



SAS Superstructure

Location: 04-SF-80-13.2 / 13.9

Client Name: CalTrans

Run date 22-Nov-14

Time 7:08 AM

Daily Diary Report by Bid Item

Contract No.: 04-0120F4

Diary #: 1026 Const Calendar Day: 599 Date: 24-Jan-2014 Friday
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 partly cloudy

Working Day [checked] If no, explain:

Diary:

Dispute

General Comments

CCO 314, SAMPLING AND TESTING A354 GRADE BD MATERIAL:



VGO from Oregon is working on site today with 2 engineers – Rob Rutledge and Mattea. They start work on site approximately 0800 and leave the site after tensioning is complete after approximately 1300. They still work an 8 hour day on this job, with the afternoon data reports being done remotely. They are present for producing the morning data reports, monitoring during the morning/afternoon jacking steps at TR's 5 through 10, and producing the evening data reports.

ABF Engineer Kelvin Chen is working in the field and office on CCO 314 today.

Ironworkers Barry Rothman and John (Ryan) Duskin are working an 8-hour shift 0700 through 1530 today, with only of that on CCO 314 for today's tensioning steps. The tensioning steps and their CCO 314 work is between 1000 and 1300. The portions of the day not on CCO 314 are on other work elsewhere at the Pier 7 warehouse area not covered by this diary.

Prior to the jacking steps, VGO's reference electrode and pH checks are completed. This operation is between approximately 0915 and 1000 at TR's 5 through 10. Elijah Turner with CT-METS for the Acoustic Emissions monitoring is notified so that he can time-mark the AE activity.

For the jacking steps, Elijah Turner from CT-METS is present with MISTRAS personnel on the phone line continuously monitoring all frequencies on the two channels for each test rig during the jacking operation. Also present is Lindsay Motal from the DJV during all jacking steps.

Test Rig #7 (4" dia., Tower Saddle Tie Rod, rod ID 5) Jacking step:
This is the 8th jacking step and the rod is being jacked to 0.75 Fu. The post-seating of the nut target is 1,163.400 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,100 psi. Based on the previous jacking step, the expected seating loss is ~65 kips, meaning the initial jacking target is ~1,230 kips. There is no end stop on the 500-ton jacks used in this test rig, with a red line showing on a jack piston meaning that the jack piston is close to coming out of the jack housing, so the jacks are visually monitored during the jacking steps at this test rig to look for the red line. Jacking is started at 1033. At 5,100 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,155 kips. The hydraulic pressure is increased to 5,400 psi and the primary strain gauges give a force of 1,228 kips. The AE is checked with the ok given at 1039. The nut is tightened, and it noted that the thread fit between the rod and nut is tight and it takes extra effort to rotate the nut. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,228 kips (bleed loss = 0 kips). After bleeding off the jacks, the primary strain gauges give a force of 1,124 kips (seating loss = 102 kips). This is much more than the expected

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seating loss because of the issue with the tight thread fit between the rod and nut. For the second jacking step, at 5,400 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,236 kips. The AE is checked with the ok given at 1051. The nut is tightened, and it noted that the thread fit between the rod and nut is tight and it takes extra effort to rotate the nut. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,235 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 1,125 kips (seating loss = 110 kips). This is much more than the expected seating loss because of the issue with the tight thread fit between the rod and nut. For the third jacking step, at 5,400 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,235 kips. The AE is checked with the ok given at 1056. The nut is tightened, and it noted that the thread fit between the rod and nut is tight and it takes extra effort to rotate the nut. This is accomplished by using a plate wrench instead of a chain wrench and working the nut back and forth a few times to loosen up the tight fit. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,234 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 1,166 kips (seating loss = 68 kips). At 1059, the force is within the tolerance.

Test Rig #8 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID E-118, Heat OYI) Jacking step:

This is the 8th jacking step and the rod is being jacked to 0.75 Fu. The post-seating of the nut target is 874.650 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,200. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~935 kips. Jacking is started at 1102. At 5,200 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 868 kips. The hydraulic pressure is increased to 5,500 psi and the primary strain gauges give a force of 919 kips. The hydraulic pressure is increased to 5,600 psi and the primary strain gauges give a force of 942 kips. The AE is checked with the ok given at 1105. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 940 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 876 kips (seating loss = 64 kips). At 1106, the force is within the tolerance.

