

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 110677

FEDERAL AID PROJECT NO. STATE JOB

BRIDGEPORT & RIVERSIDE AHP INSPECTION FACILITIES (S)

STATE HIGHWAY I-55 & I-40 SECTION 11 & 52

IN CRITTENDEN COUNTY

The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

April 3, 2017

TO: Mr. Joe Sartini, State Maintenance Engineer

SUBJECT: Job No. 110677
Bridgeport & Riverside AHP Inspection Facilities (West Memphis)
Interstates 40 & 55
Crittenden County

Transmitted herewith are summaries of the site geology and subsurface conditions and the logs of the borings conducted for the structures of the above referenced project.

This project consists of the constructing two Arkansas Highway Police inspection facilities, inside the grounds of the existing weigh stations. The project is located east of West Memphis, on Interstates 40 and 55 in Crittenden County. The weigh stations were built upon select sand fill material. There was no established control available, so all boring elevations are referenced from ground level. The locations of the borings and the weigh station site layouts are included in Figures 1, 2, 3, & 4.

It is recommended that a conventional spread footing foundation and slab-on-grade construction be utilized for both inspection pits. The footing with a minimum width of 2 feet founded a minimum of 2 feet below the surface of the medium dense to dense sand, may be designed based on a factored bearing capacity of 3,000 psf.

If you have any questions concerning these recommendations, please contact the Geotechnical Section.


Michael C. Benson
Materials Engineer

MCB:rpt:mlg
Attachment

cc: State Construction Engineer – Master File Copy
District 1 Engineer
Facilities Management
G.C. File

GEOLOGY AND SITE CONDITIONS

Job No. 110677

West Memphis

Interstates 40 & 55 Weigh Station Inspection Pits

Crittenden County

Site Conditions

This job consists of the construction of an inspection pit at two existing weigh stations. One of the weigh stations is adjacent to the westbound lane of Interstate 40 at log mile 283.5, approximately 0.5 miles west of the Dacus Lake Rd exit. The other weigh station is approximately 1.25 miles southwest of the I-40 weigh station and runs adjacent to the westbound lane of Interstate I-55 at log mile 8.1. Both weigh stations were constructed above ground level on fill material in the Mississippi River Floodplain just east of the west bank levee system. The areas surrounding the project localities are primarily agricultural fields with scattered oxbow lakes and borrow pits located to the north of both job sites. There are three railroads that run east to west between the two weigh stations and pass underneath interstates I-40 and I-55 to the west of the job sites. One inspection pit will be constructed at each weigh station on the west side of the parking lot inspection area. The only utility noted in the field was a buried fiber optics line that runs northwest to southeast and is located on the northeast side of both designated inspection pit sites.

Site Geology

The project is located over Quaternary point bar deposits of the Mississippi River (map symbol Hpm). These are primarily alluvial deposits of sand, silt, and clay from small streams, overbank deposits of major streams, or older meander belt deposits of major streams. The lower contact is unconformable and the thickness is variable. Both weigh stations are located within the southern area of the New Madrid Seismic Zone.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy may be generalized as follows:

- 0 to 4.7 Feet: Consists of moist, medium stiff to hard, brown **sandy clay**.
- 4.7 to 25.0 Feet: Consists of moist, loose to very dense, light **gray sand**.
- 25.0 to 36.0 Feet: Consists of moist, medium stiff to very stiff, dark brown **clay to sandy clay**.

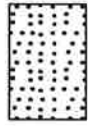
LEGEND

SOIL TYPES

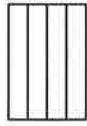
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(PREDOMINANT TYPE SHOWN HEAVY)



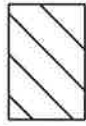
GRAVEL



SAND



SILT



CLAY



ORGANIC
MATTER

SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)

SHELBY TUBE



UNDISTURBED
SAMPLE
RECOVERY



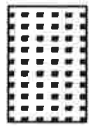
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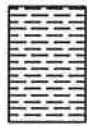
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ROCK TYPES

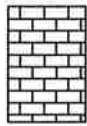
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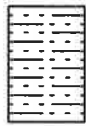
SANDSTONE



