COLORADO SPRINGS
OLYMPIC CITY USA

PLANNING & COMMUNITY DEVELOPMENT DEPARTMENT
Land Use Review Division

APPLICATION FORM FOR GEOLOGIC HAZARD WAIVER

Applicant: Blackmouth Builders Telephone 719-213-3527

Address: 1767 South 8th Street, Suite 120 Zip Code 80905 Email mark@blackmouthbuilders.com

Premises Involved: 410 South 26th Street

Tax Schedule Number: 74113-10-014

In accordance with the Geologic Hazard Ordinance 7.4.501, City Planning, in consultation with written approval of the City Engineer, may waive the requirement for the submittal of a Geologic Hazard Study on a property that is not otherwise excluded or exempted from the provisions of this part for the following:

1. Master plans, development plans, or subdivision plats for which geologic hazard reports have been previously prepared and reviewed and which are still considered to be relevant.
2. Development proposals west of Interstate Highway 25 which exhibit none of the following characteristics:
    a. Slopes (existing or proposed) exceeding thirty three percent (33%) or which are otherwise unstable or potentially unstable.
    b. Underground mining or subsidence activity.
    c. A history of a landfill or uncontrolled or undocumented fill activity.

A letter shall accompany this application that states that the project meets the above noted criteria, and is prepared by a professional geologist or professional geotechnical engineer, who is qualified in accord with section 7.4.504.

A completed waiver request will be reviewed within a 3 day time period.

Professional Geologist / Professional Geotechnical Engineer Acknowledgment:

I hereby formally request that the development at 410 South 26th Street be exempted from the requirement to submit a Geologic Hazard Study on the basis that review and on-site observation of the project has confirmed that all of the above referenced exemption criteria have been met. I hereby attest that I am a:

X Professional Geologist / Professional Geotechnical Engineer as defined by section 7.4.504

Submitted for and on behalf of Blackmouth Builders

Submitted by _____ Date 3/10/2020

City Engineering: _____ **City Planning:** _____

Date: _____ **Date:** _____

ENTECH
ENGINEERING, INC.

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

March 6, 2020

Blackmouth Builders
1767 South 8th Street, Suite 120
Colorado Springs, CO 80905

Attn: Mark Sliwinski

Re: **Geologic Hazard Waiver Request**
Tax Schedule No. 74113-10-014
410 South 26th Street - Addition
Colorado Springs, Colorado

Dear Mr. Sliwinski:

This letter is to request a waiver from the Geologic Hazard Study for the above referenced project. The project is to consist of the construction of an addition to the existing building located on the 30,914 square foot lot. The site is located in a portion of the NW¼ of NW¼ of Section 11, Township 14 South, Range 67 West, in the western portion of Colorado Springs. The location of the site is shown on the USGS Topography Map, Figure 1. The Site Map/Test Boring Location Map is presented in Figure 2. The geology of the site was evaluated using the test boring drilled at the site (Reference 1, Appendix A) and the *Geologic Map of the Colorado Springs Quadrangle* by Carroll and Crawford in 2000 (Reference 2, Figure 3).

In our opinion, the site is suitable for a Geologic Hazard Waiver as it does not exhibit any of the following characteristics:

- Slopes (existing or proposed) exceeding 33% or which are unstable or potentially unstable.
- History of underground mining or subsidence activity.
- History of a landfill, uncontrolled or undocumented fill activity.

The conditions on the site were investigated by Entech Engineering, Inc. Subsurface Soil Investigation, March 6, 2020, Entech Job No. 200175 (Reference 1). The investigation consisted of drilling one shallow test boring on the site. The approximate location of the test boring is shown on the Site Map/Test Boring Location Map, Figure 2. A copy of the subsurface soil investigation is presented in Appendix A.

Soils encountered on the site consisted of a layer of clayey sand possible fill overlying native sandy clay with underlying clayey sandstone and sandy claystone (Reference 1, Appendix A). Bedrock was encountered at 14 feet in the test boring which was drilled to 20 feet. The native clay soils were encountered at firm consistencies and moderate moisture content. The clays and claystone in the area typically have moderate to high expansion potentials. The upper soils are associated with Terrace Alluvium Three (Qt_3) of Late to Middle Pleistocene Age. The bedrock encountered on the site is the Pierre Shale Formation (Kp) of Cretaceous Age (Reference 2). A spread footing (16")/stemwall foundation bearing on undisturbed sandstone is anticipated for this site.

Blackmouth Builders
Geologic Hazard Waiver Request
Tax Schedule No. 74113-10-014
410 South 26th Street - Addition
Colorado Springs, Colorado

The site is mapped in the Hillside Overlay Zone according to the *City of Colorado Springs Zoning Map* (Reference 3). The site is gradually sloping to the east and no areas of unstable slopes were observed on the site.

The site is mapped in an area of steeply dipping bedrock according to the *Map of Areas Susceptible to Differential Heave in Expansive, Steeply Dipping Bedrock in Colorado Springs, Colorado* by J.W. Himmelreich, and D.C. Noe, distributed by the Colorado Geological Survey in 1999 (Figure 4, Reference 4). Bedrock was encountered at 14 feet in the test boring; however, the samples did not exhibit obvious bedding. A minimum separation of 10 feet between foundation components and steeply dipping bedrock is typically recommended. Mitigation for steeply dipping bedrock is not anticipated for shallow foundations on this site.

The site is not mapped in any areas susceptible to landslides according to the *Map of Potential Areas of Landslide Susceptibility in Colorado Springs* by White and Wait in 2003 (Reference 5). The site is also not located in any area of past underground mining or subsidence activity (References 6 and 7). Site photographs taken February 5, 2020, are included in Appendix B. The structure site does not lie in any floodplain zones according to the FEMA Map No. 08041CO726G (Reference 8), however, the extreme northeastern portion of the property is mapped within a floodplain zone. Finished floor levels must be a minimum of one foot above the floodplain level. Exact floodplain locations are beyond the scope of this project.

