

SUBSURFACE EXPLORATION
PROPOSED
HOUSING DEVELOPMENT (160 ACRE SITE)
CHEYENNE RIVER INDIAN RESERVATION

Prepared

For

Cheyenne River Housing Authority

Prepared

By

SCOTT ENGINEERING COMPANY

Watertown, South Dakota

June, 2002

INTRODUCTION

This report presents the results of the subsurface exploration we recently completed for the proposed Cheyenne River Housing Authority Project on a 160 acre site near Eagle Butte, South Dakota. Thirty (30) soil borings were drilled below present site grades to evaluate existing conditions for the proposed housing. Individual boring logs are included with this report. The boring locations are shown on the topographic drawing of the site prepared by Scott Engineering Company.

The purpose of this report is to describe the subsurface conditions encountered in the borings, analyze and evaluate the test data, and provide recommendations regarding the design and construction of the house foundations.

EXPLORATION AND TESTING

The borings were located in the field by Scott Engineering Company using GPS (Global Positioning System) survey equipment.

The borings were performed with a truck-mounted, rotary type drill rig equipped with hydraulic head employed in drilling and sampling operations. The borings were advanced using continuous flight-augers. Samples of the subsurface material encountered during the drilling were obtained by using split barrel sampling procedures and augured samples. The split barrel sampling procedure consisted of using a standard 2 inch O. D. split-barrel sampling spoon advanced into the soil by means of a 140 pound hammer free falling a distance of 30 inches. The first six (6) inches of penetration is considered to be a seating drive. The number of blows required to advance the sampler another 12 inches is recorded and is known as the penetration resistance or "N" value. The "N" value is an index of the relative density of cohesionless soils and the consistency of cohesive soils. The samples obtained were transported to the laboratory for further examination, classification, and testing.

Moisture contents, and atterberg limits tests were performed on the representative portions of the samples. Results of the tests are shown on the boring log remarks column. As a part of the testing program, the soils were examined in the laboratory and classified in accordance with the Unified Soil Classification System.

SITE AND SUBSURFACE CONDITIONS

The 160 acre site is shown on the topographic map drawing prepared by Scott Engineering Company.

The subsurface conditions encountered at each of the boring locations are shown on the attached individual boring logs. The stratification boundaries shown on the boring logs indicate the approximate locations of changes in soil types. The transition of the soil types may be gradual. The site is underlain by brown silty clay soils to the depth of our borings.

WATER LEVEL OBSERVATION

Observations were made while drilling and immediately after completion of the borings to detect the presence and level of free water. Free water was not encountered at the site.

Fluctuations in the groundwater level can occur due to variations in hydrologic conditions and other conditions not apparent at the time the borings were performed. Both yearly and seasonal fluctuations in groundwater levels can be expected.

ANALYSIS AND RECOMMENDATIONS

Recommendations are provided below for support of the proposed house foundations and floor slab.

All existing vegetation and any soft areas should be removed from the proposed house area. After completing all cuts and prior to placement of any fill, the exposed sub-grades should be scarified to a minimum depth of 6 inches and compacted to at least 95 percent of maximum Standard Proctor dry density (ASTM D698). The moisture content of the scarified soils should be adjusted to within 2% of the optimum moisture content as determined in accordance with the Standard Proctor procedure. We recommend a geotechnical engineer observe all exposed subgrade soils prior to placement of any fill.

HOUSE FOUNDATION & FLOOR SLAB

Spread footing type foundations can be utilized in the design of the proposed houses.

We recommend the footings be placed upon the undisturbed brown silty clay soils. With footings placed at a depth of four feet or more on the natural brown silty clay soils, unit foundation loads up to 2500 pounds per square foot may be used.

Should fill be required to support the footings at higher elevations, we recommend the placement of properly compacted fill material for support of the footings. The compacted engineered fill material should be compacted to a density of at least 95 percent of the maximum dry density in accordance with ASTM D698.

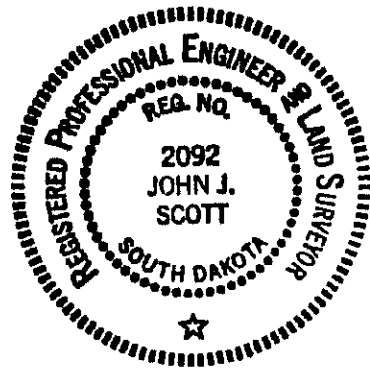
We recommend using an engineered granular fill material for supporting slab-on-grade floors. The engineered granular fill material should be compacted to a density of at least 95 percent of maximum dry density in accordance with ASTM D698. The engineered granular fill material should be 100% passing the 2" sieve with no more than 15% passing the #200 sieve.


