14400

Hole No. 6ST-170

DRILLING LOG	DIVISION Southwestern	INSTALLATION Galv Dist, Eng Div	SHEET OF SHEETS

1. PROJECT White Oak Bayou	10. SIZE AND TYPE OF BIT
2. LOCATION *(Coordinates or Station)*	11. DATUM FOR ELEVATION SHOWN *(TBM or MSL)*
3. DRILLING AGENCY Dept of the Army, GD, Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL
4. HOLE NO. *(As shown on drawing title and file number)* 6ST-170	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN — DISTURBED: 12 Jars; UNDISTURBED: 16 Cont
5. NAME OF DRILLER Eck	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
	16. DATE HOLE — STARTED: 19 Oct; COMPLETED: 20 Oct 1966
7. THICKNESS OF OVERBURDEN	17. ELEVATION TOP OF HOLE
8. DEPTH DRILLED INTO ROCK	18. TOTAL CORE RECOVERY FOR BORING %
9. TOTAL DEPTH OF HOLE 56.0	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS *(Description)* d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS *(Drilling time, water loss, depth of weathering, etc., if significant)* g	
0.0	2.0		Dark gray clay w/gravel and org. mat.,v/soft,fill			Jar 1	0.0
2.0	4.0		Brown silty clay w/small gravel and shell,v/soft,fill			Jar 2	0.0
4.0	6.0		Brown clay and gravel mixed fill,v/soft			Jar 3	
6.0	8.0		Sam e as above, v/soft,fill			Jar 4	0.0
8.0	10.0		Gravel,fill			Jar 5	
10.0	12.0		Gravel,fill			Jar 6	
12.0	14.0		Same as above, fill			Jar 7	
14.0	16.0		Gray and clay,fill			Jar 8	
16.0	18.0		Gravel, fill			Jar 9	
18.0	20.0		Same as above, fill			Jar 10	
20.0	22.0		Gray clay w/cal nod, med	Unc		Cont. 1	0.75
22.0	24.0		Gray and brown clay w/cal nod, med	Unc		Cont. 2	0.75
24.0	26.0		Gray clay w/nod and org. mat. med			Cont. 3	0.75
26.0	28.0		Gray and brown clay w/wood v/stiff			Cont. 4	2.00
28.0	30.0		Dark gray clayey sandy silt stiff			Cont. 5	1.50
30.0	32.0		Brown and gray clay and silty sand, v/stiff			Cont. 6	3.50
32.0	34.0		Brown clayey sand, v/stiff			Con t. 7	2.75
34.0	36.0		Same as above, v/stiff			Cont. 8	3.00
36.0	38.0		Gray and brown clayey sandy silt, stiff			Cont. 9	1.50
38.0	40.0		Gray clay w/layers sand v/stiff to v/soft			Cont. 10	2.50-0.00
40.0	42.0		Tan and gray clay w/nod,stiff			Cont. 11	1.75
42.0	44.0		Tan silty clay w/siltstone nod, hard			Cont. 12	4.50
44.0	46.0		Brown silty sand, stiff			Cont. 13	1.50
			continued				

Hole No. 6ST-170 (Cont'd)

DRILLING LOG

DIVISION	
INSTALLATION	
SHEET OF SHEETS	
1. PROJECT	White Oak Bayou
2. LOCATION (Coordinates or Station)	
3. DRILLING AGENCY	
4. HOLE NO. (As shown on drawing title and file number)	
5. NAME OF DRILLER	
6. DIRECTION OF HOLE	☐ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	
8. DEPTH DRILLED INTO ROCK	
9. TOTAL DEPTH OF HOLE	
10. SIZE AND TYPE OF BIT	
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
12. MANUFACTURER'S DESIGNATION OF DRILL	
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED / UNDISTURBED
14. TOTAL NUMBER CORE BOXES	
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED / COMPLETED
17. ELEVATION TOP OF HOLE	
18. TOTAL CORE RECOVERY FOR BORING	%
19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
46.0	48.0		Brown and gray silty sand w/layers and lumps tan clay v/soft			Jar 11 0.0
48.0	50.0		Tan clay w/a seam-sand,v/stiff			Cont. 14 2.75
50.0	52.0		Brown sand, stiff			Cont. 15 1.25
52.0	54.0		Tan clay 52.0-52.5 2 blows 52.5-53.0 6 blows 53.0-53.5 9 blows 53.5-54.0 Drilled			Jar 12
54.0	56.0		Tan clay, stiff BOTTOMED Water @ 21.0			Cont. 16 1.25

1 December 1966

WHITE OAK BAYOU

TEST REQUEST CE-28-67

A. Samples submitted

Borings 6ST-169 thru 6ST-171, 50 containers and 31 jars.

