Daily Diary Report by Bid Item

Contract No.: **04-0120F4**
Diary #: **1069** **Const Calendar Day:** 642 **Date:** **08-Mar-2014** **Saturday**
Inspector Name: **Brignano, Bob** **Title:** **Transportation Engineer**
Inspection Type:
Shift Hours: **Break:** **Over Time:**
Federal ID:
Location:
Reviewer: **Schmitt, Alex** **Approved Date:** **Status:** Submit

04-0120F4
04-SF-80-13.2/13.9
Self-Anchored
Suspension Bridge

Weather

Temperature **7 AM** **12 PM** **4PM**
Precipitation **Condition**

Working Day ☑ If no, explain:

Diary: Dispute ☐

General Comments

CCO 314, SAMPLING AND TESTING A354 GRADE BD MATERIAL:

There is no work in the field on this operation today by ABF. Work on setup of the Townsend Test (Test IV) test rigs for TR's 12 and 13 is ongoing.

TOWER ELEVATOR BOLTING:

This morning, at approximately 0800, ABF Engineer Bill O'Sullivan calls me about issues on last night's work with the DTI's that connect the elevator rail sections. There were issues with excessive torque in order to get the required crush of the DTI's. I discuss the following 2 potential issues along with a third suggestion for future work:

Possible Issue #1: lubrication issue:
I suggested to Bill that since these assemblies were installed a month ago and have been sitting unprotected in the environment, the lubrication could have broken down. The reason galvanized assemblies have lubricated nuts is because there would be too much torque from of too much friction between the galvanized surfaces. Too much torque to turn the nut can result in a torque failure of the bolt before the bolt reaches the necessary tension. If this is the issue, the bolt threads and nuts (threads and face against washer) can be lubricated. I note to Bill that the concern I typically have with added lubrication is that inconsistent lubrication can result in variable torque values which is an issue for inspection torque. Since DTI's are the method of acceptance instead of inspection torque, it is ok to have inconsistent lubrication provided it is enough to keep the torque down to a reasonable level. I suggested a few different additional lubrication methods we have used on the job, with beeswax applied to the nut and bolt threads being the best option from past tests.

Possible Issue #2: tight fit up issue:
I suggested to Bill that since these assemblies were installed a month ago and the joined pieces may have shifted, the bolt could be pinched at the joint in the middle, which could add to the torque and also make it difficult to elongate the bolt past this pinch point when tensioning. Bill explained that these are tight holes for the bolts, especially with the length and the galvanizing. He said that they needed to drive in the bolts, but I noted that the beating in of the bolt is a small force compared to the tension of a fully tensioned bolt. If this is where there is a friction problem, the hole and/or bolt can be lubricated. Sometimes when ironworkers install alignment pins, they lubricate them with drilling cream. Note that the nut is being turned while the bolt does not turn, but the friction between the sides of the hole and the long bolt could be preventing the bolt from elongating – not sliding past tight spots when elongate from tension – making it

difficult to turn the nut.

Suggestion: check turn of the nut amount:
I explained that this long bolt (L/D > 12) means the established turn of the nut amounts cannot be used, but the turn amount can be used as a clue to what is happening. For L/D greater than 8.0 and less than 12.0, the turn amount is 2/3 to get the necessary travel down the threads to get the necessary elongation to get the necessary tension. This can be marked and checked to see is the nut being turned anywhere near this amount.

When on site later in the morning, I visit the Pier 7 yard area where the elevator crew has a lay-down yard. I examine the bolts and DTI's that were used for some tests last night / this morning. I make a few suggestions on potential issues and steps for the other CT staff inspecting this work to examine – these are lubrication, fit up / clearance, and torque issues.

INSPECTOR OT REMARK:

Office and Field 8 hours: I am at work to address issues with an elevator bolt issue and on CCO 314. On CCO 314, I provide information to the DJV and CT-METS that has been requested regarding the test rigs and test program. I am also at work to address some issues with the bolting of the elevator rails last night – issue with the DTI's – this involves work in the office and in the field (Pier 7 yard). This includes some research and identifying issues that should be examined during the next shift (Sunday night, pending weather). My shift and OT hours are 0900 to 1730, after getting a phone call about 0800 regarding bolting issues last night on the elevator.