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PAVEMENT DESIGN REPORT
FLYING HORSE NORTH – FILING NO. 6
EL PASO COUNTY, COLORADO

Prepared for:
Flying Horse North, LLC
2138 Flying Horse Club Drive
Colorado Springs, CO 80921

Attn: Adam Doyle

August 10, 2026

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Hannah Grossman

Hannah Grossman
Geotechnical Engineering Staff

Reviewed by:

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Digitally signed by Joseph C Goode III
Date: 08/10/26

Joseph C. Goode III, P.E.
Sr. Engineer

HG:JCG/ed

Entech Job No. 251790

F:\AA Projects\2025\251790-Flying Horse North, LLC-Flying Horse North F6-SGS WWS\Pavement\09-Reports

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1 Introduction

Entech Engineering, Inc. (Entech) completed this pavement design report for the extension of Sandbagger Drive and paving of Holmes Road, which are associated with the Flying Horse North (FHN), Filing No. 6 in El Paso County, Colorado. This report describes the subsurface investigation conducted for the proposed roadway improvements and provides pavement section alternatives and construction recommendations. Entech participated in this project as a consultant to Flying Horse North, LLC. The contents of this report, including the pavement design recommendations, are subject to the limitations and assumptions presented in Section 7.

2 Project Description

This project includes the final grading and paving of the section of Sandbagger Drive and Holmes Road in association with FHN, Filing No. 6, which is a continuation of Sandbagger Drive that was paved as a part of FHN, Filing No. 5. The site is located south of Old Stagecoach Road and west of Black Forest Road in El Paso County, Colorado (Figure 1). The proposed improvements include extending the pavement on Sandbagger Drive from approximately STA 26+07.73 to STA 34+43.58, and paving of Holmes Road from STA 38+27.13 to STA 45+40.40, constituting approximately 1,579 linear feet of pavement. Holmes Road will terminate at a temporary cul-de-sac consisting of compact gravel from STA 36+65.14 to STA 38+27.13. The extent of our investigation is shown in Figure 2.

At the time of our subsurface exploration program, the existing roadway alignment was rough-graded. The site is bordered by the FHN Golf Course to the west and a rural residential property to the east and south. Based on the preliminary site plans prepared by HR Green, the roadways are designated as rural local residential.

3 Subsurface Explorations and Laboratory Testing

3.1 Subsurface Exploration Program

Subsurface conditions at the project site were explored by 4 test borings, designated TB-1 through TB-4, drilled on July 1, 2026. The locations of the test borings are shown on the Site and Exploration Plan (Figure 2). The borings were drilled to depths of 5 to 10 feet below the existing ground surface (bgs). The drilling was performed using a truck-mounted, continuous flight auger drill rig supplied and operated by Entech. Descriptive boring logs providing the lithologies of the

subsurface conditions encountered during drilling are presented in Appendix A. Groundwater levels were measured in each of the open boreholes at the conclusion of, and subsequent to, drilling.

Soil samples were obtained from the borings utilizing the Standard Penetration Test (ASTM D1586) using a 2-inch outside diameter split spoon or a 2½-inch modified California sampler. Results of the Standard Penetration Test (SPT) are included on the boring logs in terms of N-values expressed in blows per foot (bpf). Soil samples recovered from the borings were visually classified and recorded on the boring logs. The soil classifications were later verified utilizing laboratory testing and grouped by soil type. The soil type numbers are included on the boring logs. It should be understood that the soil descriptions shown on the boring logs may vary between boring locations and sample depths.

3.2 Geotechnical Index and Engineering Property Testing

Water content testing (ASTM D2216) was performed on the samples recovered from the borings, and the results are shown on the boring logs. Grain-size analysis (ASTM D6913) and Atterberg limits testing (ASTM D4318) were performed on selected samples to assist in classifying the materials encountered in the borings. Volume change testing was performed on selected samples using the One-dimensional Swell or Collapse Test (ASTM D4546) in order to evaluate the potential expansion characteristics of the soil.

For pavement design, a Modified Proctor (ASTM D1557) and a California Bearing Ratio (CBR) test (ASTM D1883) were completed. Soluble sulfate testing was performed on select soil samples to evaluate the potential for below-grade degradation of concrete due to sulfate attack. The laboratory testing results are presented in Appendix B and summarized in Table B-1.

4 Subgrade Conditions

Three soil types were encountered in the test borings drilled for the subsurface exploration program. The soil types were classified in accordance with the Unified Soil Classification System (USCS) and the American Association of State Highway and Transportation Officials (AASHTO) soil classification system using the laboratory testing results and the observations made during drilling.

4.1 Subsurface Conditions

Subsurface conditions along the proposed roadway for boring TB-1 consisted of stiff sandy clay fill from the existing ground surface to 4 feet bgs (Soil Type 2, AASHTO A-4, A-6), where native dense to medium dense sand with silt was encountered and extended to the termination depth of the boring 10 feet bgs (Soil Type 3, AASHTO A-1-b). In test borings TB-2 and TB-4, conditions generally consisted of medium dense clayey sand fill from the ground surface to the termination depth of the borings 5 feet bgs (Soil Type 1, AASHTO A-2-4). Boring TB-3 consisted of native dense clayey sand from the ground surface to the termination of the boring 5 feet bgs (Soil Type 3, AASHTO A-2-6).

Laboratory test results are presented in Appendix B and are summarized in Table B-1.

4.2 Groundwater

Groundwater was not encountered in the test borings. Groundwater fluctuations are likely and will depend on seasonal variations, local precipitation, runoff, and other factors. We do not anticipate that groundwater will affect the proposed roadway construction.

5 Pavement Design Recommendations

Pavement design recommendations were made in accordance with the *El Paso County Engineering Criteria Manual*.

5.1 Subgrade Conditions

California Bearing Ratio (CBR) testing was performed on a representative sample of the pavement subgrade, clayey sand fill (Soil Type 2) from boring TB-1, to determine the support characteristics of the subgrade soils for the roadway section. The results of the CBR testing are presented in Appendix B and summarized in Exhibit 1.

Exhibit 1: Subsurface Laboratory Testing Summary

Design Parameter	Values
Soil Type	2 – Clayey Sand Fill
CBR at 95%	7.5
Design CBR	7.5
Liquid Limit	26
Plasticity Index	9
Percent Passing 200	44.4
AASHTO Classification	A-4
Group Index	1
Unified Soils Classification	SC

5.2 Swell Mitigation

El Paso County requires swell mitigation for cohesive soils with swell testing results 2.0% or greater under a surcharge of 100 to 150 pounds per square foot (psf). Potentially expansive soil was encountered in boring TB-1 to a depth of 4 feet; however, swell tests resulted in a swell of 0.1%, indicating that mitigation for expansive soils is not required on this site.

5.3 Traffic Loading

Traffic data is not available for the roadways; however, the roadways are considered local roadways based on the current development plans. The *El Paso County Engineering Criteria Manual* provides a default 18-kip equivalent single axle loading (ESAL) for local roadways. For design, a default ESAL value of 36,500 was used for the rural local roadways.

5.4 Pavement Design

The recommended pavement sections were determined utilizing the *El Paso County Engineering Criteria Manual,* the CBR testing, and the default ESAL. Design parameters used in the pavement analysis are presented in Exhibit 2.

Exhibit 2: Pavement Design Parameters

Design Parameter	Values
Reliability	75%
Standard Deviation	0.45
Serviceability Loss (Δ psi)	2.5
Design CBR	7.5
Resilient Modulus - Soil Type 2	11, 250 psi
Structural Coefficients	
Hot Mix Asphalt	0.44
Aggregate Base Course	0.11
Recycled Concrete Base	0.11

Pavement sections recommended for the roadway are summarized in Exhibit 3. The pavement design calculations are presented in Appendix C.