For this site we recommend adequate drainage be maintained during and after construction. We recommend roof gutter and downspouts for controlling roof drainage to release roof water beyond the outside of the backfill line.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based on data which is assumed to be representative of the site explored. This report does not reflect any variations which may occur between borings across the site. The nature and extent of any variations between the borings may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The recommendations presented in this report are in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.




John J. Scott, PE
President

BORING LOG

SCOTT ENGINEERING CO.
P.O. BOX 1414
WATERTOWN, SD 57201

Eagle Butte
160 Acre Site

Hole No. 1

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
Compressive Strength

W=Moisture Content %

Date 5/14/02

140lb Hammer

30in. Fall

2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				15 17	N=32 W=20.1 LL=57 PL=27
	10'		Brown Silty Clay		13 16	N=29 W=19.1
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201		Eagle Butte 160 Acre Site		Hole No. 2 Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.		U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/14/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon		

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				11 13	N=24 W=15.9 LL=49 PL=26
	10'		Brown Silty Clay		12 14	N=26 W=20.0
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 3 Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/14/02	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon				
Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		8 11	N=19 W=11.0
	10'					
	15'				16 20	N=36 W=20.2 LL=41 PL=29
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 4 <hr/> Sheet 1 Of 1 <hr/> Date 5/14/02
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content %	Date 5/14/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon		D=Dry Density, pcf	

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		7 ----- 9	N=16 W=9.1
	10'					
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
P.O. BOX 1414
WATERTOWN, SD 57201

Eagle Butte
160 Acre Site

Hole No. 5

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
Compressive Strength

W=Moisture Content %

140lb Hammer

30in. Fall

2in. o.d. Split Spoon

D=Dry Density, pcf

Date 5/14/02

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
					6 ----- 10	N=16 W=8.8
	5'				8 ----- 12	N=20 W=7.9 LL=33 PL=24
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 6
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength		W=Moisture Content % D=Dry Density, pcf	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon	Date 5/14/02			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				9 13	N=22 W=18.0
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 7
Standard Penetration Test N=Blows Per Ft. 140lb Hammer 30in. Fall 2in. o.d. Split Spoon			U.C. = Unconfined Compressive Strength		Sheet 1 Of 1
			W=Moisture Content % D=Dry Density, pcf		Date 5/14/02

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay	TUBE	11 15	N=26 W=20.4
	10'					
	15'		Brown Clayey Sand			W=16.8
			Brown Silty Clay			
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201	Eagle Butte 160 Acre Site	Hole No. 8 Sheet 1 Of 1
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Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/14/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				12 15	N=27 W=13.4
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 9
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Sheet 1 Of 1 Date 5/14/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks		
	0							
	5'							
					<table border="1" style="margin: auto;"> <tr> <td style="width: 50%; text-align: center;">12</td> <td style="width: 50%; text-align: center;">14</td> </tr> </table>	12	14	N=26 W=24.4
12	14							
	10'		Brown Silty Clay					
	15'		End of Boring at 15 Feet					
	20'							
	25'							
	30'							

BORING LOG

SCOTT ENGINEERING CO.
 P.O. BOX 1414
 WATERTOWN, SD 57201

Eagle Butte
 160 Acre Site

Hole No. 10

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
 Compressive Strength

W=Moisture Content %

Date 5/14/02

140lb Hammer 30in. Fall 2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		7 7	N=14 W=16.2 LL=42 PL=26
	10'					
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
 P.O. BOX 1414
 WATERTOWN, SD 57201

Eagle Butte
 160 Acre Site

Hole No. 11

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
 Compressive Strength

W=Moisture Content %

Date 5/14/02

140lb Hammer 30in. Fall 2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay			W=9.9
	10'					
	15'		End of Boring at 15 Feet			
	20'					
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 12 <hr/> Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		8 10	N=18 W=9.0
	10'					
	15'		Hit Rock End of Boring at 13 Feet			
	20'					
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
P.O. BOX 1414
WATERTOWN, SD 57201

Eagle Butte
160 Acre Site

Hole No. 13

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
Compressive Strength

W=Moisture Content %

Date 5/21/02

140lb Hammer

30in. Fall

2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				9 12	N=21 W=9.7 LL=46 PL=22
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 20 Feet			W=18.4
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 14
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Sheet 1 Of 1
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			Date 5/21/02

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'					
	10'		Brown Silty Clay		14 20	N=34 W=20.1
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 15 <hr/> Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
					7 8	N=15 W=9.5
	5'					
			Brown Silty Clay		12 16	N=28 W=19.2 LL=36 PL=24
	10'					
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 16 <hr/> Sheet 1 Of 1 <hr/> Date 5/21/02
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf		
140lb Hammer	30in. Fall	2in. o.d. Split Spoon				

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		8 10	N=18 W=8.8
	10'					
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
 P.O. BOX 1414
 WATERTOWN, SD 57201

Eagle Butte
 160 Acre Site

Hole No. 17

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
 Compressive Strength

W=Moisture Content %

Date 5/21/02

140lb Hammer

30in. Fall

2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'			TUBE		
					10 13	N=23 W=21.5 LL=45 PL=27
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 18 <hr/> Sheet 1 Of 1 <hr/> Date 5/21/02
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		6 8	N=14 W=12.2
	10'					
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 19 <hr/> Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks		
	0							
	5'							
	10'		Brown Silty Clay		<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">16</td> </tr> </table>	12	16	N=28 W=20.7
12	16							
	15'							
	20'		End of Boring at 20 Feet					
	25'							
	30'							

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 20
					Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
					5	N=11 W=6.7
					6	
	5'					
			Brown Silty Clay			
	10'					
	15'		End of Boring at 15 Feet			
	20'					
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 21
					Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks		
	0							
	5'		Brown Silty Clay		<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">12</td> <td style="text-align: center;">16</td> </tr> </table>	12	16	N=28
12	16							
	10'							
	15'							
	20'		End of Boring at 20 Feet					
	25'							
	30'							

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 22
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength		W=Moisture Content % D=Dry Density, pcf	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon	Date 5/21/02			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				8 12	N=20 W=8.8
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 23		
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength		W=Moisture Content %			
140lb Hammer	30in. Fall	2in. o.d. Split Spoon	D=Dry Density, pcf		Date 5/21/02			
Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks		
	0							
	5'		Brown Silty Clay		<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">12</td> <td style="padding: 2px;">16</td> </tr> </table>	12	16	N=28 W=19.6
12	16							
	10'							
	15'		End of Boring at 15 Feet					
	20'							
	25'							
	30'							

BORING LOG

SCOTT ENGINEERING CO.
 P.O. BOX 1414
 WATERTOWN, SD 57201

Eagle Butte
 160 Acre Site

Hole No. 24

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
 Compressive Strength

W=Moisture Content %

Date 5/21/02

140lb Hammer 30in. Fall 2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'				14 ----- 16	N=30 W=9.6 LL=40 PL=20
	10'		Brown Silty Clay			
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
P.O. BOX 1414
WATERTOWN, SD 57201

Eagle Butte
160 Acre Site

Hole No. 26

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
Compressive Strength

W=Moisture Content %

Date 5/21/02

140lb Hammer

30in. Fall

2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		6 7	N=13 W=8.3 LL=43 PL=21
	10'					
	15'		End of Boring at 15 Feet			W=21.3
	20'					
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO.
 P.O. BOX 1414
 WATERTOWN, SD 57201

Eagle Butte
 160 Acre Site

Hole No. 27

Sheet 1 Of 1

Standard Penetration Test N=Blows Per Ft.

U.C. = Unconfined
 Compressive Strength

W=Moisture Content %

Date 5/21/02

140lb Hammer 30in. Fall 2in. o.d. Split Spoon

D=Dry Density, pcf

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		7 g	N=16 W=18.5
	10'					
	15'					
	20'		End of Boring at 18 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site			Hole No. 28 Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon				

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		6 6	N=12 W=14.9
	10'					
	15'					
	20'		End of Boring at 20 Feet			
	25'					
	30'					

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 29 Sheet 1 Of 1
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content % D=Dry Density, pcf	Date 5/21/02
140lb Hammer	30in. Fall	2in. o.d. Split Spoon			

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks		
	0							
	5'		Brown Silty Clay		<table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">6</td> <td style="padding: 2px;">8</td> </tr> </table>	6	8	N=14 W=10.0
6	8							
	10'							
	15'		End of Boring at 15 Feet					
	20'							
	25'							
	30'							

BORING LOG

SCOTT ENGINEERING CO. P.O. BOX 1414 WATERTOWN, SD 57201			Eagle Butte 160 Acre Site		Hole No. 30 <hr/> Sheet 1 Of 1 <hr/> Date 5/21/02
Standard Penetration Test N=Blows Per Ft.			U.C. = Unconfined Compressive Strength	W=Moisture Content %	
140lb Hammer	30in. Fall	2in. o.d. Split Spoon		D=Dry Density, pcf	

Elevation	Depth	Group Symb.	Description Of Materials	Sample No.	Blows	Remarks
	0					
	5'		Brown Silty Clay		6 8	N=14 W=14.7 LL=38 PL=22
	10'					
	15'		End of Boring at 15 Feet			
	20'					
	25'					
	30'					