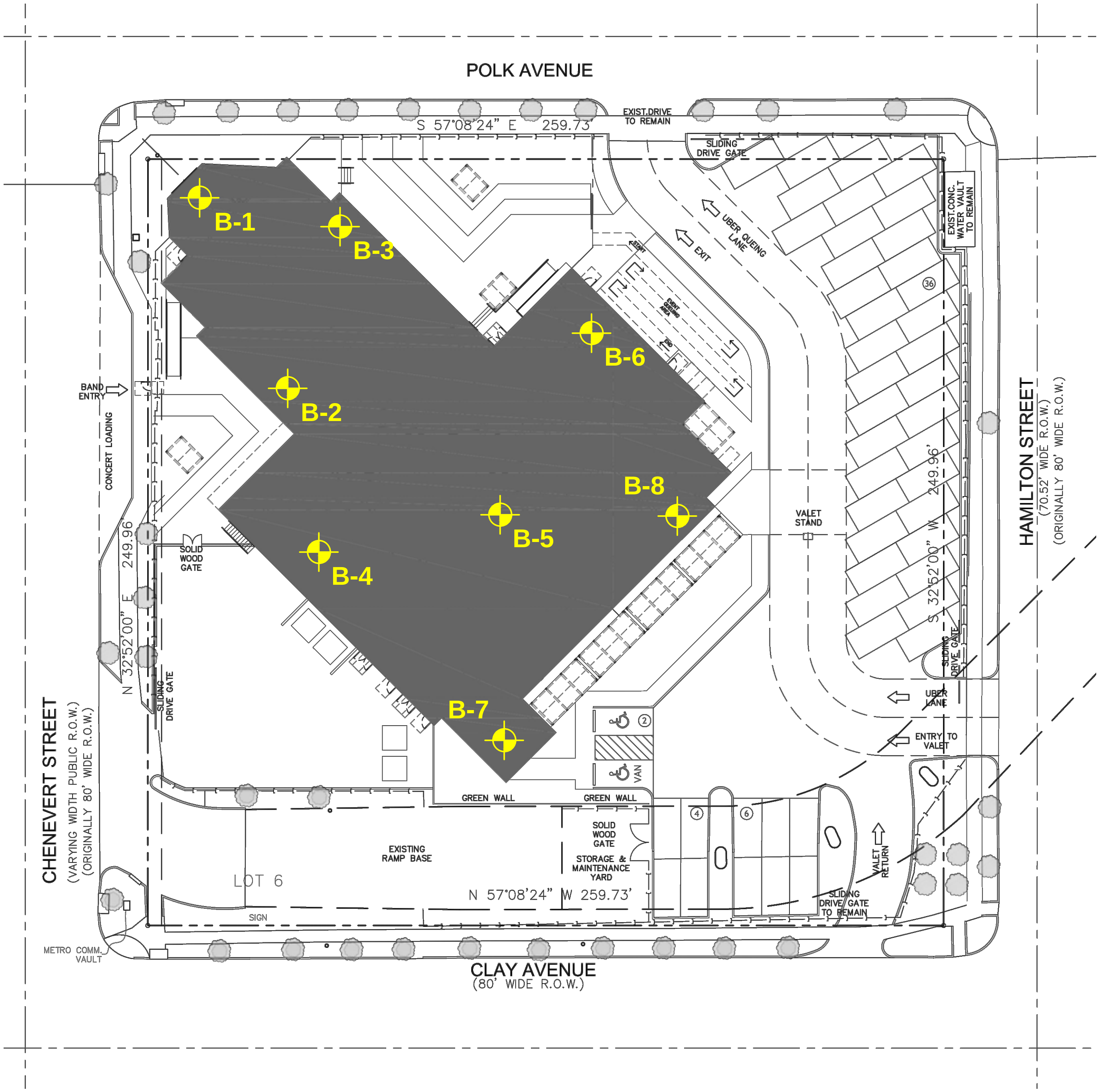


PLAN OF BORINGS

0 50 100 FEET

NORTH

LOG OF BORING NO. 1

THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURF. EL: 44'	BLOWS PER FT	UNIT DRY WT LB/CU FT	UNDRAINED SHEAR STRENGTH, TONS/SQ FT ○ △ ⊗ ◇ □ 0.2 0.4 0.6 0.8 1 1.2 1.4 MOISTURE ● CONTENT, % PLASTIC LIMIT +----+ LIQUID LIMIT 10 20 30 40 50 60 70	STRAIN, %
0			PAVEMENT: 6" asphalt & 4" base - refusal @ 1'				
5							
10							
15							
20							
25							
30							
35							

