May 16, 2018

ENTECH
ENGINEERING, INC.

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

Elite Properties of America, Inc.
6385 Corporate Drive, Suite 200
Colorado Springs, CO 80919

Attn: Matt Manuszak

Re: Exterior Perimeter Drain and Foundation Wall Waterproofing
1970 Volterra Way
Colorado Springs, Colorado

Dear Mr. Manuszak:

As requested, personnel of Entech Engineering, Inc. observed the exterior perimeter drain installation and the foundation wall waterproofing on the foundation walls at the above referenced site on May 14, 2018.

The drain consisted of a 3 inch diameter perforated flexible pipe surrounded by clean, coarse gravel. The drain was placed on the exterior portion of the foundation. A polyethylene membrane was mopped to the wall and extended beneath the drain. The top of the gravel layer was protected with a synthetic filter fabric material. Line and grade was spot checked and appeared adequate. The drain is planned to extend to the sewer underdrain. In general, the drain installation appears to be in substantial compliance with the drain detail provided by Entech Engineering, Inc.

The foundation walls were observed to have waterproof material on the exterior.

We trust that 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.

Tae Y. Yang

Reviewed by:

Mark H. Hauschild, P.E.
Senior Engineer

JM/jm

Encl.

Entech Job No. 180717
AAprojects/2018/180717 epd&fww

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
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FAX (719) 531-5238

May 11, 2018

Elite Properties of America, Inc.
6385 Corporate Drive, Suite 200
Colorado Springs, CO 80919

Attn: Matt Manuszak

Re: Footing and Footing Reinforcing Observation
1970 Volterra Way
Colorado Springs, Colorado

Dear Mr. Manuszak:

As requested, personnel of Entech Engineering, Inc. observed the foundation at the address referenced above on May 1, 2018 in order to observe the footing forms and footing reinforcing prior to placement of concrete.

Continuous footings, widened footings and interior pads of the specified dimensions were formed for placement of concrete. The footing forms were found to have been placed generally conforming with the foundation design for the Model 314 by Entech Engineering, Inc., dated November 21, 2014, Job No.141660. The footing forms were approved for concrete placement.

We trust that 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.

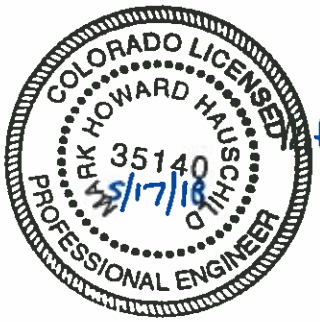
Tae Yang

TYY/kp

Encl.

Entech Job No. 180717
AAprojects/2018/180717 fo

Reviewed by:



Mark H. Hauschild, P.E.
Senior Engineer

ENTECH
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505 ELKTON DRIVE
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FAX (719) 531-5238

May 11, 2018

Elite Properties of America, Inc.
6385 Corporate Drive, Suite 200
Colorado Springs, CO 80919

Attn: Matt Manuszak

Re: Foundation Wall Reinforcing and Ufer Observation
1970 Volterra Way
Colorado Springs, Colorado

Dear Mr. Manuszak:

As requested, personnel of Entech Engineering, Inc. observed the foundation at the address referenced above on May 4, 2018 in order to observe the placement of steel reinforcing and ufer in the foundation walls.

The reinforcing was found to be in substantial compliance with the foundation design for the the Model 314.0 by Entech Engineering, Inc., dated November 21, 2014, Job No. 141660. One ufer ground was observed in the garage foundation wall extending above the top of the wall. The ufer was lapped onto the lower horizontal reinforcing. The wall was approved for the placement of concrete.

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.

Tae Yang

JM/rm

Entech Job No. 180717
AAprojects/2018/180717 fwr&ufer

Reviewed by:

Mark H. Hauschild, P.E.
Senior Engineer

May 17, 2018

ENTECH
ENGINEERING, INC.

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

Elite Properties of America
6385 Corporate Drive, Suite 200
Monument, Colorado 80919

Attn: Jamie Twigg

Re: Excavation Observation
1970 Volterra Way
Colorado Springs, Colorado

Dear Mr. Twigg:

Personnel of Entech Engineering, Inc. have observed the foundation excavation at the site referenced above. Specific findings for the site are presented in this letter.

The recommendations presented in this letter are based on conditions observed on April 24, 2018. Entech Engineering, Inc. should be notified if changes in the conditions are encountered or if the excavation depth or location should change.

Soil Classification:

Soil types observed in the foundation excavation were found to consist of fine to coarse grained silty sand overlying claystone.

Allowable Bearing Capacity:

An allowable bearing pressure of 2400 psf with an equivalent hydrostatic fluid pressure (in the active state) of 45 pcf is anticipated for the imprint and structural fill to be used on this site.

Soil Moisture Conditions:

Moist.

Expansion Potential:

Low for the sand and high for the claystone.

Fill:

Overlot fill was encountered on this site. The foundation excavation penetrated the fill in all locations.

Special Considerations:

Due to the expansive clays encountered in the excavation, the entire site was overexcavated to approximately 2 feet below grade to penetrate the claystone. Imported structural fill was then placed to grade. The soil was observed and tested by personnel of Entech Engineering, Inc. Results of the density tests are attached.

