

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

"HISTORICAL INFORMATION"

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	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730						
5	725		CL	18.4	43	20	SI CL, TR FN GV, TN-BRN, MST, ALL
10	720		CL	18.6	39	18	CL SI, TN, MST, RESD
15	715		CL	19.2	35	14	CL SI, TN, V MST, RESD
							W SI
20	710						DISCONTINUED.
25	705						
30	700						
35	695						
1' = 5'			* Lab. Classif.				

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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: *RL*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							ROADFILL
5	735		1 0	21.3	39	18	SI CL, R-BRN, MST, ALL
10	730		1 0 1 Σ	22.9	42	16	SI CL, R, MST, ALL
15	725		1 0 1 Σ	24.2	42	16	SI CL, R, MST, ALL
20	720						DISCONTINUED.
25	715						
30	710						
35	705						
1' = 5'			* Lab. Classif.				

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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 (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
							RANDOM ROADFILL
5	740		1 0 1 1 Σ	23.1	42	16	SI CL, R-BRN, MST, ALL
10	735		1 0 1 1 Σ	22.7	42	16	SI CL, R-BRN, MST, ALL
15	730		1 0	21.9	39	18	SI CL, R-BRN, MST, ALL
20	725						DISCONTINUED.
25	720						
30	715						
35	710						
1''=5'			* Lab. Classif.				

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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: PZ

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	750						RANDOM ROADFILL
5	745		$\frac{1}{0} \frac{1}{1} \frac{1}{2}$	23.5	42	16	SI CL, R-BRN, MST, ALL
10	740		$\frac{1}{0} \frac{1}{1} \frac{1}{2}$	23.6	42	16	SI CL, R, MST, ALL
15	735		$\frac{1}{0} \frac{1}{1} \frac{1}{2}$	37.1	42	16	SI CL, R V MST, ALL
20	730						W SI CL
							DISCONTINUED.
25	725						
30	720						
35							
1' = 5'			* Lab. Classif.				

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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: OBE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							CUT SURFACE; SP FL
5	765		U	23.2	44	19	FT CL, BRN, MST, RESD
10	760		U Σ	24.2	42	16	FT CL, BRN, MST, RESD
15	755		U	26.7	48	21	FT CL, BRN, MST, RESD
20	750						
25	745						
30	740						
35	735						
1"=5'			* Lab. Classif.				

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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: *DBE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	770		$\frac{1}{0}$	11.5	33	11	CUT SURFACE CL SI, BRN, MST, RESD
10	765		$\frac{1}{0}$	20.4	44	19	CL SI, BRN, MST, RESD
15	760		$\frac{1}{0} \frac{1}{\Sigma}$	20.6	40	14	CL SI, BRN, MST, RESD
20	755		$\frac{1}{0} \frac{1}{\Sigma}$	24.9	36	12	CL SI, BRN, V MST, RESD
25	750						DISCONTINUED.
30	745						
35	740						
1' = 5'			* Lab. Classif.				

<p>WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p>SOIL PROFILE FIGURE 2.5-491 SHEET 1 OF 1</p>

"HISTORICAL INFORMATION"

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: *DEE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	795		$\frac{I}{U} \frac{I}{\Sigma}$	26.6	53	24	CUT SURFACE CL SI, BRN, MST, RESD
10	790		$\frac{I}{U} \frac{I}{\Sigma}$	21.3	36	12	CL SI, BRN, MST, RESD -
15	785		$\frac{I}{U} \frac{I}{\Sigma}$	26.3	40	14	CL SI, BRN, MST, RESD
20	780		$\frac{I}{U}$	22.6	39	17	CL SI, TN-BRN, MST, RESD
25	775						
30	770						
35	765						
1' = 5'			* Lab. Classif.				

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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: *029*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	755						
5	750		┐ └	12.7	33	11	SI CL, BRN, MST, RESD
10	745		┐ └	21.4	45	22	SI CL, BRN, MST, RESD -
15	740		┐ └	18.8	48	21	SI CL, TN, TR LS GV, MST, RESD
29	735		┐┐ └└	22.2	42	16	CL SI, GRN-TN, MST, RESD
25	730						DISCONTINUED.
30	725						
35	720						
1' = 5'							

* Lab. Classif.

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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: DEE

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
							(PREVIOUSLY CUT SURFACE)
5	745		U	17.5	44	20	SI CL, TN, MST, TERRACE ALL
	740		Σ	16.1	37	11	GV SI, DK BRN, MST, TERRACE ALL
10							
	735		Σ U Σ S	17.9	35	11	SI CL, BRN, TR GV
15							
	730		U U Σ	20.1	40	14	CL SI, R-BRN, MST, RESD
20							DISCONTINUED.
	725						
25							
	720						
30							
	715						
35							
1' = 5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-494
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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: *UE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	745						CUT SURFACE
5	740		ΣU 0 0	15.5	35	11	GV CL, DK BRN, MST, TERRACE ALL
10	735		ΣU 0 0	20.3	40	14	GV CL, DK BRN, MST, TERRACE ALL
15	730						DISCONTINUED.
20	725						
25	720						
30	715						
35	710						
1"=5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-495
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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 est
PREPARED BY: MHD CHECKED BY: *DE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730		I I O I Σ	23.1	53	24	CUT SURFACE SI CL, BRN, MST, RESD
5							
	725		I I O I Σ	23.3	53	24	CL SI, BRN, MST, RESD
			I I O I Σ	22.2	53	24	CL SI, BRN, MST, RESD
10							
	720						REFUSAL. BEDROCK.
15							
	715						
20							
	710						
25							
	705						
30							
	700						
35							
1' = 5'							
			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-496
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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: *DEB*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	730		$\Sigma \frac{U}{U}$	16.4	35	11	CUT SURFACE CL SI, BRN, MST, RESD
5	725		$\frac{I}{U} \frac{I}{\Sigma}$	24.6	53	24	FT CL, LT BRN, MST, RESD
10	720		$\frac{I}{\Sigma}$	18.0	37	11	CL SI, R-BRN, MST, RESD
15	715		$\frac{I}{\Sigma}$	16.7	37	11	CL SI, R-BRN, MST, RESD
20	710						DISCONTINUED.
25	705						
30	700						
35							
1' = 5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-497
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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: *DBG*

DEPTH ft.	EL	SPT (CN)	* 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
20	725						DISCONTINUED.
25	720						
30	715						
35	710						
1' = 5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-498
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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: JCE

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	765		$\frac{1}{0} \frac{1}{\Sigma}$	14.3	40	14	SI CL, R-BRN, MST, RESD
10	760		$\frac{1}{\Sigma}$	19.8	67	29	SI CL, R-BRN, MST, RESD
15	755		$\frac{1}{0} \frac{1}{\Sigma}$	15.8	40	14	SI CL, R-BRN, MST, RESD, TR GV
20	750		$\frac{1}{0}$	15.7	44	19	SI CL, TR GV, R-BRN, MST, RESD
25	745						DISCONTINUED.
30	740						
35	735						
1' = 5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-499
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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: *CB*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	775		$\frac{1}{0} \frac{1}{\Sigma}$	13.6	40	14	CUT SURFACE SI CL, R-BRN, MST, RESD
5							
	770		$\frac{1}{0} \frac{1}{\Sigma}$	19.1	40	14	SI CL, R-BRN, MST, RESD
10							
	765		$\frac{1}{0} \frac{1}{\Sigma}$	16.1	37	12	CL SI, TR GV, BRN, MST, RESD
15							
	760		$\frac{1}{0} \frac{1}{\Sigma}$	17.5	37	12	CL SI, TR GV, BRN, MST, RESD
20							DISCONTINUED.
	755						
25							
	750						
30							
	745						
35							
1' = 5'							
		* Lab. Classif.					

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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: *286*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	815						
5	810		I Σ	29.2	67	29	FT CL, R, MST, RESD
10	805		I Σ	32.7	67	29	FT CL, R, MST, RESD
15	800		U	24.7	44	20	CL SI, TN, MST, RESD
20	795		U	22.1	44	20	CL SI, TN, MST, RESD
25	790						DISCONTINUED.
30	785						
35	780						
1"=5'			* Lab. Classif.				

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SOIL PROFILE
FIGURE 2.5-501
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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: *LE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	820		$\frac{1}{0}$	12.9	35	15	CUT SURFACE CL SI, TN, MST, RESD
10	815		$\frac{11}{01\Sigma}$	19.5	53	24	CL SI, YEL-TN, MST, RESD
15	810		$\frac{1}{0}$	20.6	39	17	CL SI, TN, MST, RESD
20	805		$\frac{11}{01\Sigma}$	14.5	36	12	CL SI, TN, MST, RESD
25	800						DISCONTINUED.
30	795						
35	790						
1' = 5'			* Lab. Classif.				

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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: J/L

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		U	11.2	35	15	CUT SURFACE SI CL, R-BRN, D, RESD
5			U	21.3	44	19	SI CL, TR GV, D, RESD
	795						
10			UI UΣ	20.1	53	24	CL SI, MST, RESD
	790						
15			UI UΣ	18.3	36	12	CL SI, MST, RESD
	785						
20							DISCONTINUED.
	780						
25							
	775						
30							
	770						
35							
1' = 5'							

* Lab. Classif.

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SOIL PROFILE
FIGURE 2.5-503
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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: JEC

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	770		J U	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		J U	24.8	44	20	SI CL, R-BRN-WHT, MST, RESD
15							
	755		J U	24.4	44	20	SI CL, R-BRN-WHT, MST, RESD
20							
	750						DISCONTINUED.
25							
	745						
30							
	740						
35							
1"=5'			* Lab. Classif.				

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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: *CC*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	740		J U	8.9	33	11	CUT SURFACE CL SI, BRN, D, RESD
10	735		J U	13.4	35	15	CL SI, BRN, MST, RESD
15	730		J U J Σ	17.2	37	12	CL SI, BRN, MST, RESD
20	725		J U	20.3	45	22	SI CL, BRN, MST, RESD
25	720						DISCONTINUED.
30	715						
35	710						
1' = 5'			* Lab. Classif.				

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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: *JE*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	725						FL SP
			┐ U	15.8	39	17	CL SI, BRN, MST, RESD
5			┐ U	16.9	39	17	CL SI, LT BRN-BRN, MST, RESD
	720						
			┐ 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.					

SOIL PROFILE
FIGURE 2.5-506
SHEET 1 OF 1

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 721.0
PREPARED BY: MHD CHECKED BY: JPD

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	720		$\frac{1}{0} \frac{1}{\Sigma}$	23.0	40	14	CUT SURFACE CL SI, BRN, MST, RESD
5			ML				
	715		$\frac{1}{\Sigma}$	19.0	22	2	CL SI, GY, V MST, RESD
			$\frac{1}{\Sigma}$	18.7	22	2	SI CL, BRN, MST, RESD
10			$\frac{1}{0} \frac{1}{\Sigma}$	17.4	37	12	SI CL, DK BRN, MST, RESD
	710						DISCONTINUED.
15							
	705						
20							
	700						
25							
	695						
30							
	690						
35							
1' = 5'							

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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: JJS

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	735		I U	34.4	53	24	CUT SURFACE CL SI, TN, V MST, RESD
5	730		I U	39.6	48	21	CL SI, TN, V MST, RESD
10	725		I U	40.4	48	21	CL SI, TN, V MST, RESD
15	720		I U	26.8	22	2	SI CL, (BENT), GRN-TN, V MST, RESD
20							DISCONTINUED.
25	715						
30	710						
35	705						
1"=5'							
			* Lab. Classif.				

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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: BORKOW AREA EXT 2C
RANGE: SURFACE EL: 742.3
PREPARED BY: MHD CHECKED BY: J. J. J.

DEPTH ft.	EL	SPT (ND)	* LOG	W	LL	PI	FIELD DESCRIPTION
	740		U	8.7	34	13	CUT SURFACE SL CI, TN, D, RESD
5							
	735		U I Σ	14.5	37	12	CL SI, TN, MST, RESD
10							
	730		U I Σ	24.2	37	12	CL SI, TN, MST, RESD
15							
	725		U I Σ	24.3	42	16	
20							
	720						DISCONTINUED.
25							
	715						
30							
	710						
35							
1''=5'							

* Lab. Classif.

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: JEG

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	785		U	16.6	34	13	CUT SURFACE SI CL, TR GV, D, RESD
10	780		U Σ	16.2	36	12	CL SI, MST, RESD
15	775		U	17.8	30	11	CL SI, MST, BRN, RESD
20	770		U	16.8	30	11	CL SI, MST, BRN, RESD
25	765						DISCONTINUED.
30	760						
35	755						
1"=5'			* Lab. Classif.				

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: *PLC*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	835		┐ 0	20.1	34	13	CUT SURFACE SI CL, TN, MST, RESD
10	830		┐ 0	16.9	33	12	SI CL, PK-TN, MST, RESD
15	825		┐┐ 0 1 Σ	12.1	36	12	SI CL, TN, MST, RESD, TR GV
20	820		┐┐ 0 1 Σ	14.6	36	12	SI CL, TN, MST, RESD
25	815						DISCONTINUED.
30	810						
35	805						
1' = 5'							

* Lab. Classif.

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: *CLP*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	880		U S	12.4	40	16	CUT SURFACE CL SI, TN, MST, RESD
10	875		U S	10.3	40	16	CL SI, TN, MST, RESD
15	870		U S	9.9	36	12	CL SI, TN, TR GV, MST, RESD
20	865		U S	8.6	36	12	CL SI, TN, TR GV, MST, RESD
25	860						DISCONTINUED.
30	855						
35	850						
1' = 5'			* Lab. Classif.				

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-512
SHEET 1 OF 1

FEATURE: BORROW AREA EXT 2C
RANGE: SURFACE EL: 777.0
PREPARED BY: MHD CHECKED BY: *OK*

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
							TOPSOIL
5	775		CL	15.5	33	12	CL SI, BRN, MST, RESD
10	770		CL	14.6	34	12	CL SI, TR GV, BRN, MST, RESD
15	765		CL	16.5	34	12	CL SI, TR GV, R-BRN, MST, RESD
20	760		CL	16.7	34	12	CL SI, BRN, MST, RESD

	755						DISCONTINUED.
25							
	750						
30							
	745						
35							
1' = 5'							

* Lab. Classif.

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: *WJG*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	740		CL	13.8	34	13	CUT SURFACE CL SI, TN, MST, RESD
10	735		CL	22.6	39	17	CL SI, TN, MST, RESD
15	730		CL	21.9	44	20	CL SI, TN, MST, RESD
20	725		CL	21.4	44	20	CL SI, TN, MST, RESD
25	720						DISCONTINUED.
30	715						
35	710						
1' = 5'			* Lab. Classif.				

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: *BBE*

DEPTH ft.	EL	SPT (CN)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		CL	7.8	33	12	CUT SURFACE CL SI, TR GV, TN, MST, RESD
5			CL				
	795		CL	11.1	30	11	CL SI, TR GV, TN, MST, RESD
10			CL	14.2	30	11	CL SI, TR LS GV, R-BRN, MST, RESD
	790		CL				
15			CL	12.3	30	11	CL SI, TR LS GV, R-BRN, MST, RESD
	785						DISCONTINUED.
20							
	780						
25							
	775						
30							
	770						
35							
1"=5'			* Lab. Classif.				

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: *Wij*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	880		U S	11.4	40	16	CUT SURFACE CL SI, D, RESD
10	875		U S	11.6	40	16	CL SI, D, RESD
15	870		U S	12.8	40	16	CL SI, TR GV, D, RESD
20	865		U S	12.4	40	16	CL SI, D, RESD
25	860						DISCONTINUED.
30	855						
35	850						
1' = 5'			* Lab. Classif.				

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-516
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA EXT 2C
BORING: PAH-83 STATION: RANGE: SURFACE EL: 872.0
DATE DRILLED: TO 8/25/83 PREPARED BY: MHD CHECKED BY: *LB*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	870		CL	16.7	35	15	CUT SURFACE CL SI, R-BRN, D, RESD
5							
	865		Σ S	10.1	22	1	CL SI, TR GV, TN, MST, RESD
10							
	860		CL	10.2	33	12	CL SI, TR GV, BRN, MST, RESD
15							
	855		CL	8.1	30	11	CL SI, GV, BRN
20							DISCONTINUED.
	850						
25							
	845						
30							
	840						
35							
1''=5'			* Lab. Classif.				

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: *MB*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	845		$\frac{1}{0} \frac{1}{0}$	20.3	36	12	CUT SURFACE CL SI, BRN, MST, RESD
5	840		$\frac{1}{0}$	21.4	33	11	CL SI, R-BRN, MST, RESD
			$\frac{1}{0}$	22.5	34	12	SI CL, BRN, MST, RESD
10	835		$\frac{1}{0}$	21.0	44	19	SI CL, BRN, MST, RESD
15	830		$\frac{1}{0}$	19.7	34	12	SI CL, R-BRN, MST, RESD
20	825						DISCONTINUED.
25	820						
30	815						
35							
1' = 5'			* Lab. Classif.				

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SOIL PROFILE
FIGURE 2.5-518
SHEET 1 OF 1

PROJECT: WATTS BAR N.P. FEATURE: BORROW AREA EXT 2C
BORING: PAH-85 STATION: RANGE: SURFACE EL: 834.0
DATE DRILLED: TO 8/25/83 PREPARED BY: M/ CHECKED BY: *836*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
5	830		$\frac{1}{0}$	18.8	34	13	CUT SURFACE CL SI, TN, MST, RESD
10	825		$\frac{1}{0} \frac{1}{\Sigma}$	12.3	36	12	CL SI, TN, MST, RESD
15	820		$\frac{1}{0} \frac{1}{\Sigma}$	13.0	36	12	CL SI, TN, MST, RESD
20	815		$\frac{1}{0}$	13.4	33	12	CL SI, YEL-TN, MST, RESD
25	810						DISCONTINUED.
30	805						
35	800						
1''=5'			* Lab. Classif.				

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: *llg*

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	FIELD DESCRIPTION
	800		$\frac{1}{0}$	13.6	34	13	CUT SURFACE CL SI, TN, MST, RESD
5							
	795		$\frac{1}{0} \frac{1}{\Sigma}$	18.5	36	12	CL SI, TN, MST, RESD
10							
	790		$\frac{1}{0} \frac{1}{\Sigma}$	18.7	36	12	CL SI, TN, MST, RESD
15							
	785		$\frac{1}{0} \frac{1}{\Sigma}$	16.4	36	12	CL SI, TN, MST, RESD
20							
	780						DISCONTINUED.
25							
	775						
30							
	770						
35							
1' = 5'							
		* Lab. Classif.					

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

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

T - SHEAR STRESS (PSF)

0

1000

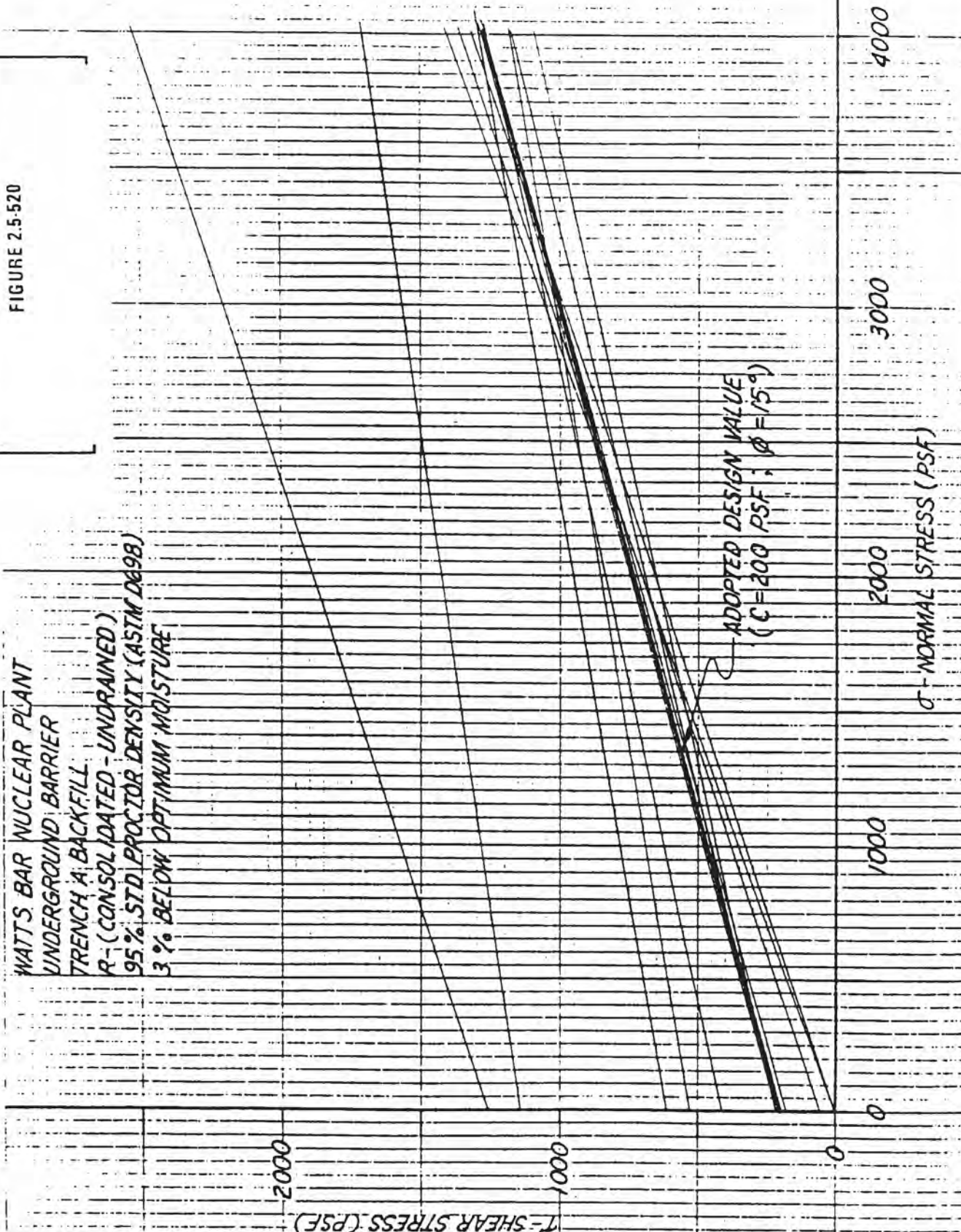
2000

3000

4000

σ - NORMAL STRESS (PSF)

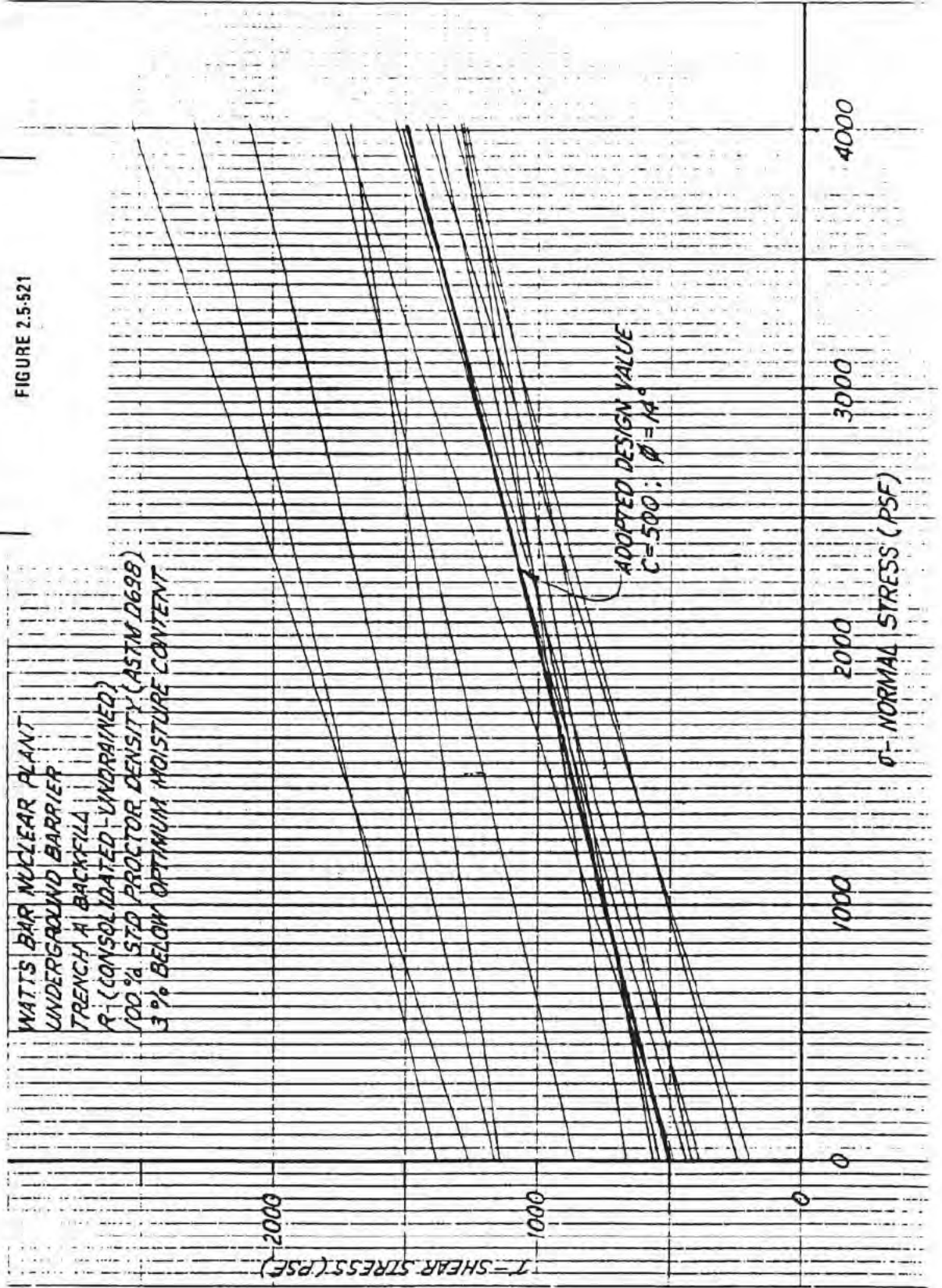
ADOPTED DESIGN VALUE
($C=200$ PSF ; $\phi=15^\circ$)



HISTORICAL

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-521



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.3.522

WATTS BAR NUCLEAR PLANT
UNDERGROUND BARRIER
TRENCH B BACKFILL

R- (CONSOLIDATED - UNDRAINED

95% STD PROCTOR DENSITY (ASTM D698)

3% BELOW OPTIMUM MOISTURE CONTENT

T-SHEAR STRESS (PSF)

2000

1000

0

ADOPTED DESIGN VALUE
 $C = 200 \text{ PSF}$; $\phi = 14^\circ$

1000

2000

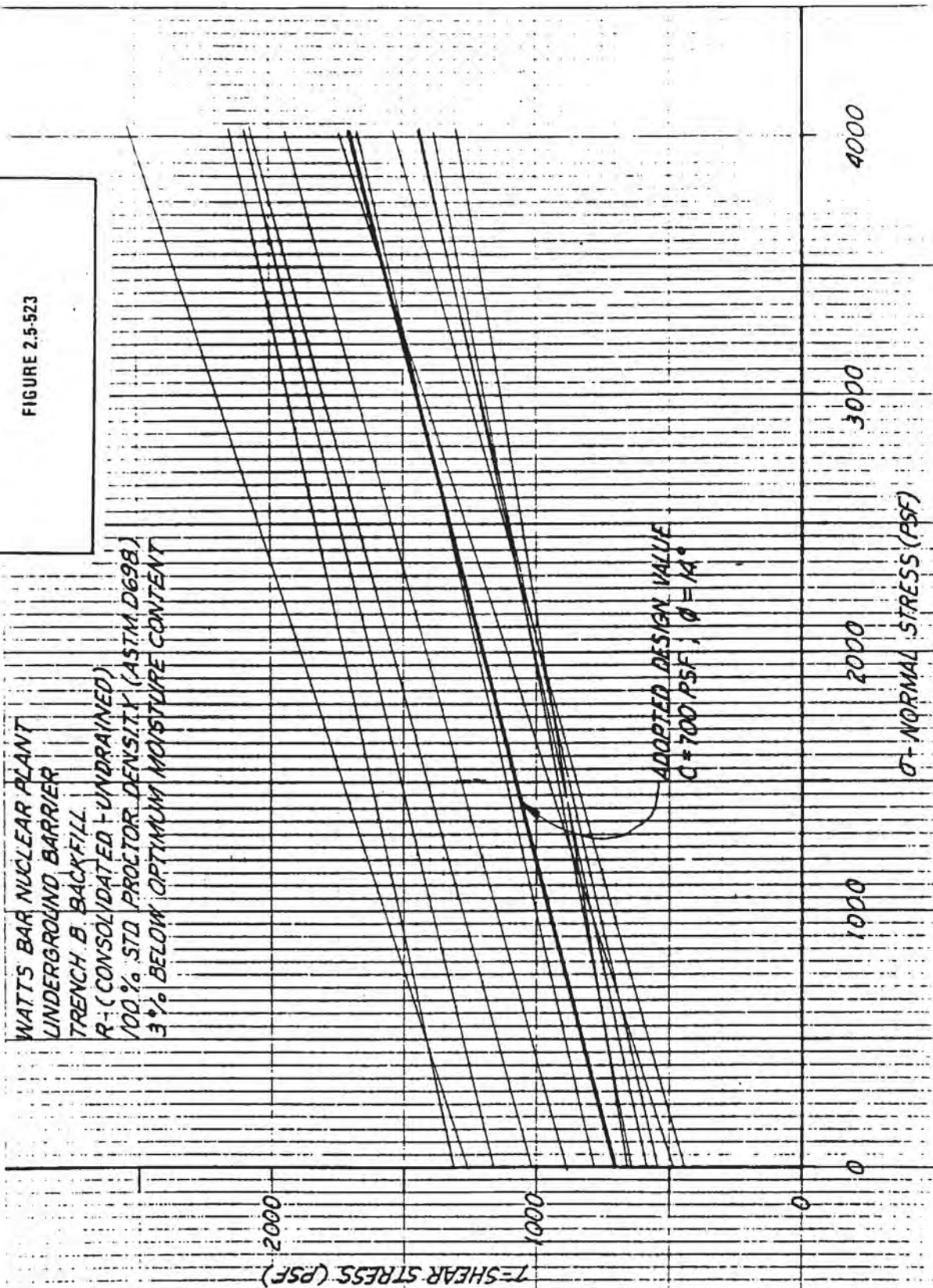
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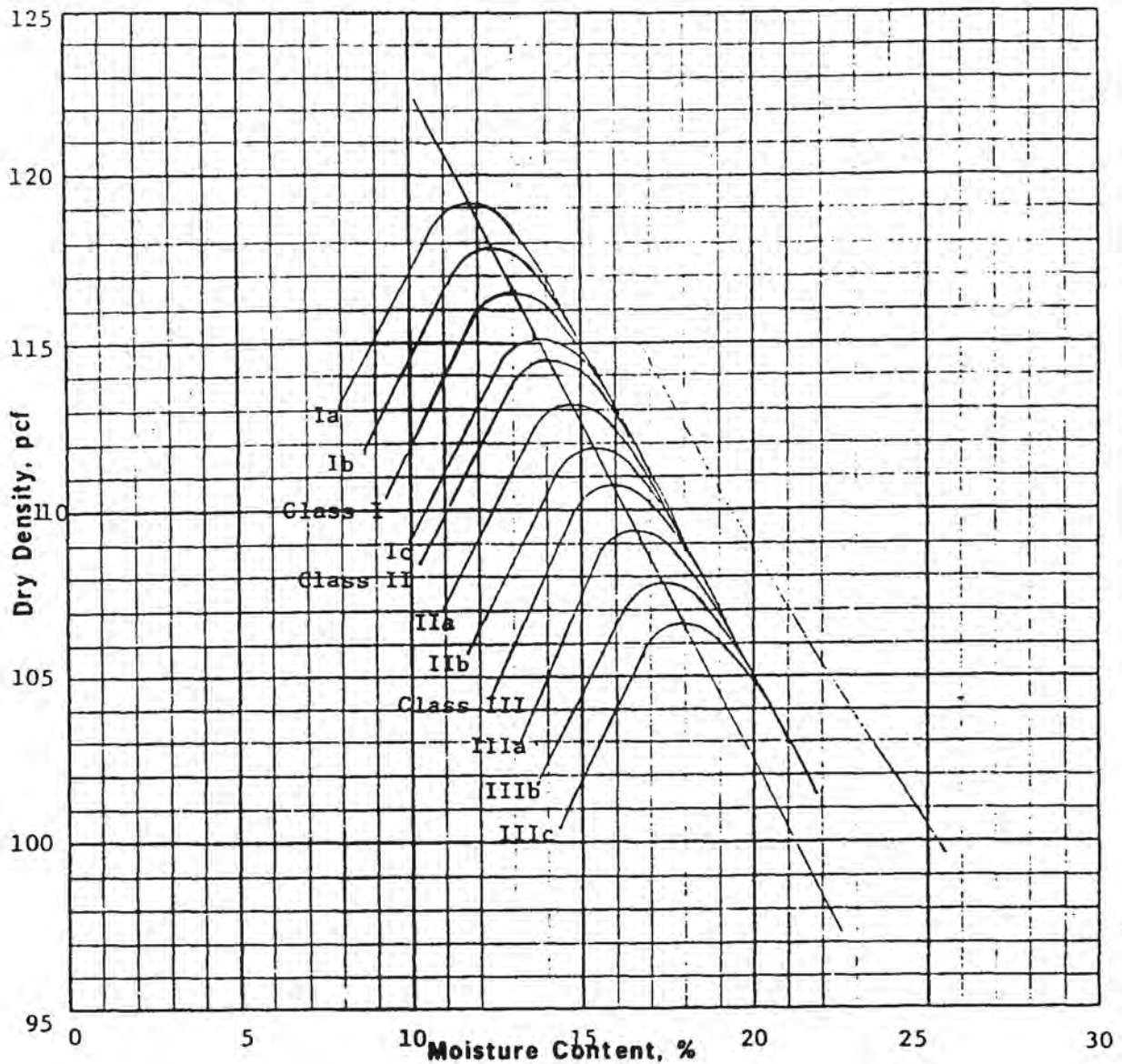
4000

σ - NORMAL STRESS (PSF)

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-523





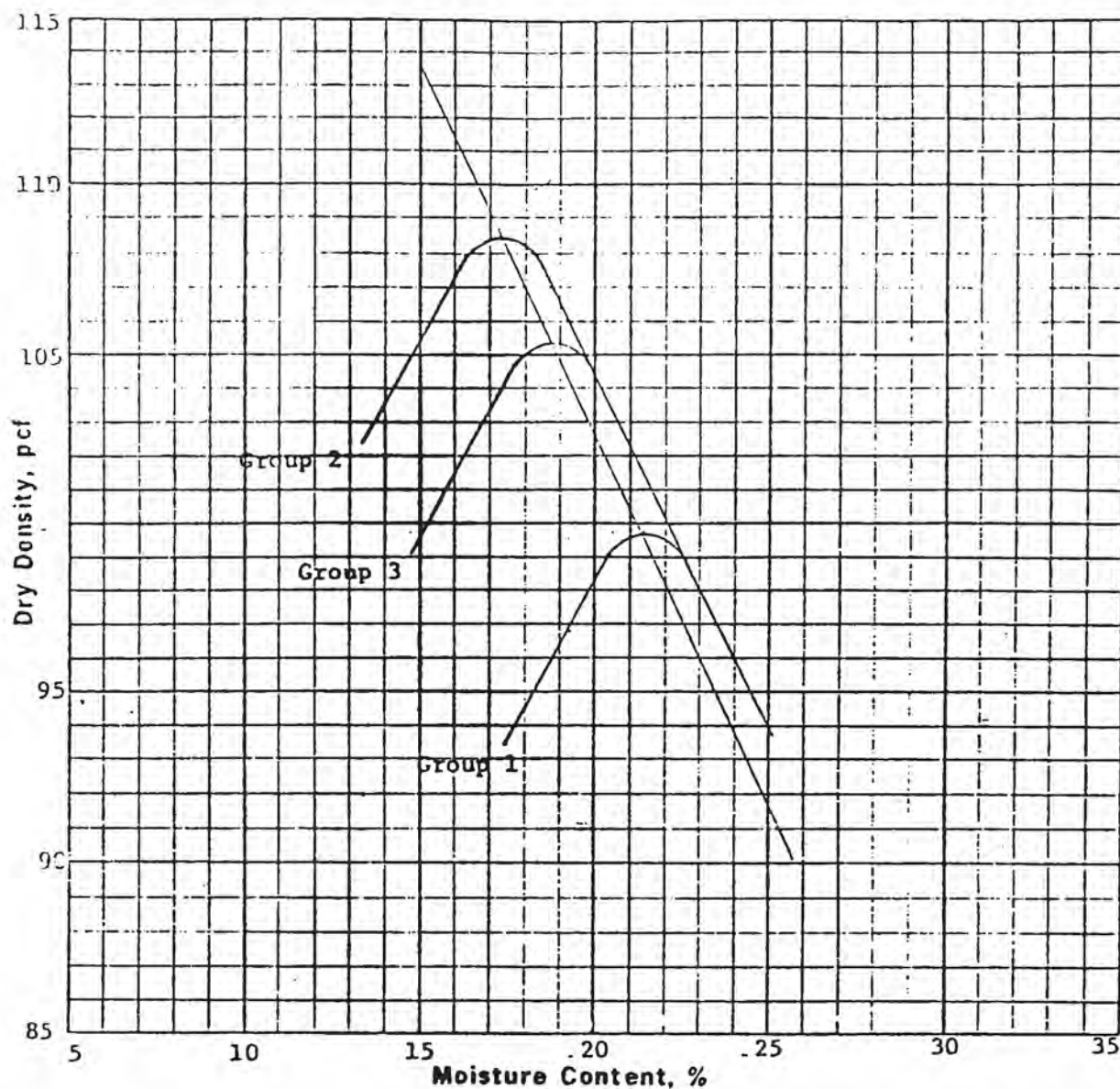
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-SM-SC	0	70	15	15	2.66	24	5	13.1	116.6
II-SC	0	51	24	25	2.69	28	11	14.1	114.4
III-CL	0	40	29	31	2.69	34	15	15.9	110.8

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

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

**ERCW LIQUEFACTION
TRENCH A, BORROW
FIGURE 2.5-524**



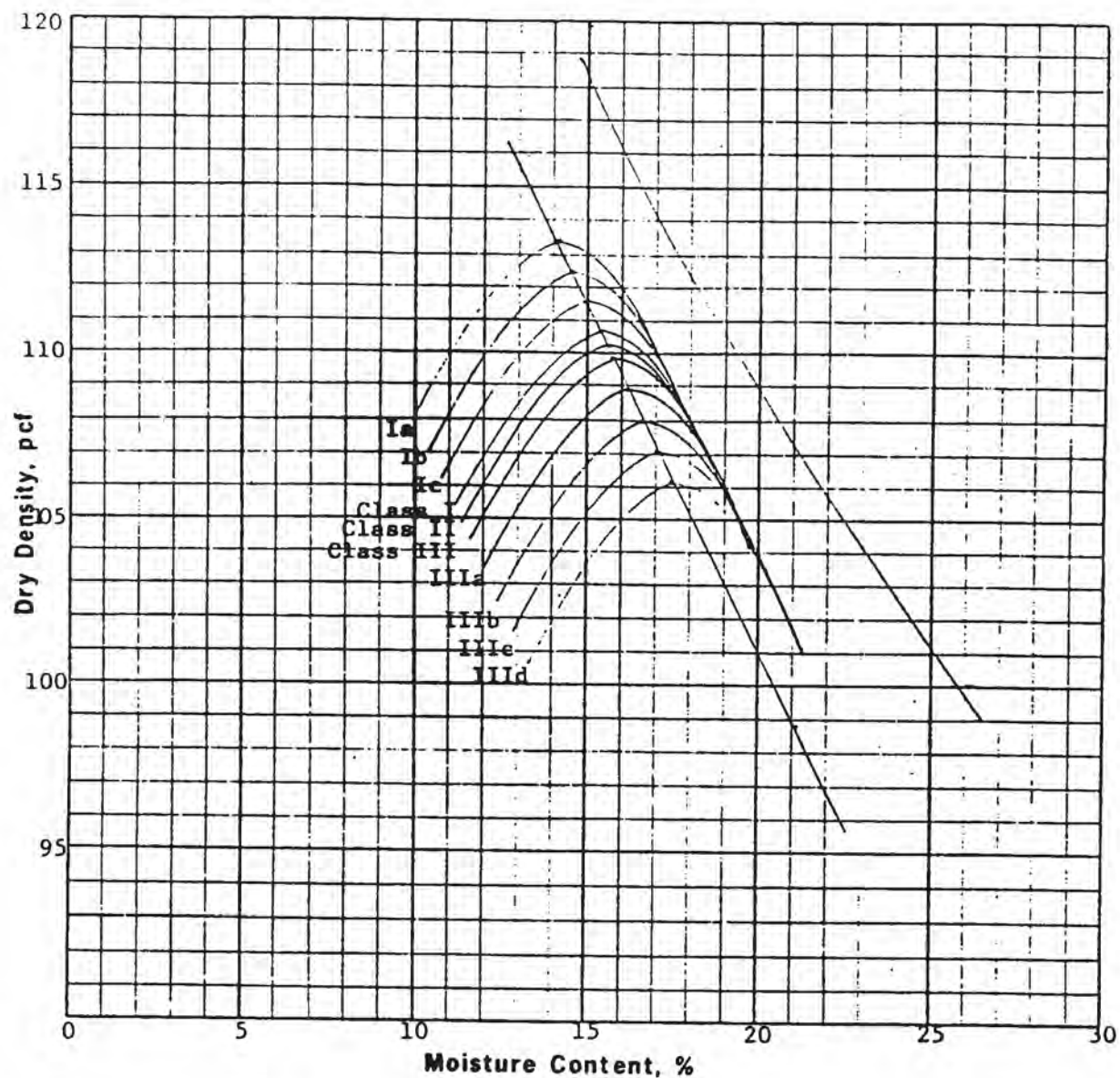
Soil Group	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
1-M	0	16	44	.40	2.73	47	18	21.4	99.7
2-SM	0	54	31	15	2.72	26	1	17.3	108.4
3-M	0	43	35	22	2.73	34	8	18.8	105.3