SHALE
or
SILTSTONE



LIMESTONE
or
DOLOMITE



ALTERNATING
LAYERS of
SHALE and
SANDSTONE

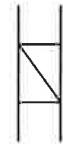


OTHER

SPLIT SPOON

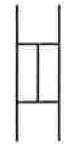


SAMPLE
RECOVERY



NO
RECOVERY

ROCK CORING



% RECOVERY
INDICATED ON LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
'N' Value	Density	'N' Value	Consistency	'N' Value	Consistency	'N' Value	Consistency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	Over 60	
31-50	Dense	9-15	Stiff	9-15	Stiff	More than 2'	
Over 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	in 60 Blows	Medium Hard
		Over 60	Very Hard	Over 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows	Hard

1. Ground water elevations indicated on boring logs represent ground water elevations at date or time shown on boring log. Absence of water surface implies that no ground water data is available but does not necessarily mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
2. Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
3. Terms used for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System.

Standard Penetration Test – Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field "N" Value (N_f) can be obtained by

adding the bottom two numbers for example: $\frac{6}{8-9} \Rightarrow 8+9 = 17 \text{ blows/ft}$. The "N" Value corrected to 60%

efficiency (N_{60}) can be obtained by multiplying N_f by the hammer correction factor published on the boring log.

**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 1 OF 2

JOB NO. 110677 Crittenden County
JOB NAME: Bridgeport and Riverside AHP Inspection Facilities

DATE: January 24, 2017
TYPE OF DRILLING: Hollow Stem Auger

STATION: 35.15395, -90.0903
LOCATION: I-40 Weigh Station (Riverside)
LOGGED BY: Coty Campbell

EQUIPMENT: CME - 45
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 36.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% T C C R	% R Q D
			SURFACE ELEVATION: N/A									
5		X	Moist, Stiff, Brown Sandy Clay							6 7-7		
10		X	Moist, Medium Dense, Light Gray Sand							6 7-13		
15		X	Moist, Dense, Light Gray Sand							7 11-16		
20		X	Moist, Dense, Light Gray Sand							13 20-21		
25		X	Moist, Dense, Light Gray Sand with Some Gravel							9 17-27		
30		X	Moist, Dense, Light Gray Sand							9 20-20		
35		X	Moist, Medium Dense, Light Gray Sand							10 23-24		
35		X	Moist, Medium Stiff, Dark Gray Sandy Clay							10 17-16		
35		X	Moist, Medium Stiff, Dark Brown Clay							7 17-13		
35		X	Moist, Medium Stiff, Dark Brown Clay							2 3-4		
35		X	Moist, Medium Stiff, Dark Brown Clay							2 3-4		

REMARKS: NW Boring
*24 Hour water level reading was 22.8 feet below ground level (bgl).

**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 1
PAGE 2 OF 2

JOB NO. 110677 Crittenden County
JOB NAME: Bridgeport and Riverside AHP Inspection Facilities

DATE: January 24, 2017
TYPE OF DRILLING: Hollow Stem Auger

STATION: 35.15395, -90.0903
LOCATION: I-40 Weigh Station (Riverside)
LOGGED BY: Coty Campbell

EQUIPMENT: CME - 45
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 36.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% FCR	% RQD
			SURFACE ELEVATION: N/A									
			Moist, Medium Stiff, Dark Brown Sandy Clay							7		
			Moist, Medium Dense, Dark Brown Sand							10-12		
			Boring Terminated									
40												
45												
50												
55												
60												
65												
70												

REMARKS: NW Boring
*24 Hour water level reading was 22.8 feet below ground level (bgl).

**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 2
PAGE 1 OF 1











JOB NO. 110677 Crittenden County
JOB NAME: Bridgeport and Riverside AHP Inspection Facilities

DATE: January 24, 2017
TYPE OF DRILLING: Hollow Stem Auger

STATION: 35.15383, -90.09004
LOCATION: I-40 Weigh Station (Riverside)
LOGGED BY: Coty Campnell

EQUIPMENT: CME - 45
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 26.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU. FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5		X	Moist, Medium Dense, Dark Brown Clayey Sand with Gravel							5 5-7		
		X	Moist, Loose, Light Gray Sand							5 5-5		
		X	Moist, Medium Dense, Light Gray Sand							4 7-14		
10		X	Moist, Dense, Light Gray Sand							11 21-28		
15		X								10 18-19		
		X								11 21-22		
20		X	Moist, Medium Dense, Light Gray Sand							9 20-30		
		X	Moist, Dense, Light Gray Sand							8 9-9		
25		X	Moist, Medium Dense, Light Gray Clayey Sand							12 21-20		
		X	Moist, Medium Dense, Light Gray Clayey Sand							2 5-7		
30			Boring Terminated									
35												