COMPLETION DEPTH: 1'
DATE: 17 March 2016

WATER DEPTH: Dry
DATE: 17 March 2016

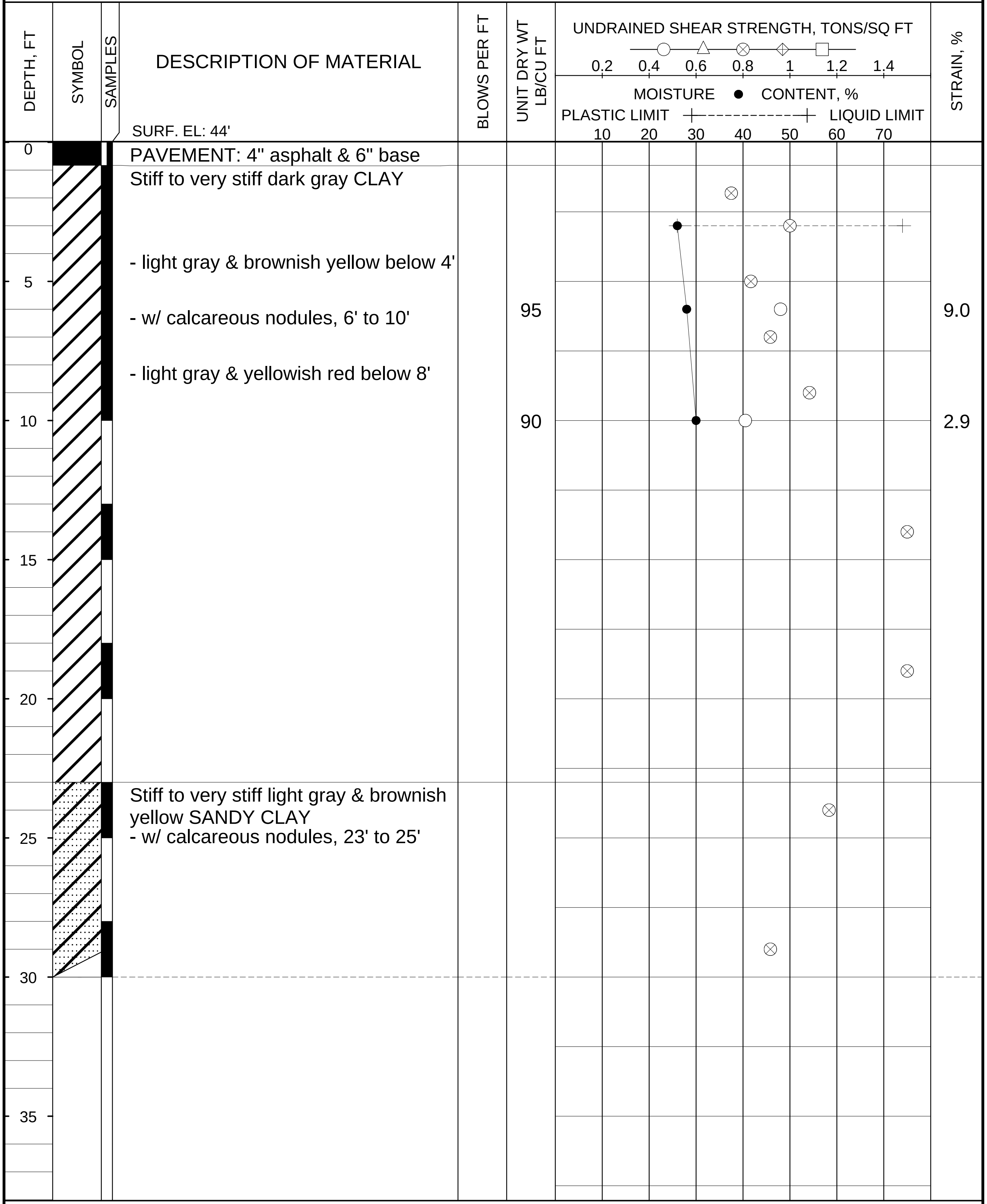
CAVED DEPTH: Open
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 2

THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2



DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	STRAIN, %
PAVEMENT: 4" asphalt & 6" base			
Stiff to very stiff dark gray CLAY			
- light gray & brownish yellow below 4'			
- w/ calcareous nodules, 6' to 10'		95	9.0
- light gray & yellowish red below 8'			
		90	2.9
Stiff to very stiff light gray & brownish yellow SANDY CLAY - w/ calcareous nodules, 23' to 25'			

