

**DEPARTMENT OF TRANSPORTATION**

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 70.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-007220**Date Inspected:** 11-Jun-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 730**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1630**Contractor:** Japan Steel Works**Location:** Muroran, Japan

|                                    |               |    |     |
|------------------------------------|---------------|----|-----|
| <b>CWI Name:</b>                   | Chung Fu Kuan |    |     |
| <b>Inspected CWI report:</b>       | Yes           | No | N/A |
| <b>Electrode to specification:</b> | Yes           | No | N/A |
| <b>Qualified Welders:</b>          | Yes           | No | N/A |
| <b>Approved Drawings:</b>          | Yes           | No | N/A |

|                                  |     |    |     |
|----------------------------------|-----|----|-----|
| <b>CWI Present:</b>              | Yes | No |     |
| <b>Rod Oven in Use:</b>          | Yes | No | N/A |
| <b>Weld Procedures Followed:</b> | Yes | No | N/A |
| <b>Verified Joint Fit-up:</b>    | Yes | No | N/A |
| <b>Approved WPS:</b>             | Yes | No | N/A |
| <b>Delayed / Cancelled:</b>      | Yes | No | N/A |

**Bridge No:** 34-0006**Component:** Tower, Jacking, and Deviation Saddles**Summary of Items Observed:**

On this date Caltrans OSM Quality Assurance (QA) Inspector Mr. Art Peterson was present during the times noted above for observations relative to the work being performed in Fabrication shop #4 and the Foundry shop at Japan Steel Works.

**Machine Shop #4:**

Machining Operation on Saddle: Tower Saddle Segment T1-1 (cast section welded to steel section)

The QA Inspector observed that tower saddle segment T1-1 is located in Machine Shop #4 to have the final machining performed. On this date, the QA Inspector observed that the interior of the north cable trough is being milled to final dimensions on the tower saddle segment.

**Fabrication Shop #4:**

Re-positioning of Saddle: Tower Saddle Segment T1-2 (steel section welded to steel section)

The QA Inspector observed that JSW personnel were re-positioning tower saddle segment T1-2 in preparation to change the location for the start of the fit-up operation of the stiffener plates to the trough section. The QA Inspector observed that the re-positioning of tower saddle segment T1-2 was in process at the end of the QA Inspectors' shift.

NDT Operation on Saddle: Tower Saddle Segment T1-3 (cast section welded to steel section)

The QA Inspector observed Nikko Inspection Services (NIS) Quality Control (QC) NDT Inspector Mr. R. Kumagai (#132) performing the magnetic particle test (MPT) inspection (dry method) on the partial-joint penetration (PJP) groove welds on the rib (cast section) to rib plate (steel section) and the stem (cast section) to

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stem plate (steel section) of tower saddle segment T1-3. The QA Inspector observed that the MPT inspection on the PJP groove welds of tower saddle segment T1-3 was in process at the end of the QA Inspectors' shift.

**NDT Operation on Saddle: West Deviation Saddle Segment W2-E1 (cast section welded to steel section)**

The QA Inspector observed Nikko Inspection Services (NIS) Quality Control (QC) NDT Inspector Mr. A. Seino (#82) performed the magnetic particle test (MPT) inspection (wet method) on west deviation saddle W2-E1 (cast section) on the as finished surface of level (1) areas as shown on the plans on the outside of the trough section and of level (3) areas as shown on the plans on the rib and stem sections of the west deviation saddle and to the acceptance criteria as follows on the as finished surfaces of the cast section: Linear indications, defined as having a ratio of maximum to minimum dimensions greater than 3, tears and cracks will not be permitted. Indications less than 3mm for Level 1 zones and 6 mm for Level 3 zones may be disregarded. The NIS QC NDT Inspector Mr. Seino verified the lifting force and the sensitivity of the yoke prior to the start of the MPT inspection. The inspection was performed in between rib 1-14 and rib 1-16 and between rib 1-16 and rib 1-17 (end) on the exterior of the trough cast portion, stem cast portion, and rib cast portion. The QA Inspector was informed by Mr. A Seino that no rejectable indications were detected on the 10% of area inspected on the (cast section) of west deviation saddle segment W2-E1.

