

August 2, 2019

Erin Warner
8884 Towner Avenue
Peyton, CO 80831



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

Re: Plot Plan Review
8884 Towner Avenue
Lot 58, The Meadows Filing No. 3
Peyton, Colorado

Ref: RMG Engineers, Inc. October 6, 1998, *Geologic Hazard Investigation, The Meadows Filing #3, El Paso County, Colorado*. RMG Job No. 40586

Entech Engineering, Inc. August 2, 2019, *Subsurface Soil Investigation, 8884 Towner Avenue, Lot 58, The Meadows Filing No. 3, El Paso County, Colorado*. Entech Job No. 191187.

Dear Ms. Warner:

As requested, personnel of Entech Engineering, Inc. have reviewed geologic conditions for Lot 58, The Meadows Filing No. 3. The site lies in The Meadows Subdivision that was previously investigated by RMG Engineers, Inc. as a part of the above referenced Geologic Hazard Investigation. The site has recently been investigated as part of this review with the above referenced Subsurface Soil Investigation by Entech Engineering, Inc. is presented in Appendix A. The site location is shown on Figure 1.

The site was observed on July 24, 2019, by personnel of Entech Engineering, Inc. Site photographs are included in Appendix B. According to the Soil, Geology and Wastewater Study, portions of the site were mapped as shallow bedrock areas. A no-build area was designated on the original plat to avoid the shallow bedrock areas. One test boring was placed in the footprint of the proposed pole barn. Bedrock was encountered at 9 feet. Specific recommendations have been provided in the Subsurface Soil Investigation Appendix A. It is our opinion that the proposed pole barn location is acceptable for the site conditions and the no-build area should be modified to allow for construction. It is our understanding that the no-build was based on the shallow bedrock in respect to onsite wastewater treatment systems.

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.

Reviewed by:


Logan L. Langford, P.G.
Geologist



LLL/III

Encl.

Entech Job No. 191187
AAprojects/2019/191187 ppr

FIGURES

APPENDIX A: Entech Engineering, Inc.
Subsurface Soil Investigation, Entech Job No. 191187



ENTECH
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505 ELKTON DRIVE
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PHONE (719) 531-5599
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July 31, 2019

Erin Warner
8884 Towner Avenue
Peyton, CO 80831

Re: Subsurface Soil Investigation- Pole Barn
8884 Towner Avenue
Lot 58, The Meadows Filing No. 3
Peyton, Colorado

Dear Ms. Warner:

Personnel of Entech Engineering, Inc. have drilled one shallow test boring for the pole barn at the site referenced above. Specific findings for the site are presented in this letter.

Soil Classification:

Soil types observed in the test boring drilled on this site were found to consist of fine to coarse grained sand overlying silty sandstone.

Allowable Bearing Capacity:

An allowable bearing pressure of 2400 psf with an equivalent hydrostatic fluid pressure (in the active state) of 45 pcf is recommended for this site.

Soil Moisture Conditions:

Moist.

Expansion Potential:

Low.

Fill:

None.

Special Considerations:

Excavation of site materials should be moderately easy with rubber-tired equipment. Granular site materials are acceptable for use as structural fill.

Erin Warner
Subsurface Soil Investigation – Pole Barn
8884 Towner Avenue
Lot 58, The Meadows Filing No. 3
Peyton, Colorado

Foundation Type:

A shallow foundation system consisting of isolated pads or piers at column locations is anticipated for this site. A minimum depth of 5 feet is recommended for the pads or piers. Point load bearing pads or piers should be sized for the allowable bearing capacity given. **This does not constitute a foundation design.** Qualified personnel should verify that building loads do not exceed the bearing value given in this letter. The bottoms of the piers should be located at least 36 inches below finished grade for frost protection.

Reinforcing:

Reinforcing should be designed to permit foundation walls, if used to span a minimum of 10 feet under the design load. Foundation walls retaining over 4 feet of soil should be designed to resist an equivalent fluid pressure (in the active state) of 45 pcf.

Floor Slabs:

Floor slabs-on-grade, if any, should be separated from structural portions of the building and allowed to float freely. Interior partitions must be constructed in such a manner that they do not transmit floor slab movement to the roof or overlying floor. Backfill placed below floor slabs should be compacted to a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557.

Drainage and Grading:

The ground surface must be sloped away from the building to provide positive drainage away from the foundation. We recommend an equivalent slope of 6 inches with in the first 10 feet (5%) surrounding the structure, where possible, or as required to quickly remove surface water. Where a 5% slope cannot be achieved practically, such as around patios, at inside foundation corners, and between a building and nearby sidewalk, we believe it is desirable to establish as much slope as possible and to avoid irrigation in the area. Roof downspouts should discharge beyond the limits of backfill. We recommend providing splash blocks and downspout extensions to discharge runoff beyond the limits of backfill.