We trust that this has provided you with the information required regarding a Geologic Hazard Waiver, a copy of Geologic Hazard Waiver form is attached with this letter. Specific recommendations have been made in the Subsurface Soil Investigation (Appendix A, Reference 1). 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

Reviewed By:

Kristen A. Andrew-Hoeser, P.G.
Senior Geologist

LLL/ao
Encl.
Entech Job No. 200175
AA projects\2020\200175 Geohaz Waiver Letter

BIBLIOGRAPHY

1. Entech Engineering, Inc., February 25, 2020. *Subsurface Soil Investigation, 410 South 26th Street, Colorado Springs, Colorado.* Entech Job No. 200175.

2. Carroll, Christopher J. and Crawford, Timothy A. 2000. *Geologic Map of the Colorado Springs Quadrangle, El Paso County, Colorado.* Colorado Geological Survey. Open-File Report 00-3.

3. City of Colorado Springs. *Zoning Map, City of Colorado Springs, Colorado.* http://gis.coloradosprings.go.

4. Himmelreich, John W. Jr. and Noe, David D. 1999. *Map of Areas Susceptible to Differential Heave in Expansive, Steeply Dipping Bedrock, City of Colorado Springs, Colorado.* Colorado Geological Survey. Map Series 32.

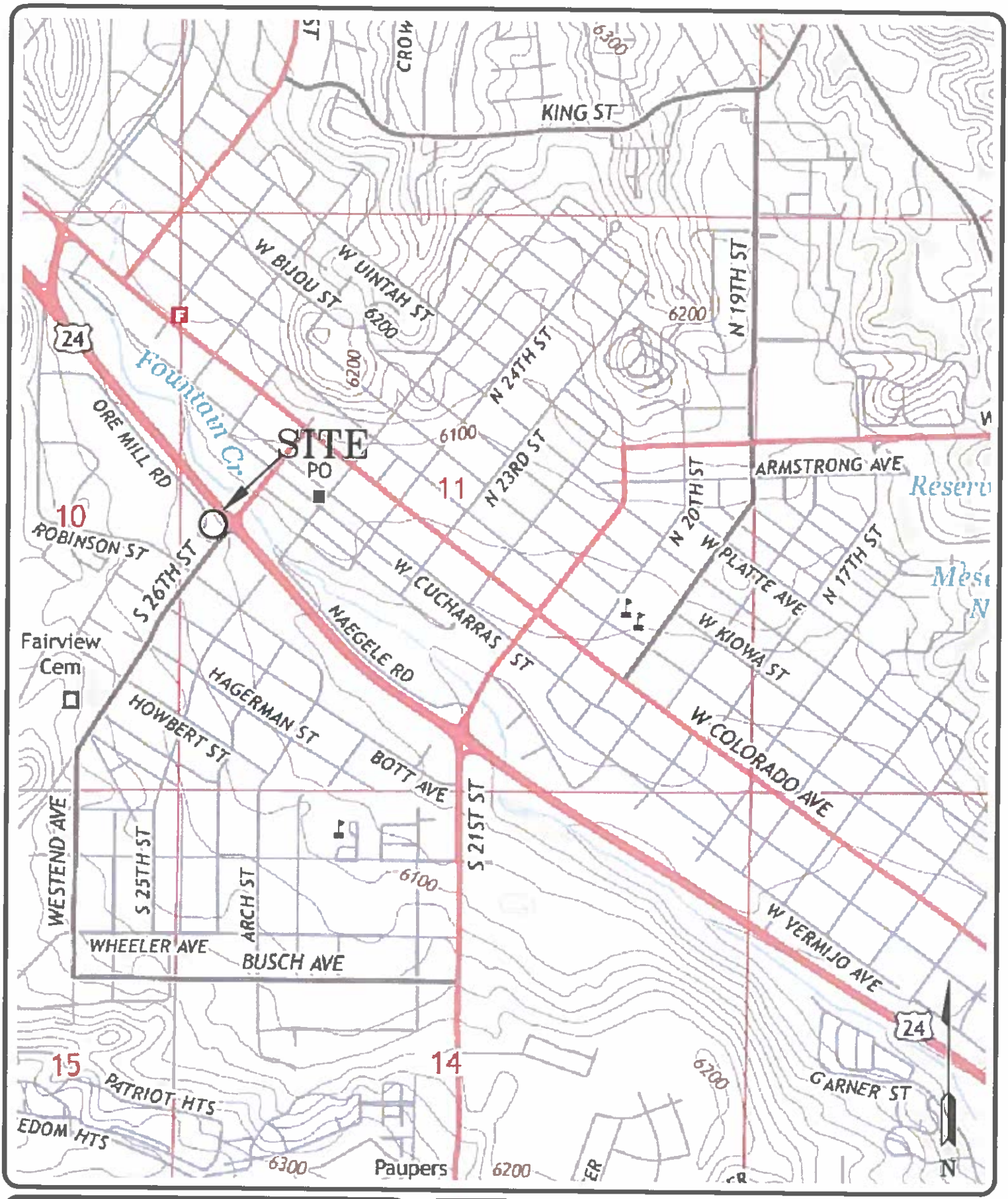
5. White, Jonathan, L. and Wait, T.C. 2003. *Map of Potential Areas of Landslide Susceptibility in Colorado Springs, El Paso County, Colorado.* Colorado Geological Survey. Map Series 42.

