LESSON 2

TOPIC 2

Layout of Subsurface Investigation for Bridge Foundation

SOILS AND FOUNDATIONS WORKSHOP

LAYOUT OF SUBSURFACE INVESTIGATION FOR BRIDGE FOUNDATION

Lesson 2 - Topic 2

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SOILS AND FOUNDATIONS WORKSHOP

Layout of Subsurface Investigation Program

- ***Plan Location***
- ***Type***
- ***Depth and Sampling Frequency for Exploration***

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SOILS AND FOUNDATIONS WORKSHOP

Explain the Steps in the Layout of a Subsurface Exploration Program for a Typical Bridge Project

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SOILS AND FOUNDATIONS WORKSHOP

Site Exploration

Terrain Reconnaissance

Site Inspection

Subsurface Borings

Basic Soil Properties

Laboratory Testing

Slope Stability

Embankment Settlement

Spread Footing Design

Pile Design

Construction Aspects

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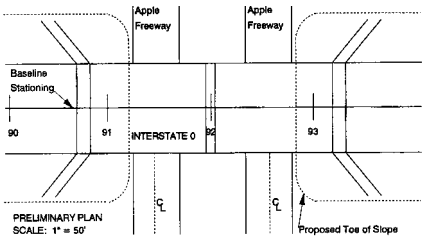
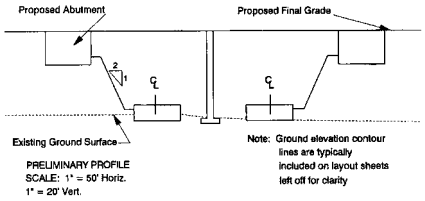
SOILS AND FOUNDATIONS WORKSHOP

Given: Field inspection showed wet area with cattails in vicinity of East abutment. Soil map showed structure to be located in a delta landform.





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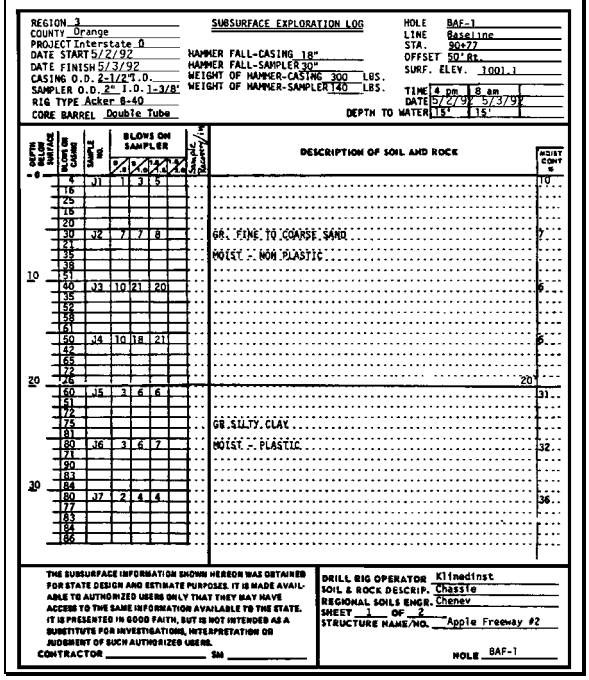
SOILS AND FOUNDATIONS WORKSHOP



REGION 3
COUNTY Orange
PROJECT Interstate 0
DATE START 5/2/92
DATE FINISH 5/3/92
CASING O.D. 2-1/2" I.D.
SAMPLER O.D. 2" I.D. 1-3/8"
RIG TYPE Acker B-40
CORE BARREL Double Tube

SUBSURFACE EXPLORATION LOG

HAMMER FALL-CASING 18"
HAMMER FALL-SAMPLER 30"
WEIGHT OF HAMMER-CASING 300 LBS.
WEIGHT OF HAMMER-SAMPLER 140 LBS.

