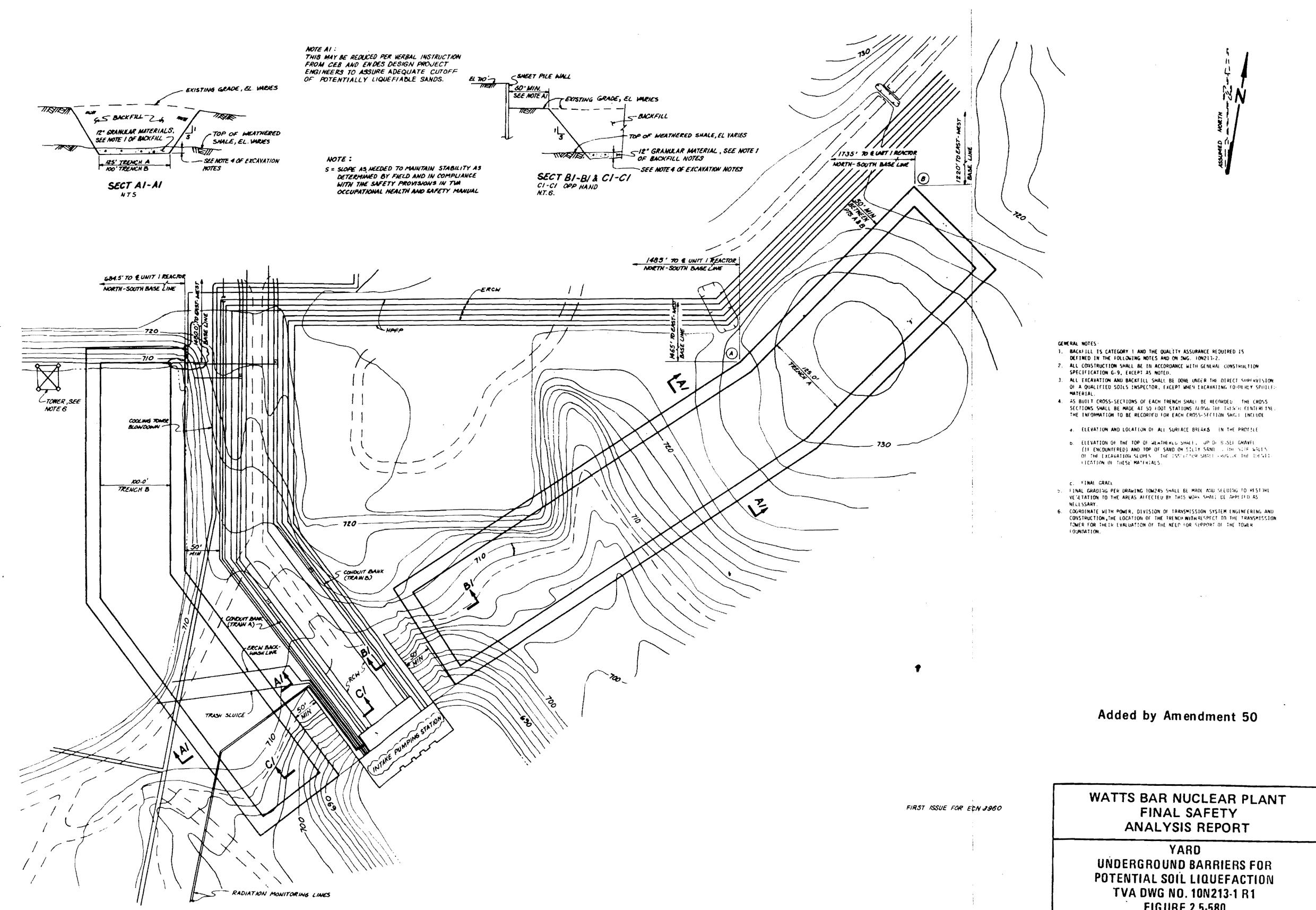


Figure 2.5-580 Yard Underground Barriers for Potential Soil Liquefaction
TVA DWGNO. 10N213-1 R1

EXCAVATOR NOTES:

- A STOCHPYLE AREA FOR FINE GRAINED CLAYS AND SILTS, AND A SEPARATE STOCHPYLE AREA FOR THE SANDS AND SILTY SANDS ARE TO BE ESTABLISHED. SEPARATE STOCHPYLES FOR EACH TRENCH MAY BE ESTABLISHED AT THE OPTION OF THE INSPECTOR. AS EACH TRENCH IS EXCAVATED, THE FINE GRAINED CLAYS AND SILTS SHALL BE IMMEDIATELY REMOVED FROM THE SANDS AND SILTY SANDS AND RESTRICTED TO THE APPROPRIATE STOCHPYLE. THE STOCHPYLE AREAS ARE TO BE ESTABLISHED IN A MANNER THAT WILL ALLOW DRAINSAGE OF THE STOCHPYLE MATERIAL. IN ADDITION, IT CAN BE RECLAIMED FOR BACKFILL. THE SURFACES OF THE STOCHPYLE AREAS ARE TO BE GRADED TO PREVENT PONDING AND TO REHABILITATE INFILTRATION, WEIRFALL AND RAPIDITY.
- INTERVAL EXCAVATION AREAS IN EXCAVATION THAT HAS PREVIOUSLY DRILLED OR BURIED PLANT CONSTRUCTION SHALL BE GRADED TO A HORIZONTAL.
- BASED CHANNEL MAY BE EXCAVATED BELOW THE SANDS AND SILTY SANDS IN MANY AREAS OF THE TRENCH EXCAVATION. THE BASED CHANNEL SHALL BE SPILLED.
- EACH TRENCH IS TO BE EXCAVATED TO THE WEATHERED SHALE (SAMPOLITE). THE EXCAVATION IS TO BE CARRIED INTO THE WEATHERED SHALE TO A DEPTH WHERE THE SAMPOLITE MATERIAL EXHIBITS ROCK-LIKE CHARACTERISTICS SUCH AS HORSES HOOFES, SPONGE-LIKE, ETC. THE DEPTH OF THE EXCAVATION IS TO BE DETERMINED AS NOTED ABOVE BY A QUALIFIED SOILS INSPECTOR. EXCAVATION TO SHALE, UNGRADED ROCK IS NOT REQUIRED.
- BEST MANAGEMENT PRACTICE FOR RAPIDITY SHOULD BE USED FOR STOCHPYLES AND STOCHPYLE AREAS.
- EACH TRENCH SHALL BE REINFORCED AND MAINTAINED IN A MANNER THAT WILL ALLOW THE EXCAVATION AND PLACEMENT OF EARTHFILL. NOTE 3. REINFORCEMENT IS ALSO NECESSARY TO MAINTAIN THE STABILITY OF EXCAVATION SLIDES AND ADEQUATELY SUPPORT EXCAVATION GEOMETRY. REINFORCEMENT REQUIREMENTS ARE TO BE APPROVED BY THE INSPECTOR AS LAELE AND MEET THE APPROVAL OF DE RES. PARTICULAR CARE SHALL BE TAKEN TO PREVENT THE REINFORCEMENT, REINFORCER, REFLU, SLUMPING, OR LOSS OF THE SANDS AND SILTY SANDS IN THE TRENCH EXCAVATION. PROGRESSIVELY GRADED REVERSE FILTERS OF SANDS, GRANULES, AND/OR CRUSHED STONE, AS APPROPRIATE, SHALL BE IMMEDIATELY PLACED OVER ANY REINFORCEMENT PLACEMENT. REINFORCEMENT IS TO BE NEGATIVELY TESTED FOR MOISTURE CONTENT AND PLACEMENT OF ANY BACKFILL.
- PLACEMENT OF ANY BACKFILL, THE SURFACE OF THE WEATHERED SHALE SHALL BE REASONABLY WELL CLEANS OF ANY SOIL OR LOOSE DEBRIS AND/OR ANY DIRT OVER 1". THAT REMAIN AFTER THE EXCAVATION PROCESS. AIR OR WATER SHALL NOT BE USED TO CLEANUP OF THE WEATHERED SHALE SURFACE.
- THE PROCESS OF EXCAVATION UNTIL THE WEATHERED SHALE TO THE SPECIFIED DEPTH, CLEANING THE SURFACE, AND PLACEMENT OF THE GROUTABLE MATERIAL AS SPECIFIED IN EARTHFILL NOTE 1 SHALL BE KEPT AS SHORT AS REASONABLE TO PREVENT DEGRADATION OF THE WEATHERED SHALE SURFACE.

EARTHFILL NOTES:

1. AFTER THE TRENCH HAS BEEN EXCAVATED TO THE SPECIFIED DEPTH (EXC. NOTE 4) THE FOLLOWING STEPS SHALL BE TAKEN TO BACKFILL EACH TRENCH:

- PLACE AND COMPACT A MINIMUM OF 12 INCHES OF GRANULAR MATERIAL MEETING THE REQUIREMENTS OF SECTION 1050 (BOTTON LAYER) OF GENERAL CONSTRUCTION SPECIFICATION T-1. THE FOLLOWING GRADING IS ALSO ACCEPTABLE.

SOURCE SIZE & SIZE	PERCENT PASSING BY WEIGHT
1-1/2 INCHES	100
3/4 INCH	30-75
3/8 INCH	5-10
NO. 4	5-1

THE GRANULAR MATERIAL SHALL BE PLACED IN 6-INCH THICK LOOSE LISTS AND COMPACTED WITH A NUMBER OF 6 COMPLETE PASSES BY A VIBRATING CYLINDRICAL ROLLER (ASTM D-422), OR AN EQUIVALENT ROLLER, ON THE DESCRIBED AREAS APPROVED BY DE RES. THE PURPOSE OF THE BACKFILLING SEQUENCE PROVIDED BELOW IS TO PLACE THE SANDS AND SILTY SANDS AT A HIGHER ELEVATION AND AT A HIGHER DENSITY THAN THEY NATURALLY EXIST. THE MATERIAL FOR BACKFILLING THE TRENCHES SHALL BE OBTAINED FROM THE FOLLOWING SOURCES OR THE OWNER'S SOURCE.

- MATERIAL FROM THE STOCHPYLE OF FINE-GRAINED CLAYS AND SILTS ESTABLISHED DURING THE TRENCH EXCAVATION. THIS MATERIAL SHALL BE PLACED UNIFORMILY AND COMPACTED ALONG THE LENGTH OF THE TRENCH.
- MATERIAL FROM THE STOCHPYLE OF SANDS AND SILTY SANDS ESTABLISHED DURING THE TRENCH EXCAVATION. THIS MATERIAL SHALL BE PLACED UNIFORMILY AND COMPACTED ALONG THE LENGTH OF THE TRENCH.
- MATERIAL FROM APPROVED ZONED AREAS AS NOTED USED TO SUPPLEMENT ANY ADDITIONAL MATERIAL NEEDED FOR FILLING THE TRENCHES.
- MATERIAL FOR BACKFILLING TRENCH A & B SHALL BE OBTAINED FROM TRENCH A STOCHPYLE, BOTTOM AREAS NO. 10, AND 2C, AND FROM APPROVED ZONED AREAS AS NOTED.
- MATERIAL FOR BACKFILLING TRENCH B & C SHALL BE OBTAINED FROM TRENCH B STOCHPYLE, BOTTOM AREAS 12,13, AND 2C, AND FROM APPROVED ZONED AREAS AS NOTED.

A MINIMUM OF 10 FEET OF FINE-GRAINED MATERIAL FROM CATEGORIES (a) AND (c) ABOVE SHALL BE PLACED BEFORE MATERIAL FROM CATEGORIE (b) CAN BE PLACED.

2. EARTHFILL SHALL BE PLACED IN LAYERS WHICH AREN'T COMPACTED OR NOT EXCEED A THICKNESS OF 6 INCHES. EARTHFILL SHALL BE ACCOMPLISHED WITH A TRENCH (IMPACT) ROLLER (A 20 POUND 3-40, OR AN EQUIVALENT CONCRETE).

3. EARTHFILL TYPES ARE DEFINED AS FOLLOWS:

- TYPE A: EARTHFILL COMPACTED TO AT LEAST 90% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698 (STANDARD PROCTOR).
- TYPE B: EARTHFILL COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-698.
- TYPE C: EARTHFILL SHALL BE NEITHER A 30% OR OPTIMUM MOISTURE CONTENT.