6. Amuedo and Ivey. *Inactive Mine Reclamation Program, Extent of Mining Map.* Colorado Department of Natural Resources.

7. Dames and Moore. 1985. *Colorado Springs Subsidence Investigation.* State of Colorado, Division of Mined Land Reclamation.

8. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado.* Map Number 08041CO726G.

FIGURES



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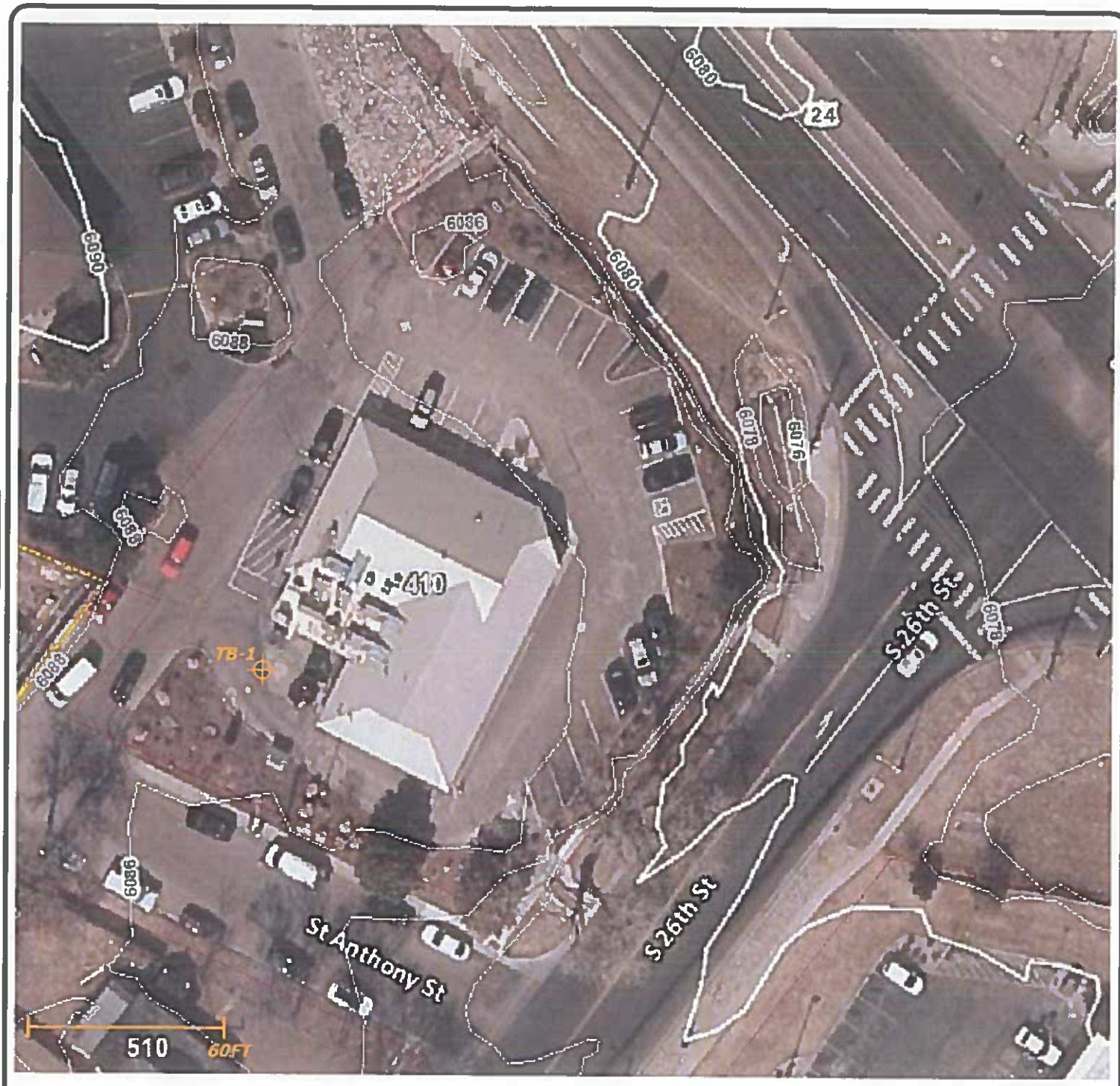
COLORADO SPRINGS, CO. 80907 (719) 531-5599

USGS MAP
410 SOUTH 26TH STREET
COLORADO SPRINGS, CO.
FOR: BLACKMOUTH BUILDERS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/6/20		