HOLE BAF-1
LINE Baseline
STA. 90+77
OFFSET 50' Rt.
SURF. ELEV. 1001.1
TIME 4 pm 8 am
DATE 5/2/92 5/3/92
DEPTH TO WATER 15' 15'

DEPTH BELOW SURFACE	BLOWS ON CASING	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	Sample/Core Recovery	DESCRIPTION OF SOIL AND ROCK	MOIST CONT %
0	4	J1	1	3	5				10
	16								
	25								
	15								
	20								
	30	J2	7	7	8			GR. FINE TO COARSE SAND	7
	21								
	35							MOIST - NON PLASTIC	
	38								
10	51								
	40	J3	10	21	20				6
	35								
	52								
	58								
	61								
	50	J4	10	18	21				6
	42								
	65								
	72								
20	26								20
	60	J5	3	6	6				31
	61								
	72								
	75							GR SILTY CLAY	
	81								
	80	J6	3	6	7			MOIST - PLASTIC	32
	71								
	90								
	83								
30	84								
	80	J7	2	4	4				36
	77								
	83								
	84								
	86								

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

CONTRACTOR _____ SM _____

DRILL RIG OPERATOR Klinedinst
SOIL & ROCK DESCRIP. Chassie
REGIONAL SOILS ENGR. Cheney
SHEET 1 OF 2
STRUCTURE NAME/NO. Apple Freeway #2
HOLE BAF-1

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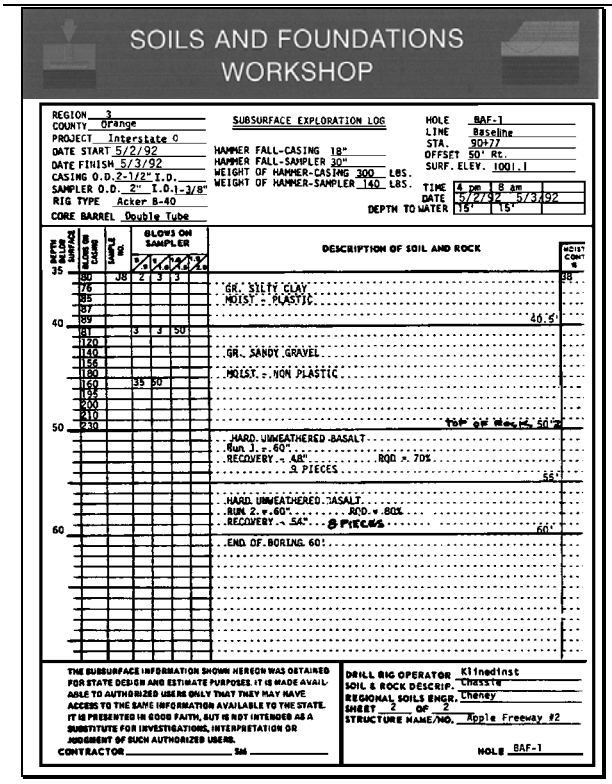

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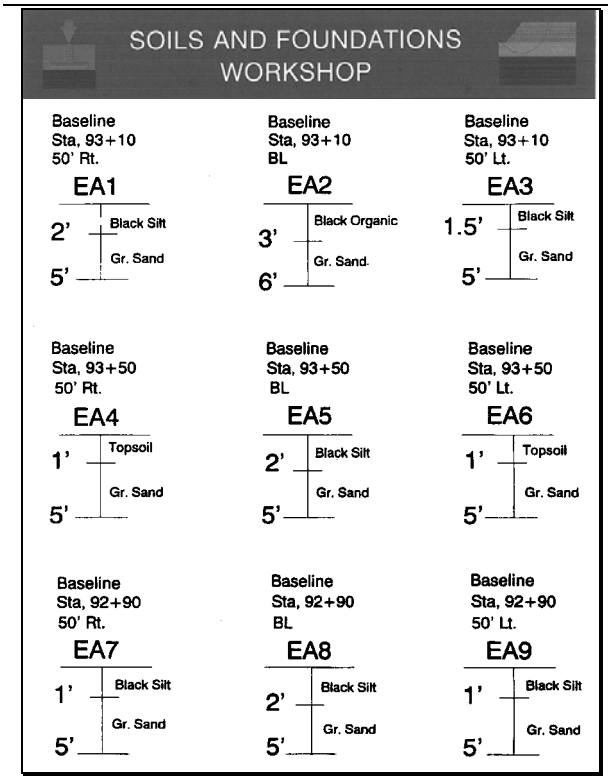

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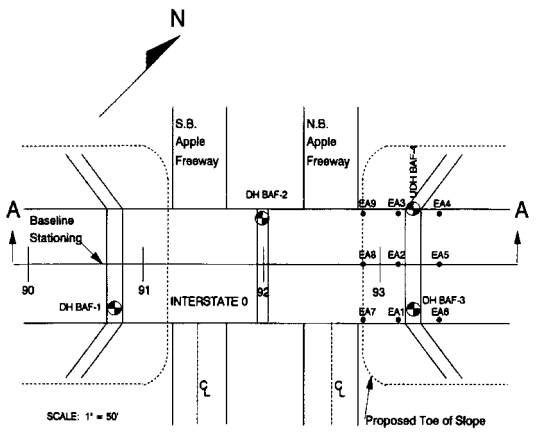
SOILS AND FOUNDATIONS WORKSHOP