REMARKS: NE Boring

**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 3
PAGE 1 OF 1

JOB NO. 110677 Crittenden County
JOB NAME: Bridgeport and Riverside AHP Inspection Facilities

DATE: January 25, 2017
TYPE OF DRILLING: Hollow Stem Auger

STATION: 35.14159, -90.10527
LOCATION: I-55 Weigh Station (Bridgeport Rd)
LOGGED BY: Coty Campbell

EQUIPMENT: CME - 45
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 26.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: N/A									
5		X	Moist, Medium Stiff, Dark Brown Clay							3 4-4		
10		X	Moist, Medium Dense, Light Gray Sand							7 9-9		
15		X	Moist, Dense, Light Gray Sand							9 12-14		
20		X	Moist, Dense, Light Gray Sand							9 18-21		
25		X	Moist, Very Dense, Light Gray Sand*							10 14-17		
25		X	Moist, Very Dense, Light Gray Sand*							12 17-22		
25		X	Moist, Very Dense, Light Gray Sand*							8 18-21		
25		X	Moist, Very Dense, Light Gray Sand*							14 20-25		
25		X	Moist, Very Dense, Light Gray Sand*							16 33-45		
25		X	Moist, Medium Dense, Dark Brown Sand							5		
25		X	Moist, Very Stiff, Dark Brown Clay							5-20		
30			Boring Terminated									
35												

REMARKS: NW Boring.
*24 Hour water level reading was 21.6 feet below ground level (bgl).

**ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.**

BORING NO. 4
PAGE 1 OF 1


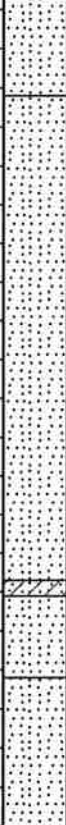

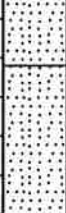
JOB NO. 110677 Crittenden County
JOB NAME: Bridgeport and Riverside AHP Inspection Facilities

DATE: January 25, 2017
TYPE OF DRILLING: Hollow Stem Auger

STATION: 35.14142, -90.10505
LOCATION: I-55 Weigh Station (Bridgeport Rd)
LOGGED BY: Troy Frazier

EQUIPMENT: CME - 45
HAMMER CORRECTION FACTOR: N/A

COMPLETION DEPTH: 26.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% TCR	% RQD	
			SURFACE ELEVATION: N/A										
5		X	Moist, Hard, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							4 17-19			
		X	Moist, Medium Dense, Brown Sand with Some Gravel							7 11-14			
10		X	Moist, Dense, Brown Sand							9 16-19			
		X									9 16-20		
15		X									10 21-26		
		X									10 17-21		
20		X	Moist, Dense, Brown Clayey Sand							8 16-24			
		X	Moist, Dense, Brown Sand							10 25-35			
25		X	Moist, Very Dense, Brown Sand							17 32-30			
			Boring Terminated										
30													
35													