4. EARTHFILL PLACEMENT INSTRUCTIONS:

- GENERAL: THE BATON FOR EARTHFILL PLACEMENT SHALL BE A PLANE SURFACE CONNECTING THE TOP OF SHALE ON OPPOSING SIDES. TICHOE MARKS AS DETERMINED BY THE 60 FOOT CROSS-SECTION STATIONS AS IDENTIFIED BY THE SOILS INSPECTOR, ARE TO BE USED AS A GUIDE FOR THE PLACEMENT OF EARTHFILL. THE EARTHFILL PLACEMENT IS TO BE CONDUCTED AT THE REQUIRED DEPTH OF TYPE A EARTHFILL SHOTFY OR RES GEOLAND AND GEOTECHNICAL ENGINEERING GROUP OF THE CIVIL ENGINEERING SUPPORT BRANCH (CESB). SUCH CASES WILL BE EVALUATED ON AN INDIVIDUAL BASIS AND VENAL ENGINEERING PROVIDED TO THE FIELD.
- TRENCH A:

 - TYPE A EARTHFILL SHALL BE PLACED PRIOR THE GRANULAR TOPS MATERIAL TO A LINE 10 FEET ABOVE THE SHALE.
 - TYPE A EARTHFILL SHALL BE USED FROM THE TOP OF THE TYPE A MATERIAL TO FINAL GRADE.
 - TYPE A EARTHFILL PLACEMENT INSTRUCTIONS FOR TRENCH A ARE A PORTION OF THE DEPTH FROM FINAL GRADE TO THE SHALE.
 - FOR 25 FEET OR LESS: TYPE A EARTHFILL SHALL BE PLACED PRIOR THE GRANULAR TOPS MATERIAL TO NEARLY 8 FEET OF FINAL GRADE. THE REMAINDER OF THE TRENCH SHALL BE TYPE A EARTHFILL.
 - FOR A DEPTH GREATER THAN 25 FEET BUT LESS THAN 40 FEET: GRANULAR MATERIAL, EXCLUDING THE REQUIREMENTS OF THE EARTHFILL, SHALL BE PLACED IN 10 FEET LOTS. THE REMAINDER OF THE TRENCH SHALL BE PLACED FROM A DEPTH OF 25 FEET TO 8 FEET. THE REMAINDER OF THE TRENCH SHALL BE TYPE B EARTHFILL.
 - FOR A DEPTH GREATER THAN 40 FEET OR FOR CASES OF UNUSUAL EXCAVATION GEOMETRY, CONTACT THE GEOLAND AND GEOTECHNICAL ENGINEERING GROUP IN CES FOR INSTRUCTIONS. SUCH CASES WILL BE EVALUATED ON AN INDIVIDUAL BASIS AND VENAL INSTRUCTIONS PROVIDED TO THE FIELD.

- IN-PLACE DRY DENSITY TESTS USING THE SAND CONE (ASTM D-1996) OR RUBBER BALLOON (ASTM D-2167) TEST METHODS SHALL BE MADE AT RATE OF ONE TEST FOR EACH 100 CUBIC YARDS OF EARTHFILL PLACED (IN PLACE VOLUME). SAMPLES SHALL BE TAKEN IN ACCORDANCE WITH SECTION 11.2 OF THE GENERAL CONSTRUCTION SPECIFICATION G-4, SUBJECT THAT THE MINIMUM FREQUENCY OF SAMPLING SHALL CORRESPOND TO EACH OF THE FOLLOWING:
 - ONE SAMPLE SHALL BE TAKEN FOR EACH 50,000 CUBIC YARDS OF FILLED PLACEMENT THROUGHOUT THE COURSE OF THE WORK.
 - ONE SAMPLE SHALL BE TAKEN FOR EACH 20 DAYS OF FILLED PLACEMENT THROUGHOUT THE COURSE OF THE WORK.
 - A MINIMUM OF THREE SAMPLES SHALL BE TAKEN IN EACH TRENCH. A MINIMUM OF ONE OF THESE THREE SAMPLES IN EACH TRENCH SHALL BE TAKEN IN THE WEATHERED SHALE (SEE EARTHFILL NOTE 3) IF THERE ARE THAN 10,000 CUBIC YARDS PLACED. A MAXIMUM OF ONE OF THESE THREE SAMPLES IN EACH TRENCH SHALL BE TAKEN FROM THE FULL COMPACTED TO 100% OF MAXIMUM DRY DENSITY.
- IN-PLACE DRY DENSITY TESTS USING THE SAND CONE (ASTM D-1996) OR RUBBER BALLOON (ASTM D-2167) TEST METHODS SHALL BE MADE AT RATE OF ONE TEST FOR EACH 100 CUBIC YARDS OF EARTHFILL PLACED (IN PLACE VOLUME). SAMPLES SHALL BE TAKEN IN ACCORDANCE WITH SECTION 11.2 OF THE GENERAL CONSTRUCTION SPECIFICATION G-4, SUBJECT THAT THE MINIMUM FREQUENCY OF SAMPLING SHALL CORRESPOND TO EACH OF THE FOLLOWING:
 - ONE SAMPLE SHALL BE TAKEN FOR EACH 50,000 CUBIC YARDS OF FILLED PLACEMENT THROUGHOUT THE COURSE OF THE WORK.
 - ONE SAMPLE SHALL BE TAKEN FOR EACH 20 DAYS OF FILLED PLACEMENT THROUGHOUT THE COURSE OF THE WORK.
 - A MINIMUM OF THREE SAMPLES SHALL BE TAKEN IN EACH TRENCH. A MINIMUM OF ONE OF THESE THREE SAMPLES IN EACH TRENCH SHALL BE TAKEN IN THE WEATHERED SHALE (SEE EARTHFILL NOTE 3) IF THERE ARE THAN 10,000 CUBIC YARDS PLACED. A MAXIMUM OF ONE OF THESE THREE SAMPLES IN EACH TRENCH SHALL BE TAKEN FROM THE FULL COMPACTED TO 100% OF MAXIMUM DRY DENSITY.
- EXCEPTIONS AND SUBSTITUTIONS TO THE ABOVE MATERIAL OR PLACEMENT SEQUENCE ARE:
 - GRANULAR MATERIAL MEETING THE REQUIREMENTS OF SECTION 1050 (BOTTON LAYER) OF GENERAL CONSTRUCTION SPECIFICATION T-1 MAY BE USED IN LIEU OF ANY OF THE ABOVE EARTHFILL MATERIALS. THE GRANULAR MATERIAL SHALL BE PLACED IN A MINIMUM QUANTITY OF 10 FEET. THE GRANULAR MATERIAL, WHEN COMPACTED WITH A VIBRATORY ROLLER TO AN AVERAGE RELATIVE DENSITY OF 90% OR GREATER FOR ALL TESTS, WITH A MAXIMUM OF 95% RELATIVE DENSITY FOR INDIVIDUAL TESTS AS DETERMINED BY ASTM D-698 PROCEDURES.
 - THE MOISTURE CONTENT SHALL BE ADJUSTED AS NECESSARY TO ASSURE ADEQUATE COMPACTION. IN-PLACE DRY DENSITY TESTS USING THE SAND CONE (ASTM D-1996) OR RUBBER BALLOON (ASTM D-2167) OR NUCLEAR DENSITY-MASS TESTS SHALL BE MADE AT RATE OF ONE TEST FOR EACH 100 CUBIC YARDS OF EARTHFILL PLACED (IN PLACE VOLUME). GRANULAR MATERIAL PLACED WITH A FREQUENCY OF ONE TEST EACH DAY THE MATERIAL IS PLACED. COMPLETE DOCUMENTATION OF QUANTITY AND LOCATIONS WHERE THE MATERIAL WAS USED SHALL BE RECORDED AND SUBMITTED TO DE RES FOR REVIEW WITH THE MONTHLY FILM QUALITY CONTROL REPORTS REQUIRED BY G-6.
 - LAWNS, ALL DREDGED AREAS APPROVED FOR USE IN THE TRENCHES BY DE RES MAY BE SUBSTITUTED FOR ANY OF THE MATERIALS APPROVED FROM THE PLACEMENT SEQUENCE AS PER THE GENERAL CONSTRUCTION SPECIFICATION G-4.
 - FOR BACKFILLING BELOW THE EARTHFILL CONCRETE LINES, THE EARTHFILL PLACEMENT TESTS FOR GRANULAR MATERIALS (TOPS) CAN BE OMITTED, DEPENDING ON THE INSPECTOR'S JUDGEMENT. IN THE EARTHFILL AREAS, THE EARTHFILL PLACEMENT TESTS (TOPS) FROM BOTH SHALE AND GRANULAR TOPS (VIBRATORY ROLLER (TOPS)) CAN BE OMITTED, DEPENDING ON THE INSPECTOR'S JUDGEMENT. A MAXIMUM OF 6-10 FEET LISTS SHALL BE PLACED.

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
YARD UNDERGROUND BARRIERS FOR POTENTIAL SOIL LIQUEFACTION TVA DWG NO. 10N213-2 R6 FIG. 2.5-581	

REVISED BY AMENDMENT 59

Figure 2.5-581 Yard Underground Barriers for Potential Soil Liquefaction
TVA DWGNO. 10N213-2 R6

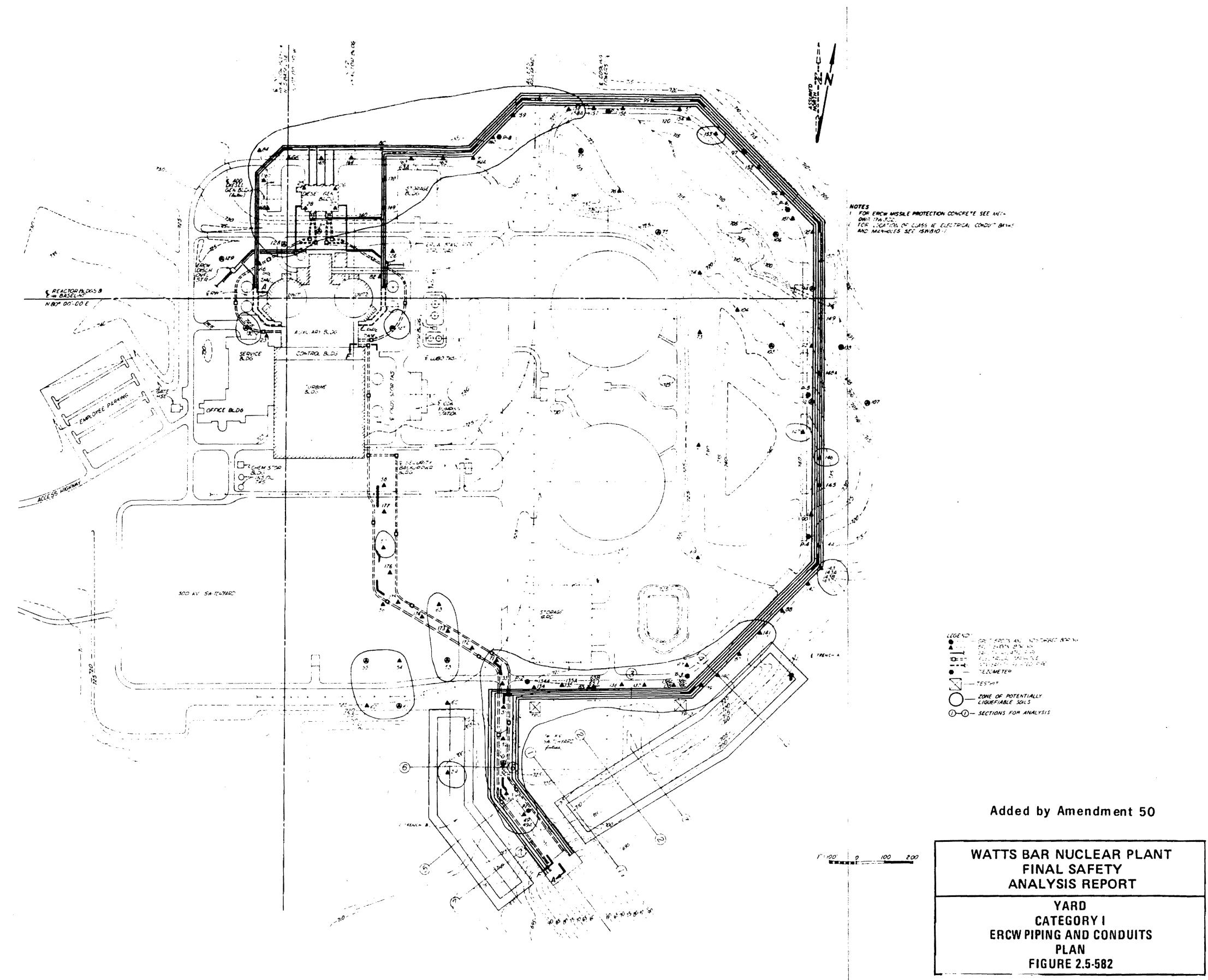


Figure 2.5-582 Yard Category I ERCW Piping and Conduits - Plan

**Figure 2.5-583 Remedial Treatment for Potential Soil Liquefaction -Stability Analysis Summary
(Actual Figure Located in Oversized Figures File)**