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**



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-SC	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

--

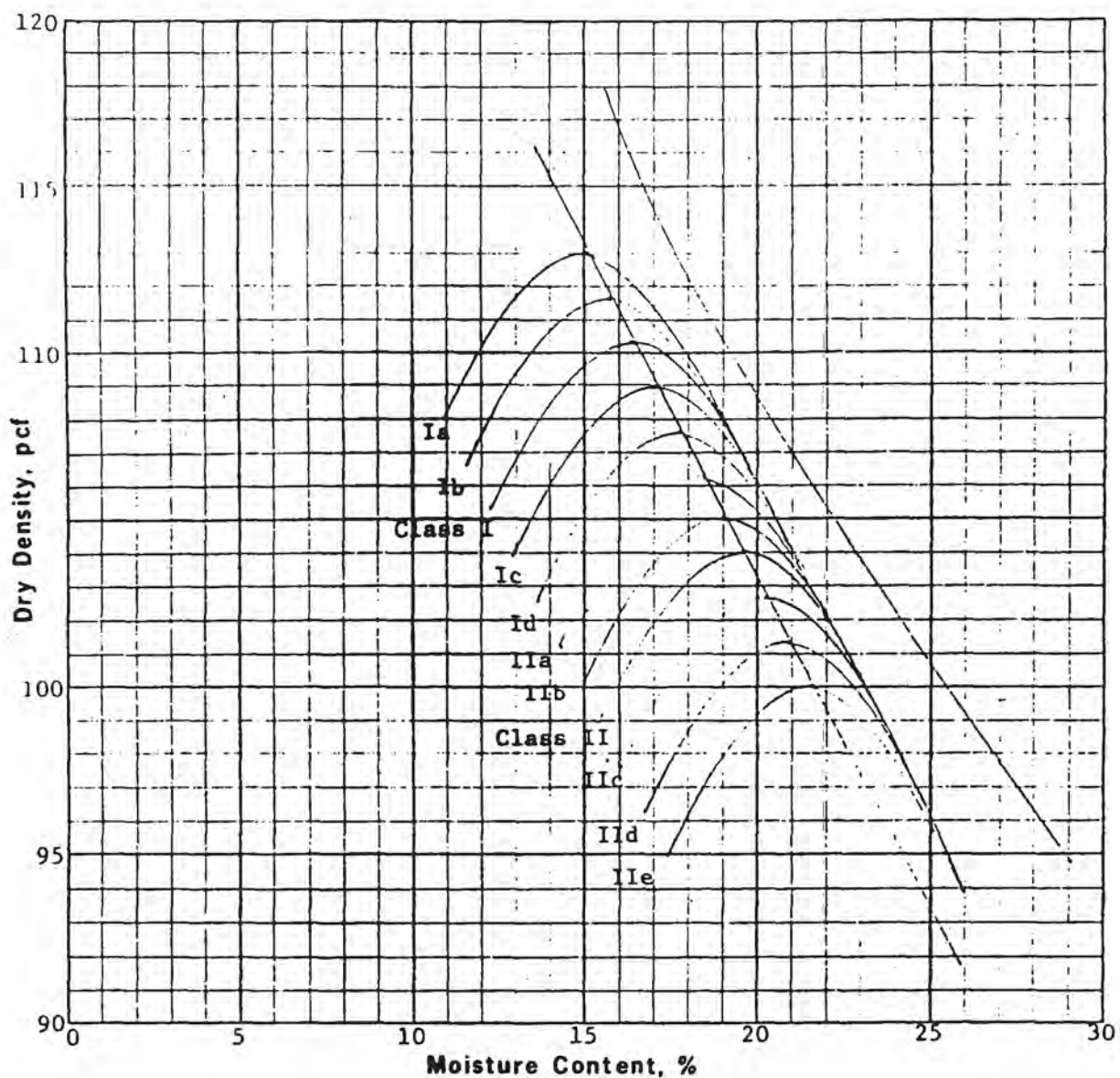
Plus No. 4 Absorption, %

--

Remarks:

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

**ERCW LIQUEFACTION
TRENCH B
FIGURE 2.5-526**



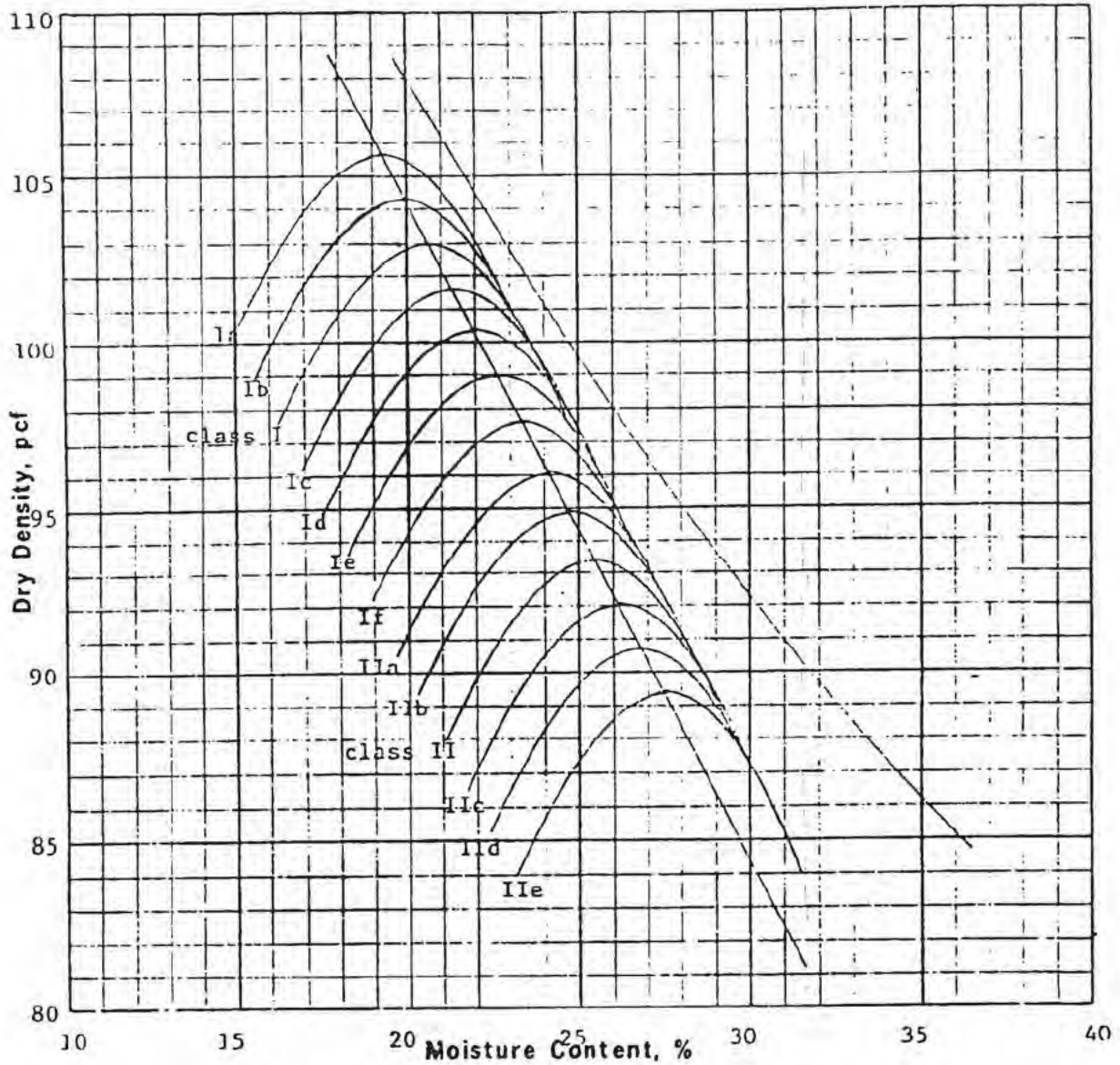
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-CL	0	24	40	.36	2.66	31	16	16.4	110.3
II-CL-NL	0	32	27	41	2.70	40	15	19.6	104.0

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--
Remarks:	

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 9
FIGURE 2.5-527

HISTORICAL



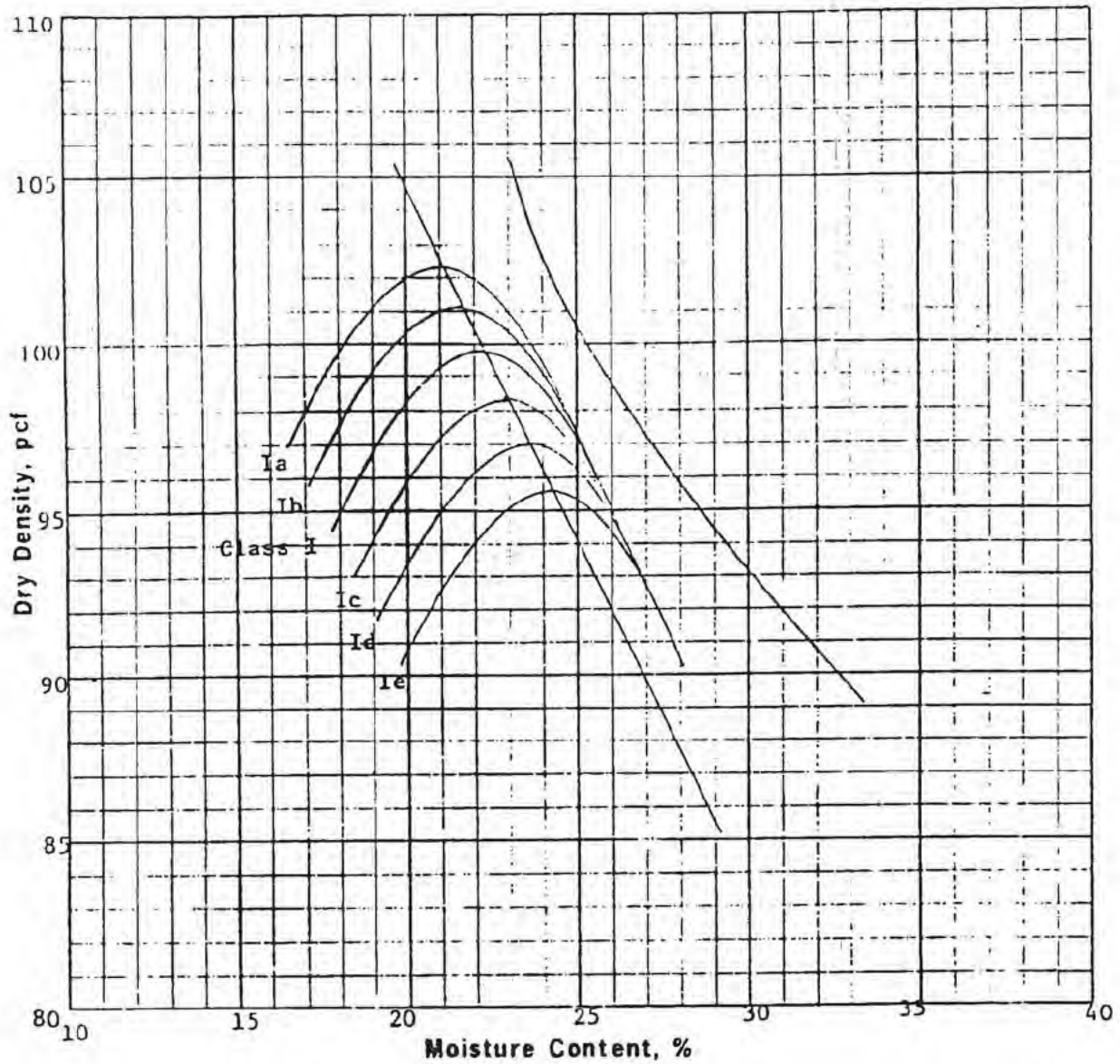
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-CL	0	33	31	36	2.65	39	16	20.6	103.0
II-CL-NL	0	19	33	48	2.65	45	19	25.4	93.3

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

<p align="center">WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p align="center">ERCW LIQUEFACTION BORROW AREA 10 FIGURE 2.5-528</p>

HISTORICAL



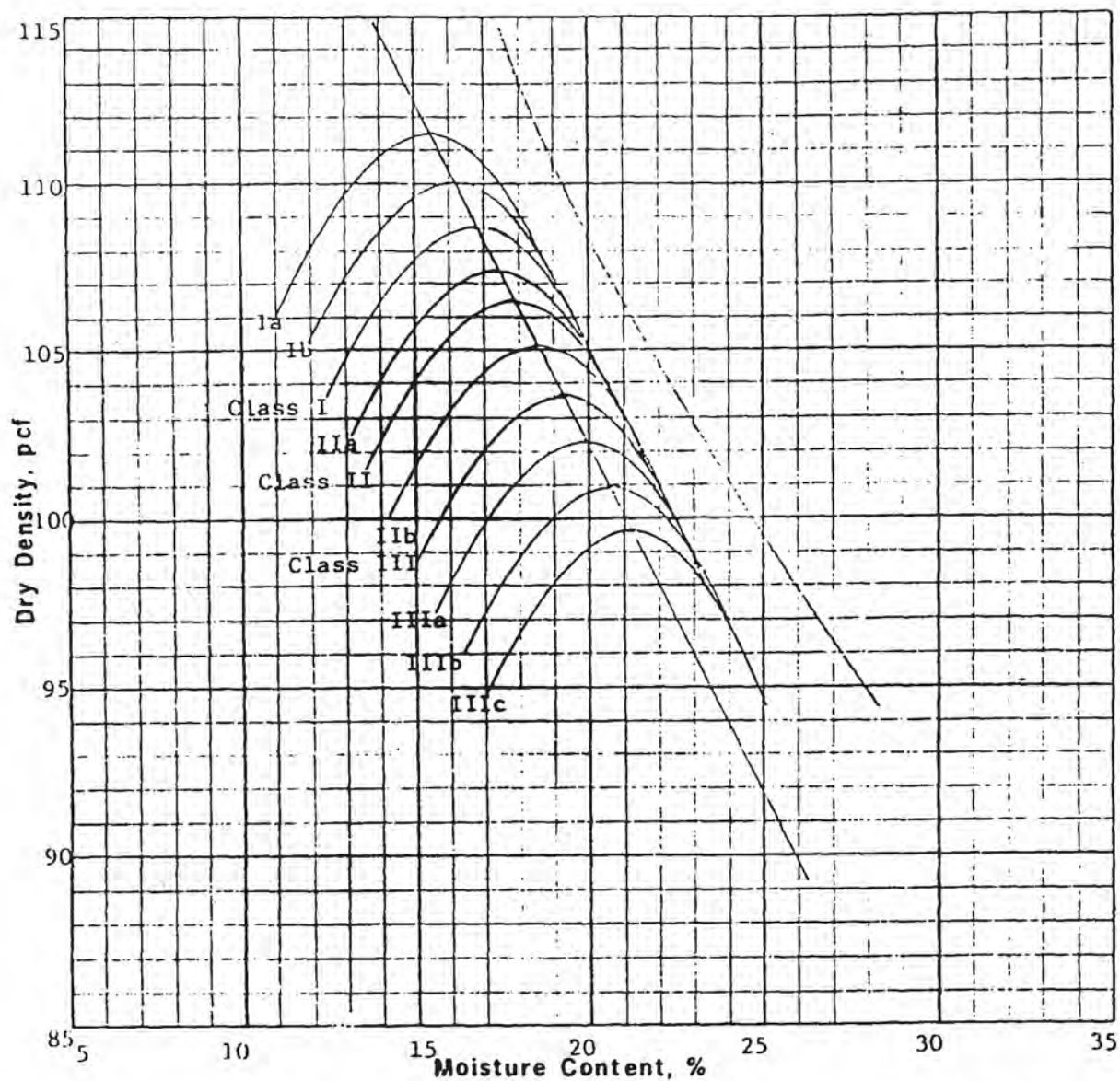
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-NL	0	21	35	44	2.71	44	15	22.2	99.8

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

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

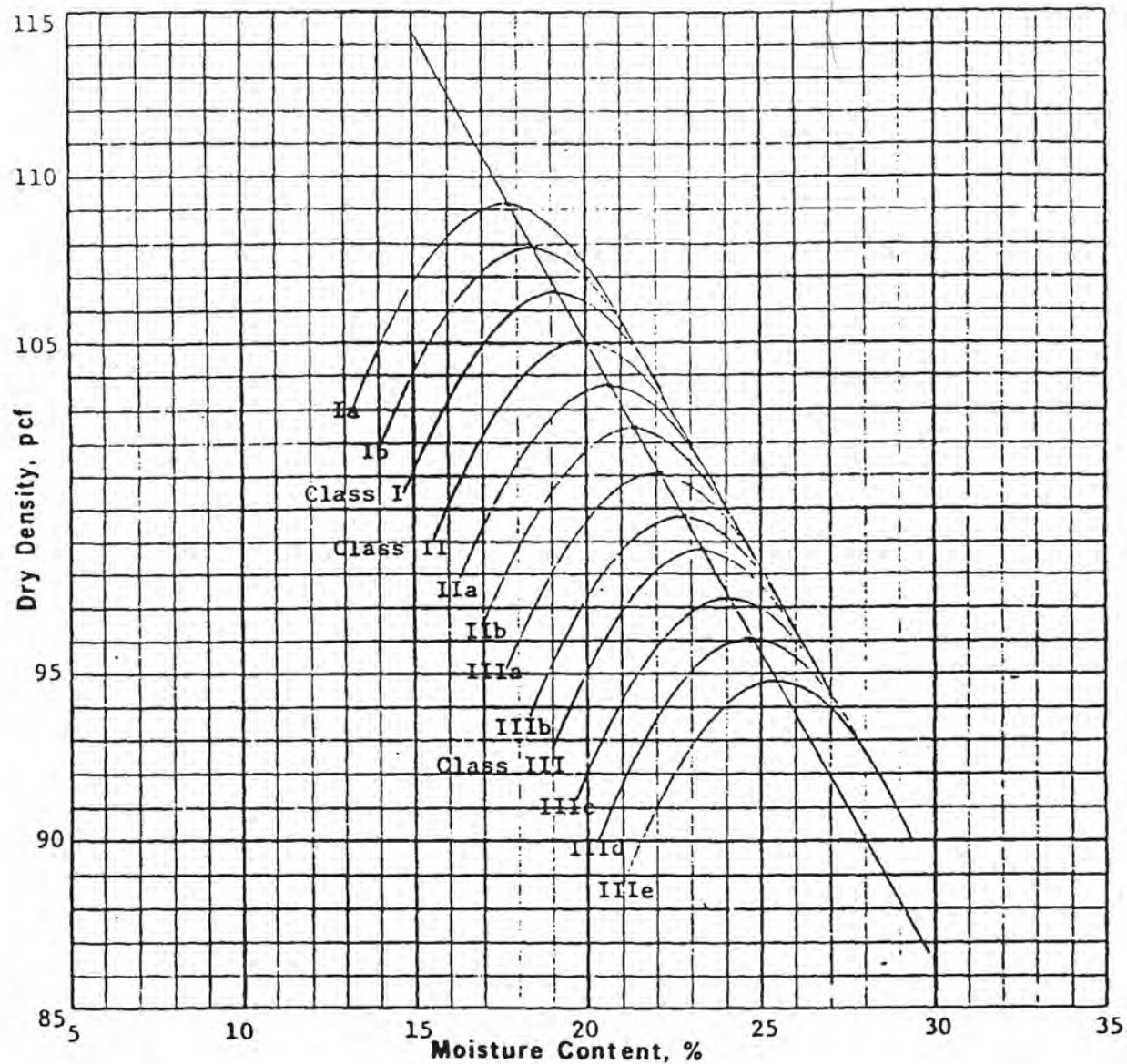
**ERCW LIQUEFACTION
BORROW AREA 11
FIGURE 2.5-529**



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-ML	0	22	39	39	2.70	40	15	17.8	106.5
III-CL-MH	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:	

<p align="center">WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p align="center">ERCW LIQUEFACTION BORROW AREA 12 FIGURE 2.5-530</p>

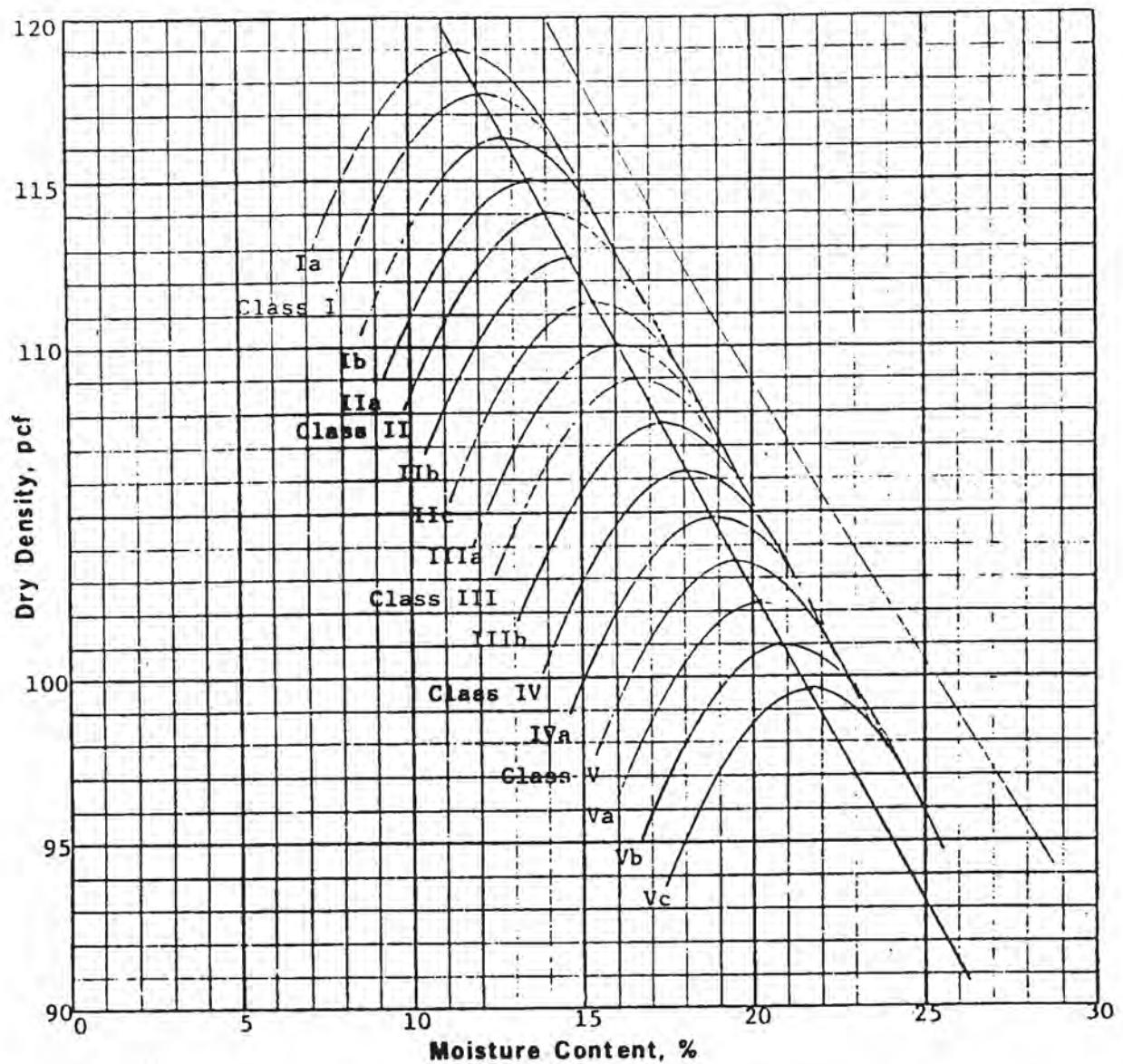


Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML	0	24	42	34	2.71	37	11	19.2	106.6
II-ML	0	23	39	38	2.73	41	14	20.0	105.1
III-MH	0	12	41	47	2.74	52	17	23.3	98.8

Plus No. 4 Specific Gravity, S S D	---
Plus No. 4 Absorption, %	---

Remarks:

<p align="center">WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p align="center">ERCW LIQUEFACTION BORROW AREA 13 FIGURE 2.5-531</p>



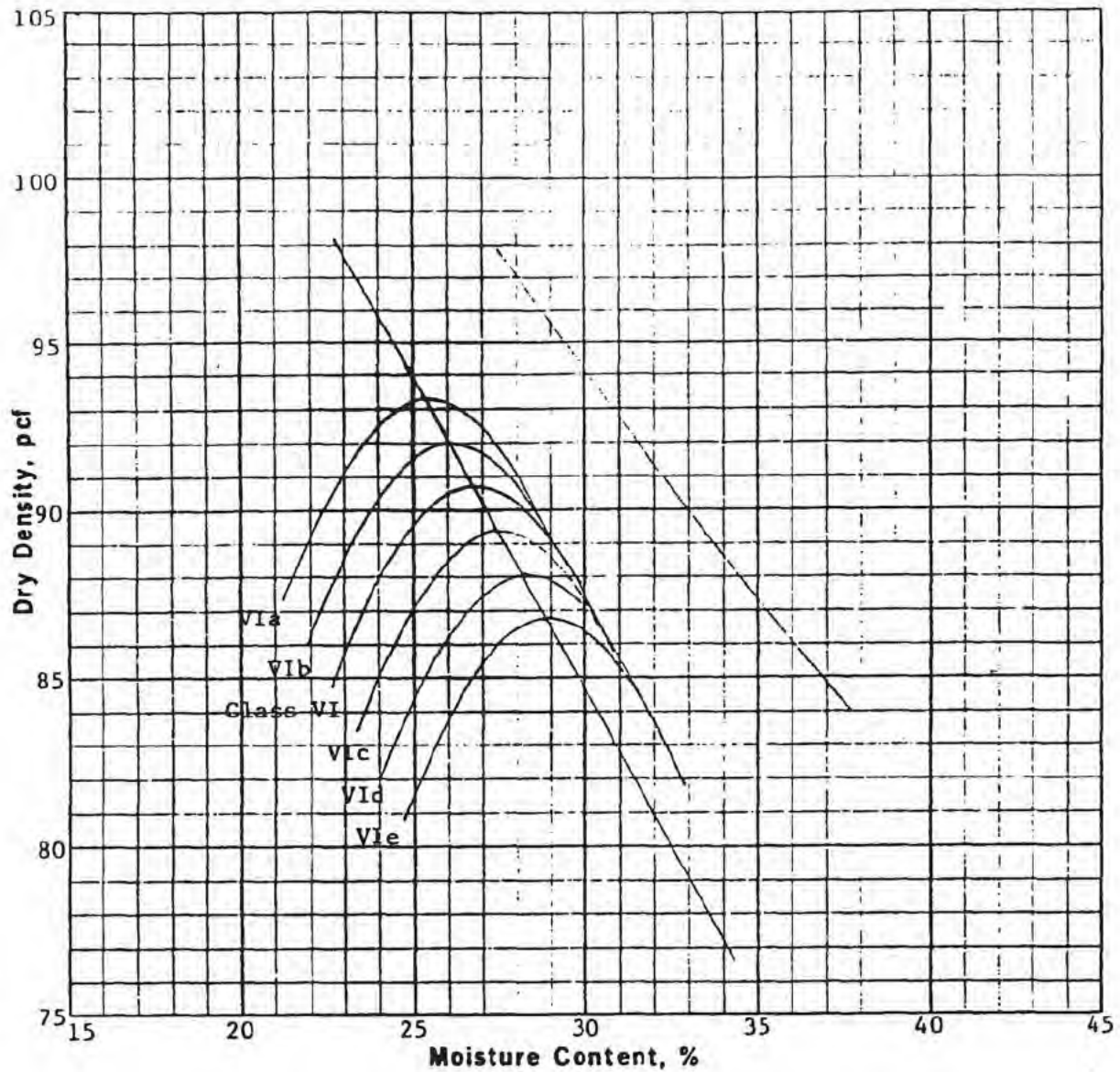
Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML	0	48	40	12	2.63	NP	NP	12.1	117.7
II-SM-SC	0	65	16	19	2.68	25	6	13.9	114.0
III-CL	0	48	23	29	2.67	36	14	16.6	109.0
IV-CL	0	30	34	36	2.68	41	17	18.1	106.2
V-CL-ML	0	23	39	38	2.70	44	17	19.5	103.5

Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

<p align="center">WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p align="center">ERCW LIQUEFACTION BORROW AREA 2C FIGURE 2.5-532</p>

HISTORICAL



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

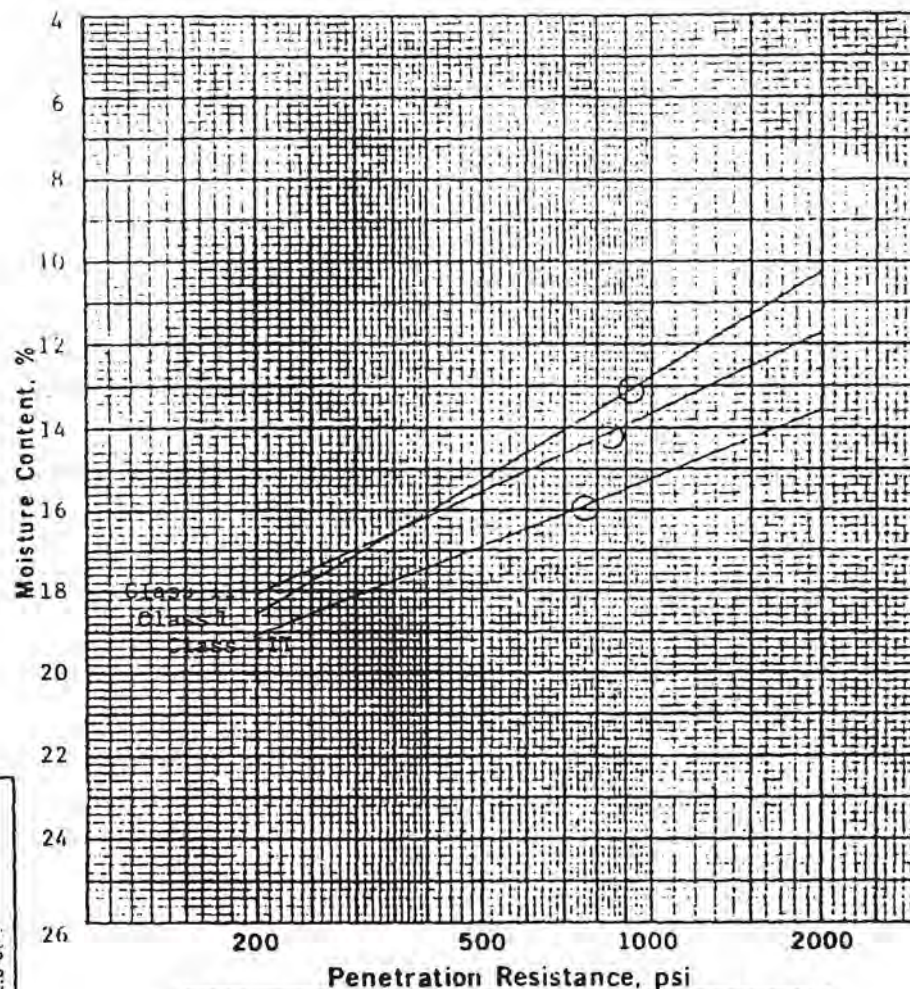
Plus No. 4 Specific Gravity, S S D	--
Plus No. 4 Absorption, %	--

Remarks:

<p align="center">WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p align="center">ERCW LIQUEFACTION BORROW AREA 2C FIGURE 2.5-533</p>

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
TRENCH A
FIGURE 2.5-3a



Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-SM-SC	13.1	116.6	910
II-SC	14.1	114.4	840
III-CL	15.9	110.8	760

Remarks:

○ Denotes Optimum Moisture

Project Watts Bar Nuclear Plant

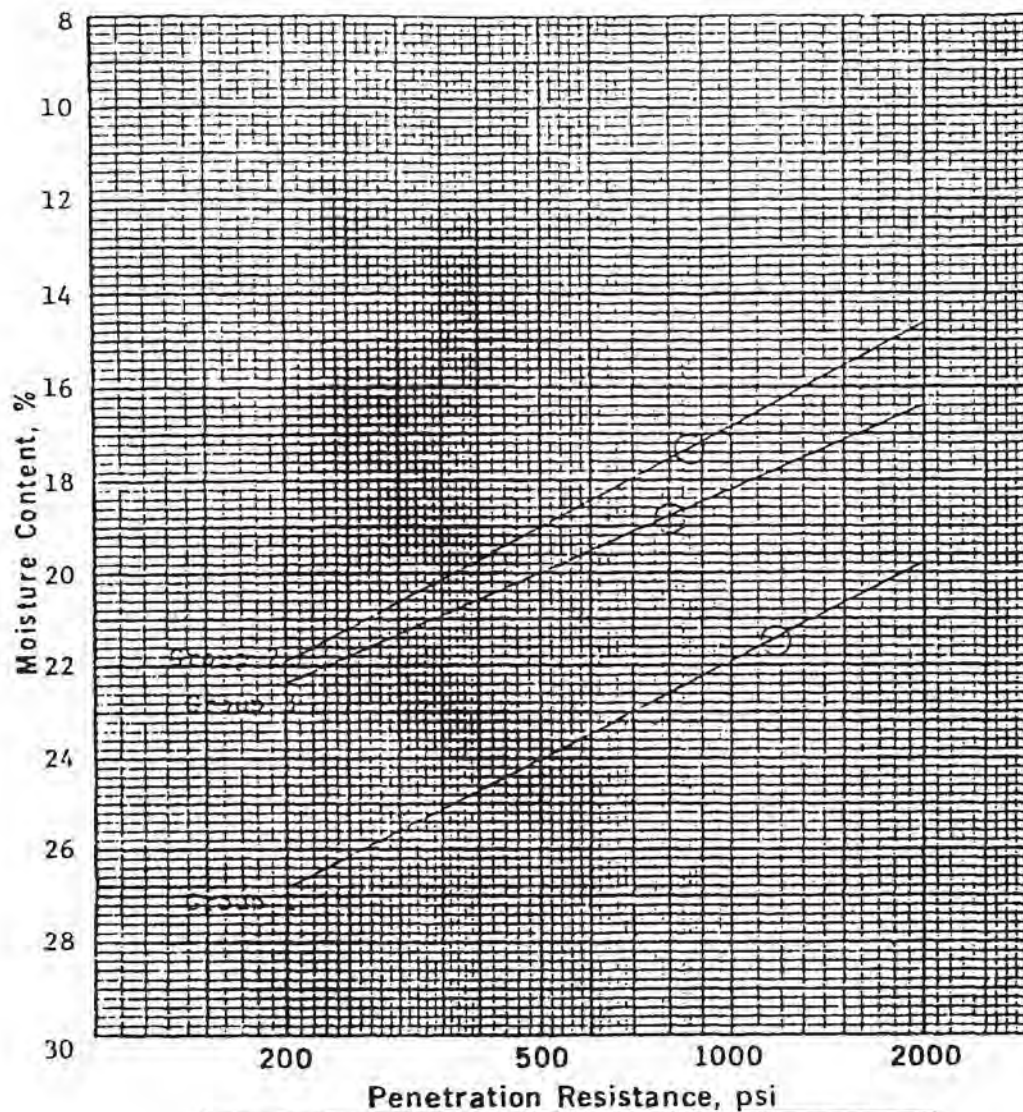
ERCW Liquefaction

Feature Trench A

ASTM Designation D 698A

Date Tested 6-6-83

MOISTURE - PENETRATION TEST



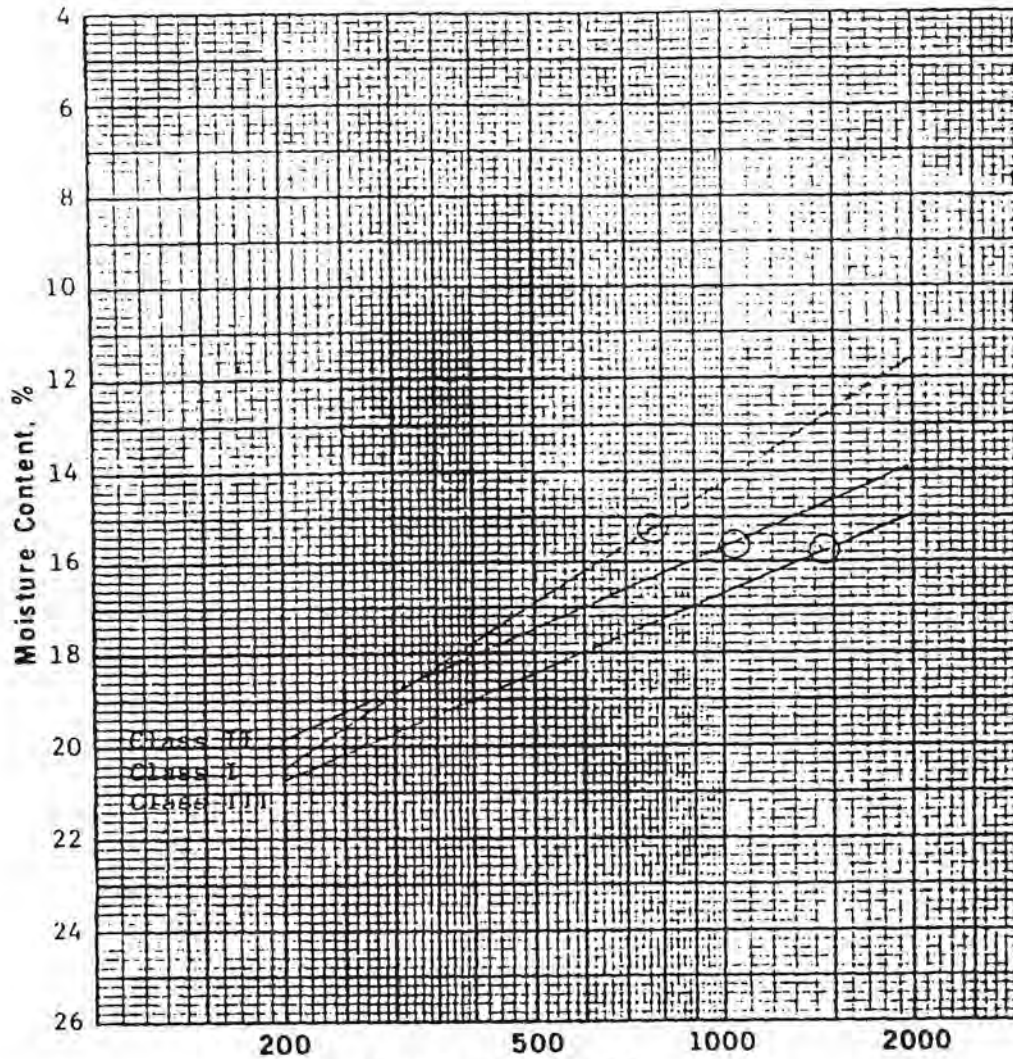
Soil Group	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
1-ML	21.4	99.7	1180
2-SM	17.3	108.4	860
3-ML	18.8	105.3	800

Remarks:

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION, TRENCH A
SUPPLEMENTAL BORROW
FIGURE 2.5-535