B. Identification tests requested

S-1	Processing and preparation	50 @ $8	$400
		31 @ $1	31
S-2	Moisture content	81 @ $1	81
S-4	Mechanical analysis, sieves only	40 @ $7	280
S-9	Liquid limit	20 @ $8	160
S-10	Plastic limit	20 @ $8	160
S-15	Unit weight	50 @ $7	350
S-20	Visual classification	81 @ $2	162

C. Special tests requested

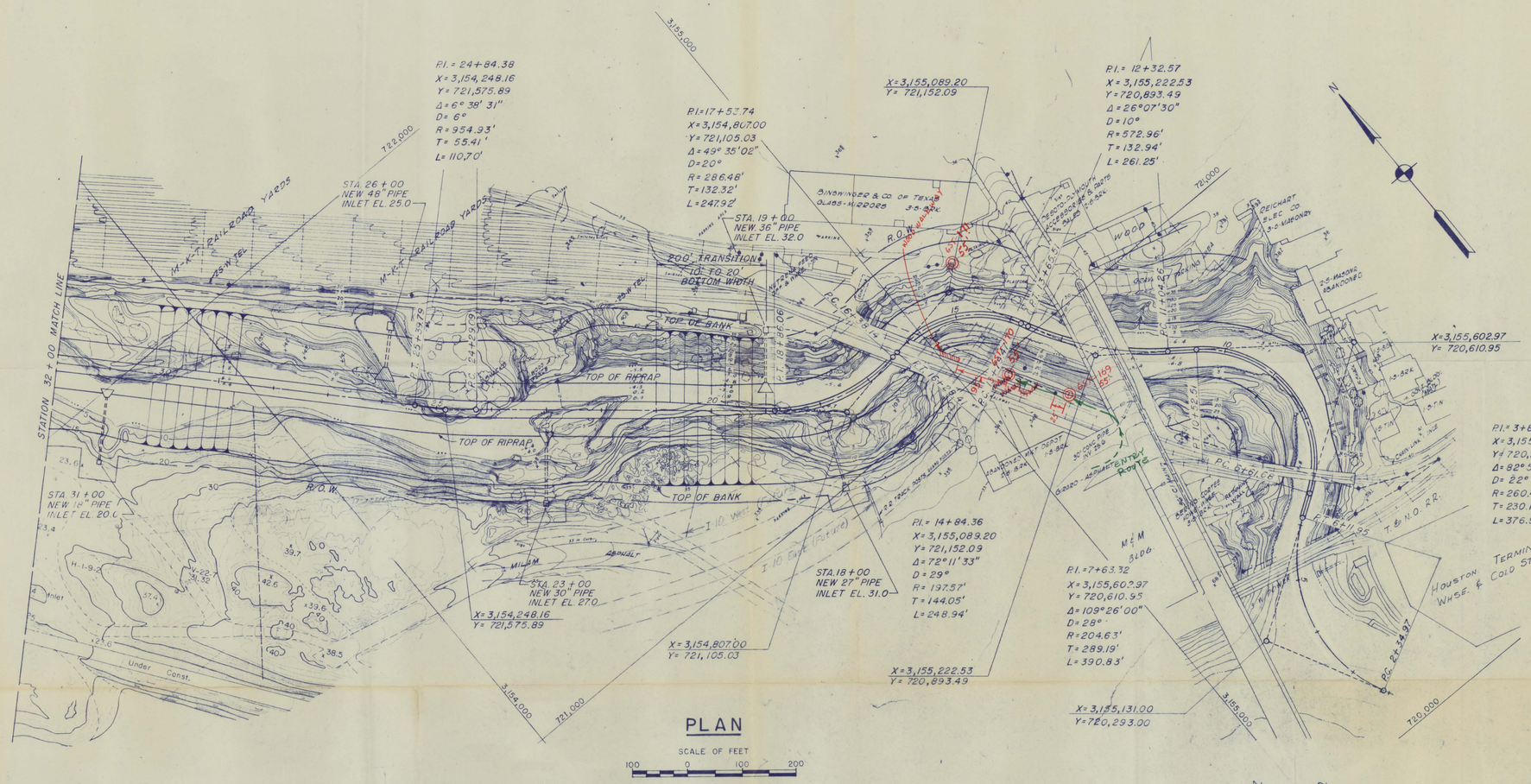
1. S-42 Direct shear (maximum lateral stress 3tons/sq ft) 3 @ $100 $300

