

ON 00 36,190

APN 7136002061

8/29/2016



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5588
FAX (719) 531-5238

August 19, 2016

Broders Excavation
557 Rose Drive
Colorado Springs, Colorado 80911

Attn: Richard Broders

Re: Test Pit Observation – OWTS Repair
715 Struthers Loop
El Paso County, Colorado

Dear Mr. Broders:

As requested, personnel of Entech Engineering, Inc. have observed the excavation of three test pits at the above referenced site. This letter presents the results of our testing.

The following recommendations are based on conditions observed on August 16, 2016. Entech Engineering, Inc. should be notified if any changes in conditions are encountered or if the proposed absorption field location should change. A Test Pit Location Map is included as Figure 1.

Soil types observed in the test pit excavations were found to consist of sand, sandy clay loam and clay overlying weathered to formational sandstone. Grain size analysis of the upper sand soils resulted in 4 to 21 percent or the soil particles passing the No. 200 sieve. Weathered to formational sandstone bedrock was encountered at approximately 4 to 5 feet in Test Pit Nos. 1 and 2, which were excavated to depths 5 to 8 feet. Bedrock was not encountered in Test Pit No. 3, which was excavated to 8 feet. Signs of seasonal groundwater were observed at depths of approximately 4 to 5 feet in Test Pit Nos. 1 and 2, and at approximately 7 feet in Test Pit No. 3. Test Pit logs are presented in Figures 2 and 3.

Based on the soils observed the area of Test Pit No. 3 has been chosen for the new OWTS field location. A LTAR Value of 0.60, for Treatment Level 1 is recommended for the design of the field repair. The field should be sized based on the number of bedrooms and anticipated usage. If gravity flow is not possible, a pump and pumping chamber will be required. A minimal separation of 4 feet is required between the absorption field and the groundwater or bedrock.


The absorption field should be installed in accordance with El Paso County Health Department regulations.

Broders Excavation
Test Pit Observation – OWTS Repair
715 Struthers Loop
El Paso County, Colorado
Page Two

We trust this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.



Logan L. Langford
Geologist

LLL/crf

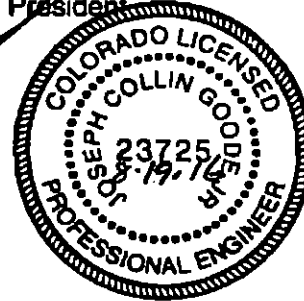
Encl.

Entech Job No. 161641
AAproject/2016/161641 tpo

Reviewed by:



Joseph C. Goode, Jr., P.E.
President





TP- APPROXIMATE TEST PIT LOCATION AND NUMBER



BM- APPROXIMATE BENCHMARK LOCATION 39°3'2.51"N, 104°50'40.42"W
- 270' N X 180' W OF BM



ENTECH
ENGINEERING, INC.
200 ELSTON DRIVE
COLORADO SPRING, CO. 80907 (719) 521-9399

Site Plan/Test Pit Location Map
715 Struthers Loop
El Paso County, CO.
For: Broders Excavation

DRAWN:
LLL

DATE:
8/19/16

CHECKED:

DATE:

JOB NO.:
161641

FIG NO.:
1

TEST PIT NO. 1
 DATE EXCAVATED 8/16/2016
 Job # 161641

TEST PIT NO. 2
 DATE EXCAVATED 8/16/2016
 CLIENT BRODERS EXCAVATION
 LOCATION 715 STRUTHERS LOOP

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
topsoil - sandy loam, fine to coarse grained, dark brown	1					
sand, fine to coarse grained with gravel, tan	2					
	3					
sandy clay loam, fine to coarse grained, grayish tan	4					
	5					
sandstone, very silty, fine grained, tan	6					
	7					
sandstone, fine to coarse grained, tan	8					
	9					
	10					

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
topsoil - sandy loam, fine to coarse grained, dark brown	1					
sand, fine to coarse grained with gravel, tan	2					
	3					
	4					
sandstone, fine to coarse grained, tan	5					
	6					
	7					
	8					
	9					
	10					



ENTECH
 ENGINEERING, INC.