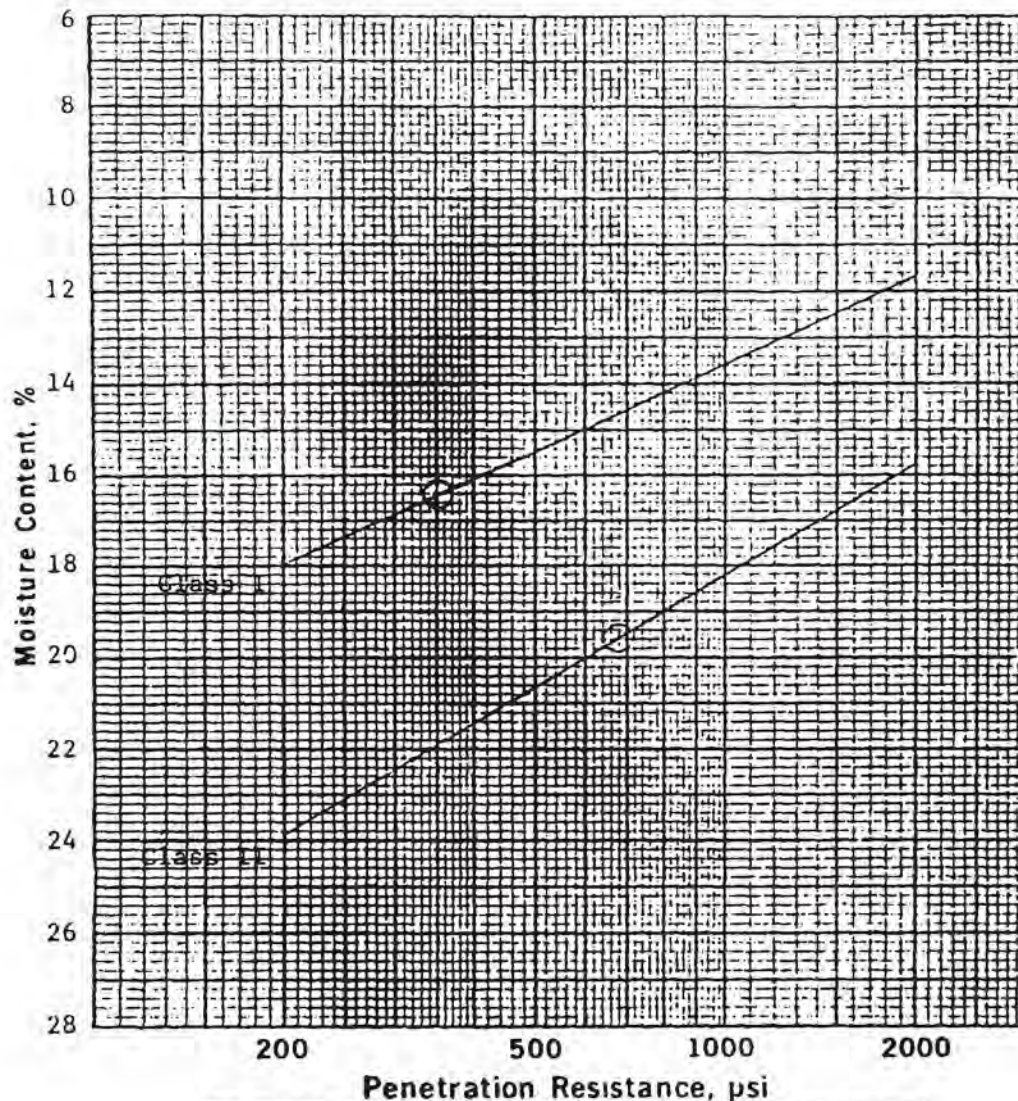
Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-SM	15.3	110.7	770
II-SM-SC	15.6	110.3	1025
III-CL	15.8	109.8	1425

Remarks:

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
TRENCH B
FIGURE 2.5-536

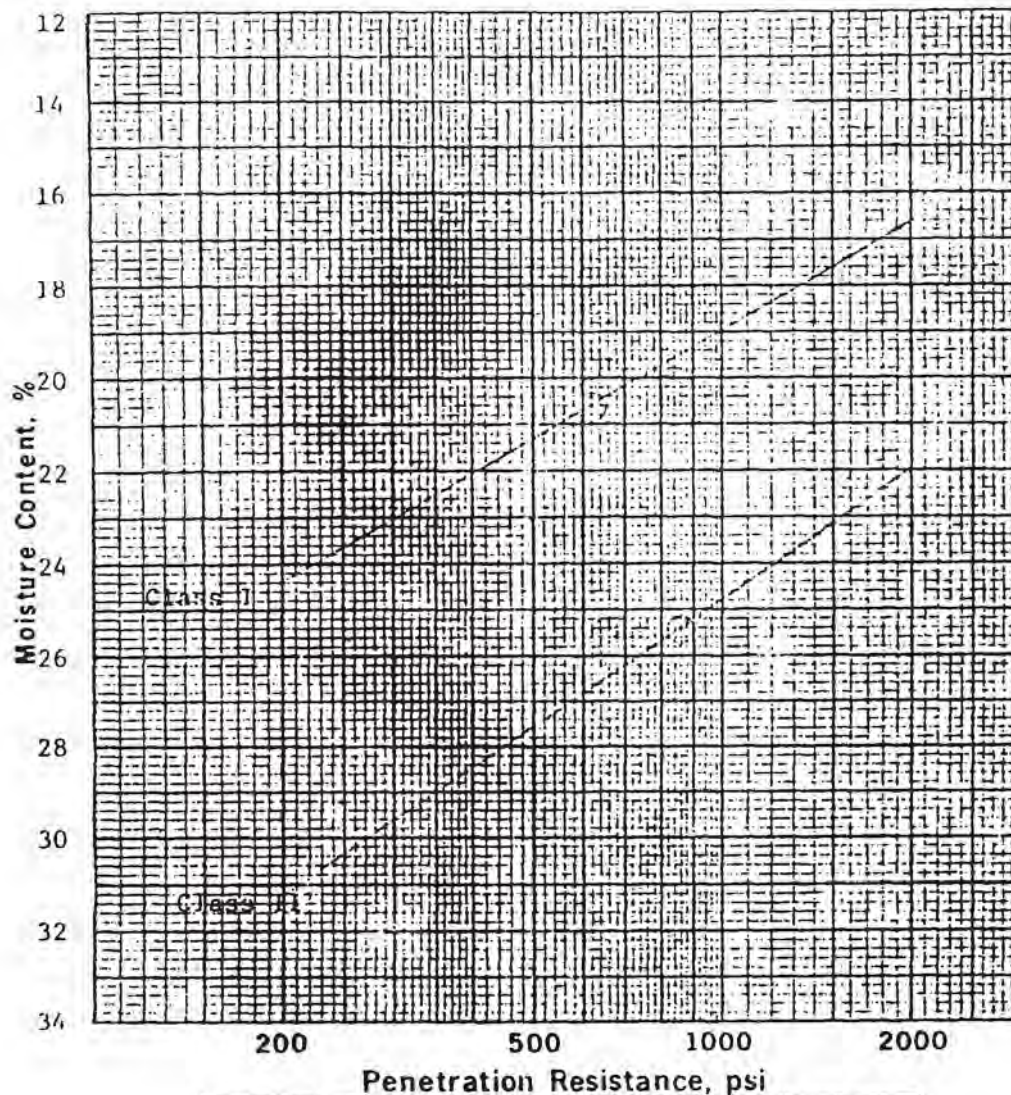


Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-CL	16.4	110.3	350
II-CL-ML	19.6	104.0	680

Remarks:

○ Denotes Optimum Moisture

<p>WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p>ERCW LIQUEFACTION BORROW AREA 9 FIGURE 2.5-537</p>



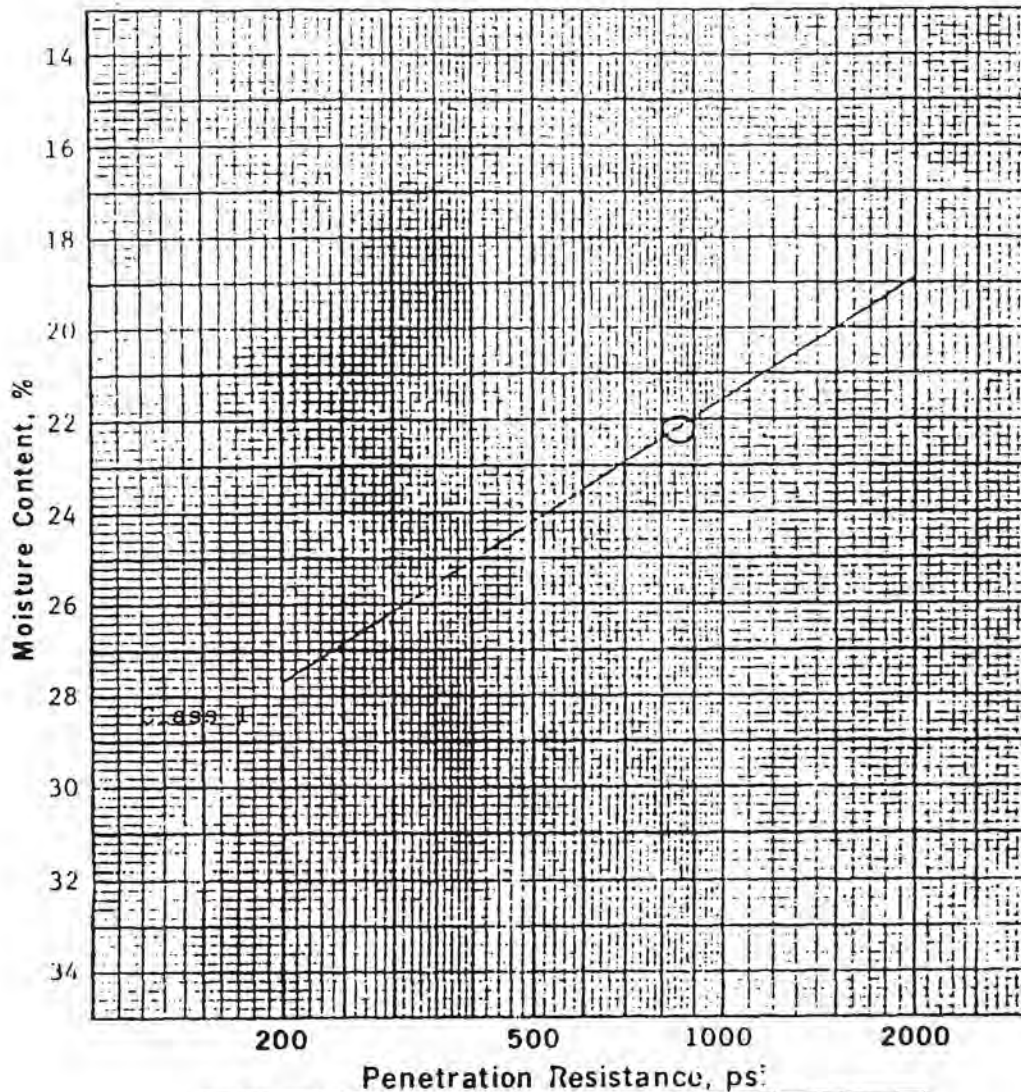
Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-CL	20.6	103.0	620
II-CL-ML	25.4	93.3	860

Remarks:

○ Denotes Optimum Moisture

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

**ERCW LIQUEFACTION
BORROW AREA 10
FIGURE 2.5-538**



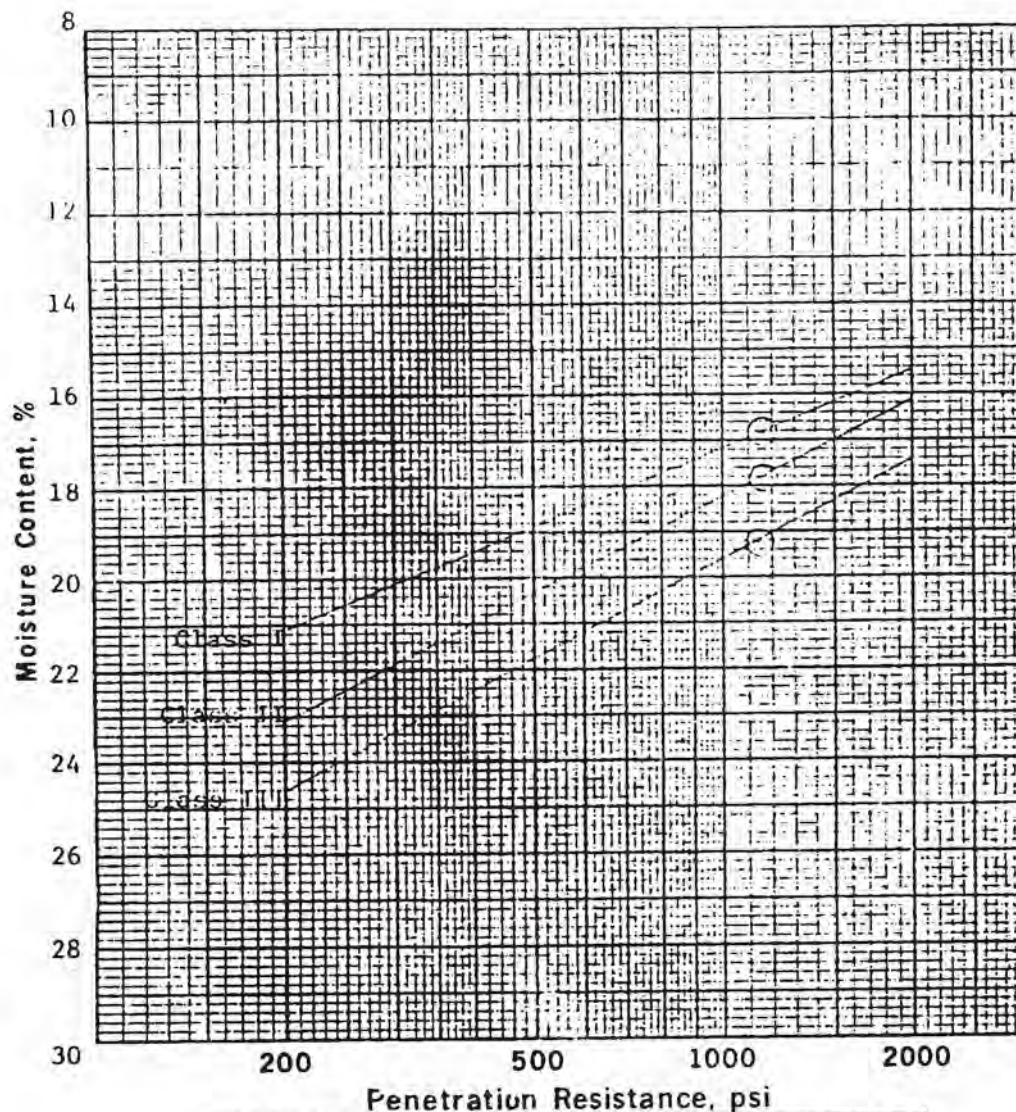
Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-M-L	22.2	99.8	850

Remarks:

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 11
FIGURE 2.5-539



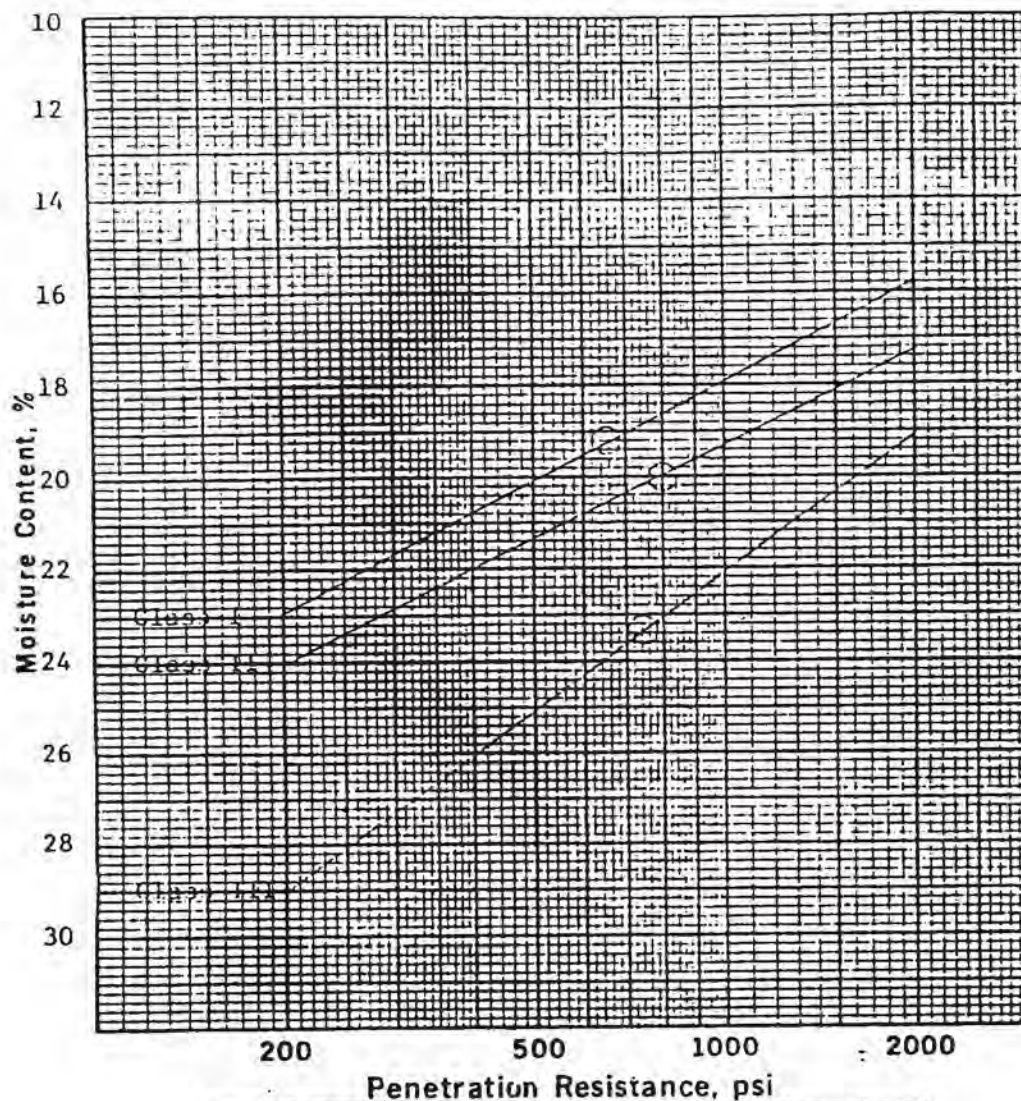
Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-ML	16.8	108.8	1165
CL- II-ML	17.8	106.5	1150
CL- III-ML	19.2	103.7	1145

Remarks:

○ Denotes Optimum Moisture

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

**ERCW LIQUEFACTION
BORROW AREA 12
FIGURE 2.5-540**

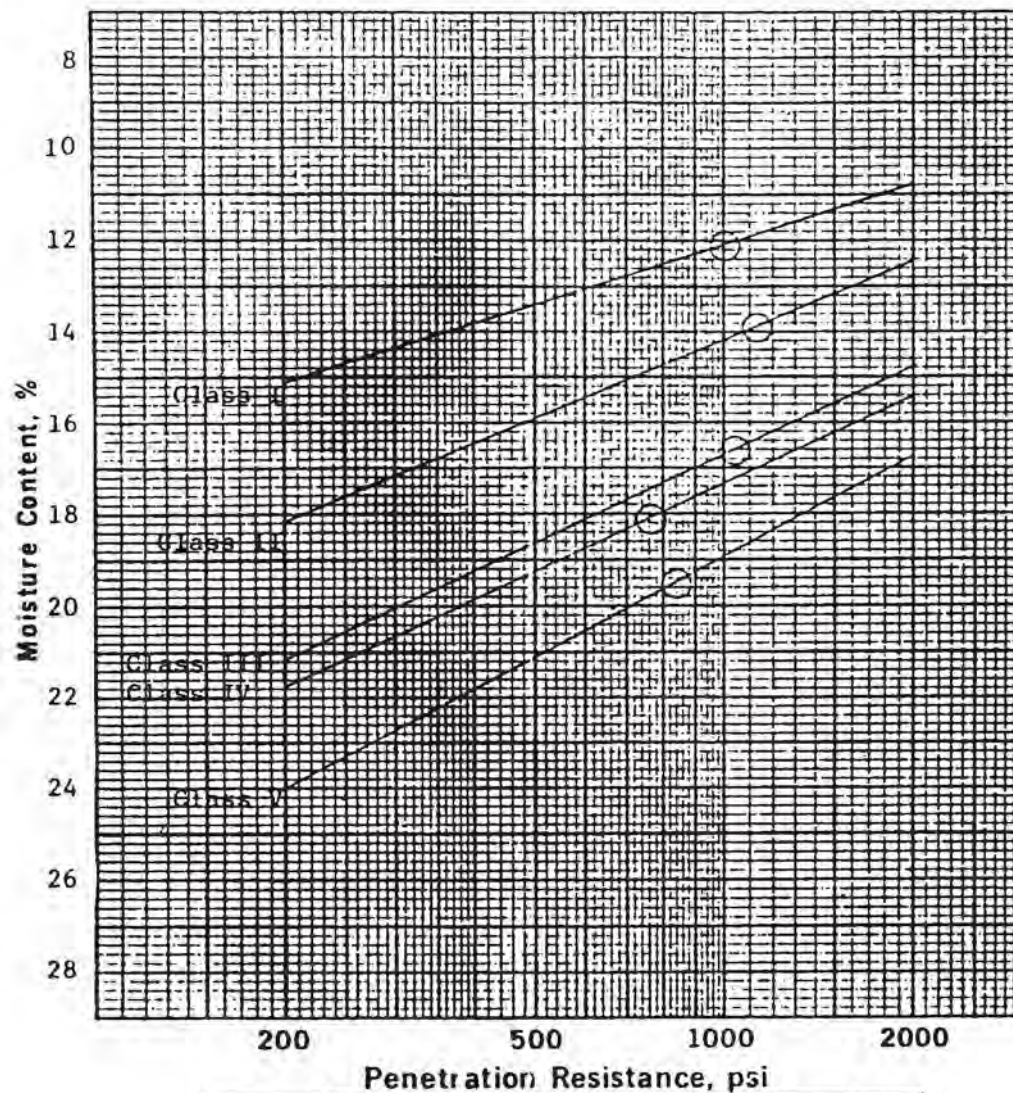


Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-ML	19.2	106.6	650
II-ML	20.0	105.1	800
III-MH	23.3	98.8	740

Remarks:

○ Denotes Optimum Moisture

<p>WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>
<p>ERCW LIQUEFACTION BORROW AREA 13 FIGURE 2.5-541</p>



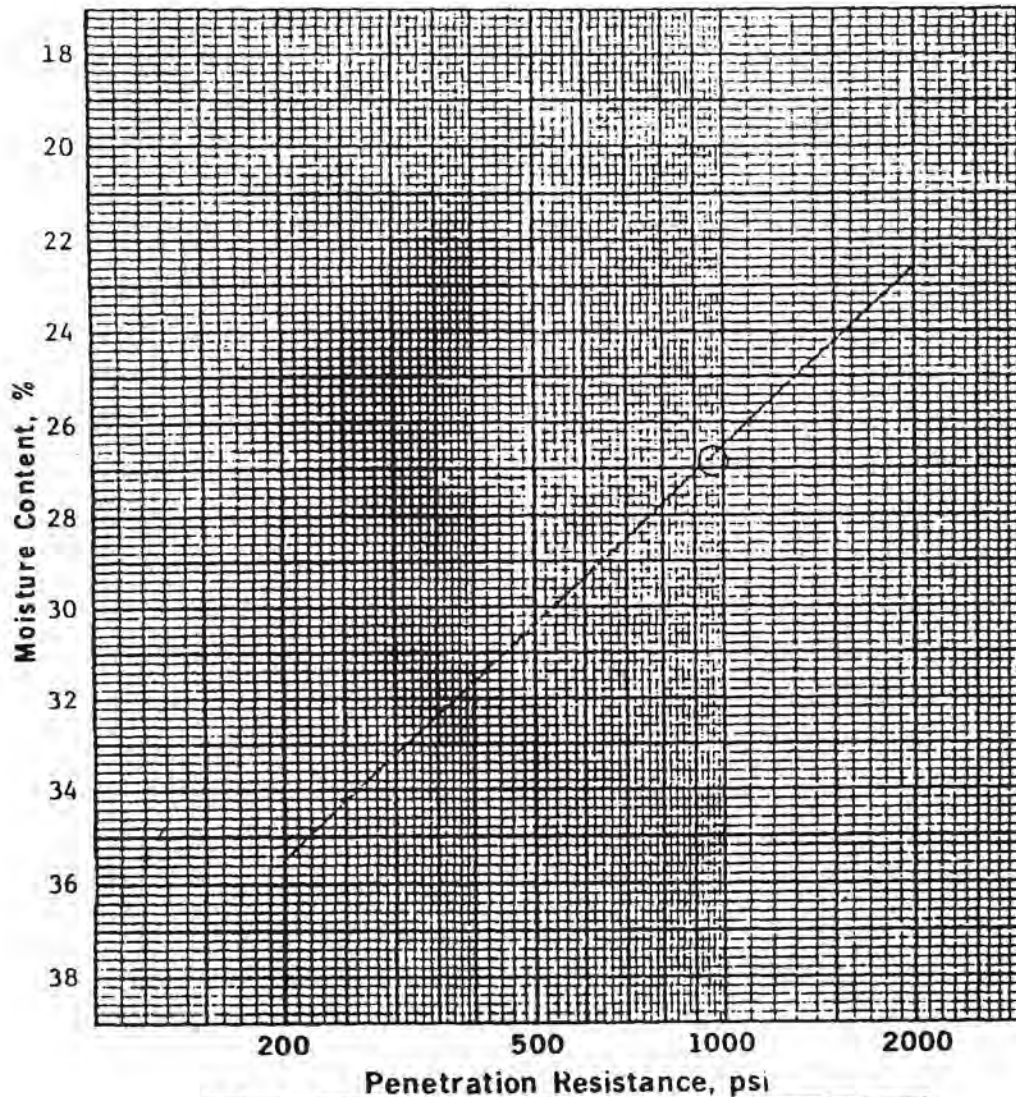
Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-ML	12.1	117.7	1000
II-SM-SC	13.9	114.0	1125
III-CL	16.6	109.0	1050
IV-CL	18.1	106.2	760
V-CL-ML	19.5	103.5	840

Remarks:

○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 2C
FIGURE 2.5-542



Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
VI-MH	26.8	90.8	950

Remarks:

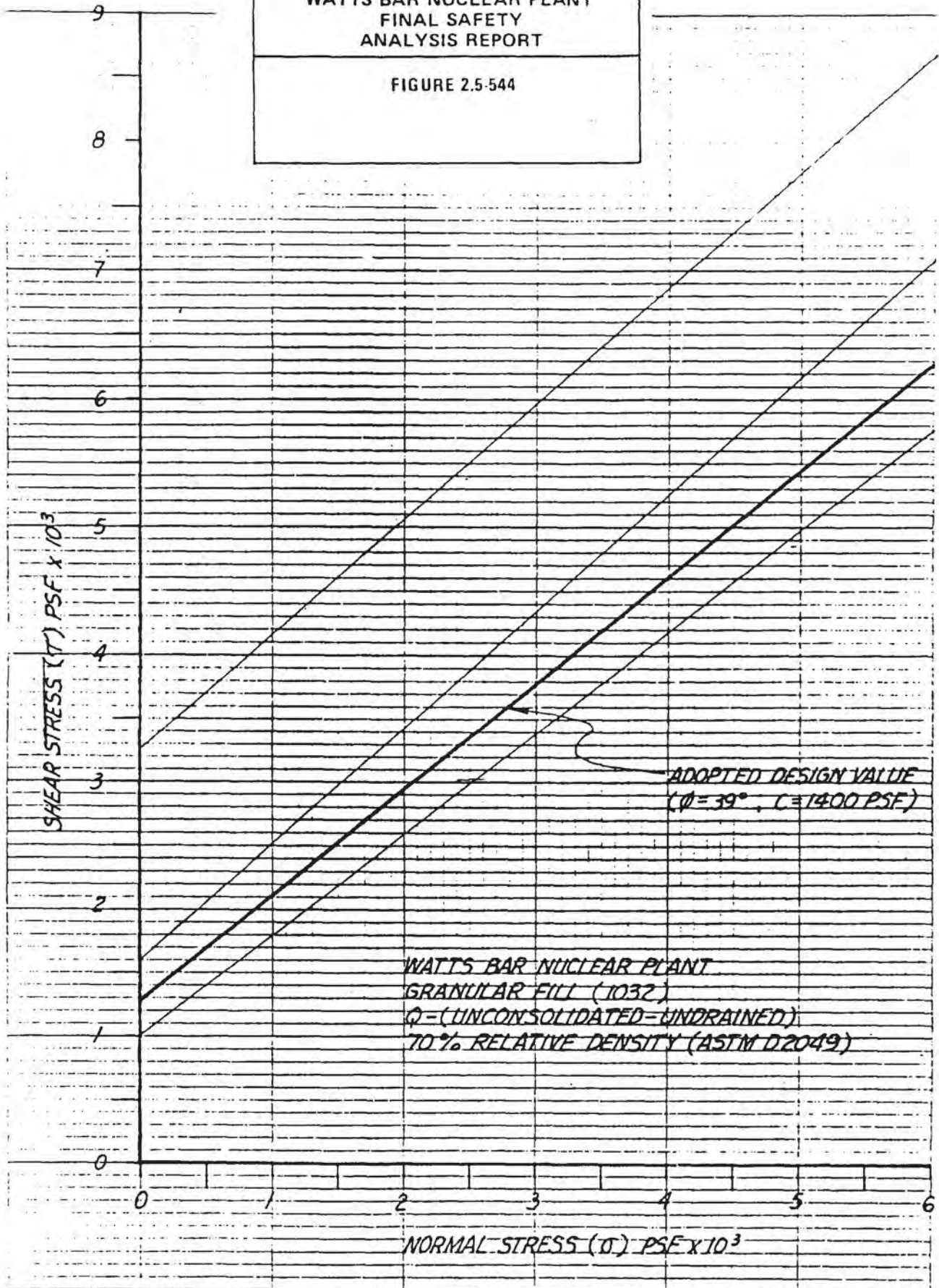
○ Denotes Optimum Moisture

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW LIQUEFACTION
BORROW AREA 2C
FIGURE 2.5-543

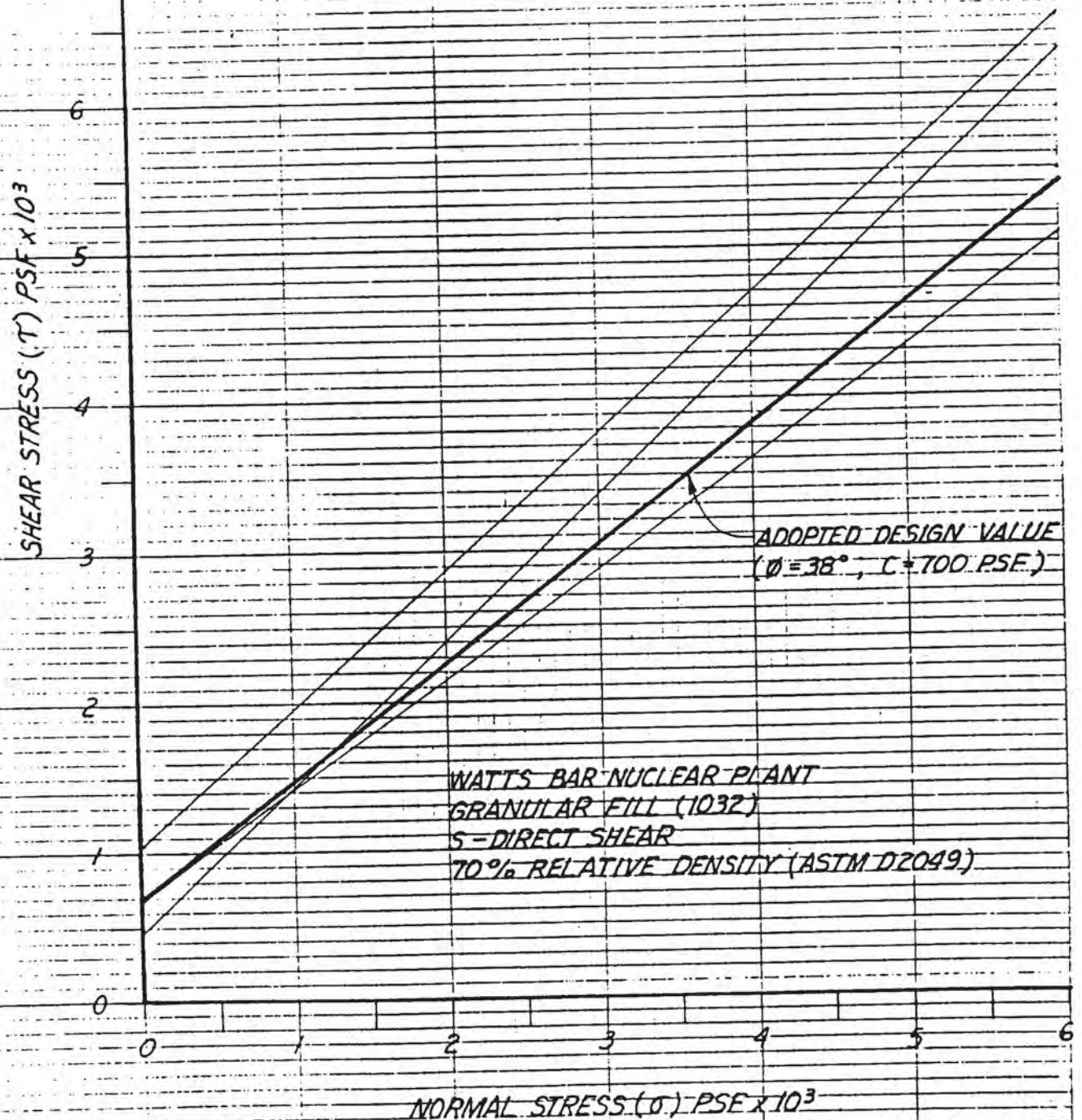
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-544



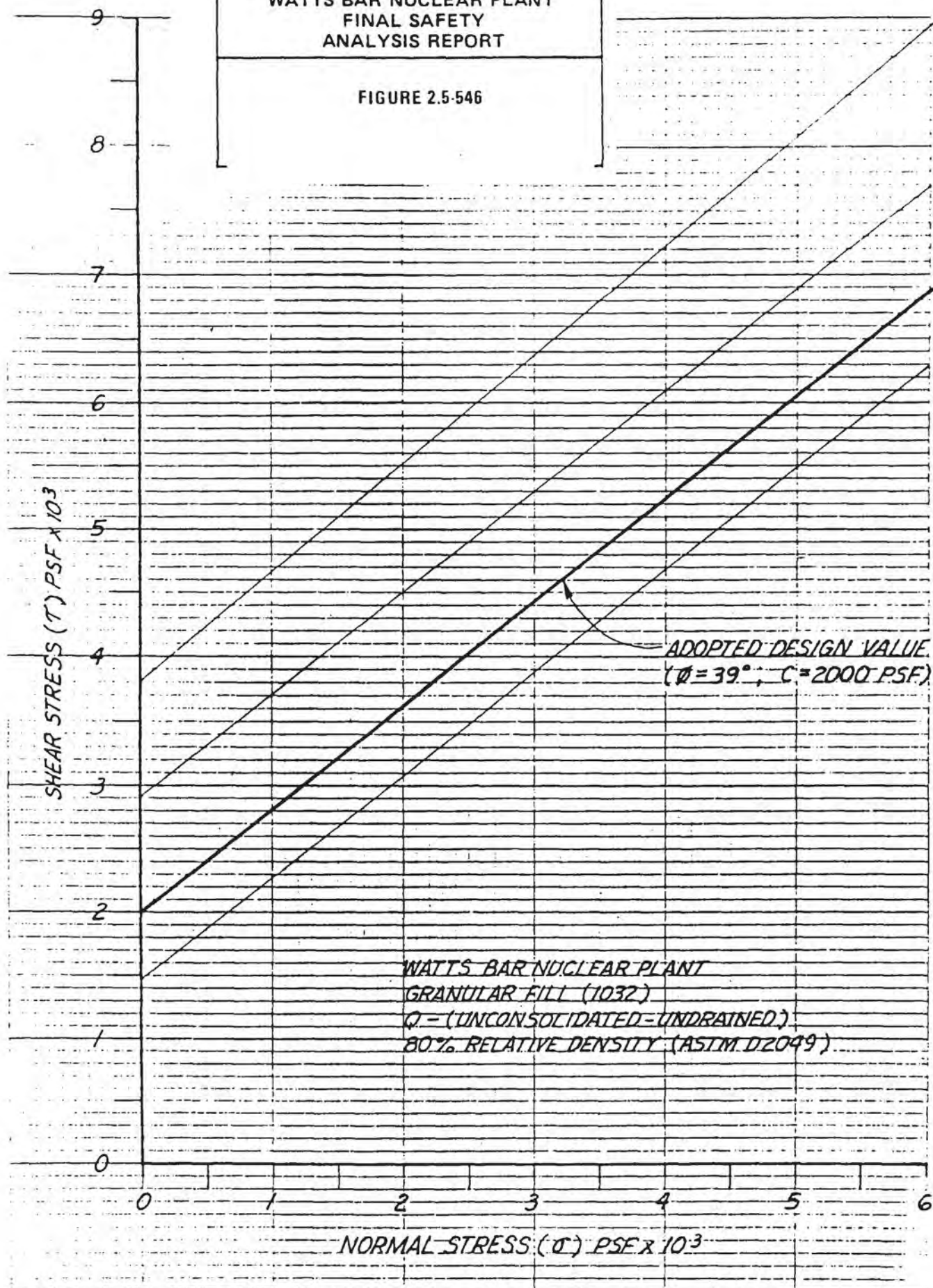
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-545



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-546



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

FIGURE 2.5-547

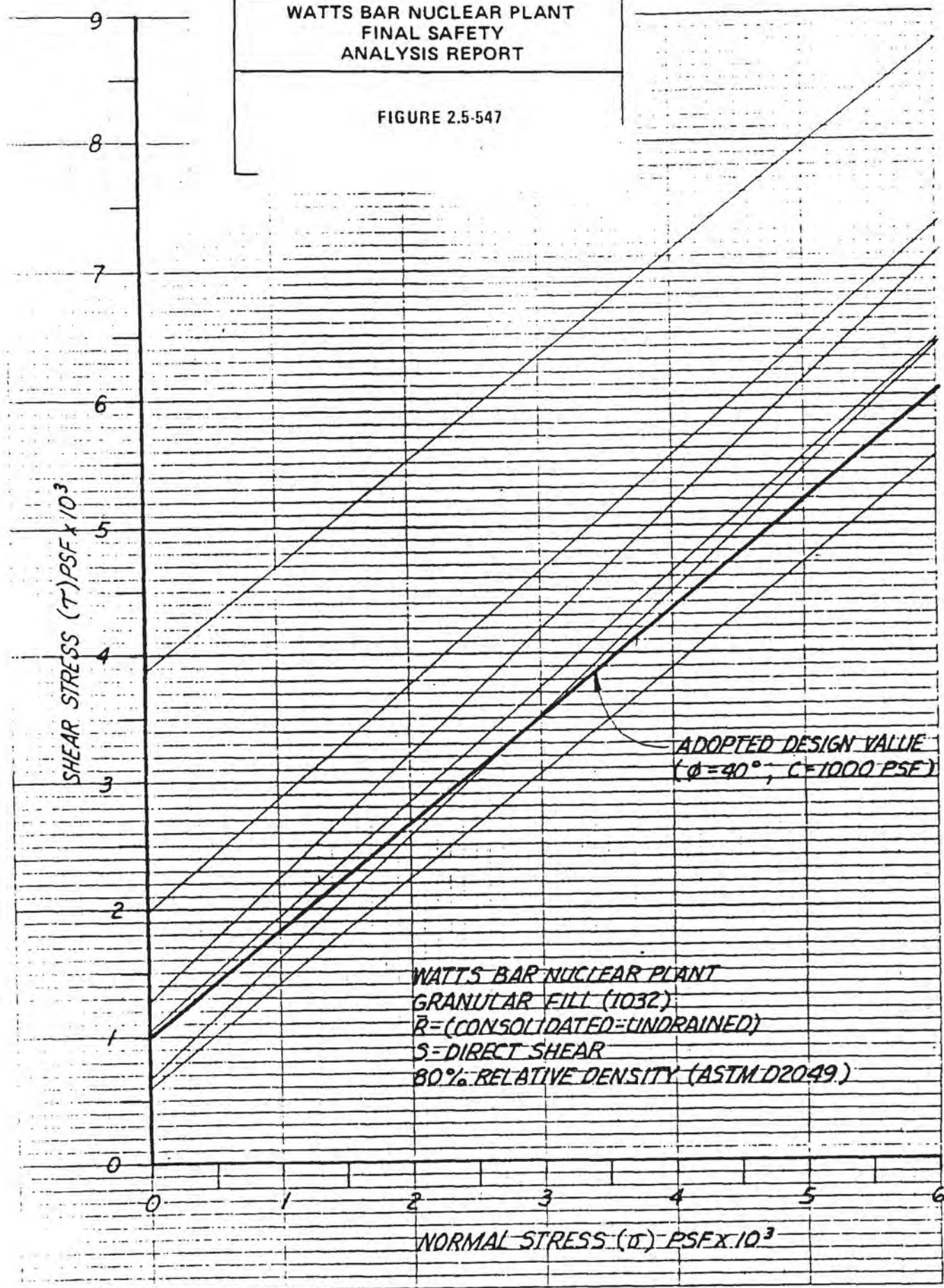


FIGURE 2.5-548

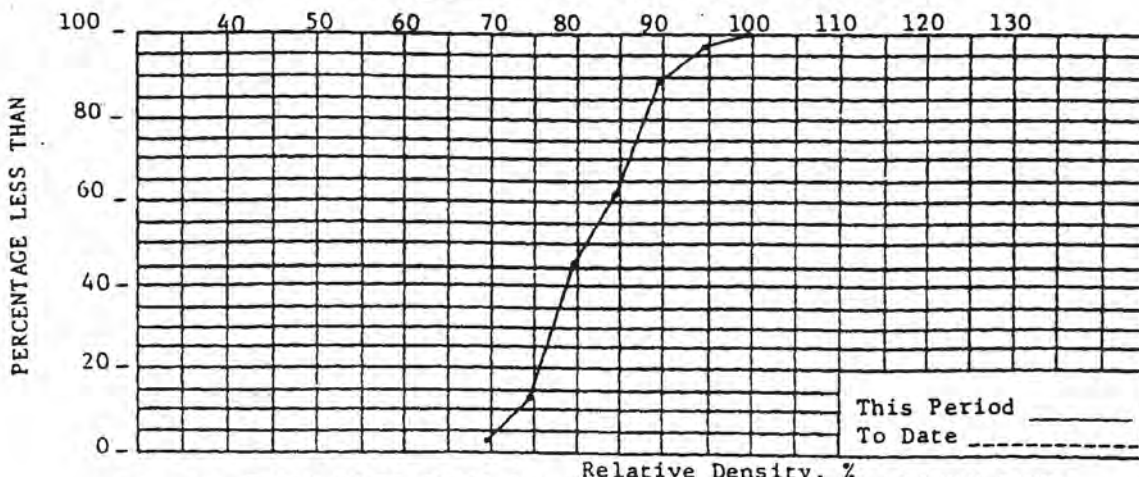
Period: 3-28-75 to 4-24-75 Test No. _____ to _____
Part II Section _____ Prepared by _____

	PLOT THIS COLUMN	PREV. CUM. F	THIS PERIOD				TO DATE		
		F	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		11	12	17	45.9			
80.0	84.9		1	6	23	62.2			
85.0	89.9			10	33	89.2			
90.0	94.9			3	36	97.2			
95.0	99.9		1	1	37	100.0			
100.0	104.9								
105.0	109.9								
TOTALS			- -	- -	37	- -	- -		- -

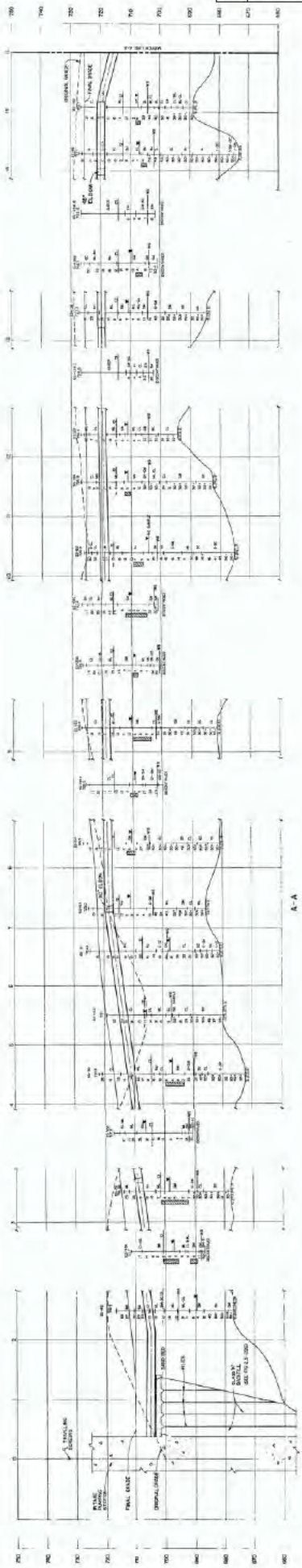
Specification Source 1032 MATERIAL

Specification Source <u>1032 MATERIAL</u>	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.

