

Geopier Northwest 800 W Main Street, Suite 1460 Boise, Idaho 83702 Tel. 208.401.9567 www.geopier.com

June 15, 2023

- TO: Matt Van Goethem and Jason Gamache MCG Explore Design
- SUBJECT: Design Comment Response Geopier Soil Reinforcement <u>FedEx Sorting Facility – Foundation and Slab Support</u> Anchorage, Alaska

Introduction

This letter and the attached documents represent our design submittal comment response for Geopier[®] soil reinforcement to support the foundations and slab-on-grade for the FedEx Sorting Facility and vehicle wash, as well as the loading dock and generator slabs in Anchorage, Alaska. Geopier Northwest is responding to comments provided by the City of Anchorage in an email dated May 31, 2023. We are responding to the comments that pertain to our services only.

Cursory Review Comments - May 31, 2023

Comment 1. David Plehn's Alaska engineering license expired 12/31/2011. Please provide design stamped by an engineer currently licensed in Alaska.

The plans and specifications have been revised with the engineering stamp of Daniel P. Ciani, please refer to the attachment.

Comment 2. It does not appear as if lateral design has been provided. Please provide or indicate where in the calculations this design has been completed. Reference IBC section 1613.1.

The Geopier system designed for this project is an aggregate pier ground improvement system with an HDPE sleeve to confine the aggregate from bulging in the organic soil. The foundation is isolated from the Geopier elements to allow lateral resistance by traditional methods for shallow foundation design per IBC Section 1806.

Comment 3. Typically there are special detailing requirements for foundation elements in high seismic areas (Seismic Design Categories D, E, and F). This foundation type does not appear in the 2018 or 2021 IBC. There is no mention of this type of foundation system in section 12.13 of ASCE 7-16. It does not appear as if seismic detailing requirements exist for this type of system. All elements of a structure must be detailed for seismic forces per IBC section 1604.9. Given that it does not appear as if seismic detailing requirements exist for this system it's not clear how this section can be met.

Seismic detailing is not required for the Geopier elements. The Geopier elements are not structurally connected to the foundations. Foundations to be designed per IBC Section 1806.

Comment 4. This system is not covered by the IBC. Typically elements that are not covered by code require an approved third party report per IBC section 1703.4.2. This report would need to be by an approved third party. Manufacturer's report or similar documentation is not acceptable. The report would cover things such as design procedures and input values used as part of the design as well as detailing requirements for high seismic areas. Please provide this documentation for review.

Geopier® and Rammed Aggregate Pier® are registered trademarks of Geopier Foundation Company, Inc.

The ground improvement system provides shallow foundation support as covered by IBC 1806.

Comment 5. IBC Section 1803.6 requires the geotechnical report to include recommendations for the foundation. In this case the report recommends the use of steel piles and makes no mention of Geopiers.

An revised geotechnical report has been issued for the project, dated June 2023, with a recommendation of the Geopier system.

Comment 6. If the above items can be met it is still not clear how lateral loads can be resisted properly if the soil adjacent to the reinforced soil is peat or other soft soils. These adjacent soils would provide little to no resistance to lateral forces and they would just compress against the reinforced soils with seismic ground motion. This would need to be clarified if the above items are addressed.

Please refer to the provided responses in items 2 through 4 above.

We hope we have adequately addressed your comments. If you have any questions or require further information, please call.

Sincerely, Geopier Northwest Inc.



Daniel P. Ciani, PE

Attachments: Revised Geopier Foundation Plan and Construction Notes (Sheets GP100 and GP204)

Cc: Gianni Martinez, PE, Geopier Foundation Company