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Our recommendations for flexible pavement sections are presented in the following tables.

Material	Pavement Design Thickness	
	Light Duty	Heavy Duty
Hot-Mix Asphalt Concrete (HMAC)	1.5 inches	2.5 inches
Flexible Base	5 inches	6 inches
Compacted Select Fill	8 inches	8 inches

The above recommendations for heavy duty pavement present thicker pavement sections than the City of El Paso's minimum recommended values for the noted street classifications due to the low CBR value obtained from our laboratory testing.

**Garbage Dumpster Areas**

Where flexible pavements are constructed at any site, we recommend that reinforced concrete pads be provided in front of and beneath trash receptacles. The dumpster trucks should be parked on the rigid pavement when the receptacles are lifted. It is suggested that such pads also be provided in drives where the dumpster trucks make turns with small radii to access the receptacles. The concrete pads at this site should be designed according to the "Heavy Duty" section as presented in the following section of this report and reinforced with conventional steel reinforcing bars or welded wire mats.

**RIGID PAVEMENT**

We recommend that rigid pavement sections at this site consist of the following:

Material	Pavement Design Thickness	
	Light Duty	Heavy Duty
Portland Cement Concrete	5 inches	6 inches
Compacted Select Fill	12 inches	12 inches

In general, ACI 330 R-01 (latest revision) *Guide for Design and Construction of Concrete Parking Lots* should be followed in addition to the recommendations below.

Using the previously referenced modulus of subgrade reaction value and the foregoing traffic volume, the following rigid pavement reinforcement is recommended.

- Maximum Individual Slab Dimension  
(Expansion Joint to Crack Control Joint) = 12.5 feet by 12.5 feet (light duty)
- Maximum Individual Slab Dimension  
(Expansion Joint to Crack Control Joint) = 15 feet by 15 feet (heavy duty)

Reinforcement Size	= No. 4 Deformed Bars
Reinforcement Spacing	= 18 inches on centers each way
Load Transfer at Joints, Dowel Size	= 3/4-inch diameter smooth bars
Load Transfer at Joints, Dowel Length	= 12 inches (one end treated to slip)
Load Transfer at Joints, Dowel Spacing	= 12 inches on centers along each joint

Refer to the *Pavement Construction Considerations* section of this report for additional recommendations.

## PAVEMENT CONSTRUCTION CONSIDERATIONS

### SUBGRADE PREPARATION

Areas to support pavements should be stripped of all vegetation and organic topsoil and the exposed subgrade should be proofrolled in accordance with the recommendations in the *Site Preparation* section under *Foundation Construction Considerations*.

After completion of the proofrolling operations and just prior to flexible base placement, the exposed subgrade should be moisture conditioned by scarifying to a minimum depth of 8 in. and recompact to a minimum of 95 percent of the maximum density determined from ASTM D1557. The moisture content of the subgrade should be maintained within the range of 3 percentage points below optimum water content to 3 percentage points above the optimum water content until permanently covered. Please note that the northernmost parking lot may require lime treatment due to the expansive clays observed in Boring B-18 in lieu of conventional subgrade preparation.

### DRAINAGE CONSIDERATIONS

As with any soil-supported structure, the satisfactory performance of a pavement system is contingent on the provision of adequate surface and subsurface drainage. Insufficient drainage which allows saturation of the pavement subgrade and/or the supporting granular pavement materials will greatly reduce the performance and service life of the pavement systems.

Surface and subsurface drainage considerations crucial to the performance of pavements at this site include (but are not limited to) the following:

- 1) Any known natural or man-made subsurface seepage at the site which may occur at sufficiently shallow depths as to influence moisture contents within the subgrade should be intercepted by drainage ditches or below grade French drains.
- 2) Final site grading should eliminate isolated depressions adjacent to curbs which may allow surface water to pond and infiltrate into the underlying soils. **Curbs should completely penetrate base materials and should be installed to sufficient depth to reduce infiltration of water beneath the curbs.**
- 3) Pavement surfaces should be maintained to help minimize surface ponding and to provide rapid sealing of any developing cracks. These measures will help reduce infiltration of surface water downward through the pavement section.

### **FLEXIBLE BASE COURSE**

The flexible base course should be crushed limestone conforming to TxDOT Standard Specifications 2004, Item 247, Type A, Grades 1 or 2. Base course should be placed in lifts with a maximum thickness of 8 in. and compacted to a minimum of 95 percent of the maximum density at a moisture content within the range of 2 percentage points below to 2 percentage points above the optimum moisture content as determined by ASTM D1557.

### **ASPHALTIC CONCRETE SURFACE COURSE**

The asphaltic concrete surface course should conform to TxDOT Standard Specifications 2004, Item 340. The asphaltic concrete should be compacted to a minimum of 98 percent of the Marshall Value. Pavement specimens, which shall be either cores or sections of asphaltic pavement, will be tested according to Test Method Tex-207-F. The nuclear-density gauge or other methods which correlate satisfactorily with results obtained from project roadway specimens may be used when approved by the Engineer. Unless otherwise shown on the plans, the Contractor shall be responsible for obtaining the required roadway specimens at their expense and in a manner and at locations selected by the Engineer.

