Florida Department of Transportation

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GOVERNOR

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STEPHANIE C. KOPELOUSOS
SECRETARY

November 16, 2010

Mr. Michael Moussa
VSL (VStructural LLC)
15600 Trinity Boulevard, Suite 118
Fort Worth, TX 76155-2792

Re: VSL Optional Grouting Components and Details for PT Bar Systems

Dear Mr. Moussa:

The Florida Department of Transportation Structures Design Office (SDO) has reviewed the proposed optional grouting components and installation details submitted by VSL for use on the approved VSL/Williams PT bar systems. Based on the results of lab testing, the components submitted for approval meet the minimum material and performance requirements set forth in the FDOT Standard Specifications for Road and Bridge Construction. As part of this review, SDO has raised concerns regarding the method of drilling and tapping the additional grout port on the bar grout cap in the field. Because the grout cap will be screwed onto the tail of the PT bar, the grout port must be drilled and tapped in the field to ensure the port will be oriented upward.

Several key areas have been identified where field drilling and tapping of the cap may lead to problems during grouting operations:

1. Drilling the grout port followed by tapping will require a specific drill bit. If an incorrect drill bit is used, either slightly larger or slightly smaller than the correct drill bit, the ability of the threaded port to maintain its seal under high grouting pressures may be compromised.

2. The portion of the cap that will be drilled and tapped is approximately 3/8" thick (as scaled from the submitted drawings). The thin walls of the grout cap mean few threads will secure the grout port fitting making proper tapping even more critical. Generally, caps that are designed for a grout port have a thickened area to increase the local strength of the cap.

3. The portion of the cap to be drilled and tapped is round. This will make drilling a perpendicular hole even more difficult. Generally, locations on a grout cap that are intended to accommodate a grout port are flattened to facilitate tapping.

4. The Duct Pressure Field Test specified in 462-10.9 calls for the tendon to be pressure tested with air to 50 psi. Grouting pressures can be as high as 145 psi per 462-11.5.5. In light of the issues raised in items 1, 2 and 3 above, successful completion of the Duct Pressure Field Test may not be indicative of the ability of a field tapped grout port to resist full grouting pressures.

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In the interest of moving this project forward, SDO will issue a Conditional Approval for limited use of these optional grout components and installation details. Once satisfactory performance has been demonstrated in the field, full approval may be granted to these optional grouting details, such as the field drilling and tapping of the grout cap. Approval will be based on project-level feedback concerning the ease of drilling and tapping the grout cap, the ability to consistently achieve a seal with the field-tapped grout port and the reliability of the tapped port itself to hold the required pressures during grouting operations. Satisfactory field performance remains the responsibility of the Contractor.

As an alternative to the Conditional Approval, VSL may elect to withdraw the current installation detail requiring field drilling and tapping and proceed with developing a cap intended to have a top-mounted grout port. If the issues identified above are sufficiently addressed with a newly designed grout cap, it would receive full approval from SDO and be posted on the Approved Post Tensioning Systems website as such.

Please notify the Structures Design Office of how VSL would like to proceed.

Sincerely,

Charles E. Boyd, P.E.
Assistant State Structures Design Engineer

Copies: Mr. David Saddler, P.E. (FDOT)
Mr. Robert Robertson, P.E. (FDOT)
Mr. Rodney Chamberlain, P.E. (FDOT)
Mr. Dan Dock (VSL)

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