

**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 #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-016079**Date Inspected:** 05-Aug-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1000**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site

<b>CWI Name:</b>	Jim Cunningham and William She			<b>CWI Present:</b>	<b>Yes</b>	<b>No</b>	
<b>Inspected CWI report:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Rod Oven in Use:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Electrode to specification:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Weld Procedures Followed:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Qualified Welders:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Verified Joint Fit-up:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Approved Drawings:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Approved WPS:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
				<b>Delayed / Cancelled:</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
<b>Bridge No:</b>	34-0006			<b>Component:</b>	Orthotropic Box Girder		

**Summary of Items Observed:**

Caltrans Office of Structural Material (OSM) Quality Assurance Inspector (QAI) Joselito Lizardo was present at the Self Anchored Suspension (SAS) job site as requested to perform observations on the welding of components for the San Francisco Oakland Bay Bridge (SFOBB) Project.

At OBG 5E/6E edge plate 'B' inside, ABF welder Hua Qiang Hwang was observed preparing his welding machine and accessories to perform vertical welding of the splice butt joint. Since the thickness of the plate to be welded was 28mm, it needed preheat of 200 degrees Fahrenheit, continuous maintenance and holding of the preheat for three hours after welding. The welder has waited for the preheat to come to the required temperature before started welding. As soon as the required preheat was achieved, the welder was observed perform manual welding in the 3G (vertical) position utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3110-3. The splice joint was preheated to greater than 200 degrees Fahrenheit using Miller Proheat 35 Induction Heating System located at the opposite side of the plate prior welding. During welding, ABF Quality Control (QC) Jim Cunningham was noted monitoring the welding parameters of the welder. At the end of the shift, the welder has not completed the cover pass welding of the splice butt joint and should remain tomorrow.

At OBG 4W/5W side plate 'C' (3200mm to 7955mm) inside, QA observed ABF/JV qualified welder Sungtao, Huang ID # 3794 completed the root pass at this location and has continued to weld fill passes. The welder was observed perform automatic welding in the 3G (vertical) position utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3042A-1. The joint being welded has a single V-groove butt joint

# WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

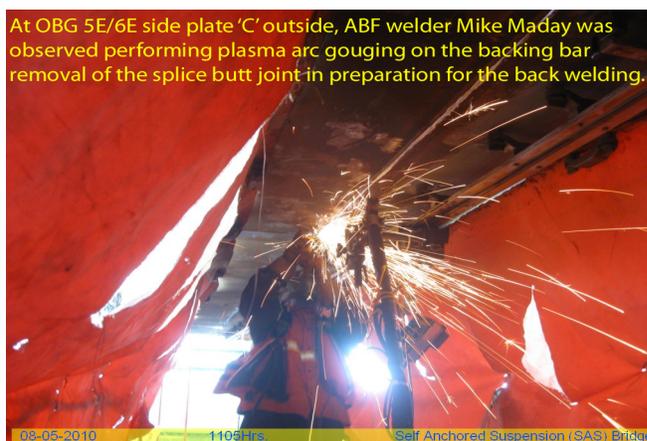
with backing bar. The splice joint was preheated and maintained to greater than 200 degree Fahrenheit using Miller Proheat 35 Induction Heating System located at the opposite side of the plate prior/during welding. During welding, ABF Quality Control (QC) William Sherwood was noted monitoring the welding parameters of the welder. At the end of the shift, the welder was still welding the fill pass and should remain tomorrow.

QA randomly observed ABF/JV qualified welder Jeremy Dolman perform CJP groove (splice ) back welding fill pass on Orthotropic Box Girder (OBG) 4E/5E side plate 'E1' outside. The welder was observed back welding in the 4G (overhead) position utilizing a dual shield Flux Cored Arc Welding (FCAW-G) with E71T-1M, 1/16" diameter wire electrode and implementing Caltrans approved Welding Procedure Specification (WPS) ABF-WPS-D15-3110-4. The welder was using a track mounted welder holder assembly that was remotely controlled. The joint being welded has the backing bar gouged using the Esab Plasma Arc machine and was ground smooth. The gouged and ground splice butt joint was also Non Destructive Testing (NDT) tested using the Magnetic Particle Testing (MT). The splice joint was preheated and maintained to greater than 150 degree Fahrenheit using Miller Proheat 35 Induction Heating System located on top of the plate prior welding and by moving the blanket to the side of the weld being welded during welding. The vicinity was also properly protected from wind and other climatic conditions. ABF Quality Control (QC) Jim Cunningham was noted monitoring the welding parameters of the welder. At the end of the shift, fill pass welding of the splice joint was still continuing and should remain tomorrow.

At OBG 5E/6E side plate 'C' outside, QA randomly observed ABF personnel perform plasma arc gouging on the backing bar removal of the splice butt joint. The personnel were using an Esab plasma arc gouging machine that has the nozzle holder attached to a Bug-o track. Gouging of the backing bar was not completed today and should continue tomorrow.



At OBG 5E/6E edge plate 'B' inside, ABF welder Hua Qiang Hwang was noted preparing his welding equipment while waiting for the plate's preheat to come to 200 degrees Fahrenheit.



At OBG 5E/6E side plate 'C' outside, ABF welder Mike Maday was observed performing plasma arc gouging on the backing bar removal of the splice butt joint in preparation for the back welding.

## Summary of Conversations:

1. At OBG 4W/5W side plate 'C' and OBG 5E/6E edge plate 'B', since both plates being welded were more than 20mm thickness, both respective QC inspectors were reminded to hold the preheat for three hours after welding completion which they agreed.
2. At OBG 4E/5E edge plate 'B' inside, ABF QC has requested QA to perform preliminary visual test (VT) on the welded cover of the splice joint. QA performed the VT as requested and noted surface defects such as slag inclusion, lack of fusion and underfill. Due to this, QA informed QC Jim Cunningham to let ABF fix mentioned defects before final VT could be performed.

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# WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

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## 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 SMR Mohammad Fatemi (916) 227-5298, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Lizardo, Joselito	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell, Bill	QA Reviewer

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