Boring No.	Cont. No.
6ST-169	2
6ST-169	17
6ST-171	6

2. Unconfined compression 4 @ $27 $108

Boring No.	Cont. No.
6ST-169	3
6ST-169	4
6ST-170	1
6ST-170	2

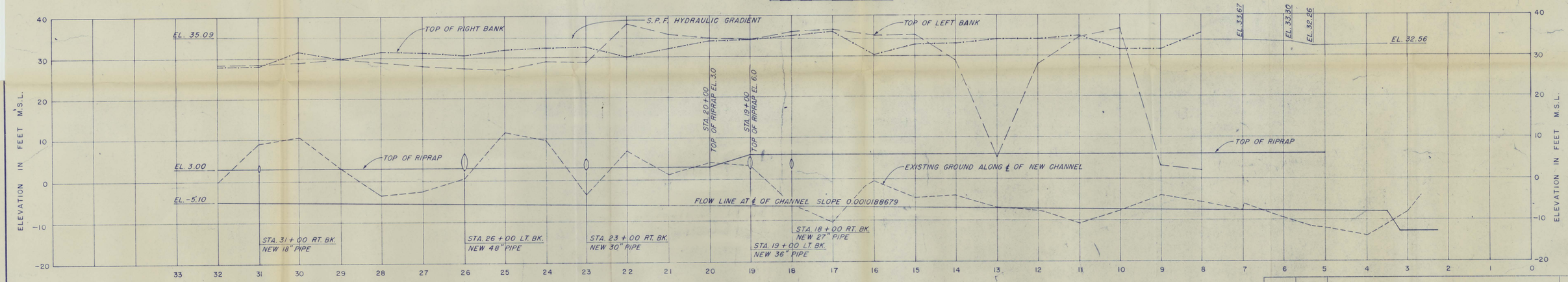
$2,032



PLAN

SCALE OF FEET

100 0 100 200



PROFILE

REVISION	DATE	BY

OFFICE OF THE DISTRICT ENGINEER
U. S. ARMY ENGINEER DISTRICT, GALVESTON
CORPS OF ENGINEERS
GALVESTON, TEXAS

DRAWN BY:
TRACED BY:
CHECKED BY:
SUBMITTED BY:
CHIEF
APPROVED:
CHIEF DESIGN BRANCH

BORING LAYOUT
BUFFALO BAYOU, TEXAS
WHITE OAK BAYOU

GALVESTON DISTRICT LABORATORY REPORT NO. 1155
SHEET 1 OF 1

APPROVED: DATE
CHIEF ENGINEERING DIVISION

SCALE: AS SHOWN
SPEC. DATE
DRAWING NUMBER
SHEET
FILE NO.