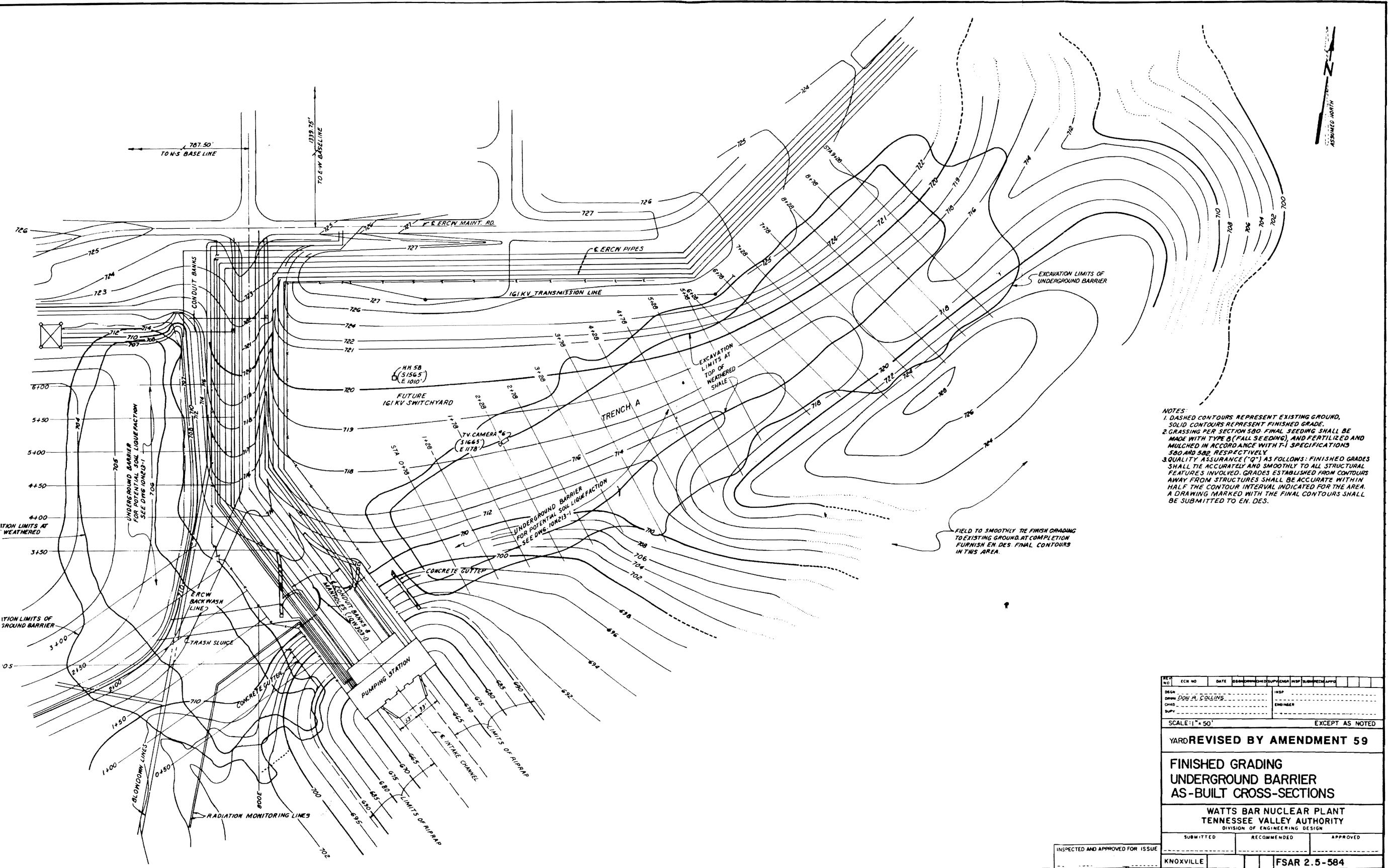


Figure 2.5-584 Finished Grading - Underground Barrier As-Built Cross-Sections

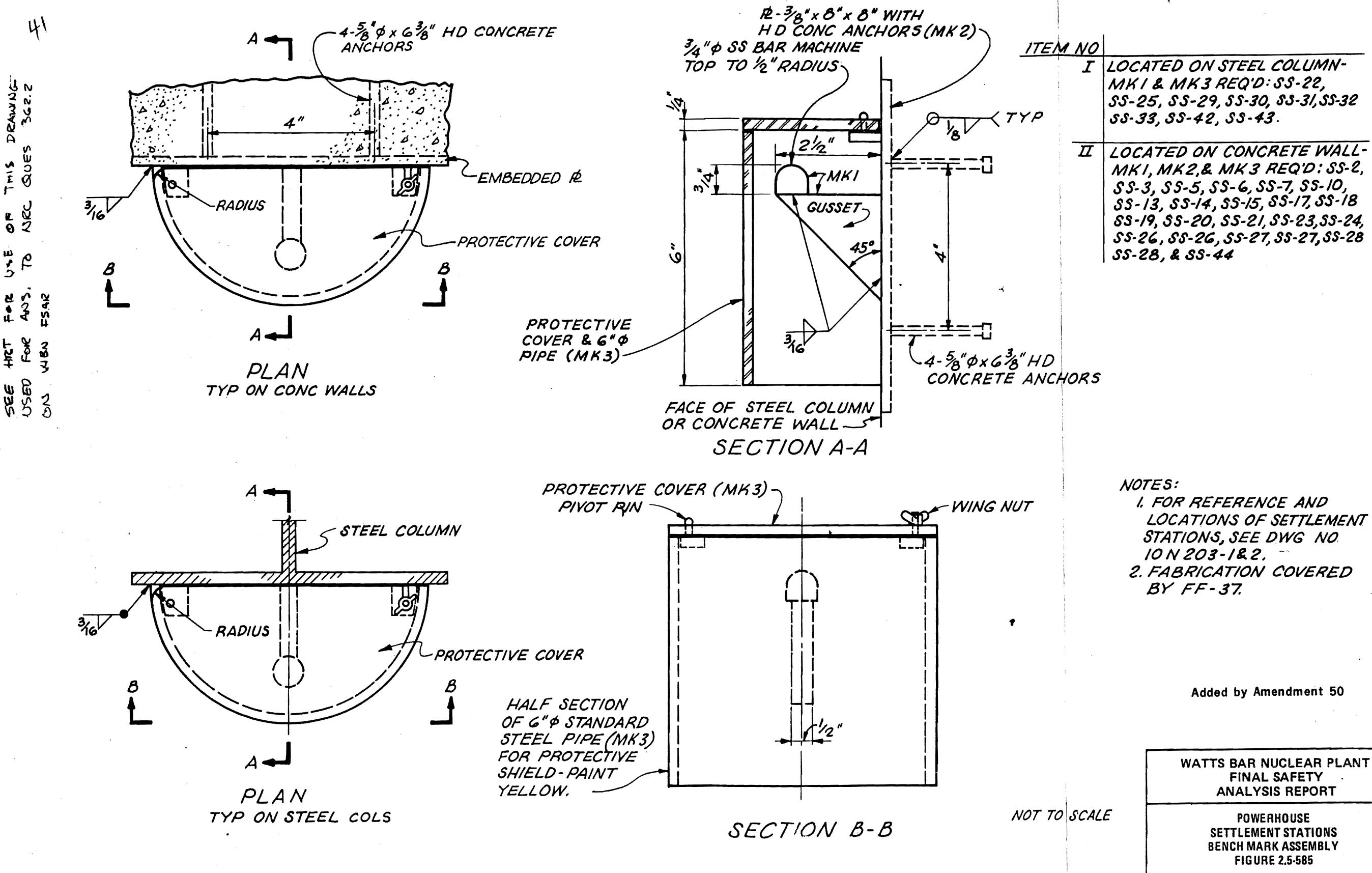
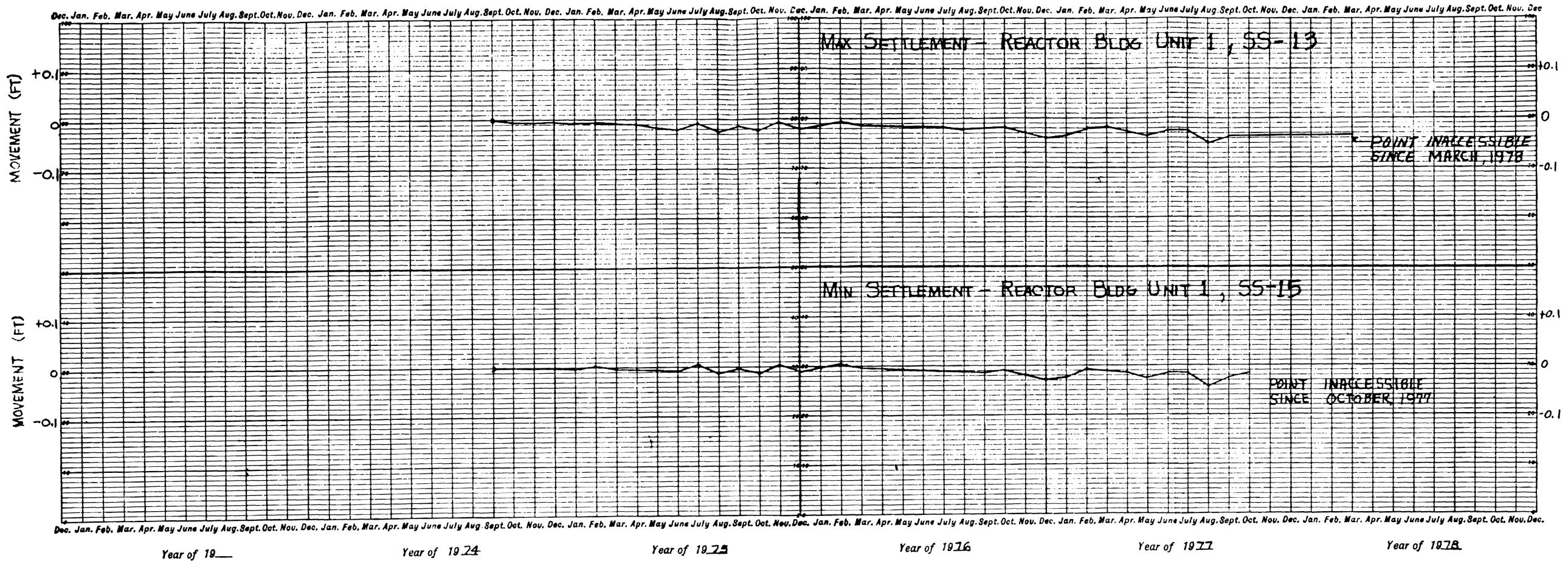