COMPLETION DEPTH: 30'
DATE: 17 March 2016

WATER DEPTH: Dry
DATE: 17 March 2016

CAVED DEPTH: Open
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 3

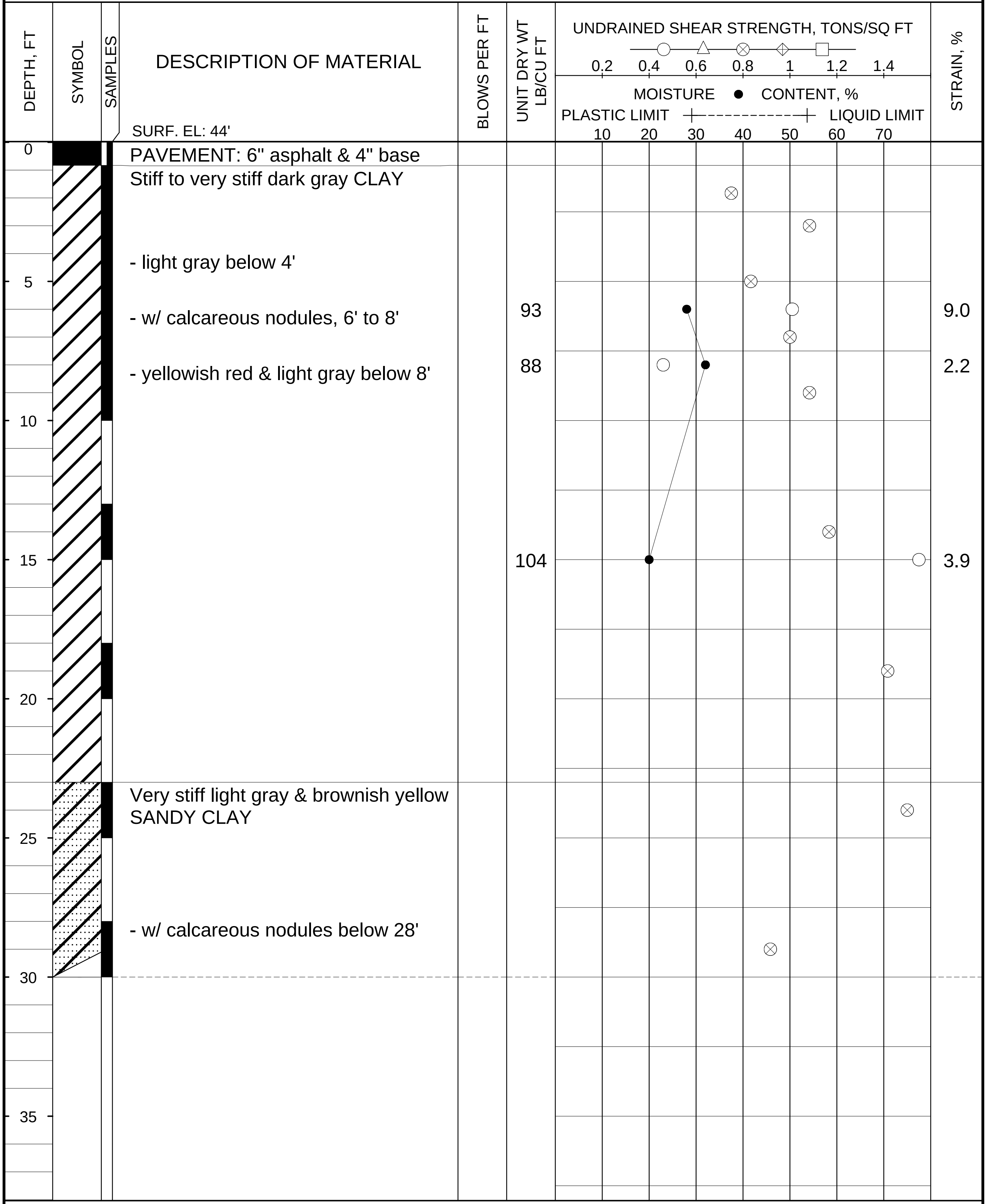
THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2

SURF. EL: 44'

DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	STRAIN, %
PAVEMENT: 6" asphalt & 4" base			
Stiff to very stiff dark gray CLAY			
- light gray below 4'			
- w/ calcareous nodules, 6' to 8'		93	9.0
- yellowish red & light gray below 8'		88	2.2
		104	3.9
Very stiff light gray & brownish yellow SANDY CLAY			
- w/ calcareous nodules below 28'			



COMPLETION DEPTH: 30'