JOB NO.: 200175

FIG NO.: 1



⊕ TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

N

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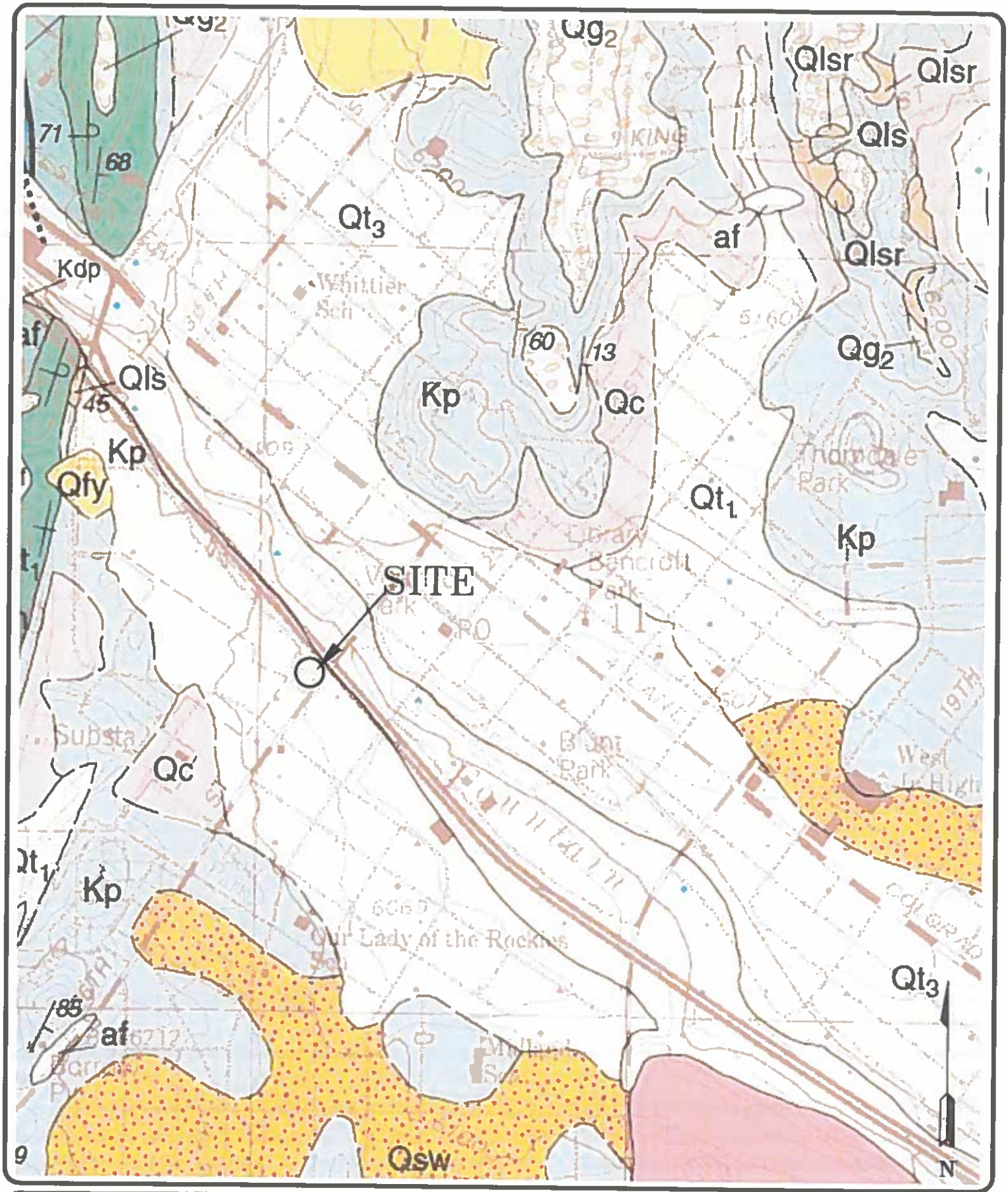
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SITE MAP/TEST BORING LOCATION MAP
410 SOUTH 26TH STREET
COLORADO SPRINGS, CO.
FOR: BLACKMOUTH BUILDERS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/6/20		

JOB NO.: 200175

FIG NO.: 2



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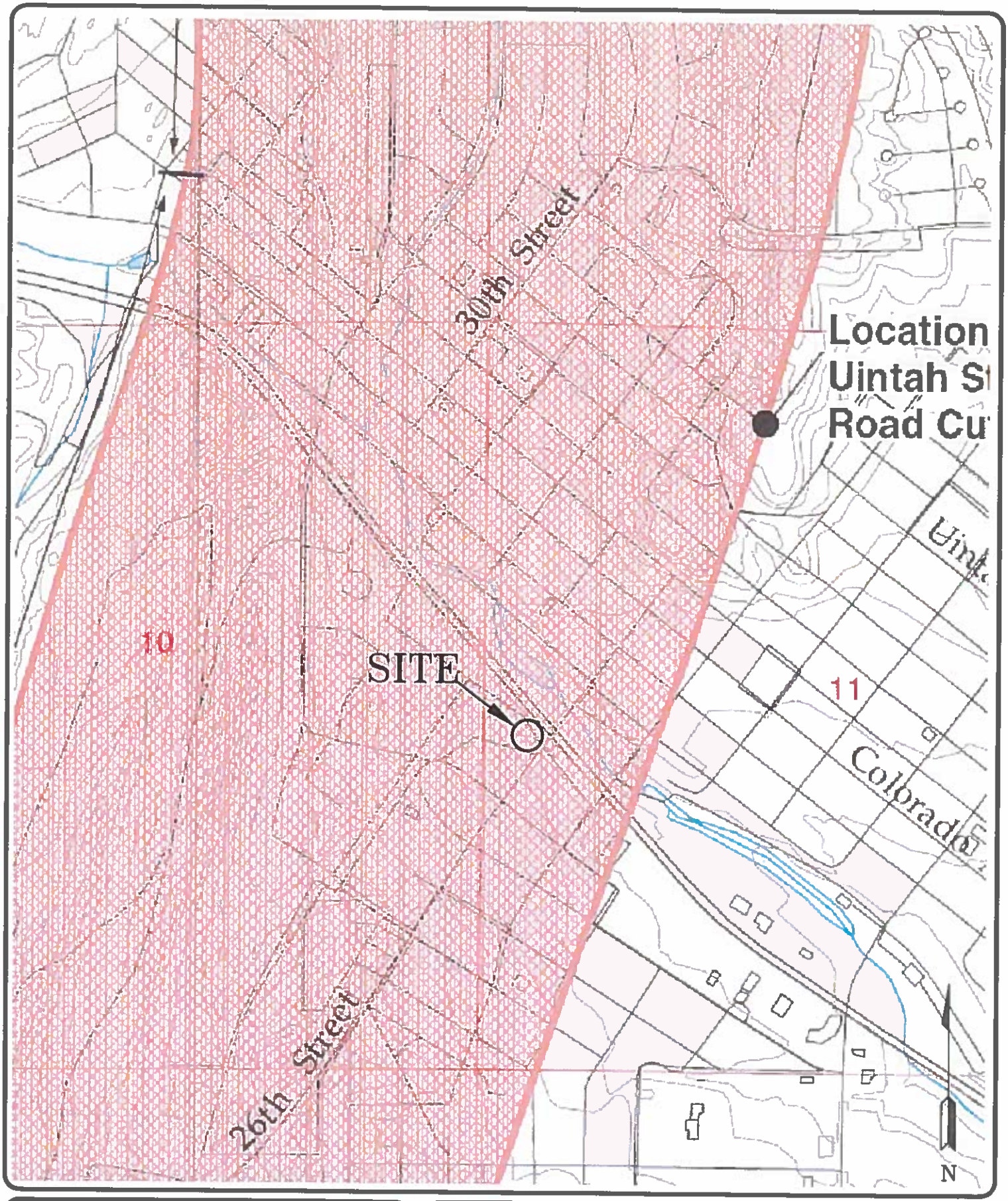
505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907 (719) 531-5599