### **PORTLAND CEMENT CONCRETE**

The Portland cement concrete should be air entrained to result in a 4 percent plus/minus 1 percent air, should have a maximum slump of 5 inches, and should have a minimum 28-day compressive strength of 3,500 psi, and comply with TxDOT Standard Specifications 2004, Item 360. A liquid membrane-forming curing compound should be applied as soon as practical after broom finishing the concrete surface. The curing compound will help reduce the loss of water from the concrete. The reduction in the rapid loss in water will help reduce shrinkage cracking of the concrete.

## **CONSTRUCTION RELATED SERVICES**

### **CONSTRUCTION MATERIALS TESTING AND OBSERVATION SERVICES**

As presented in the attachment to this report, *Important Information About Your Geotechnical Engineering Report*, subsurface conditions can vary across a project site. The conditions described in this report are based on interpolations derived from a limited number of data points. Variations will be encountered during construction, and only the geotechnical design engineer will be able to determine if these conditions are different than those assumed for design.

Construction problems resulting from variations or anomalies in subsurface conditions are among the most prevalent on construction projects and often lead to delays, changes, cost overruns, and

disputes. These variations and anomalies can best be addressed if the geotechnical engineer of record, Raba-Kistner, is retained to perform construction observation and testing services during the construction of the project. This is because:

- **R-K** has an intimate understanding of the geotechnical engineering report's findings and recommendations. **R-K** understands how the report should be interpreted and can provide such interpretations on site, on the client's behalf.
- **R-K** knows what subsurface conditions are anticipated at the site.
- **R-K** is familiar with the goals of the owner and project design professionals, having worked with them in the development of the geotechnical workscope. This enables **R-K** to suggest remedial measures (when needed) which help meet the owner's and the design teams' requirements.
- **R-K** has a vested interest in client satisfaction, and thus assigns qualified personnel whose principal concern is client satisfaction. This concern is exhibited by the manner in which contractors' work is tested, evaluated and reported, and in selection of alternative approaches when such may become necessary.
- **R-K** cannot be held accountable for problems which result due to misinterpretation of our findings or recommendations when we are not on hand to provide the interpretation which is required.

#### **BUDGETING FOR CONSTRUCTION TESTING**

Appropriate budgets need to be developed for the required construction testing and observation activities. At the appropriate time before construction, we advise that **R-K** and the project designers meet and jointly develop the testing budgets, as well as review the testing specifications as it pertains to this project.

Once the construction testing budget and scope of work are finalized, we encourage a preconstruction meeting with the selected contractor to review the scope of work to make sure it is consistent with the construction means and methods proposed by the contractor. **R-K** looks forward to the opportunity to provide continued support on this project, and would welcome the opportunity to meet with the Project Team to develop both a scope and budget for these services.

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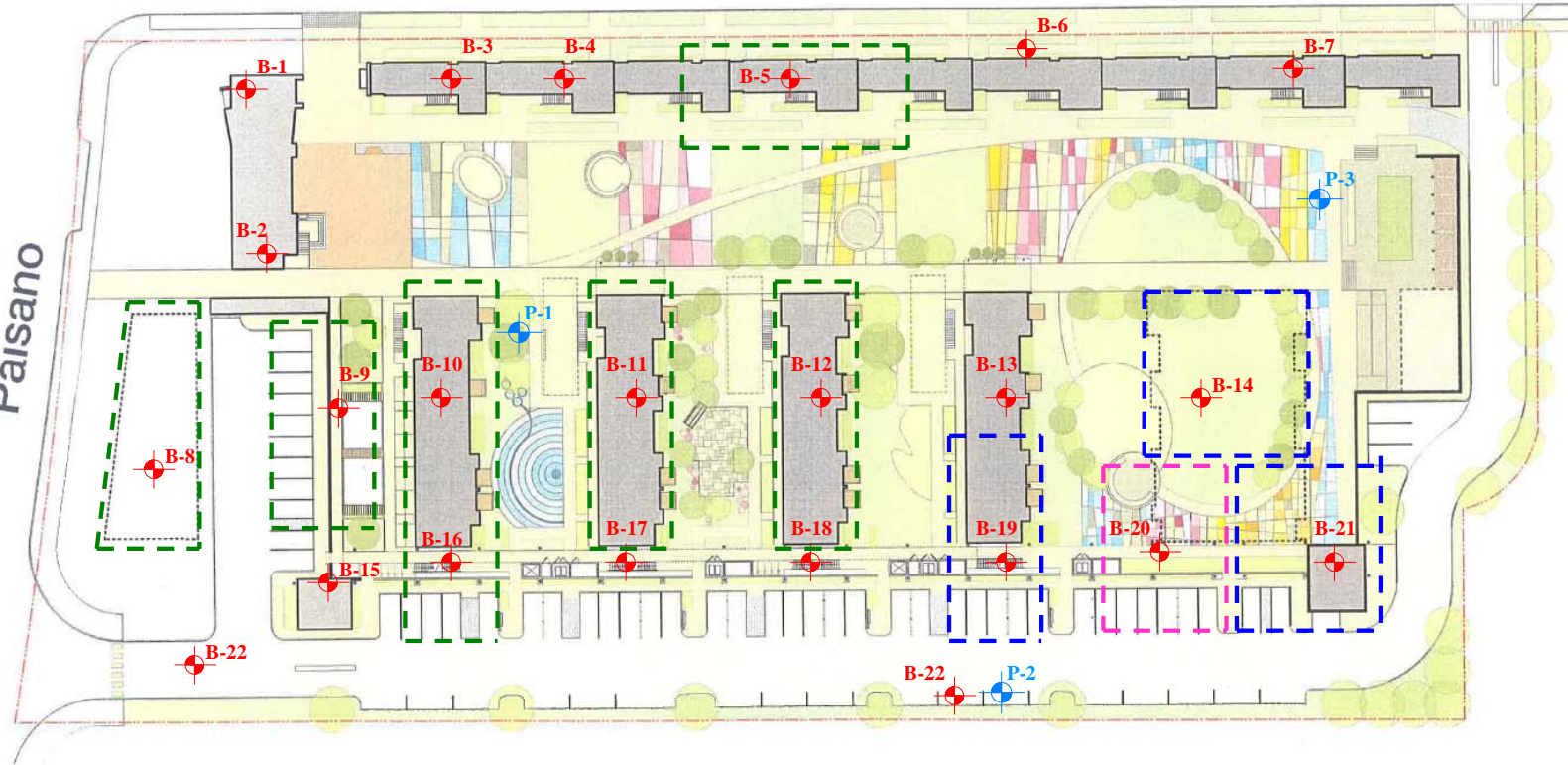
## ATTACHMENTS








