

9600201 POST-TENSIONING COMPONENTS
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (7/27/22, Internal)

Here are some of my comments on the changes:

1. The moisture control items listed seems like a good practice that is being introduced, but it might have chances of introducing unwanted moisture into the system if the “Oil-free dry compressed” air used for testing is not monitored/checked.
2. There might not necessarily be an advantage of having multiple ports on the cap specifically in case of “Flexible filler” tendon. The Anchorage caps are made of ABS or nylon (for the systems currently on the Department APL) and the fittings used for the connections to inject the flexible filler are metal. In a controlled environment these connections work as intended but as observed on Wekiva this one of the most fragile part of the entire assembly. The heat from the flexible filler can cause failure at the connection.

Unless the PT suppliers can make these holes stronger and provide a product that would make this connection stronger (essentially making these from stainless steel), the additional hole will create more problems for the contactor. On the other hand if the caps are made from stainless steel it should reduce the chances of failure at this connection.

3. For 960-2.2.2.1.5 “Install the anchorage cap such that the top and bottom holes form a vertical axis oriented 90 degrees from horizontal.”, this is not practical as in most cases the tendon profile determines the orientation of the bearing plate on which the anchorage cap is to be installed. To accomplish this requirement each cap will have to be custom made for the tendon profile and bearing plate orientation, specific to the project.

Response: See the Spec. 462 responses No. 1 and No. 2.

3. That is true when the anchorage cap is anchored to the wedge plate (some systems). However, most systems have the cap anchored to the bearing plate. In this case the cap orientation is depended on the bearing plate orientation.

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Comments: (7/28/22, Industry)

For balanced cantilever construction, the longitudinal top slab tendon anchor is located in a pocket. The tendon is often not grouted prior to the adjacent segment being in place making access to the proposed hole in the cap bottom difficult or impossible to properly open and close. A larger pocket may be required to enable the access to the bottom drain hole and if so needs to be shown on the standards for this application. A required minimum size would also be needed as the pocket is generally made just large enough to accommodate the cap. For these type tendons the anchor is always the low point of the tendon due to the geometry of the anchor moving downwards to fit within the section.

This sentence is not needed “To handle cases where the anchor is the geometric low point of a predominantly horizontal tendon profile, locate the hole at the bottom of the cap to drain water” The sentence already included in the change dictates the positioning of the holes “. Install the anchorage cap such that the top and bottom holes form a vertical axis oriented 90 degrees from horizontal.”

The vent hole should always be at the top and the drain always at the bottom. This is necessary regardless of tendon geometry other than vertical tendons.

Response: For the case of balanced cantilever tendons, those will have grout filler for which some water in the cap will be mixed in with the grout during the injection process. For flexible filled tendons, the water will remain since it’s heavier than the filler and will not mix with it. Agree that we may need to consider potential cases where a flexible filled tendon would have its lower cap port inaccessible, although we don’t currently foresee this case. For other type of external tendons (e.g. span by span or draped continuity tendons anchored in the diaphragm) the 2nd lower port in the cap is needed. The lower hole can be used to drain water present in the cap. In the case when the anchorages are located just below the top flange there is insufficient head room to repair voids in the cap by gravity feed. In this case the void in the cap can be injected from the lower hole by low pressure hand pump. This situation happed recently at one of segmental projects anchorage cap repair due to water/void present in the caps.

Agree that the following sentence is redundant and can be removed: “To handle cases where the anchor is the geometric low point of a predominantly horizontal tendon profile, locate the hole at the bottom of the cap to drain water”.