Owners should maintain the surface grading and drainage installed by the builder to assure water is not directed toward the foundations and does not pond near the building. Landscaping should be carefully designed to minimize irrigation adjacent to the foundation. We do not recommend use of impervious plastic membranes below landscaped areas near foundations; geotextile fabrics can control weed growth while allowing evaporation. Plants used close to foundation walls should be limited to those with low moisture requirements. Irrigated grass should not be located within 5 feet of the foundation. Sprinklers should not discharge water within 5 feet of foundations. Irrigation should be limited to the minimum amount sufficient to maintain vegetation. Application of more water will increase the potential for slab and foundation movements.

Erin Warner
Subsurface Soil Investigation – Pole Barn
8884 Towner Avenue
Lot 58, The Meadows Filing No. 3
Peyton, Colorado

Subdrain:

A subsurface drain is not required provided that the slab is positioned above the exterior grade, positive surface grading is maintained, the interior and exterior backfill is properly compacted and that irrigation adjacent to the structure is minimized.

Backfill:

Backfill should be compacted to 95% of its maximum Modified Proctor Dry Density, ASTM D-1557. Backfill must be compacted by mechanical means. No water flooding techniques of any type should be used in the compaction of backfill on this site. Expansive soils are not to be used as foundation backfill.

Concrete:

Type II cement is recommended for all concrete on this site. Concrete should not be placed on frozen or wet ground. Care should be taken to prevent the accumulation and ponding of water in the footing excavation prior to the placement of concrete. If standing water is present in the excavation, it should be removed by installing sumps and pumping the water away from the building area. 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 heating to prohibit freezing.

Open Foundation Excavation Observation:

The open foundation excavation should be observed prior to construction of the foundation in order to verify that no anomalies are present, that materials at the proper design bearing capacity have been encountered, and that no soft spots or debris are present in the foundation area.

Remarks:

The recommendations provided in this letter are based upon the observed soil parameters, anticipated foundation loads, and accepted engineering procedures. The recommendations are intended to minimize differential movement resulting from the heaving of expansive soils or resulting from settlement induced by the application of building loads. It must be recognized that the foundation may undergo movement. In addition, concrete floor slabs may experience movement; therefore, adherence to those recommendations which would isolate floor slabs from columns, walls, partitions or other structural components is extremely important, if damage to the superstructure is to be minimized. Owners should be apprised of the soil conditions and advised to maintain good practice in the future with regard to surface and subsurface drainage, framing of partitions above floor slabs, drywall and finish work above floor slabs, etc.

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Subsurface Soil Investigation – Pole Barn
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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, P.G.
Geologist

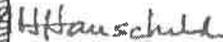
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Encl.

Entech Job No. 191187
AAProjects/2019/191187 ssi- pole barn



Reviewed by:

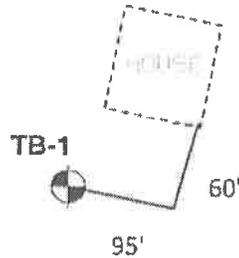
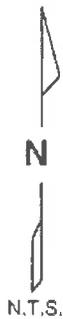


Mark H. Hauschild, P.E.
Senior Engineer

TEST BORING NO. 1
 DATE DRILLED 7/24/2019
 Job # 191187

TEST BORING NO.
 DATE DRILLED
 CLIENT ERIN WARNER
 LOCATION 8884 TOWNER AVENUE

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 15', 7/24/19													
SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE, MOIST	5			25	2.8			5					
				27	11.7								
SANDSTONE, SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST	10			50	12.9			10					
				8"									
	15			50	11.9			15					
				6"									
	20							20					



TOWNER AVENUE

LOCATIONS OF TEST BORINGS ARE APPROXIMATE.