NOT TO SCALE

Boone

Paisano



**LEGEND**

-  B-1: Boring Number and Approximate Location
-  P-1: Percolation Number and Approximate Location
-  Remove a Minimum of 3 ft. and Replace with Select Fill
-  Remove a Minimum of 4 ft. and Replace with Select Fill
-  Remove a Minimum of 7 ft. and Replace with Select Fill

**DRAFT**

**LOG OF BORING NO. B-1**

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:** See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>								PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0			
4.5 - 5.5		X	<b>FAT CLAY (CH)</b> firm, brown, moist	9											39	91
5.5 - 6.5		X	<b>SILTY SAND (SM)</b> loose, brown, slightly moist	6												
6.5 - 10.5		X	<b>LEAN CLAY (CL)</b> stiff, brown, moist	12											32	72
10.5 - 19.5		X	<b>POORLY GRADED SAND (SP)</b> loose, multi-colored, slightl moist	8											NP	14
19.5 - 20.0			Boring Terminated													
20.0 - 25.0			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.													

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 20.0 ft <b>DATE DRILLED:</b> 6/17/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/17/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 2
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## LOG OF BORING NO. B-2

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:**

CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:** See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0	2.5	3.0			3.5
19			<b>SILTY SAND (SM)</b> medium dense, light brown, dry, with some gravel	19										
12			<b>SANDY LEAN CLAY (CL)</b> stiff, light brown, slightly moist	12		●	×	×					11	58
12			<b>CLAY (CH)</b> stiff, moist, with sand	12		●					×		45	84
12			<b>SILT (ML)</b> medium dense, light brown, slightly moist with sand	12		●	×						2	79
13				13										
23			<b>POORLY GRADED SAND (SP)</b> medium dense, multi-colored, slightly moist	23		●							NP	5
28				28										
20			Boring Terminated											
25			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.											

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 20.0 ft <b>DATE DRILLED:</b> 6/17/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/17/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 3
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## LOG OF BORING NO. B- 4

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:**

CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:** See Figure 1

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0	2.5	3.0			3.5
0 - 5	[Symbol]	X	<b>SILTY SAND (SM)</b> loose, light brown, slightly moist	5										
5 - 9	[Symbol]	X	<b>CLAY (CH)</b> stiff, brown, moist	9			X	●			X	37	94	
9 - 8	[Symbol]	X		8			X	●			X	37	96	
8 - 12	[Symbol]	X	<b>LEAN CLAY (CL)</b> stiff, brown, moist	12			X	●			X	24	96	
12 - 10	[Symbol]	X	<b>SILT (ML)</b> medium dense, light brown, slightly moist, with sand and nodules of clay	12										
10 - 15	[Symbol]	X	<b>POORLY GRADED SAND (SP)</b> medium dense, multi-colored, slightly moist	20										
15 - 20	[Symbol]	X		12										
20 - 25			Boring Terminated											
25 - 30			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.											
30 - 35														
35 - 40														
40 - 45														
45 - 50														
50 - 55														
55 - 60														

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 20.0 ft <b>DATE DRILLED:</b> 6/17/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/17/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 5
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## LOG OF BORING NO. B- 5

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0	2.5	3.0			3.5
0 - 1.5		X	<b>CLAYEY SAND (SC)</b> medium dense, brown, dry, with some calcareous material	15										
1.5 - 5.5		X	<b>FAT CLAY (CH)</b> stiff to very stiff, brown, moist	9								37	90	
5.5 - 10.0		X		12										
10.0 - 13.0		X		19								44	86	
13.0 - 15.0		X	<b>SILT (ML)</b> medium dense, light brown, slightly moist with sand	12										
15.0 - 20.0		X	<b>POORLY GRADED SAND (SP)</b> medium dense, multi-colored, slightly moist	12	●								4	
20.0 - 20.5		X	Boring Terminated	15										
20.5 - 25.0			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.											
25.0 - 30.0														
30.0 - 35.0														
35.0 - 40.0														
40.0 - 45.0														
45.0 - 50.0														
50.0 - 55.0														
55.0 - 60.0														