505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST PIT LOG

DRAWN:

DATE:

CHECKED:

DATE:
 8/19/16

JOB NO.:
 161641
 PID NO.:
 2

TEST PIT NO. 3
 DATE EXCAVATED 8/16/2016
 Job # 161641

TEST PIT NO. 4
 DATE EXCAVATED 8/16/2016
 CLIENT BRODERS EXCAVATION
 LOCATION 715 STRUTHERS LOOP

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
topsoil - sandy loam, fine to coarse grained, dark brown	1	⬢				
sand, fine to coarse grained, tan	2	⬢				
	3	⬢				
	4	⬢				
	5	⬢				
	6	⬢				
	7	⬢				
clay, reddish gray	8	⬢				
	9					
	10					

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST PIT LOG

DRAWN:

DATE:

CHECKED:

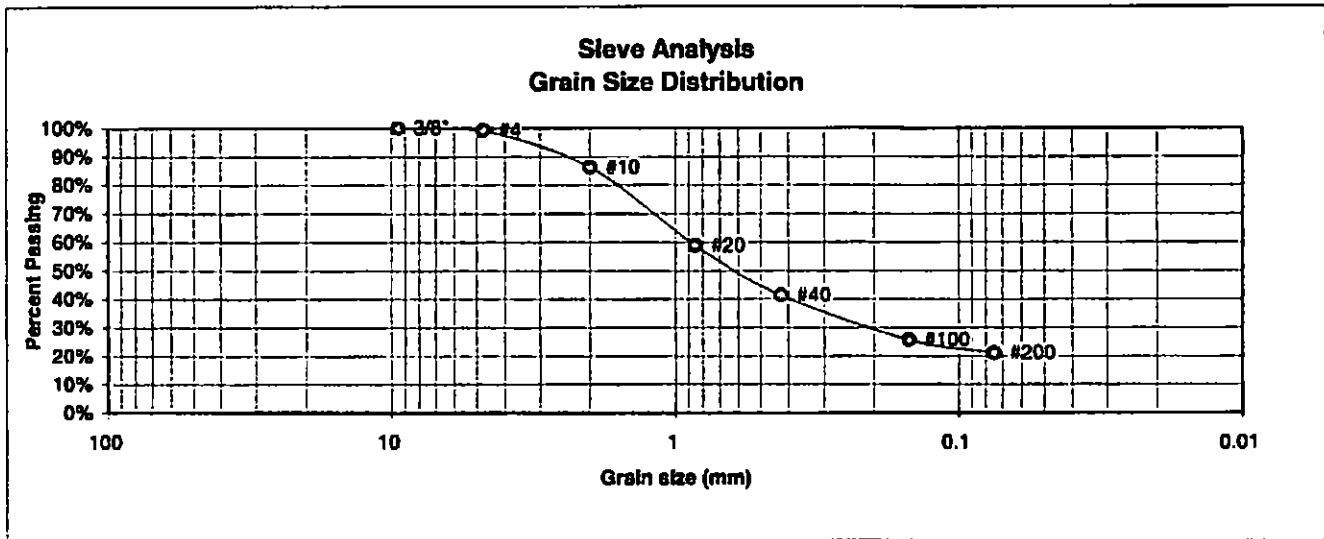
DATE:
 8/19/16

JOB NO.:
 161641

FIG NO.:

3

BORING NO.	TP-1	UNIFIED CLASSIFICATION	SM	TEST BY	BL
DEPTH(ft)	4.5-5'	AASHTO CLASSIFICATION		JOB NO.	161641
CLIENT	BRODERS EXCAVATING				
PROJECT	715 STRUTHERS LOOP				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.2%
10	86.1%
20	58.8%
40	41.3%
100	25.7%
200	21.0%

