

J. Wanzek Handout
8/29/80

MIDLAND PROJECT

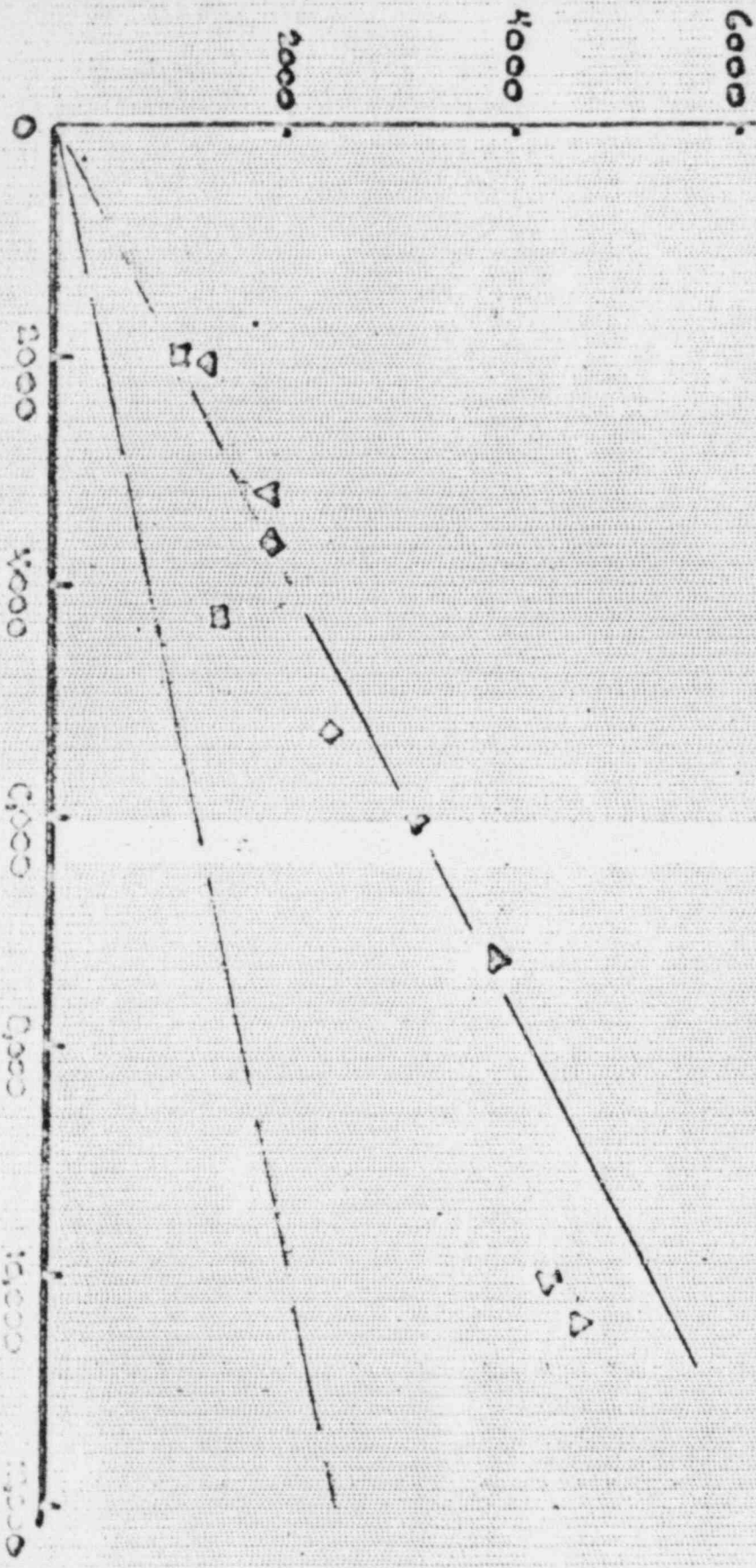
Observed Settlements (Inches)
of Structures