DATE: 17 March 2016

WATER DEPTH: Dry

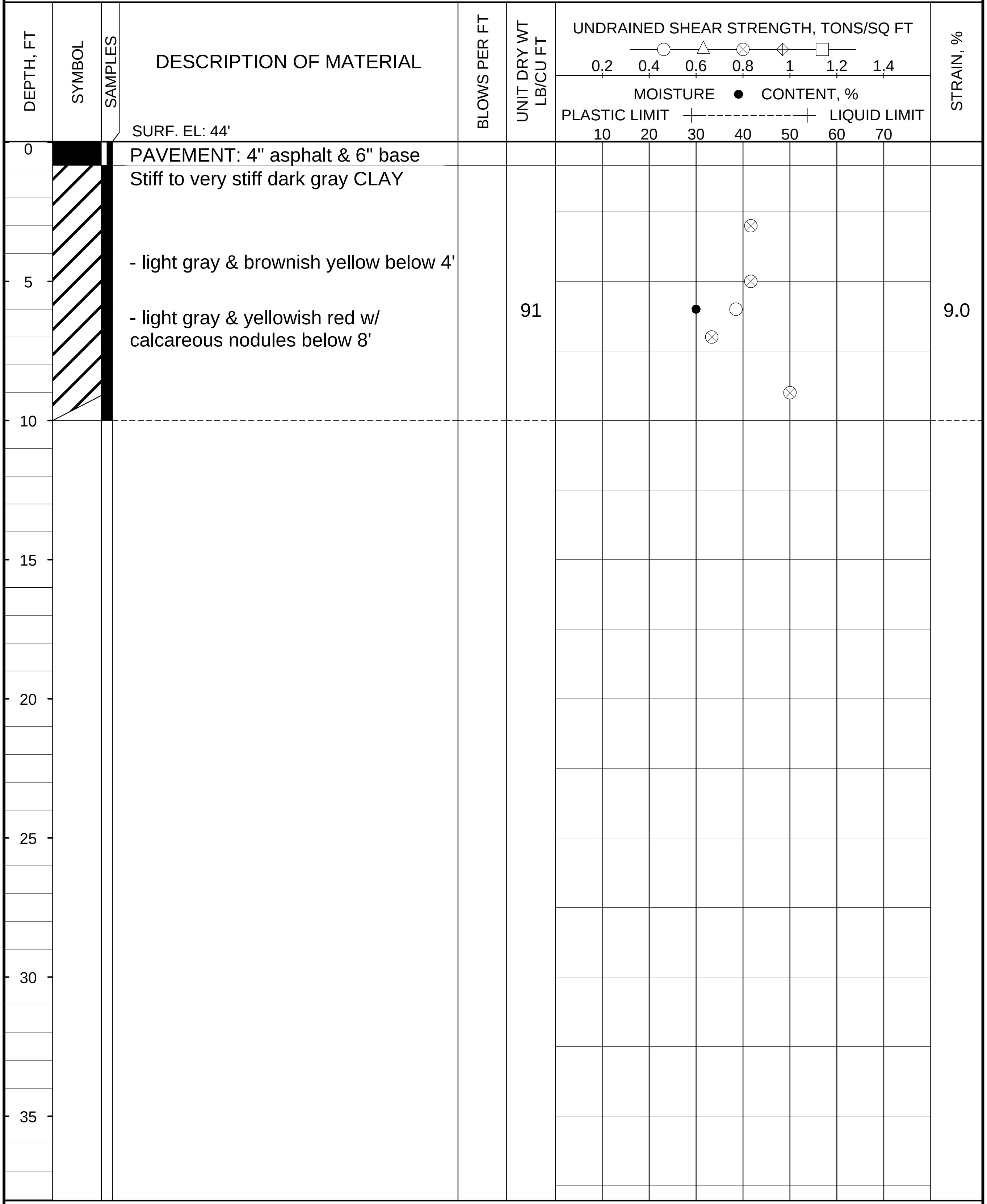
DATE: 17 March 2016

CAVED DEPTH: Open

DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 4
THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel   LOCATION: See Plate 2



PAVEMENT: 4" asphalt & 6" base

Stiff to very stiff dark gray CLAY

- light gray & brownish yellow below 4'
- light gray & yellowish red w/ calcareous nodules below 8'

COMPLETION DEPTH: 10'
DATE: 17 March 2016

WATER DEPTH: Dry
DATE: 17 March 2016

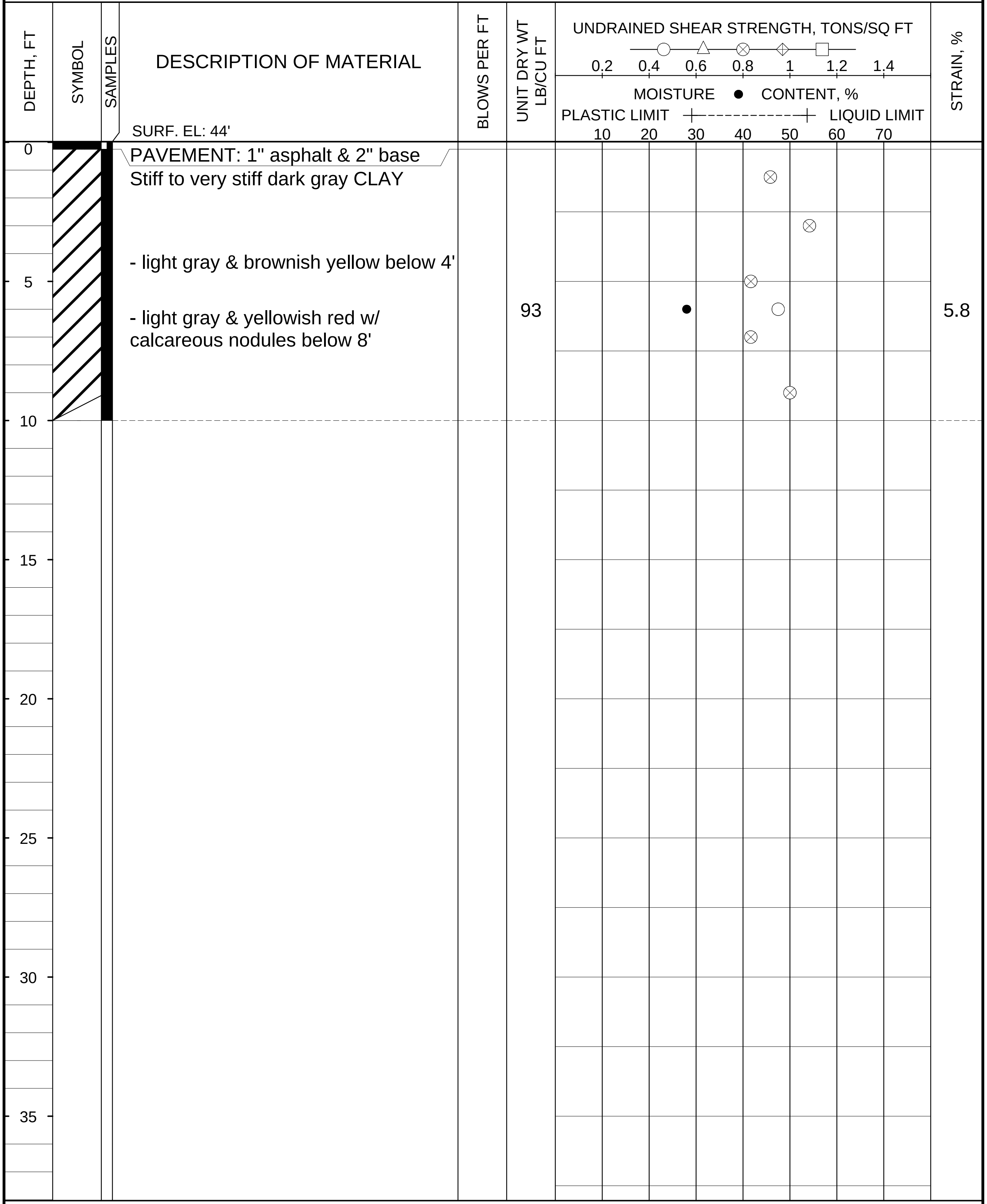
CAVED DEPTH: Open
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 5

THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2



PAVEMENT: 1" asphalt & 2" base

Stiff to very stiff dark gray CLAY

- light gray & brownish yellow below 4'

- light gray & yellowish red w/ calcareous nodules below 8'

COMPLETION DEPTH: 10'

DATE: 17 March 2016

WATER DEPTH: Dry

DATE: 17 March 2016

CAVED DEPTH: Open

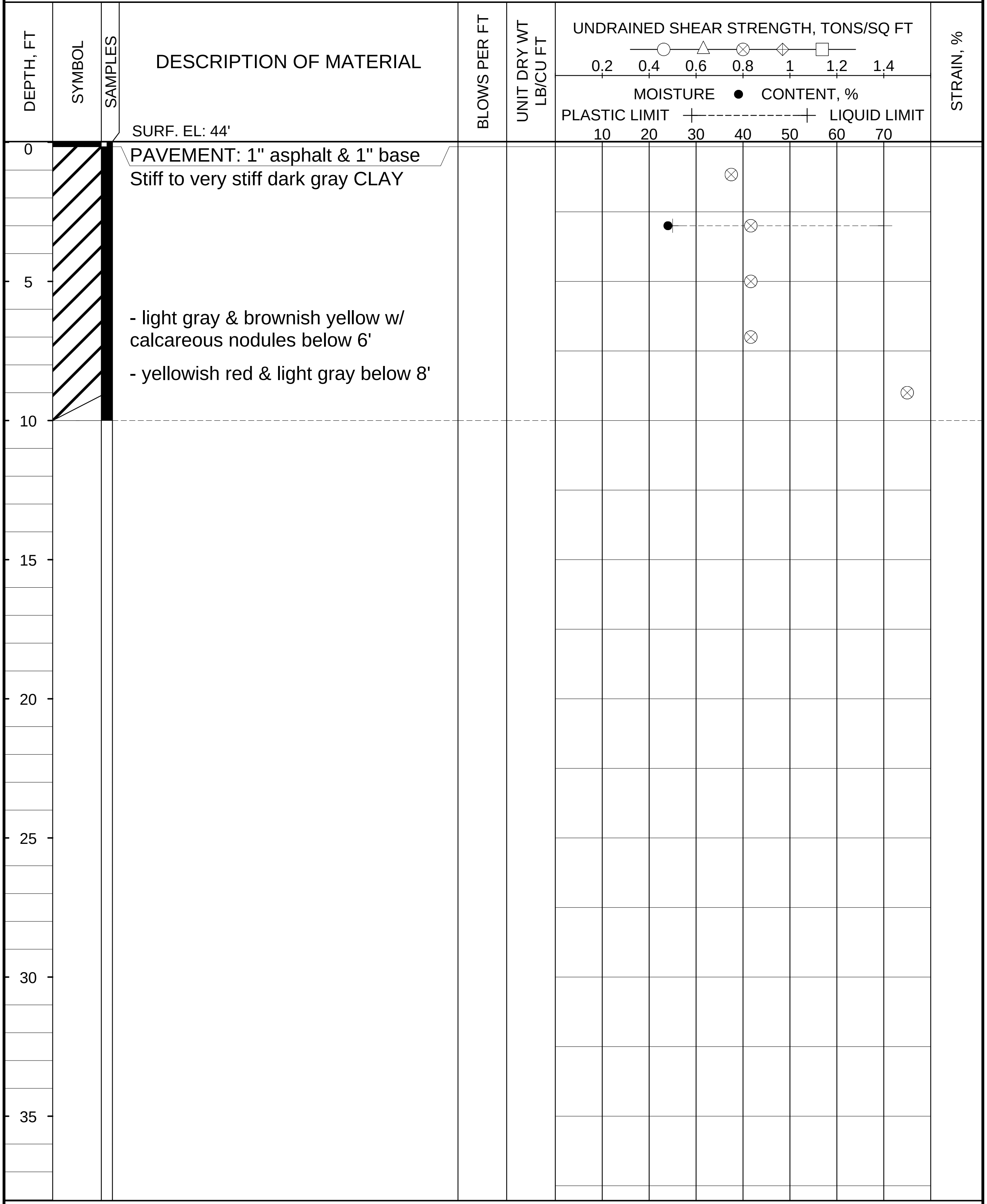
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 6

THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2



PAVEMENT: 1" asphalt & 1" base

Stiff to very stiff dark gray CLAY

- light gray & brownish yellow w/ calcareous nodules below 6'

- yellowish red & light gray below 8'