**NDT Operation on Saddle: West Deviation Saddle Segment W2-E2 (cast section welded to steel section)**

The QA Inspector observed Nikko Inspection Services (NIS) Quality Control (QC) NDT Inspector Mr. A. Seino (#82) performed the magnetic particle test (MPT) inspection (wet method) on west deviation saddle W2-E2 (cast section) on the as finished surface of level (1) areas as shown on the plans on the outside of the trough section and of level (3) areas as shown on the plans on the rib and stem sections of the west deviation saddle and to the acceptance criteria as follows on the as finished surfaces of the cast section: Linear indications, defined as having a ratio of maximum to minimum dimensions greater than 3, tears and cracks will not be permitted. Indications less than 3mm for Level 1 zones and 6 mm for Level 3 zones may be disregarded. The NIS QC NDT Inspector Mr. Seino verified the lifting force and the sensitivity of the yoke prior to the start of the MPT inspection. The inspection was performed in between rib 2-7 and rib 2-5 and between rib 2-5 and rib 2-4 (end) on the exterior of the trough cast portion, stem cast portion, and rib cast portion. The QA Inspector was informed by Mr. A Seino that no rejectable indications were detected on the 10% of area inspected on the (cast section) of west deviation saddle segment W2-E2.

### Machine Shop #4

**Machining Operation on Saddle: West Deviation Saddle Segment W2-E3 (cast section welded to steel section)**

The QA Inspector observed that west deviation saddle segment W2-E3 is located in Machine Shop #4. The JSW personnel previously performed the dimensional inspection and verified the location of the rib and stem against the approved drawings. Afterwards, the JSW personnel scribed the assembly control lines (ACL) on the edges of the ribs, stem and base plate for reference points during machining. On this date, the QA Inspector observed that the machining operation has not started on west deviation saddle segment W2-E3.

### Fabrication Shop #4

**Gouging Operation on Saddle: West Deviation Saddle Segment W2-W1 (cast section welded to steel section)**

The QA Inspector observed that the JSW personnel completed the gouging operation to remove the excess weld material remaining on the rib (cast section) where the (2) lifting lugs were previously located on the outside surface of end rib (4-4). On this date, the QA Inspector observed that no work was performed on west deviation

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saddle segment W2-W1.

Grinding Operation on Saddle: West Deviation Saddle Segment W2-W2 (steel section)

The QA Inspector observed JSW personnel were preparing to perform the grinding operation on the rib plates and stem plate's prepared edges (face of bevels) of west deviation saddle W2-W2 (steel section). These areas that will be prepared by grinding were difficult to be machined. The JSW personnel will be grinding to the scribe lines (layout marks and punch marks of the final dimension of the groove area) prior to the fit-up operation of west deviation saddle W2-W2 (cast section). The QA Inspector observed that the grinding operation has not started by the end of the QA Inspectors' shift.

Buttering Weld Operation on Saddle: West Deviation Saddle Segment W2-W2 (cast section)

The QA Inspector observed the weld surfacing (buttering operation / build-up of weld metal) on the end of the trough of end rib (5-17) was completed on west deviation saddle segment W2-W2 (cast section). The buttering operation was performed at (2) specific locations on end rib (5-17) where the lifting lugs will be welded for JSW personnel to position and re-position the saddle segment for the weld operation. On this date, the QA Inspector observed that no other work was performed on west deviation saddle segment W2-W2 (cast section).

Weld Operation on Saddle: West Deviation Saddle Segment W2-W3 (steel section being welded to steel section)

The QA Inspector observed the partial-joint penetration groove weld operation on the rib plate to stem plate of west deviation saddle W2-W3. The QA Inspector observed Quality Control (QC) Inspector Mr. Chung Fu Kuan verify prior to and during the weld operation that the minimum preheat temperature of 160 degrees Celsius was maintained and the welding parameters of JSW welding personnel Mr. M. Kato (08-5018) on weld joint no. W3Y-7V- (plate 6-9 side) and T. Watanabe (08-5169) on weld joint no. W3Y-8V- (plate 6-10 side) were in compliance with WPS SJ-3011-3 per the FCAW-G process in the (1G) flat position using (1.6) mm diameter TM95 electrode. The QA Inspector observed that the partial-joint penetration groove weld operation was in process at the end of the QA Inspectors' shift.