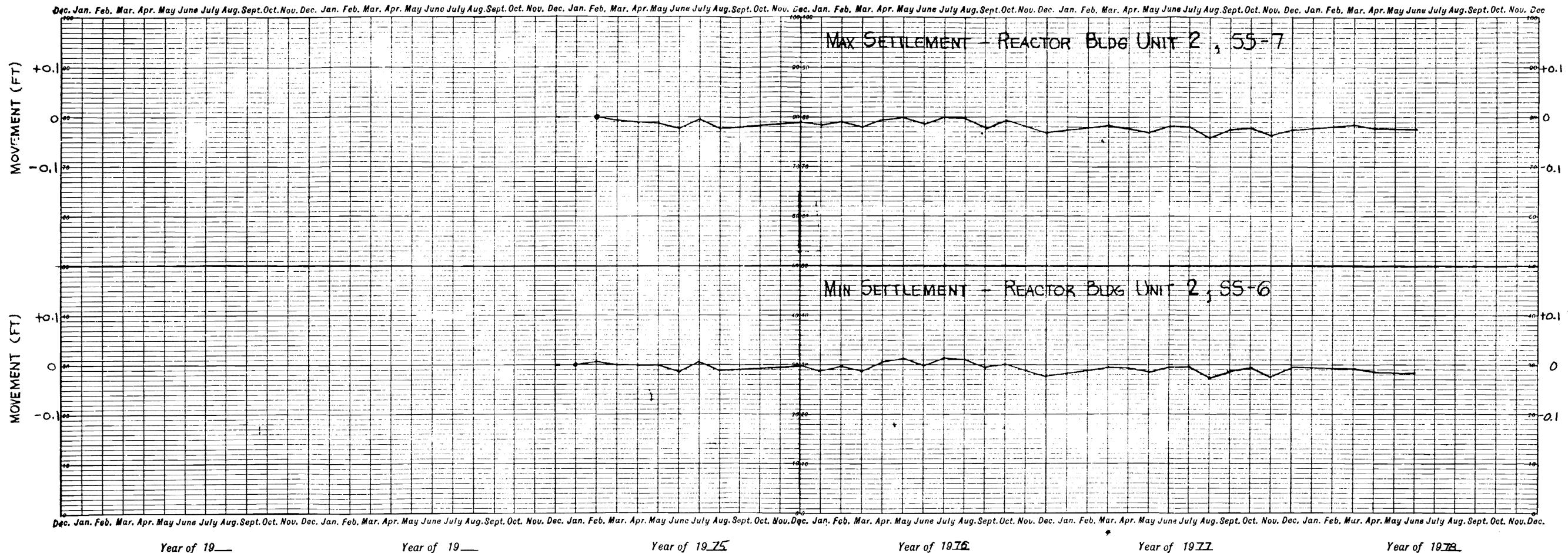
Figure 2.5-585 Powerhouse -Settlement Stations -Bench Mark Assembly



Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SETTLEMENT VS. TIME FOR UNIT 1 REACTOR BUILDING FIGURE 2.5-586

Figure 2.5-586 Settlement VS. Time For Unit 1 Reactor Building



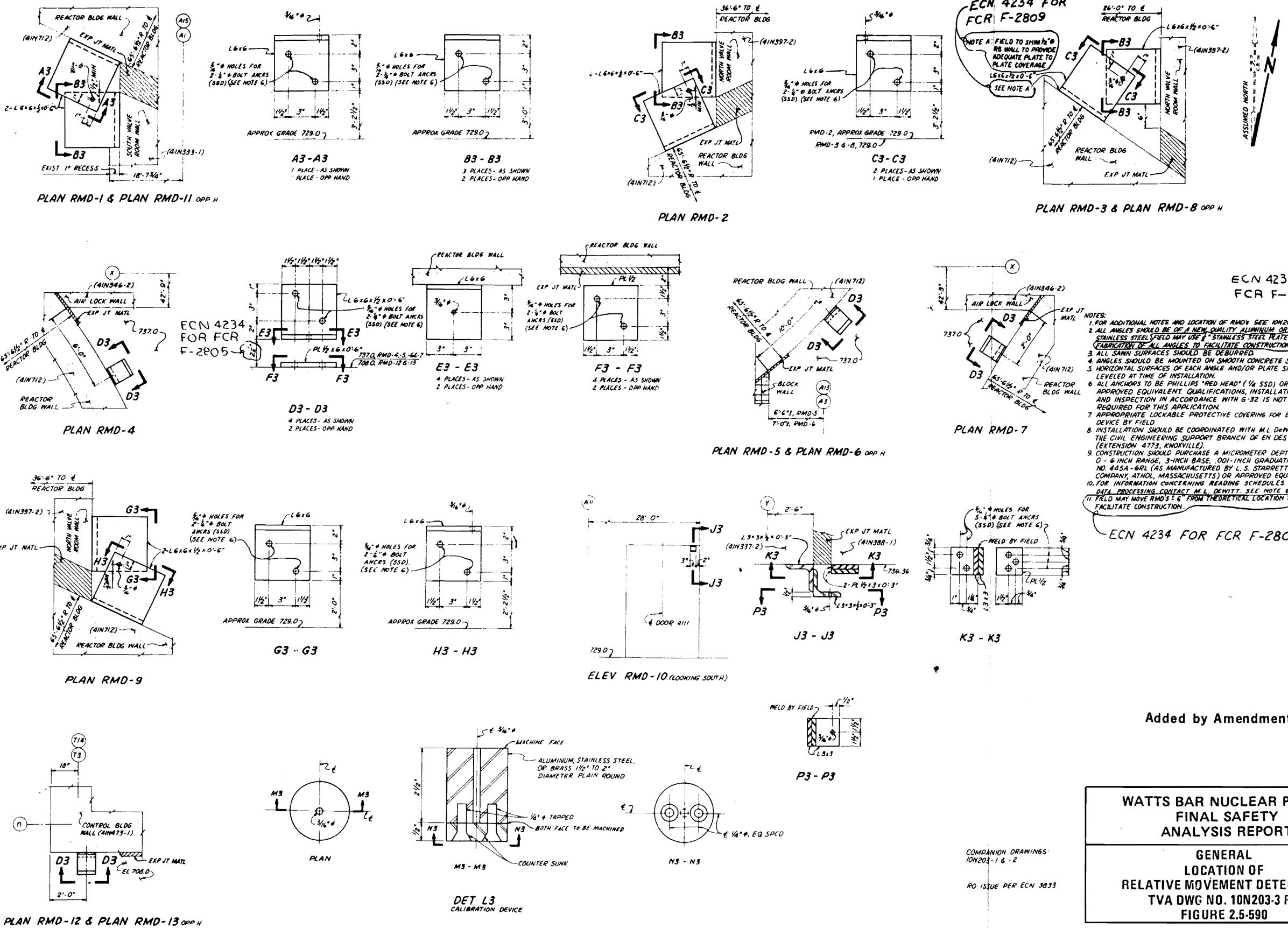
Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SETTLEMENT VS. TIME FOR UNIT 2 REACTOR BUILDING FIGURE 2.5-587

Figure 2.5-587 Settlement VS. Time For Unit 2 Reactor Building

**Figure 2.5-588 Maximum Settlement -Auxiliary Building Settlement Station 10; Minimum Settlement -Auxiliary Building Settlement Station 20 (1973-1982)
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-589 Maximum Settlement - Diesel Generator Building Settlement Station 1 & Intake Pumping Station Settlement Station 3A;
Minimum Settlement Diesel Generator Building Settlement Station 4 & Intake Pumping Station Settlement Station 4 (1975-1982)
(Actual Figure Located in Oversized Figures File)**



Added by Amendment 50

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
GENERAL LOCATION OF RELATIVE MOVEMENT DETECTORS TVA DWG NO. 10N203-3 R1 FIGURE 2.5-590	
COMPANION DRAWINGS: 10N203-1&-2	NO ISSUE PER ECN 3033

Figure 2.5-590 General Location Of Relative Movement Detectors
TVA DWG NO. 10N203-3 R1

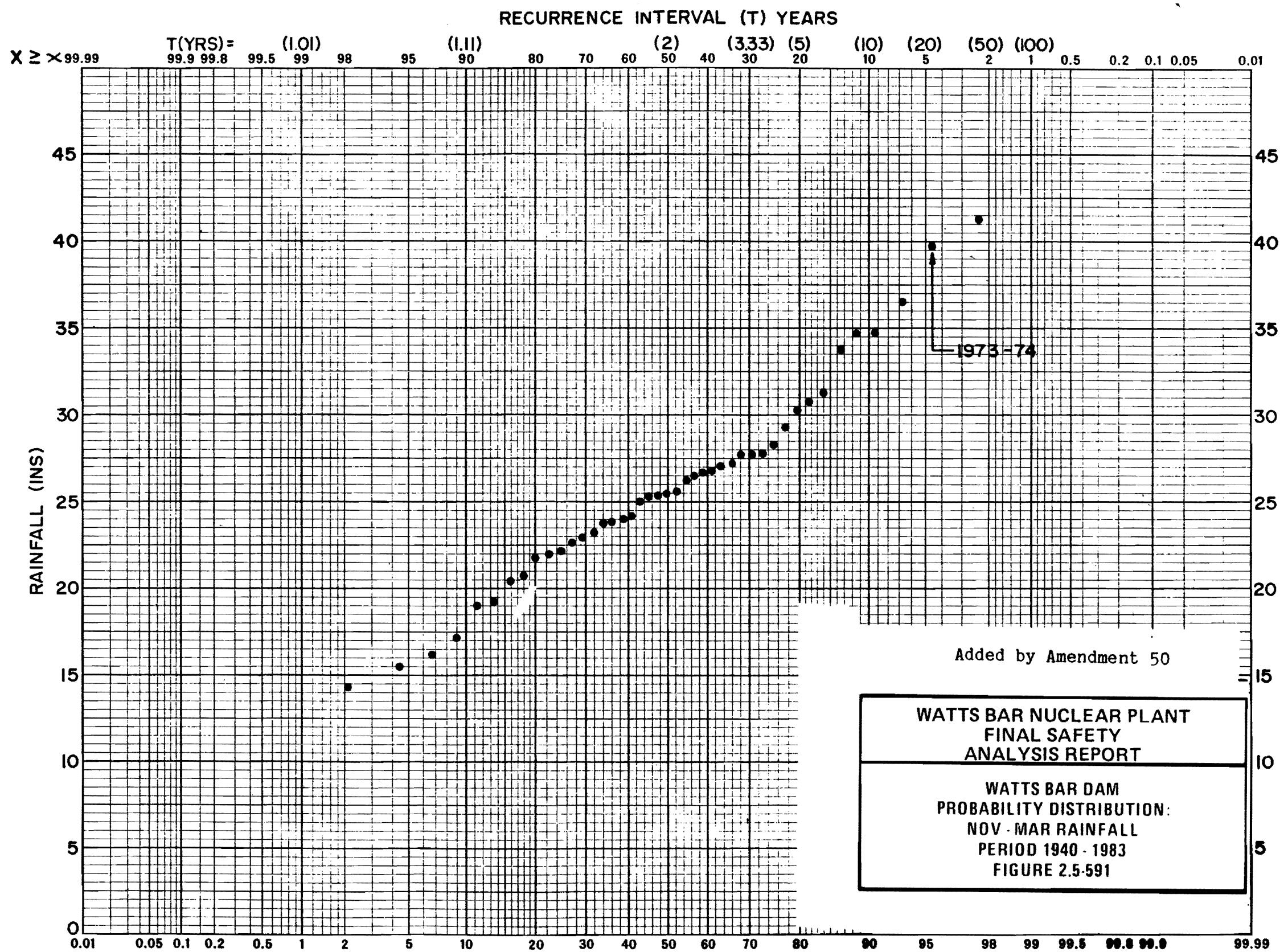


Figure 2.5-591 Watts Bar Dam Probability Distribution: November - March Rainfall Period 1940 - 1983