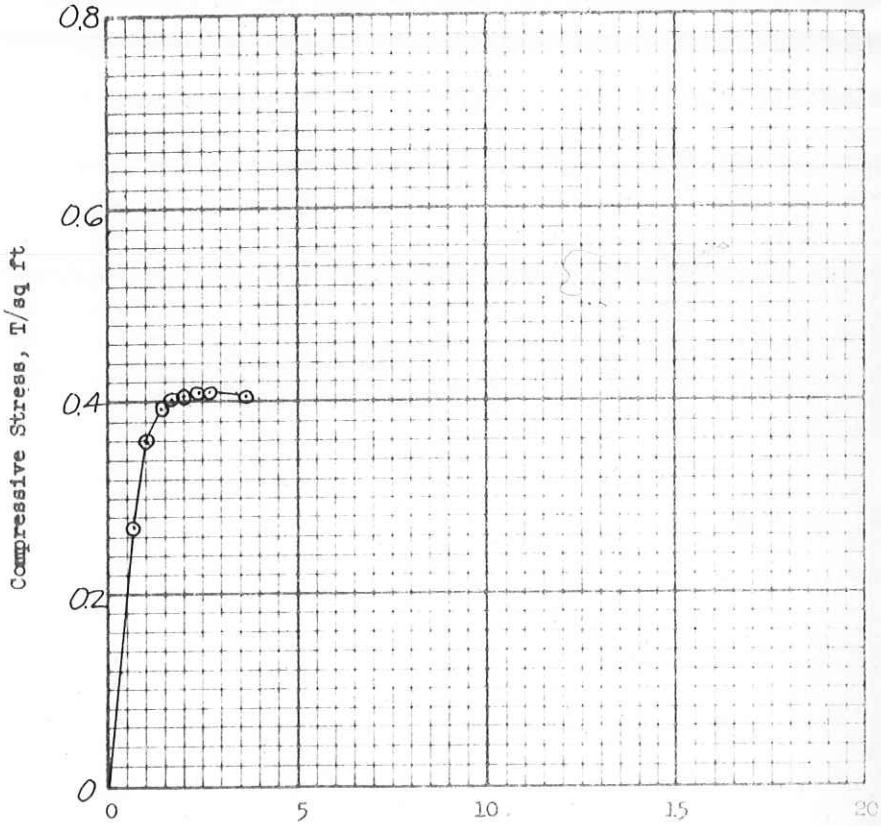
Results of Tests of Foundation Materials

Hole No.	SWD Sample No.	Depth, feet	Type of Sample	Mechanical Analysis, % Passing 1"	3/4"	1/2"	3/8"	No. 4	No. 10	No. 20	No. 40	No. 100	No. 200	Limits LL	PL	LS	Natural Conditions Water Content %	Dry Density lbs/cu.ft.	Classification
6ST-169 (Cont'd)	3353	52.0 - 53.0	Ctn								100	99	99	36	16		26.7	100	CL CLAY, red, stiff; slickensided.
	3353A	53.0 - 54.0	"														12.9	103	- SANDSTONE, red, hard.
	3354	54.0 - 56.0	"														19.9	111	CH CLAY, red, medium to stiff; 1" silty layers; sandstone fragments.
6ST-170	X-3355	0.0 - 2.0	Jar														12.9		- Mixed SAND, CLAY and GRAVEL, brown.
	3356	2.0 - 4.0	"	100	94	91	86	72	62	54	49	40	32				11.2		SC SAND, clayey, gravelly, brown; shells and rock fragments to 3/4" size.
	3357	4.0 - 6.0	"														6.4		CL CLAY, sandy, brown; gravel sizes to 3/4".
	3358	6.0 - 8.0	"	73	57	44	39	31	25	20	17	14	12	28	12		5.5		GC-GP GRAVEL, clayey, sandy, brown; 100% finer than 1-1/2 inch screen.
	3359	8.0 - 10.0	"														4.4		GC-GP GRAVEL, clayey, sandy, brown; 100% finer than 1-1/2 inch screen.
	3360	10.0 - 12.0	"		100	94	78	52	32	20	15	11	10				5.4		GC-GP GRAVEL, clayey, sandy, brown.
	3361	12.0 - 14.0	"														6.3		GC-GP GRAVEL, clayey, sandy, brown; 100% finer than 1" screen.
	3362	14.0 - 16.0	"											25	13		7.9		GC-GP GRAVEL, clayey, sandy, brown; 100% finer than 1" screen.
	3363	16.0 - 18.0	"														15.7		GC-GP GRAVEL, clayey, sandy, brown; 100% finer than 1" screen.
	3364	18.0 - 20.0	"	81	73	61	57	44	34	27	23	19	17				11.2		GC-GP GRAVEL, clayey, sandy, red, 100% finer than 1-1/2" screen.
	3365	W.T. 20.0 - 22.0	Ctn	83	83	83	81	78	76	75	74	71	64	52	15		20.6	104	CH CLAY, gravelly, light red and gray; 100% finer than 1-1/2" screen. UNCONFINED COMPRESSION TEST: PLATE 3.
	3366	22.0 - 24.0	"		100	91	86	80	76	73	71	67	59	47	14		20.1	104	CL CLAY, gravelly sandy, medium, calcareous particles SEE UNCONFINED COMPRESSION TEST: PLATE 4.
	3367	24.0 - 26.0	"														25.8	99	CH CLAY, yellowish-brown and gray, medium, calcareous particles.
	3368	26.0 - 28.0	"				100	99	99	99	99	97	88				26.0	91	CH CLAY, yellowish-brown and gray, stiff.