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 20.0 ft <b>DATE DRILLED:</b> 6/17/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/17/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 6
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## LOG OF BORING NO. B- 6

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0			2.5
0-9	[Symbol]	X	<b>SILTY SAND (SM)</b> loose, light brown, dry	9								
9-10	[Symbol]	X	<b>CLAYEY SAND (SC)</b> loose, light brown, slightly moist - with trace of glass at at 2-feet	10								
10-7	[Symbol]	X	<b>LEAN CLAY</b> firm to stiff, brown, moist with silt and sand	7						34	70	
7-10	[Symbol]	X		10						8	93	
10-14	[Symbol]	X	<b>POORLY GRADED SAND with SILT (SP-SM)</b> medium dense, multi-colored, moist	14								
14-15	[Symbol]	X		15								
15-20	[Symbol]	X		12								8
20-25			Boring Terminated									
25-30			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.									
30-35												
35-40												
40-45												
45-50												
50-55												
55-60												
<b>DEPTH DRILLED:</b> 20.0 ft				<b>DEPTH TO WATER:</b> Dry				<b>PROJ. No.:</b> AEA10-024-00				
<b>DATE DRILLED:</b> 6/17/2010				<b>DATE MEASURED:</b> 6/17/2010				<b>FIGURE:</b> 7				

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

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## LOG OF BORING NO. B-7

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>							PLASTICITY INDEX	%-200	
						0.5	1.0	1.5	2.0	2.5	3.0	3.5			4.0
7		X	<b>SILTY SAND (SM)</b> loose, light brown, dry, with some gravel	7											
10		X	<b>fat CLAY (CH)</b> medium stiff, brown, moist with sand	10										37	74
18		X	<b>POORLY GRADED SAND (SP)</b> loose to medium dense, multi-colored, slightly moist	18											
14		X		14											
5		X		5	5									NP	3
17		X		17											
13		X		13											
20		X	Boring Terminated												
25			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												
30															
35															
40															
45															
50															
55															

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 20.0 ft <b>DATE DRILLED:</b> 6/18/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/18/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 8
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## LOG OF BORING NO. B- 8

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	%-200
						0.5	1.0	1.5	2.0	2.5	3.0		
			Asphalt (approximately 1-inch)	7									
			Base Course (approximately 9-inch)										
5			CLAYEY SAND (SC) loose, brown, slightly moist	6									
6			FAT CLAY firm, brown, moist	6								57	99
10			LEAN CLAY (CL) firm to stiff, soft, brown, moist	6								13	98
9				9									
15			POORLY GRADED SAND (SP) medium dense, light brown, slightly moist	27									
15			Boring Terminated										
20			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.										
25													
30													
35													
40													
45													
50													
55													

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 15.0 ft	<b>DEPTH TO WATER:</b> Dry	<b>PROJ. No.:</b> AEA10-024-00
<b>DATE DRILLED:</b> 6/18/2010	<b>DATE MEASURED:</b> 6/18/2010	<b>FIGURE:</b> 9



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## LOG OF BORING NO. B-10

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	% -200		
						0.5	1.0	1.5	2.0	2.5	3.0			3.5	4.0
						PLASTIC LIMIT		WATER CONTENT		LIQUID LIMIT					
						10	20	30	40	50	60	70	80		
			Asphalt (approximately 1-inch)	10											
			Base Course (approximately 4 inches)												
5			SILTY SAND (SM) medium dense, light brown, dry	13		●	×						39	81	
			FAT CLAY (CH) stiff, brown, slightly moist to moist with some sand	11			●						49	92	
10			SILT (ML) loose, brown, moist with sand	10											
				9			●						NP	87	
15			POORLY GRADED SAND (SP) dense to loose, multi-colored, slightly moist	30											
20			- with interbedded seams of clay at 21 feet	11											
25			- 4-inch clay seam at 26 feet	7											
30			Boring Terminated	26		●							NP	4	
35			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 30.0 ft <b>DATE DRILLED:</b> 6/16/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/16/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 11
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## LOG OF BORING NO. B-11

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	%-200	
						0.5	1.0	1.5	2.0			2.5
			<b>SILTY SAND (SM)</b> medium dense, light brown, dry	11								
5			<b>FAT CLAY (CH)</b> stiff to very stiff, brown, moist	11							50	98
			<b>SILT (ML)</b> medium dense, light brown, moist with clay	15							5	98
10			<b>LEAN CLAY (CL)</b> firm, light brown, very moist	6							11	97
15			<b>POORLY GRADED SAND with SILT (SP-SM)</b> loose to medium dense, multi-colored, slightly moist	35								
20				25							NP	8
25			- 6-inch clay seam at 26 feet	11								
30			Boring Terminated	26								
35			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.									
40												
45												
50												
55												