Exhibit 3: Recommended Pavement Sections

Pavement Area	Roadway Designation	Design ESAL	Design CBR	Alternative [1]
Sandbagger Drive and Holmes Road	Rural Local	36,500	7.5	4.0 inches HMA over 4.0 inches ABC/RCB

ABC = Aggregate Base Course; RCB = Recycled Concrete Base; ESAL = Equivalent Single Axle Loads; HMA = Hot Mix Asphalt

Notes:
1. All pavement alternatives meet the minimum sections required per the *El Paso County Engineering Criteria Manual.*

6 Construction Recommendations

Pavement design recommendations provided herein are contingent on good construction practices, and poor construction techniques may result in poor performance. Our analyses assumed that this project would be constructed according to the *El Paso County Engineering Criteria Manual* and the *Pikes Peak Region Asphalt Paving Specifications.*

6.1 Earthwork Recommendations for Pavement Subgrade

Proper subgrade preparation is required for adequate pavement performance. Surface vegetation should be removed by stripping, with the depth to be field-determined. Where loose soils are encountered, they should be removed to a minimum depth of 2 feet below aggregate base course materials or to underlying dense and unyielding subgrade, whichever occurs first. Once suitable

materials are encountered, the overexcavated material should be recompacted in accordance with Section 6.1.2. Refer to Section 6.1.2 for additional discussion.

We do not anticipate issues with the subgrade in regard to shallow water, frost-susceptible soils, groundwater or drainage conditions, or cold weather construction.

6.1.1 Subgrade Preparation

Proper subgrade preparation is required for adequate pavement performance. Paving areas should be cleared of all deleterious materials, including but not limited to existing pavements, utility poles, and fence poles. Surface vegetation should be removed by stripping, with the depth to be field-determined. Where loose soils are encountered, they should be removed to a minimum depth of 2 feet below aggregate base course materials or to underlying dense and unyielding subgrade, whichever occurs first.

The compacted surface below pavements should be proof rolled with a fully loaded, tandem-axle, 10-yard dump truck or equivalent. Any areas that are delineated to be soft, loose, or yielding during proof rolling should be removed and reconditioned, or replaced.

6.1.2 Fill Placement and Compaction

Granular fill placed as part of the pavement subgrade shall consist of nonexpansive, granular soil, free of organic matter, unsuitable materials, debris, and cobbles greater than 3 inches in diameter. Additionally, any granular fill placed as part of the roadway subgrade should have a minimum CBR of 10. All granular fill placed within the pavement subgrade should be compacted to a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density at +/-2% of optimum moisture content. Fill material should be placed in horizontal lifts such that each finished lift has a compacted thickness of 6 inches or less. Entech should approve any imported fill to be used within the pavement subgrade area prior to delivery to the site.

6.1.3 Aggregate Base Course and Recycled Concrete Base

ABC or RCB materials shall conform to the *El Paso County Engineering Criteria Manual*, Section D.5 Material Specifications. ABC or RCB materials should be compacted to a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density within +/-2% of optimum moisture content.

6.2 Concrete Degradation Due to Sulfate Attack

Sulfate solubility testing was conducted on several samples recovered from the test borings to evaluate the potential for sulfate attack on concrete placed below surface grade. The test results indicated 0.00% to less than 0.01% soluble sulfate (by weight). The test results indicate the sulfate component of the in-place soils presents a negligible exposure threat to concrete placed below the site grade.

Type 1L cement is recommended for concrete on the site. To further avoid concrete degradation during construction, it is recommended that concrete not be placed on frozen or wet ground. Care should be taken to prevent the accumulation or ponding of water in the foundation excavation prior to the placement of concrete. If standing water is present in the foundation excavation, it should be removed by ditching to sumps and pumping the water away from the foundation area prior to concrete placement. If concrete is placed during periods of cold temperatures, the concrete must be kept from freezing. This may require covering the concrete with insulated blankets and adding heat to prohibit freezing.

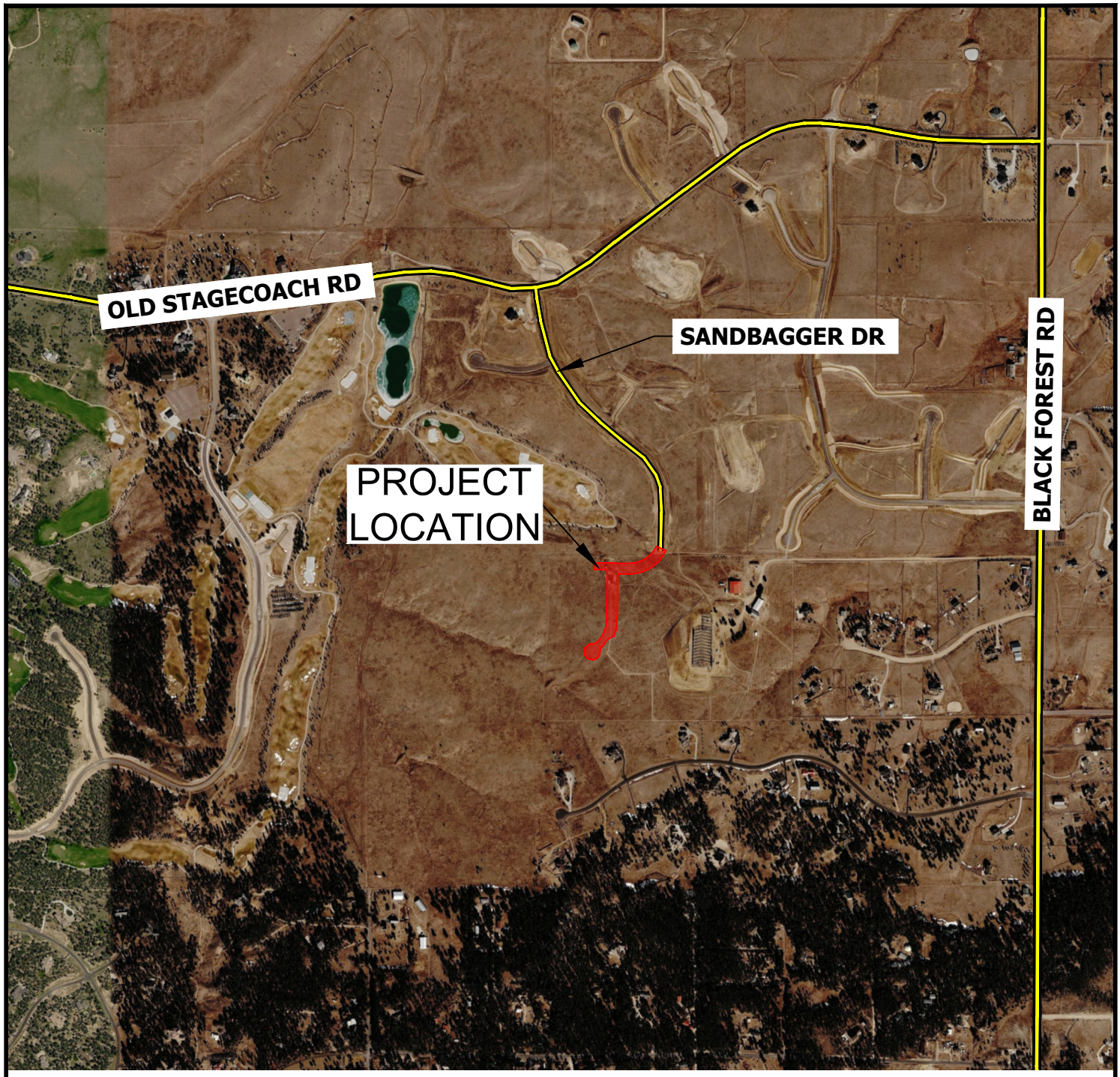
6.3 Construction Observation

Subgrade preparation for pavement structures should be observed by Entech in order to verify that (1) no anomalies are present, (2) materials similar to those described in this report have been encountered or placed, and (3) no soft spots, expansive or organic soil, or debris are present in the pavement subgrade prior to paving.