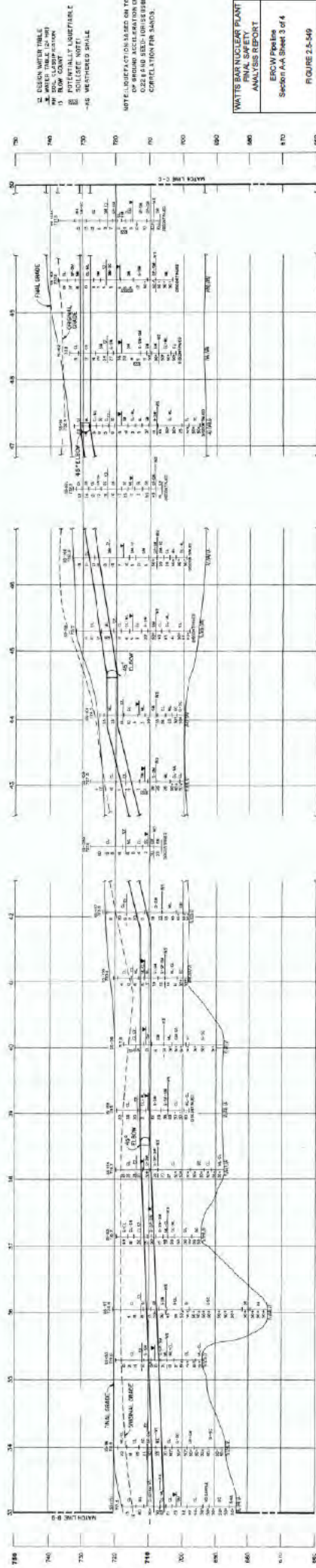


1. REACTOR CORE
 2. FUEL ELEMENT
 3. CONTROL ROD
 4. STRUCTURAL COMPONENT
 5. REACTOR CORE
 6. FUEL ELEMENT
 7. CONTROL ROD
 8. STRUCTURAL COMPONENT

9. REACTOR CORE
 10. FUEL ELEMENT
 11. CONTROL ROD
 12. STRUCTURAL COMPONENT
 13. REACTOR CORE
 14. FUEL ELEMENT
 15. CONTROL ROD
 16. STRUCTURAL COMPONENT

17. REACTOR CORE
 18. FUEL ELEMENT
 19. CONTROL ROD
 20. STRUCTURAL COMPONENT
 21. REACTOR CORE
 22. FUEL ELEMENT
 23. CONTROL ROD
 24. STRUCTURAL COMPONENT

WATTS BAR NUCLEAR PLANT
 ANALYSIS REPORT
 SECTION A-A Sheet 1 of 4
 FIGURE 25549



2. DESIGN WATER TABLE
 3. WATER TABLE 24 HRS
 4. FLOW DIRECTION
 5. POTENTIALLY UNRELIABLE
 6. UNRELIABLE
 7. UNRELIABLE
 8. UNRELIABLE

UPPER SURFACE OF CHALK BED AT TOP
 OF BEDDING ACCELERATION OF
 0.224 G (SEE 0155108)
 CORRELATION FOR 54003

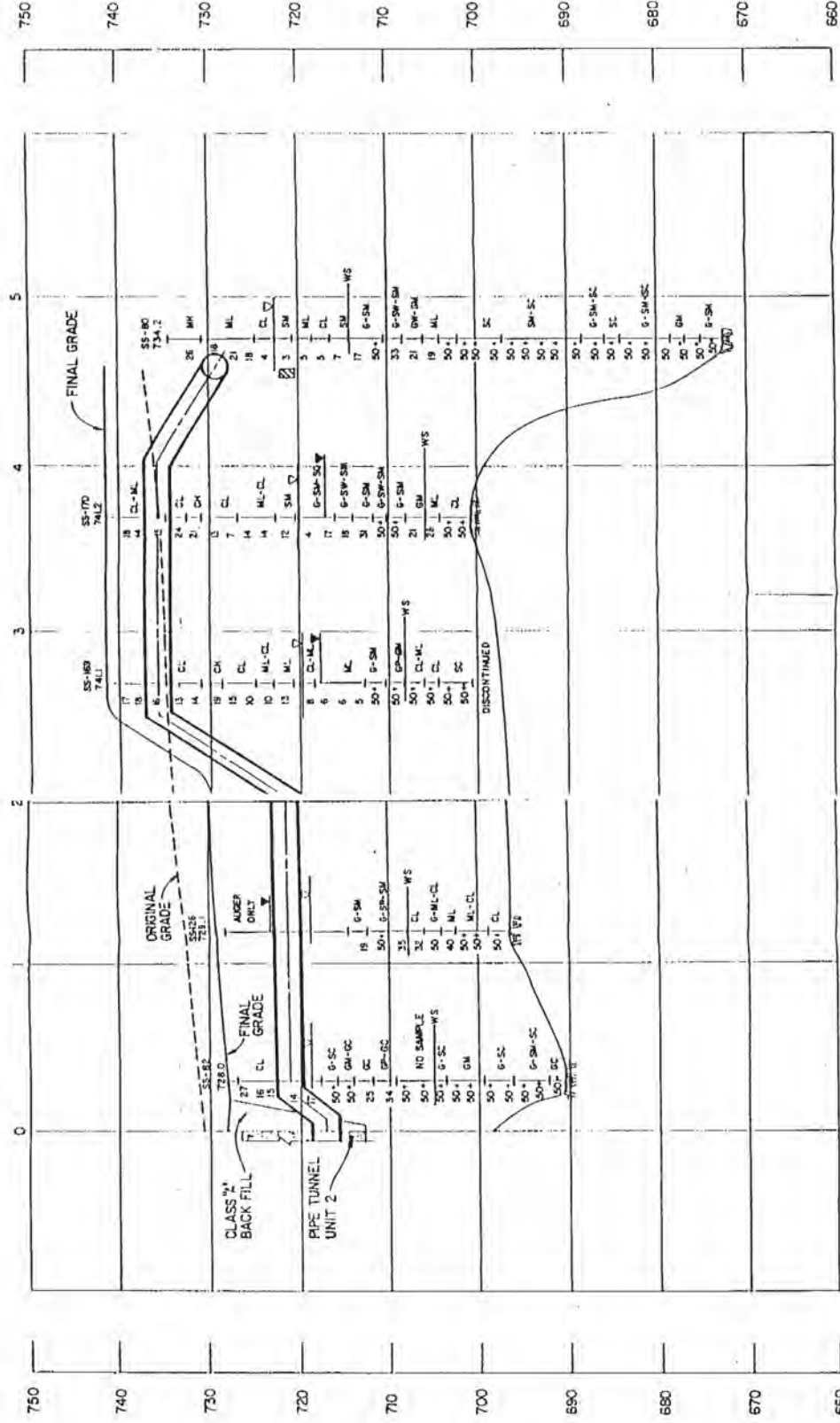
WAYS BAR NUCLEAR PLANT
 ANALYSIS REPORT
 EROW Pipeline
 Section A Sheet 3 of 4
 FIGURE 2.5-549

- DESIGN WATER TABLE
- ▬ WATER TABLE (24HR)
- MH SOIL CLASSIFICATION
- 13 BLOW COUNT
- ▨ POTENTIALLY LIQUEFIABLE SOIL (SEE NOTE)
- WS WEATHERED SHALE

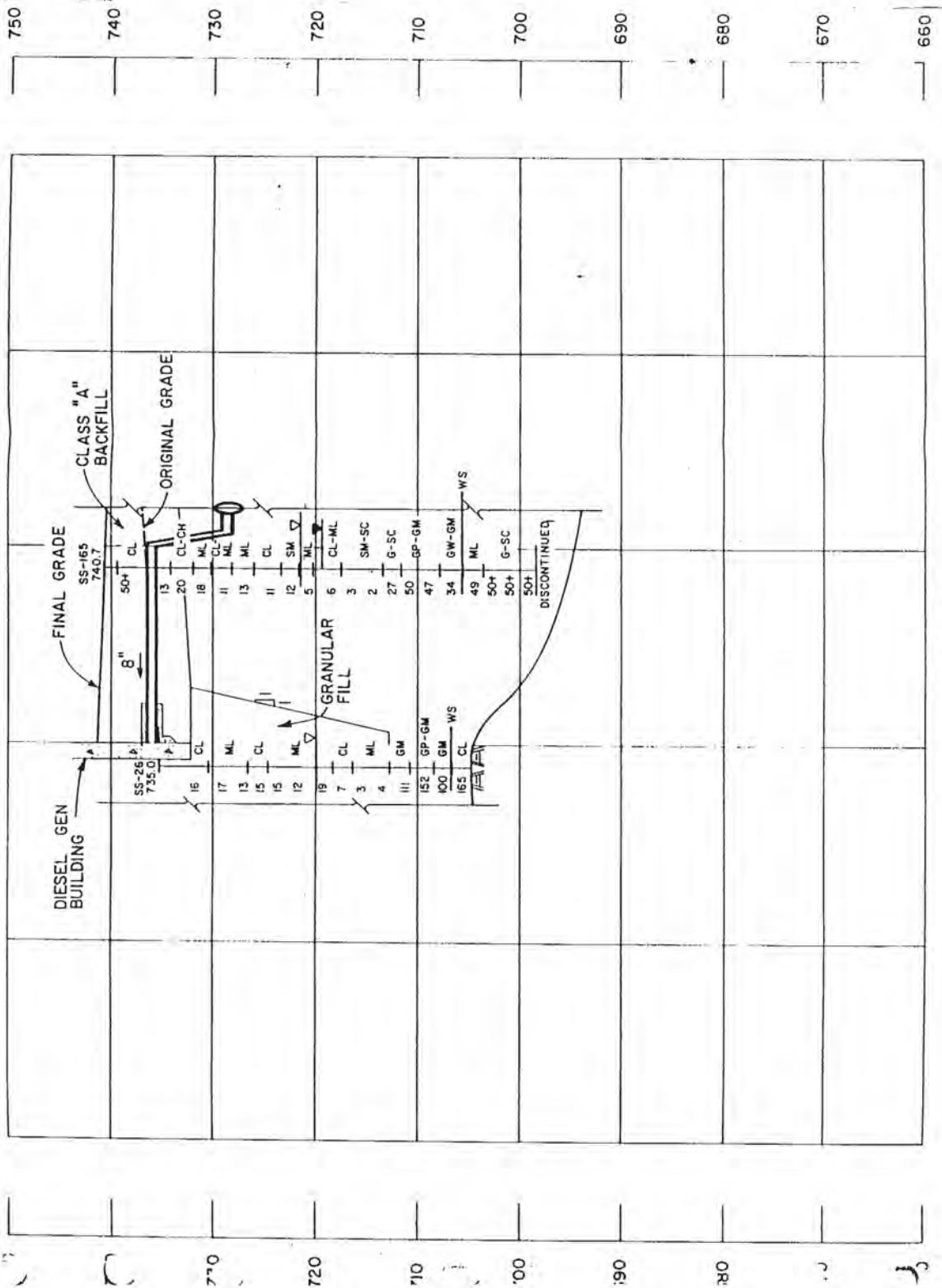
NOTE: LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.22g AND SEED-IDRISS (1981) CORRELATION FOR SANDS.

"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW PIPELINE SECTION B-B FIGURE 2.5-550



B-B



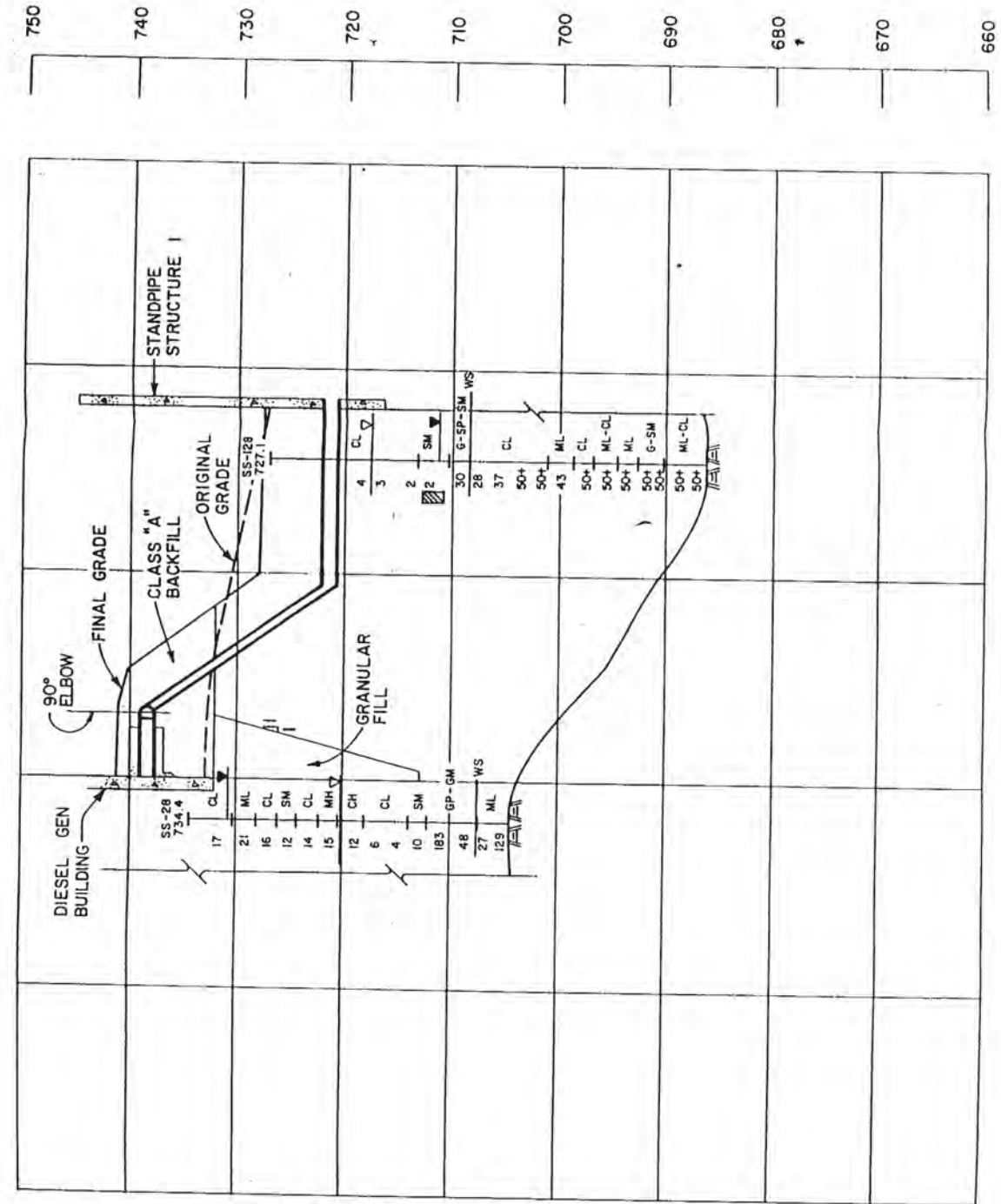
- ▽ DESIGN WATER TABLE
- ▽ WATER TABLE (24 HR)
- MH SOIL CLASSIFICATION
- 13 BLOW COUNT
- ▨ POTENTIALLY LIQUEFIABLE SOIL (SEE NOTE)
- WS WEATHERED SHALE

NOTE: LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.22g AND SEED-IDRISS (1981) CORRELATION FOR SANDS.

"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW PIPELINE SECTION D-D FIGURE 2.5-55.2

D-D



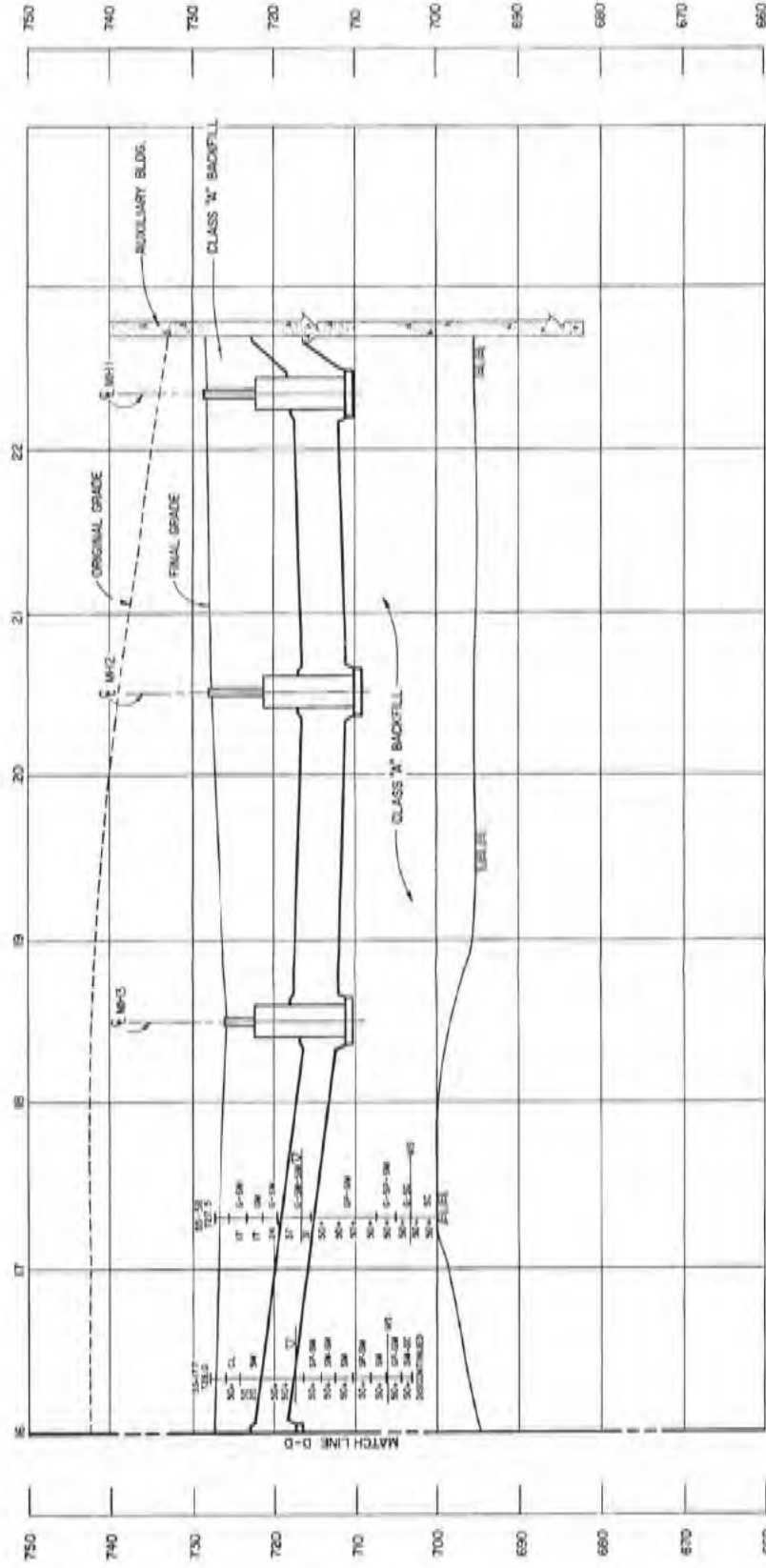
- DESIGN WATER TABLE
- WATER TABLE (24HR)
- MH SOIL CLASSIFICATION
- I3 BLOW COUNT
- POTENTIALLY LIQUEFIABLE SOIL (SEE NOTE)
- WS WEATHERED SHALE

NOTE: LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.22g AND SEED-DRISS(1981) CORRELATION FOR SANDS.

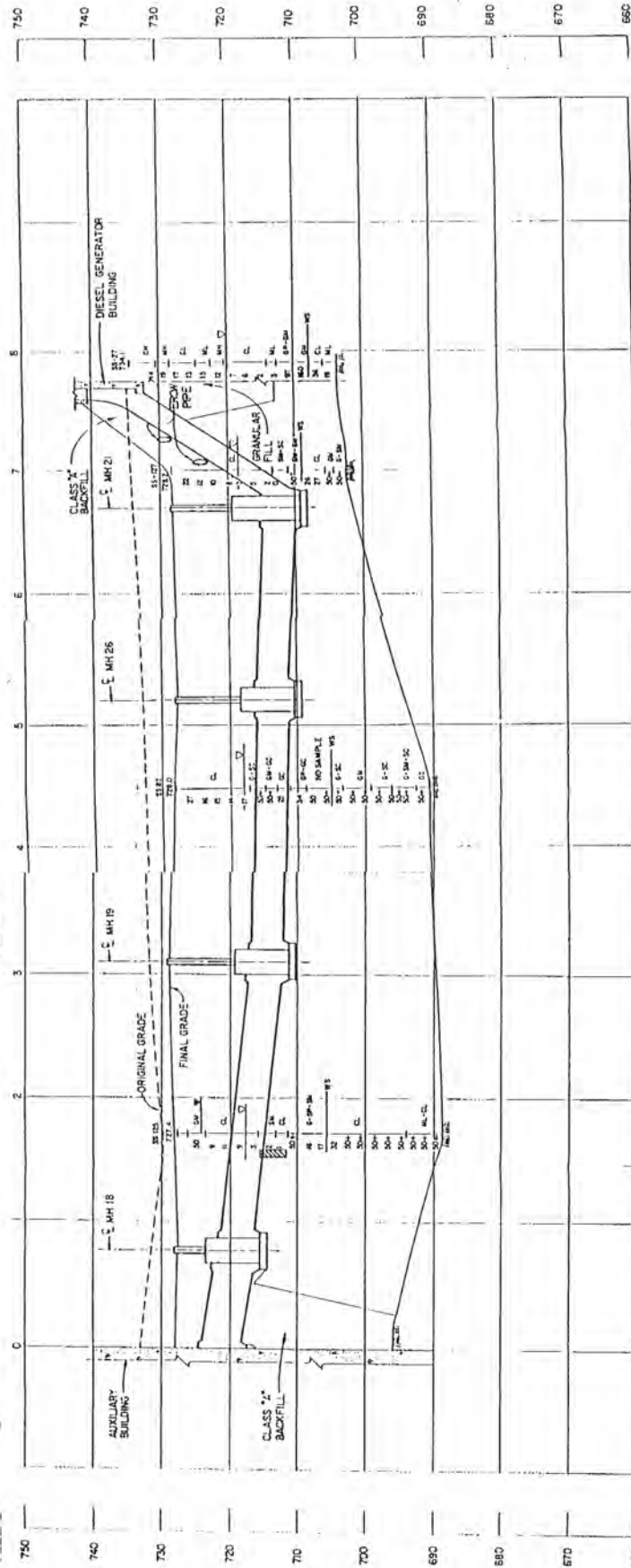
"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
EPIC PIPELINE SECTION E-E FIGURE 2.5-553

E - E

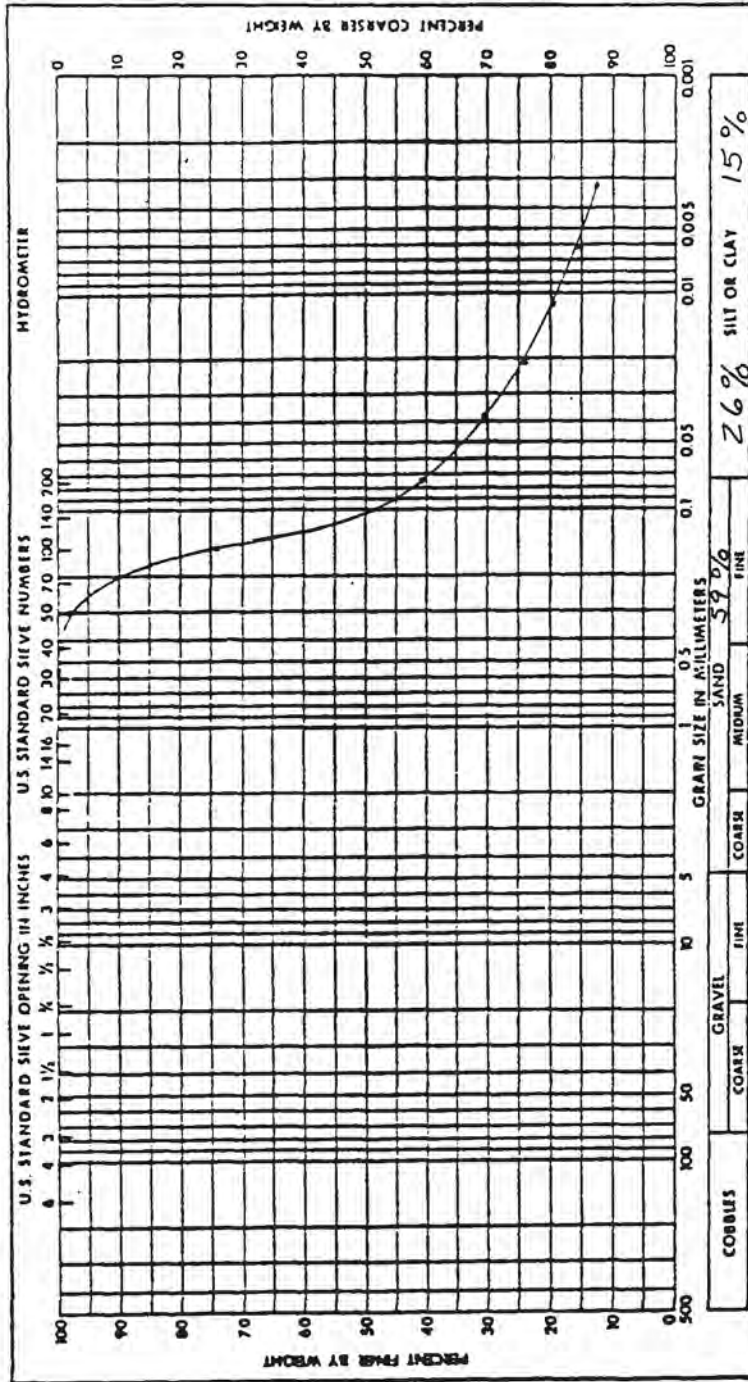


F-F



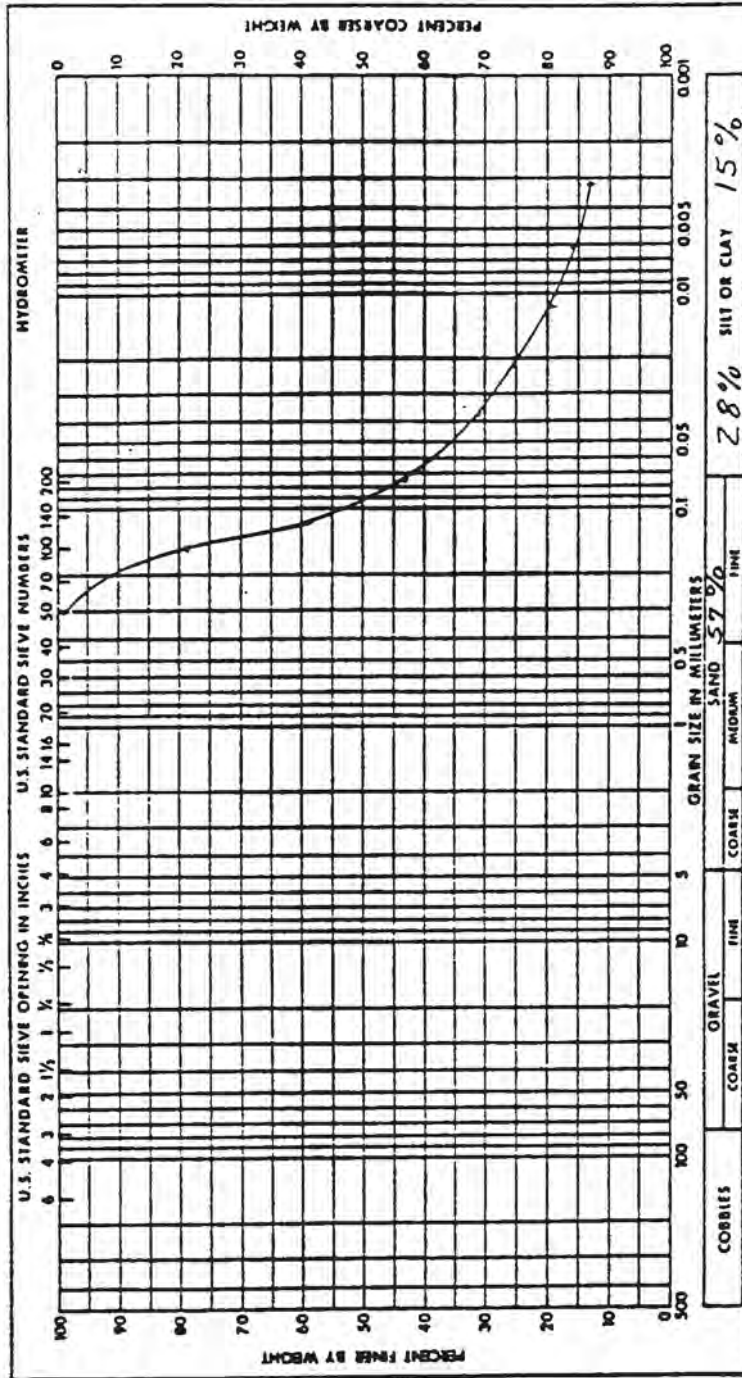
WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

CLASS IE CONDUIT
FIGURE 2.5-557



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

CLASS 1E CONDUIT
FIGURE 2.5-558

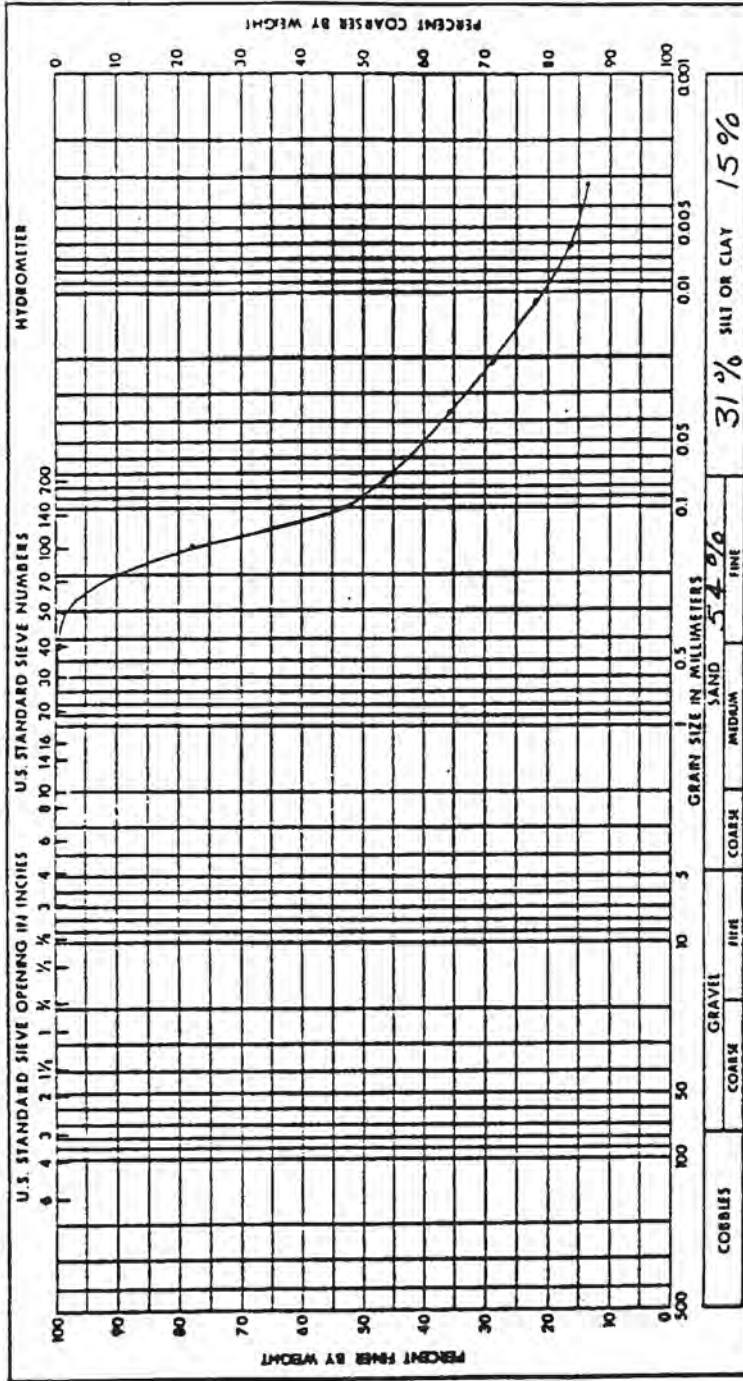


Remarks:
N = 8
W = 29.1

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

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

CLASS IE CONDUIT
FIGURE 2.5-559



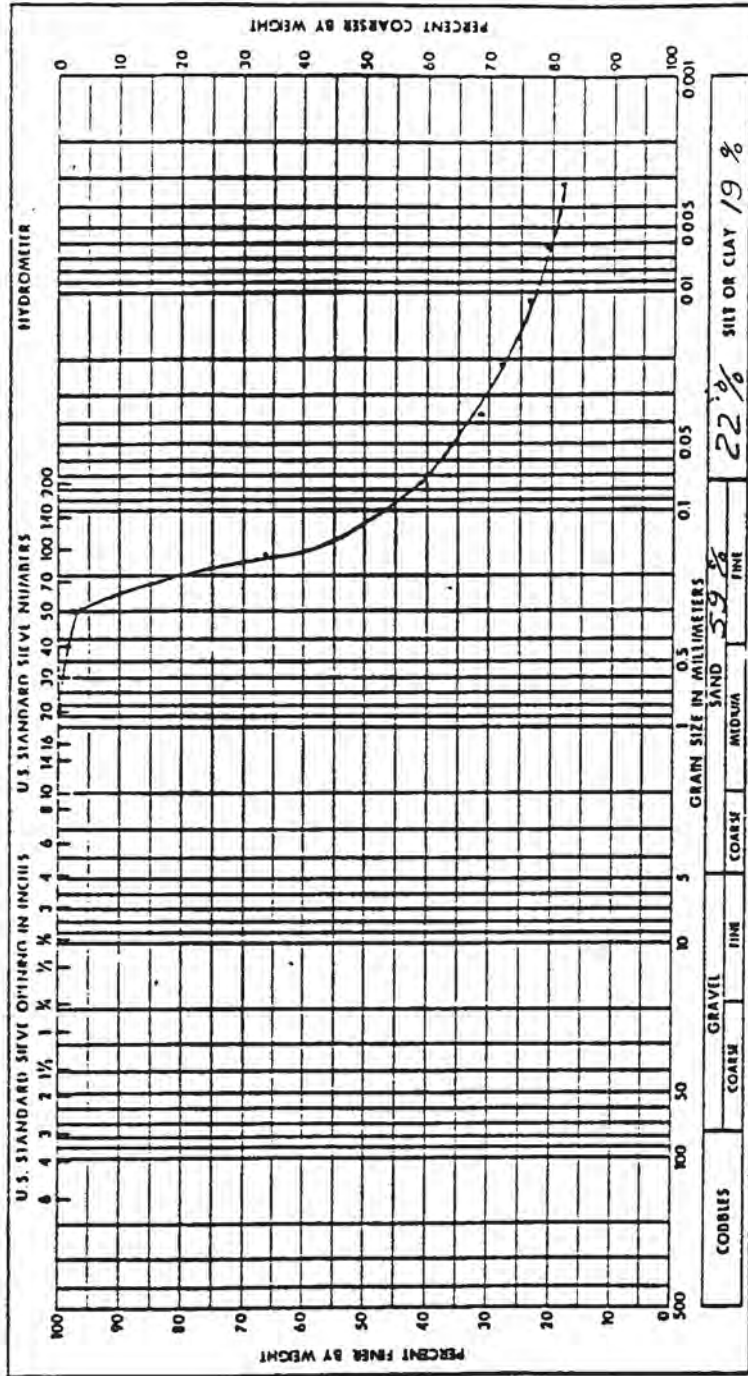
Project	WATTS BAR N.P.
Feature	CLASS IE CONDUIT
Boring No.	55-50
Station	Offset
Date	10-7-75
Elevation	
GRAIN SIZE ANALYSIS	