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 30.0 ft <b>DATE DRILLED:</b> 6/17/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/17/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 12
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## LOG OF BORING NO. B-12

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>						PLASTICITY INDEX	%-200
						0.5	1.0	1.5	2.0	2.5	3.0		
8			<b>SILTY SAND (SM)</b> loose, light brown, dry	8									
10			<b>FAT CLAY (CH)</b> stiff, medium stiff, moist	10									
13				13								52	97
10			<b>SILTY CLAY</b> stiff, light brown, slightly moist	10								6	76
12				12									
15			<b>POORLY GRADED SAND (SP)</b> loose to medium dense, multi-color, slightly moist	13									
21				21									
25				6									
30			- with some fine gravel at 28 feet	6									
30			Boring Terminated									NP	6
35			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.										
40													
45													
50													
55													

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 30.0 ft <b>DATE DRILLED:</b> 6/16/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/16/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 13
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## LOG OF BORING NO. B-13

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0			2.5
0 - 4.5	[Symbol]	X	<b>SILTY SAND (SM)</b> medium dense to loose, light brown, dry	10								
4.5 - 7	[Symbol]	X	<b>FAT CLAY (CH)</b> brown, firm to stiff, moist, with silt	5								
7 - 8	[Symbol]	X		7						38	96	
8 - 10	[Symbol]	X	<b>SILTY CLAY (CL-ML)</b> stiff to very stiff, brown, slightly moist	8						5	96	
10 - 15	[Symbol]	X	<b>POORLY GRADED SAND (SP)</b> medium dense to dense, multi-colored, slightly moist	15								
15 - 20	[Symbol]	X		13								
20 - 25	[Symbol]	X		30						NP	5	
25 - 26	[Symbol]	X	<b>FAT CLAY (CH)</b> stiff, moist	8						50	84	
26 - 30	[Symbol]	X	<b>POORLY GRADED SAND (SP)</b> medium dense, multi-colored, slightly moist	26								
30 - 30.0			Boring Terminated									
35 - 55			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.									

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 30.0 ft <b>DATE DRILLED:</b> 6/11/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/11/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 14
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DRAFT

## LOG OF BORING NO. B-14

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0			2.5
42			<b>SILTY SAND (SM)</b> dense, brown, slightly moist, with gravel and trace organics	42	●						NP	17
5			<b>FAT CLAY (CH)</b> brown, stiff, moist	8								
11				11		×	●			×	59	84
15			<b>SILTY SAND (SM)</b> medium dense, light brown, slightly moist	15	●							5
15-18			- with interbedded clay lenses from 15-18 feet	10								
21			<b>SILTY SAND (SM)</b> medium dense, light brown, slightly moist	21	●							5
25			- with interbedded clay lenses at 25 feet	27								
30			Boring Terminated	30								
35			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.									

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 30.0 ft <b>DATE DRILLED:</b> 6/16/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/16/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 15
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DRAFT

LOG OF BORING NO. B-15

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



DRILLING METHOD: CME 75,3.25" I.D.H.S Auger 2"

LOCATION:

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	% -200				
						0.5	1.0	1.5	2.0			2.5	3.0	3.5	4.0
						PLASTIC LIMIT		WATER CONTENT		LIQUID LIMIT					
						10	20	30	40	50	60	70	80		
0-5	[Symbol]	X	SILTY SAND (SM) brown, dry	36											
5-10	[Symbol]	X	POORLY GRADED GRAVEL (GP) hard, calcareous, multi-colored, slightly moist with sand	17									36	90	
10-12	[Symbol]	X	FAT CLAY (CH) very stiff, brown, moist	14											
12-15	[Symbol]	X	SILTY SAND (SM) medium dense, light brown, dry, with some clay	10									10	97	
15-17	[Symbol]	X	LEAN CLAY (CL) stiff, brown, moist	10									51	94	
17-18	[Symbol]	X	FAT CLAY (CH) stiff, brown, moist												
18-20	[Symbol]	X	SILTY SAND (SM) medium dense, light brown, slightly moist	20									NP	48	
20-30	[Symbol]	X	POORLY GRADED SAND (SP) medium dense, multi-color, slightly moist to moist	11											
30-35	[Symbol]	X		15											
35-40	[Symbol]	X		12											
40-45	[Symbol]	X	SILTY CLAY (CL-ML) stiff to very stiff, light brown, moist	14									19		
45-50	[Symbol]	X	POORLY GRADED SAND (SP) very dense, multi-colored, slightly moist, with gravel	15											
50-55	[Symbol]	X	Boring Terminated	58									NP	4	
55-60	[Symbol]	X	NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

DEPTH DRILLED: 50.0 ft  
DATE DRILLED: 6/16/2010

DEPTH TO WATER: Dry  
DATE MEASURED: 6/16/2010

PROJ. No.: AEA10-024-00  
FIGURE: 16

DRAFT

## LOG OF BORING NO. B-16

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>				PLASTICITY INDEX	% -200	
						0.5	1.0	1.5	2.0			2.5
4		X	<b>FAT CLAY (CH)</b> firm to very stiff, brown, slightly moist to moist	4								
16											50	95
14												
10		X	<b>SILT (ML)</b> medium dense to loose, light brown, slightly moist with sand - with seams of clay from 9-15 feet	10								
7											5	85
22		X	<b>POORLY GRADED SAND (SP)</b> medium dense, multi-colored, slightly moist  - with some nodules of clay from 21-23 feet	22								
13												
19												NP
27												
23												
35			Boring Terminated									
40	NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.											
45												
50												
55												