COLORADO SPRINGS QUADRANGLE GEOLOGY MAP
410 SOUTH 26TH STREET
COLORADO SPRINGS, CO.
FOR: BLACKMOUTH BUILDERS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/6/20		

JOB NO.: 200175

FIG NO.: 3



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ENGINEERING, INC.
505 ELKTON DRIVE
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DIPPING BEDROCK MAP
410 SOUTH 26TH STREET
COLORADO SPRINGS, CO.
FOR: BLACKMOUTH BUILDERS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/6/20		

JOB NO.: 200175

FIG NO.: 4

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FLOODPLAIN MAP
410 SOUTH 26TH STREET
COLORADO SPRINGS, CO.
FOR: BLACKMOUTH BUILDERS

DRAWN:	DATE:	CHECKED:	DATE:
LLL	3/6/20		

JOB NO.: 200175

FIG NO.: 5

APPENDIX A: Subsurface Soil Investigation, Entech Job No. 200175

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ENGINEERING, INC.

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

March 9, 2020

Blackmouth Builders
1767 South 8th Street, Suite 120
Colorado Springs, CO 80905

Attn: Mark Sliwinski

Re: Subsurface Soil Investigation
410 South 26th Street - Addition
Colorado Springs, Colorado

Dear Mr. Sliwinski:

Personnel of Entech Engineering, Inc. have drilled one (1) shallow test boring for the proposed addition at the address 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 clayey sand possible fill and sandy clay overlying clayey sandstone and sandy claystone.

Allowable Bearing Capacity:

An allowable bearing pressure of 2000 psf is recommended for the well compacted structural fill. An equivalent hydrostatic fluid pressure (in active state) of 45 pcf is recommended for this site.

Soil Moisture Conditions:

Groundwater was encountered at 18 feet in the test boring. Groundwater is not anticipated to affect the construction of the shallow foundation.

Expansion Potential:

FHA Swell Testing resulted in an expansion pressure of 280 psf with 0.13% volume change and 8.0% moisture increase was determined by laboratory tests on a sample of clayey sand possible fill from Test Boring No. 1 at a depth of 2 to 3 feet. This magnitude of expansion is in the low range.

Swell/Consolidation Testing on a sample the sandy clay resulted in a volume change of 0.0%, which indicates a low expansion potential.

Fill:

Possible fill was encountered in the test boring to a depth of 3 feet, that is considered uncontrolled. Any fill encountered in the excavation must be fully penetrated to native soil or be removed and replaced under controlled conditions.

Special Considerations:

Clay and claystone, known to exhibit a high expansion potential, were encountered in the test borings. If highly expansive materials are encountered at or within 3 to 4 feet of foundation grade, removal and replacement with a granular non-expansive structural fill may be required. The need for overexcavation will be determined at the time of the open excavation observation.

Excavation of this site will likely be moderate with rubber-tired equipment. Site sand materials may be acceptable for use as structural fill, pending approval by Entech Engineering, Inc.

Foundation Type:

A spread footing (16")/stemwall foundation system is anticipated for this site. Point load bearing pads 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 exterior foundations should be located at least 30 inches below finished grade for frost protection.

Foundation Configuration Remarks:

The configuration of the foundation system in conjunction with possible overexcavation is critical to its performance. The position of foundation windows, jogs, steps and the relative elevation of adjacent and opposite walls determine foundation performance. Improper placement of the above can result in differential and lateral foundation movement. In addition, foundation walls over 4 feet in height should not span over 30 feet in length without specific design.

Reinforcing:

Reinforcing should be designed to permit foundation walls 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 placed on expansive clays should be expected to experience movement. Removal and replacement of clay soils, (3 to 4 feet minimum), is recommended to minimize slab movement. 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 92% of its maximum Modified Proctor Dry Density, ASTM D- 1557.

Drainage and Grading:

The ground surface must be sloped away from the addition to provide positive drainage away from the foundation. We recommend an equivalent slope of 6 inches 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 house 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 foundation and does not pond near the house. 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.

Subdrain:

A subsurface drain is recommended around portions of the addition which will have useable space located below the finished ground surface, if any. If a drain exists on the structure, the new drain should tie into the existing drain. A typical drain detail is included with this letter.

Structural Fill/Backfill:

Structural fill and 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.

Blackmouth Builders
Subsurface Soil Investigation
410 South 26th Street
Colorado Springs, Colorado

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.