Remarks:
N=2
w=31.5

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

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

IE CONDUIT
FIGURE 2.5-560

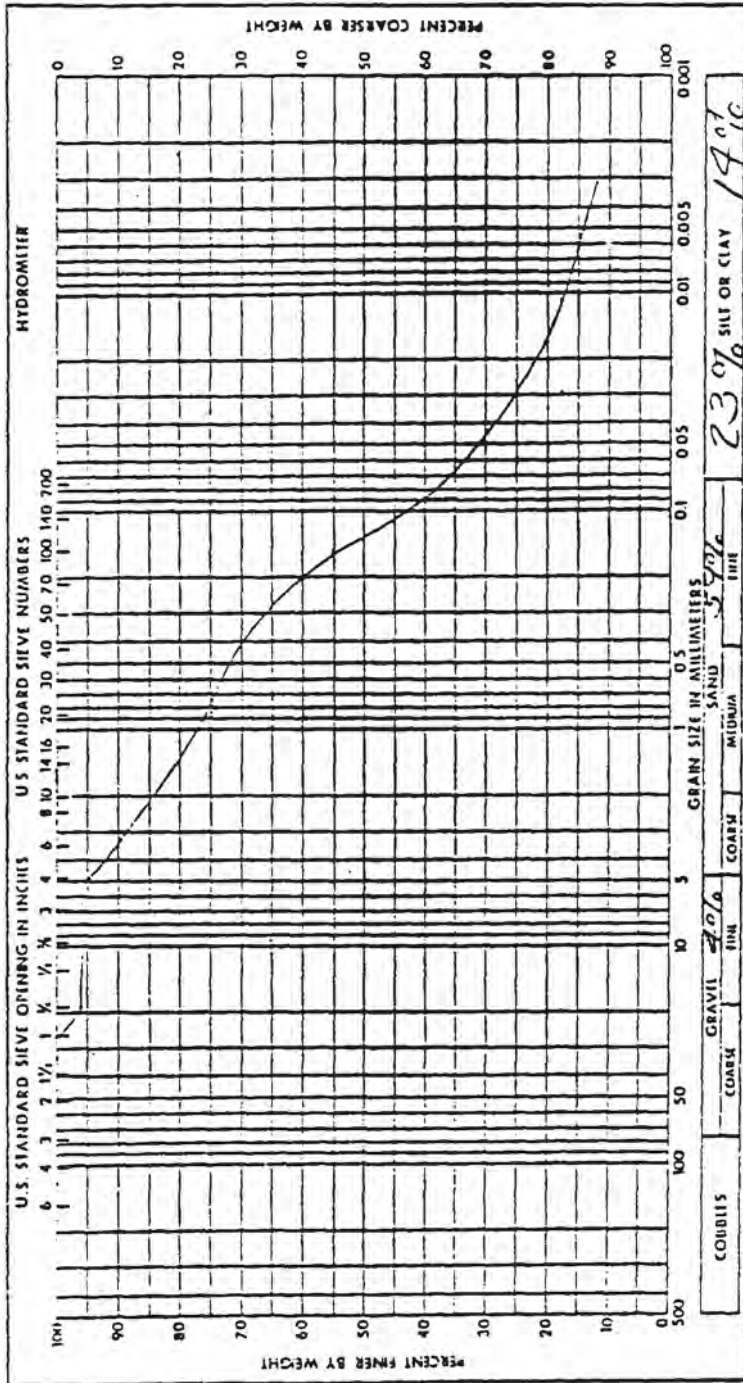


Remarks:
$N = 15$
$w = 20.9$

Soil Symbol	SM	Liquid Limit, %	29.7
Moisture Content, %		Plastic Limit, %	28.1
Specific Gravity		Plasticity Index, %	1.6
		Shrinkage Limit, %	

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

IE CONDUIT
FIGURE 2.5-561



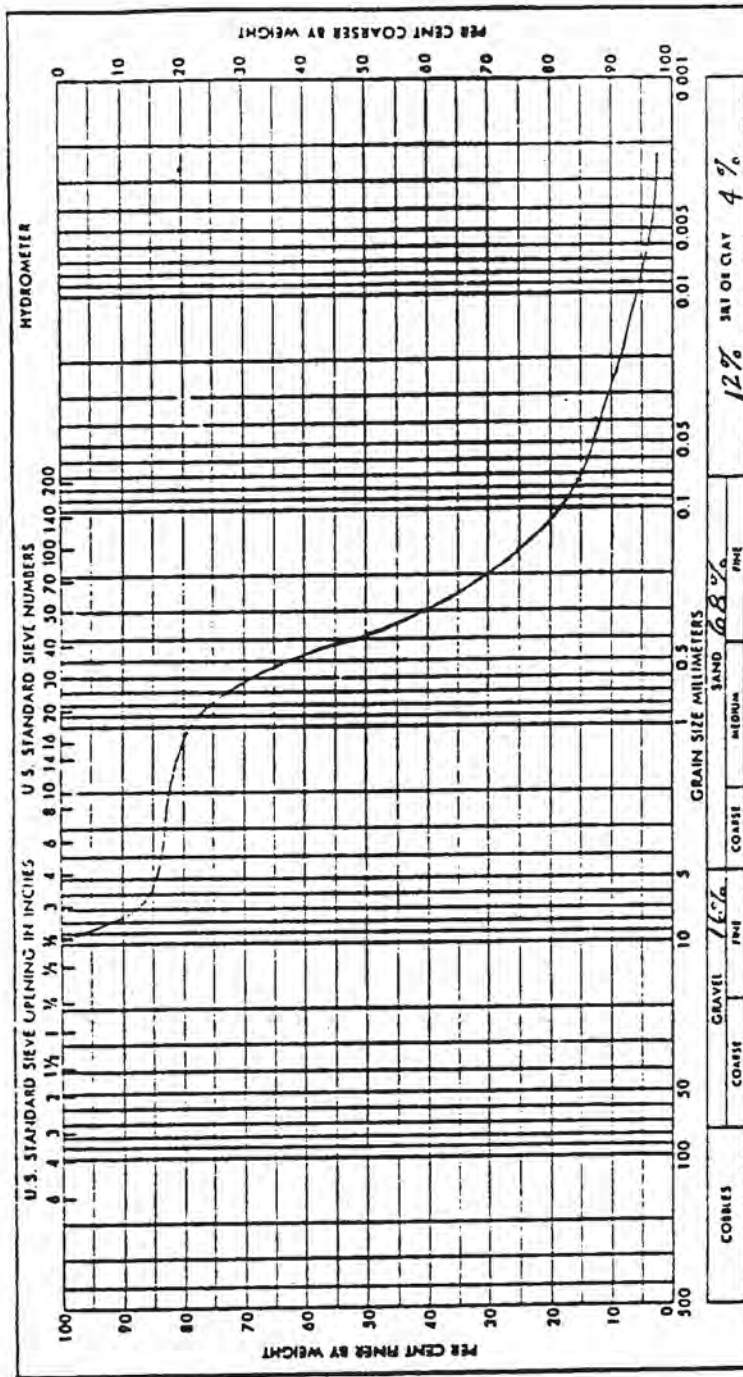
Project <i>Watts Bar N.P.</i>	
Feature <i>IE CONDUIT</i>	
Doring No. <i>CS-61</i>	Sample No. <i>104</i>
Station	Offset
Date <i>1-16-77</i>	Elevation
GRAIN SIZE ANALYSIS	

Remarks:
<i>N=11</i>
<i>W=11.7</i>

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, %	

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-562



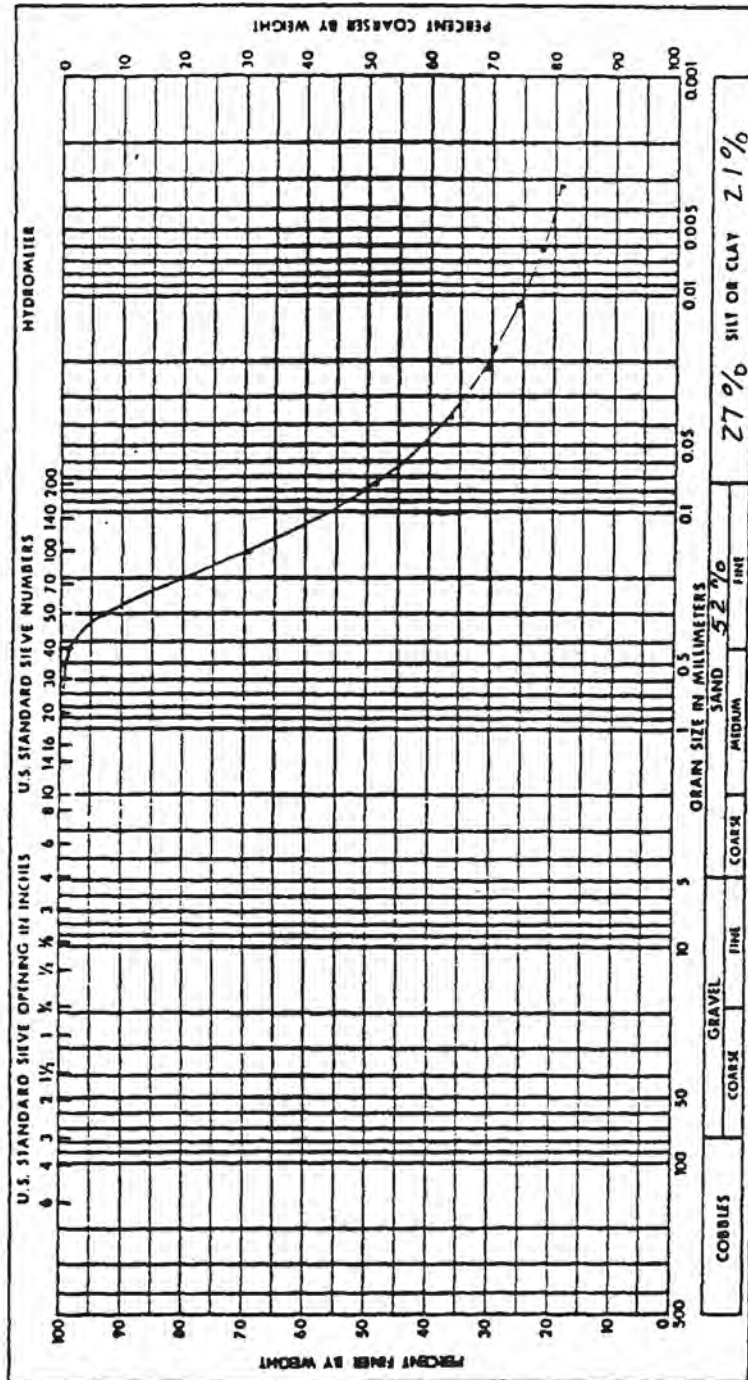
Project	WATTS BAR NP
Feature	
Boring No.	SS-46
Station	0+00
Date	12-7-76
GRAIN SIZE ANALYSIS	

Remarks:
N = 8
w = 14.1

Soil Symbol	1-SM	Liquid Limit, %	NP
Moisture Content, %		Plastic Limit, %	NP
Specific Gravity		Plasticity Index, %	NP
		Shrinkage Limit, %	

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

CLASS I E CONDUIT
FIGURE 2.5-563



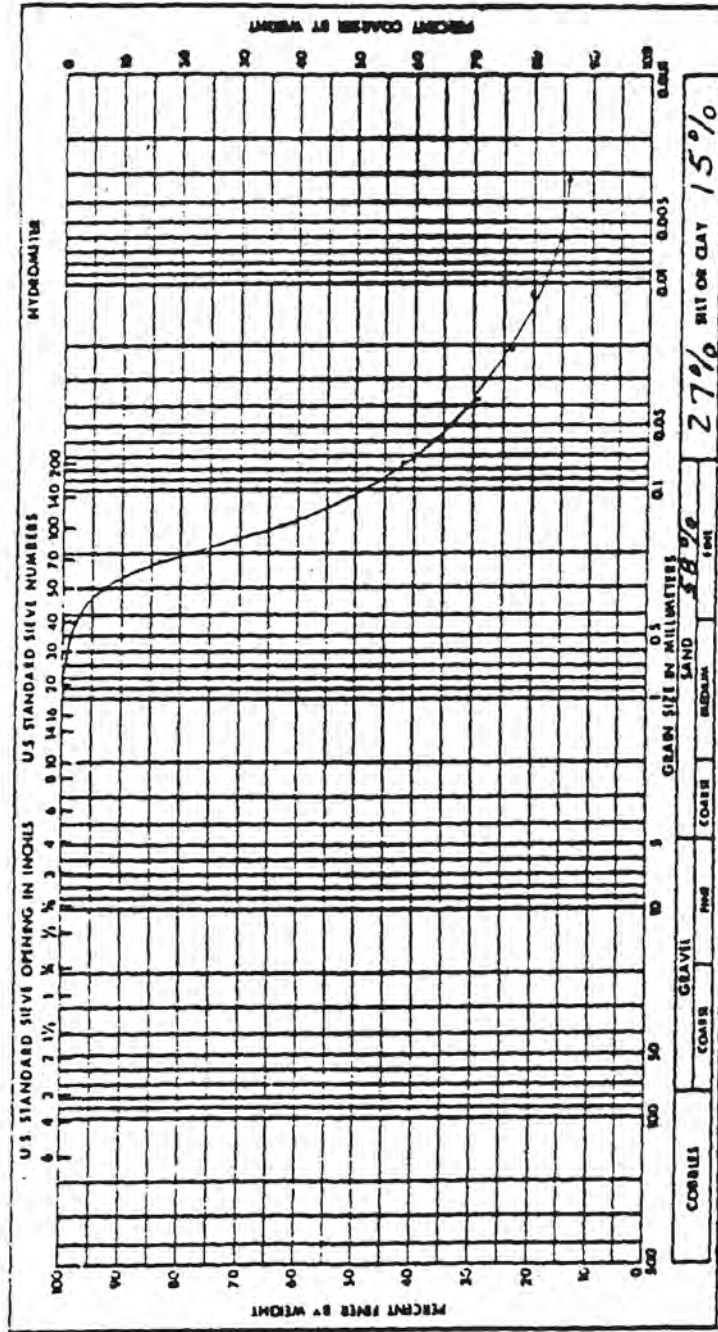
Project	Watts Bar N.P.
Feature	CLASS I E CONDUIT
Boring No.	SS-63
Station	Offset
Date	10-1-13
Elevation	
GRAIN SIZE ANALYSIS	

Remarks:
N = 10
Q = 20.7

Soil Symbol	SM	Liquid Limit, %	36.0
Moisture Content, %		Plastic Limit, %	26.0
Specific Gravity		Plasticity Index, %	10.0
		Shrinkage Limit, %	

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

ERCW & HPFP SYSTEM
FIGURE 2.5-564

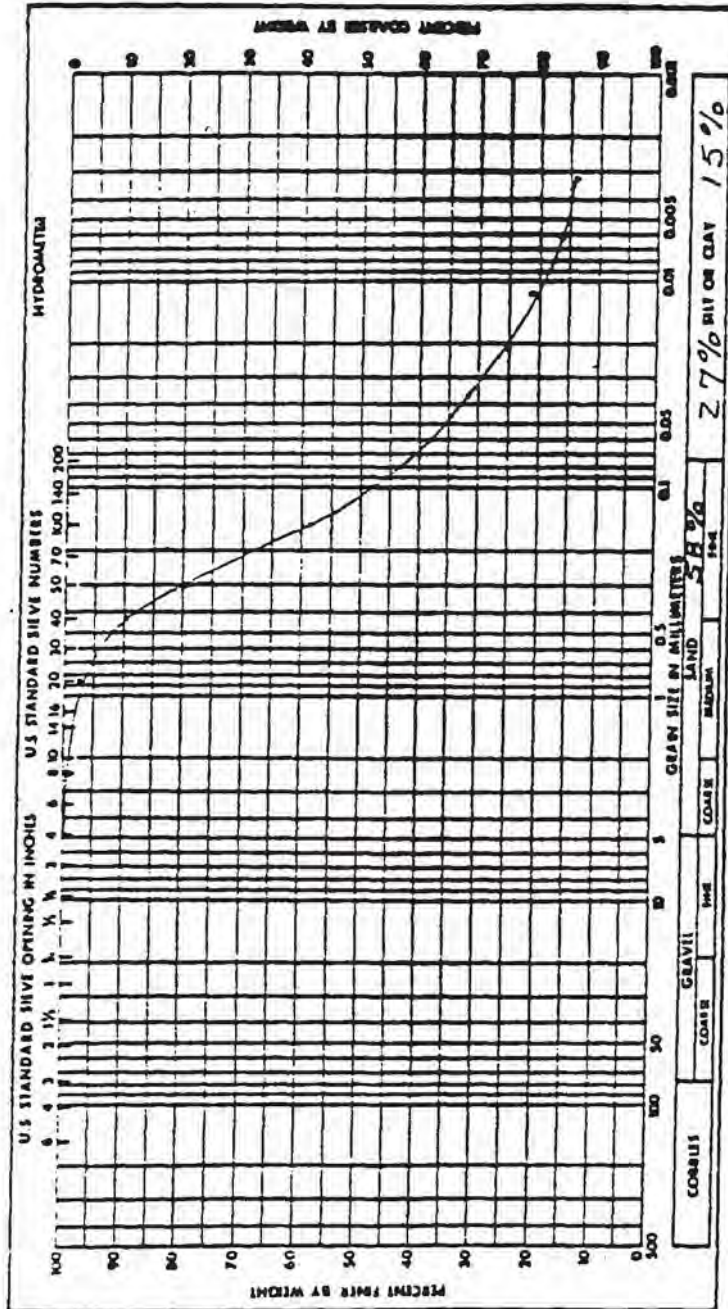


Soil Symbol	SM	Liquid Limit, %	28.0
Moisture Content, %		Plastic Limit, %	22.8
Specific Gravity		Plasticity Index, %	5.2
		Shrinkage Limit, %	

Remarks:	N-5

Project	WATTS BAR N.P.
Feature	ERCW & HPFP SYSTEM
Boring No.	55-92
Sample No.	3A, 4A
Station	Offset
Date	11-26-75
Elevation	719.720.5
GRAIN SIZE ANALYSIS	

ERCW & HPFP SYSTEM
FIGURE 2.5-565



Project WATTS BAR N.P.

Feature ERW & HPFP SYSTEM

Boring No. 55-92	Sample No. 5A
------------------	---------------

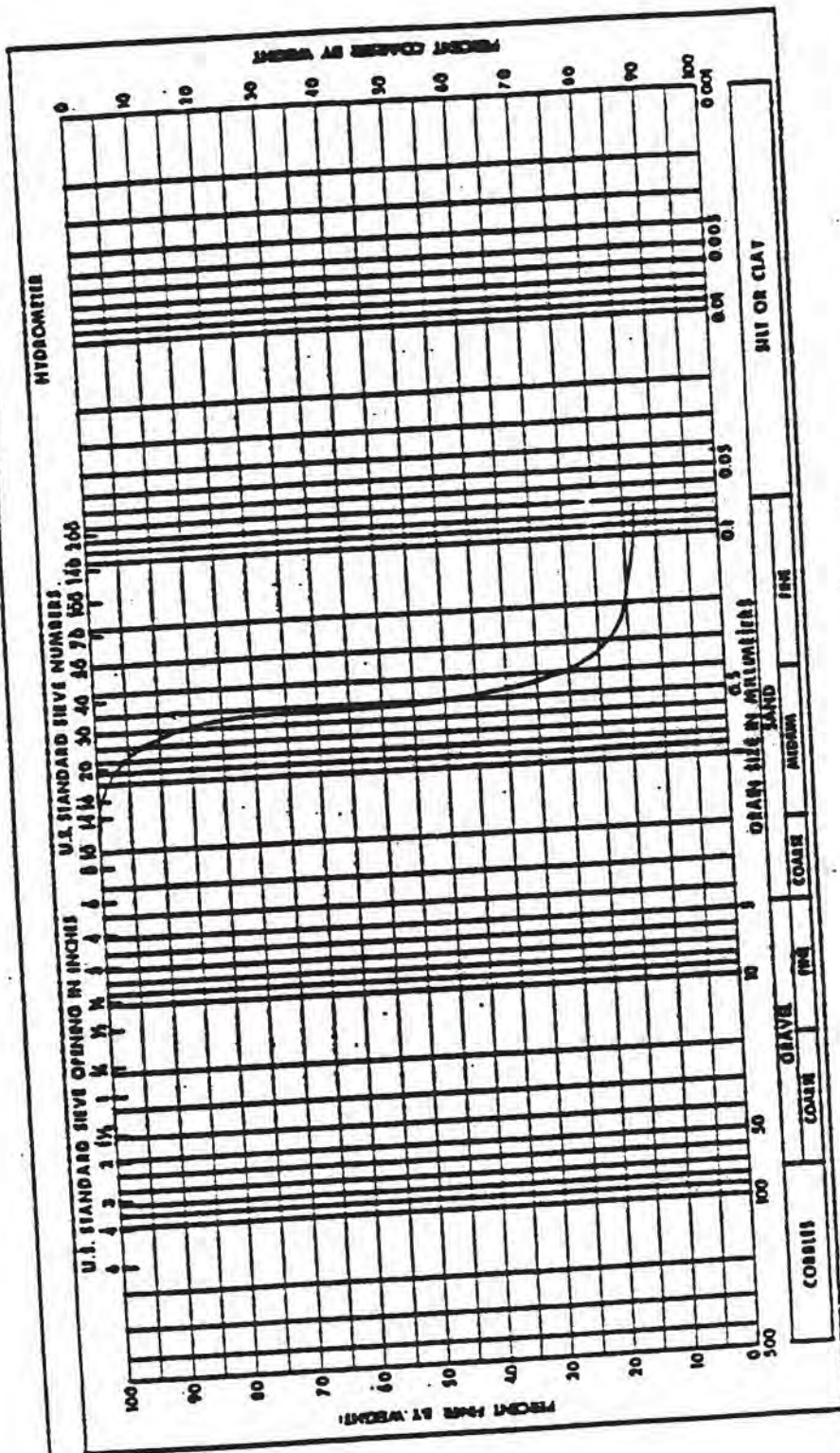
Station	Office
---------	--------

Date 11-26-75	Elevation 716.9
---------------	-----------------

GRAIN SIZE ANALYSIS

Remarks:

Soil Symbol	SM	Liquid Limit, %	26.0
Moisture Content, %	20.1	Plastic Limit, %	22.1
Specific Gravity		Plasticity Index, %	3.9
		Shrinkage Limit, %	



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

INTAKE CHANNEL

GRAIN SIZE ANALYSIS

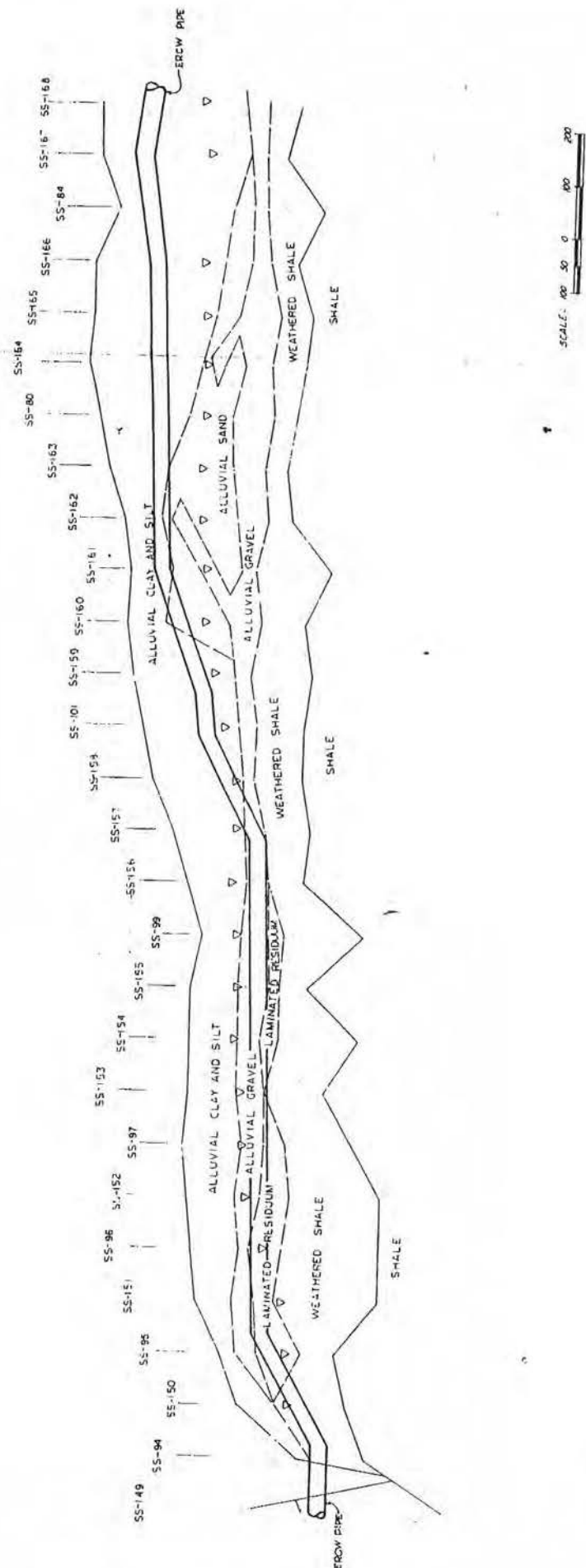
Figure 2.5-566

Remarks:

$D_{60} = 0.53$

γ_D 96.1 pcf
W 12.4 %

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



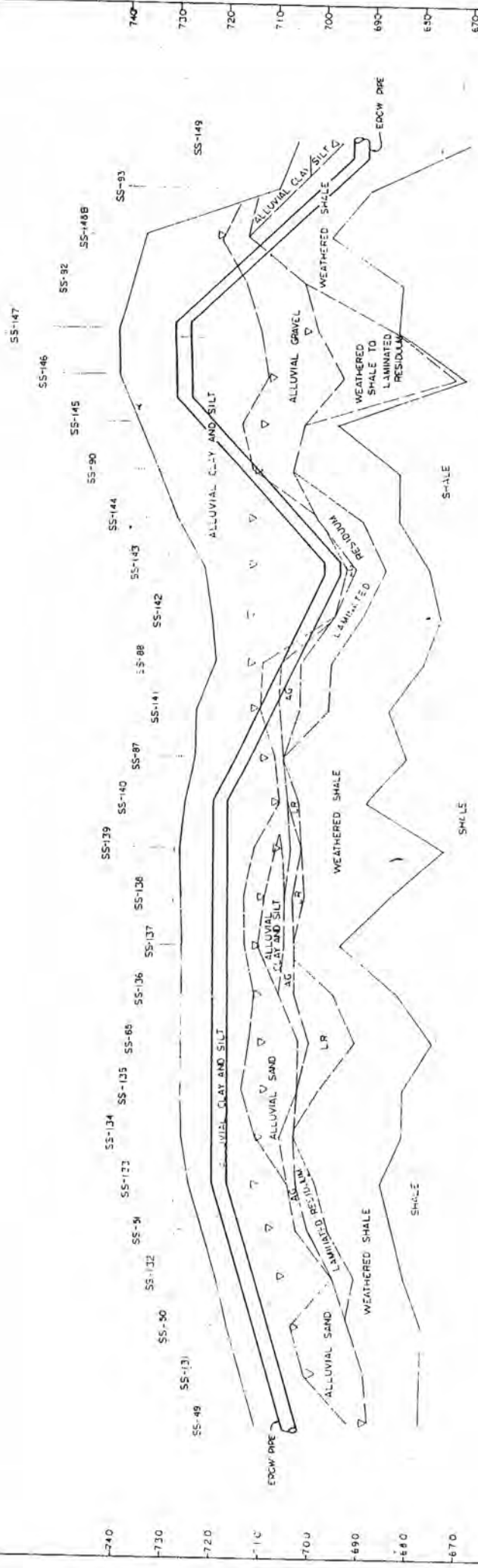
SYMBOLS

▽ - WATER TABLE

"HISTORICAL INFORMATION"

NOTE: STRATA CONTINUITY BETWEEN BORINGS ASSUMED

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT	ERCW PIPING SYSTEM GENERALIZED PROFILE TVA DWG NO. 604K1009 R0 FIGURE 2.5-567
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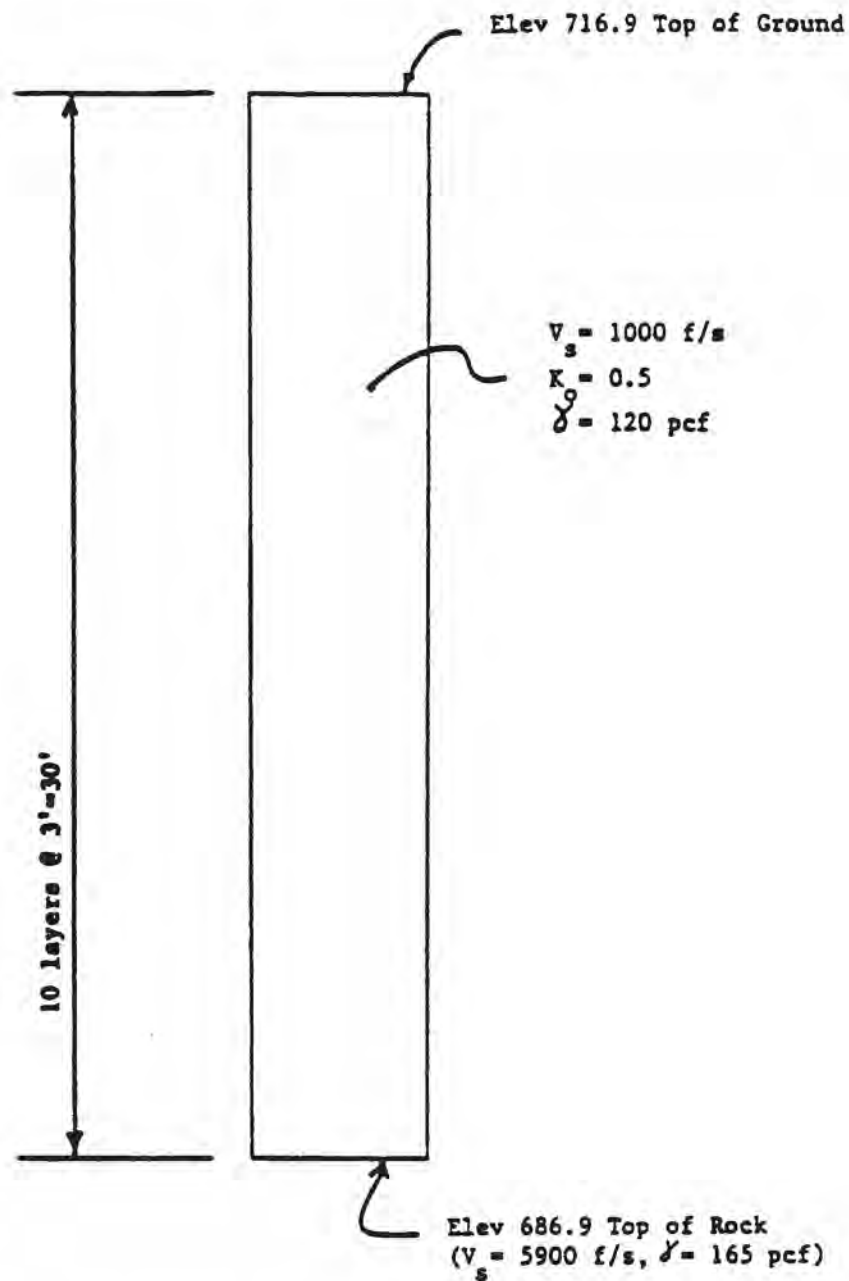
SYMBOLS

- LR - LAMINATED RESIDUUM
- AG - ALLUVIAL GRAVEL
- ▽ - WATER TABLE

"HISTORICAL INFORMATION"

NOTE STRATA CONTINUITY BETWEEN BORINGS ASSUMED

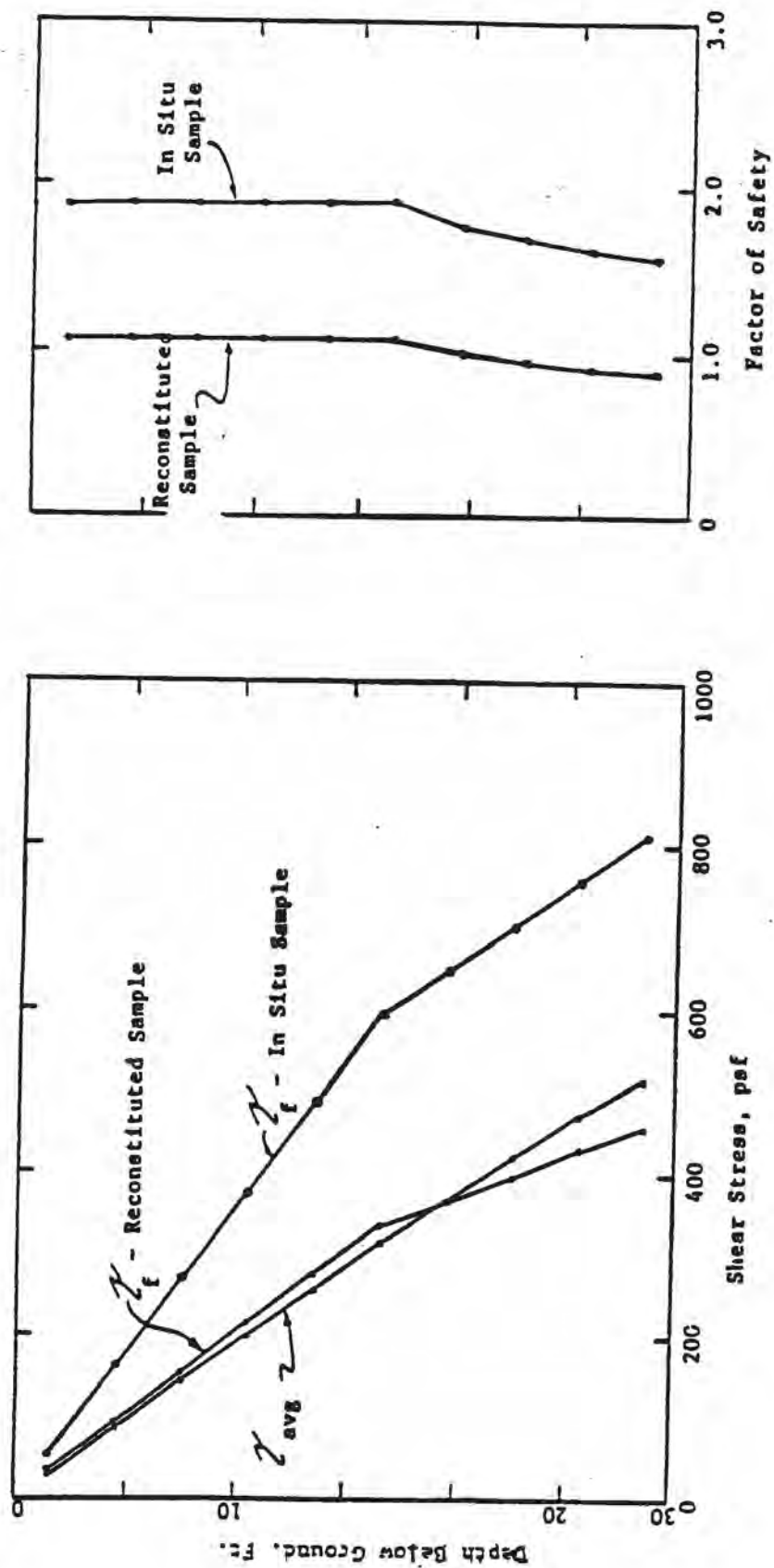
<p>WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT</p>	<p>ERCW PIPING SYSTEM GENERALIZED PROFILE TVA DWG NO. 604K1010 R0 FIGURE 2.5-568</p>
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One-Dimensional Soil Profile Used for Liquefaction Evaluation

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

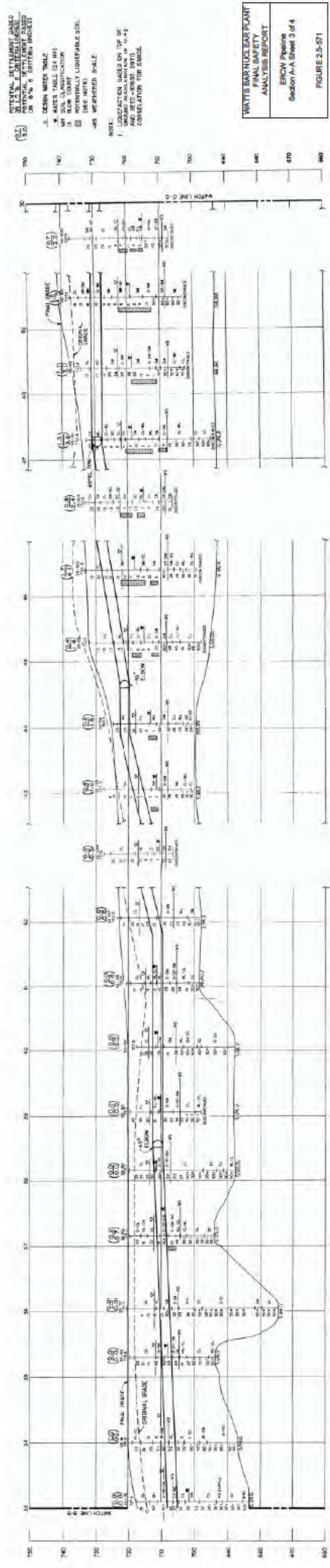
FIGURE 2.5-569



Comparison of Induced Shear Stress (τ_{avg}) and Shear Stress Required to cause 5% strain (τ_f) and Resulting Factors of Safety with Depth Below Ground Surface.

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

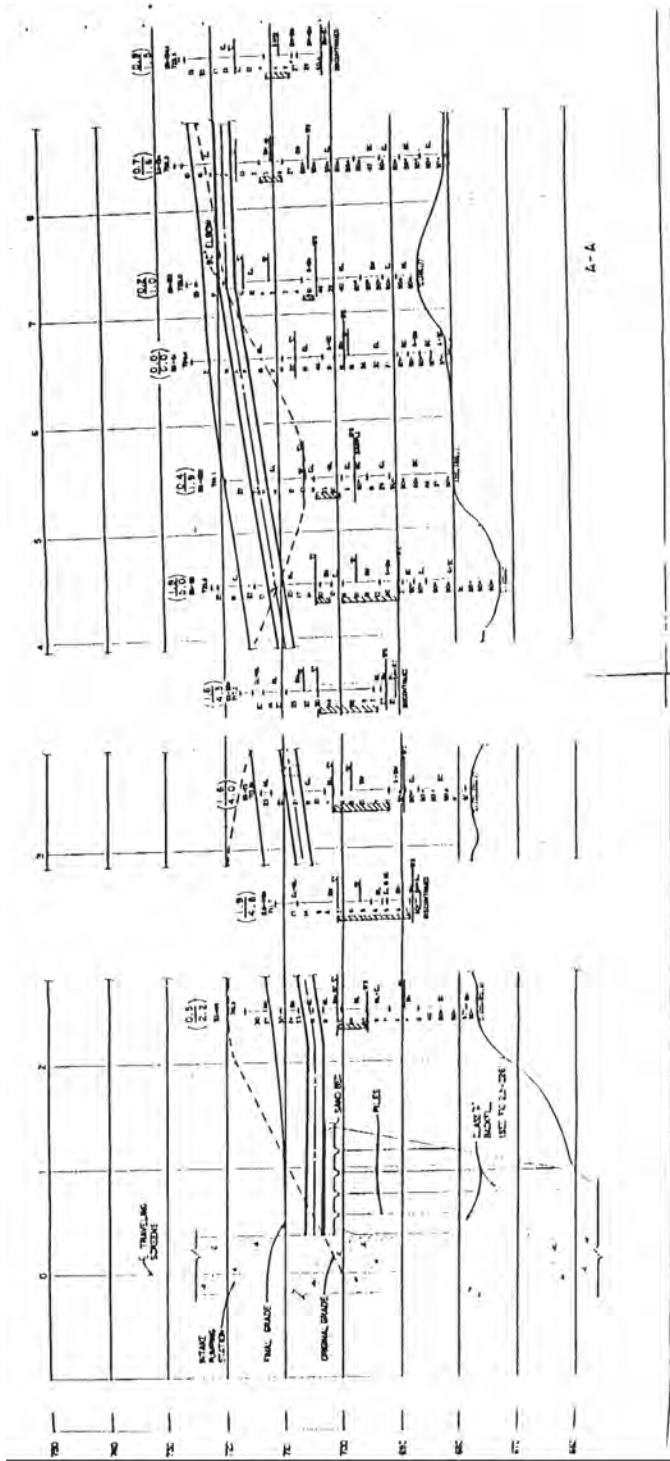
FIGURE 2.5-570



WHITE SANDS PLANT
 FINAL SAFETY
 ANALYSIS REPORT
 EPOCH Phase
 Section A-A Sheet 3 of 4
 FIGURE 2.5-571



NOTE:
1. LOCOMOTION BASED ON TOP OF BRIDGE
ACCELERATION OF 0.4g AND SEED - CROSS
(87%) CORRELATION FOR BRIDGE.