REMARKS: NE Boring

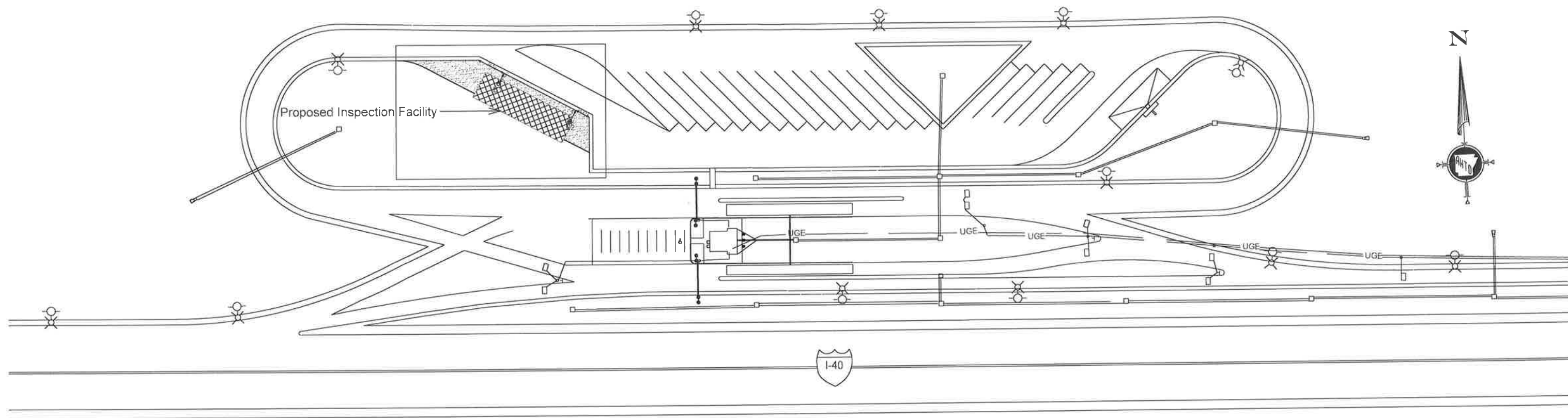


Figure 1 - I-40 Weigh Station Site Layout

