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**Dispute Review Board**  
**Clearwater Pass Bridge - State Project No. 15140-3518**

Claim #3 - Remedial Work at Pier #4 Shaft No. 1.

The Contractor has requested compensation for removing and replacing approximately five feet of shaft concrete from the subject shaft in order to remove some entrapped laitance.

Shaft No. 1, Pier 4 was the first production shaft on this project. The Contractor's Drilled Shaft Installation Plan called for concrete to be installed using the tremie method up to approximate elevation -10. MLW. They would then pump out the water on top of the tremie and visually monitor the placement to elevation -1.69 MLW. This plan was based on using 78" diameter permanent steel casing.

The first load of concrete for this shaft arrived at the site at 10:45 a.m. on September 21, 1994. There was a 45 minute delay before concrete placement began as the Contractor was required by the Department to remove sediment from the shaft bottom after the reinforcing steel had been placed. The concrete pour commenced at 11:30 a.m. by which time there were four concrete trucks on the site. The concrete supplier was told to hold off batching the fifth truck until the second truck was discharged which resulted in another approximately 45 minute delay between trucks. The pour continued normally until the concrete reached elevation -4.5 MLW at 3:00 p.m. The pour was then stopped and the water pumped out of the casing to permit removal of the lifting device used to place the inner cage of reinforcing steel.

At this point there seemed to be some disagreement over the amount of laitance present, so test cylinders were taken from the shaft concrete. There was also some discussion between FDOT and Contractor personnel as to the best way to proceed, and it was finally decided to reinstall the tremie and proceed with the pour. The last truck was batched at 4:20 p.m. and placement began at 5:10 p.m. Unfortunately, the concrete in place had attained sufficient set to force the fresh concrete to chimney up around the tremie pipe and flow over the top of the laitance instead of raising the entire mass of concrete upward. Subsequent tests indicated that some laitance had indeed been entrapped and needed to be removed.

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| Post-It <sup>®</sup> Fax Note | 7671       | Date    | 1 of 3 pages |
| To                            | John Dulce | From    | Dolph Hansey |
| Co./Dept.                     |            | Co.     |              |
| Phone #                       |            | Phone # |              |
| Fax #                         |            | Fax #   |              |
| To                            | John Dulce | From    | Dolph Hansey |

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It shall be noted that on September 22, 1994, the Contractor submitted a revision to his Drilled Shaft Installation Plan which would continue the tremie pour without interruption up to elevation 0 MLW. At approximately elevation -10. MLW, the water will be pumped out of the shaft and the lifting ring will be unbolting and attached to the tremie pipe for removal with the tremie at the end of concreting. All of the drill shafts have been completed utilizing this revised plan without any further problems of this nature.

It appears that the problem on this shaft was caused by the delays to the pour which allowed the concrete in place to set up. The first major delay occurred at the start of the pour. The Contractor ordered concrete while he was setting the reinforcing steel. After the steel was in place, the bottom was probed and it was determined that additional sediment had accumulated on the bottom of the shaft and he was required to pump this material out.

Section 455-14.1 of the Supplemental Specifications states, in part, "The cage of reinforcing steel, consisting of longitudinal bars, ties, and cage stiffener bars shall be completely assembled and placed as a unit immediately after the shaft excavation is inspected and accepted and immediately prior to concrete placement." Section 455-15.1 states, in part, "Concrete shall be placed as soon as possible after all excavation is complete, the shaft excavation has been cleaned, inspected, and found satisfactory, and immediately after reinforcing steel placement."

It appears obvious that the Contractor expected to commence pouring concrete as soon as the reinforcing steel was placed. Instead, the start of the pour was delayed approximately 45 minutes, at which time there were four trucks on the job waiting, and he had to put a hold on the fifth truck. This disrupted his concrete delivery schedule and undoubtedly accounts for some of the minor delays between trucks.

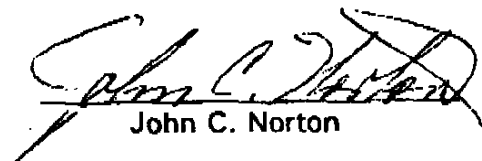
The second major delay occurred when the pour was stopped, and the water was pumped out of the shaft in order to remove the lifting device. This amounted to approximately two hours during which time the lifting device was removed, the exposed concrete was examined, test cylinders were taken, and discussions were held between FDOT and Contractor personnel as to the best method to proceed.

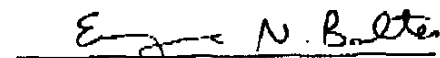
The Board has spent considerable time in attempting to assess the responsibility for the two major delays. The first major delay appears to be primarily the responsibility of the Department since Section 455-14.1 and Section 455-15.1 both indicate that concrete placement will commence immediately after reinforcing steel placement. As this is a "Partnering" project, the Board believes that the Department should have notified the Contractor of its intention to examine the shaft bottom after the placement of the reinforcing steel so that he could delay ordering concrete.

The responsibility for the second major delay was primarily the responsibility of the Contractor. Clearly, the Contractor had to stop the pour to remove the reinforcing steel lifting device. When the water was pumped out of the shaft and the lifting device removed, the Department became concerned with the appearance of surface laitance and how best to proceed in order to preserve the structural integrity of the drilled shaft. This may have aggravated the delay somewhat. In this case, however, it appears that the "Partnering" concept may have worked since the decision to reinsert the tremie and proceed with the pour appears to be the most logical at the time.

It is, therefore, the decision of the Board that the responsibility for the remedial work at Pier 4, Shaft No. 1 be shared equally by the Contractor and the Department.

  
G. A. Hanson

  
John C. Norton

  
Eugene N. Balter

Date: April 17, 1995