7 Closure

The subsurface investigation, geotechnical evaluation, and recommendations presented in this report are intended for the Flying Horse North, Filing No. 6 paving project of Sandbagger Drive and Holmes Road in El Paso County, Colorado. In conducting the subsurface investigation, laboratory testing, engineering evaluation, and reporting, Entech Engineering, Inc. endeavored to work in accordance with generally accepted professional geotechnical and geologic practices and principles consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession currently practicing in the same locality and under similar conditions. No other warranty, express or implied, is made. During final design and/or construction, if conditions are encountered that appear different from those described in this report, Entech Engineering, Inc. requests to be notified so that the evaluation and recommendations presented herein can be reviewed and modified as appropriate.

If there are any questions regarding the information provided herein, or if Entech Engineering, Inc. can be of further assistance, please do not hesitate to contact us.



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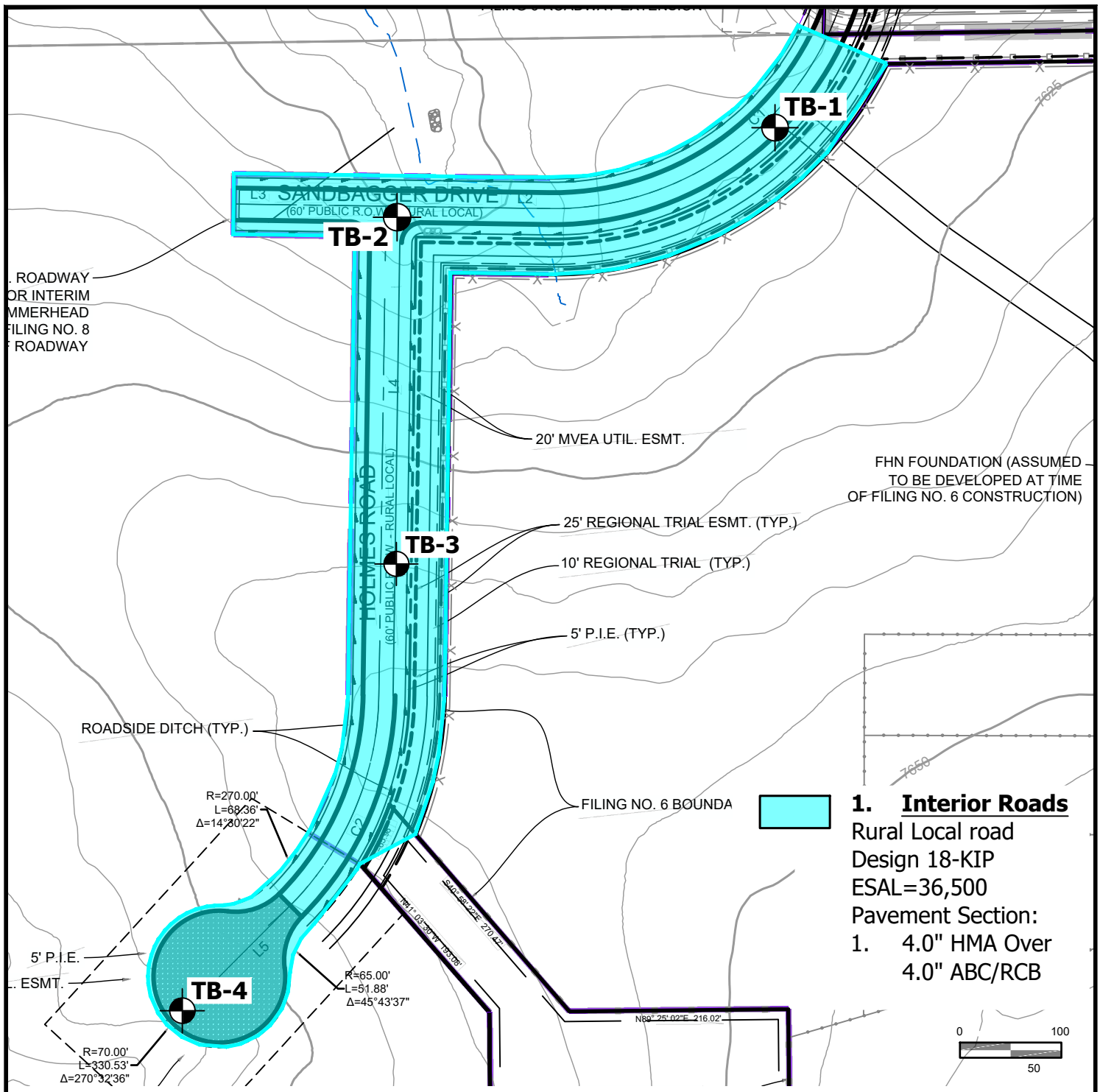
VICINITY MAP

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

JOB NO. 251790

FIG. 1



TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

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SITE AND EXPLORATION PLAN

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

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251790

FIG. 2

APPENDIX A: Test Boring Logs

TEST BORING 1
DATE DRILLED 7/1/2026

REMARKS

DRY TO 10', 7/1/26

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
FILL 0-4', CLAY, SANDY, BROWN, STIFF, MOIST			12	16.6	2
SAND, WITH SILT, TAN, DENSE to MEDIUM DENSE, MOIST			32	4.6	3
10			17	6.3	3
15					
20					

TEST BORING 2
DATE DRILLED 7/1/2026

REMARKS

DRY TO 5', 7/1/26

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
FILL 0-5', SAND, CLAYEY, BROWN to TAN, MEDIUM DENSE, MOIST			20	6.0	1
5			16	8.1	1
10					
15					
20					

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TEST BORING LOGS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

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FIG. A-1

TEST BORING 3
DATE DRILLED 7/1/2026

REMARKS

DRY TO 5', 7/1/26

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			42	10.1	3	SAND, CLAYEY, BROWN to TAN, DENSE, MOIST
5			39	8.0	3	
10						
15						
20						

TEST BORING 4
DATE DRILLED 7/1/2026

REMARKS

DRY TO 5', 7/1/26

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Description
			16	4.3	1	FILL 0-5', SAND, CLAYEY, BROWN to TAN, MEDIUM DENSE, MOIST
5			16	6.0	1	
10						
15						
20						

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TEST BORING LOGS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