"HISTORICAL INFORMATION"

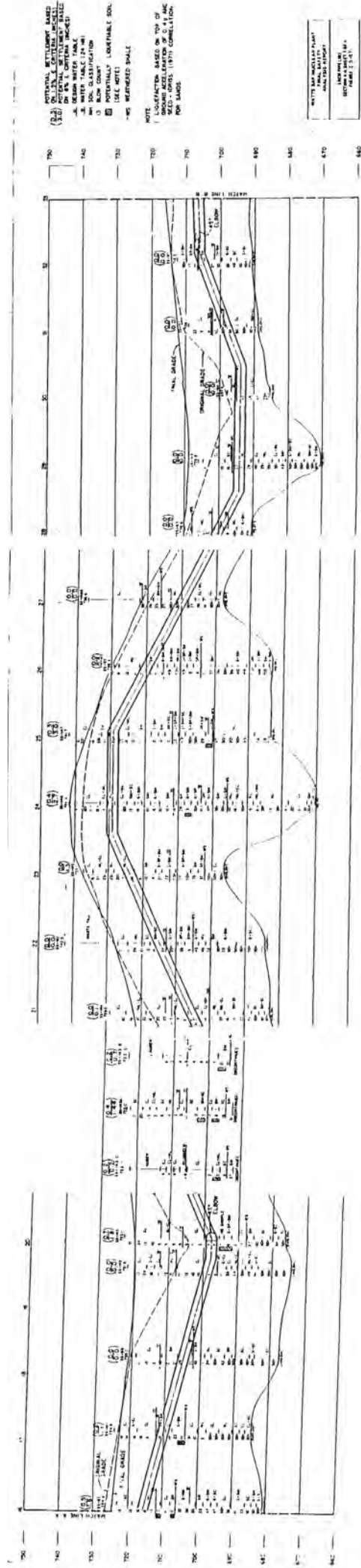
WATTS BAF NUCLEAR PLANT
SMALL SAFETY
ANALYSIS REPORT

EGON PIPELINE
SECTION A-2 SHEET 1 OF 4
FORM T-1 (REV. 7-61)



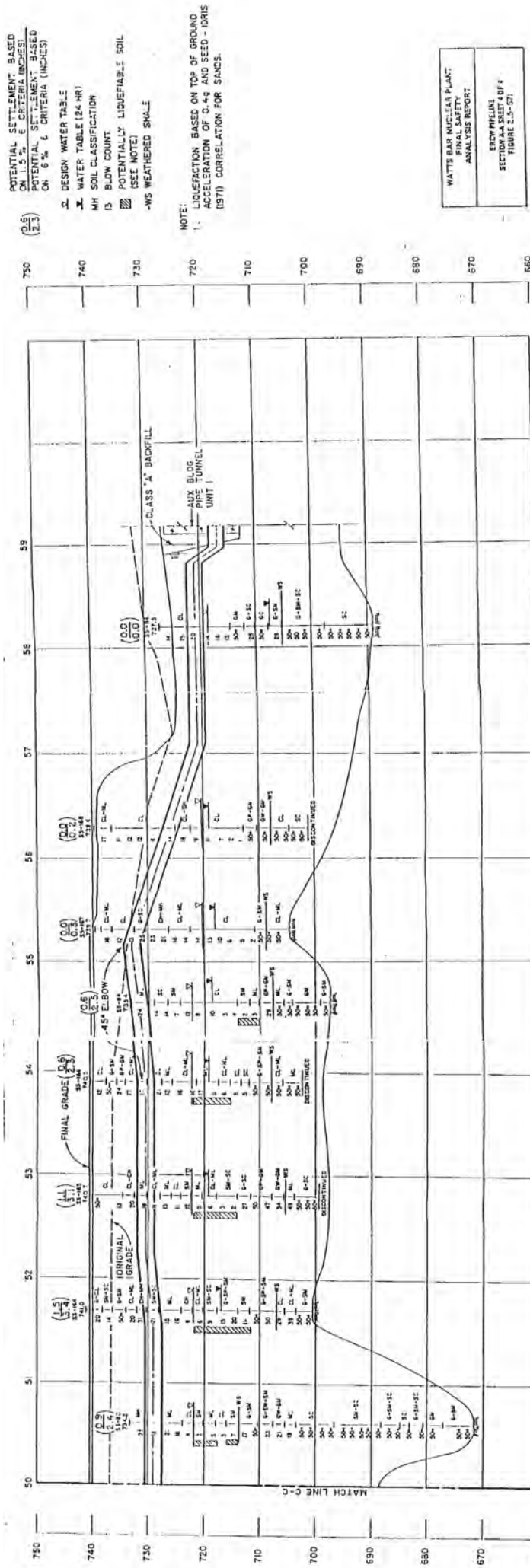
WATTE BAS NUCLEAS P-AM
FOAL SAFETY
ANALYTIC REPORT

DEB WFLINE
SETTER LVA BERT ID 4
PROMO 2-3-57



"HISTORICAL INFORMATION"

A-4



A-A

"HISTORICAL INFORMATION"

FIG 5

E 2.5

NOTE:
1. LIQ
GRO
AND
CON

"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW PIPELINE
SECTION 6-8
FIGURE 2.5-572

B-B

POTENTIAL SETTLEMENT BASED
ON 1.5% ϵ CRITERIA (INCHES)
(0.4)

POTENTIAL SETTLEMENT BASED
ON 6% ϵ CRITERIA (INCHES)
(1.0)

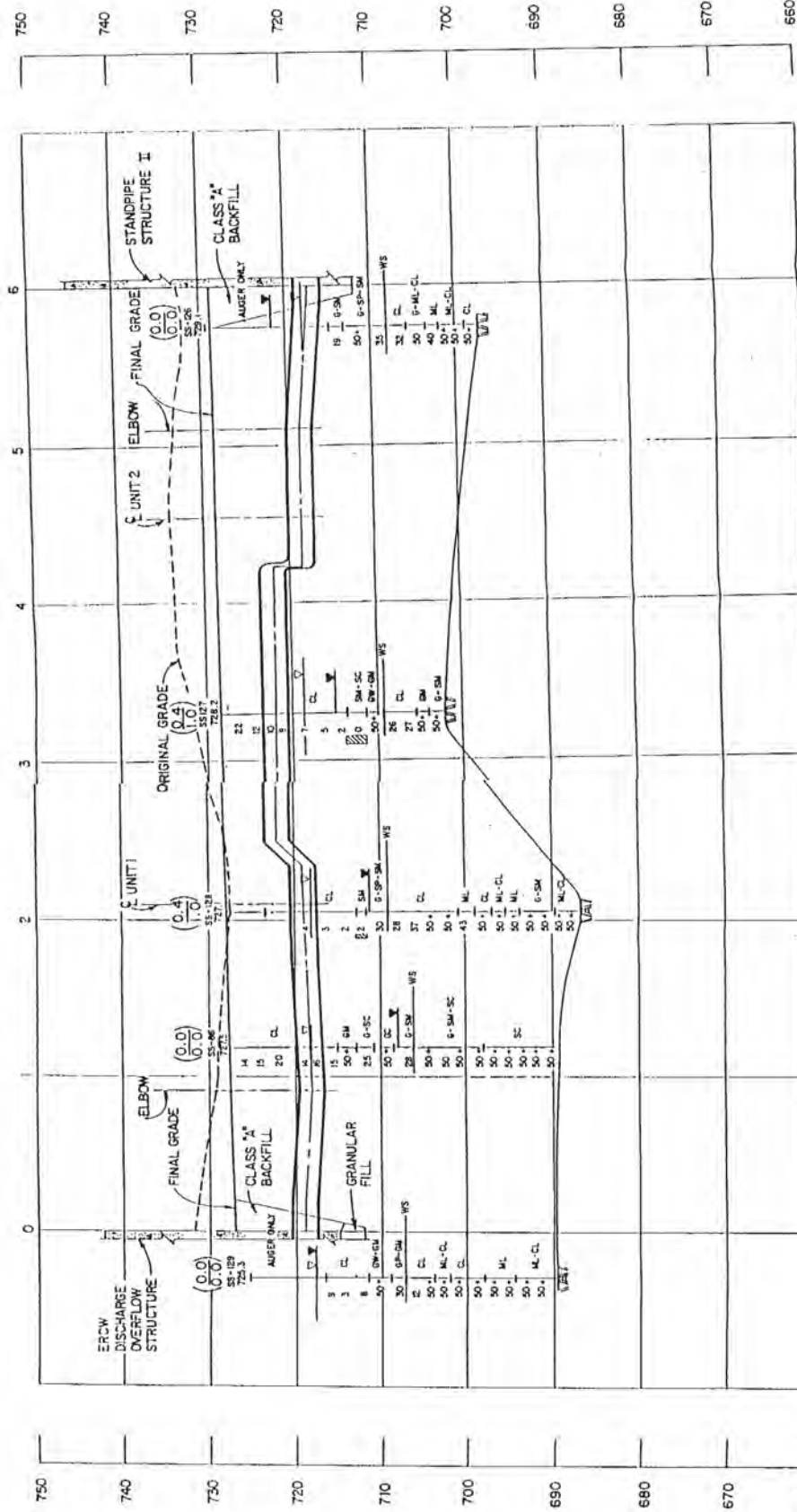
- DESIGN WATER TABLE
- WATER TABLE (24 HR)
- SOIL CLASSIFICATION
- BLD COUNT
- POTENTIALLY LIQUEFIABLE SOIL
(SEE NOTE)
- WS WEATHERED SHALE

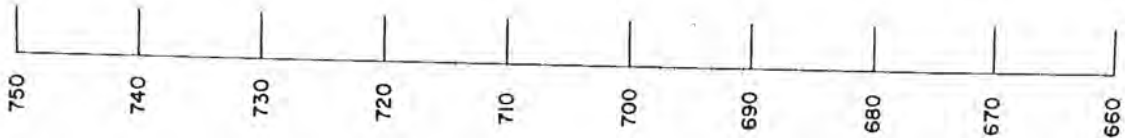
NOTE:

1. LIQUEFACTION BASED ON TOP OF
GROUND ACCELERATION OF 0.4g
AND SEED-DRUSS (1971)
CORRELATION FOR SANDS.

"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW PIPELINE SECTION CC FIGURE 2.5-573





▽ DESIGN WATER TABLE
 ▽ WATER TABLE (24 HR)
 MH SOIL CLASSIFICATION
 I3 BLOW COUNT
 ▨ POTENTIALLY LIQUEFYING
 (SEE NOTE)
 -WS WEATHERED SHALE

NOTE:

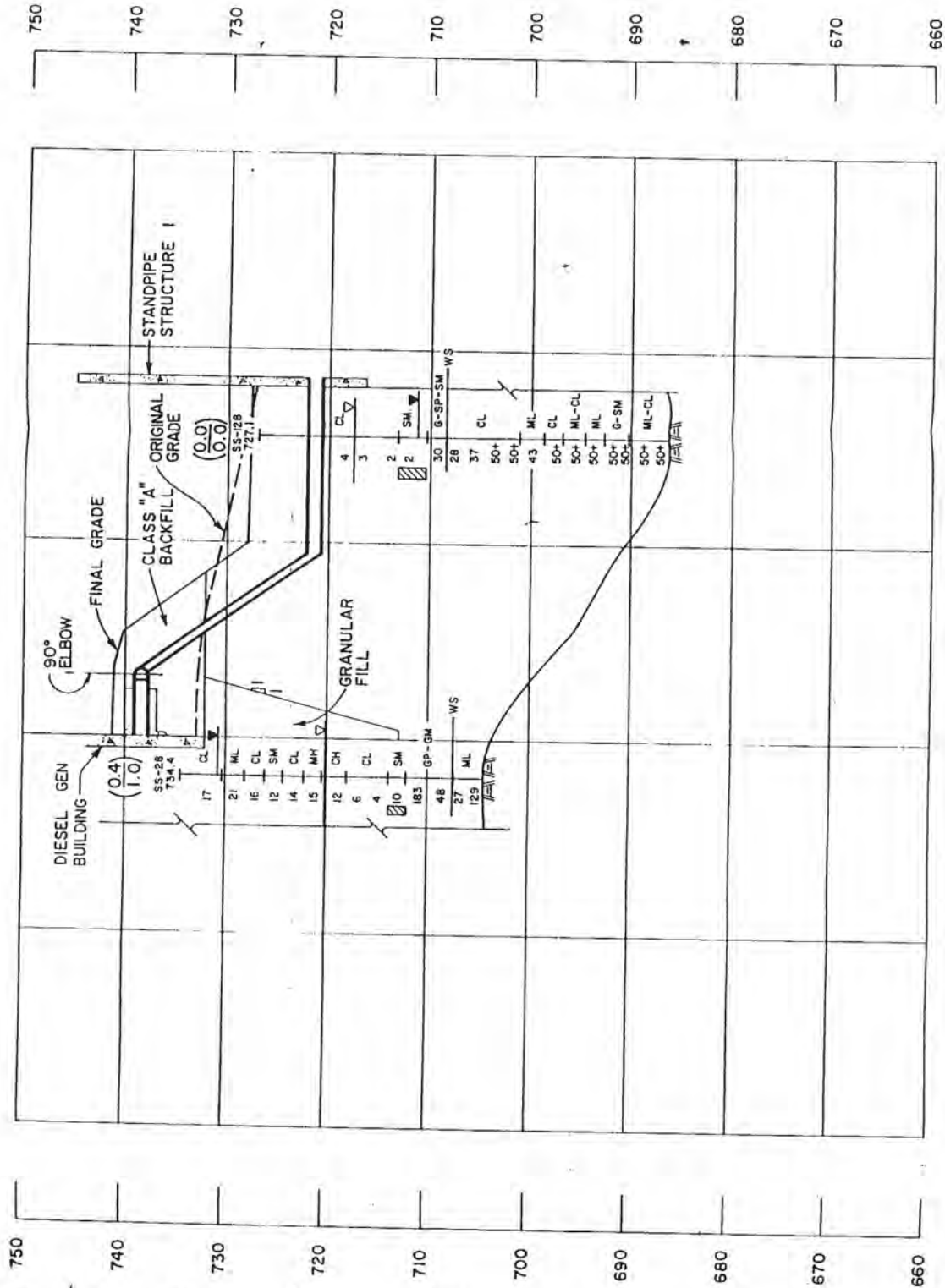
1. LIQUEFACTION BASED ON TOP OF
GROUND ACCELERATION OF 0.4g
AND SEED - IDRISS (1971)
CORRELATION FOR SANDS.

ADDITIONAL INFORMATION

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

ERCW PIPELINE
SECTION D-D
FIGURE 2.5-574

D-D



POTENTIAL SETTLEMENT BASED ON
1.5% & CRITERIA (INCHES)
(0.4)
(1.0)

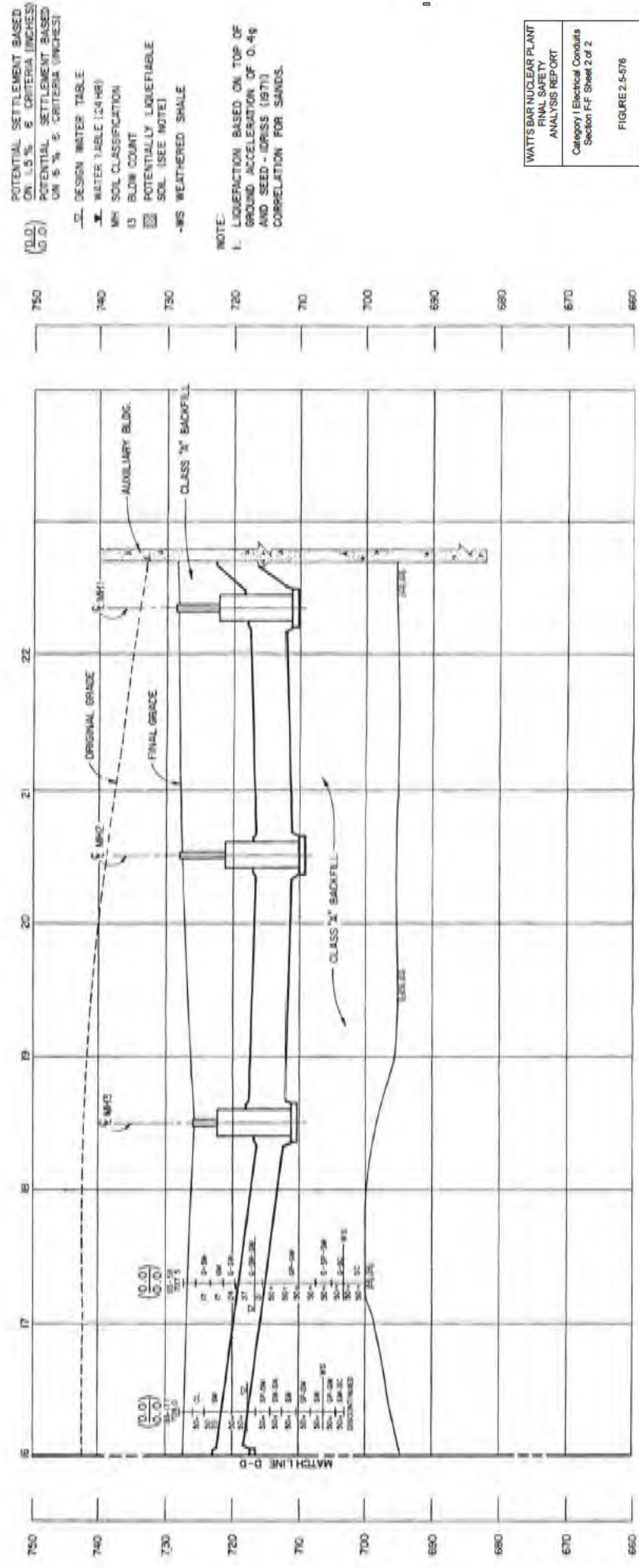
POTENTIAL SETTLEMENT BASED ON
6% & CRITERIA (INCHES)
DESIGN WATER TABLE
WATER TABLE (24HR)
MH SOIL CLASSIFICATION
13 BLOW COUNT
POTENTIALLY LIQUEFIABLE SOIL
(SEE NOTE)
-WS WEATHERED SHALE

NOTE:
LIQUEFACTION BASED ON TOP OF
GROUND ACCELERATION OF 0.4g
AND SEED - IDRISS (1971)
CORRELATION FOR SANDS.

"HISTORICAL INFORMATION"

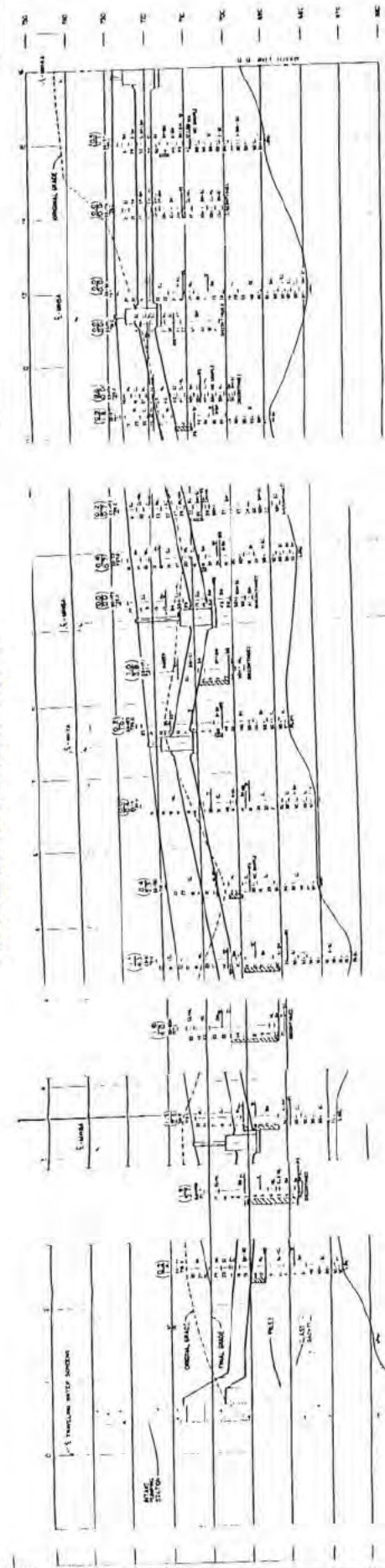
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
ERCW PIPELINE SECTION E-E FIGURE 2.5-575

E-E



F-F

FIGURE 2.5-576 SHEET 1 OF 2



"HISTORIC-IL INFORMATION"

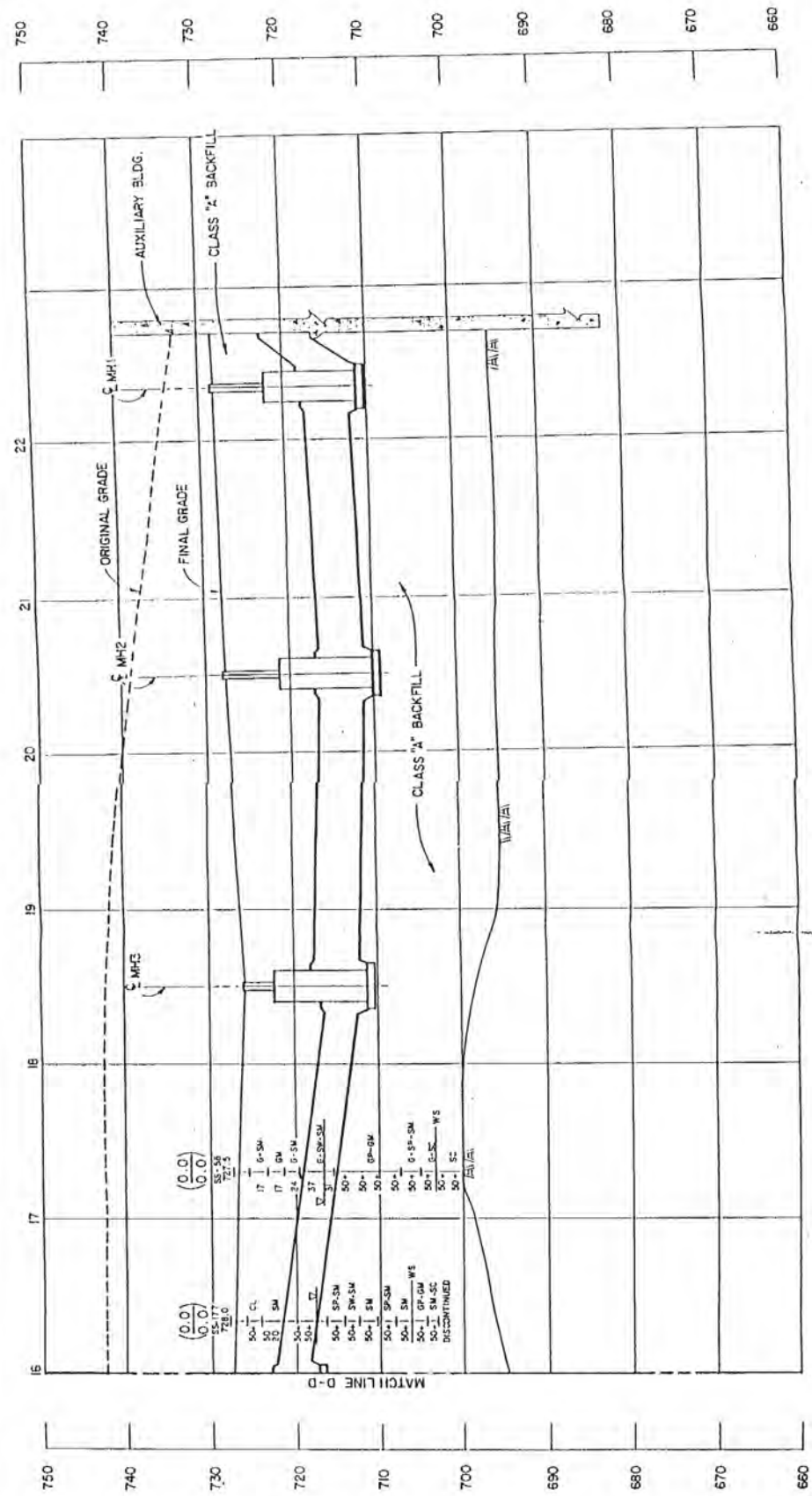
POTENTIAL SETTLEMENT BASED ON 1.5 % ϵ CRITERIA (INCHES)
 (0.0)
 POTENTIAL SETTLEMENT BASED ON 6 % ϵ CRITERIA (INCHES)
 (0.0)

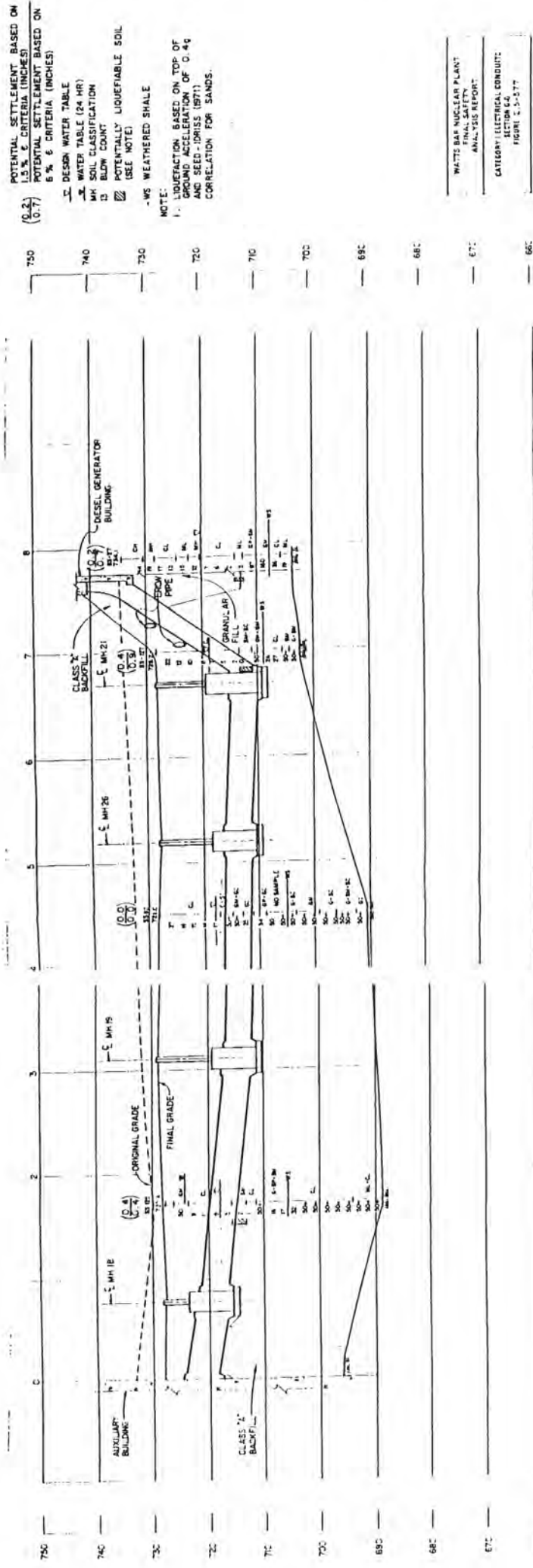
- DESIGN WATER TABLE
- WATER TABLE (24 HR)
- MH SOIL CLASSIFICATION
- BLOW COUNT
- POTENTIALLY LIQUEFIABLE SOIL (SEE NOTE)
- WEATHERED SHALE

NOTE:
 1. LIQUEFACTION BASED ON TOP OF GROUND ACCELERATION OF 0.4g AND SEED - IDRISS (1971) CORRELATION FOR SANDS.

"HISTORICAL INFORMATION"

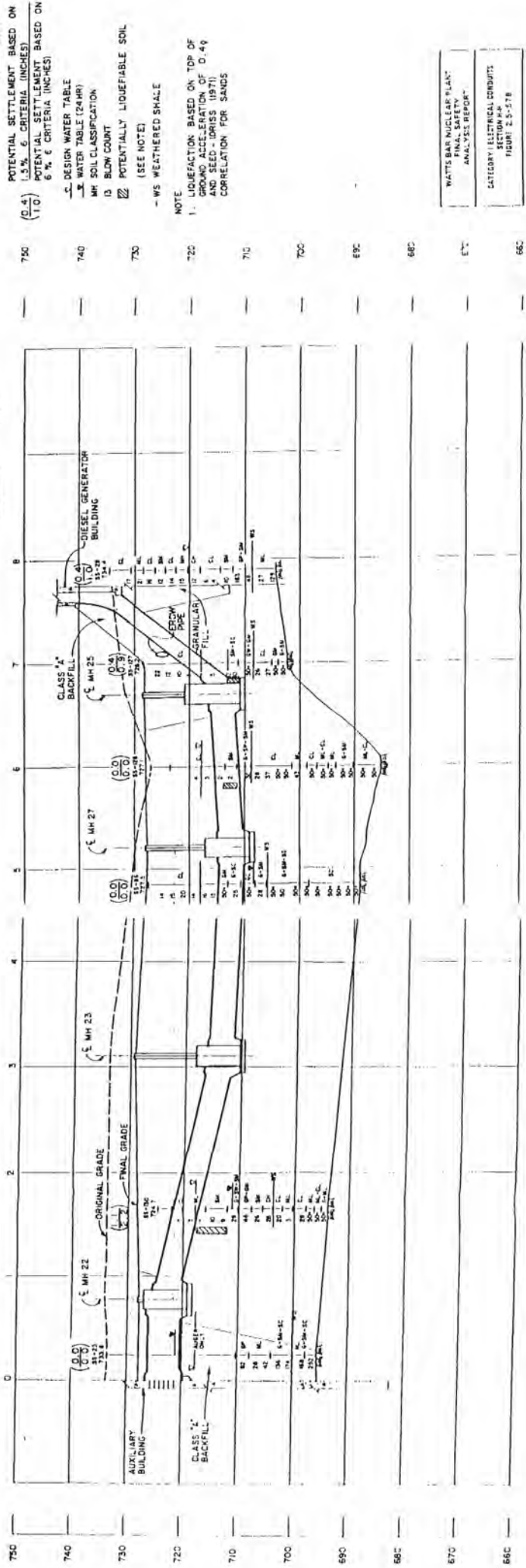
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
CATEGORY 1 ELECTRICAL CONDUITS SECTION F-F SHEET 2 OF 2 FIGURE 2.5-576





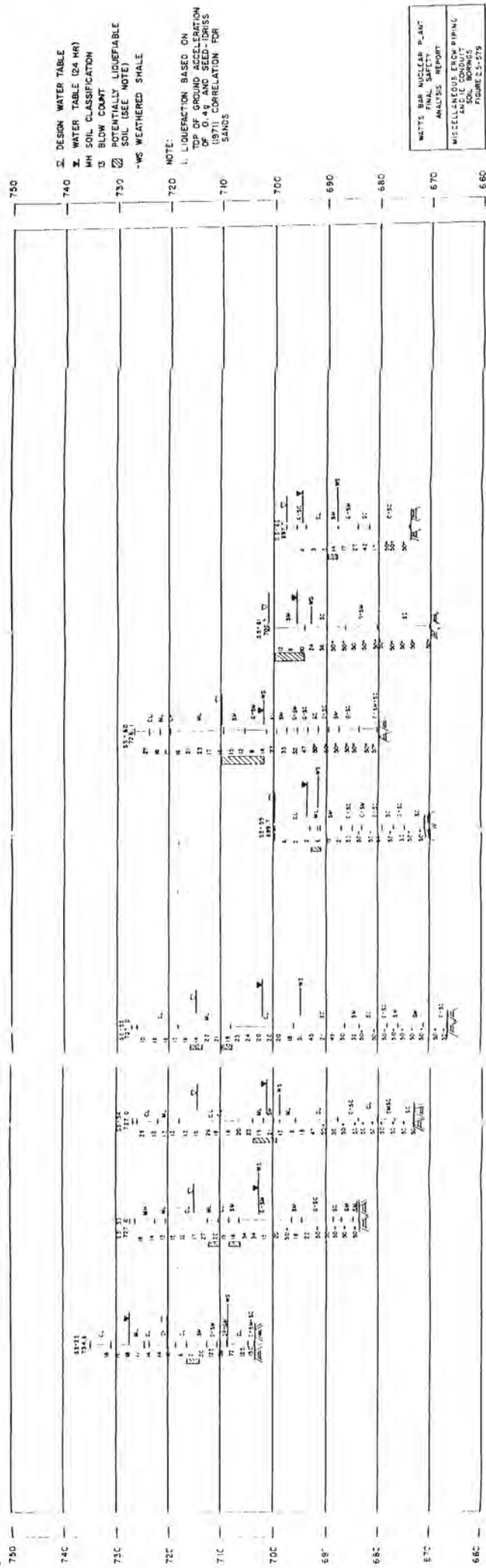
G-G

"HISTORICAL INFORMATION"



"HISTORICAL INFORMATION"

H-H





GENERAL NOTES:

BACKFILL IS CATEGORY 1, AND THE QUALITY ASSURANCE REQUIRED IS AS SHOWN IN THE QUALITY CONTROL AND DATA TEST PLAN. ALL MATERIALS TO BE USED IN THE BACKFILL SHALL BE OF THE SAME GENERAL CONTRIBUTION SPECIFICATION OR CLASS, AS NOTED.

FOR A QUALIFIED SOURCE OF MATERIAL, THE FOLLOWING INFORMATION IS REQUIRED:

- 1. A QUALIFIED SOURCE OF MATERIAL WITH RELEVANT POLYMER-BINDED MATERIAL.
- 2. A QUALIFIED SOURCE OF EACH THICKNESS SHALL BE REQUIRED. THE GROUP SHALL BE IDENTIFIED BY THE THICKNESS OF THE MATERIAL.
- 3. SECTION SHALL BE MADE AT 60 FOOT STATIONS ALONG THE THICKNESS. THE INFORMATION TO BE PROVIDED FOR EACH CROSS-SECTION SHALL INCLUDE:

- a. ELEVATION AND LOCATION OF ALL SURFACE BENEATH THE PROFILE.
- b. ELEVATION OF THE TOP OF WEATHERED SHALE, TOP OF BASEL GRAVEL (OR EQUIVALENT) AND TOP OF BASE SILEX SAND IN THE ROAD WALLS (OR EQUIVALENT). THE INFORMATION TO BE PROVIDED FOR EACH SECTION SHALL INCLUDE:

- a. ELEVATION AND LOCATION OF EACH SECTION.
- b. LOCATION OF THE THICKNESS.

c. FINAL GRADE

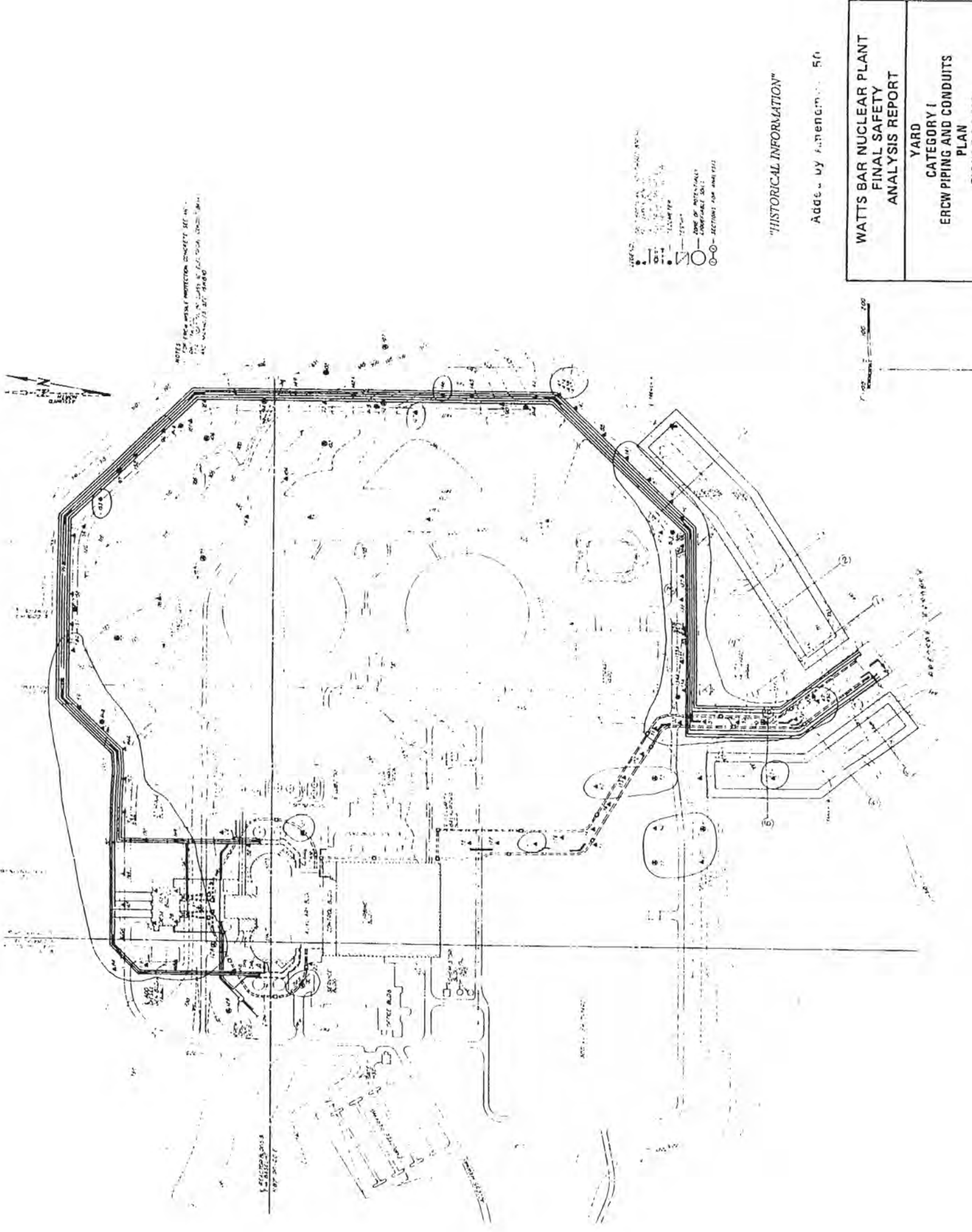
THE FINAL GRADE DRAINAGE SHALL BE IN PLACE AND DESIGN TO SURVEY VEGETATION TO THE AREA AFFECTED BY THIS WORK SHALL BE APPLIED AS NECESSARY.

THE CONTRACTOR SHALL PROVIDE A STATEMENT OF PERFORMANCE REVIEW AND CONSTRUCTION OF THE THICKNESS WITH RESPECT TO THE THICKNESS AND CONSTRUCTION OF THE THICKNESS WITH RESPECT TO THE THICKNESS FOUNDATION.

