



## NON USE VARIANCE PROJECT STATEMENT

December 17, 2019

RE: Colorado Springs Storage  
118 Resort Point  
Colorado Springs, CO 80905

### Description:

The property owned by Colorado Springs Storage LLC after replatting of 10 existing residential (R) lots will consist of approximately 2.92 acres combined. This will also include the land proposed for vacating of unbuilt right of ways for an additional area of .98 acres. A total of 3.88 acres will be available to plat into one lot. The newly platted land is proposed to be used for surface parking (RV parking lot). The owner proposes to use recycled asphalt millings in lieu of a hard paved surface.

### Justification:

A non-use variance is proposed to allow the alternate method of permeable asphalt millings to be used on this site in lieu of impermeable paving. This unusual site is located in a landslide area and is therefore unbuildable per the Geohaz report findings. The asphalt millings will be permeable allowing some water to seep into the land and limit sheet flow. This is a well-drained site, no water was found when drilling was conducted on the site. Any site water that does travel to the low spot on the North end of the property will be held in the retention pond, which includes a liner and sand filter.

A permeable surface improves the sites ability to manage any water run off on site, and limits any water disturbance that would flow onto neighboring properties. The millings allow for percolation of site water and prevents flooding or pooling on the site outside of the retention pond. This recycled material is more stable than gravel. The tar on the asphalt millings allows for bonding and if well compacted provides a smooth surface. If all possible water were required to drain to the retention pond a much larger heavier pond would be required. A heavier pond would likely reactivate landslides in the area. Well-compacted asphalt millings will melt together as the remaining tar heats up.

Recommended pavement surfaces are Concrete or Asphalt. Concrete is extremely heavy. It will likely crack quickly on this unstable site. It is not a good choice. Asphalt has less weight than concrete, but will also crack with the likely settlement on site. Gravel can be dusty and unstable. Asphalt Millings are a hybrid surface material. Combining the best of gravel with the surface stability

**NON-USE VARIANCE  
JUSTIFICATION**



of asphalt. This surface will perform better than gravel yet still be permeable. It will not crack over time. If damaged it can easily be repaired and compacted. The variance will allow for fewer disturbances in the area by limiting runoff and future landslides. A variance would allow the owner to use the site in a manner that is better in keeping with the existing site conditions. Building a larger retention pond structure is not advisable, as structures are not recommended to be built on the site per the Geohaz report findings. There is expected to be limited traffic to and from this property as planned, it is for long term storage.



December 13, 2019

City Planning and Development Department  
30 S. Nevada Avenue  
Colorado Springs, CO 80903  
Attention: Hannah Van Nimwegen

RE: Colorado Springs Storage – Paving of Site

Dear Hannah:

This letter is related to the City's requirement that the site be paved, with the specific portion of the code being cited reading:

*"The surface of all parking spaces, drives, aisles, maneuvering and automobile outdoor sale and/or rental display or storage areas shall be paved. For the purpose of this section, 'paving' shall mean covered with semipermeables, asphalt, concrete, brick, pavers, or other similar surfaces which may be approved by the Manager."*

Terra Nova Engineering (TNE) is opposed to paving the site due to the negative impacts such paving will create from an engineering perspective. The negative impacts are based on the geologic hazards identified on the site in CTL Thompson's Geologic Hazards Evaluation, Colorado Springs Storage, West of Terry Ann PT. & Olivias View, Colorado Springs, Colorado, dated November 20, 2017. The relevant geologic hazards are: undocumented fill material, potentially expansive soils, expansive underlying bedrock, and potential lateral earth movement.

There are two primary negative impacts from paving the site that concern TNE:

- Expansive soils quickly damaging / breaking up pavement on the site
- Paving the site will substantially increase the volume of storm runoff the DCM requires to be stored onsite.

Expansive soils damaging pavement is a concern both because damaged / broken up pavement is a hazard for vehicles, and because it can make areas impassible for vehicles in extreme cases. Rigid pavement (concrete) is particularly susceptible to the effects of expansive soils and settlement, but flexible pavement (asphalt) regularly fails due to these conditions as well.

The typical method of addressing expansive soils is to replace or modify the subgrade to eliminate or protect against expansive soils. This option is less viable when the underlying bedrock is expansive. Additionally, replacing or modifying the subgrade for the entire area of the site being used for storage is not expected to be economically viable.

For a RV storage area that has expansive soils and is expected to have very light traffic, a gravel surface (such as asphalt millings) or similar is considered superior to a pavement surface. A gravel surface can't break up, will conform to any changes in the soil surface, and can be smoothed out or filled in with ease.

Paving the site will substantially increase the volume of storm runoff required to be stored onsite because the required volume is directly affected by the percent of impervious area on the site. The gravel surface (asphalt millings) in the current design is given a percent impervious of 40%, while pavement would be 100% impervious. Therefore, paving the site would substantially increase the volume / weight of runoff required to be stored onsite by the DCM.

There has been a small temporary sedimentation pond onsite for several years and a small sand filter is proposed at the same location. Due to the geologic hazards, the sand filter basin bottom is required to be impervious. So the entire runoff volume from the storm event will be stored in the sand filter until it drains. The proposed sand filter will be on the northeast corner of the site, with a steep down slope below it, and an occupied RV parking area below that.

Having a small sand filter on the site has not been identified as a geologic hazard issue (as long as certain design constraints are met), and a similar sized temporary pond has been onsite for several years. However, this does not mean having a substantially larger sand filter (or a detention basin) onsite will be acceptable from a geologic hazard perspective. At a minimum, a new geologic hazard study to determine if the site could support the weight from a larger sand filter would be warranted.

In general, it is better to avoid putting any large structural loads on soils with identified settlement and lateral movement potential. From both a technical and safety standpoint, requiring a substantially larger stormwater detention structure on this site is not advised. It is also possible the soils onsite are not capable of safely supporting the load of a larger sand filter.

Note on Showing an example of a similar project that was surfaced with gravel: After reviewing the landslide maps for the Colorado Springs region, TNE could not find any existing RV storage facilities located in the identified landslide areas. The geologic hazards associated with this site and the proposed use appear to have made this a unique project in the Colorado Springs area.

Sincerely,

**Terra Nova Engineering, Inc.**

*Dane Frank*

Dane Frank, P.E.  
Project Engineer