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FIG. A-2

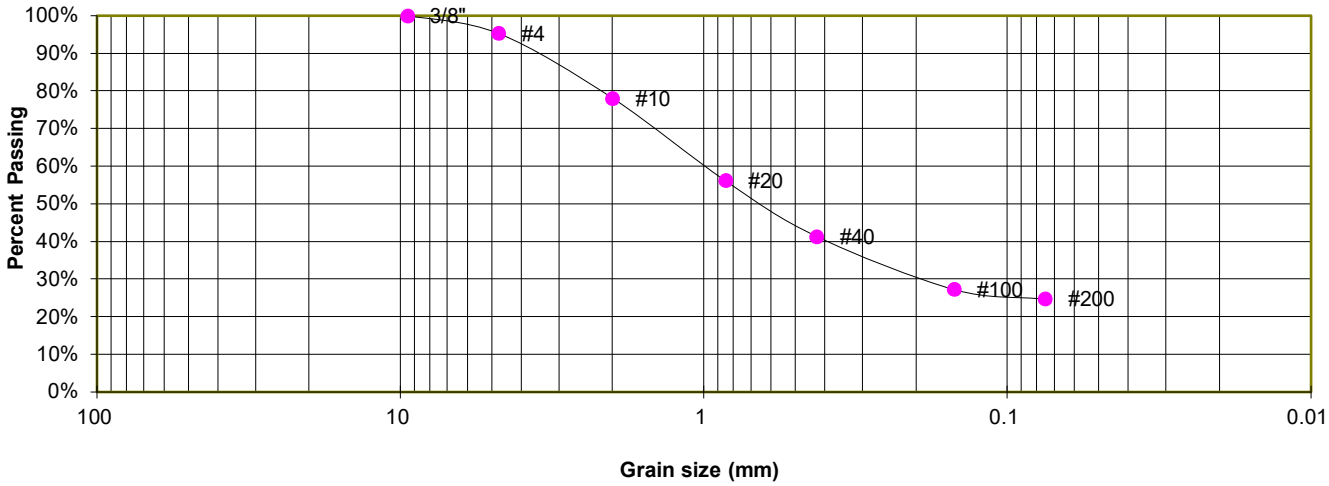
APPENDIX B: Laboratory Test Results

TABLE B-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	SWELL/ COLLAPSE (%)	AASHTO CLASS. (GROUP INDEX)	USCS	SOIL DESCRIPTION
1	3	0-3	6.9		24.7	34	22	12			A-2-6 (0)	SC	FILL, SAND, CLAYEY
1	2	1-2	7.5		23.0	24	17	7			A-2-4 (0)	SC	FILL, SAND, CLAYEY
1	4	1-2	3.7		16.0	28	19	9			A-2-4 (0)	SC	FILL, SAND, CLAYEY
2, CBR	1	0-3	4.8		44.4	26	17	9			A-4 (1)	SC	FILL, SAND, CLAYEY
2	1	1-2	14.6	115.5	65.5	30	20	10	<0.01	0.1	A-6 (4)	CL	FILL, CLAY, SANDY
3	3	1-2	10.3		17.5	35	23	12	0.00		A-2-6 (0)	SC	SAND, CLAYEY
3	1	10	6.5		9.8	NV	NP	NP			A-1-b (0)	SW-SM	SAND, WITH SILT

Project: Flying Horse North, Filing No. 6
Client: Flying Horse North, LLC
Job No: 251790

TEST BORING	3	SOIL DESCRIPTION	FILL, SAND, CLAYEY
DEPTH (FT)	0-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.3%
10	78.1%
20	56.2%
40	41.3%
100	27.3%
200	24.7%

ATTERBERG LIMITS

Plastic Limit	22
Liquid Limit	34
Plastic Index	12

SOIL CLASSIFICATION

USCS CLASSIFICATION:	SC
AASHTO CLASSIFICATION:	A-2-6
AASHTO GROUP INDEX:	0

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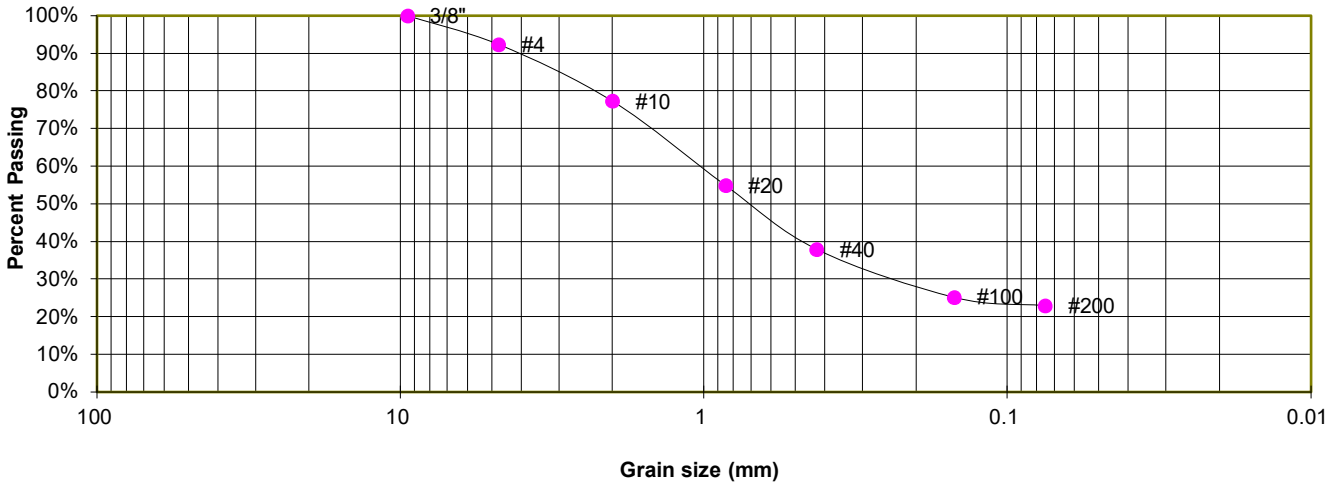
LABORATORY TEST RESULTS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

JOB NO. 251790

FIG. B-1

TEST BORING	2	SOIL DESCRIPTION	FILL, SAND, CLAYEY
DEPTH (FT)	1-2	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.4%
10	77.3%
20	54.9%
40	37.9%
100	25.2%
200	23.0%

ATTERBERG LIMITS

Plastic Limit	17
Liquid Limit	24
Plastic Index	7

SOIL CLASSIFICATION

USCS CLASSIFICATION:	SC
AASHTO CLASSIFICATION:	A-2-4
AASHTO GROUP INDEX:	0

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LABORATORY TEST RESULTS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

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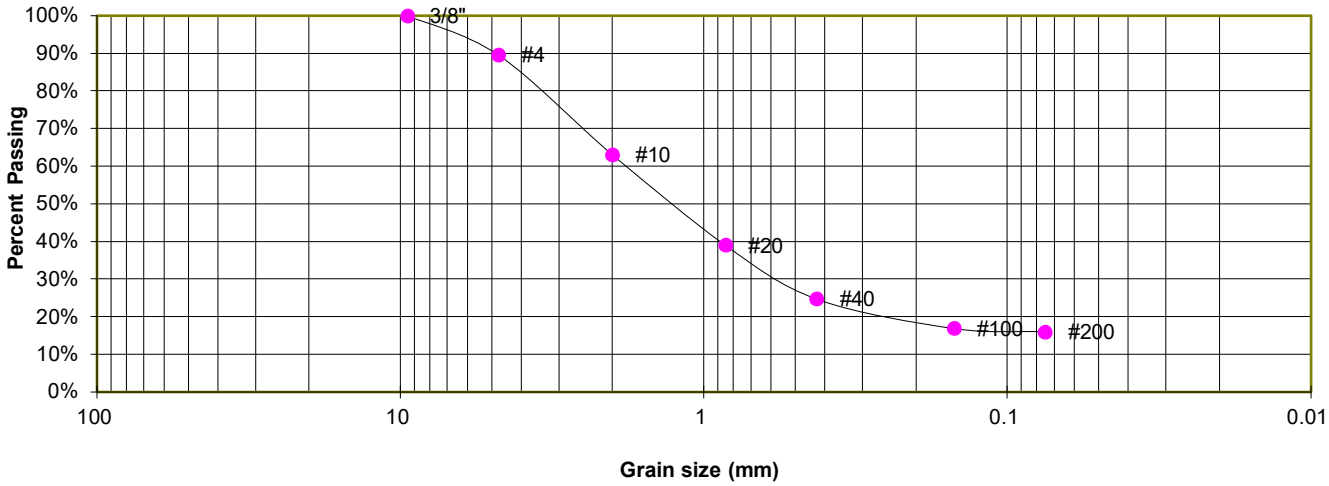
FIG. B-2