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SOILS AND FOUNDATIONS WORKSHOP

Site Exploration

- ***Terrain Reconnaissance***
  - ***Delta Landform - Possible Clay Deposit Buried***
- ***Site Inspection***
  - ***Unsuitable Soils Near East Approach Embankment***
- ***Subsurface Borings***
  - ***Auger Hole Define Limits and Depth of Unsuitable Organic Deposit***
  - ***SPT Drill Holes Show Sand Over Clay Over Gravel and Rock***
  - ***Undisturbed Samples and Vane Shear Tests Taken in Clay***

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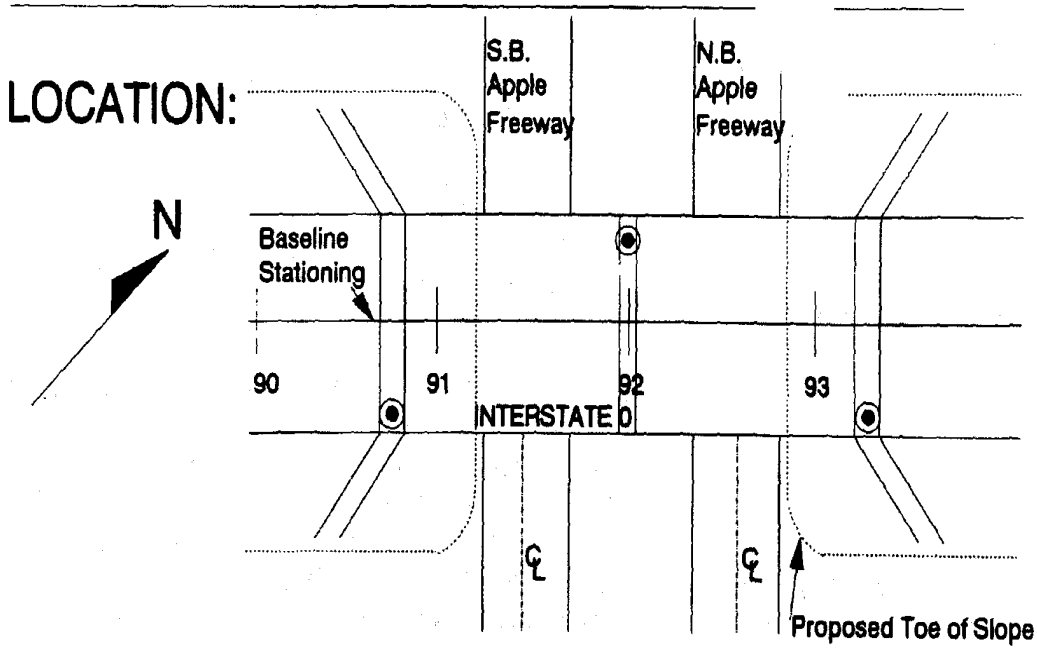
SOILS AND FOUNDATIONS WORKSHOP

Layout of Subsurface Exploration Program

GIVEN: Soil map showed structure to be located in a delta landform. Field inspection showed wet area with cattails in vicinity of East abutment.

PLAN SUBSURFACE EXPLORATION PROGRAM



SOILS AND FOUNDATIONS WORKSHOP

Layout of Subsurface Exploration Program (cont'd)

TYPE: ***Disturbed SPT sample boring Hand Auger holes in wet area within East approach fill limits***

DEPTH: ***SPT holes to depth where N average equals 20 for 20' depth or 10' into bedrock whichever depth is less.***

SAMPLING: ***Pier footing: Continuous SPT samples to depth of 15', Then 5' Intervals. East and West abutments: Disturbed SPT every 5'.***

REMARKS: ***Since area a delta landform, granular deposits overlying clay may be encountered. If so, an undisturbed drill hole (UDH) will be required. The location, depth, and sampling details will be selected based on the results of the three SPT borings. Notify the drillers of possibility of UDH and vane shear so necessary equipment can be taken to site. Long term water level readings should be taken in one hole.***