Figure 2.5-592 Yard ERCW Pipeline EST. 25-YR High Water Table

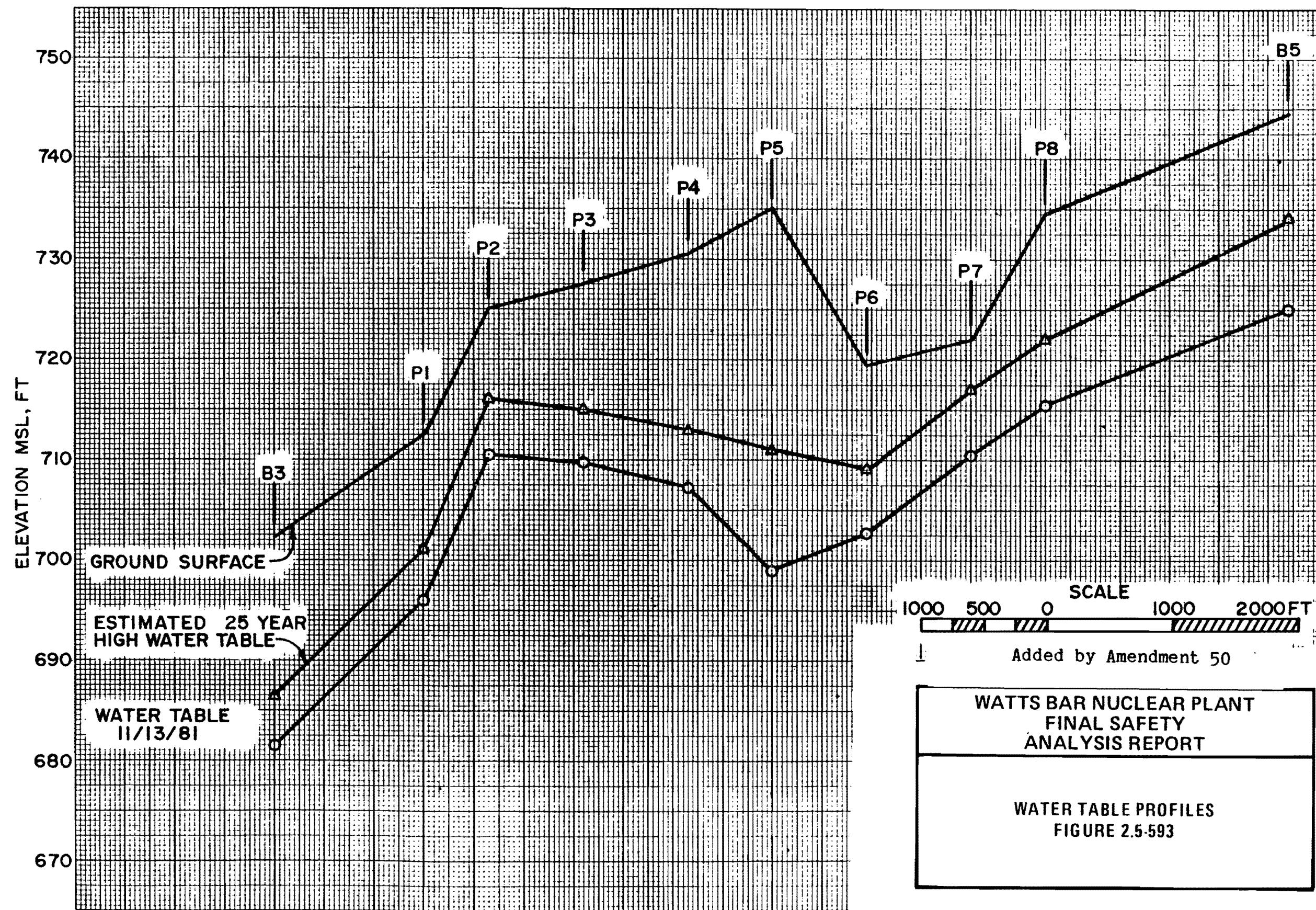


Figure 2.5-593 Water Table Profiles

**Figure 2.5-594 Yard Underground Barrier Trench A STA 1 + 78
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-595 Yard Underground Barrier Trench A STA 3 + 78
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-596 Yard Underground Barrier Trench A STA 5 + 78
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-597 Yard Underground Barrier Trench A STA 7 + 78
(Actual Figure Located in Oversized Figures File)**

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT					
SUMMARY OF EARTHFill TEST DATA - DENSITY FIGURE 2.5-598					
SI					

CP-2.01 # *841*
Rev F R4 11-5-83

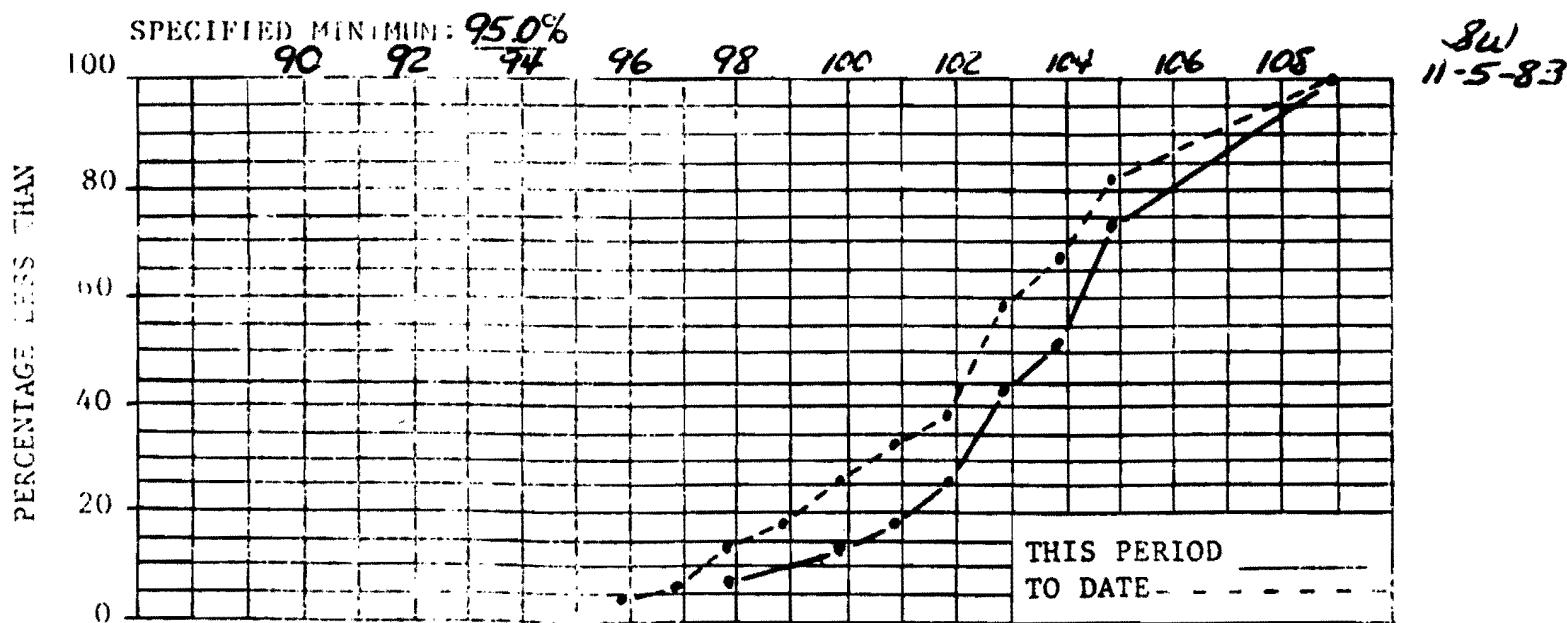
2 of 2

FEATURE: UNDERGROUND BARRIER - TRENCH A - 95% γ_{df} MAX Fill
 DATE: 9-30-83 TO: 10-22-83 TEST NO.: 1351 TO: 1390
 PART: I SECTION: 52A (A) PREPARED BY: W.S. WOODLEE

PLOT THIS COL.	PREV CUM F	THIS PERIOD				TO DATE			
		FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %	
90.0	91.9								
92.0	92.9								
93.0	93.9								
94.0	94.9								
95.0	95.9	3							
96.0	96.9	4							
97.0	97.9	8	11			2	2	7.4	6
98.0	98.9	10							
99.0	99.9	13	11			2	4	14.8	5
100.0	100.9	14	1			1	5	18.5	2
101.0	101.9	19	11			2	7	25.9	7
102.0	102.9	27	NH			5	12	44.4	13
103.0	103.9	31	11			2	14	51.9	6
104.0	104.9	35	NH-1			6	20	74.1	10
105.0	108.9	40	NH-11			7	27	100.0	12
TOTALS		40		--	--	27	--	--	67

SPECIFICATION SOURCE: DWG #10N213-2 R2

	PREV	THIS PERIOD	TO DATE
Avg Fill Dry Density, γ_{df} ,pcf	105.5	105.8	105.6
Avg Maximum Dry Density, γ_{dl} ,pcf	104.0	102.6	103.4
Mean Variation $\gamma_{df} - \gamma_{dl}$, pcf	+1.5	+3.2	+2.2



REMARKS: THIS IS THE FINAL ANALYSIS FOR TYPE A FILL COMPACTION.
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH REV 4 OF WBNP-QCP-2.01. *841*

W. Scott Woodlee 11-5-83
INSPECTOR Date

ADDED BY AMENDMENT 59

Figure 2.5-598 Summary of Earthfill Test Data - Density

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SUMMARY OF EARTHFILL TEST DATA - MOISTURE CONTENT FIGURE 2.5-599	
SUM	

BNP-QCP-2.01 #3 SW
Attachment C R4 11-5-83
DP

Sheet 2 of 2

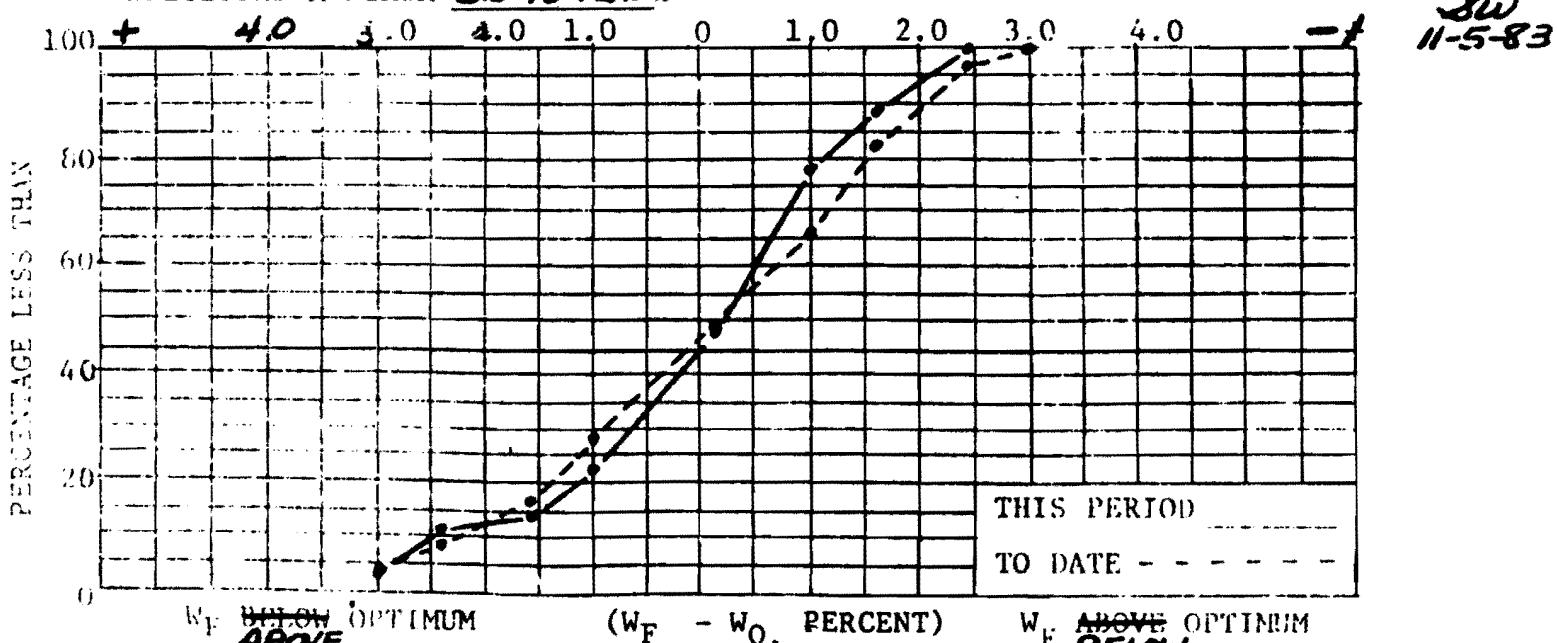
FEATURE: UNDERGROUND BARRIER - TRENCH A - 95% D_{MAX} FILL
 DATE: 9-30-83 TO: 10-22-83 TEST NO.: 1351 TO: 1390
 PART: I SECTION: 52A (A) PREPARED BY: W.S. WOODLEE