Results of Tests of Foundation Materials

Hole No.	SWD Sample No.	Depth, feet	Type of Sample	Mechanical Analysis, % Passing 1"	3/4"	1/2"	3/8"	No. 4	No. 10	No. 20	No. 40	No. 100	No. 200	Limits LL	PL	LS	Natural Conditions Water Content %	Dry Density lbs/cu.ft.	Classification
6ST-170 (Cont'd)	X-3369	28.0 - 30.0	Ctn														18.2	109	CL CLAY, sandy, dark gray and grayish brown, stiff; seams and pockets of sandy silt; organic material in lower 0.4'.
	3370	30.0 - 32.0	"								100	93	69	26	17		17.3	113	CL CLAY, sandy, light gray, very stiff.
	3371	32.0 - 34.0	"								100	77	44				17.0	112	SC SAND, clayey, light reddish-brown.
	3372	34.0 - 36.0	"														17.3	113	SC SAND, clayey, light reddish-brown and gray.
	3373	36.0 - 37.0	"								100	85	53				20.9	104	CL CLAY, sandy, grayish-brown.
	3373A	37.0 - 38.0	"											31	15		23.3	111	CL CLAY, sandy, light brownish-gray, stiff.
	3374	38.0 - 40.0	"														19.1	107	SM SAND, silty, light brownish-gray; 1/4" to 1/2" seams of dark gray sandy clay in lower 0.4'.
	3375	40.0 - 42.0	"		100	96	88	82	78	75	74	64	56				16.9	111	CL CLAY, sandy, light red, stiff.
	3376	42.0 - 44.0	"														15.9	109	CL CLAY, sandy, light red, hard; few hard flat sandstone particles.
	3377	44.0 - 46.0	"					100	99	99	99	96	46				18.7	111	SM SAND, silty, light reddish-brown.
	3378	46.0 - 48.0	Jar							100	99	95	48				24.4		SC SAND, clayey, light reddish-brown and dark gray.
	3379	48.0 - 50.0	Ctn											69	22		33.6	89	CH CLAY, red, stiff; 1/8" to 1/2" diagonal silty sand seam.
	3380	50.0 - 52.0	"								100	53	20				17.5	102	SM SAND, silty, light brown.
	3381	52.0 - 53.5	Jar														30.0		CH CLAY, red.
	3382	54.0 - 56.0	Ctn														39.6	81	CH CLAY, red, stiff.
6ST-171	X-3383	0.0 - 2.0	Jar														8.3		GC GRAVEL, clayey, sandy, brown; 100% finer than 1-1/2" screen.
	3384	2.0 - 4.0	"	89	79	75	71	64	57	51	46	37	27				6.4		SC SAND, clayey gravelly, reddish-brown; 100% finer than 1-1/2" screen.
	3385	4.0 - 6.0	"														4.6		SC SAND, clayey gravelly, reddish-brown; 100% finer than 1-1/2" screen.
	3386	6.0 - 8.0	"	90	86	81	74	57	43	34	25	16	13				4.7		SC SAND, clayey gravelly, reddish-brown; 100% finer than 1-1/2" screen.