COMPLETION DEPTH: 10'
DATE: 17 March 2016

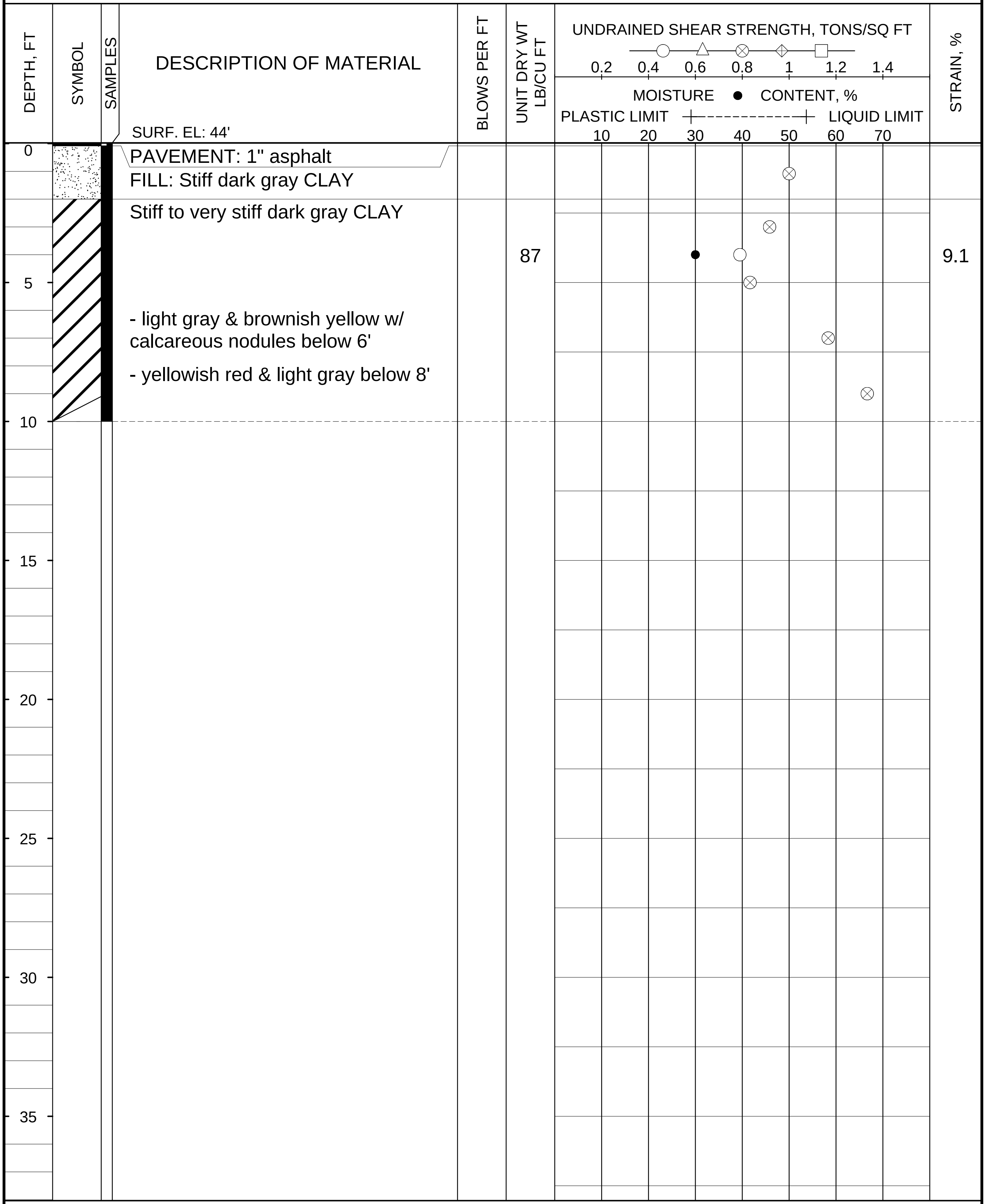
WATER DEPTH: Dry
DATE: 17 March 2016

CAVED DEPTH: Open
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 7
THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2



PAVEMENT: 1" asphalt

FILL: Stiff dark gray CLAY

Stiff to very stiff dark gray CLAY

- light gray & brownish yellow w/ calcareous nodules below 6'

- yellowish red & light gray below 8'

COMPLETION DEPTH: 10'