(W _F - W _O), PERCENT	PLOT THIS COL.	PREV CUM F	THIS PERIOD			TO DATE		
			FREQUENCY (F)	F	CUM F	CUM %	F	CUM F
+4.6	5.2							
3.9	4.5							
3.1	3.8							
2.5	3.0	2	1	1	1	3.7	3	3 4.5
1.8	2.4	3	11	2	3	11.1	3	6 9.0
1.1	1.7	7	1	1	4	14.8	5	11 16.4
0.4	1.0	13	11	2	6	22.2	8	19 28.4
+0.3	-0.3	20	WW-II	7	13	48.1	14	33 49.3
0.4	1.0	23	WW-III	8	21	77.8	11	44 65.7
1.1	1.7	32	III	3	24	88.9	12	56 83.6
1.8	2.4	38	III	3	27	100.0	9	65 97.0
2.5	3.0	40					2	67 100.0
3.1	3.8							
3.9	4.5							
-4.6	5.2							
TOTALS	NA	40	--	--	27	--	--	67 --

SPECIFICATION SOURCE: DWG. #10N213-2 R2

	PREV	THIS PERIOD	TO DATE
Avg Fill Moisture Content, W _F , %	18.9	19.8	19.3
Avg Optimum Moisture Content, W _O , %	19.4	20.0	19.6
Mean Variation (W _F - W _O), %	-0.5	-0.2	-0.3

SPECIFIED MINIMUM-30 TO +30%



REMARKS: THIS IS THE FINAL ANALYSIS FOR TYPE A FILL COMPACTION.
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R-4 OF WBNP-QCP-2.01. SW

W. Scott Woodlee
E. S. CO., INC.

11-5-83
ADDED BY AMENDMENT 59

Figure 2.5-599 Summary Of Earthfill Test Data -Moisture Content

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SUMMARY OF EARTHFILL TEST DATA - DENSITY FIGURE 2.5-600	

BNP-QCP-2.01 R4 SW
Attachment F R4 11-5-83
OP

Sheet 4 of 4

FEATURE: UNDERGROUND BARRIER - TRENCH A - 100% γ_{dmax} Fill

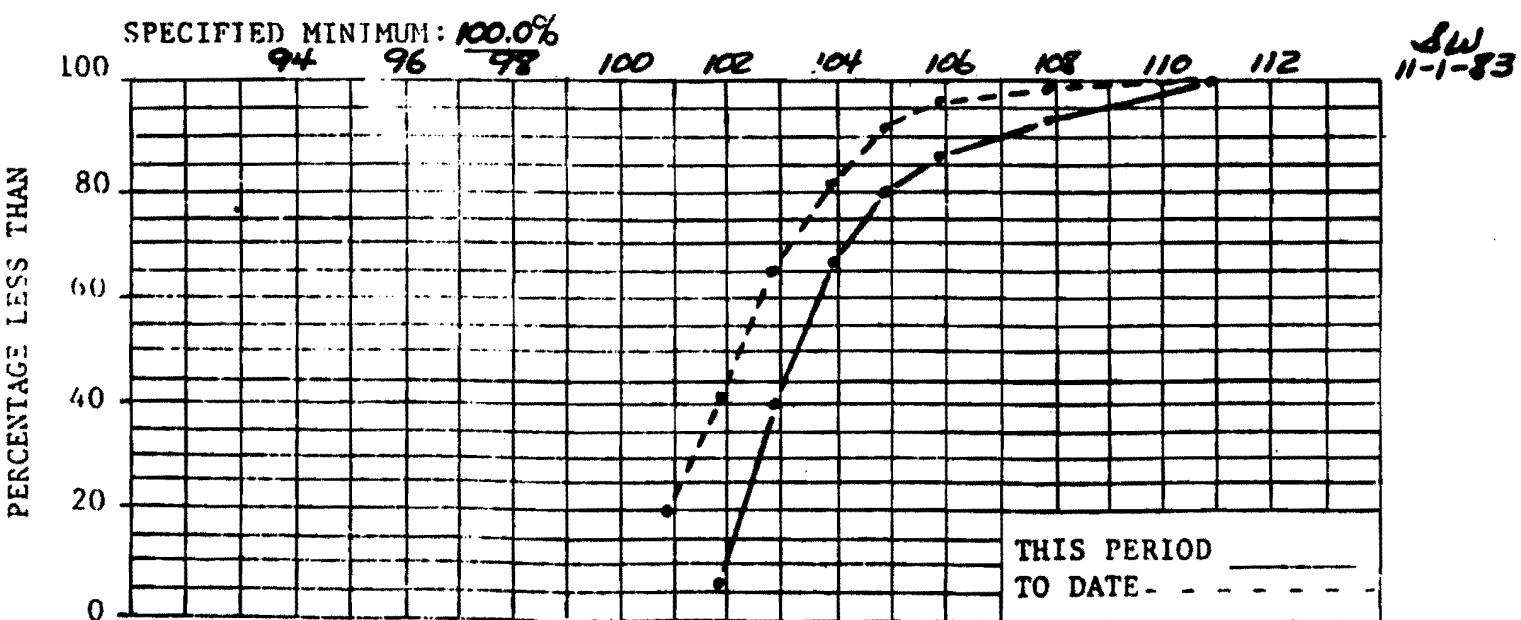
DATE: 9-30-83 TO: 10-9-83 TEST NO.: 1347 TO: 1364

PART: I SECTION: 52A (A) PREPARED BY: W.S. WOODLEE

PLOT THIS COL.	PREV CUM F	THIS PERIOD				TO DATE			
		FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %	
95.0	95.9								
96.0	96.9								
97.0	97.9								
98.0	98.9								
99.0	99.9								
100.0	100.9	16							
101.0	101.9	32	1			1	1	6.7	17
102.0	102.9	46	1111			5	6	40.0	19
103.0	103.9	55	11111			4	10	66.7	13
104.0	104.9	61	111111			2	12	80.0	8
105.0	105.9	64	1			1	13	86.7	4
106.0	106.9								
107.0	107.9	65	1			1	14	93.3	2
108.0	108.9								
109.0	110.9		1			1	15	100.0	1
TOTALS		65	--	--	--	15	--	--	80
									--

SPECIFICATION SOURCE: DWG. #10N213-2 R2

	PREV	THIS PERIOD	TO DATE
Avg Fill Dry Density, γ_{df} , pcf	104.4	105.2	104.6
Avg Maximum Dry Density, γ_{dL} , pcf	102.1	101.2	101.9
Mean Variation $\gamma_{df} - \gamma_{dL}$, pcf	+2.3	+4.0	+2.7



W. Scott Woodlee 11-5-83
INSPECTOR Date

ADDED BY AMENDMENT 59

Figure 2.5-600 Summary Of Earthfill Test Data -Density

**WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT**

**SUMMARY OF EARTHFILL
TEST DATA - MOISTURE CONTENT**
FIGURE 2.5-601

WBNP-QCP-2.01 *8W*
Attachment G *R4* *11-5-83*
LOP

Sheet 4 of 4

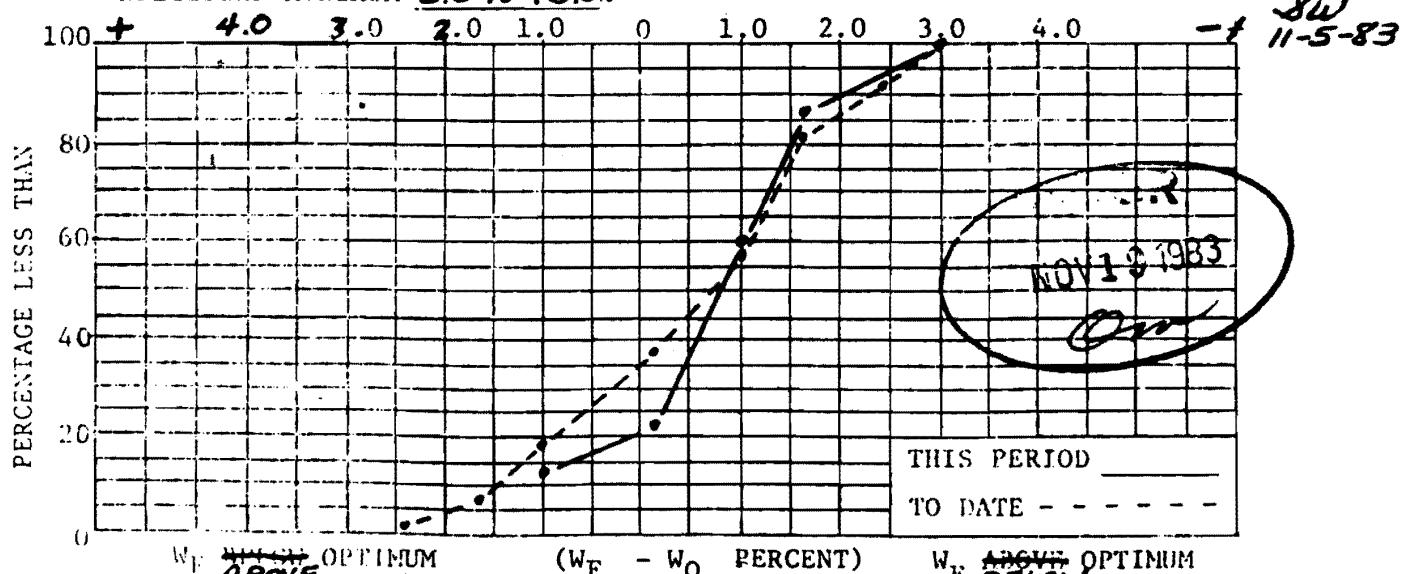
FEATURE: UNDERGROUND BARRIER - TRENCH A - 100% D_{MAX} FILL
DATE: 9-30-83 TO: 10-9-83 TEST NO.: 1347 TO: 1364
PART: I SECTION: 52A (AI) PREPARED BY: W.S. WOODLEE

$(W_F - W_0)$, PERCENT	PLOT THIS COL.	PREV CUM F	THIS PERIOD			TO DATE		
			FREQUENCY (F)	F	CUM F	CUM %	F	CUM F
+4.6	5.2							
3.9	4.5							
3.1	3.8							
2.5	3.0							
1.8	2.4	1					1	1
1.1	1.7	6					5	6
0.4	1.0	13	II		2	2	13.3	9
+0.3	-0.3	25	II		2	4	26.7	14
0.4	1.0	38	III		5	9	60.0	18
1.1	1.7	52	III		4	13	86.7	18
1.8	2.4	61					9	74
2.5	3.0	65	II		2	15	100.0	6
3.1	3.8							
3.9	4.5							
-4.6	5.2							
TOTALS	NA	65	--	--	15	--	--	80

SPECIFICATION SOURCE: DWG. #10N213-2 R2

	PREV	THIS PERIOD	TO DATE
Avg. Full Moisture Content, W_F , %	19.7	19.9	19.7
Avg. Optimum Moisture Content, W_0 , %	20.4	20.8	20.5
Mean Variation ($W_F - W_0$), %	-0.7	-0.9	-0.8

SPECIFIED MINIMUM -3.0 TO +3.0%



REMARKS: THIS IS THE FINAL ANALYSIS FOR TYPE AI FILL COMPACTION. *8W*
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R *4* OF WBNP-QCP-2.01.