Foundation Type:

A spread footing (16")/stemwall foundation system in conjunction with overexcavation is recommended for this site. The footing design for the Model 314.0 by Entech Engineering, Inc. is appropriate for this site. All footings must be formed and placed on top of the fill. The footings are not to be trenched into the fill. The bottoms of exterior foundations should be located at least 30 inches below finished grade for frost protection.

Reinforcing:

Reinforcing should comply with that shown on the foundation design provided by Entech Engineering, Inc. No. 5 Grade 40 reinforcing bars may be used in place of No. 4 Grade 60 reinforcing bars, if desired.

Floor Slabs:

Floor slabs placed on expansive soils should be expected to experience movement. Penetration to suitable soils or removal and replacement of expansive soils, (2 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 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 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.

Homebuyers 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 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 for the entire structure. This includes foundation walls between the basement and a crawlspace or garage. Typical drain details are included with this letter.

Backfill:

Backfill should be compacted to 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 in areas with flatwork. Backfill should be compacted to 85% of its maximum Modified Proctor Dry Density, ASTM D-1557 in landscaping areas. 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.

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. Any subsequent 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.

Reviewed by:

Daniel P. Stegman

DPS/kp

Encl.

Entech Job No. 180717
AAprojects/2018/180717 oe

Mark H. Hauschild, P. E.
Senior Engineer

Client:	Elite Properties of America, Inc.	**Entech Job #:**	180717	**Proctor Value Key:**	**M = modified, ASTM D-1557**
Project:	1970 Volterra Way	**Tested By:**	S. Reardanz		**S = standard, ASTM D-698**
Subject:	Structural Fill	**Report Date:**	05-17-2018		**T = AASHTO, T-180**

Test #	Test Location	Testing Date	Percent Compaction	Percent Required	Percent Moisture	Soil Type	Proctor Type/Value	Pass/Fail ☑ = Fail
1	10' east and 35' north off southwest corner of excavation, lower, at grade.	4/26/18	97	95	8.3	SM	M - 128.3 @ 8.9	☐
2	30' east and 10' north off southwest corner of excavation, lower, at grade.	4/26/18	97	95	8.1	SM	M - 128.3 @ 8.9	☐

Comments:

Scope of Observation: PERIODIC; CONTRACTOR'S OR CLIENT'S REPRESENTATIVE ADVISED

All dimensions are approximate. Cl. = Centerline

ENTECH
ENGINEERING, INC.
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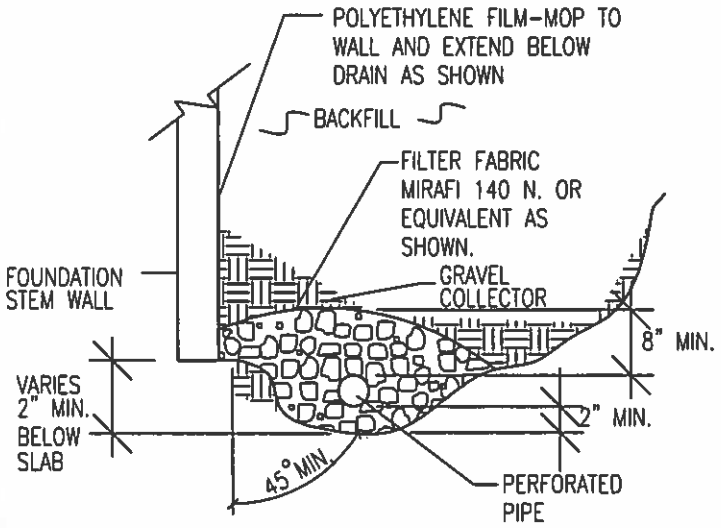
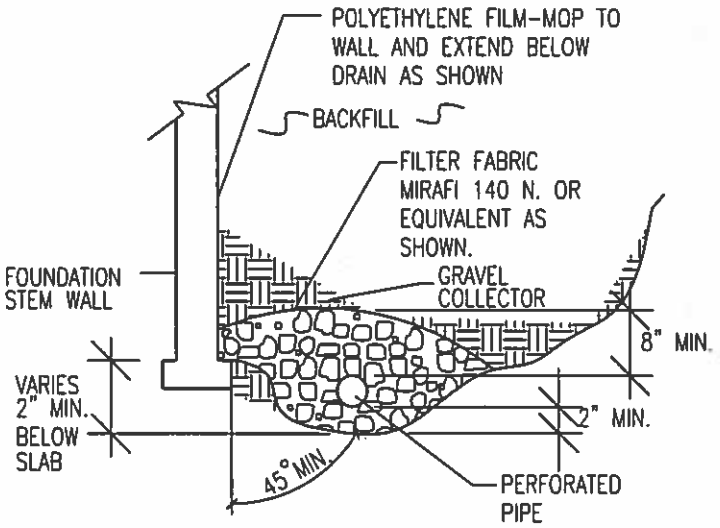
FIELD DENSITY RESULTS

Mark H. Hauschild, P.E.





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 DRAWN:	DESIGNED BY:	CHECKED:

JOB NO.:

FIG. NO.: