July 15, 2015

Mr. Robert Crowley
Jacobs
1100 North Glebe Road
Suite 500
Arlington, Virginia 22201

ECS Job No. 05.6333

Reference: Quantico P635 Ammunition Supply Point Expansion Addendum, Slope Grading Review, Quantico, Virginia

Dear Mr. Crowley:

As requested, ECS has completed a review of the revised slope grading at the proposed storm drain from structure STMH 3 to end structure ES-3. Since the completion of ECS' geotechnical report entitled Ammunition Supply Point Expansion (Project No. 05:6333 dated July 23, 2014) the proposed slope grades have been changed. Based on information provided by Jacobs and after reviewing plans titled P-635 ASP Expansion Site Grading Plan (Sheet CG-102), which was prepared by Jacobs, the slope in this area will be approximately 75 feet tall and will required up to 15 feet of new fill. The majority of the slope will have a grade of 4.5H:1V; however, the lower portion of the slope is proposed to have a grade of 3H:1V.

A soil boring was not performed in this area to determine soil and groundwater conditions; however, based on the existing slopes having grades between 1.5H:1V and 3H:1V, it is reasonable to believe that the underlying materials are granular and are consistent with the soil at depth in Boring ECS-6. Based on this assumption, a slope with a grade of to 3H:1V can be constructed. The materials used for slope fill should consist of SC or more granular having a maximum liquid limit of 40, a maximum plasticity index of 20, and a maximum of 35 percent passing the No. 200 Sieve. Newly placed materials should be placed in maximum 8 inch thick horizontal lifts and benched into the existing slope as fill is placed. Materials should be compacted to at least 95% of the maximum dry density in accordance with the standard proctor.

We have enjoyed being of service to you in respect to this project and trust that you will contact us if any further needs arise.

Respectfully,

ECS Mid-Atlantic, LLC

William T. Griffith, III, C.P.G.
Project Geologist

Kathryn M. Freiberger, P.E.
Principal Engineer

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