September 79 to Present

1. Diesel Gen. Bldg. (.0625")
2. Aux. Bldg. Elect.
Penetration Rooms (0.0625" (Approx. 0.02" Dewatering))
3. Feedwater Iso. Pits (0.080")
4. Service Water Structure (0.120")
5. Serv. Water Struct. Wing Wall (0.010")
6. Diesel Fuel Oil Stor. Tanks (0.010")
- *7. Condensate Stor. Tank (1.625" During Lead Test)
(0.06" Last 30 Days)
- *8. Circ. Water Wing Walls (0.040")
- *9. Cooling Pond Dike (3 Points 1.875". - Since 6/6/78 0.030")

*Non-Category 1

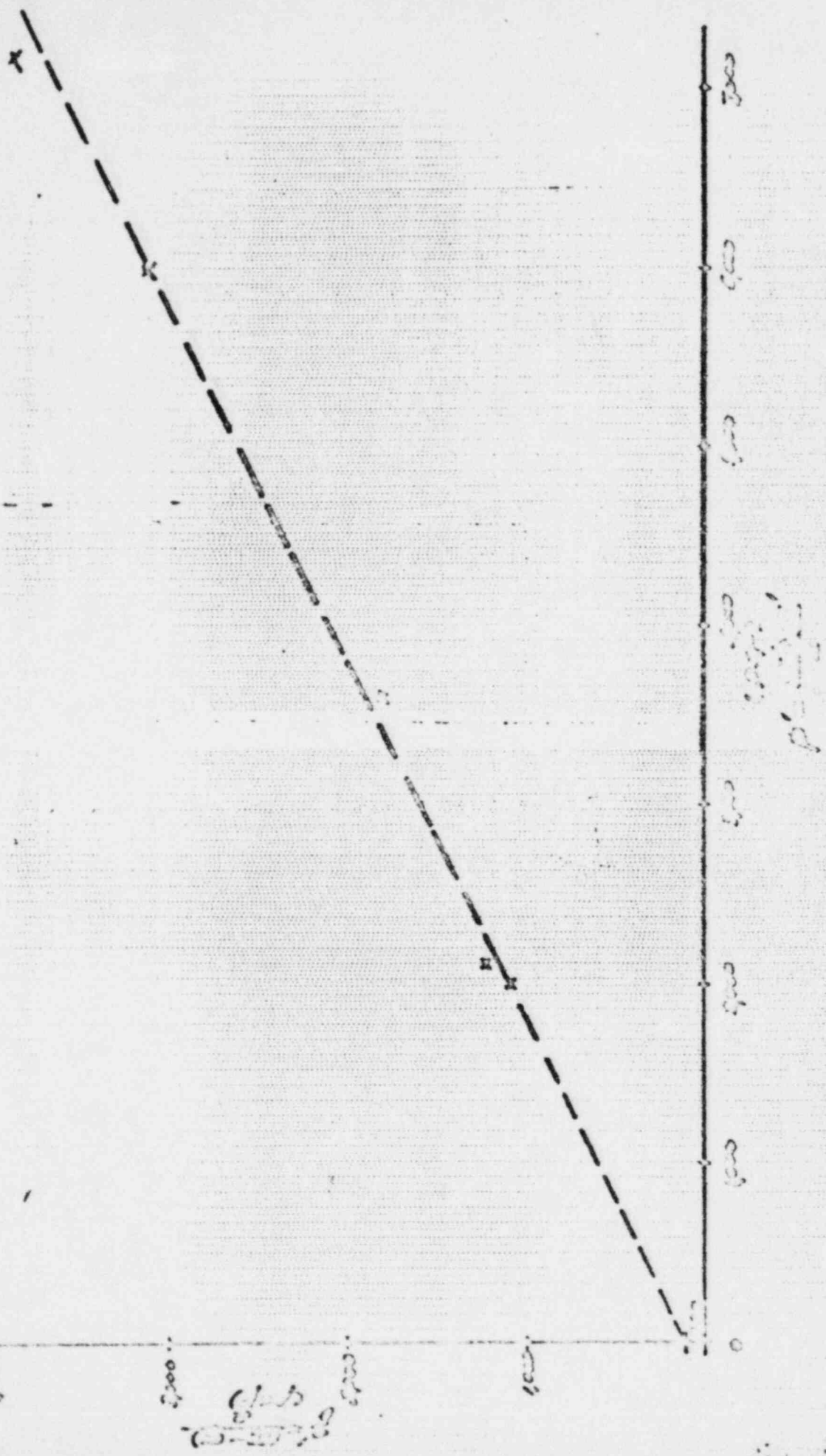
A. Henson Handout
 8/29/80
 $\frac{C_1(C_2 - C_3)}{C_2}$
 (PSF)