YARD
UNDERGROUND BARRIERS
FOR
POTENTIAL SOIL LIQUEFACTION

TVA DWG NO. 10N213-1 RD
FIGURE 2.5-580

FIRST ISSUE FOR FCN 3960

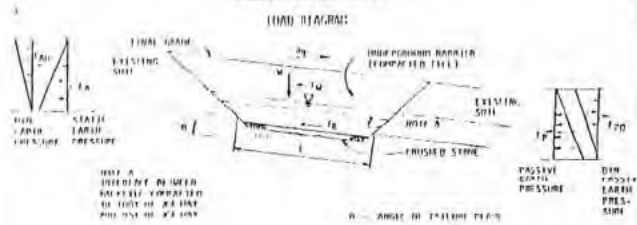


"HISTORICAL INFORMATION"

Added by Engineering 5/1

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
YARD CATEGORY I ERCW PIPING AND CONDUITS PLAN FIGURE 2.5-582

11/10/75 7:55 AM
 3 TEN HOURS FROM CLASS
 11/10/75 7:55 AM FROM 11/10/75 7:55 AM FROM 11/10/75 7:55 AM
 11/10/75 7:55 AM FROM 11/10/75 7:55 AM FROM 11/10/75 7:55 AM



ANALYSIS LAST 5

Q	DESCRIPTION	FUNCTION OR SAFETY
1	FIXING EARTHQUAKE AND WIND TO LIMIT ACTION (REDUCED INACTIVE PRESSURE ASSIGNED TO A17)	$F_{E1} = F_{E1} \frac{F_{E1} \text{ (code)}}{F_{E1} + F_{E1} \text{ (code)}} \leq 1.0$
2	ALIAS EARTHQUAKE AND WIND EARTHQUAKE (REDUCED INACTIVE PRESSURE ASSIGNED)	$F_{E1} = \frac{F_{E1}}{F_{E1} \text{ (code)}} \leq 1.0$
3	SEISMIC ISOLATION FOR THE SHEAR STRENGTH OF THE EARTH TO ALL $F_{E1} = 2.0 \times F_{E1} \text{ (code)} \leq 1.0$	
4	COMBINATION SEISMIC EARTH TO ALL IN THE EARTHQUAKE TO THE UNDERGROUND BARRIER $F_{E1} = F_{E1} \text{ (code)} \leq 1.0$	
5	EARTH PRESSURE $= \frac{F_{E1} \text{ (code)}}{2}$, $(F_{E1} = F_{E1} \text{ (code)})$	
6	EARTH EARTH PRESSURE $= F_{E1} \text{ (code)} \cdot (F_{E1} - F_{E1} \text{ (code)})$	
7	PASSIVE EARTH PRESSURE $= \frac{F_{E1} \text{ (code)}}{2}$, $(F_{E1} = F_{E1} \text{ (code)})$	
8	PASSIVE EARTH PRESSURE $= F_{E1} \text{ (code)} \cdot (F_{E1} - F_{E1} \text{ (code)})$	
9	PASSIVE EARTH PRESSURE $= F_{E1} \text{ (code)} \cdot (F_{E1} - F_{E1} \text{ (code)})$	
10	WIND TO THE BARRIER, $W_{E1} = W_{E1} \text{ (code)}$	
11	WIND TO THE EARTH TO ALL IN THE EARTH TO ALL	
12	WIND TO THE EARTH TO ALL IN THE EARTH TO ALL	

MAIERIAL FIGURENS

	TEST METRIC (F1 F2)			TEST METRIC (AUC F1)		TEST METRIC (AUC F2)	
	F1	F2	F3	F1	F2	F1	F2
IN THE INTERESTS							
INTEREST CLASS AND SIZE	120	125	130	28	0.8	18	0.7
INTEREST CLASS	110	124	129	28	0.8	18	0.7
INTEREST CLASS (F1)	110	124	129	29	0.7	18	0.7
INTEREST CLASS (F2)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F3)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F4)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F5)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F6)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F7)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F8)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F9)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F10)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F11)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F12)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F13)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F14)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F15)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F16)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F17)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F18)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F19)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F20)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F21)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F22)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F23)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F24)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F25)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F26)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F27)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F28)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F29)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F30)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F31)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F32)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F33)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F34)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F35)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F36)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F37)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F38)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F39)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F40)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F41)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F43)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F44)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F45)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F47)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F48)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F49)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F50)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F51)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F52)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F54)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F55)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F57)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F58)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F59)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F60)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F61)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F62)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F63)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F64)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F65)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F66)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F67)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F68)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F71)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F104)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F106)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F107)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F108)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F109)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F110)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F111)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F141)	110	124	129	30	0.8	18	0.7
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INTEREST CLASS (F144)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F145)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F146)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F147)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F148)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F149)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F150)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F151)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F152)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F153)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F154)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F155)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F156)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F157)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F158)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F159)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F160)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F161)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F162)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F163)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F164)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F165)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F166)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F167)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F168)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F169)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F170)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F171)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F172)	110	124	129	30	0.8	18	0.7
INTEREST CLASS (F173)	110						

SHEAR FACTORS TREND A ¹					SHEAR FACTORS TREND B ¹				
STATION	BURIED FAULTURE PLANE FAILURE TYPE		POST FAULTURE PLANE FAILURE TYPE		STATION	BURIED FAULTURE PLANE FAILURE TYPE		POST FAULTURE PLANE FAILURE TYPE	
	A ²	B ²	A ²	B ²		A ²	B ²	A ²	B ²
0+00	1.36	3.63	3.98	8.78	0+50	1.86	1.8510	3.00	11.32 ¹¹
0+25	1.51	3.69	5.18	7.70	1+00	1.93	1.8310	6.00	11.13 ¹¹
1+25	1.52	3.88	5.58	8.37	1+50	1.83	1.6510	4.52	21.71 ¹¹
2+25	1.34	3.95	10.32	10.83	2+00	1.70	1.6510	5.24	21.71 ¹¹
2+50	1.52	3.85	6.08	8.19	2+50	1.80	1.8011	9.20	31.02 ¹¹
3+25	1.20	3.20	4.55	4.66	3+00	1.95	1.70 ¹¹	2.57	1.94 ¹¹
3+50	1.22	3.71	3.95	3.91	3+50	2.23	1.10 ¹¹	8.23	3.32 ¹¹
4+25	1.24	3.46	4.57	4.83	4+00	1.10	NA	16.52	NA
4+50	1.17	3.72	3.95	3.33	4+50	1.18	NA	17.50	NA
5+25	1.11	3.50	2.49	2.90	5+00	1.82	NA	18.10	NA
5+50	1.03	3.17	1.53	2.14	5+50	2.78	NA	30.29	NA
6+25	1.05	3.11	1.16	2.02	6+00	2.18	NA	32.15	NA
6+30 ²									
7+25	1.29	1.23	1.78	1.82					
7+50	1.36	1.11	1.16	1.42					
8+25	1.22	1.12	1.64	1.76					
9+25	1.22	1.12	1.16	1.81					
10+25	1.01	1.32	2.30	1.30					

- 1 SEE FIGURE 2-4, ONE FOR A PAIN "CLIMING" THE LOCATIONS OF THE TRENCH SECTIONS.
2 NOT INDICATED: ASSESSMENT NOT IDENTIFIED.
3 FAILURE PLANE IDENTIFIED: FILL IMMEDIATELY ABOVE EXISTING SCENE
4 FAILURE PLANE AT INTERFACE OF MATERIALS. FAILURE COMPLETE: YES
5 FAILURE NOT AT INTERFACE IDENTIFYING PASSIVE FAILURE PLANE. CALCULATED USING REDUCED STRENGTHS.
6 MATERIALS NOT IDENTIFIED: ASSUMING NO PASSIVE PRESSURE.
7 CONSIDER THE ORIGINAL PROPOSED EXCAVATION, INCLUDES DUST DRAVEIL AND SHIMIL BLASTED FROM
8 EXISTING: SPREAD BY PANS AND DIRT COMPACTION IS NOT SPREADING EQUIPMENT
9 FAILURE PLANE AT BASE OF EXISTING SECTION
10 THE USE OF EXISTING DATA WILL BE LIMITED TO BEING AVOIDED FOR SEVERAL POTENTIAL FAILURE PLACES. THE
11 FAILURE PLANE IS IDENTIFIED BY THE HORIZONTAL LINE. THE HORIZONTAL LINE POTENTIAL FAILURE PLACES OTHER THAN THAT
12 GIVEN IN FIGURE 2-4
13 FAILURE PLANE AT INTERFACE BETWEEN 1-2 EXISTING SCENE MATERIAL AND 3-4 EXISTING SCENE MATERIAL
14 FAILURE PLANE AT INTERFACE BETWEEN 3-4 EXISTING SCENE MATERIAL AND 5-6 EXISTING SCENE MATERIALS
15 FAILURE PLANE AT INTERFACE BETWEEN 5-6 EXISTING SCENE MATERIAL AND 7-8 EXISTING SCENE MATERIALS
16 FAILURE PLANE AT INTERFACE BETWEEN 7-8 EXISTING SCENE MATERIAL AND 9-10 EXISTING SCENE MATERIALS
17 FAILURE PLANE AT INTERFACE BETWEEN 9-10 EXISTING SCENE MATERIAL AND 11-12 EXISTING SCENE MATERIALS
18 FAILURE PLANE AT INTERFACE BETWEEN 11-12 EXISTING SCENE MATERIAL AND 13-14 EXISTING SCENE MATERIALS
19 FAILURE PLANE AT INTERFACE BETWEEN 13-14 EXISTING SCENE MATERIAL AND 15-16 EXISTING SCENE MATERIALS
20 FAILURE PLANE AT INTERFACE BETWEEN 15-16 EXISTING SCENE MATERIAL AND 17-18 EXISTING SCENE MATERIALS
21 FAILURE PLANE AT INTERFACE BETWEEN 17-18 EXISTING SCENE MATERIAL AND 19-20 EXISTING SCENE MATERIALS
22 FAILURE PLANE AT INTERFACE BETWEEN 19-20 EXISTING SCENE MATERIAL AND 21-22 EXISTING SCENE MATERIALS
23 FAILURE PLANE AT INTERFACE BETWEEN 21-22 EXISTING SCENE MATERIAL AND 23-24 EXISTING SCENE MATERIALS
24 FAILURE PLANE AT INTERFACE BETWEEN 23-24 EXISTING SCENE MATERIAL AND 25-26 EXISTING SCENE MATERIALS
25 FAILURE PLANE AT INTERFACE BETWEEN 25-26 EXISTING SCENE MATERIAL AND 27-28 EXISTING SCENE MATERIALS
26 FAILURE PLANE AT INTERFACE BETWEEN 27-28 EXISTING SCENE MATERIAL AND 29-30 EXISTING SCENE MATERIALS
27 FAILURE PLANE AT INTERFACE BETWEEN 29-30 EXISTING SCENE MATERIAL AND 31-32 EXISTING SCENE MATERIALS
28 FAILURE PLANE AT INTERFACE BETWEEN 31-32 EXISTING SCENE MATERIAL AND 33-34 EXISTING SCENE MATERIALS
29 FAILURE PLANE AT INTERFACE BETWEEN 33-34 EXISTING SCENE MATERIAL AND 35-36 EXISTING SCENE MATERIALS
30 FAILURE PLANE AT INTERFACE BETWEEN 35-36 EXISTING SCENE MATERIAL AND 37-38 EXISTING SCENE MATERIALS
31 FAILURE PLANE AT INTERFACE BETWEEN 37-38 EXISTING SCENE MATERIAL AND 39-40 EXISTING SCENE MATERIALS
32 FAILURE PLANE AT INTERFACE BETWEEN 39-40 EXISTING SCENE MATERIAL AND 41-42 EXISTING SCENE MATERIALS
33 FAILURE PLANE AT INTERFACE BETWEEN 41-42 EXISTING SCENE MATERIAL AND 43-44 EXISTING SCENE MATERIALS
34 FAILURE PLANE AT INTERFACE BETWEEN 43-44 EXISTING SCENE MATERIAL AND 45-46 EXISTING SCENE MATERIALS
35 FAILURE PLANE AT INTERFACE BETWEEN 45-46 EXISTING SCENE MATERIAL AND 47-48 EXISTING SCENE MATERIALS
36 FAILURE PLANE AT INTERFACE BETWEEN 47-48 EXISTING SCENE MATERIAL AND 49-50 EXISTING SCENE MATERIALS
37 FAILURE PLANE AT INTERFACE BETWEEN 49-50 EXISTING SCENE MATERIAL AND 51-52 EXISTING SCENE MATERIALS
38 FAILURE PLANE AT INTERFACE BETWEEN 51-52 EXISTING SCENE MATERIAL AND 53-54 EXISTING SCENE MATERIALS
39 FAILURE PLANE AT INTERFACE BETWEEN 53-54 EXISTING SCENE MATERIAL AND 55-56 EXISTING SCENE MATERIALS
40 FAILURE PLANE AT INTERFACE BETWEEN 55-56 EXISTING SCENE MATERIAL AND 57-58 EXISTING SCENE MATERIALS
41 FAILURE PLANE AT INTERFACE BETWEEN 57-58 EXISTING SCENE MATERIAL AND 59-60 EXISTING SCENE MATERIALS
42 FAILURE PLANE AT INTERFACE BETWEEN 59-60 EXISTING SCENE MATERIAL AND 61-62 EXISTING SCENE MATERIALS
43 FAILURE PLANE AT INTERFACE BETWEEN 61-62 EXISTING SCENE MATERIAL AND 63-64 EXISTING SCENE MATERIALS
44 FAILURE PLANE AT INTERFACE BETWEEN 63-64 EXISTING SCENE MATERIAL AND 65-66 EXISTING SCENE MATERIALS
45 FAILURE PLANE AT INTERFACE BETWEEN 65-66 EXISTING SCENE MATERIAL AND 67-68 EXISTING SCENE MATERIALS
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52 FAILURE PLANE AT INTERFACE BETWEEN 79-80 EXISTING SCENE MATERIAL AND 81-82 EXISTING SCENE MATERIALS
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54 FAILURE PLANE AT INTERFACE BETWEEN 83-84 EXISTING SCENE MATERIAL AND 85-86 EXISTING SCENE MATERIALS
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61 FAILURE PLANE AT INTERFACE BETWEEN 97-98 EXISTING SCENE MATERIAL AND 99-100 EXISTING SCENE MATERIALS
62 FAILURE PLANE AT INTERFACE BETWEEN 99-100 EXISTING SCENE MATERIAL AND 101-102 EXISTING SCENE MATERIALS
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64 FAILURE PLANE AT INTERFACE BETWEEN 103-104 EXISTING SCENE MATERIAL AND 105-106 EXISTING SCENE MATERIALS
65 FAILURE PLANE AT INTERFACE BETWEEN 105-106 EXISTING SCENE MATERIAL AND 107-108 EXISTING SCENE MATERIALS
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69 FAILURE PLANE AT INTERFACE BETWEEN 113-114 EXISTING SCENE MATERIAL AND 115-116 EXISTING SCENE MATERIALS
70 FAILURE PLANE AT INTERFACE BETWEEN 115-116 EXISTING SCENE MATERIAL AND 117-118 EXISTING SCENE MATERIALS
71 FAILURE PLANE AT INTERFACE BETWEEN 117-118 EXISTING SCENE MATERIAL AND 119-120 EXISTING SCENE MATERIALS
72 FAILURE PLANE AT INTERFACE BETWEEN 119-120 EXISTING SCENE MATERIAL AND 121-122 EXISTING SCENE MATERIALS
73 FAILURE PLANE AT INTERFACE BETWEEN 121-122 EXISTING SCENE MATERIAL AND 123-124 EXISTING SCENE MATERIALS
74 FAILURE PLANE AT INTERFACE BETWEEN 123-124 EXISTING SCENE MATERIAL AND 125-126 EXISTING SCENE MATERIALS
75 FAILURE PLANE AT INTERFACE BETWEEN 125-126 EXISTING SCENE MATERIAL AND 127-128 EXISTING SCENE MATERIALS
76 FAILURE PLANE AT INTERFACE BETWEEN 127-128 EXISTING SCENE MATERIAL AND 129-130 EXISTING SCENE MATERIALS
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87 FAILURE PLANE AT INTERFACE BETWEEN 149-150 EXISTING SCENE MATERIAL AND 151-152 EXISTING SCENE MATERIALS
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95 FAILURE PLANE AT INTERFACE BETWEEN 165-166 EXISTING SCENE MATERIAL AND 167-168 EXISTING SCENE MATERIALS
96 FAILURE PLANE AT INTERFACE BETWEEN 167-168 EXISTING SCENE MATERIAL AND 169-170 EXISTING SCENE MATERIALS
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107 FAILURE PLANE AT INTERFACE BETWEEN 189-190 EXISTING SCENE MATERIAL AND 191-192 EXISTING SCENE MATERIALS
108 FAILURE PLANE AT INTERFACE BETWEEN 191-192 EXISTING SCENE MATERIAL AND 193-194 EXISTING SCENE MATERIALS
109 FAILURE PLANE AT INTERFACE BETWEEN 193-194 EXISTING SCENE MATERIAL AND 195-196 EXISTING SCENE MATERIALS
110 FAILURE PLANE AT INTERFACE BETWEEN 195-196 EXISTING SCENE MATERIAL AND 197-198 EXISTING SCENE MATERIALS
111 FAILURE PLANE AT INTERFACE BETWEEN 197-198 EXISTING SCENE MATERIAL AND 199-200 EXISTING SCENE MATERIALS
112 FAILURE PLANE AT INTERFACE BETWEEN 199-200 EXISTING SCENE MATERIAL AND 201-202 EXISTING SCENE MATERIALS
113 FAILURE PLANE AT INTERFACE BETWEEN 201-202 EXISTING SCENE MATERIAL AND

FIGURE 2.5-583



NOTES:
1. DASHED CONTOURS REPRESENT EXISTING GROUND.
2. SOLID CONTOURS REPRESENT FINISHED GRADE.
3. GRASSING PER SECTION 500. FINAL SEEDING SHALL BE MADE WITH TYPE B (FALL SEEDING), AND FERTILIZED AND MOWED IN ACCORDANCE WITH P.1 SPECIFICATIONS

FIELD TO SMOOTHEN THE FINISH GRADING
TO EXISTING GROUND AT COMPLETION
FURNISH EN. DES. FINISH CONTOURS
IN THIS AREA

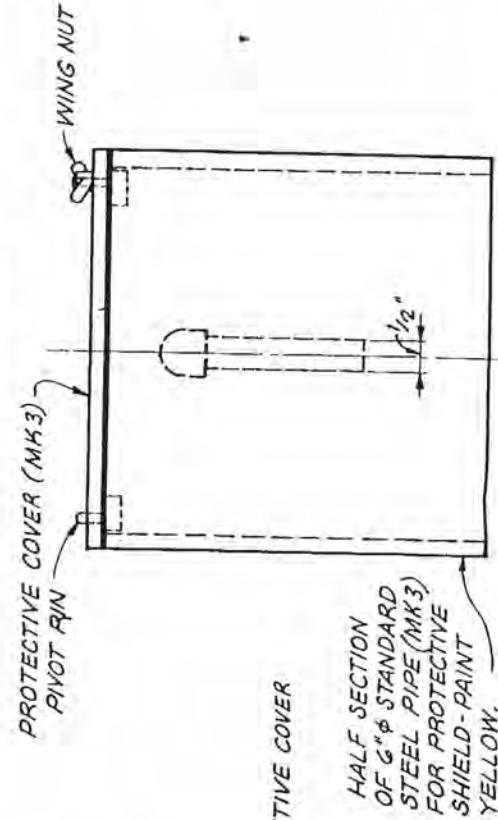
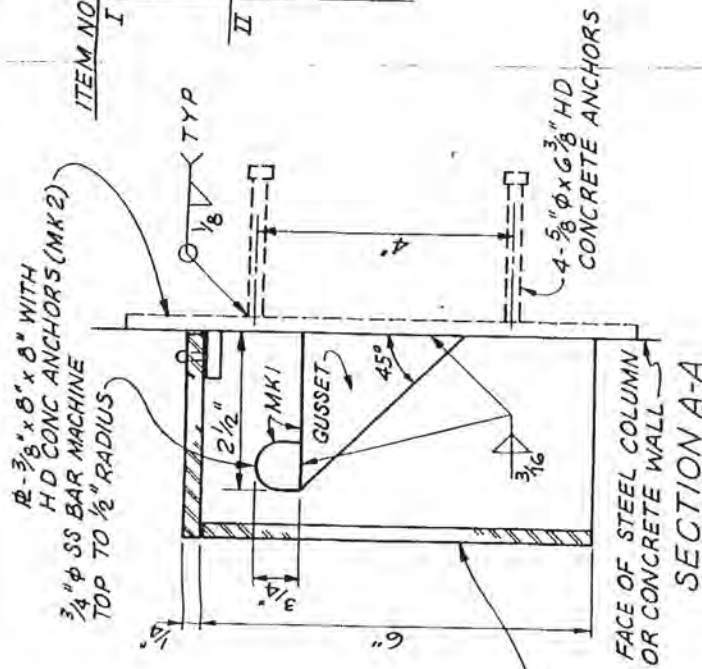
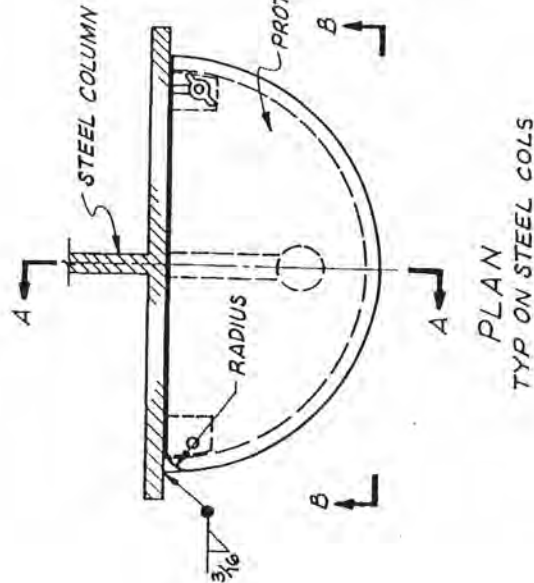
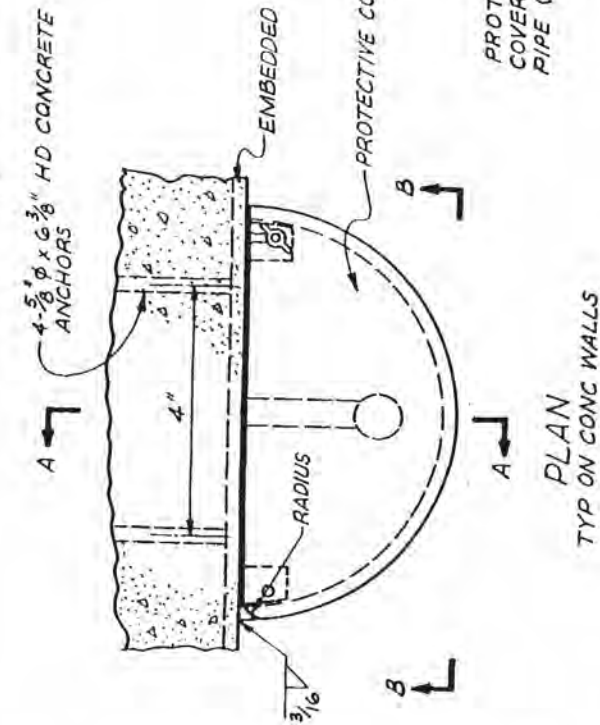
WATTS BAR
FINAL SAFETY
ANALYSIS REPORT

MAIN PLANT
FINISHED GRADING
AND PAVING
SHEET 8

TVA DWG NO. 10W245-1 R2
FIGURE 2.5-584

CAD MAINTAINED DRAWING

SEE TRT FOR USE OF THIS DRAWING
USED FOR ACJ. TO KRC QUES 362.2
Q2 WBS FSAR



NOT TO SCALE

ITEM NO	
I	LOCATED ON STEEL COLUMN- MK1 & MK3 REQ'D: SS-22, SS-25, SS-29, SS-30, SS-31, SS-32 SS-33, SS-42, SS-43.
II	LOCATED ON CONCRETE WALL- MK1, MK2, & MK3 REQ'D: SS-2, SS-3, SS-5, SS-6, SS-7, SS-10, SS-13, SS-14, SS-15, SS-17, SS-18 SS-19, SS-20, SS-21, SS-23, SS-24, SS-26, SS-26, SS-27, SS-27, SS-28 SS-28, & SS-44

NOTES:

1. FOR REFERENCE AND
LOCATIONS OF SETTLEMENT
STATIONS, SEE DWG NO
10N 203-1&2.
2. FABRICATION COVERED
BY FF-37

"HISTORICAL INFORMATION"

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

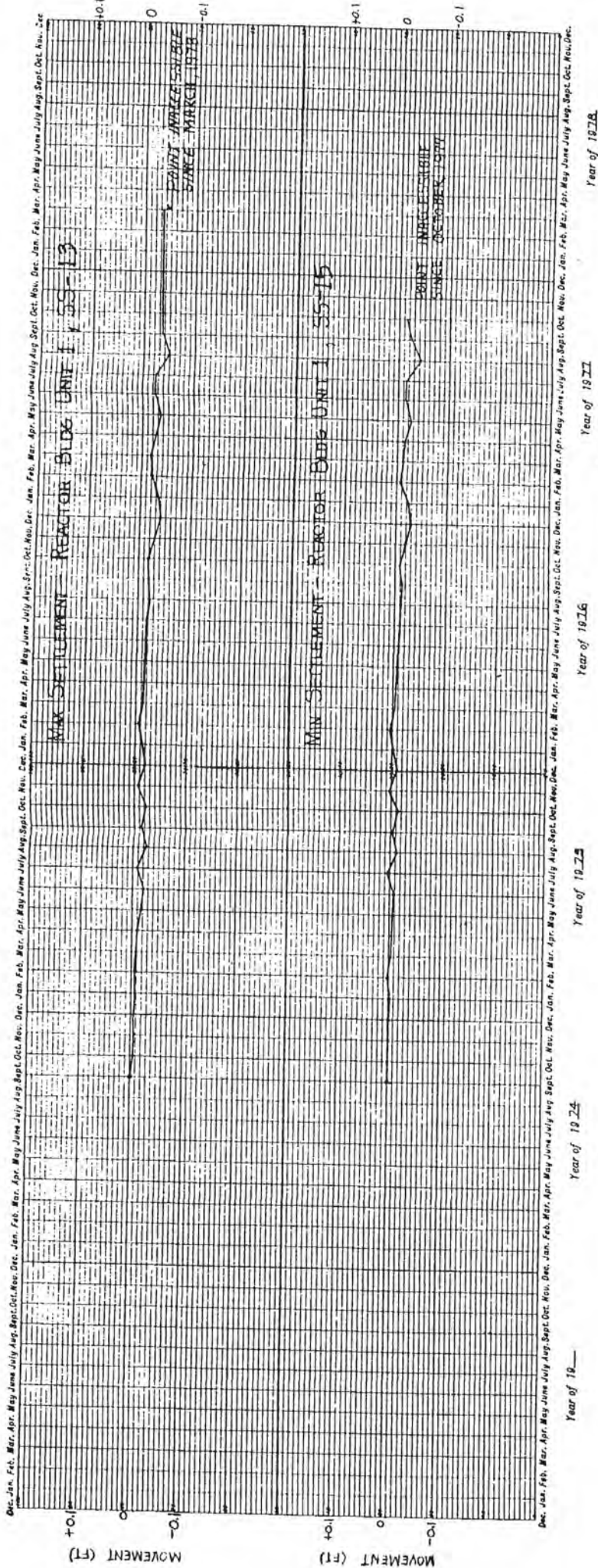
POWERHOUSE
SETTLEMENT STATIONS
BENCH MARK ASSEMBLY
FIGURE 2.5-585

SECTION B-B

SECTION A-A

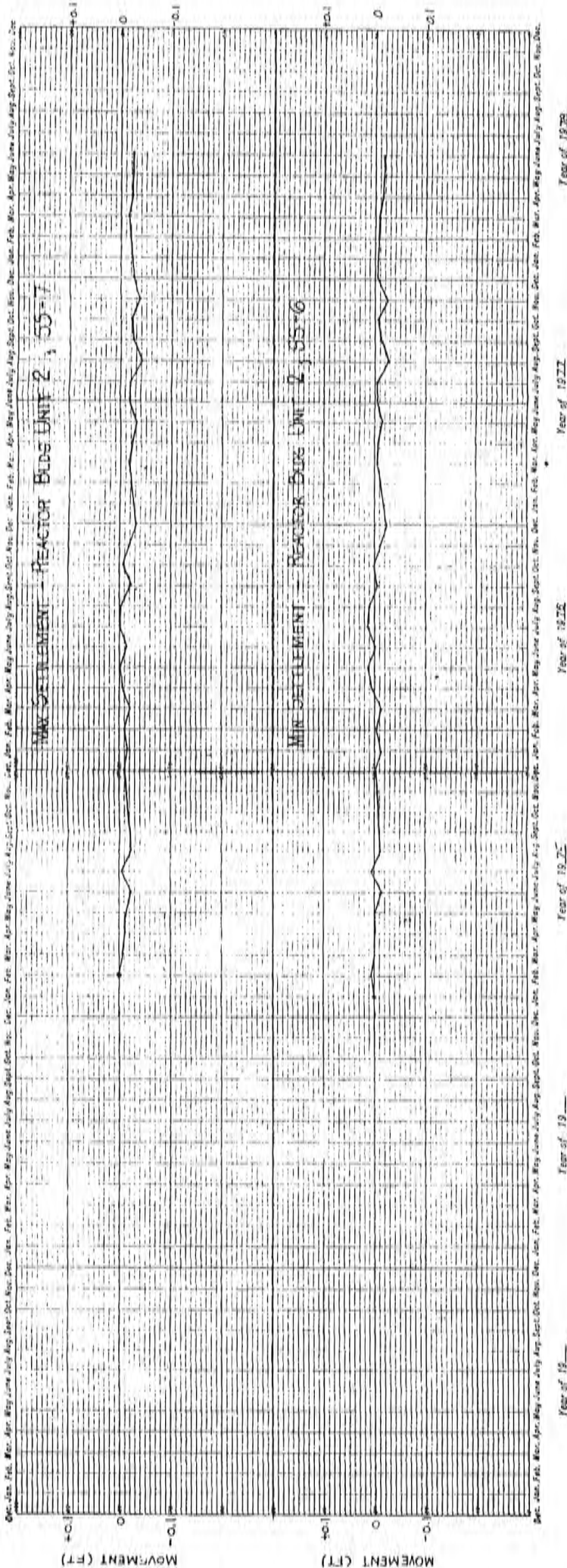
PLAN
TYP ON CONC WALLS

PLAN
TYP ON STEEL COLS



"HISTORICAL INFORMATION"

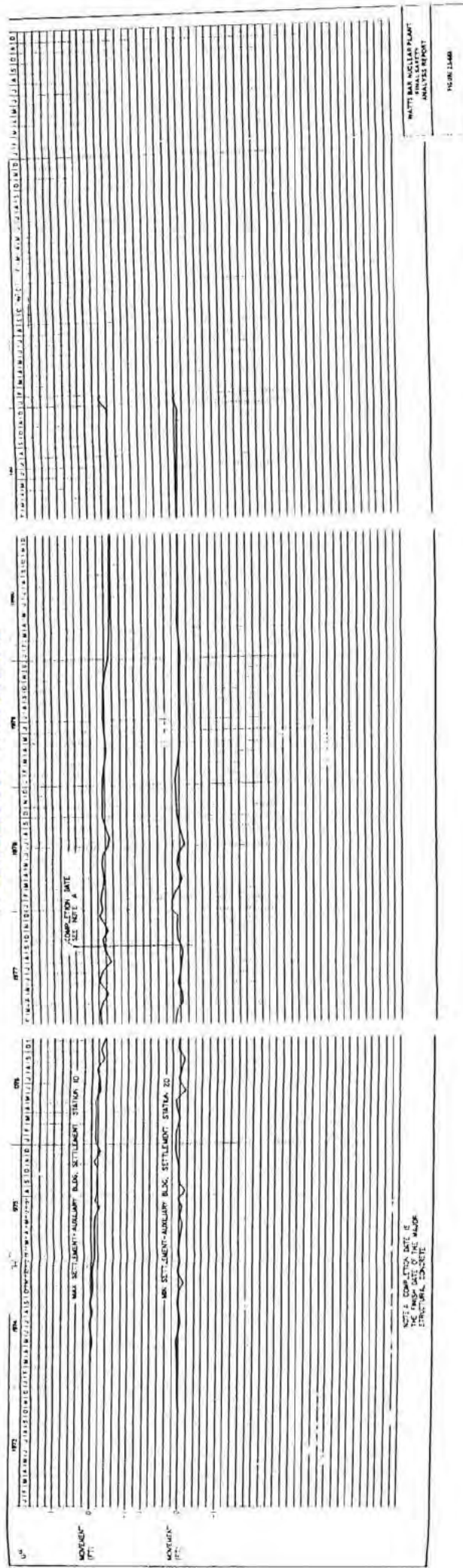
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SETTLEMENT VS. TIME FOR UNIT 1 REACTOR BUILDING FIGURE 2.5-585



"HISTORICAL INFORMATION"

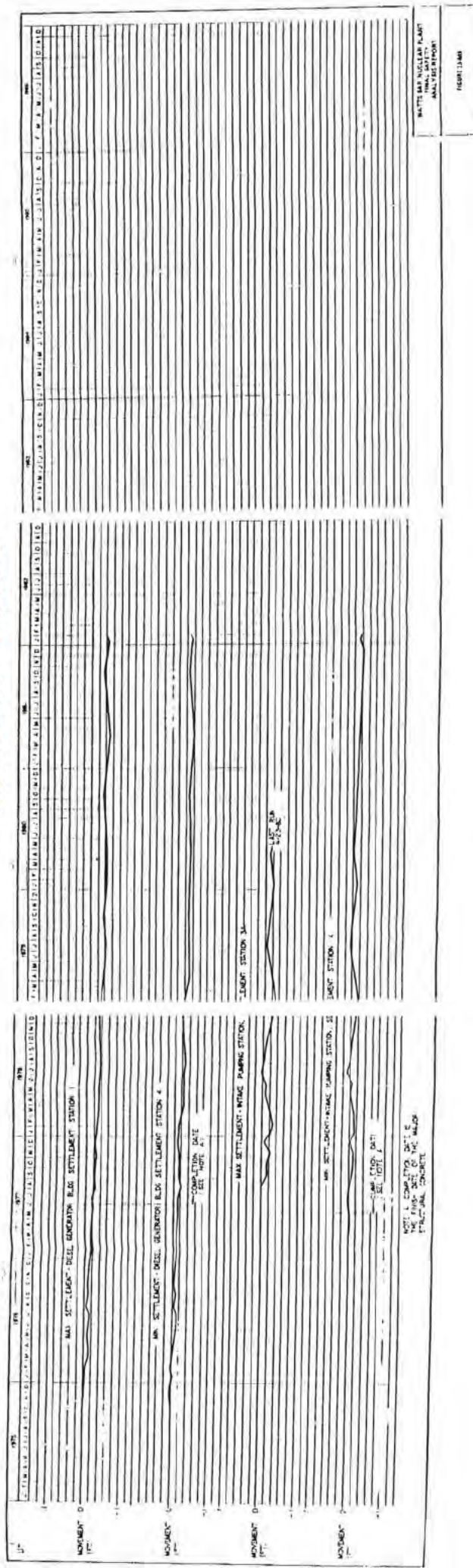
WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT
SETTLEMENT VS. TIME FOR UNIT 2 REACTOR BUILDING FIGURE 2.5-587

FIGURE 2.5-588 HISTORICAL

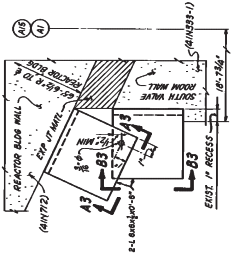


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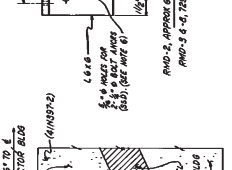
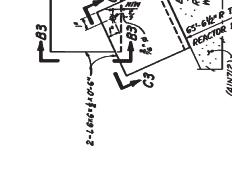
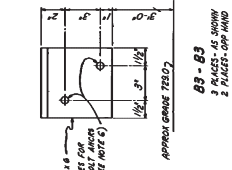
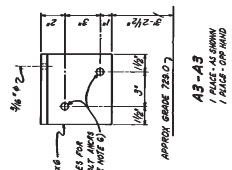
FIGURE 2.5-589 HISTORICAL



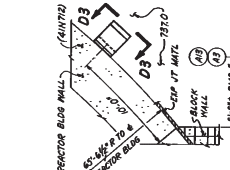
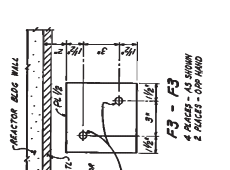
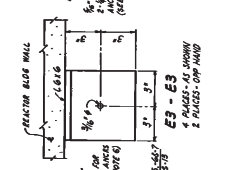
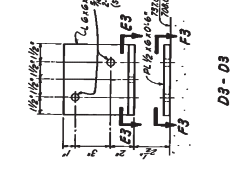
"HISTORICAL INFORMATION"



PLAN RMD-1 & PLAN RMD-11 OPP H

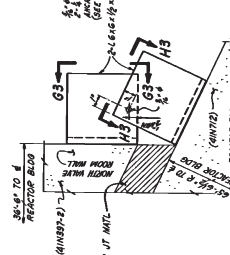


PLAN RMD-2

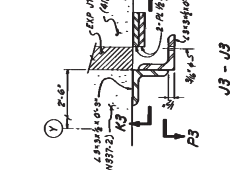
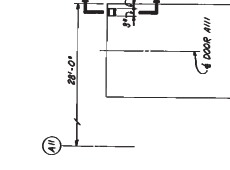
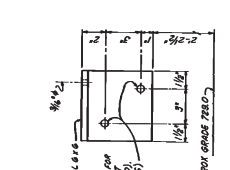
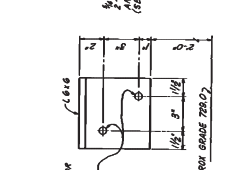


PLAN RMD-4

PLAN RMD-5 & PLAN RMD-6 OPP H

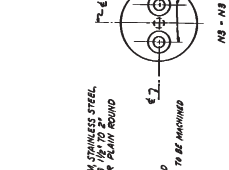
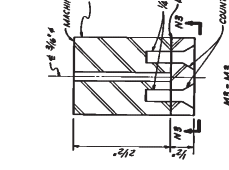
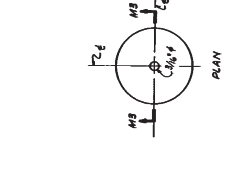
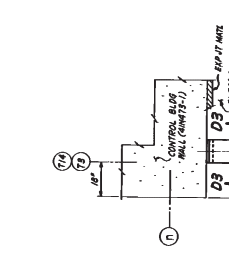