TEST BORING	4	SOIL DESCRIPTION	FILL, SAND, CLAYEY
DEPTH (FT)	1-2	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.6%
10	63.0%
20	39.1%
40	24.7%
100	16.9%
200	16.0%

ATTERBERG LIMITS

Plastic Limit	19
Liquid Limit	28
Plastic Index	9

SOIL CLASSIFICATION

USCS CLASSIFICATION:	SC
AASHTO CLASSIFICATION:	A-2-4
AASHTO GROUP INDEX:	0

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LABORATORY TEST RESULTS

FLYING HORSE NORTH, FILING NO. 6
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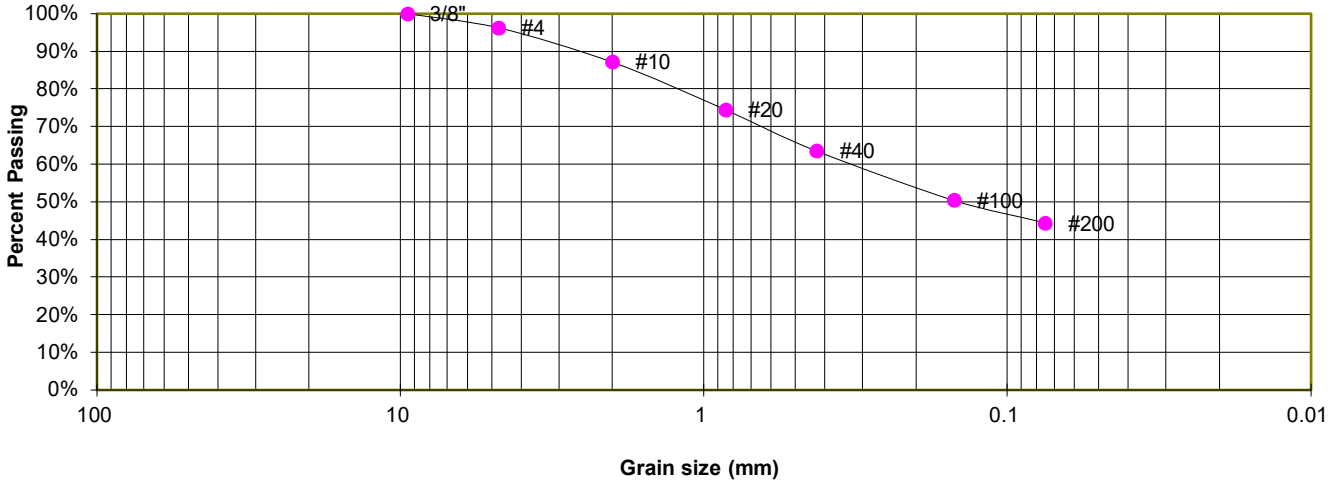
FIG. B-3

TEST BORING	1	SOIL DESCRIPTION	FILL, SAND, CLAYEY
DEPTH (FT)	0-3	SOIL TYPE	2, CBR



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.3%
10	87.2%
20	74.5%
40	63.6%
100	50.5%
200	44.4%

ATTERBERG LIMITS

Plastic Limit	17
Liquid Limit	26
Plastic Index	9

SOIL CLASSIFICATION

USCS CLASSIFICATION:	SC
AASHTO CLASSIFICATION:	A-4
AASHTO GROUP INDEX:	1

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LABORATORY TEST RESULTS

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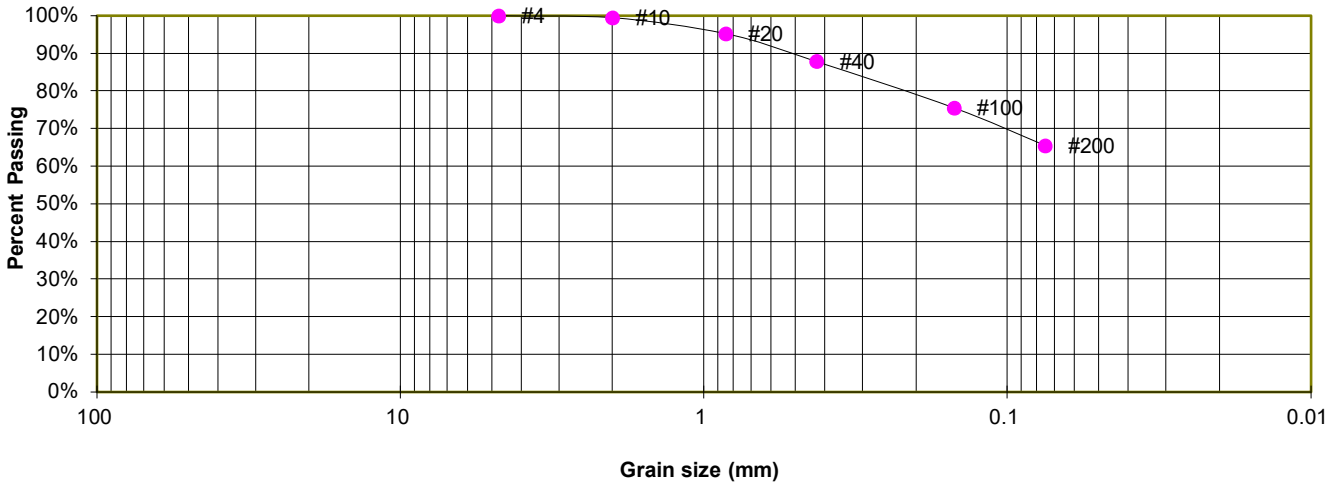
FIG. B-4

TEST BORING	1	SOIL DESCRIPTION	FILL, CLAY, SANDY
DEPTH (FT)	1-2	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.5%
20	95.3%
40	87.9%
100	75.6%
200	65.5%

ATTERBERG LIMITS

Plastic Limit	20
Liquid Limit	30
Plastic Index	10

SOIL CLASSIFICATION

USCS CLASSIFICATION:	CL
AASHTO CLASSIFICATION:	A-6
AASHTO GROUP INDEX:	4

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LABORATORY TEST RESULTS

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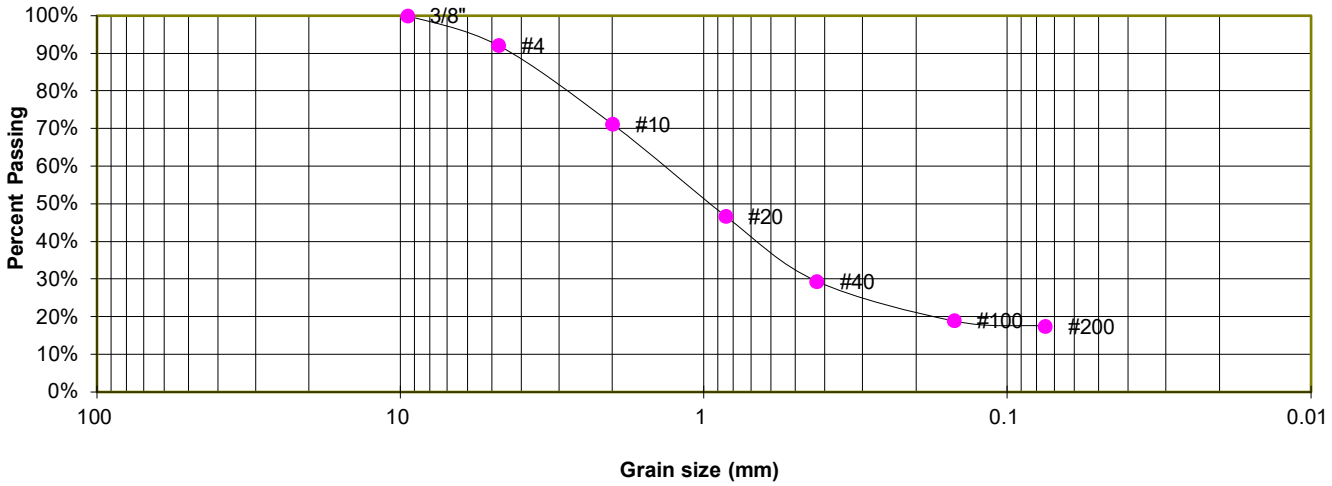
FIG. B-5

