



Florida Department of Transportation

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SECRETARY

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This Memo Has Expired

DCE MEMORANDUM NO. 11-12

(FHWA Approved: 3/12/2012)

TO: DISTRICT CONSTRUCTION ENGINEERS

FROM: David A. Sadler, P.E., Director, Office of Construction

COPIES: Tom Byron, Bob Burluson (FTBA), Chris Richter (FHWA), Chad Thompson, Rafiq Darji, Heather Dean, Rudy Powell

SUBJECT: CROSS-HOLE SONIC LOGGING (CSL) TUBES

Field personnel have observed on shafts for miscellaneous structures that after CSL tubes are cut flush with the top of the shaft, the result can be a sharp irregular surface that needs to be ground down or if left uncorrected, tends to rust with time. On some projects contractors have been allowed to switch from steel to PVC material from the top of the shaft reinforcing cage to the top of the CSL tube. This has resulted in easier and faster cutting and smoother surfaces that are free of corrosion with fewer hazards for people to trip or cut their feet. The following specification change will be processed in the near future to allow the use of PVC pipe in all drilled shafts as described above:

455-16.4 Cross-Hole Sonic Logging (CSL) Tubes: Install CSL access tubes full length in all drilled shafts from the tip of shaft to a point high enough above top of shaft to allow cross-hole-sonic-logging testing, but not less than 30 inches above the top of the drilled shaft, ground surface or water surface, whichever is higher. Equally space tubes around circumference of drilled shaft. Securely tie access tubes to the inside of the reinforcing cage and align tubes to be parallel to the vertical axis of the center of the cage. Access tubes **from the top of the reinforcing cage to the tip of the shaft shall** be NPS 1 1/2 Schedule 40 black iron or black steel (not galvanized) pipe. **Access tubes above the top of the reinforcing cage may be the same black iron or black steel pipe or Schedule 80 PVC pipe.** Ensure that the CSL access tubes are free from loose rust, scale, dirt, paint, oil and other foreign material. Couple tubes as required with threaded couplers, such that inside of tube remains flush. Seal the bottom and top of the tubes with threaded caps. The tubes, joints and bottom caps shall be watertight. Seal the top of the tubes with lubricated, threaded caps sufficient to prevent the intrusion of foreign materials. Stiffen the cage sufficiently to prevent damage or misalignment of access tubes during the lifting and installation of the cage. Repair or replace any unserviceable tube prior to concreting. Exercise care in removing the caps from the top of the tubes

after installation so as not to apply excess torque, hammering or other stress which could break the bond between the tubes and the concrete.

Provide the following number (rounded up to the next whole number of tubes) and configuration of cross-hole sonic logging access tubes in each drilled shaft based on the diameter of the shaft.

Shaft Diameter	Number of Tubes Required	Configuration around the inside of Circular Reinforcing Cage
36 to 48 inches	4	90 degrees apart
Greater than 48 inches	1 tube per foot of Shaft Diameter	360 degrees divided by the Number of Tubes

Insert simulated or mock probes in each cross-hole-sonic access tube prior to concreting to ensure the serviceability of the tube. Fill access tubes with clean potable water and recap prior to concreting. Repair or replace any leaking, misaligned or damaged tubes as in a manner acceptable to the Engineer prior to concreting.

For drilled shaft foundations requiring anchor bolts, verify CSL access tubes will not interfere with anchor bolt installation before excavating the shaft. When CSL access tube locations conflict with anchor bolt locations, move the CSL access tube location plus or minus 2 in. along the inner circumference of the reinforcing cage. Notify the Engineer before excavating the shaft if the CSL access tube locations cannot be moved out of conflict with anchor bolt locations.

When drilled shaft cages will be suspended in place from the top rather than resting on the bottom of the excavation, clearly mark the top of shaft location on each tube.

This memorandum serves as a blanket approval to process a \$0.00 specification change and shall be attached to the Work Order or Supplemental Agreement used to document the change.

If you have any questions, please call Juan Castellanos at 850-414-4276.

DS/ch