ADDED BY AMENDMENT 59 *W. Scott Woodlee* INSPECTOR

11-5-83

Figure 2.5-601 Summary Of Earthfill Test Data -Moisture Content

**Figure 2.5-602 Yard Underground Barrier Trench B STA 1 + 100
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-603 Yard Underground Barrier Trench B STA 2 + 50
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-604 Yard Underground Barrier Trench B STA 3 + 00
(Actual Figure Located in Oversized Figures File)**

**Figure 2.5-605 Yard Underground Barrier Trench B STA 4 + 50
(Actual Figure Located in Oversized Figures File)**

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT		
SUMMARY OF FILL TEST DATA - DENSITY FIGURE 2.5-606		

NP-QCP-2.01 R6
Attachment F
IP

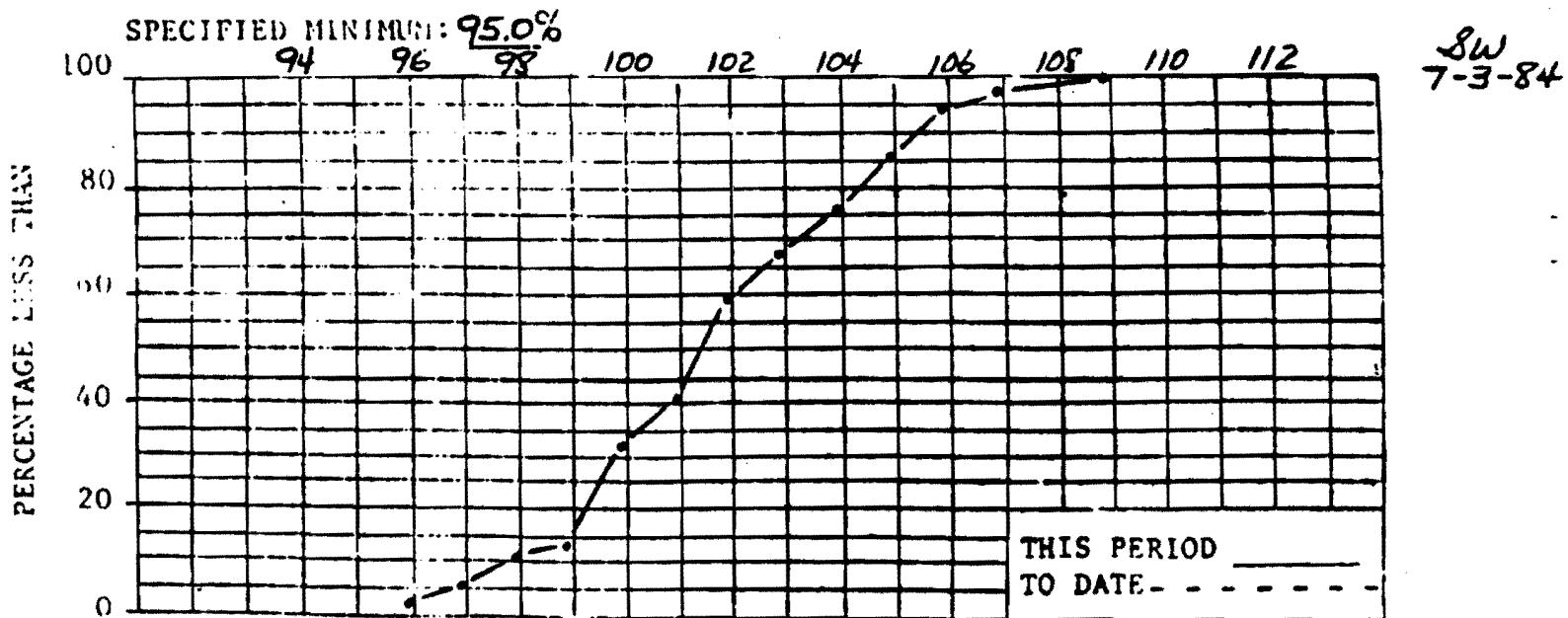
Sheet 1 of 1

FEATURE: UNDERGROUND BARRIER - TRENCH A-95% γ_{dmax} FILL
 DATE: 11-2-83 TO: 6-28-84 TEST NO.: 1397 TO: 1475
 PART: I SECTION: 52B (A) PREPARED BY: W.S. WOODLEE

PLOT THIS COL.	PREV CUM F	THIS PERIOD			TO DATE		
		FREQUENCY (F)	F	CUM F	CUM %	F	CUM F
95.0	95.9	I		1	1	2.7	
96.0	96.9	I		1	2	5.4	
97.0	97.9	II		2	4	10.8	
98.0	98.9	I		1	5	13.5	
99.0	99.9	III-II		7	12	32.4	
100.0	100.9	III		3	15	40.5	
101.0	101.9	III-II		7	22	59.5	
102.0	102.9	NA	III	3	25	67.6	NA NA NA
103.0	103.9	III		3	28	75.7	
104.0	104.9	III		4	32	86.5	
105.0	105.9	III		3	35	94.6	
106.0	106.9	I		1	36	97.3	
107.0	107.9						
108.0	108.9	I		1	37	100.0	
109.0	110.9						
TOTALS				--	37	--	--

SPECIFICATION SOURCE: DWG #10N213-2 R4

	PREV	THIS PERIOD	TO DATE
Avg Fill Dry Density, γ_{df} ,pcf	NA	107.0	107.0
Avg Maximum Dry Density, γ_{dL} ,pcf	NA	105.3	105.3
Mean Variation $\gamma_{dc} - \gamma_{dL}$, pcf	NA	+1.7	+1.7



REMARKS: FAILED TESTS NOT INCLUDED IN THIS ANALYSIS. SW
 INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH REV 6 OF WBNP-QCP-2.01.

ADDED BY AMENDMENT 59 W. Scott Woodlee

INSPECTOR

7-3-84
Date

Figure 2.5-606 Summary of Fill Test Data -Density

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT					
SUMMARY OF EARTHFILL TEST DATA - MOISTURE CONTENT FIGURE 2.5-607					
S					

IP-QCP-2.01 R6
Attachment C

sheet 1 of 1

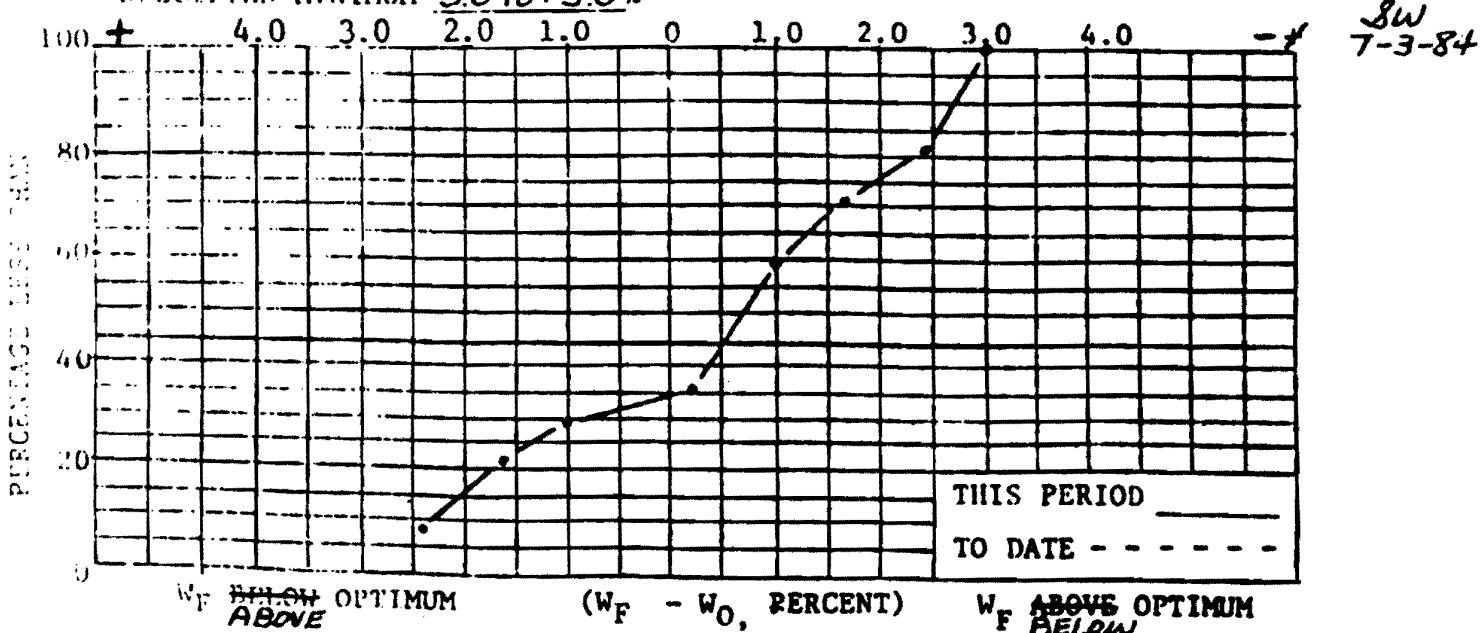
FEATURE: UNDERGROUND BARRIER - TRENCH A - 95% D_{MAX} FILL
 DATE: 11-2-83 TO: 6-28-84 TEST NO.: 1397 TO: 1475
 PART: I SECTION: 52B (A) PREPARED BY: W.S. Woodlee

W _F - W ₀ , PERCENT	PLOT THIS COL.	PREV CUM F	THIS PERIOD			TO DATE		
			FREQUENCY (F)	F	CUM F	CUM %	F	CUM F
+4.6	5.2							
3.9	4.5							
3.1	3.8							
2.5	3.0							
1.8	2.4		III		3	3	8.1	
1.1	1.7		NN-		5	8	21.6	
0.4	1.0		III		3	11	29.7	
+0.3	-0.3	NA	II		2	13	35.1	NA NA NA
0.4	1.0		NN-III		9	22	59.5	
1.1	1.7		IIII		4	26	70.3	
1.8	2.4		IIII		4	30	81.1	
2.5	3.0		NN-II		7	37	100.0	
3.1	3.8							
3.9	4.5							
-4.6	5.2							
TOTALS	NA			--	37	--	--	--

SPECIFICATION SOURCE: Dwg. # 10N213-2 R4

	PREV	THIS PERIOD	TO DATE
Avg. Fill Moisture Content, W _F , %	NA	18.4	18.4
Avg. Optimum Moisture Content, W ₀ , %	NA	19.0	19.0
Mean Variation (W _F - W ₀), %	NA	-0.6	-0.6

SPECIFIED MINIMUM -3.0 to +3.0%



REMARKS: FAILED TESTS NOT INCLUDED IN THIS ANALYSIS. SW
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R 6 OF WBNP-QCP-2.01

ADDED BY AMENDMENT 59 W. Scott Woodlee DIRECTOR

7-3-84

Figure 2.5-607 Summary of Earthfill Test Data - Moisture Content

WBNP-QCP-2.01 Rev
Attachment F
LOT

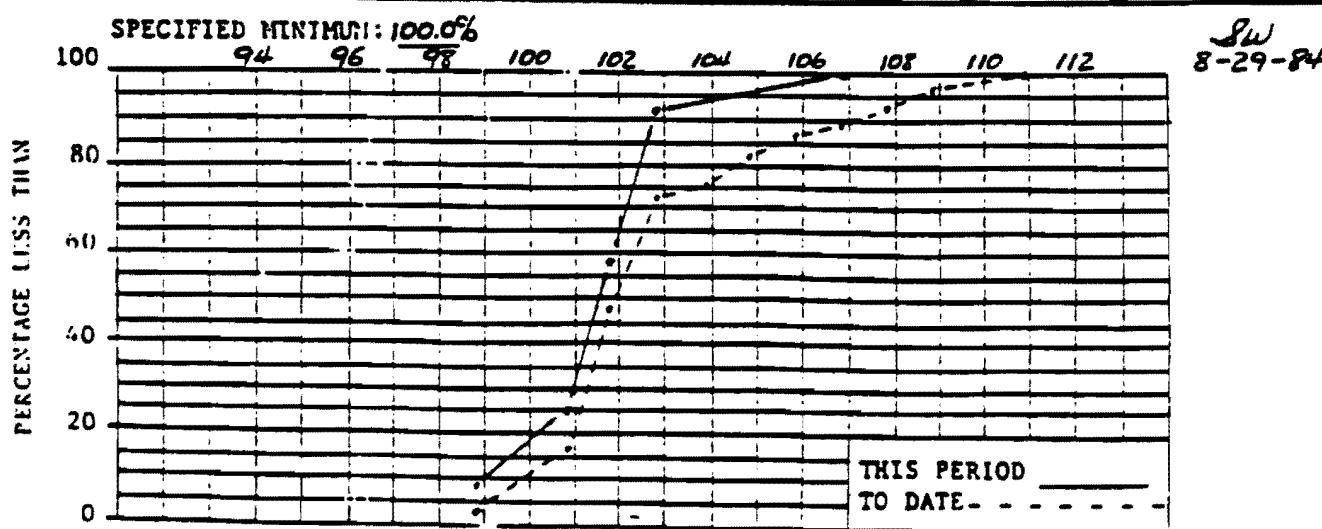
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
SUMMARY OF FILL TEST DATA - DENSITY Sheet 2 of 2