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 35.0 ft	<b>DEPTH TO WATER:</b> Dry	<b>PROJ. No.:</b> AEA10-024-00
<b>DATE DRILLED:</b> 6/16/2010	<b>DATE MEASURED:</b> 6/16/2010	<b>FIGURE:</b> 17

**DRAFT**

**LOG OF BORING NO. B-17**

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>								PLASTICITY INDEX	%-200
						0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0		
0			<b>Asphalt (approximately 1-1/2 inch)</b>												
0			<b>Base Course (approximately 4-inches)</b>												
5			<b>FAT CLAY (CH)</b> soft to firm, brown, moist											35	96
10			<b>SILTY CLAY (CL-ML)</b> stiff, brown, moist											6	86
15			<b>SANDY SILT (ML)</b> medium dense, light brown, slightly moist												
20			<b>POORLY GRADED SAND (SP)</b> loose to medium dense, multi-colored, slightly moist												
35			Boring Terminated												
40			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												
45															
50															
55															

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 35.0 ft	<b>DEPTH TO WATER:</b> Dry	<b>PROJ. No.:</b> AEA10-024-00
<b>DATE DRILLED:</b> 6/16/2010	<b>DATE MEASURED:</b> 6/16/2010	<b>FIGURE:</b> 18

DRAFT

## LOG OF BORING NO. B-18

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>			PLASTICITY INDEX	% -200
						0.5	1.0	1.5		
0 - 2			<b>CLAYEY SAND (SC)</b> very loose to loose, brown, slightly moist, with trace organic material	2					11	36
2 - 6			<b>SANDY CLAY (CL)</b> firm to very stiff, brown, moist, with calcareous material	6					24	67
6 - 21				21						
21 - 15			<b>SILTY SAND (SM)</b> medium dense, light brown, slightly moist	15						
15 - 8			<b>CLAYEY SAND (SC)</b> loose, light brown to brown, moist	8						
8 - 12			<b>POORLY GRADED SAND (SP)</b> medium dense, light brown, slightly moist	12						
12 - 13				13					NP	3
13 - 22				22						
22 - 25				25						
25 - 35				35						
35 - 40			<b>CLAYEY SAND (SC)</b> medium dense, light brown, moist	40					9	41
40 - 45				45						
45 - 50			<b>POORLY GRADED SAND (SP)</b> dense, light brown, slightly moist, with gravel	50						
50 - 55			Boring Terminated							
NOTES:			1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.							

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 50.0 ft	<b>DEPTH TO WATER:</b> Dry	<b>PROJ. No.:</b> AEA10-024-00
<b>DATE DRILLED:</b> 6/11/2010	<b>DATE MEASURED:</b> 6/11/2010	<b>FIGURE:</b> 19







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**LOG OF BORING NO. B-22**

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING METHOD:** Hand Auger

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>								PLASTICITY INDEX	%-200
						0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0		
			<b>CLAYEY SAND (SC)</b> brown, moist												
5			<b>POORLY GRADED SAND (SP)</b> multi-colored, slighty mosit												
			Boring Terminated												
			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												
10															
15															
20															
25															
30															
35															
40															
45															
50															
55															
<b>DEPTH DRILLED:</b> 6.5 ft			<b>DEPTH TO WATER:</b> Dry			<b>PROJ. No.:</b> AEA10-024-00									
<b>DATE DRILLED:</b> 6/11/2010			<b>DATE MEASURED:</b> 6/11/2010			<b>FIGURE:</b> 23									

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

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**LOG OF BORING NO. B-23**

Paisano Green Community  
4002 E. Paisano Drive  
El Paso, El Paso County, Texas



**DRILLING**

**METHOD:** CME 75,3.25" I.D.H.S Auger 2"

**LOCATION:**

DEPTH, FT	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	BLOWS PER FT	UNIT DRY WEIGHT, pcf	SHEAR STRENGTH, TONS/FT <sup>2</sup>								PLASTICITY INDEX	%-200
						0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0		
5		X	<b>SILTY SAND (SM)</b> medium dense, light brown, slightly moist	20											
5		X	<b>FAT CLAY (CH)</b> firm, brown, moist,	10									39	91	
5		X		8											
10			Boring Terminated												
10			NOTES: 1. Free water was not observed during drilling operations. 2. Backfilled with soil cuttings.												
15															
20															
25															
30															
35															
40															
45															
50															
55															