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TEST BORING LOG

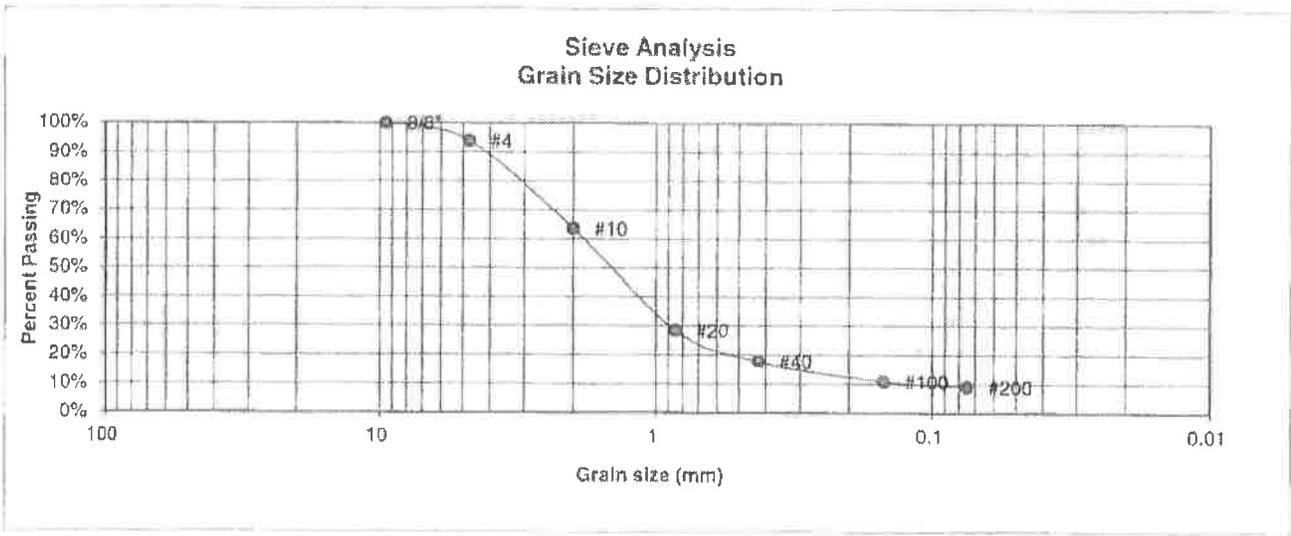
DRAWN	DATE	CHECKED	DATE
		LLL	7/31/19

JOB NO 191187

FIG NO

1

BORING NO.	1	<u>UNIFIED CLASSIFICATION</u>	SM-SW	<u>TEST BY</u>	BL
DEPTH(ft)	2-3	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	191187
CLIENT	ERIN WARNER				
PROJECT	8884 TOWNER AVENUE				



<u>U.S. Sieve #</u>	<u>Percent Finer</u>	<u>Atterberg Limits</u>
3"		Plastic Limit
1 1/2"		Liquid Limit
3/4"		Plastic Index
1/2"		
3/8"	100.0%	
#4	93.9%	<u>Swell</u>
#10	63.6%	Moisture at start
#20	28.3%	Moisture at finish
#40	17.7%	Moisture increase
#100	10.9%	Initial dry density (pcf)
#200	9.2%	Swell (psf)



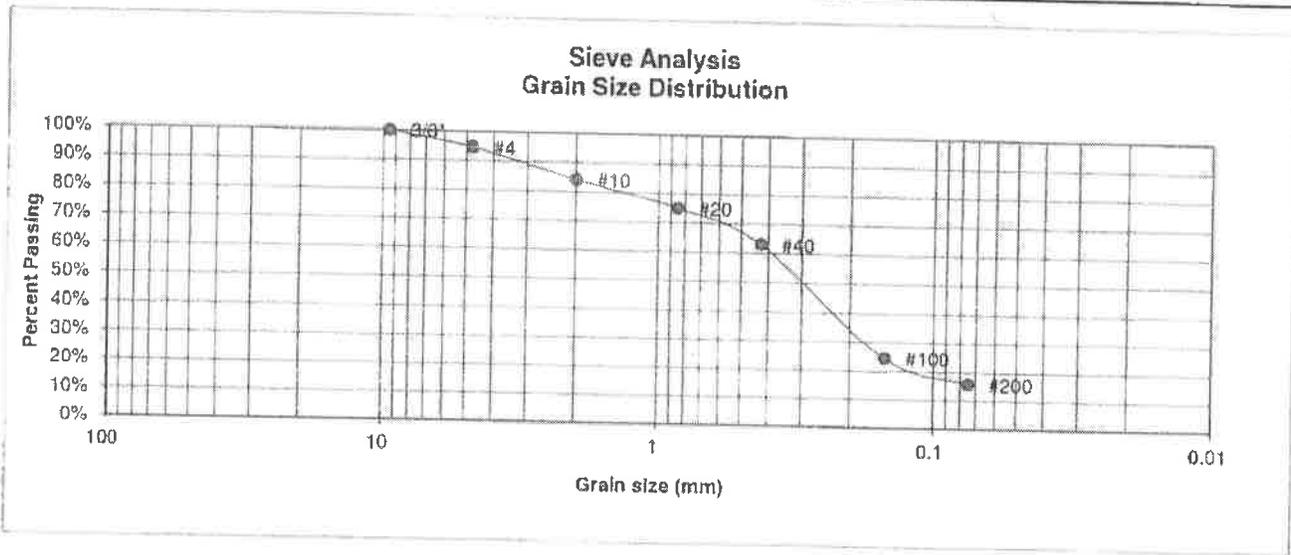
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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: LLL	DATE: 7/31/19
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JOB NO
191187
FIG NO
2