DATE: 17 March 2016

WATER DEPTH: Dry

DATE: 17 March 2016

CAVED DEPTH: Open

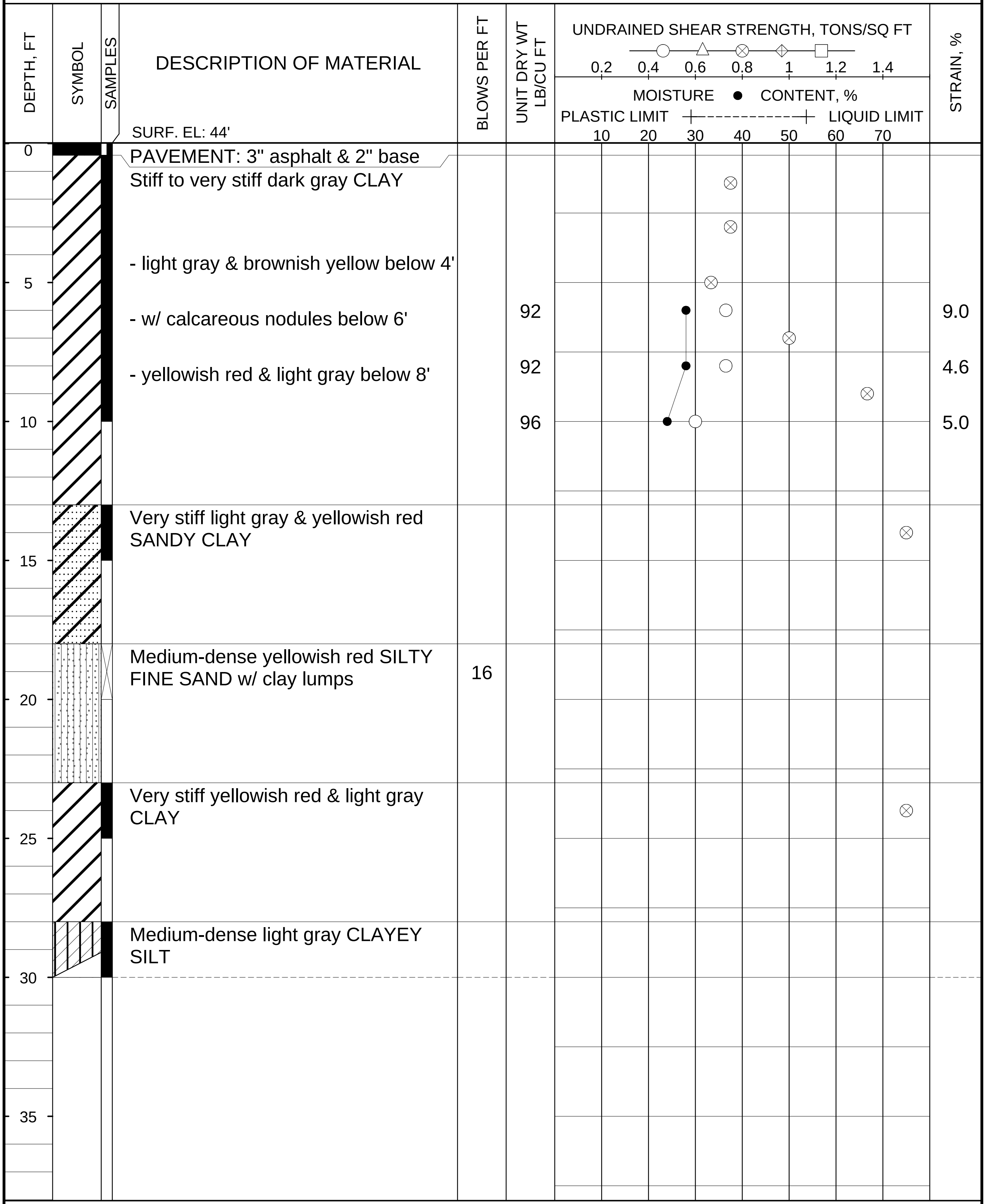
DRILL METHOD: Auger & Rotary

LOG OF BORING NO. 8

THE HOUSTON VENUE
POLK AVE. & HAMILTON ST.
HOUSTON, TEXAS

TYPE: 3" thin-walled tube & 2" split-barrel

LOCATION: See Plate 2



SURF. EL: 44'

DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WT LB/CU FT	STRAIN, %
PAVEMENT: 3" asphalt & 2" base			
Stiff to very stiff dark gray CLAY			
- light gray & brownish yellow below 4'			
- w/ calcareous nodules below 6'		92	9.0
- yellowish red & light gray below 8'		92	4.6
		96	5.0
Very stiff light gray & yellowish red SANDY CLAY			
Medium-dense yellowish red SILTY FINE SAND w/ clay lumps	16		
Very stiff yellowish red & light gray CLAY			
Medium-dense light gray CLAYEY SILT			

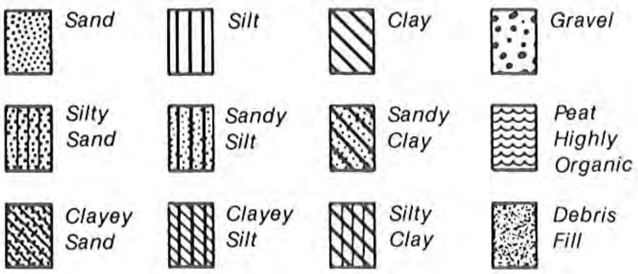
COMPLETION DEPTH: 30'
DATE: 17 March 2016

WATER DEPTH: 27.5'
DATE: 17 March 2016

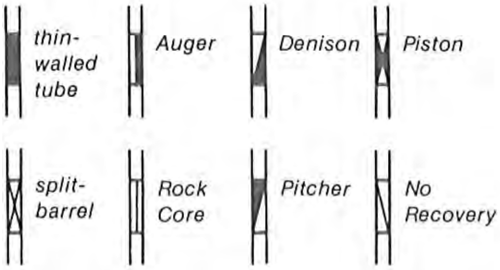
CAVED DEPTH: Open
DRILL METHOD: Auger & Rotary

TERMS AND SYMBOLS USED ON BORING LOGS

SOIL TYPES



SAMPLER TYPES



SOIL GRAIN SIZE

U.S. STANDARD SIEVE

6" 3" 3/4" 4 10 40 200

BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

152 76.2 19.1 4.76 2.00 0.420 0.074 0.002

SOIL GRAIN SIZE IN MILLIMETERS

STRENGTH OF COHESIVE SOILS(1)

Consistency	Unconfined Compressive Strength, q_u, Tons Per Sq Ft
Very Soft	less than 0.25
Soft	0.25 to 0.50
Firm	0.50 to 1.00
Stiff	1.00 to 2.00
Very Stiff	2.00 to 4.00
Hard	greater than 4.00