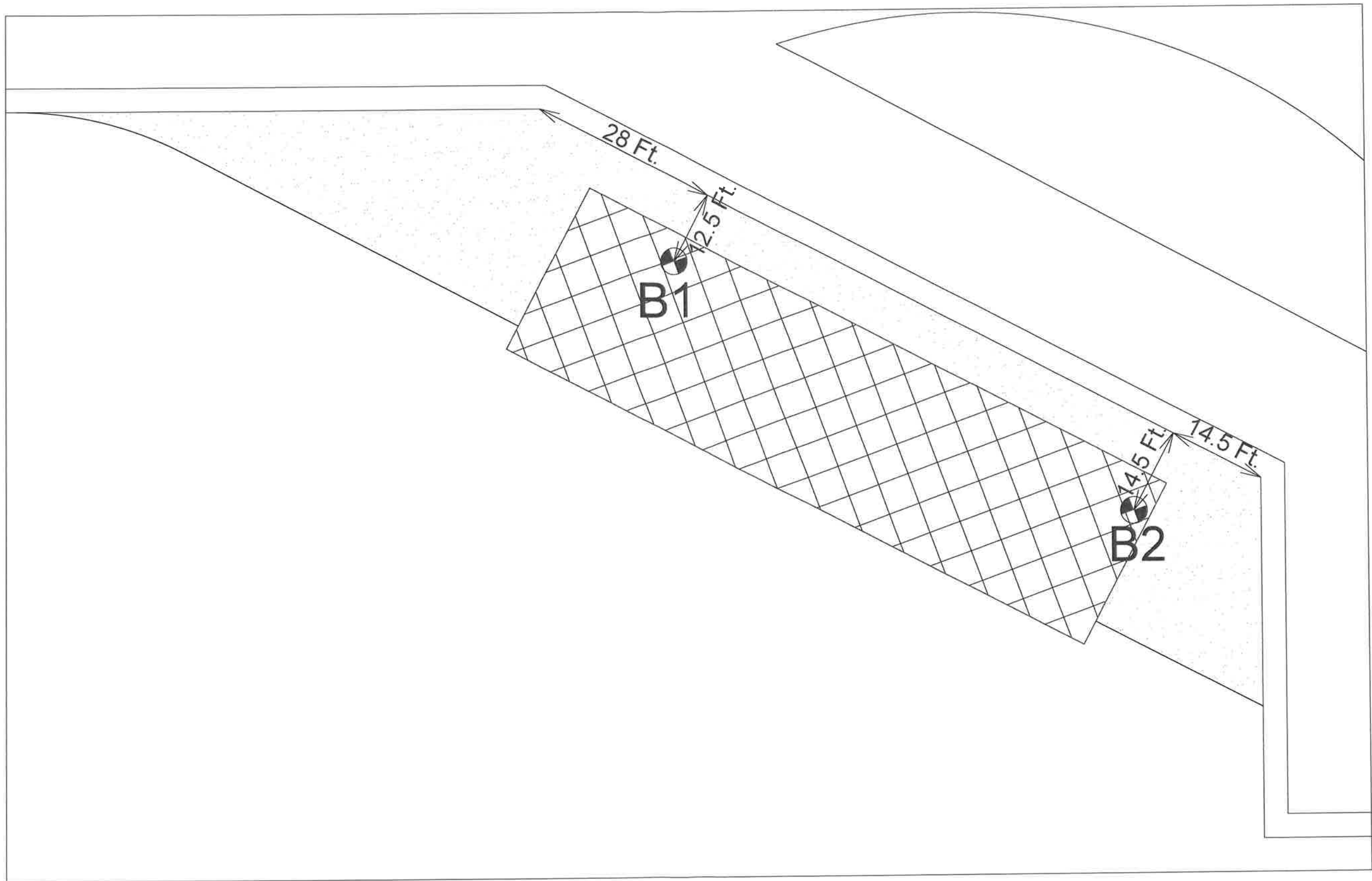


Figure 2 - I-40 Weigh Station Boring Layout

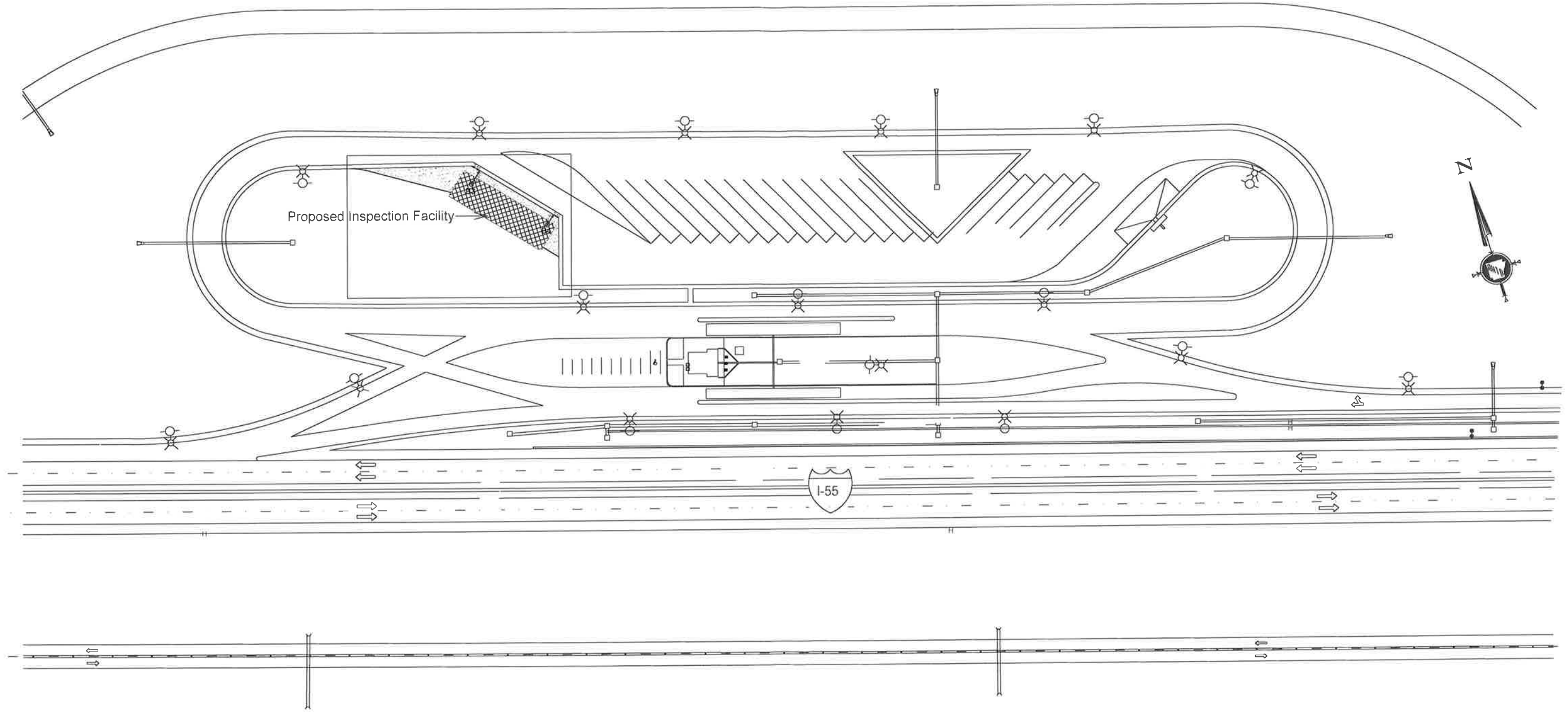