Failure Sketches



☐ Controlled stress

☑ Controlled strain

Rate, 0.3 %/min

Test No.						
Type of specimen	Undisturbed					
Initial	Water content	w_o	20.6 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	104			
Time to failure, min		t_f	8			
Unconfined compressive strength, T/sq ft		q_u	0.4			
Undrained shear strength, T/sq ft		s_u	0.2			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	5.0			
Initial specimen height, in.		H_o	8.9	N.G. - too much gravel		

Classification CLAY, gravelly (CH) Test

LL 52 | PL 15 | PI 37 | G_s

Remarks

Project WHITE OAK BAYOU

Area

Boring No. 6ST-170 | Sample No. X-3365

Depth ~~El.~~ 20.0-22.0 | Date JAN 67

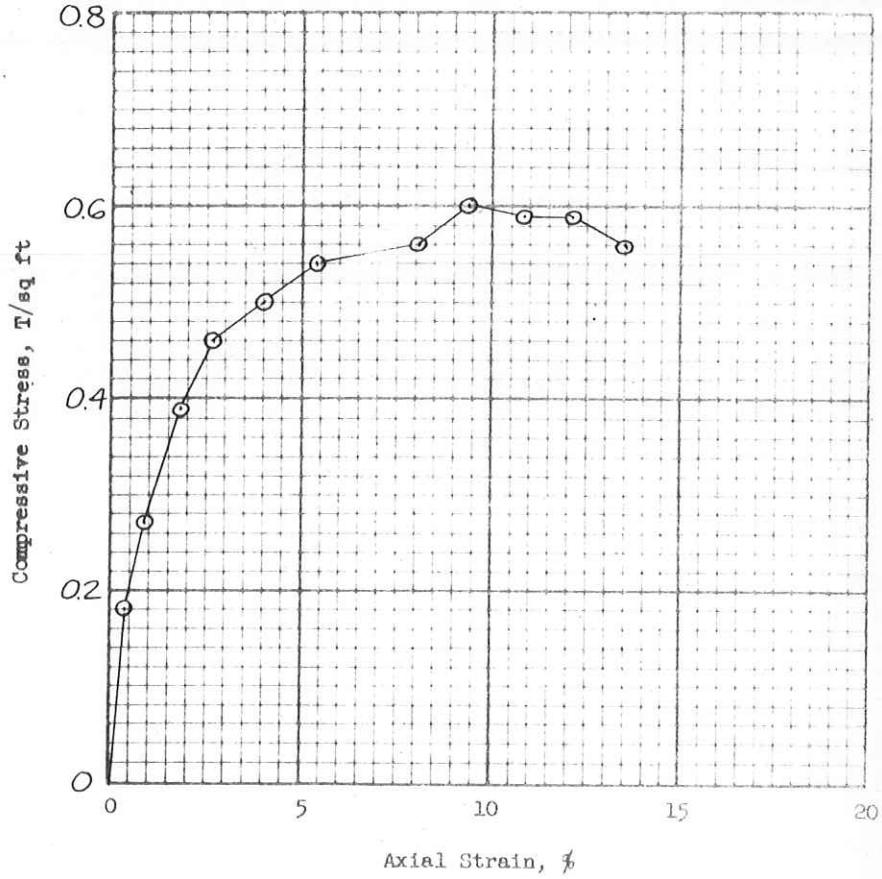
UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Plate No. 3

Failure Sketches



☐ Controlled stress

☑ Controlled strain

Rate, 0.4 %/min

Test No.						
Type of specimen						
Initial	Water content	w_o	21.7 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	102			
Time to failure, min		t_f	23			
Unconfined compressive strength, T/sq ft		q_u	0.6			
Undrained shear strength, T/sq ft		s_u	0.3			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	4.3			
Initial specimen height, in.		H_o	6.7			

test N.G. too much sand & gravel

Classification CLAY, gravelly sandy (CL)