Tack-Weld Operation on Miscellaneous Channel to Rocker Bearing Plate Assembly: East Saddle E2-W1

The QA Inspector observed that the tack-weld operation was completed on the miscellaneous channel to the rocker bearing plate of the rocker bearing plate assembly for location E2-W1. On this date, the QA Inspector observed that no work was performed on the rocker bearing plate assembly for location E2-W1.

Weld Operation on End Splay Cover Plate Assembly: East Saddle E2-W1

The QA Inspector observed the complete-joint (CJP) groove weld operation on the (cover plate stiffener to base plate) of the end splay cover plate assembly for east saddle E2-W1. The QA Inspector observed Quality Control (QC) Inspector Mr. Chung Fu Kuan verify prior to and during the weld operation that the minimum preheat temperature of 110 degrees Celsius was maintained and the welding parameters of JSW welding personnel Mr. K. Kobayashi (08-5023) welding on the 1st side of double bevel groove stiffener plate 24-4 to base plate 24-1 were in compliance with WPS SJ-3177-2 per the FCAW process in the (1G) flat position using (1.6) mm diameter TM 55 electrode. The QA Inspector observed that the CJP groove weld operation was in process at the end of the QA Inspectors' shift.

Foundry:

Storage of Saddle: West Deviation Saddle Segment W2-W3 (cast section)

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The QA Inspector observed that west deviation saddle segment W2-W3 (cast section) is located in the Foundry Shop for storage until west deviation saddle segment W2-W3 (steel section) is ready for the fit-up operation. On this date, the QA Inspector observed that no work was performed on west deviation saddle segment W2-W3 (cast section).

### Defect Removal on Cast Saddle: East Saddle E2-E1 (cast saddle)

The QA Inspector observed JSW personnel performing the gouging / grinding operation on the second side of the cast saddle by the air-carbon arc gouge method to remove rejectable indications located on the exterior of the trough section, stem section, and rib section at various locations along its length on east saddle E2-E1 (cast saddle).

The rejectable indications were previously marked up by Nikko Inspection Services (NIS) QC NDT Personnel Mr. H. Kohama (#86) from the magnetic particle test (MPT) inspection and the ultrasonic test (UT) inspection performed on the exterior of the trough section, stem section and rib sections of east saddle E2-E1 (cast saddle). The QA Inspector observed that the gouging / grinding operation was in process on the trough section of the east saddle at the end of the QA Inspectors' shift.

### Repair Weld Operation on Cast Saddle: East Saddle E2-W1 (cast saddle)

The QA Inspector observed the repair weld operation on excavated areas on exterior of the trough (opposite the ID side) on east saddle E2-W1. The QA Inspector observed Quality Control (QC) Inspector Mr. T. Imai verify prior to and during the weld operation that the minimum preheat temperature of 150 degrees Celsius was maintained and the welding parameters of JSW welding personnel Mr. H. Sato (69-2699) and Mr. H. Onodera (93-2272) were in compliance with WPS SJ-3026-4 per the SMAW process in the (1G) flat position using (4.8) mm diameter E9016-G electrode. The QA Inspector observed that the repair weld operation was in process at the end of the QA Inspectors' shift.

### Shaping Operation on Saddle: West Jacking Saddle (cast saddle)

The QA Inspector observed that JSW personnel were performing the shaping (scarfing) operation- (removal of excess cast material on the rough casting) by the air-carbon arc gouge method- (19) mm carbon electrode on the exterior of the trough, stem and rib sections on the west jacking saddle to profile the trough, stem, and rib sections of the west jacking saddle to the proper shape, dimension and radius. The QA Inspector observed that the shaping operation was in process at the end of the QA Inspectors' shift.

Unless otherwise noted, all observations reported on this date appeared to be in general compliance with the applicable contract documents

### Summary of Conversations:

No significant conversations were reported on this date.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Nina Choy, 510 385-5910, who represents the Office of Structural Materials for your project.

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**Inspected By:** Peterson, Art

Quality Assurance Inspector

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**Reviewed By:** Guest,Kittric

QA Reviewer