BORING NO.	1	UNIFIED CLASSIFICATION	SM	TEST BY	BL
DEPTH(ft)	10	AASHTO CLASSIFICATION		JOB NO.	191187
CLIENT	ERIN WARNER				
PROJECT	8884 TOWNER AVENUE				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.5%
10	84.2%
20	75.0%
40	62.9%
100	24.5%
200	15.8%

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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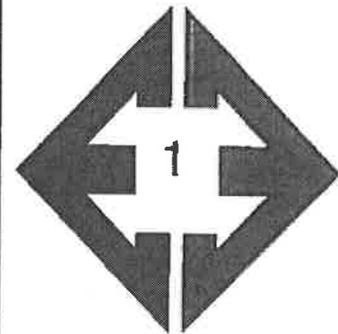
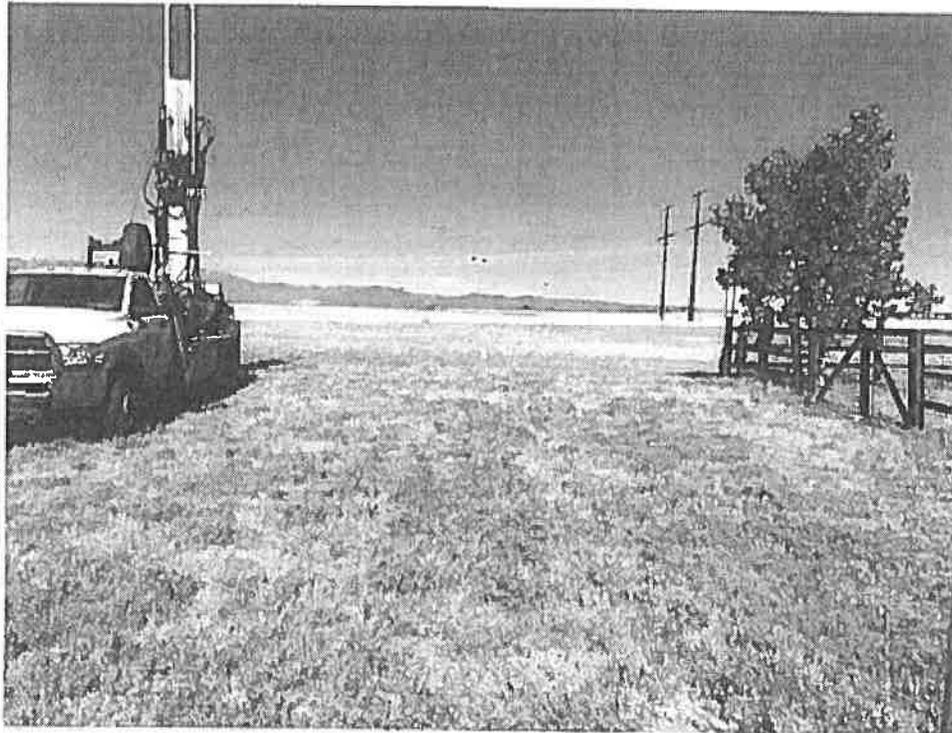
**LABORATORY TEST
RESULTS**

DRAWN:	DATE	CHECKED: <i>LL</i>	DATE: <i>7/31/19</i>
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JOB NO.
191187

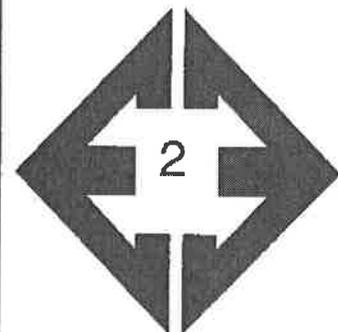
 FIG NO.
3

APPENDIX B: Site Photographs



**Looking west from the
proposed building
area.**

July 24, 2019



**Looking south from
the proposed building
area.**

July 24, 2019