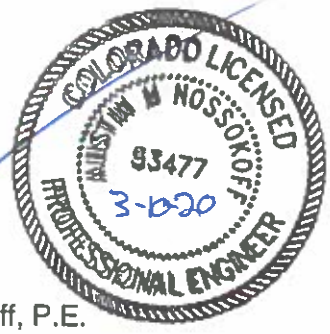
We trust this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

Reviewed by:



Austin M. Nossokoff, P.E.
Project Engineer

LLL/ao

Encl.

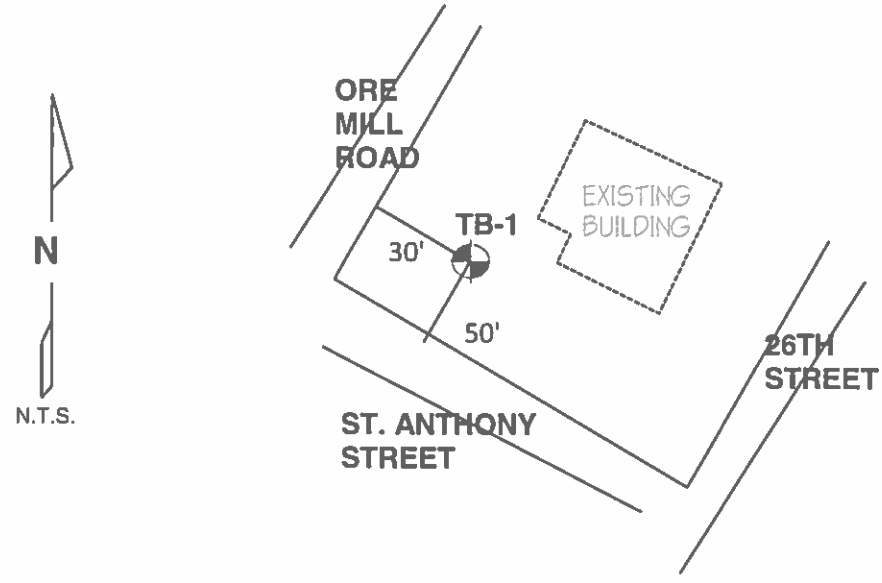
Entech Job No. 200238
AAprojects/2020/200238/200238 ssi

TEST BORING NO. 1
DATE DRILLED 2/17/2020
Job # 200175

TEST BORING NO.
DATE DRILLED
CLIENT BLACKMOUTH BUILDERS
LOCATION 410 SOUTH 26TH STREET

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
WATER @ 18', 2/17/20						
POSS. FILL 0-3', SAND, CLAYEY, FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST				9	18.0	
CLAY, SANDY, DARK BROWN TO BROWN, FIRM, MOIST	5			12	18.4	
	10			9	20.3	
SANDSTONE, CLAYEY, FINE GRAINED, RED BROWN, VERY DENSE, MOIST	15			50/2"	21.6	
CLAYSTONE, SANDY, GRAY BROWN, HARD, MOIST	20			50/8"	13.2	

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	5					
	10					
	15					
	20					



LOCATIONS OF TEST BORINGS ARE APPROXIMATE

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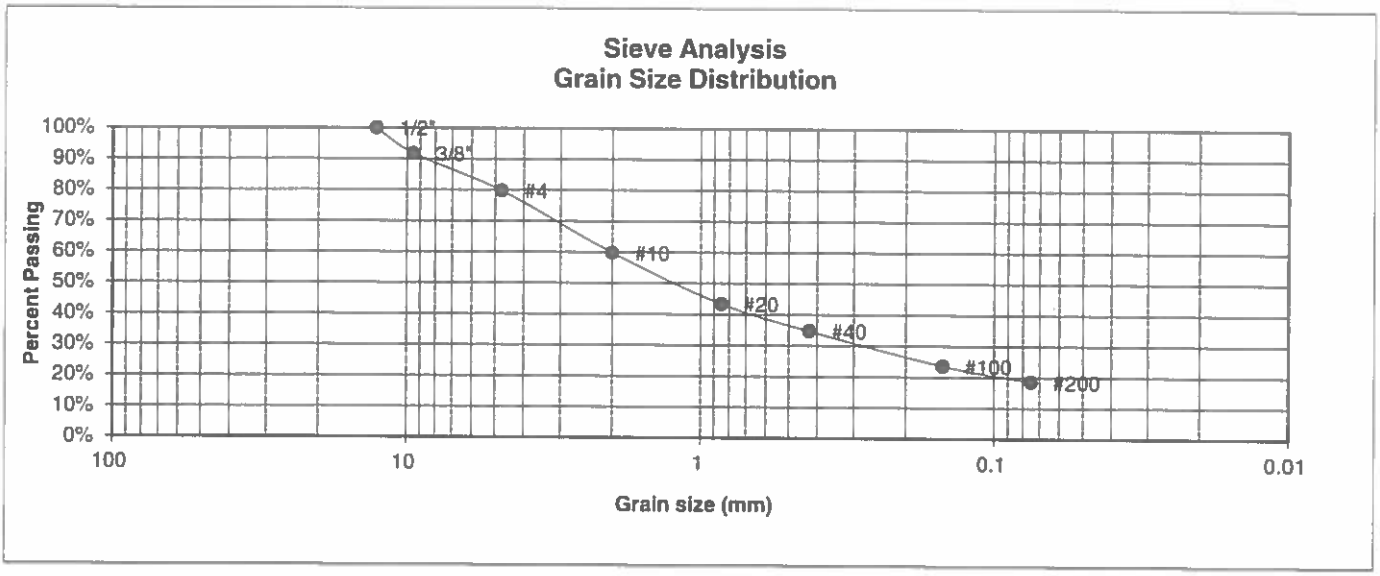
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/5/20

JOB NO. 200175
FIG NO. 1

BORING NO.	1	UNIFIED CLASSIFICATION	SC	TEST BY	BL
DEPTH(ft)	2-3	AASHTO CLASSIFICATION		JOB NO.	200175
CLIENT	BLACKMOUTH BUILDERS				
PROJECT	410 SOUTH 26TH STREET				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	91.7%
4	79.8%
10	59.8%
20	43.4%
40	34.7%
100	23.6%
200	18.5%

Atterberg Limits

Plastic Limit	
Liquid Limit	
Plastic Index	

Swell

Moisture at start	9.8%
Moisture at finish	17.8%
Moisture increase	8.0%
Initial dry density (pcf)	107
Swell (psf)	280

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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

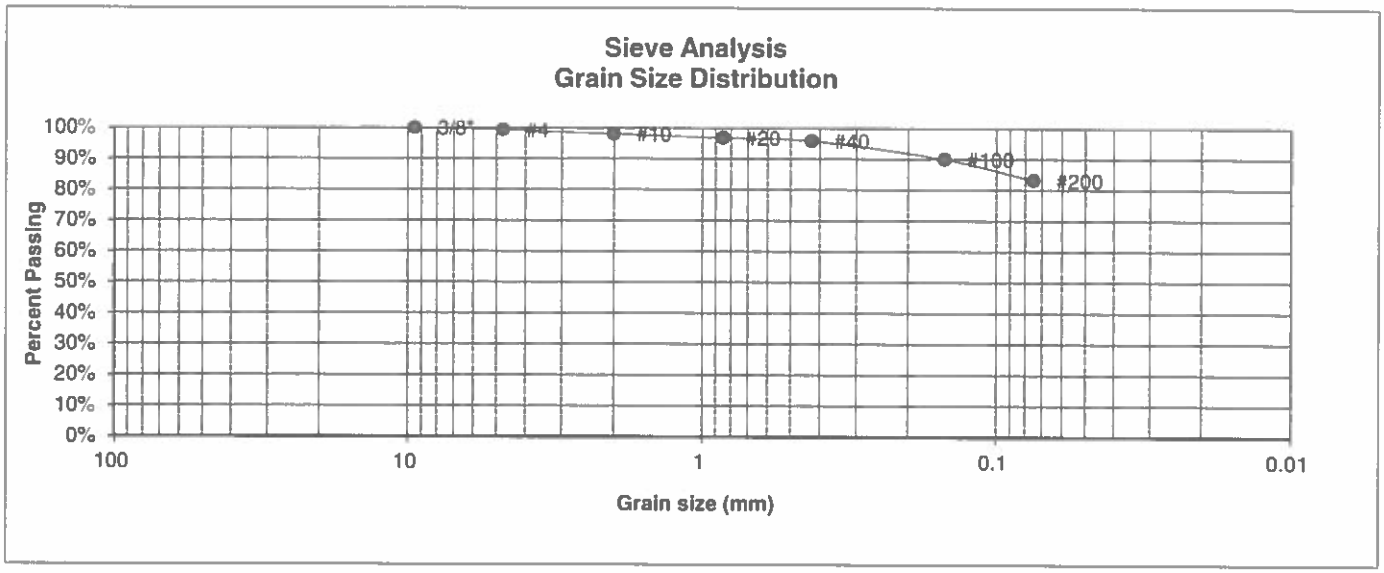
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	3/5/20

JOB NO.: 200175

FIG NO.: 2

BORING NO.	1	UNIFIED CLASSIFICATION	CL	TEST BY	BL
DEPTH(ft)	10	AASHTO CLASSIFICATION		JOB NO.	200175
CLIENT	BLACKMOUTH BUILDERS				
PROJECT	410 SOUTH 26TH STREET				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.3%
10	98.0%
20	96.8%
40	95.9%
100	89.9%
200	83.2%

