BRAUN INTERTEC
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May 15, 2017

Kevin Hatfield
West Branch Community School District
148 North Oliphant Street
West Branch, Iowa 52358

Re: Memorandum of Professional Opinion
Proposed Fire Lane
West Branch High School
West Branch, Iowa

Dear Mr. Hatfield:

Braun Intertec respectfully submits this Memorandum of Professional Opinion for the new fire lane being constructed at the West Branch High School.

Our Understanding of the Project

Based on our correspondence with HBK Engineering, we understand that the new fire lane will be a paved drive, approximately 14 feet wide and extending from the east parking lot around the south and west sides of the West Branch High School building. The proposed pavement section is 7 inches of Portland cement concrete over a 6-inch granular subbase. This new fire lane is currently under construction and, in general, grading has been done to reach subgrade level. We understand that about ½ to 3 feet of cut earthwork was necessary to reach subgrade elevation. We understand that the soils exposed at the proposed subgrade elevations appeared to be soft and wet in various locations.

Soft soils encountered at subgrade level were overexcavated and replaced with coarse aggregate. We understand the coarse aggregate was generally a gravel with a maximum particle size of about ¾ inch. Before the gravel backfill and subbase was placed, a layer of geogrid was placed on the exposed subgrade to laterally confine the gravel placed on it and provide additionally uniformity and stability.

For a section of the proposed fire lane east of the south entrance to the school, the depth of overexcavation and replacement with gravel and geogrid was limited due to the presence of shallow underground utilities. We understand the depth of overexcavation and replacement in this area was limited to less than 1 foot. Additional reinforcing steel will be placed within the pavement to provide additional tensile strength to the pavement section in these areas.

Additionally, we understand that longitudinal subdrains were installed on the shoulder of the proposed fire lane west of the south entrance at low points where water would be allowed to collect. Longitudinal shoulder subdrains were not installed east of the south entrance due to the shallow existing utilities.

Discussion

Based on the available information, it appears that the soft, wet soils encountered at the proposed subgrade elevations were removed and replaced in areas where it was practical. Due to the proximity of the existing utilities east of the south entrance, deeper overexcavation and replacement of the soft, wet soils exposed at subgrade elevations would have required the relocation of existing utilities. Due the costs associated with the relocation of the utilities in the area, deeper overexcavation and replacement of the soft, wet soils in those areas would be cost prohibitive, and impractical.

We believe that the shallow remediation consisting of geogrid installed below the gravel subbase and additional reinforcing steel in the area east of the south entrance will provide adequate support considering the relatively thick pavement section (7 inches) and infrequent traffic loads.

In addition to the subdrains installed in the on the shoulder of the fire lane west of the south entrance, we understand the subdrains will be installed behind the proposed retaining wall system directly to the south of the south entrance. The subdrains that have, and will be installed will prolong the pavement life.

Sincerely,

BRAUN INTERTEC CORPORATION

Justin Humke, PE
Associate Principal / Project Engineer

Timothy T Wiles
Principal / Senior Engineer