TEST BORING	3	SOIL DESCRIPTION	SAND, CLAYEY
DEPTH (FT)	1-2	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.1%
10	71.2%
20	46.8%
40	29.4%
100	19.0%
200	17.5%

ATTERBERG LIMITS

Plastic Limit	23
Liquid Limit	35
Plastic Index	12

SOIL CLASSIFICATION

USCS CLASSIFICATION:	SC
AASHTO CLASSIFICATION:	A-2-6
AASHTO GROUP INDEX:	0

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LABORATORY TEST RESULTS

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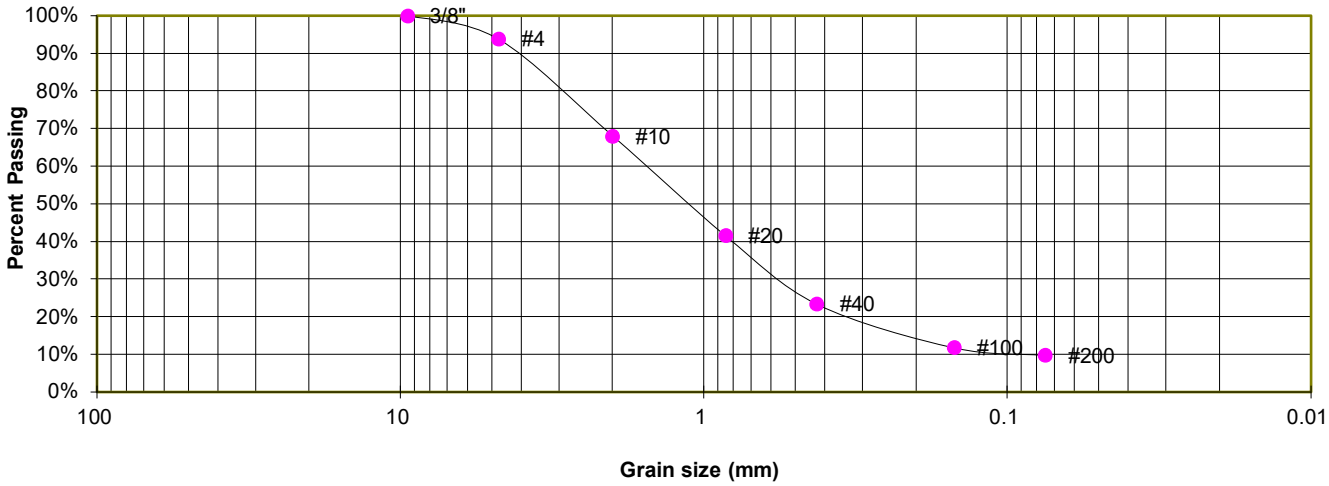
FIG. B-6

TEST BORING	1	SOIL DESCRIPTION	SAND, WITH SILT
DEPTH (FT)	10	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.8%
10	68.1%
20	41.6%
40	23.4%
100	11.8%
200	9.8%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM
AASHTO CLASSIFICATION: A-1-b
AASHTO GROUP INDEX: 0

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LABORATORY TEST RESULTS

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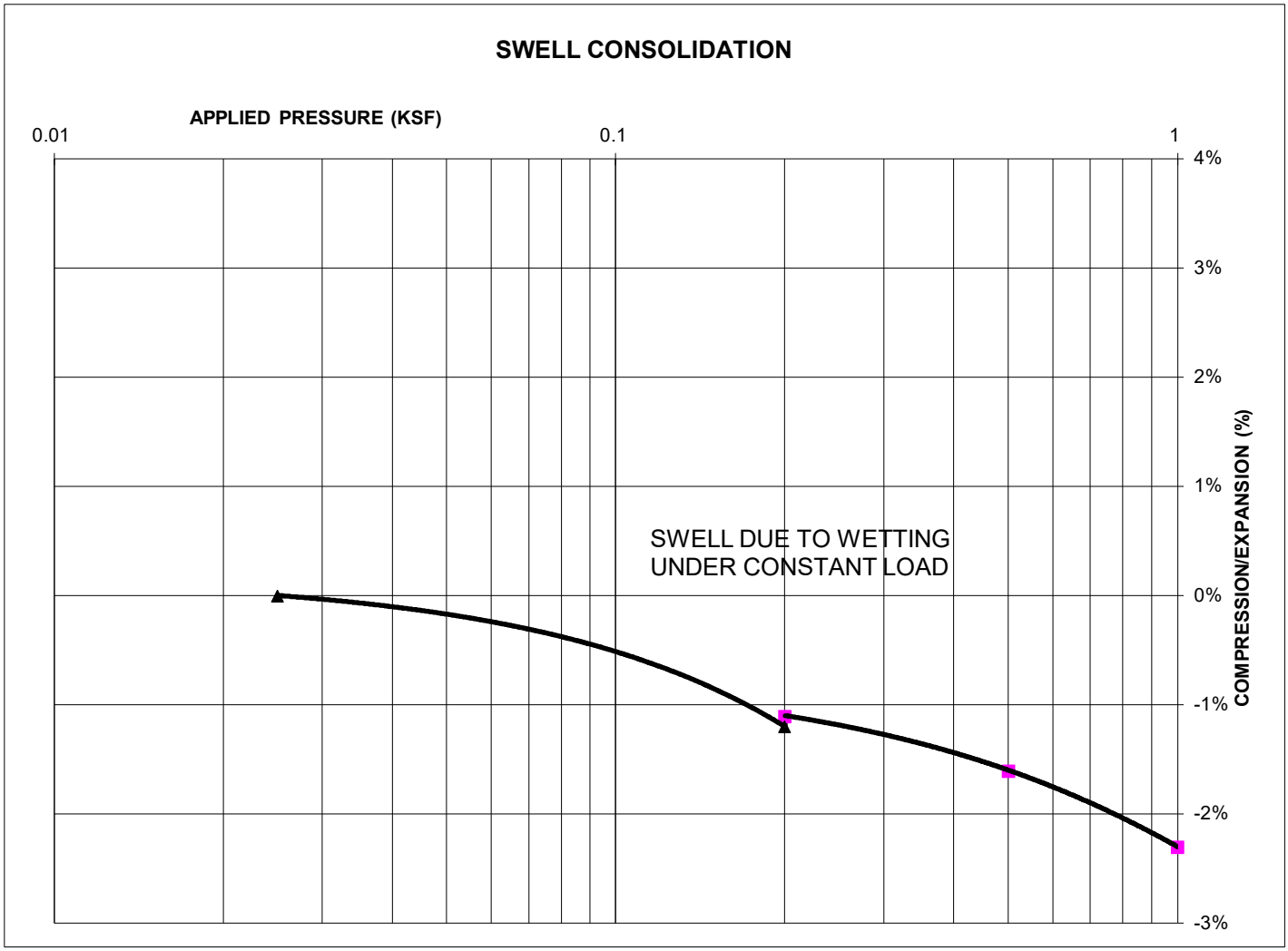
FIG. B-7

