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October 23, 2013

4CD, Inc.
Attn: Michael Lipkin
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(mlipkin@lipkinwarner.com)

Job No. 113 099A

Subject: Observation of Excavation, Proposed Building 1 Townhomes, Parcel 4C, Sopris Meadows Two, Filing 4, East Valley and Evans Roads, Basalt, Colorado

Gentlemen:

As requested, a representative of Hepworth-Pawlak Geotechnical, Inc. observed the excavation at the subject site on October 17, 2013 to evaluate the soils exposed for foundation support. The project lies within the Sopris Meadows PUD, previously evaluated for geotechnical conditions by Hepworth-Pawlak Geotechnical in 1995. An Update of Geotechnical Information by Hepworth-Pawlak Geotechnical was provided on April 18, 2013, Job No. 113 099A. The findings of our observations and recommendations for the foundation design are presented in this report. The services were performed in accordance with our agreement for professional engineering services to 4CD, Inc., dated September 19, 2013.

The proposed construction includes a multi-level residential building with lower level parking and associated access drives and utilities. The building will be of wood frame and concrete construction with a slab-on-grade lower floor. Foundation loads are anticipated to be moderate and carried by continuous foundation walls and interior isolated columns.

A review of the project plans prepared by Kurtz and Associates, dated August 29, 2013, indicates that the footings for the structure have been designed with an allowable soil bearing pressure of 3,000 psf.

At the time of our visit to the site, the foundation excavation had been cut in 3 levels (including a partially excavated elevator pit) from approximately 3 to 7 feet below the

adjacent ground surface. The soils exposed in the bottom of the excavation consisted of silty sandy gravel with cobbles and boulders. The results of a gradation analysis performed on a sample of soil obtained from the base of the excavation (minus 3 inch fraction) are presented on Figure 1. No free water was encountered in the excavation and the soils were slightly moist to moist.

Considering the conditions exposed in the excavation and the nature of the proposed construction, spread footings placed on the undisturbed natural soil designed for an allowable soil bearing pressure of 3,000 psf can be used for support of the proposed structure. Footings should be a minimum width of 18 inches for continuous walls and 2 feet for columns. Loose and disturbed soils in footing areas should be removed and the bearing level extended down to the undisturbed natural soils. Soils in foundation areas disturbed during the excavation process should be moisture conditioned and compacted prior to placement of footing concrete. The bearing soils should be protected against frost and concrete should not be placed on frozen soils. Exterior footings should be provided with adequate soil cover above their bearing elevations for frost protection, typically 42 inches of cover in this area. Continuous foundation walls should be reinforced top and bottom to span local anomalies such as by assuming an unsupported length of at least 12 feet. Foundation walls acting as retaining structures should also be designed to resist a lateral earth pressure based on an equivalent fluid unit weight of at least 45 pcf for on-site granular soil (exclusive of rocks larger than 6 inches in diameter) as backfill. A perimeter foundation drain should be provided to prevent temporary buildup of hydrostatic pressure behind the below grade walls and prevent wetting of the lower levels. Structural fill placed within floor slab areas can consist of the on-site granular soils (exclusive of oversize rock) compacted to at least 95% of standard Proctor density at a moisture content near optimum. Backfill placed around the structure should be compacted and the surface graded to prevent ponding within at least 10 feet of the building. Landscape that requires regular heavy irrigation, such as sod, and sprinkler heads should not be located within 10 feet of the foundation.

The recommendations submitted in this letter are based on our observation of the soils exposed within the foundation excavation and do not include subsurface exploration to evaluate the subsurface conditions within the loaded depth of foundation influence. This study is based on the assumption that soils beneath the footings have equal or better support than those exposed. The risk of foundation movement may be greater than indicated in this report because of possible variations in the subsurface conditions. In order to reveal the nature and extent of variations in the subsurface conditions below the

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excavation, drilling would be required. It is possible the data obtained by subsurface exploration could change the recommendations contained in this letter. Our services do not include determining the presence, prevention or possibility of mold or other biological contaminants (MOBC) developing in the future. If the client is concerned about MOBC, then a professional in this special field of practice should be consulted.

If you have any questions or need further assistance, please call our office.

Sincerely,

HEPWORTH – PAWLAK GEOTECHNICAL, INC.

James A. Parker, P.E., P.G.