PLAN RMD-9



PLAN RMD-3 & PLAN RMD-8 OPP H

PLAN RMD-12 & PLAN RMD-13 OPP H



DEF L3 CALIBRATION DEVICE

COMPANION DRAWINGS: 10N203-1 & 2

PLAN RMD-12 & PLAN RMD-13 OPP H

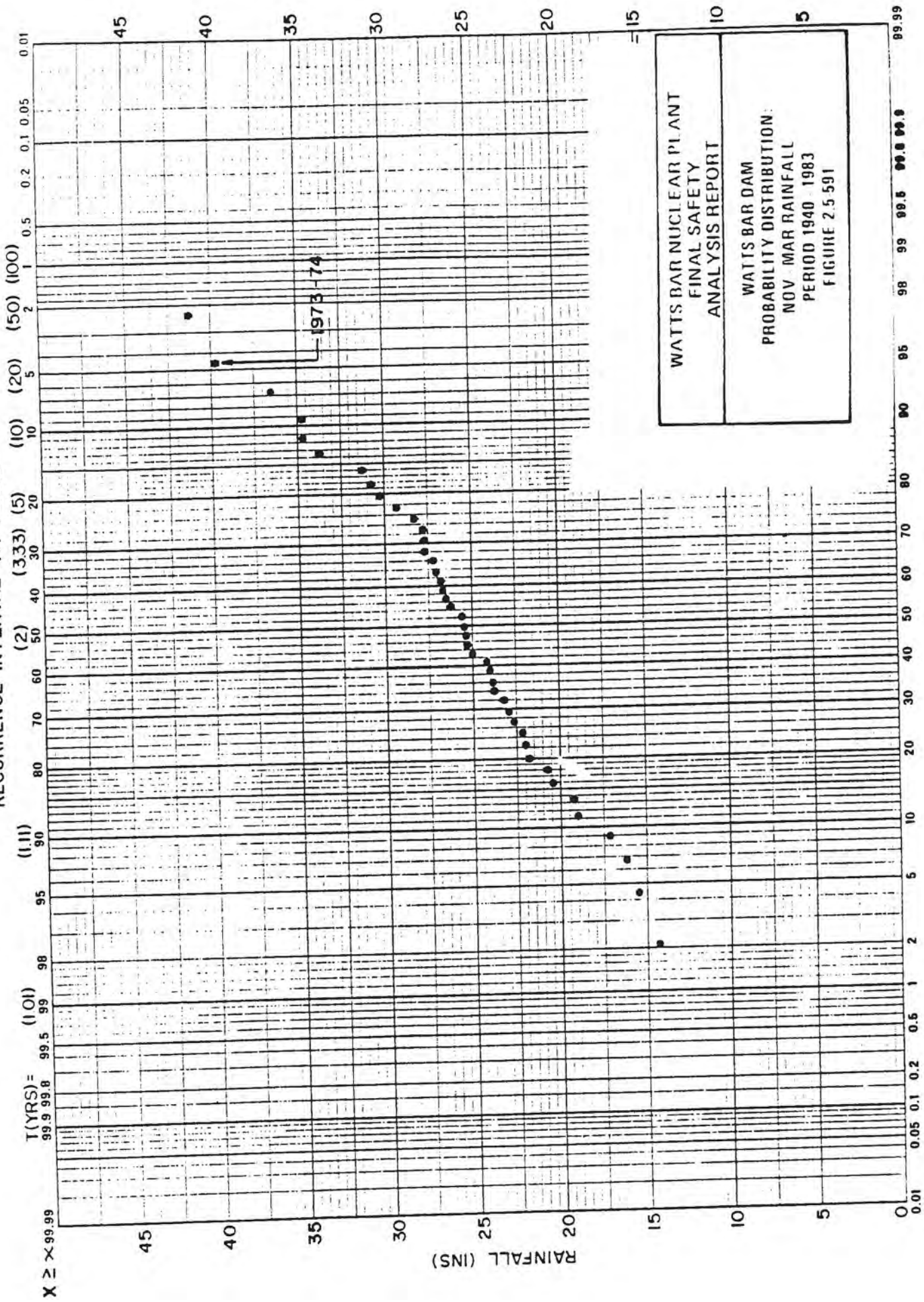
WATTS BAR
FINAL SAFETY
ANALYSIS REPORT

GENERAL

LOCATION OF RELATIVE
MOVEMENT DETECTORS

TVA DWG. NO. 10N203-3 RD
FIGURE 2.5-590

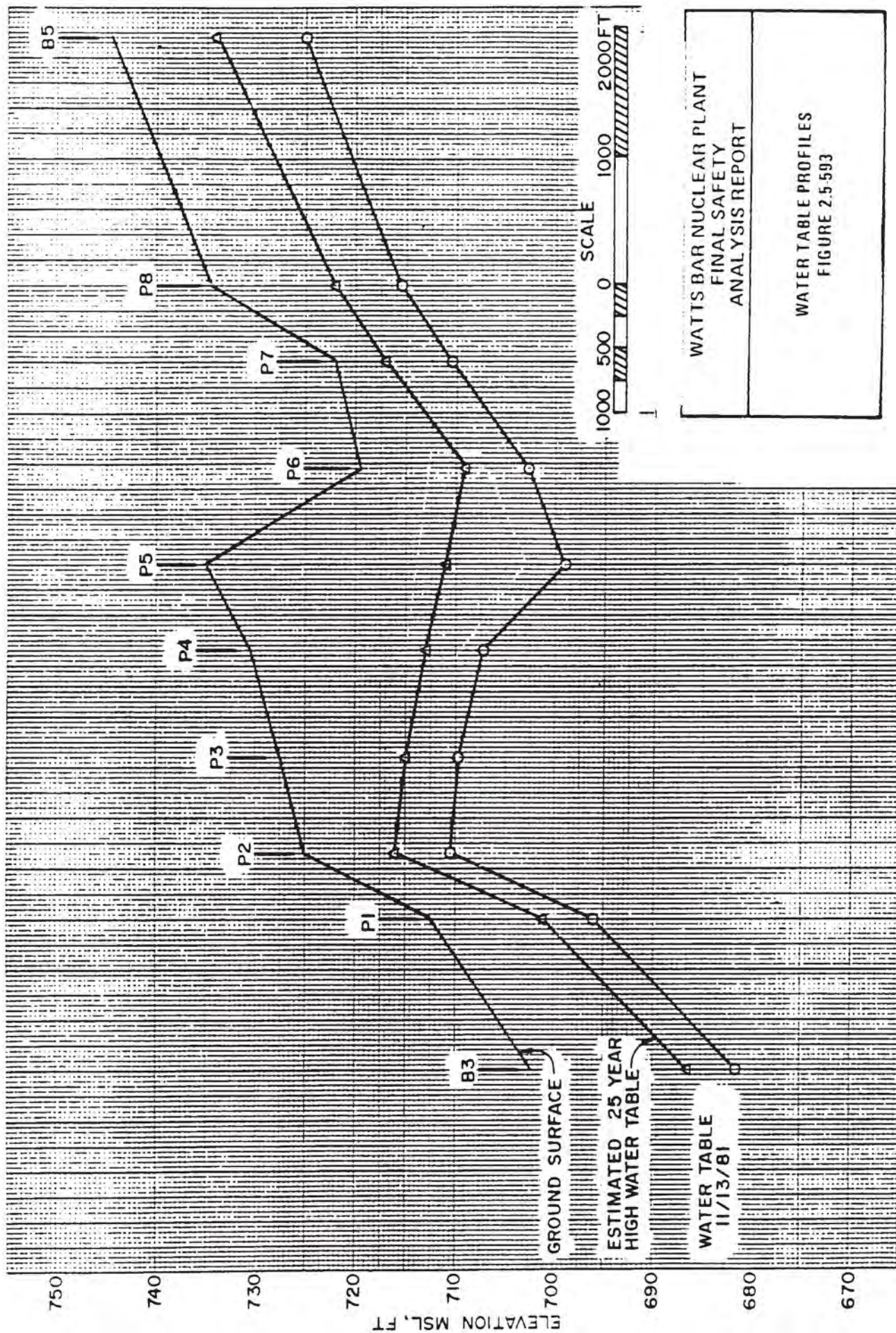
RECURRENCE INTERVAL (T) YEARS



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

WATTS BAR DAM
PROBABILITY DISTRIBUTION:
NOV MAR RAINFALL
PERIOD 1940 - 1983
FIGURE 2.5.591

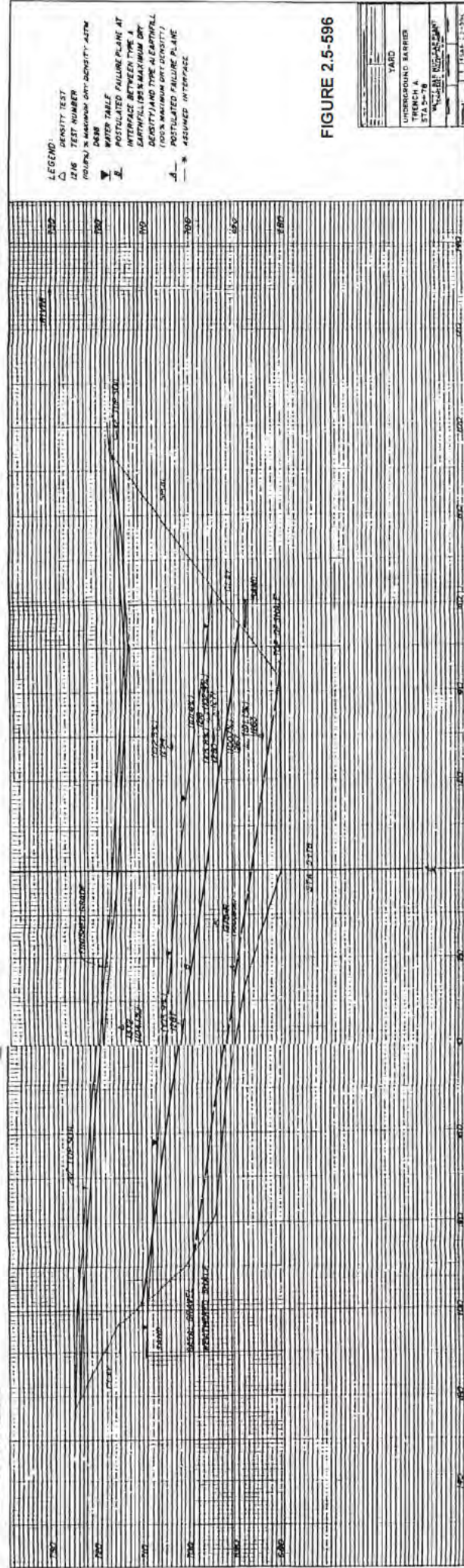
SECURITY-RELATED INFORMATION, WITHHELD UNDER 10CFR2.390
FIGURE 2.5-592



WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

WATER TABLE PROFILES
FIGURE 2.5-593

"HISTORICAL INFORMATION"

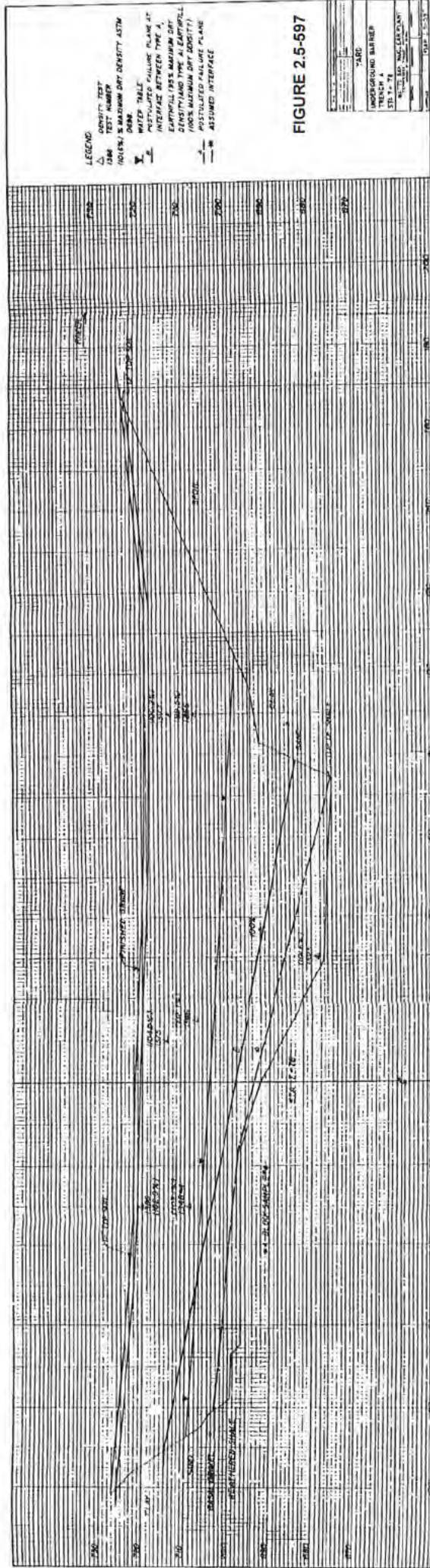


LEGEND:
 △ DENSITY TEST
 □ TEST NUMBER
 POINTS MAXIMUM DRY DENSITY ASTM
 WATER TABLE
 POSTULATED FAILURE PLANE AT
 INTERFACIAL BETWEEN TYPE A
 EARTHFILL (95% MAXIMUM DRY
 DENSITY) AND TYPE A EARTHFILL
 (100% MAXIMUM DRY DENSITY)
 POSTULATED FAILURE PLANE
 * ASSUMED INTERFACIAL

FIGURE 2.5-596

STATION	100+00
YARD	
UNDERGROUND BARRIER	
TRENCH A	
STATION	100+00
UNDERGROUND BARRIER	
TRENCH A	
STATION	100+00

"HISTORICAL INFORMATION"



"HISTORICAL INFORMATION"

WBNP-BBN NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SUMMARY OF EARTHFILL
TEST DATA - DENSITY
FIGURE 2.5-598

SP-2.01 *SW*
DATE: *R4 11-5-83*

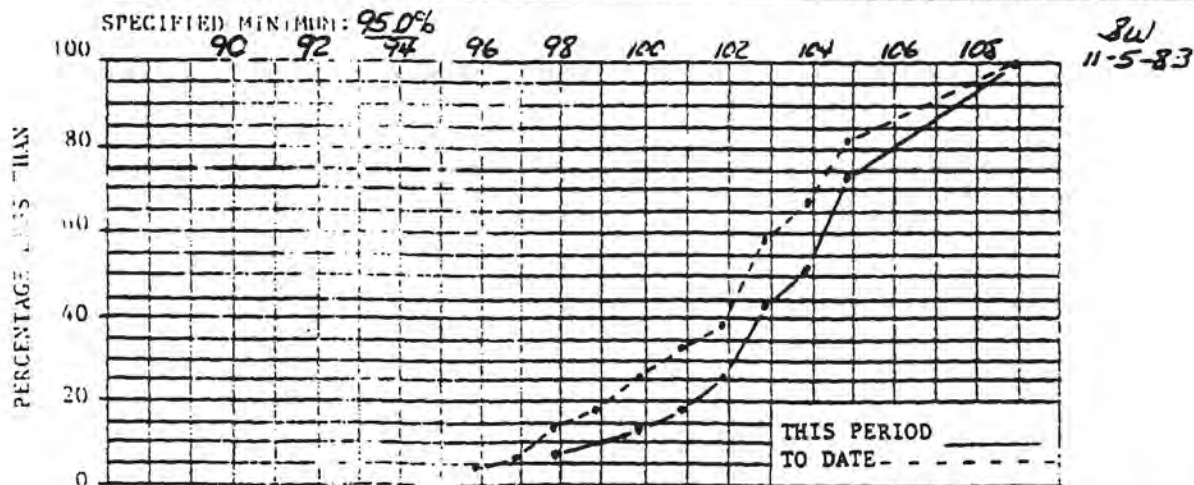
2 of 2

FEATURE: UNDERGROUND BARRIER - TRENCH A - 95% γ_{DMAX} 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 CON	PREV CUM %	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				3	3	4.5
96.0	96.9	4				1	4	6.0
97.0	97.9	8	11	2	7.4	6	10	14.9
98.0	98.9	10				2	12	17.9
99.0	99.9	13	11	2	14.8	5	17	25.4
100.0	100.9	14	1	1	18.5	2	19	28.4
101.0	101.9	19	11	2	25.9	7	26	38.8
102.0	102.9	27	11	5	44.4	13	39	58.2
103.0	103.9	31	11	2	51.9	6	45	67.2
104.0	104.9	35	11-1	6	74.1	10	55	82.1
105.0	108.9	40	11-11	7	100.0	12	67	100.0
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/CHIEF/VALUED IN ACCORDANCE WITH REV 4 OF WBNP-QCP-2.01. *SW*

W. Scott Woodlee 11-5-83

HISTORICAL

WATTS BAR NUCLEAR PLANT FINAL SAFETY ANALYSIS REPORT

SUMMARY OF EARTHFILL TEST DATA - MOISTURE CONTENT FIGURE 2.5-599

WNP-QCP-2.01 ~~13~~ *8W*
Attachment ~~6~~ *14* 11-5-83
DP

Sheet 2 of 2

SUM

FEATURE: UNDERGROUND BARRIER - TRENCH A - 95% σ_{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

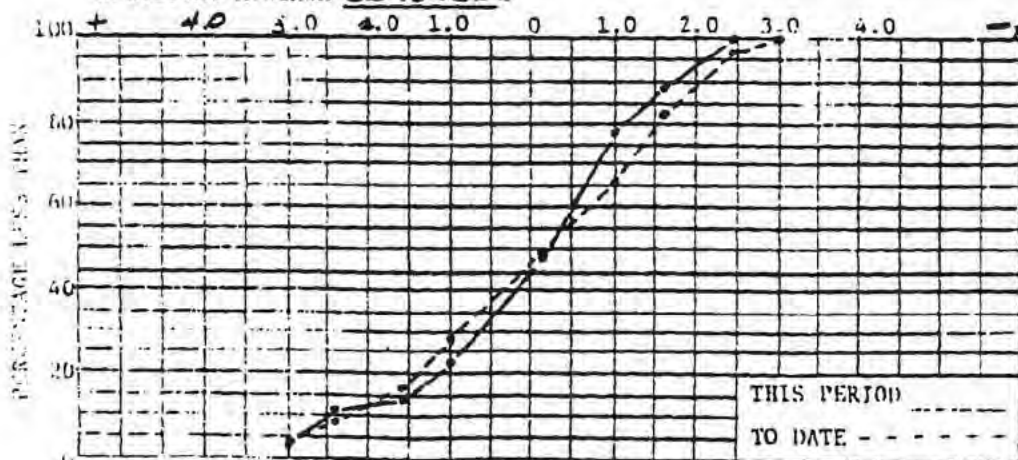
$(W_F - W_0), \text{ PERCENT}$

	PLOT	W _F ABOVE OPT	W _F BELOW OPT	PLOT	PLOT THIS COL	PREV CUM F	THIS PERIOD				TO DATE		
							FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %
		+4.6			5.2								
		3.9			4.5								
		3.1			3.8								
		2.5			3.0	2	I	1	1	3.7	3	3	4.5
		1.8			2.4	3	II	2	3	11.1	3	6	9.0
		1.1			1.7	7	I	1	4	14.8	5	11	16.4
		0.4			1.0	13	II	2	6	22.2	8	19	28.4
		+0.3			-0.3	20	III-I	7	13	48.1	14	33	49.3
		0.4			1.0	23	III-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 WNP-QCP-2.01. *8W*

W. Scott Woodlee

11-5-83

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SUMMARY OF EARTHFILL
TEST DATA - DENSITY
FIGURE 2.5-600

BNP-QCP-2.01 *SW*
Attachment F *11-5-83*
OP

Sheet 4 of 4

FEATURE: UNDERGROUND BARRIER - TRENCH A - 100% γ_{max} Fill
DATE: 9-30-83 TO: 10-9-83 TEST NO.: 1347 TO: 1364
PART: I SECTION: 52A (A1) PREPARED BY: W.S. WOODLEE

PERCENT COMPACTION: ($\gamma_{df} - \gamma_{dl}$) X 100

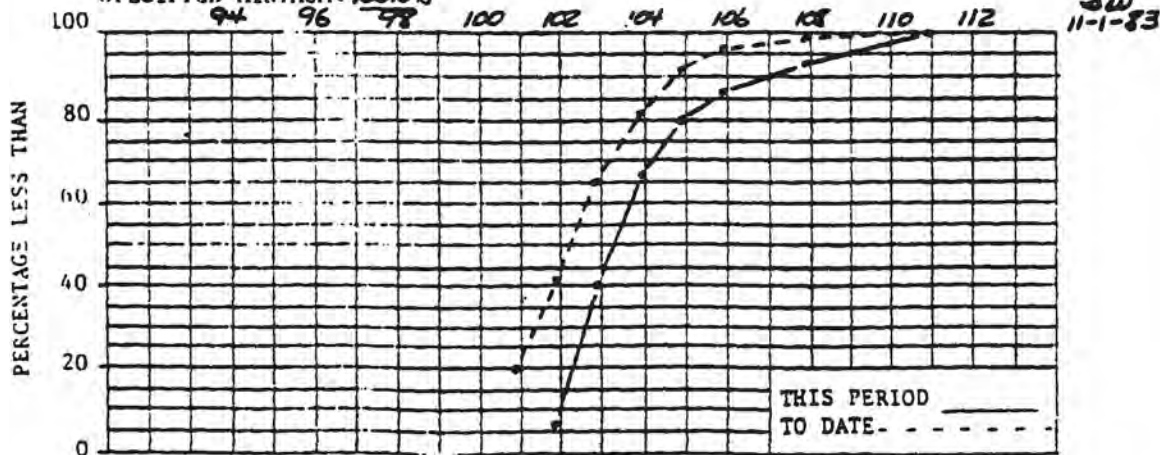
	PLOT THIS COL.	PREV CUM F	THIS PERIOD				TO DATE		
			FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %
95.0	95.9								
96.0	96.9								
97.0	97.9								
98.0	98.9								
99.0	99.9								
100.0	100.9	16					16	20.0	
101.0	101.9	32	I	1	1	6.7	17	33	41.3
102.0	102.9	46	III	5	6	40.0	19	52	65.0
103.0	103.9	55	III	4	10	66.7	13	65	81.3
104.0	104.9	61	II	2	12	80.0	8	73	91.3
105.0	105.9	64	I	1	13	86.7	4	77	96.3
106.0	106.9								
107.0	107.9	65	I	1	14	93.3	2	79	98.8
108.0	108.9								
109.0	110.9		I	1	15	100.0	1	80	100.0
TOTALS		65	--	--	15	--	--	80	--

PERCENT COMPACTION: $(\gamma_{df} - \gamma_{dL}) \times 100$

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

SPECIFIED MINIMUM: 100.0%



REMARKS: THIS IS THE FINAL ANALYSIS FOR TYPE A1 FILL COMPACTION. SW
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH REV 4 OF WBNP-QCP-2.01.

W. Scott Woodlee 11-5-83
INSPECTOR Date

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SUMMARY OF EARTHFILL
TEST DATA - MOISTURE CONTENT
FIGURE 2.5-601

WBNF-QCP-2.01 → 3W
Attachment 4 R4 11-5-83
LDP

Sheet 4 of 4

FEATURE: UNDERGROUND BARRIER - TRENCH A-100% γ_{max} FILL
DATE: 9-30-83 TO: 10-9-83 TEST NO.: 1347 TO: 1364
PART: I SECTION: 52A (A1) PREPARED BY: W.S. WOODLEE

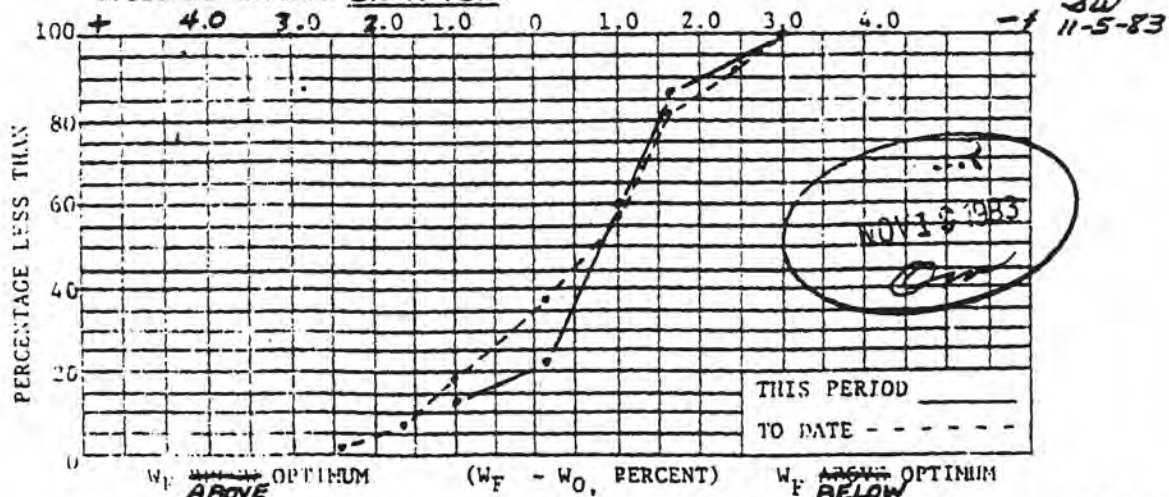
$(W_F - W_0)$, PERCENT

	PLOT THIS CUM	PREV CUM F	THIS PERIOD				TO DATE			
			FREQUENCY (F)	F	CUM F	CUM %	F	CUM F	CUM %	
W _F ABOVE OPT	+4.6	5.2								
	3.9	4.5								
	3.1	3.8								
	2.5	3.0								
	1.8	2.4	1				1	1	1.3	
	1.1	1.7	6				5	6	7.5	
PLOT	0.4	1.0	13	II	2	2	13.3	9	15	18.8
	+0.3	-0.3	25	II	2	4	26.7	14	29	36.3
	0.4	1.0	38	III	5	9	60.0	18	47	58.8
	1.1	1.7	52	III	4	13	86.7	18	65	81.3
	1.8	2.4	61				9	74	92.5	
	2.5	3.0	65	II	2	15	100.0	6	80	100.0
W _F BELOW OPT	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 FILL MOISTURE CONTENT, W_F , %	19.7	19.9	19.7
AVG OPTIMUM MOISTURE CONTENT, W_O , %	20.4	20.8	20.5
MEAN VARIATION ($W_F - W_O$), %	-0.7	-0.9	-0.8

SPECIFIED MINIMUM -3.0 to +3.0%

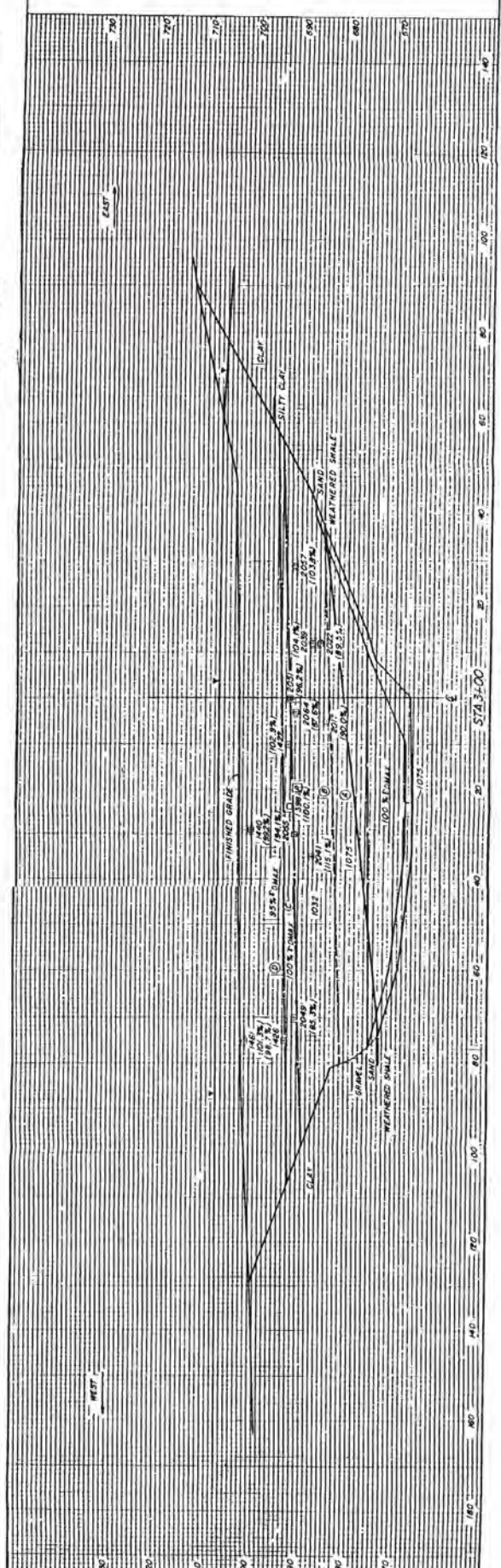


REMARKS: THIS IS THE FINAL ANALYSIS FOR TYPE A1 FILL COMPACTION. 3W
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R 4 OF WBNF-QCP-2.01.

11 Scott Woodlee 11-5-83

LEGEND
 DENSITY TEST
 100% HUMIDITY
 100% WET
 100% DRY
 100% SATURATED
 100% AIR DRY
 100% WATER
 100% VACUUM
 100% SATURATED
 100% AIR DRY
 100% WATER
 100% VACUUM

DATE	11/11/54
BY	J. H. B.
PROJECT	UNION PACIFIC RAILROAD
SECTION	11/11/54
STATION	11/11/54
SCALE	11/11/54



"HISTORICAL INFORMATION"

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

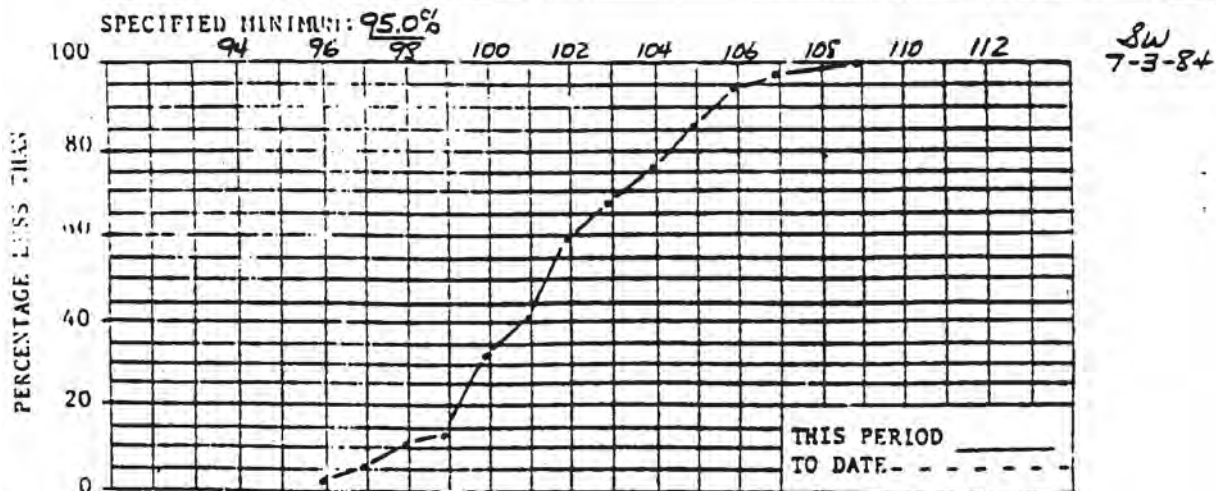
Sheet 1 of 1

FEATURE: UNDERGROUND BARRIER - TRENCH B-95% γ_{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

PERCENT COMPACTION ($\gamma_{\text{df}} - \gamma_{\text{dl}}$) X 100	PLOT THIS COL	PREV CIM F	THIS PERIOD				TO DATE		
			FREQUENCY (F)	F	QM	QM	F	QM	QM
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 $\gamma_{\text{df}} - \gamma_{\text{dl}}$, 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.

W. Scott Woodlee

INSPECTOR

7-3-84
Date

FINAL SAFETY ANALYSIS REPORT

SUMMARY OF EARTHFILL TEST DATA - MOISTURE CONTENT FIGURE 2.5-607

WP-QCP-2.01 R6
Attachment C

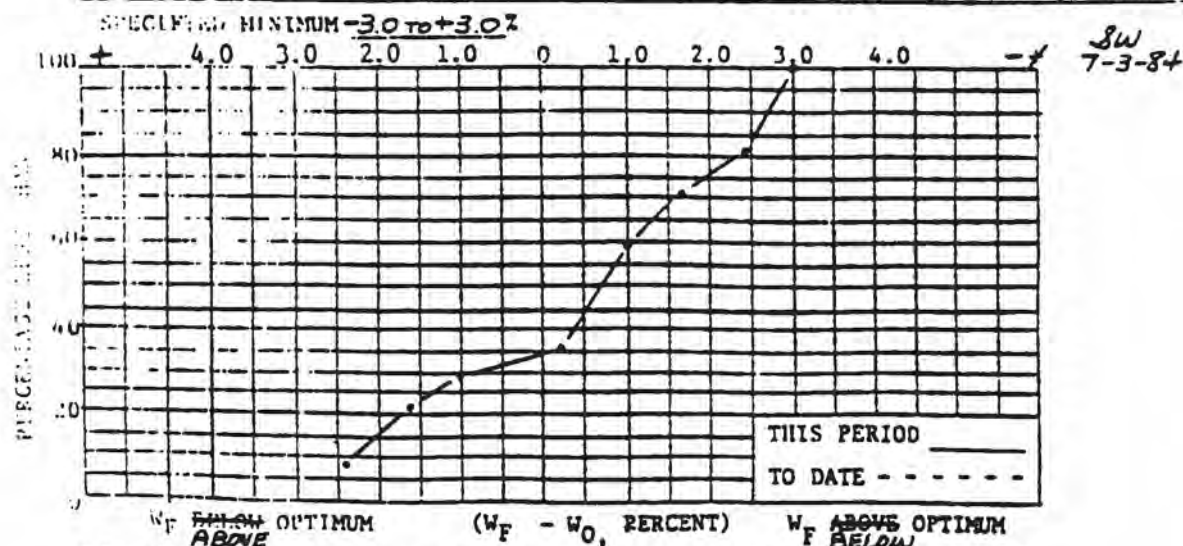
Sheet 1 of 1

FEATURE: UNDERGROUND BARRIER - TRENCH B - 95% δ_{max} FILL
DATE: 11-2-83 TO: 6-28-84 TEST NO.: 1397 TO: 1475
PART: I SECTION: 528 (A) PREPARED BY: W.S. WOODLEE

	PLOT THIS COL	PREV CUM F	THIS PERIOD				TO DATE		
			FREQUENCY (F)	F	CUM F	CUM F	F	CUM F	CUM F
W _F ABOVE OPT	+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	III	5	8	21.6			
	0.4	1.0	III	3	11	29.7			
	+0.3	-0.3	NA	2	13	35.1	NA	NA	NA
	0.4	1.0	III	9	22	59.5			
	1.1	1.7	III	4	26	70.3			
W _F BELOW OPT	1.8	2.4	III	4	30	81.1			
	2.5	3.0	III	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_O , %	NA	19.0	19.0
MEAN VARIATION ($W_F - W_O$), %	NA	-0.6	-0.6



REMARKS: FAILED TESTS NOT INCLUDED IN THIS ANALYSIS. SW
INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH R 6 OF WBNP-QCP-2.01

W.S. Woodlee

7-3-84

TENNESSEE VALLEY AUTHORITY
 WATTS BAR NUCLEAR PLANT
 SUMMARY OF FILL TEST DATA - DENSITY

WBNP-QCP-2.01 26
 ATTACHMENT F
 LOT

Sheet 2 of 2

FEATURE: UNDERGROUND BARRIER - TRENCH P-100% FILL - Full

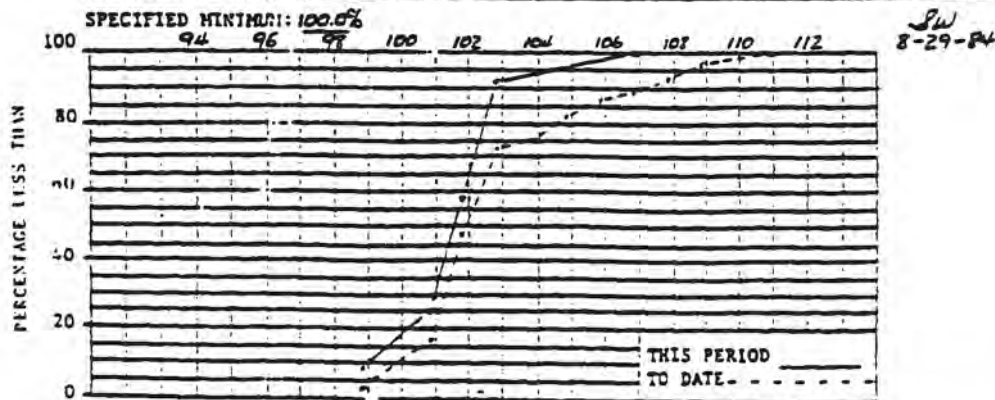
DATE: 11-25-83 TO: 5-31-84 TEST NO.: 1408 TO: 1438

PART: T SECTION: 52A (A1) PREPARED BY: L.S. WOODLEE

PLOT THIS CO.	PREV CUM F	THIS PERIOD				TO DATE		
		FREQUENCY (F)	F	CM	UP	F	CM	UP
95.0	95.9							
96.0	96.9							
97.0	97.9							
98.0	98.9		1	1	8.3	1	1	13.4
99.0	99.9							
100.0	100.9	2	2	2	25.0	4	5	17.2
101.0	101.9	7	4	7	58.3	9	14	48.3
102.0	102.9	10	4	11	91.7	7	21	72.4
103.0	103.9	11				1	22	75.9
104.0	104.9	13				2	24	82.8
105.0	105.9	14				1	25	86.2
106.0	106.9	11	1	12	100.0	1	26	89.7
107.0	107.9	15				1	27	93.1
108.0	108.9	16				1	28	96.6
109.0	109.9	17				1	29	100.0
TOTALS		17	--	12	--	--	29	--

SPECIFICATION SOURCE: DWG #10N212-2 RL

	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 SAND CONE
 INSPECTED/CHECKED/VERIFIED IN ACCORDANCE WITH REV 6 OF WBNP-QCP-2.01. TEST #1426.

L.S. Woodlee
 INSPECTOR

8-29-84
 DATE

WATTS BAR NUCLEAR PLANT
 FINAL SAFETY
 ANALYSIS REPORT

SUMMARY OF FILL TEST DATA
 DENSITY

Figure 2.5-608

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT
SUMMARY OF EARTHFILL TEST DATA - MOISTURE CONTENT Sheet 2 of 2

WMNP-OCP-2.01 R6
Attachment C
LOP

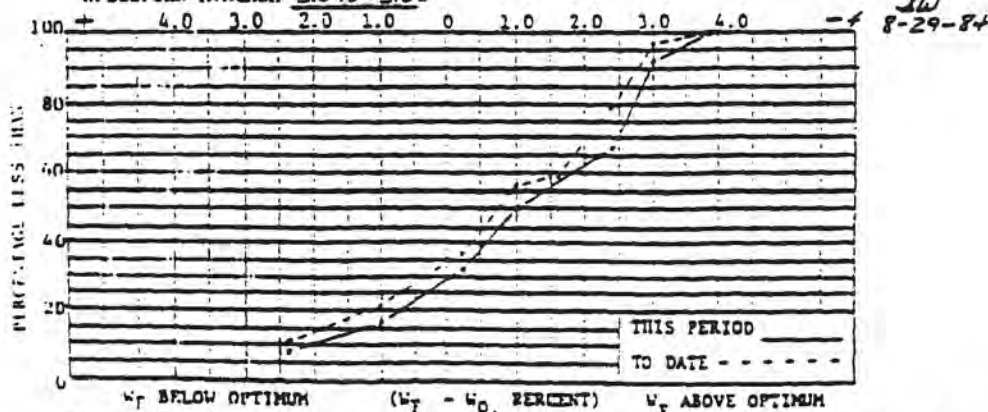
FEATURE: UNDERGROUND BARRIER - TRENCH P-100% TANK FILL
DATE: 11-25-82 TO: 5-31-84 TEST NO.: 1408 TO: 1438
PART: I SECTION: 52B (A1) PREPARED BY: W.S. WOODLEE

	PLOT THIS	PREV CUM	THIS PERIOD				TO DATE	
			FREQUENCY (%)	F	CUM	CUM	F	CUM
W _f - W _o , PERCENT	+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
W _f ABOVE OPT	1.1	1.7						
	0.4	1.0	4	1	2	16.7	3	6
	+0.3	-0.3	7	11	2	4	33.3	5
	0.4	1.0	10	11	2	6	50.0	5
	1.1	1.7	11			1	17	58.6
W _f BELOW OPT	1.8	2.4	15	11	2	9	66.7	6
	2.5	3.0	17	11	3	11	91.7	5
	3.1	3.8			1	12	100.0	1
	3.9	4.5						
	-4.6	5.2						
TOTALS	NA	17	--	--	12	--	--	29

SPECIFICATION SOURCE: DWE #10N212-2 R4

	PREV	THIS PERIOD	TO DATE
AVG FILL MOISTURE CONTENT, % :	20.2	18.7	19.6
AVG OPTIMUM MOISTURE CONTENT, % :	21.1	20.2	20.7
MEAN VARIATION (%F - %O) :	-0.9	-1.5	-1.1

SPECIFIED MINIMUM -3.0 TO +3.0



REMARK: ANALYSIS ISSUED TO REFLECT CHANGE DUE TO MISTAKE ON SAND CONE INSPECTION/CHECKED/VERIFIED IN ACCORDANCE WITH R. 6 OF WMNP-OCP-2.01. TEST #1426.

W. Scott Woodlee

8-29-84

NCR#5604

WATTS BAR NUCLEAR PLANT
FINAL SAFETY
ANALYSIS REPORT

SUMMARY OF EARTHILL TEST DATA
MOISTURE CONTENT

Figure 2.5-609

**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

Summary of

*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, %

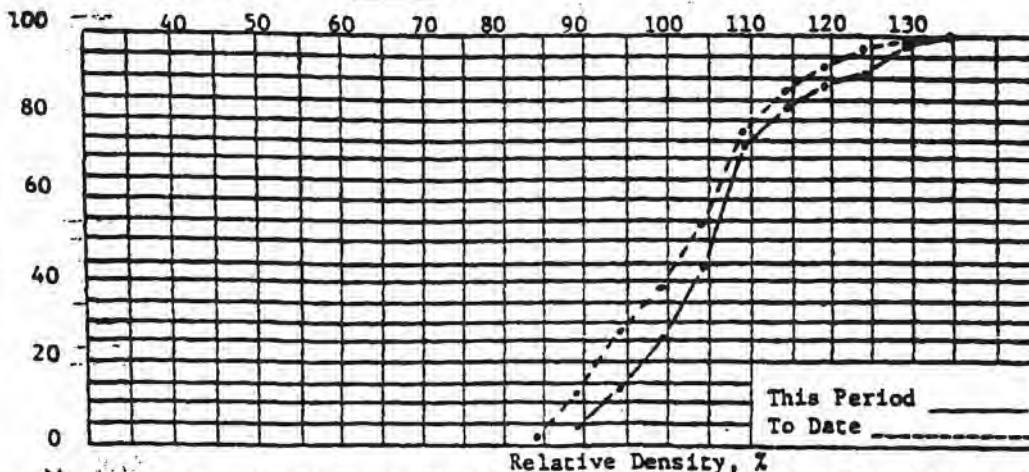
PLOT THIS COLUMN	PREV. CUM. F	THIS PERIOD				TO DATE		
		FREQUENCY (F)	F	CUM F	CUM Z	F	CUM F	CUM Z
60.0	64.9							
65.0	69.9							
70.0	74.9							
75.0	79.9							
80.0	84.9	2				2	2	2.7
85.0	89.9	7	II	2	4.7	7	9	12.3
90.0	94.9	14	IIII	4	14.0	11	20	27.4
95.0	99.9	17	IIII	5	25.6	8	28	38.4
100.0	104.9	21	IIII-III	8	44.2	12	40	54.8
105.0	109.9	24	IIII-IIII-III	13	74.4	16	56	76.7
110.0	114.9	27	IIII	4	83.7	7	63	86.3
115.0	119.9	30	II	2	88.4	5	68	93.2
120.0	124.9		III	3	95.3	3	71	97.3
125.0	129.9		I	1	97.7	1	72	98.6
130.0	134.9		I	1	100.0	1	73	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. 90 95 98 100 102 104 106 108 110 112 114 116 118 120 122 124 126 128 130

PERCENTAGE LESS THAN



*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