TEST BORING	1	SOIL DESCRIPTION	FILL, CLAY, SANDY
DEPTH (FT)	1-2	SOIL TYPE	2



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 115
NATURAL MOISTURE CONTENT: 14.6%
SWELL/COLLAPSE (%): 0.1%

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SWELL TEST RESULTS

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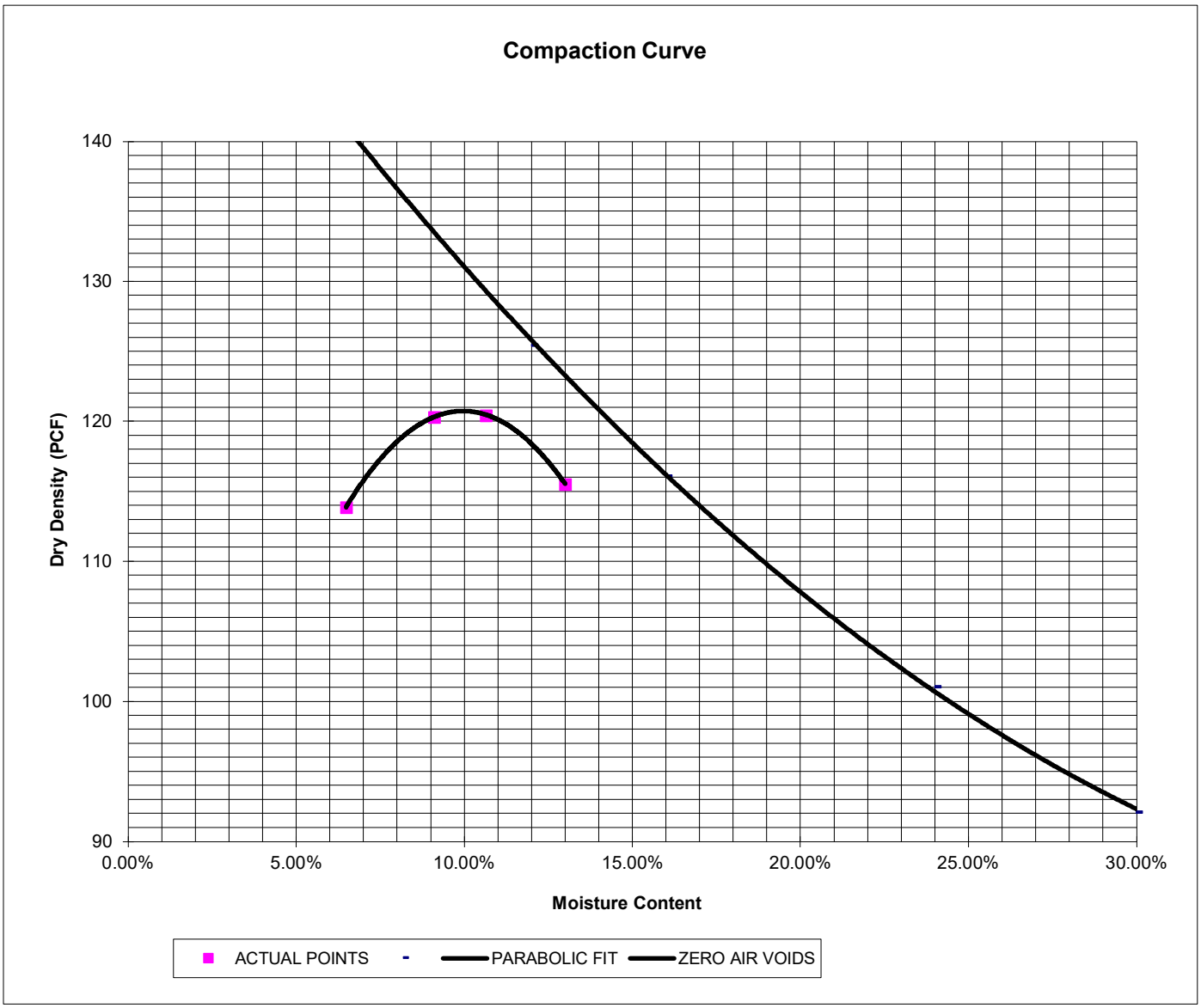
FIG. B-8

SAMPLE LOCATION TB-1 @ 0-3'	SOIL DESCRIPTION FILL, SAND, CLAYEY, BROWN SOIL TYPE 2

PROCTOR DATA

IDENTIFICATION:	SC
PROCTOR TEST #:	1
TEST BY:	SB
TEST DESIGNATION:	ASTM-698-A
MAXIMUM DRY DENSITY (PCF):	120.7
OPTIMUM MOISTURE:	9.9



ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

JOB NO. 251790

FIG. B-9

SAMPLE LOCATION TB-1 @ 0-3' | SOIL DESCRIPTION FILL, SAND, CLAYEY, BROWN
SOIL TYPE 2

CBR TEST LOAD DATA

Piston Diameter (cm): 4.958
Piston Area (in^2): 2.993

Penetration Depth (inches)	*10 BLOWS* Mold # 1 Load (lbs)	Stress (psi)	*25 BLOWS* Mold # 2 Load (lbs)	Stress (psi)	*56 BLOWS* Mold # 3 Load (lbs)	Stress (psi)
0.000	0	0.00	0	0.00	0	0.00
0.025	21	7.02	51	17.04	89	29.74
0.050	30	10.03	68	22.72	143	47.79
0.075	34	11.36	78	26.07	172	57.48
0.100	35	11.70	83	27.74	185	61.82
0.125	37	12.36	92	30.74	206	68.84
0.150	40	13.37	98	32.75	233	77.86
0.175	44	14.70	108	36.09	251	83.88
0.200	45	15.04	113	37.76	268	89.56
0.300	53	17.71	132	44.11	314	104.93
0.400	52	17.38	140	46.78	368	122.97
0.500	50	16.71	152	50.79	421	140.68

MOISTURE AND DENSITY DATA

	Mold # 1	Mold # 2	Mold # 3
Can #	500	501	502
Wt. Can	8.37	8.34	8.35
Wt. Can+Wet	334.55	247.4	264.48
Wt. Can+Dry	288.42	217.34	235.89
Wt. H20	46.13	30.06	28.59
Wt. Dry Soil	280.05	209	227.54
Moisture Content	16.47%	14.38%	12.56%
Wet Density (PCF)	103.9	114.3	122.7
Dry Density (PCF)	94.5	104.0	111.6
% Compaction	78%	86%	92%
CBR	1.17	2.77	6.18

PROCTOR DATA

Maximum Dry Density (pcf)	120.7
Optimum Moisture	9.9
90% of Max. Dry Density (pcf)	108.6
95% of Max. Dry Density (pcf)	114.7

CBR at 90% of Max. Density = 4.9 ~ R VALUE 10
CBR at 95% of Max. Density = 7.5 ~ R VALUE 17

