

**APPENDIX B**  
**Geotechnical Report – Subgrade and Pavement**



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**TECHNICAL MEMORANDUM**

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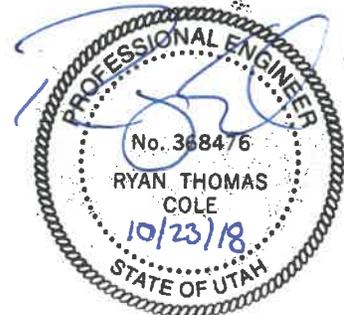
From: Taylor Hall, PE

Reviewed by: Ryan Cole, PhD, PE

Date: October 23, 2018

Job Number: 13GCI320:2 / 17-945

Subject: SVSD Subgrade Preparation and Pavement Recommendations for  
Maintenance Building No. 2 and the Thermal Drying Facility

**GENERAL**

This technical memorandum (TM) was prepared at the request of BCA to provide clarifications and more uniform recommendations for the preparation of subgrade and pavement for the Maintenance Building No. 2 and the Thermal Drying Facility for South Valley Sewer District (SVSD). We have prepared the following recommendations that supersede recommendations outlined in our SVSD Thermal Drying Facility TM dated November 8, 2017 and our revised SVSD New Maintenance Building TM dated May 4, 2018; these documents should be referenced for any recommendations not covered in this TM.

**SUBGRADE PREPRATION**

Both sites identified fine-grained soils near the surface or within the limits of anticipated subgrade. With the presence of shallow groundwater conditions at both sites, we have identified the potential for pumping or yielding subgrade during construction. Prior to preparing subgrade, the site should be stripped of all vegetation, construction debris and any other deleterious materials where improvements are planned. The use of a flat plate attached to the bucket cutting edge, rather than exposed teeth, can assist in preparing a relatively flat working surface.

In addition to stripping the existing vegetation and deleterious materials, a serpentine-shaped ditch was identified within the limits of the planned Thermal Drying Building area. This ditch should be cleared of all fill, assumed to be between 3 and 4 feet deep relative to the existing site grades, prior to the preparation of the subgrade.

At each of the sites, we recommend the following minimum subgrade preparation, prior to the placement of structural fill. It should be noted that there is a potential for additional overexcavation beyond the design recommendation below based on the abundance of vegetation and the recommendation to strip vegetation material from subgrades.

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### **New Maintenance Building**

- Under pavement areas and the building slab, native soils should be excavated a minimum of 12 inches prior to the construction of the working platform.
- Under building footings, native soils should be excavated a minimum of three feet prior to the construction of the working platform.

### **Thermal Drying Facility**

- Pavement, building slabs, and footings should excavate native soils a minimum of 12 inches prior to the construction of the working platform.

Under building footings the excavation of native soils should extent a foot laterally beyond the limits of the footing for every vertical foot of over excavation.

The building pad (working platform) should consist of a geosynthetic fabric such as a Mirafi 500X or Geotechnical Engineer-approved equivalent to be placed on the surface of the excavated native soil. After the fabric is placed in accordance with the recommendations herein and the manufacturer's recommendations, structural fill should be placed over the fabric. To avoid adverse softening of the underlying subgrade, this first lift of material should likely be placed using static rolling without vibration. The material should be compacted to either a relatively firm and unyielding condition as based on observations of the Geotechnical Engineer, or 95% maximum dry density in accordance with ASTM D1557 ("modified proctor" and at a moisture content near optimum.

### **STRUCTURAL FILL**

Structural fill should consist of material with a maximum particle size of 3-inches and fines (minus No. 200 sieve size) content less than 25 percent and plasticity index less than 8. Onsite soils are suitable for use as structural fill so long as they meet this requirement. Under building footing, structural fill section should extend 1.0 foot laterall for every foot of embedment below final grade.

### **PAVEMENT RECOMMENDATION**

We recommend that a minimum of at least 4 inches of hot-mix asphalt (HMA) over at least 10 inches of untreated base course, over 14 inches of structural fill for both projects. This will result in a pavement section of 4 inches of HMA over 10 inches of untreated base course over 2 inches of additional structural fill when placed over the working platform at both sites.

We understand the drive aisles within the building are desired to be concrete pavement. Based on our understanding of site grading, we recommend that the concrete pavement consist of 6 inches of concrete over 4 inches of untreated base course, both placed over the 12 inches of A-1-a material associated with the subgrade preparation. Concrete pavement areas should also be considered in the area of trash dumpsters or areas where frequent loading of heavy vehicles occur.

All subgrade preparation and pavement section materials (concrete, HMA, untreated base course and structural fill) should conform to the recommendations presented in this document, City of Bluffdale specifications, and American Public Works Association (APWA) specifications 32 12 16 and 32 13 13. Additionally, untreated base course should possess a minimum CBR value of 70, and the structural fill

## **LIMITATIONS**

All imported material should be approved by the Geotechnical Engineer responsible for site grading prior to importing. Prior to placing fill, excavations should be observed by the Geotechnical Engineer to note that unsuitable materials have been removed prior to the placement of geosynthetic grid and fill.

Assessments and recommendations presented in this document are based on field and laboratory test data provided to us as well as our understanding of the project's design and manner of construction. If the project's design or manner of construction changes, or if conditions are found later that are different from those described, we should be notified immediately so that we can make revisions as necessary.

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