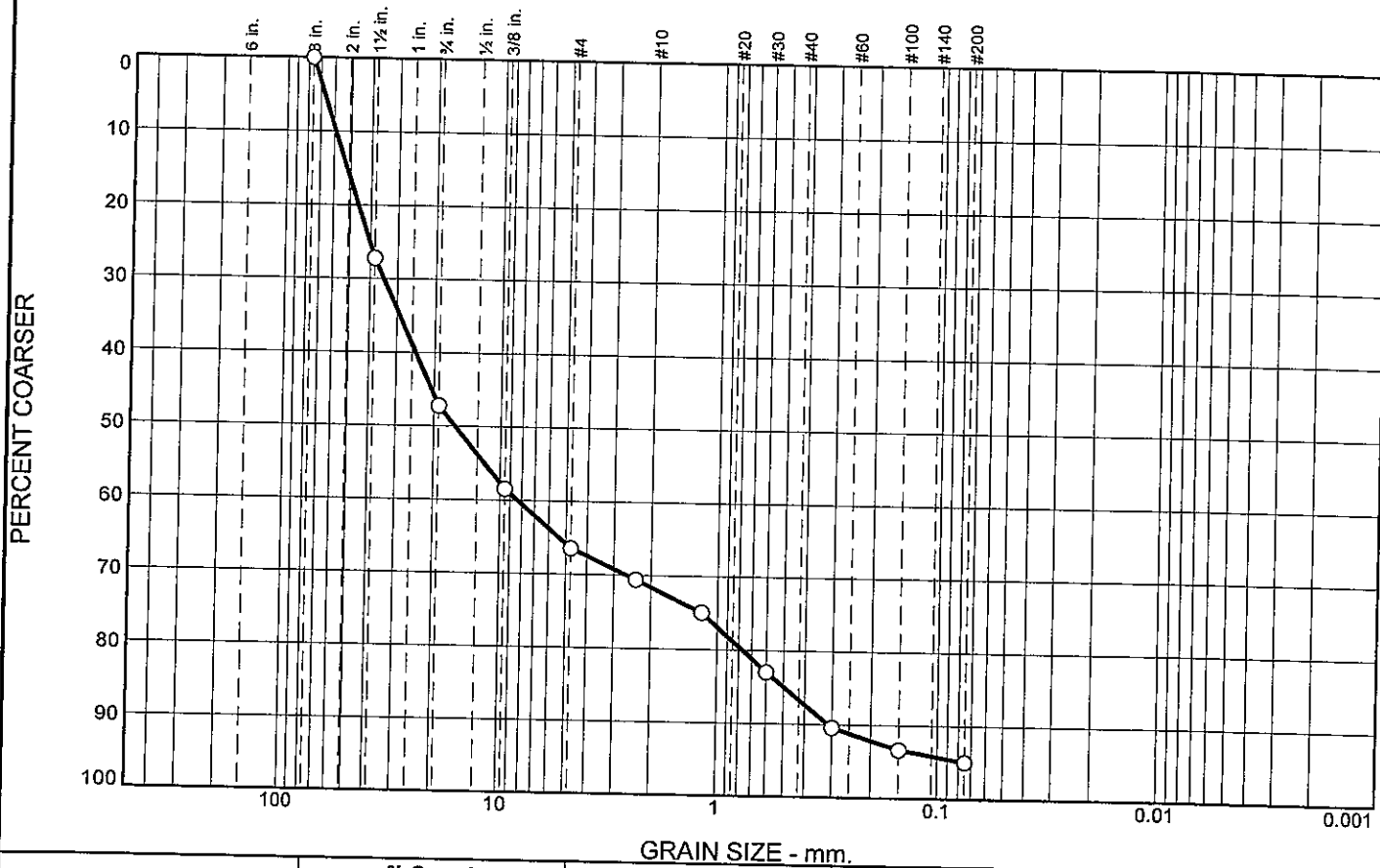
Rev. by: SLP

JAP/ksw

attachment Figure 1 – Particle Size Distribution Report

cc: Lipkin Warner – J. Ray Barlow (jrbarlow@lipkinwarner.com)

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	47	19	6	15	8	5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100		
1.5	73		
.75	53		
.375	42		
#4	34		
#8	29		
#16	25		
#30	17		
#50	10		
#100	7		
#200	5.0		

Material Description
Silty Gravel with Sand

Atterberg Limits
 PL= NP LL= NV PI= NP

Coefficients
 D₈₅= 51.9948 D₆₀= 24.4624 D₅₀= 16.0505
 D₃₀= 2.6029 D₁₅= 0.4970 D₁₀= 0.3128
 C_u= 78.19 C_c= 0.89

Classification
 USCS= GP-GM AASHTO= A-1-a

Remarks

* (no specification provided)

Location: Southwest Corner of Foundation Excavation
 Sample Number: 1

Date: 10-17-13

Hepworth-Pawlak Geotechnical, Inc. Glenwood Springs, Colorado	Client: 4CD, Inc.
	Project: Proposed Townhomes, Parcel 4C, Sopris Meadows 2, Filing 4, East Valley and Evans Roads, Basalt, Colorado
Project No: 113 099A	Figure 1

Tested By: BG

Checked By: JP