**Atterberg
Limits**

Plastic Limit	18
Liquid Limit	19
Plastic Index	1

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	



**ENTECH
ENGINEERING, INC.**

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

DRAWN:

DATE:

CHECKED:

DATE:

LL

8/19/16

JOB NO.:

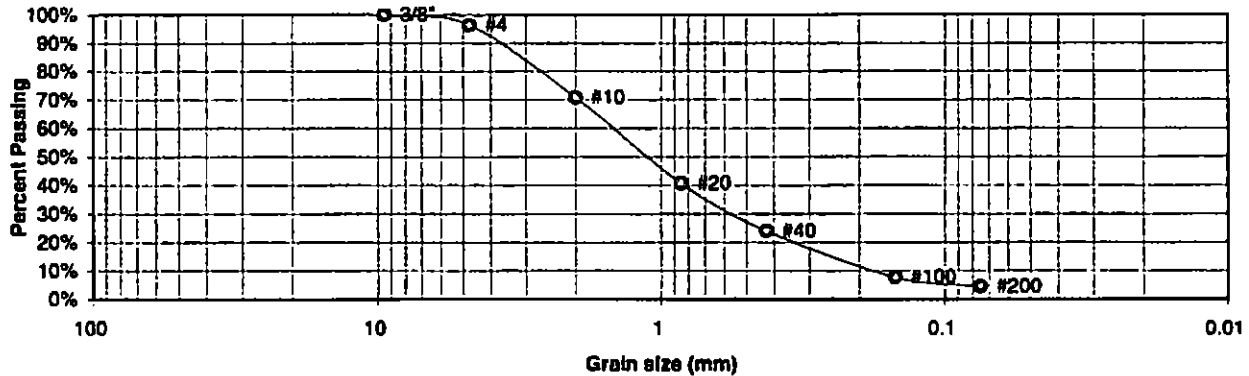
161641

FIG NO.:

4

BORING NO.	TP-3	UNIFIED CLASSIFICATION	SW	TEST BY	BL
DEPTH(ft)	1.5-7'	AASHTO CLASSIFICATION		JOB NO.	161641
CLIENT	BRODERS EXCAVATING				
PROJECT	715 STRUTHERS LOOP				

Sieve Analysis Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.4%
10	70.8%
20	40.7%
40	23.9%
100	7.7%
200	4.4%

Atterberg
Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)



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ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:

DATE:

CHECKED:

DATE:

LLL

8/19/16

JOB NO.:

161641

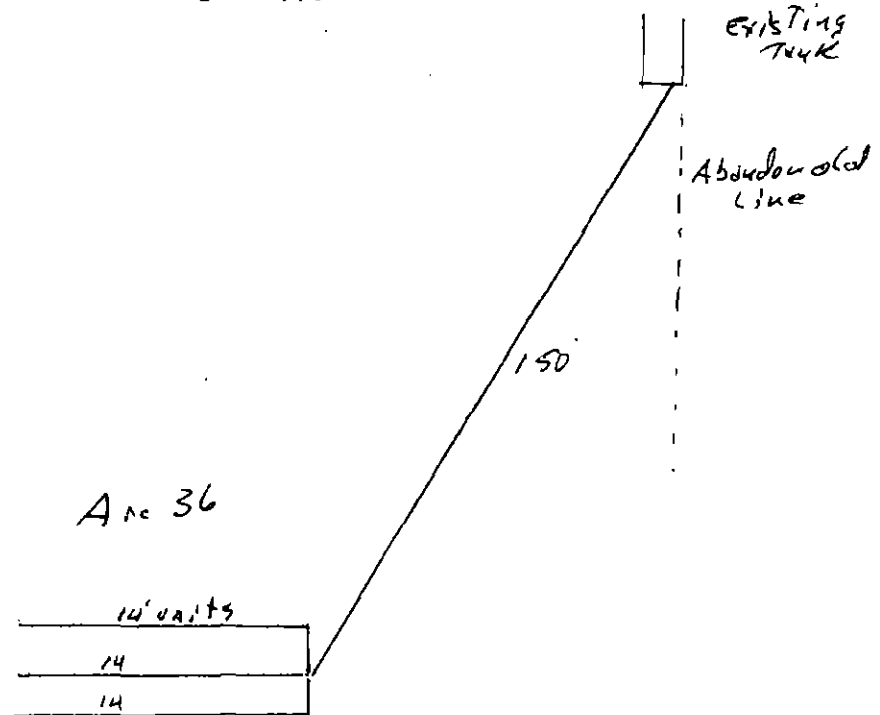
FIG NO.:

5

8-22-16
Broderick Excavating

715 STANTHEM LOOP
0N00 36190
APN# 7136 002061

Well
North



Approved design document
8-23-16 Janet

1" = 40'



Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044
 Colorado Springs, CO 80907
 (719) 578-3199 phone
 (719) 573-3188 fax
www.elpasocountyhealth.org

**CONVENTIONAL (NON-ENGINEERED)
 ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS) DESIGN WORKSHEET
 (MUST BE COMPLETED FOR ALL CONVENTIONAL DESIGNS)**

Wastewater Flow

Total number of bedrooms:

4

Design wastewater flow (gallons/day) from Table 6-1:

✓ 525

Septic Tank

Septic tank size (in gallons) from Table 9-1:

1500

1250

Tank burial depth (from top of tank, in inches)

36"

(NOTE: Shall not exceed 48 inch depth by regulation)

Will groundwater affect tank?

Yes
☐

No
☒

Will an effluent screen be installed?

Yes
☐

No
☒

(Note: Effluent screens are required for all new systems or replacement of the septic tank)

Soil Treatment Area (STA)

Long Term Acceptance Rate (LTAR) From Table 10-1:

.50

Unadjusted STA size (see 8.10.C.4) – show calculation:

875

Design flow (gallons per day)

LTAR (gallons/day/sq.ft.) =

.7

612.50 368 sq'

Depth of STA (cannot exceed 48"):

_____ Trenches are preferred. If bed system is selected,
 the selection reason must be specified: _____

Type of STA (check which applies):

☒ Trench

☐ Bed

FOR REPAIRS ONLY (check which applies):

☐ Wide Bed (more than 12 feet wide)

☐ Deep Gravel Trenches

☐ Seepage Pit

☐ None of the Above

Method of Septic Tank Effluent Application (check which applies):

- ☒ Gravity
☐ Pump to gravity
☐ Dispersed by siphon

Type of Distribution Media (check which applies):

- ☐ Rock
☐ Tire chips
☒ Chambers
☐ Other _____ Other type _____

Adjusted STA size, using factors from Table 10-2 & 10-3 (show calculation, with adjustment factors utilized):


A scale drawing *shall* be provided with each design document (see attached example design documents), showing:

- Layout of entire OWTS, including the STA configuration (trench, bed, etc.)
- Dimensions of the trench(s) or the bed(s)
- Location of all OWTS components and distances to all applicable physical features in Table 7-1
- Depths of all components (or elevations relative to a designated benchmark)
- Location of the soil profile test pit excavation(s), or percolation test holes, if required
- Location of the alternate STA site
- North direction arrow
- Graphic scale (1" = 20', 1" = 30', etc.)
- Contours, OR slope direction and % slope

Note: It is recommended that the design document is completed by a professional in the OWTS industry. EPCPH does not complete, or alter design documents. Contact EPCPH with any questions.

The proposed STA sites must be protected from disturbance, compaction, or other damage by staking, fencing, posting or other effective methods.

Certification



Signature

Richard Broders

Print Name

8-9-16

Date

715 S Truherle Loop

Property Address

Broders Excavating

Company Name

557 Rose Dr

Address

719-338-4630

Phone

2.broders @ qq.com

Email

(See attached Tables and Design Document examples)