LL 47 PL 14 PI 33 G_s

Remarks

Project WHITE OAK BAYOU

Area

Boring No. 6ST-170 Sample No. X-3366

Depth ~~El~~ 22.0-24.0 Date

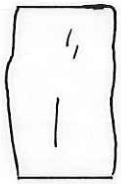
UNCONFINED COMPRESSION TEST REPORT

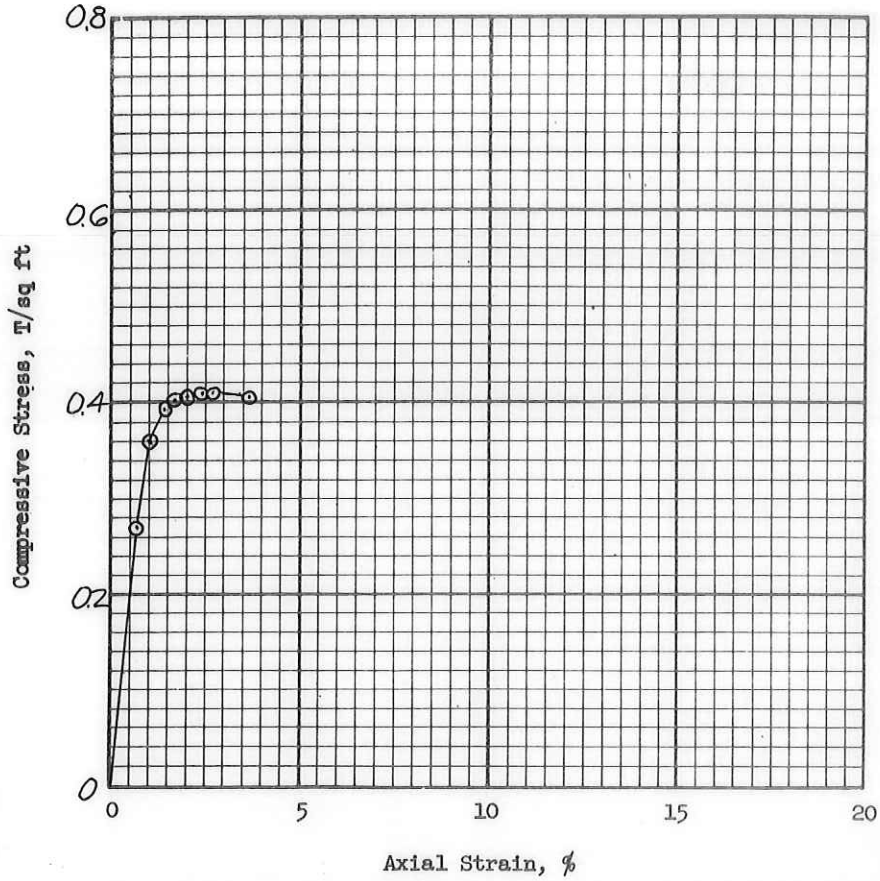
ENG FORM 1 JUN 66 3659

PLATE XI-2

Plate No. 4

Failure Sketches





☐ Controlled stress

☑ Controlled strain

Rate, 0.3 %/min

Test No.					
Type of specimen Undisturbed					
Initial: Water content	w_o	20.6 %	%	%	%
Initial: Void ratio	e_o				
Initial: Saturation	S_o	%	%	%	%
Initial: Dry density, lb/cu ft	γ_d	104			
Time to failure, min	t_f	8			
Unconfined compressive strength, T/sq ft	q_u	0.4			
Undrained shear strength, T/sq ft	s_u	0.2			
Sensitivity ratio	S_t				
Initial specimen diameter, in.	D_o	5.0			
Initial specimen height, in.	H_o	8.9			

Classification CLAY, gravelly (CH)