FEATURE: UNDERGROUND BARRIER - TRENCH A-100% Comp-Full.
 DATE: 11-25-83 TO: 5-31-84 TEST NO.: 1408 TO: 1438
 PART: I SECTION: S2B (A1) PREPARED BY: N.S. WOODLEE

PLOT THIS COL	PREV CUM F	THIS PERIOD			TO DATE		
		FREQUENCY (F)	F	CUM	CUM	F	CUM
95.0	95.9						
96.0	96.9						
97.0	97.9						
98.0	98.9						
99.0	99.9						
100.0	100.9	2	11	2	3	25.0	4
101.0	101.9	7	111	4	7	58.3	9
102.0	102.9	10	111	4	11	91.7	7
103.0	103.9	11				1	22
104.0	104.9	12				2	24
105.0	105.9	14				1	25
106.0	106.9	11		12	100.0	1	26
107.0	107.9	15				1	27
108.0	108.9	16				1	28
109.0	110.9	17				1	29
TOTALS		17	--	--	12	--	29
							--

SPECIFICATION SOURCE: DWG. #10N213-2 R4

	PREV	THIS	TO DATE
Avg Fill Dry Density, γ_{df} , pcf	104.7	105.6	105.1
Avg Maximum Dry Density, γ_{dl} , pcf	101.0	103.6	102.1
Mean Variation $\gamma_{df} - \gamma_{dl}$, pcf	+3.7	+2.0	+3.0



REMARKS: ANALYSIS ISSUED TO REFLECT CHANGE DUE TO MISTAKE ON SANDCONE
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH REV 6 OF WBNP-QCP-2.01. TEST #1426.

W. Scott Woodlee 8-29-84 NCR #5804
INSPECTOR Date

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SUMMARY OF FILL TEST DATA
DENSITY

Amendment 63

Figure 2.5-608

Figure 2.5-608 Summary of Earthfill Test Data -Density

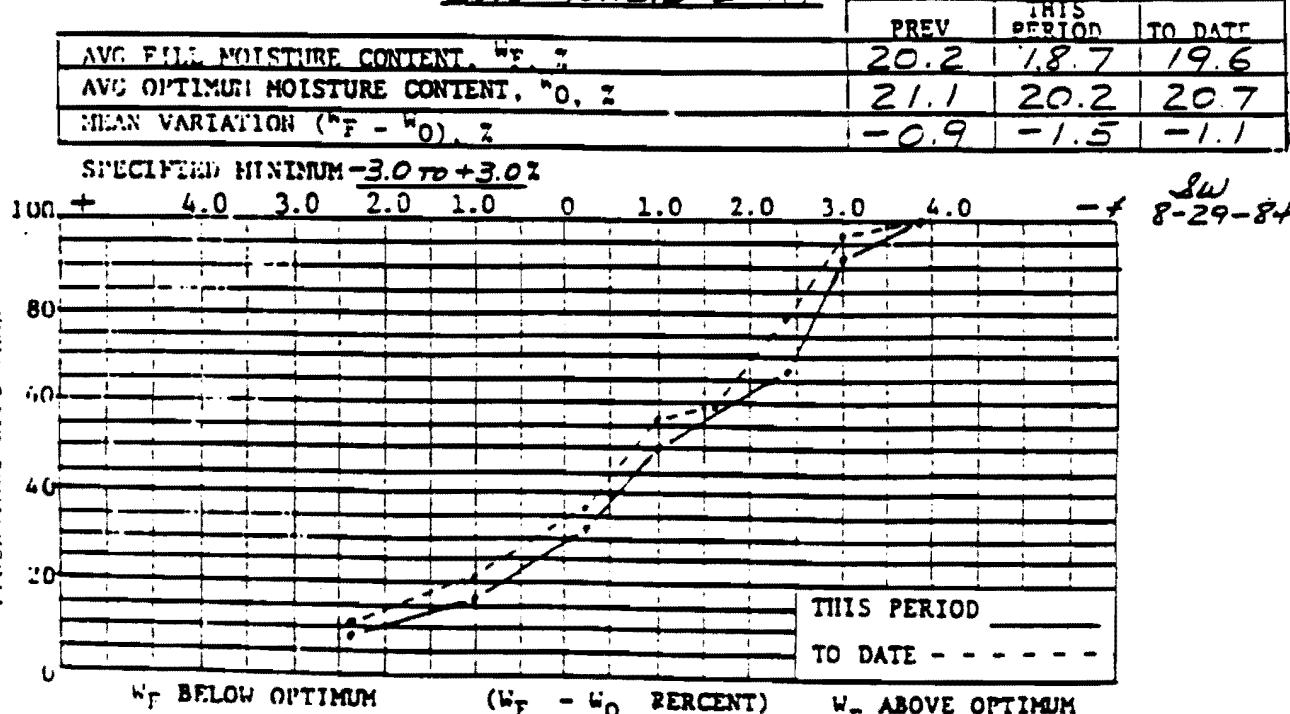
WBNP-QCP-2.01 R6
Attachment C
LOP

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
SUMMARY OF EARTHILL TEST DATA - MOISTURE CONTENT Sheet 2 of 2

FEATURE: UNDERGROUND BARRIER - TRENCH B - 100% YARNS FILLED
 DATE: 11-25-83 TO: 5-31-84 TEST NO.: 1408 TO: 1438
 PART: I SECTION: 52B (A1) PREPARED BY: W.S. WOODLEE

	PLOT THIS	PREV CUM	THIS PERIOD			TO DATE		
			FREQUENCY (F)	%	CUM	CUM	%	CUM
	+4.6	5.2						
	3.9	4.5						
	3.1	3.8						
	2.5	3.0						
	1.8	2.4	2	1	1	8.3	3	3 110.3
	1.1	1.7						
	0.4	1.0	4	11	1	2	16.7	3 6 120.7
	+0.3	-0.3	7	11	2	4	33.3	5 11 137.9
	0.4	1.0	10	11	2	6	50.0	5 16 155.2
	1.1	1.7	11				1	17 158.6
	1.8	2.4	15	11	2	8	66.7	6 23 179.3
	2.5	3.0	17	11	3	11	91.7	5 28 196.6
	3.1	3.8			1	12	100.0	1 29 100.0
	3.9	4.5						
	-4.6	5.2						
	TOTALS	NA	17	--	-	12	--	29 --

SPECIFICATION SOURCE: DWG #10N213-2 R4



REMARKS: ANALYSIS ISSUED TO REFLECT CHANGE DUE TO MISTAKE ON SANDCONE
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R 6 OF WBNP-QCP-2.01. TEST = 1426.

W. Scott Woodlee

8-29-84

NCR#5804

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SUMMARY OF EARTHILL TEST DATA MOISTURE CONTENT	
Amendment 63	Figure 2.5-609

Figure 2.5-609 Summary of Earthfill Test Data - Moisture Content

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	
SUMMARY OF GRANULAR FILL TEST DATA - RELATIVE DENSITY FIGURE 2.5-610	

WBNP-QCP-2.06.R4
Attachment F
LOP
Sheet 2 of 1

Summary

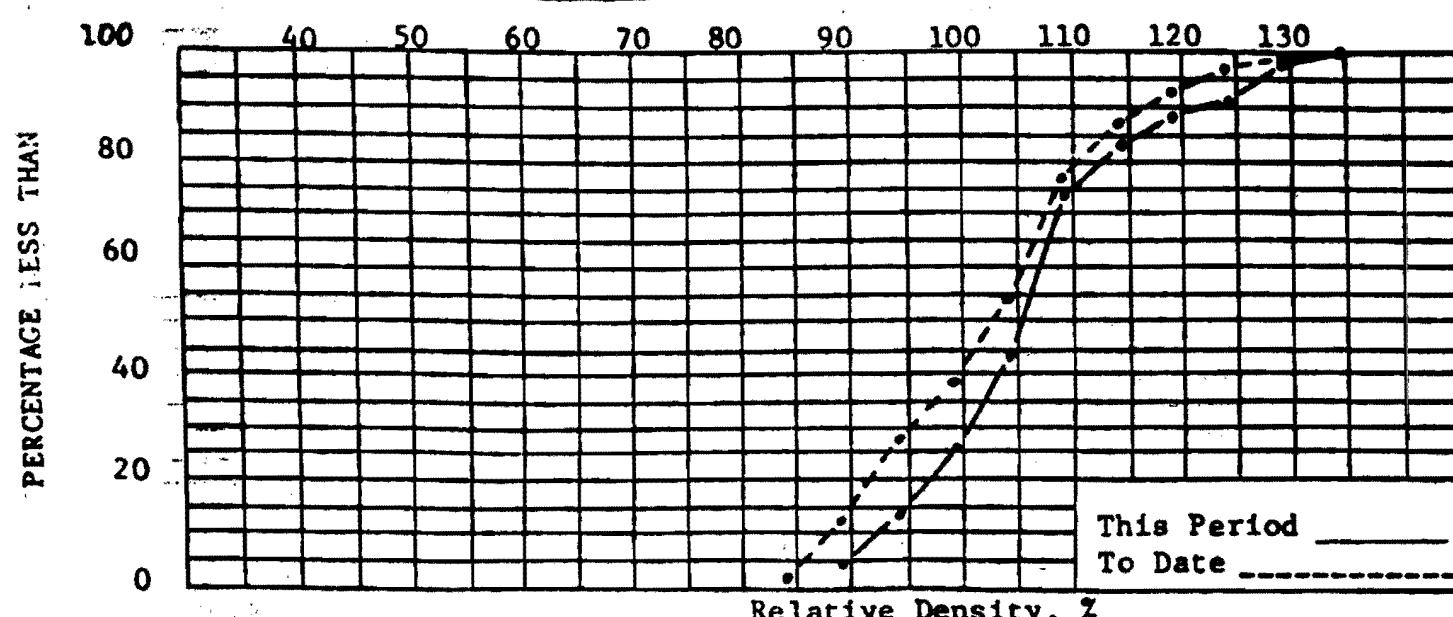
* Feature: UNDERGROUND BARRIER - TRENCH B - 1032 CRUSHED STONE
 Period: 4-27-84 to 5-31-84 Test No. 2046 to 2092
 Part II Section 29 Prepared by W.S. WOODLEE

RELATIVE DENSITY.

PLOT THIS COLUMN	PREV. CUM. F	THIS PERIOD				TO DATE		
		FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %
60.0	64.9							
65.0	69.9							
70.0	74.9							
75.0	79.9							
80.0	84.9	2				2	2	2.7
85.0	89.9	7				2	2	4.7
90.0	94.9	14				4	6	14.0
95.0	99.9	17				5	11	25.6
100.0	104.9	21	-			8	19	44.2
105.0	109.9	24	- -			13	32	74.4
110.0	114.9	27				4	36	83.7
115.0	119.9	30				2	38	88.4
120.0	124.9					3	41	95.3
125.0	129.9					1	42	97.7
130.0	134.9					1	43	100.0
TOTALS	30	--	--	--	43	--	73	--

Specification Source DWG. #10N213-2 R4

	PREV.	THIS PERIOD	TO DATE
Avg. Relative Density	98.5	106.3	103.1
Specified Min. <u>80% to 100%</u>			



* Remarks 1032 GRANULAR FILL SUBSTITUTED FOR EARTH FILL IN TRENCH B

Inspected/checked/verified in accordance with R-4 of WBNP-QCP-2.06

W. Scott Woodlee
Inspector:

6-11-84

Date

ADDED BY AMENDMENT 59

Figure 2.5-610 Summary of Granular Fill Test Data - Relative Density