Test Rig #9 (3.5" dia., PWS Anchor Rod, Rolled Threads, rod ID W-074, Heat OTD) Jacking step:

This is the 9th jacking step and the rod is being jacked to 0.80 Fu. The post-seating of the nut target is 932.960 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,500 psi. Based on the previous jacking step, the expected seating loss is ~60 kips, meaning the initial jacking target is ~995 kips. Jacking is started at 1107. At 5,500 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 926 kips. The hydraulic pressure is increased to 5,800 psi and the primary strain gauges give a force of 976 kips. The hydraulic pressure is increased to 5,900 psi and the primary strain gauges give a force of 994 kips. The AE is checked with the ok given at 1113. At this point due to miscommunication, the jacks are bleed off before the nut is tightened. Note that prior to bleeding off the jacks, the primary strain gauges give a force of 989 kips (bleed loss = 5 kips). For the second jacking step, at 5,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 990 kips. The hydraulic pressure is increased to 5,950 psi and the primary strain gauges give a force of 1,003 kips. The AE is checked with the ok given at 1116. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,001 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 932.6 kips (seating loss = 68 kips), which is not in tolerance. For the third jacking step, at 5,950 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,006 kips. The AE is checked with the ok given at 1118. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,004 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 937 kips (seating loss = 67 kips). At 1120, the force is within the tolerance.

Test Rig #10 (3.5" dia., PWS Anchor Rod, Cut Threads, rod ID E-036, Heat OTD) Jacking step:

This is the 10th jacking step and the rod is being jacked to 0.85 Fu. The post-seating of the nut target is 991.270 +10/-0 kips. The expected hydraulic pressure at this locked off force is 5,900 psi. Based on previous jacking steps and other test rigs, the expected seating loss is ~60 kips (assuming can get tighten the nut better at this test rig with a plate wrench instead of with a chain wrench, because previous seating losses at this test rig were 68 kips to 77 kips, and the jacking step prior to that had 78 kips to 89 kips seating loss, which is too much – too great of a percentage of Fu), meaning the initial jacking target is ~1,055 kips. Jacking is started at 1123. At 5,900 psi hydraulic pressure per the dial gauge, the primary



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strain gauges give a force of 1,004 kips. The hydraulic pressure is increased to 6,100 psi and the primary strain gauges give a force of 1,039 kips. The hydraulic pressure is increased to 6,200 psi and the primary strain gauges give a force of 1,058 kips. The AE is checked with the ok given at 1128. The nut is tightened, using a plate wrench instead of a chain wrench. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,054 kips (bleed loss = 4 kips). After bleeding off the jacks, the primary strain gauges give a force of 970 kips (seating loss = 84 kips), which is not in tolerance. For the second jacking step, at 6,250 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,071 kips. The AE is checked with the ok given at 1135. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,066 kips (bleed loss = 5 kips). After bleeding off the jacks, the primary strain gauges give a force of 978 kips (seating loss = 88 kips), which is not in tolerance. For the third jacking step, at 6,250 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,074 kips. The AE is checked with the ok given at 1137. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,073 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 987 kips (seating loss = 86 kips). For the fourth jacking step, at 6,250 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 1,075 kips. The AE is checked with the ok given at 1139. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 1,074 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 992.2 kips (seating loss = 82 kips). At 1141, the force is within the tolerance.

Test Rig #5 (2" dia., E2 Bearing Upper Rod, spare rod) Jacking step:

This is the 7th jacking step and the rod is being jacked to 0.70 Fu. The post-seating of the nut target is 262.500 +5/-0 kips. The expected hydraulic pressure at this locked off force is 1,900-2,000 psi. Based on the previous jacking step, the expected seating loss is ~16-17 kips, meaning the initial jacking target is ~280 kips. Jacking is started at 1143. At 1,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 258 kips. The hydraulic pressure is increased to 2,100 psi and the primary strain gauges give a force of 274 kips. The hydraulic pressure is increased to 2,150 psi and the primary strain gauges give a force of 281 kips. The AE is checked with the ok given at 1148. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 278 kips (bleed loss = 3 kips). After bleeding off the jacks, the primary strain gauges give a force of 260.5 kips (seating loss = 18 kips), which is not in tolerance. For the second jacking step, at 2,150 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 281 kips. The AE is checked with the ok given at 1151. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 279 kips (bleed loss = 2 kips). After bleeding off the jacks, the primary strain gauges give a force of 262.4 kips (seating loss = 17 kips), which is not in tolerance. For the third jacking step, at 2,150 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 282 kips. The AE is checked with the ok given at 1152. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 281 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 265.6 kips (seating loss = 15 kips). At 1153, the force is within the tolerance.