LL 52 | PL 15 | PI 37 | G_s

Remarks

Project WHITE OAK BAYOU

Area

Boring No. 6ST-170 | Sample No. X-3365

Depth ~~El~~ 20.0-22.0 | Date JAN 67

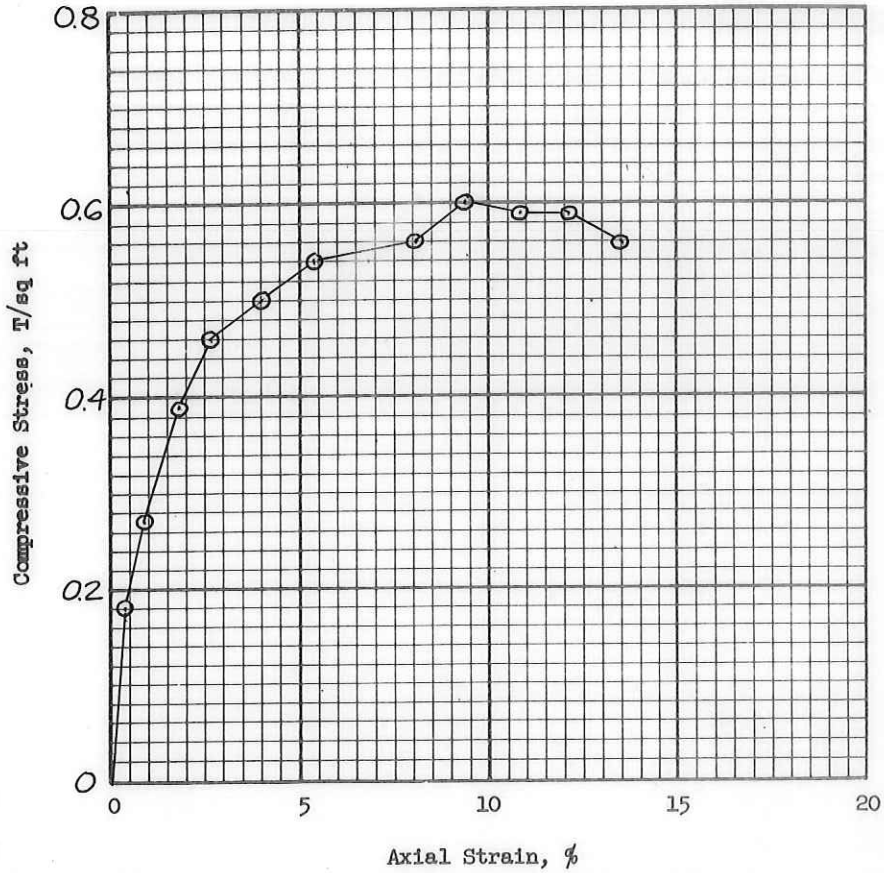
UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 65 3659

PLATE XI-2

Plate No. 3

Failure Sketches



☐ Controlled stress

☑ Controlled strain
Rate, 0.4 %/min

Test No.						
Type of specimen Undisturbed						
Initial	Water content	w_o	21.7 %	%	%	%
	Void ratio	e_o				
	Saturation	S_o	%	%	%	%
	Dry density, lb/cu ft	γ_d	102			
Time to failure, min		t_f	23			
Unconfined compressive strength, T/sq ft		q_u	0.6			
Undrained shear strength, T/sq ft		s_u	0.3			
Sensitivity ratio		S_t				
Initial specimen diameter, in.		D_o	4.3			
Initial specimen height, in.		H_o	6.7			

Classification CLAY, gravelly sandy (CL)

LL 47 | PL 14 | PI 33 | G_s

Remarks

Project WHITE OAK BAYOU

Area

Boring No. 6ST-170 | Sample No. X-3366

Depth ~~El~~ 22.0-24.0 | Date JAN 67

UNCONFINED COMPRESSION TEST REPORT

ENG FORM 1 JUN 68 3659

PLATE XI-2

Plate No. 4

BUFFALO BAYOU, TEXAS
WHITE OAK BAYOU CHANNEL RECTIFICATION
SUMMARY OF UNCONFINED COMPRESSION TEST DATA
MOUTH TO 56+50

TABLE 3

Boring Number	Depth, feet	Density Data MC %	Density Data UDW Lb/cu ft	LL	PL	Bar L.S.	Gradation Gr	Gradation Sa	Gradation Fines	% Strain @ Max stress	Max strain Lbs/sq ft	Classification
6ST-28	32.0-34.0	22	103	49	-	18	0	22	78	3.5	4239	Red sandy clay,v/stiff (CL)
6ST-30	28.0-30.0	22	105	53	-	19	0	0	100	4.9	5606	Red clay, hard (CH)
6ST-169	12.0-14.0	27	97	57	-18	+8	0	1	99	8.0	1360	Red clay, med. (CH)
6ST-169	14.0-16.0	22	103	42	-13	+3	1	12	88	11.7	1200	Red clay, med. (CL)
6ST-170	20.0-22.0	21	104	52	-15	+5	22	14	64	2.0	800	Red clay, gravelly (CH)
6ST-170	22.0-24.0	22	102	47	-14	-	20	21	59	9.3	1200	Red clay, gravelly (CL)