Normal Basis Represent
 for all bases.
 Open Basis Represent
 for all bases.

Open Basis

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SUMMARY OF SOIL PROPERTIES

TO DETERMINE $p' - q'$ RELATIONSHIP

Sample No.	γ_d (pcf)	w_s	$p' = \frac{\bar{\sigma}_1 + \bar{\sigma}_2}{2}$ (psf)	$q' = \frac{\bar{\sigma}_1 + \bar{\sigma}_3}{2}$ (psf)
T9 - 8 - 213	117.9	14.4	2000	1100
T15 - 3 - 222	118.6	14.2	7200	3250
T16 - 5 - 225	114.4	16.9	7100	1725
TR2 - U2 - 140	114.6	14.6	2600	1800
TR5 - 2 - 147	117.9	14.1	6000	3100

Boring No. Test Series No.

T9 - 8 - 213

Sample No.

BEARING CAPACITY (D/G bldg.)

B. BASED ON FIVE SAMPLES WITH LOWER DENSITIES

$$\bar{\phi} = 29^\circ$$

$$\bar{c} = 114 \text{ psf}$$

$$N_c = 27 \quad N_q = 16 \quad N_\gamma = 15$$

$$q_d = (114)(27) + (125)(6)(16) + 1/2(125)(10)(15)$$

$$= 3,078 + 12,000 + 9,375$$

$$= 24,453 \text{ psf}$$

$$(q_d)_{\text{net}} = 23,703 \text{ psf}$$

$$F.S. = \frac{23,703}{3,400} = 6.97$$

IF WE NEGLECT \bar{c} , ASSUME = 0

$$q_d = (125)(6)(16) + 1/2(125)(10)(15)$$

$$= 12,000 + 9,375$$

$$= 21,375 \text{ psf}$$

$$(q_d)_{\text{net}} = 20,625 \text{ psf}$$

$$F.S. = \frac{20,625}{3,400} = 6.07$$

BEARING CAPACITY (D/G Bldg.)

A. BASED ON ALL CIU TESTS

$$\bar{\phi} = 29^{\circ}$$

$$\bar{c} = 260 \text{ psf}$$

a). Use T & P

$$N_c = 27 \quad N_q = 16 \quad N_{\gamma} = 15$$

$$\begin{aligned} q_d &= (260)(27) + (125)(6)(16) + 1/2(125)(10)(15) \\ &= 7,020 + 12,000 + 9,375 \\ &= 28,395 \text{ psf} \end{aligned}$$

$$(q_d)_{\text{net}} = 27,645$$

$$\text{F.S.} = \frac{27,645}{3,400} = 8.13$$

b). Use Vesic

$$i_c = 27.9 \quad N_q = 16.4 \quad N_{\gamma} = 19$$

$$\begin{aligned} q_d &= (260)(27.9) + (125)(6)(16.4) + 1/2(125)(10)(19) \\ &= 7,254 + 12,300 + 11,875 = 31,429 \text{ psf} \end{aligned}$$