Test Rig #6 (3" dia., Tower Anchor Rod, Vulcan, rod ID b2W-6) Jacking step:

This is the 6th jacking step and the rod is being jacked to 0.65 Fu. The post-seating of the nut target is 543.270 +10/-0 kips. The expected hydraulic pressure at this locked off force is 3,900-4,200 psi. Based on the previous jacking step, the expected seating loss is ~35 kips, meaning the initial jacking target is ~580 kips. Jacking is started at 1154. At 3,900 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 528 kips. The hydraulic pressure is increased to 4,200 psi and the primary strain gauges give a force of 535 kips. The hydraulic pressure is increased to 4,500 psi and the primary strain gauges give a force of 578 kips. The hydraulic pressure is increased to 4,550 psi and the primary strain gauges give a force of 580 kips. The AE is checked with the ok given at 1157. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 579 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 540 kips (seating loss = 39 kips), which is not in tolerance. For the second jacking step, at 4,550 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 579 kips. The AE is checked with the ok given at 1158. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 579 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 541 kips (seating loss = 38 kips), which is not in tolerance. It is lunchtime, so jacking is stopped and will resume



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after the lunch break. For the third jacking step, resuming 1238 after the end of the lunch break, at 4,600 psi hydraulic pressure per the dial gauge, the primary strain gauges give a force of 593 kips. The AE is checked with the ok given at 1239. The nut is tightened. Prior to bleeding off the jacks, the primary strain gauges give a force of 592 kips (bleed loss = 1 kip). After bleeding off the jacks, the primary strain gauges give a force of 552 kips (seating loss = 40 kips). At 1240, the force is within the tolerance.

After the end of the jacking, the ABF ironworkers and the VGO instrumentation engineers leave the site.

A check of TR 5 later in the afternoon at approximately 1600 revealed that it developed a water leak from the wet chamber. There was no leak at the completion of the jacking to 0.70 Fu at 1153 or as late as 1330 from a check at that time. Sometime between 1330 and 1600, a leak developed in the caulking at the grommet between the wet chamber and the dry chamber. The leak is strong enough that a siphon hose to connect to an intermediate tank with a float valve was needed. We (CT personnel) set up the intermediate tank and float valve such that the water level is set well above the rod, which means the leak rate will be higher, but that is appropriate to maintain a factor of safety on the water level over the rod.

There is a hydraulic pump (Powerteam) in use during the TR 7 jack adjustment and the TR 5 through 11 jacking steps. A generator – Whisperwatt 7000 – ABF ID 002343 is on idle/standby at the work area in the morning, and then approximately 1200, it is removed from the site by ABF's mechanics for service and replaced with an MQ Power 25 generator – ABF ID 000007 – which is on idle/standby in the work area in the afternoon. Another generator – MQ Power 40 – ABF ID 002051 is in use during the TR 7 jack adjustment and the TR 5 through 10 jacking steps. A compressor IR P185R – ABF ID 002075 is on idle/standby at the work area in the morning, and then approximately 1200, it is removed from the site by ABF's mechanics for service and replaced with a compressor IR P185R – ABF ID 002078 which is on idle/standby in the work area in the afternoon. A Kubota cart is used by the ironworkers today.

Note that there is k-rail at this work area. Some of the k-rail is rented and addressed by the rental agreement. Some of the k-rail is ABF's k-rail used on site and paid as rented from ABF on a daily basis. To elevate the k-rail, crane mats and timber blocking (12x12's) are in use. The k-rail quantities are as follows:

- 10' bought k-rail = 20 pieces
- 10' ABF k-rail = 8 pieces
- 20' rented k-rail = 22 pieces
- 20' ABF k-rail = 29 pieces

See Victor Altamirano diary for labor/equipment details, including the agreed extra work with ABF per a signed Extra Work Order with ABF for CCO 314 work.