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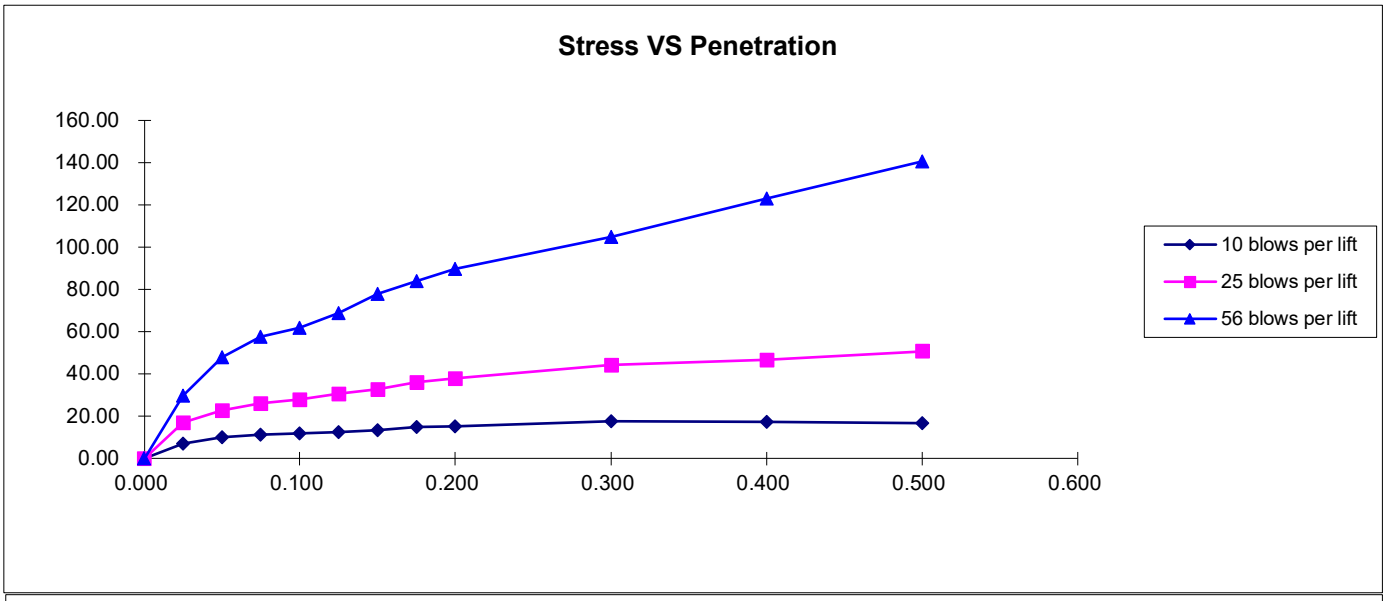
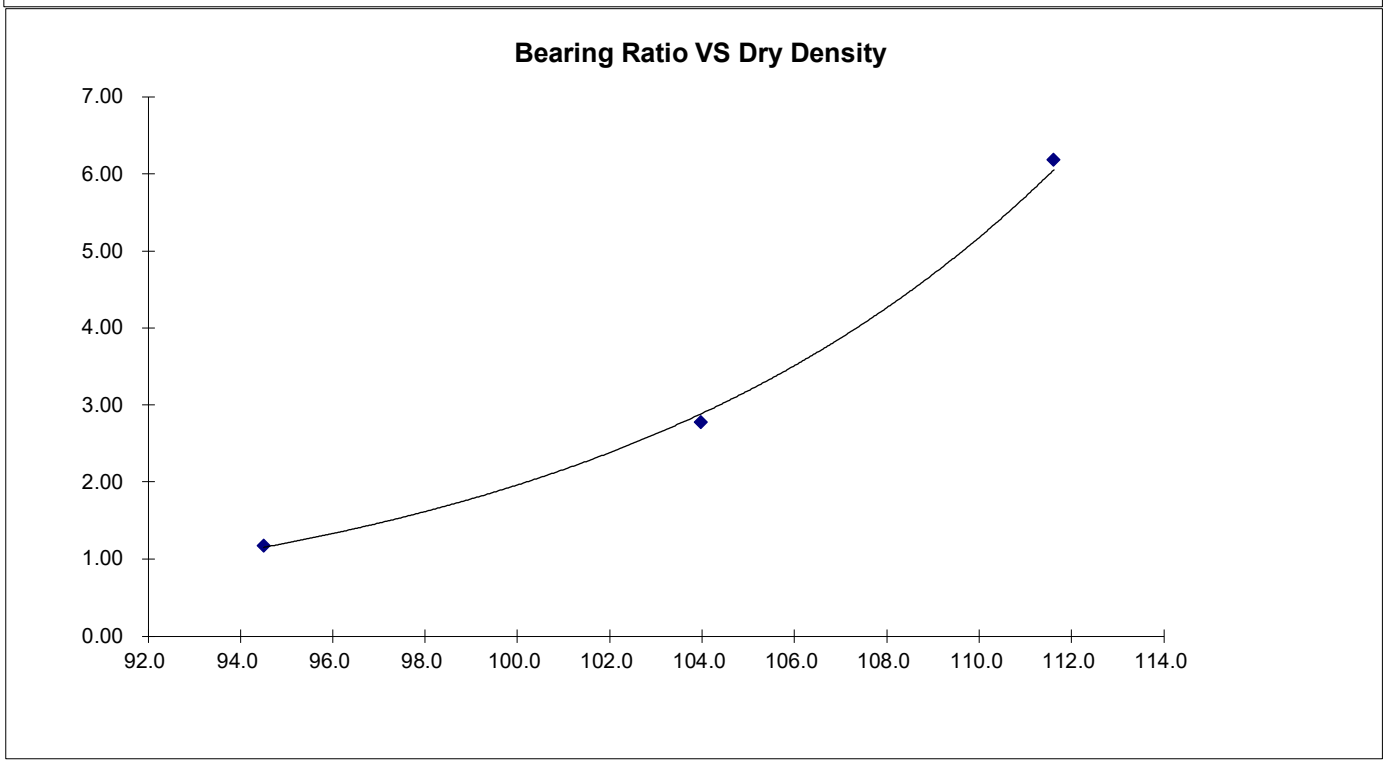
FIG. B-10

SAMPLE LOCATION TB-1 @ 0-3'	SOIL DESCRIPTION FILL, SAND, CLAYEY, BROWN SOIL TYPE 2





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LABORATORY TEST RESULTS

FLYING HORSE NORTH, FILING NO. 6
FLYING HORSE NORTH, LLC

JOB NO. 251790

FIG. B-11

APPENDIX C: Pavement Design Calculations

FLEXIBLE PAVEMENT DESIGN

PROJECT DATA

Project Location: Flying Horse North, Filing No. 6

Job Number: 251790

DESIGN DATA

Equivalent (18-kip) Single Axle Load Applications (ESAL):	ESAL (W_{18}) =	36,500
Design CBR	CBR =	7.5
Standard Deviation	S_o =	0.45
Loss in Serviceability	Δpsi =	2.5
Reliability	Reliability =	75
Reliability (z-statistic)	Z_R =	-0.67
Soil Resilient Modulus	M_R =	11,250 psi

Required Structural Number (SN): → SN = 1.51

DESIGN EQUATIONS

Resilient Modulus

If using CBR: $M_R = (CBR) \times 1{,}500$

If using R-Value: $M_R = 10^{[(S_1 + 18.72) / 6.24]}$ where: $S_1 = [(\text{R-value} - 5) / 11.29] + 3$

Required Structural Number

$$\log_{10}W_{18} = Z_R * S_O + 9.36*\log_{10}(SN+1) - 0.20 + \frac{\log_{10}\left[\frac{\Delta PSI}{4.2 - 1.5}\right]}{0.40 + \frac{1094}{(SN+1)^{5.19}}} + 2.32*\log_{10}M_R - 8.07$$

Pavement Section Thickness

$SN^* = C_1D_1 + C_2D_2$ where:

C_1 = Strength Coefficient - HMA

C_2 = Strength Coefficient - ABC/RCB

D_1 = Depth of HMA (inches)

D_2 = Depth of ABC/RCB (inches)

RECOMMENED THICKNESSES

Layer	Material	Coefficient	Thickness (D^*_i)	SN^*_i	SN
1	HMA	C_1 = 0.44	4.0 inches	1.760	-
2	ABC/RCB	C_2 = 0.11	4.0 inches	0.440	
			SN* = 2.200		1.51

Pavement SN > Required SN, Design is Acceptable

FIG. C-1