NOTE: THESE LOGS SHOULD NOT BE USED SEPARATELY FROM THE PROJECT REPORT

<b>DEPTH DRILLED:</b> 6.5 ft <b>DATE DRILLED:</b> 6/18/2010	<b>DEPTH TO WATER:</b> Dry <b>DATE MEASURED:</b> 6/18/2010	<b>PROJ. No.:</b> AEA10-024-00 <b>FIGURE:</b> 24
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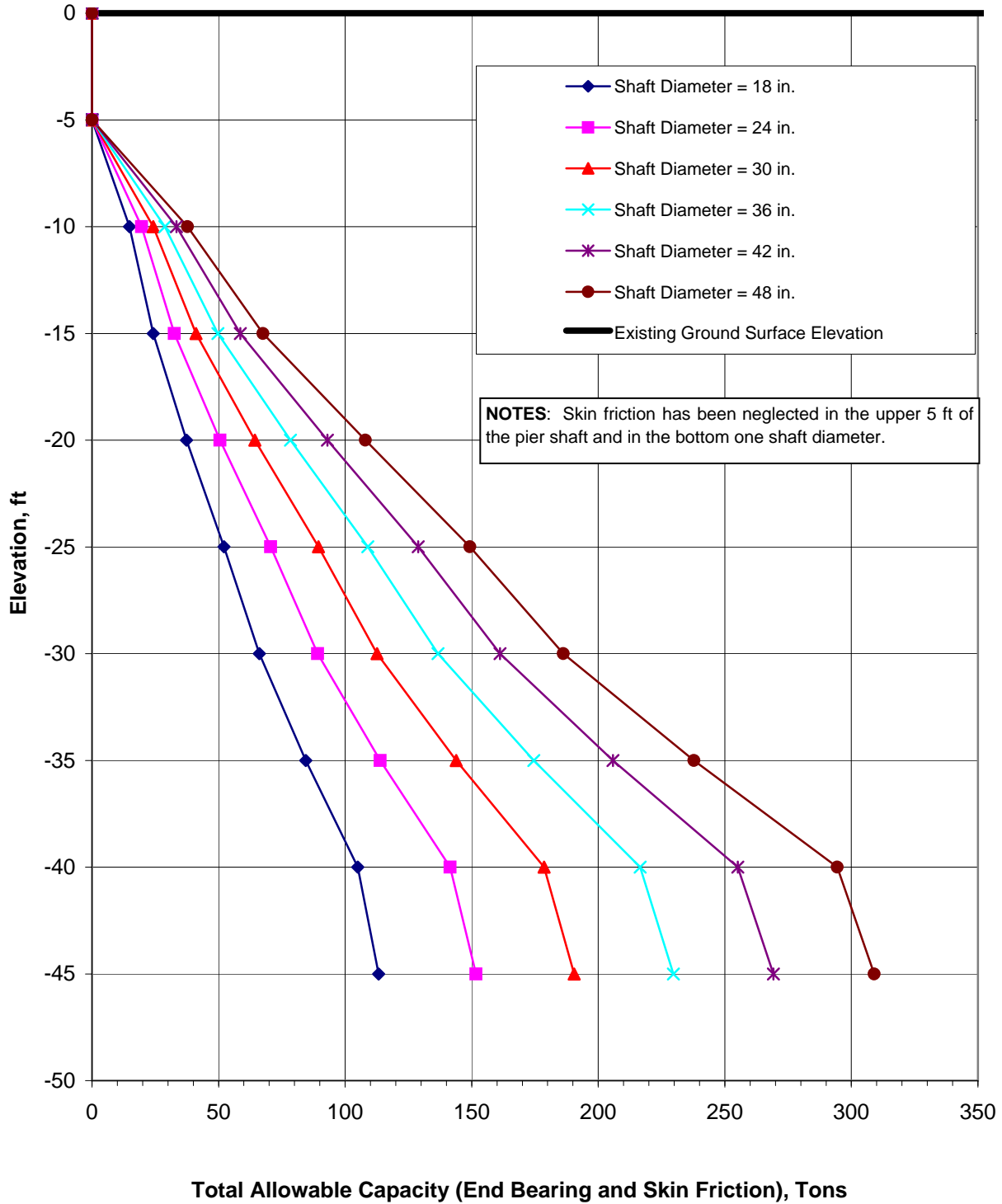