$$(q_d)_{\text{net}} = 30,679 \text{ psf}$$

$$\text{F.S.} = \frac{30,679}{3,400} = 9.02$$

SUMMARY OF SOILS INFORMATION

- 9/7/78 VERBAL REPORT TO REGION 3
- 9/29/78 ISSUED 50.55(E) REPORT
- 11/1/78 KEPPLER MEMO TO THORNBURG ASKING STAFF TO TAKE OVER RESPONSIBILITY
- 12/21/78 50.55(E) NOTIFICATION THAT PRELOAD IS CORRECTIVE ACTION WE ARE GOING TO IMPLEMENT
- 3/21/79 RECEIVED FIRST SET OF 50.54(F) QUESTIONS 1 THROUGH 22.
- 4/24/79 STARTED RESPONDING TO 50.54(F) QUESTIONS 1 THROUGH 22
- 7/18/79 MET WITH NRC STAFF IN WASHINGTON ON RESULTS OF PRELOAD PROGRAM, SITE INVESTIGATION, PROPOSED FIXES INCLUDING CAISSONS, UNDERPINNING AND DEWATERING

SUMMARY OF SOJLS INFORMATION (CONID)

- 9/5/79 MET WITH STAFF ON QA QUESTION 23
50.54(F)
- 10/16/79 NRC STATED THAT CORPS OF ENGINEERS
IS TO HELP STAFF ON GEOTECH REVIEWS
- 11/13/79 SUBMITTED ANSWER TO 50.54(F) QUESTION
23 AND COMPLETE RESPONSE TO ALL OTHER
50.54(F) QUESTIONS EXCEPT FOR QUESTIONS
4 AND 14 WHICH WERE COMMITTED TO BE
COMPLETED IN DECEMBER 1979.
- 11/14/79 CORPS OF ENGINEERS VISITS SITE
- 11/19/79 RECEIVED 50.54(F) SUPPLEMENTAL
QUESTIONS 24 - 35
- 12/6/79 PREAWARD MEETING ON UNDERPINNING
- 12/6/79 NRC ISSUES ORDER MODIFYING
CONSTRUCTION PERMIT.

SUMMARY OF SOILS INFORMATION (CONTD)

- 12/26/79 CPCO REQUESTS HEARING
- 1/16/80 MET WITH NRC STAFF AND CORPS OF ENGINEERS IN WASHINGTON ON 50.54(F) QUESTIONS AND RESULTS OF PRELOAD PROGRAM, SITE INVESTIGATION, PROPOSED FIXES INCLUDING CAISSONS, UNDERPINNING AND DEWATERING
- 2/26/80 REQUEST FROM NRC THAT NAVY WEAPONS CENTER RECEIVE ALL DOCUMENTS ON SOILS ISSUES
- 2/27-28/80 MEETING WITH NRC STAFF AND THEIR CONSULTANTS ON SITE FOR SITE TOUR AND TO DISCUSS PRELOAD PROGRAM, SITE INVESTIGATION AND PROPOSED FIXES INCLUDING CAISSONS, UNDERPINNING AND DEWATERING.
- 2/28/80 STARTED SUBMITTING ANSWERS TO QUESTIONS 24 AND 37

SUMMARY OF SOILS INFORMATION (CONTD)

- 2/29/80 NRC MEMO THAT ETECH WOULD BE NRC CONSULTANT ON MECHANICAL ENGINEERING ASPECTS OF SOILS ISSUES
- 4/1/80 NRC REQUESTED ADDITIONAL REPORTS, DRAWINGS AND OTHER INFORMATION. THIS WAS PROVIDED IN MAY 1980
- 6/30/80 SCHWENCER MEMO TO JWCOOK REQUESTING ADDITIONAL INFORMATION (QUESTIONS 36, 37 AND 38). QUESTION 37 ASKED FOR ADDITIONAL EXPLORATION, SAMPLING AND LAB TESTING
- 7/31/80 MET WITH STAFF AND CORPS OF ENGINEERS TO DISCUSS ADEQUACY OF OUR PROGRAM ON CORRECTIVE ACTION.
- 8/4/80 SCHWENCER MEMO TO JWCOOK ATTACHING MARKED UP LETTER REPORT DATED 7/7/80 WITH QUESTIONS 39 - 48 FROM CORPS OF ENGINEERS