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

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		LLL	3/5/20

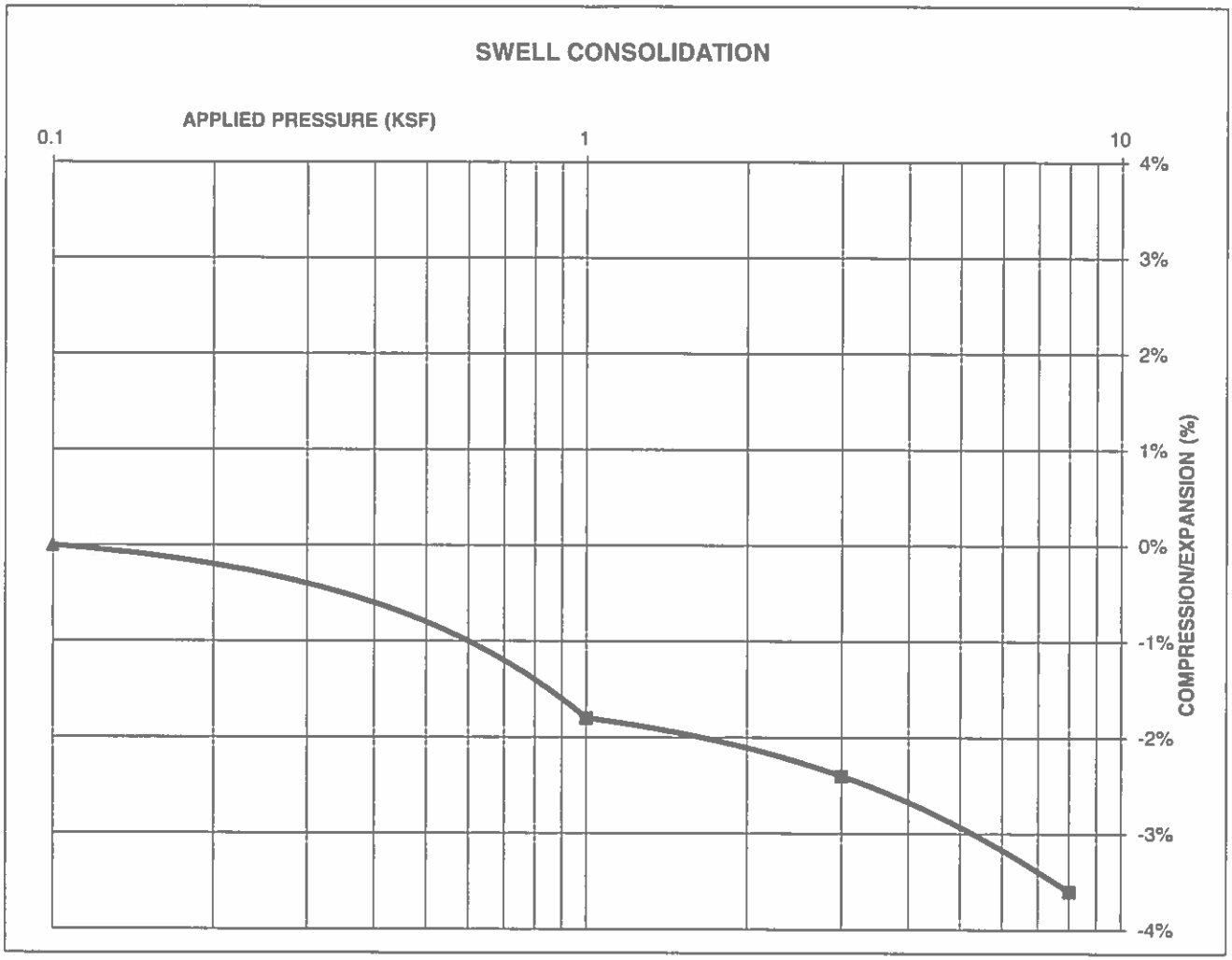
JOB NO.: 200175

FIG NO.: 3

CONSOLIDATION TEST RESULTS

SAMPLE FROM:	1	DEPTH(ft)	10
DESCRIPTION	CLAY, SANDY		
NATURAL UNIT DRY WEIGHT (PCF)			105
NATURAL MOISTURE CONTENT			20.8%
SWELL/CONSOLIDATION (%)			0.0%

JOB NO. 200175
CLIENT BLACKMOUTH BUILDERS
PROJECT 410 SOUTH 26TH STREET



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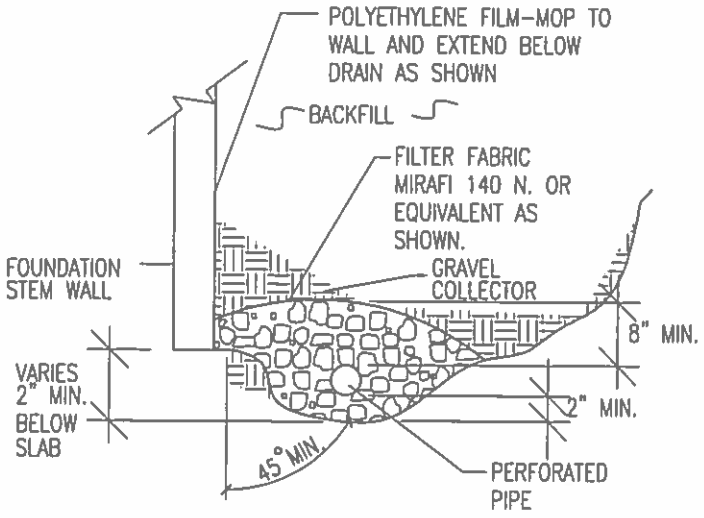
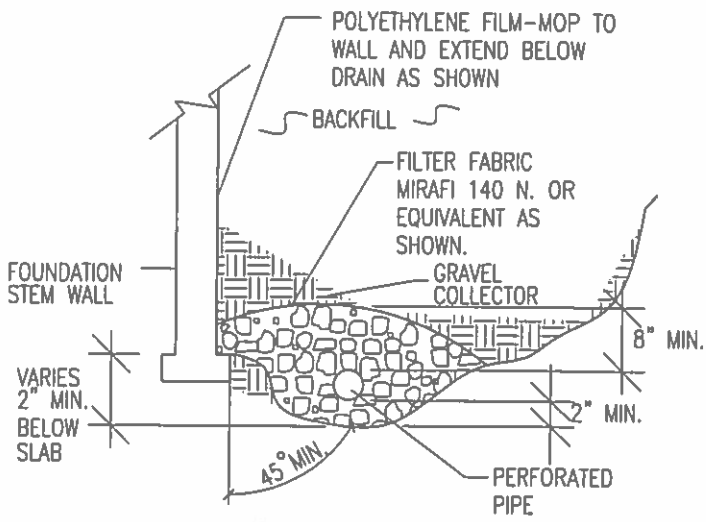
COLORADO SPRINGS, COLORADO 80907

SWELL CONSOLIDATION
TEST RESULTS

DRAWN	DATE	CHECKED:	DATE:
		LLL	3/5/20

JOB NO.: 200175
FIG NO.: 4





NOTES:

-GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS-85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

-PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4-INCH DIAMETER IS MOST OFTEN USED.

-ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON-PERFORATED PIPE.

-FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

-MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

-DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

PERIMETER DRAIN DETAIL

DRAWN:	DATE:	DESIGNED:	CHECKED:
		DS	LLL

JOB NO.: 200175

FIG NO.: 5

APPENDIX B: Site Photographs

1

Looking east along the southern side of the existing building.

February 14, 2020

2

Looking north towards along the western side of the existing building.

February 14, 2020

Job No. 200175