DRILLED PIER AXIAL CAPACITY CURVE

Straight Shaft Piers

Paisano Green Community

El Paso, Texas

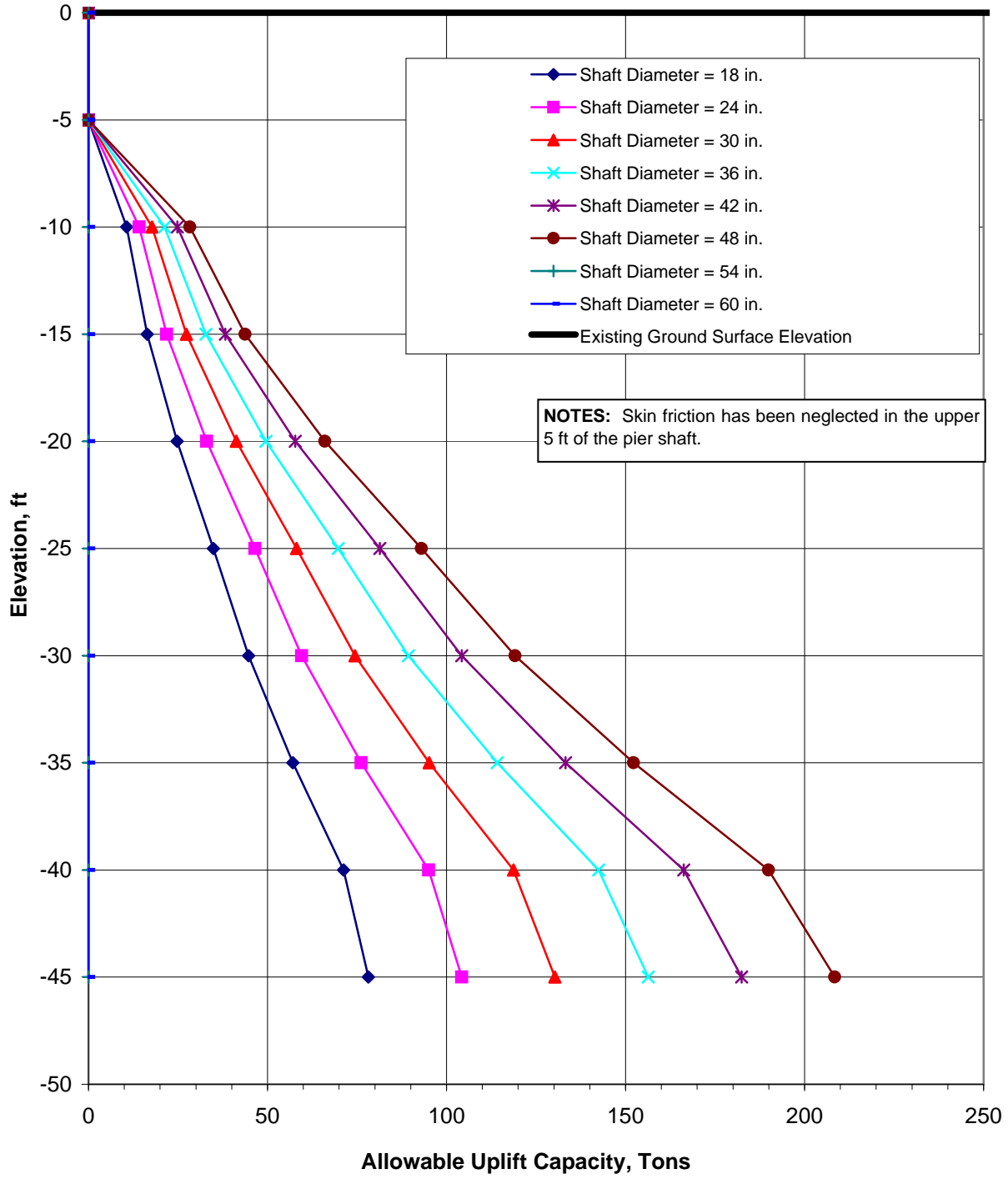


### DRILLED PIER UPLIFT CAPACITY CURVE

Straight Shaft Piers

Paisano Green Community

El Paso, Texas



**FIELD PERCOLATION TEST REPORT**

R-K Project No.: AEA10-024-00  
 Project Name: Paisano Green Community

<b>Percolation No.</b>		P-1
<b>Date Measured</b>		6/18/2010
<b>Measured by</b>		Manuel Duenez
<b>Location</b>		See Figure 1
<b>Nominal Borehole Depth</b>		10 ft
<b>Percolation Rate at Nominal Depth</b>		<b>2.5 min/in</b>
<b>Stratigraphy</b>	<i>Depth Interval</i>	<i>Material</i>
	0 to 2 ft	<b>SILTY SAND (SM)</b> , light brown, dry
	2 to 8 ft	<b>FAT CLAY (CH)</b> , brown, slightly moist
	8 to 10 ft	<b>SILT (ML)</b> , brown, moist
<b>Percolation No.</b>		P-2
<b>Date Measured</b>		6/18/2010
<b>Measured by</b>		James Tartar
<b>Location</b>		See Figure 1
<b>Nominal Borehole Depth</b>		15 ft
<b>Percolation Rate at Nominal Depth</b>		<b>3.3 min/in</b>
<b>Stratigraphy</b>	<i>Depth Interval</i>	<i>Material</i>
	0 to 2 ft	<b>SILTY SAND (SM)</b> , light brown, slightly moist
	2 to 7 ft	<b>FAT CLAY (CH)</b> , light brown, moist
	7 to 13 ft	<b>LEAN CLAY (CL)</b> , light brown, moist
	13 to 15 ft	<b>POORLY GRADED SAND (SP)</b> , multicolored, slightly moist
<b>Percolation No.</b>		P-3
<b>Date Measured</b>		6/18/2010
<b>Measured by</b>		Derek Duenez
<b>Location</b>		See Figure 1
<b>Nominal Borehole Depth</b>		10 ft
<b>Percolation Rate at Nominal Depth</b>		<b>0.6 min/in</b>
<b>Stratigraphy</b>	<i>Depth Interval</i>	<i>Material</i>
	0 to 3 ft	<b>CLAYEY SAND (SM)</b> , brown, slightly moist
	3 to 8 ft	<b>FAT CLAY (CH)</b> , brown, moist
	8 to 10 ft	<b>POORLY GRADED SAND (SP)</b> multicolored, slightly moist