Figure 3 - I-55 Weigh Station Site Layout

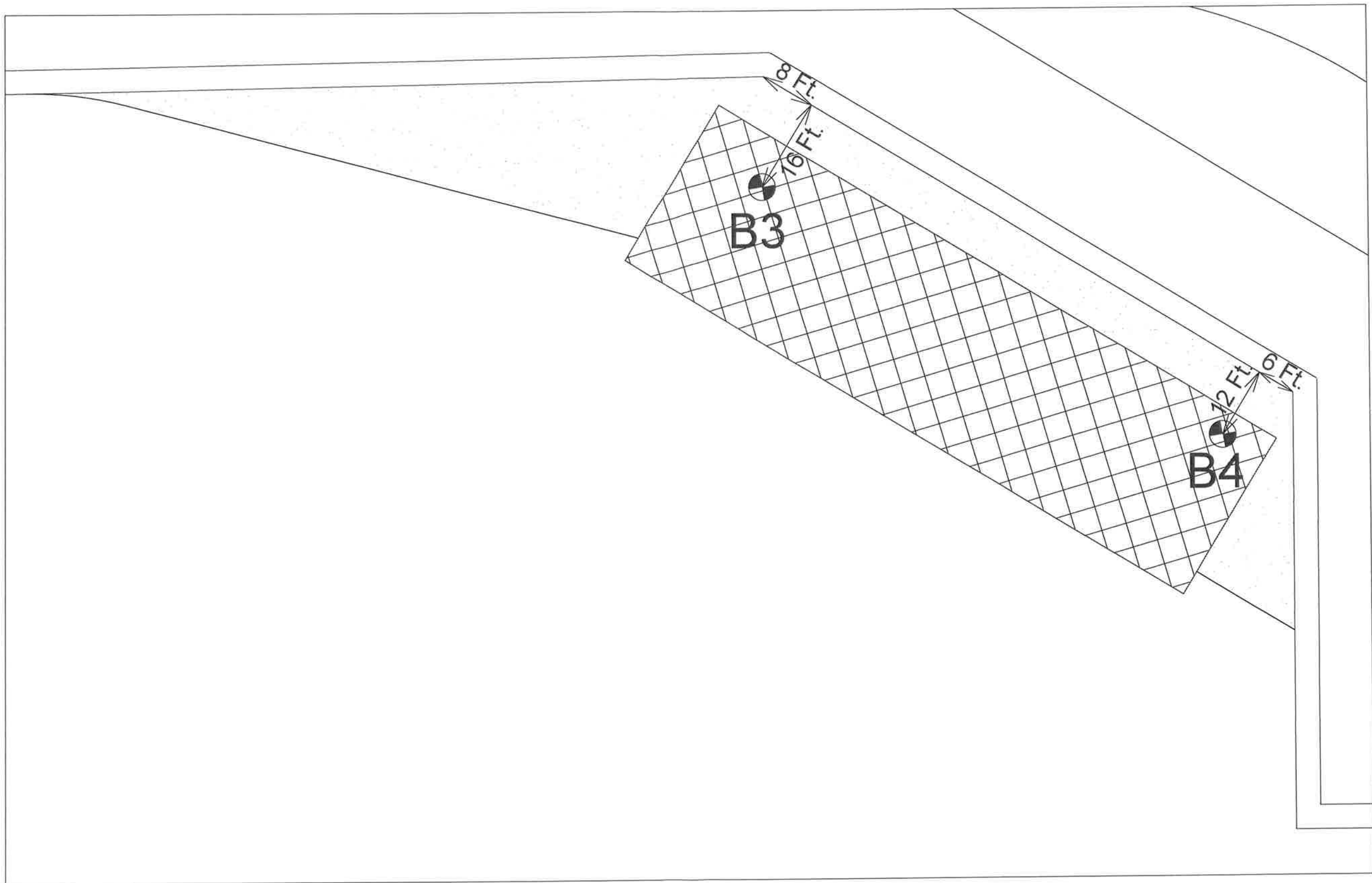


Figure 4 - I-55 Weigh Station Boring Layout