

Aron,

*Here is our response to the questions from the airport's geotechnical consultant along with all of the attachments.*

Brett

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- Field Data Collection
  - o Date of soil sampling  
*We conducted 2 site visits: September 9, 2021 and October 11, 2021. The samples for proctor testing were collected on October 11, 2021.*
  
  - o Were any logs prepared to describe the bulk sampling results?  
*Logs were not prepared for bulk samples. A bulk sample was collected from each area. Each bulk sample was not collected from a discrete test location. Soil collected from the testing locations were combined to form the bulk sample that was tested in the laboratory. Separate bulk samples from the existing and proposed drain field were prepared and tested in the laboratory.*
  
  - o Was a sieve analysis and/or Atterberg Limits test performed to validate the Silt visual classification?  
*Sieve tests and/or Atterberg Limits tests were not conducted. The samples were visually classified in the field and in the laboratory. Other geotechnical studies at Aurora State Airport confirm our classification. Laboratory tests from these studies were used in conjunction with our visual classification to classify the soil. We have attached a copy of pertinent information from these studies (Attachment 1 - Lab Data).*
  
  - o Was infiltration testing performed? If not, why?  
*Drain field design will be conducted by others and therefore we did not conduct infiltration testing as part of scope of services. A drain field feasibility study was conducted by Environmental Management Systems, Inc. A November 5, 2020 report that documents their study is attached (Attachment 2 - EMS drainfield feasibility report.pdf).*
  
- As-builts or other construction documents pertaining to the existing drain field

*To be provided by others. [Note: Attachment 6 added by Aron Faegre to this memo for providing this information to Tony Beach.]*

- Report references

- o Geoweb design procedure

*The Geoweb design procedure is attached: "GeoWeb Load Support System, Technical Overview" (Attachment 3 - Geoweb Technical Overview.pdf)*

- o Provide addition discussion on how the 6-inch geoweb, with 2/3 aggregate and 1/3 topsoil, replaces 12 inches of compacted soil.

*According to the FAA Airport Construction Standards (AC150/5370-10) Item P-152, the specified method of stabilizing the subgrade outside of paved areas is to compact the upper 12-inches to at least 95 percent of the maximum dry density, as determined by ASTM D698. It is further specified that the upper 4 inches must be scarified and be in a loose state. The intent of this is to provide a subgrade that can support snow removal equipment, aircraft rescue and firefighting equipment, and an occasional aircraft without causing damage to the aircraft. The intent of the geoweb is to provide a subgrade that will provide a subgrade that will support such traffic. It does so by confining the infill soil with the cells which gives the infill soil added shear strength when it is loaded from the top. It reduces the stress directly below the loaded area by transferring stress to the cell walls. Our calculation shows that the Geoweb provides a subgrade with an adequate factor of safety.*

- o Equivalent Single Wheel Load source

*AASHTO H20: AASHTO HB-17 Standard Specifications for Highway Bridges, 17th Edition standard*

*Gulfstream 550: Gulfstream Flight Ops, Operations Briefing, Pavement Weight Bearing Capacity (CAN/PCN) a copy is attached (Attachment 4 - Gulfstream Flight Ops.pdf)*

- o Source identifying the critical aircraft type

*A Gulfstream G-V aircraft was selected based on a report prepared by Geotechnical Resources, Inc., dated September 16, 2019, that documents a pavement evaluation of Runway 17-35 at Aurora State Airport. We have attached a copy of that report (Attachment 5 – GRI Report)*

- Report figures

- o Figure A-1: graphic does not show up in the provided pdf
- o Figure A-2: graphic does not show up in the provided pdf

*We have attached another copy of our report that shows Figures A-1 and A-2 when opened with Bluebeam Revu X64 Version 2016.5.1 and with Google Chrome Version 96.0.4664.110*

- “Such stringent compaction is not permitted in the soil cover of drain fields”
  - o Where does this statement come from?  
*This statement was written by NV5 based on the requirement from drain filed designer that the drain field cover material must allow evapotranspiration and oxygen exchange to function efficiently. Compacted soil will inhibit both of these processes.*

In addition to the list above, we will also need specifics on the proposed Geoweb reinforced drain field construction.

- Materials/Construction Proposed
  - o What materials specification is to be used (ODOT, proprietary, etc.) for the aggregate?  
*Per the GeoWeb Manufacturer the infill material should consist of one third pulverized topsoil and two thirds crushed aggregate. The aggregate portion should be crushed rock that has a particle size range from 0.375 to 1.0 inches with a D50 of 0.5 inches and a 30 percent void space. The engineered fill should lightly be compacted to allow vegetation growth.*
  - o What compaction specifications and test methods are proposed to achieve the proposed Geoweb strengths?  
*After the cells have been filled the prepared ground surface should be proofrolled with a fully loaded dump truck. Some rutting and deflection is acceptable considering that the FAA specifies the upper 4-inches of subgrade consist loose uncompacted soil over 12-inches of compacted subgrade.*
  - o What compaction specifications and test methods are proposed for soil layers to be placed along with the Geoweb?  
*The only other soil that will be placed is the washed gravel or drain rock in the drainage trenches. We recommend only light compaction of this material until it is well keyed. Even at this level of compaction we believe its load bearing characteristics will be superior to the soil that exists in the RSA. Over compacting this material will inhibit its drainage characteristics*

- What subgrade compaction specifications and test methods are proposed for the expanded drain field areas?  
*See our response to the two prior questions.*
  
- What materials are proposed for use in the rest of the elements of the drain field system (pipes, manifolds, perf spec., etc.)?  
*To be addressed by others. [[Note: Attachment 6 added by Aron Faegre to this memo for providing this information to Tony Beach.]*

*Attachments:*

*Attachment 1 – Lab Data*

*Attachment 2 – EMS drainfield feasibility report*

*Attachment 3 – Geoweb Technical Overview*

*Attachment 4 – Gulfstream Flight Ops*

*Attachment 5 – GRI Report*

*Attachment 6 – Construction Documents for HDSE Drainfield*