DENSITY OF GRANULAR SOILS(2,3,4)

Descriptive Term	Number of Blows Per Foot, N	*Relative Density, %
Very Loose	0 - 4	less than 15
Loose	4 - 10	15 to 35
Medium Dense	10 - 30	35 to 65
Dense	30 - 50	65 to 85
Very Dense	greater than 50	greater than 85

*Estimated from sampler driving record

SPLIT-BARREL SAMPLER DRIVING RECORD

Blows Per Foot, N	Description
25	25 blows drove sampler 12 inches, after initial 6 inches of seating
50/7"	50 blows drove sampler 7 inches, after initial 6 inches of seating
Ref/3"	50 blows drove sampler 3 inches during initial 6-inch seating interval

Note : To avoid damage to sampling tools, driving is limited to 50 blows during or after seating interval.

SOIL STRUCTURE(1)

Slickensided	Having planes of weakness that appear slick and glossy. The degree of slickensidedness depends upon spacing of slickensides and the ease of breaking along these planes.
Fissured	Containing shrinkage or relief cracks, often filled with fine sand or silt; usually more or less vertical.
Pocket	Inclusion of material of different texture that is smaller than the diameter of the sample.
Parting	Inclusion less than 1/8 inch thick extending through the sample.
Seam	Inclusion 1/8 inch to 3 inches thick extending through the sample.
Layer	Inclusion greater than 3 inches thick extending through the sample.
Laminated	Soil sample composed of alternating partings or seams of different soil type.
Interlayered	Soil sample composed of alternating layers of different soil type.
Intermixed	Soil sample composed of pockets of different soil type & layered or laminated structure is not evident.
Calcareous	Having appreciable quantities of carbonate.

REF : (1) ASTM D 2488; (2) ASCE Manual 56 (1976); (3) ASTM D 2049; (4) "Foundation Engineering", second edition (1974), by Ralph B. Peck, Walter E. Hanson & Thomas H. Thornburn.

Information on each boring log is a compilation of subsurface conditions and soil or rock classifications obtained from the field as well as from laboratory testing of samples. Strata have been interpreted by commonly accepted procedures. The stratum lines on the logs may be transitional and approximate in nature. Water level measurements refer only to those observed at the times and places indicated, and may vary with time, geologic condition or construction activity.

Drafted :
Date :
Checked :
Date :
Approved :
Date :
0007 (1/86) Job No. :

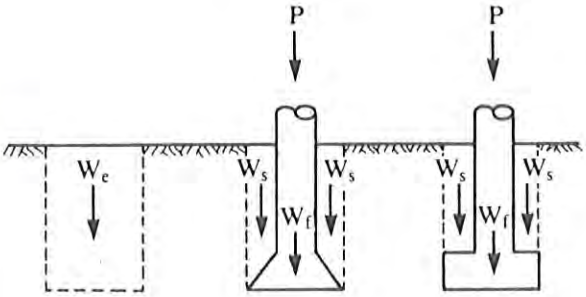
Ulrich Engineers

FOUNDATION DESIGN CRITERIA

A properly-sized foundation must satisfy the two following design criteria with respect to the supporting soil.

1. **For soil strength.** The bearing pressure created on the base of the foundation by the maximum design load must be less than that which would cause shear failure in the soil. A factor of safety of 2 or more with respect to the soil shear strength is generally used.
2. **For soil compressibility.** The bearing pressure created on the base of the foundation by the average sustained load must not produce sufficient consolidation in the underlying soil to result in foundation settlement that is detrimental to the safety or utility of the structure.

SYMBOLS



TERMS AND SYMBOLS

P = Column load (subscript can be used to denite character of load: P_s = sustained load, P_n = normal operating load, P_m = maximum design load).

W_e = Weight of soil located above base of foundation prior to excavation.*

W_s = Weight of soil located above foundation.*

W_f = Weight of foundation.*

A = Area of base of foundation.

p = Average bearing pressure acting on soil (subscript can be used to correspond to column load: p_s, p_n, p_m).

* Position of water table must be considered in determining weights. Effective, or buoyant, unit weights should be used below the highest expected water table.

BEARING PRESSURES

Gross Bearing Pressure, p, for any column load is the total effective pressure acting on the base of the foundation.

$$p = \frac{1}{A}(P + W_s + W_f)$$

Net Bearing Pressure, p', for any column load is the difference between the gross bearing pressure acting on the base of the foundation and the soil pressure existing at that elevation prior to excavation.

$$p' = \frac{1}{A}(P + W_s + W_f - W_e)$$

For analysis with regard to the first design criterion — soil strength, the column load in the above equations should usually be the maximum design load, P_m. Occasionally, the normal operating load, P_n, may also be used. If a footing is loaded eccentrically, the increase in edge bearing pressure due to the eccentricity should be computed in the usual manner.

For analysis with regard to the second design criterion — soil compressibility, the column load in the above equations should be the sustained load, P_s. This load is the dead load plus the average continuous live load.

For further references, see Chapter 5, "Soil Mechanics in Engineering Practice" by Karl Terzaghi and Ralph B. Peck, second edition (1967); and Chapters 18 and 19, "Foundation Engineering", by Ralph B. Peck, Walter E. Hanson, and Thomas H. Thornburn, second edition (1974).

COMPUTATION OF BEARING PRESSURES