

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

Office of Structural Materials

Quality Assurance and Source Inspection



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Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 69.28**WELDING INSPECTION REPORT****Resident Engineer:** Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-018775**Date Inspected:** 18-Dec-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 1900**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 700**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island **Location:** Shanghai, China**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** OBG**Summary of Items Observed:**

CWI Inspector: Mr. Bao Qian, Mr. Lv Li Qing

On this date CALTRANS OSM Quality Assurance (QA) Inspector, Mr. Paul Dawson, arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai China, for the purpose of monitoring welding and fabrication.

OBG Bay 13

Segment 13AE

This QA Inspector observed ZPMC welder Ms. Wang Min, stencil 044771 used submerged arc welding procedure specification WPS-B-T-2221-B-L2C-S-2 to complete OBG segment 13AE groove welds SA3011-001-001 and SA3011-002-001. This QA Inspector observed ZPMC QC has recorded a welding current of 590 amps, 30.8 volts and a welding travel speed of 552mm per minute. This QA Inspector measured a welding current of approximately 630 amps, 32 volts and Ms. Wang Min appeared to be certified to make this weld. This QA Inspector observed the base materials had been preheated with electric heaters prior to welding. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Ms. Duan Ziuzhi, stencil 050502 used submerged arc welding procedure specification WPS-B-T-2221-B-L2C-S-2 to complete OBG segment 13AE groove welds SA3011-001-003 and SA3011-002-003. This QA Inspector observed ZPMC QC has recorded a welding current

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of 587 amps, 31.3 volts and a welding travel speed of 556mm per minute. This QA Inspector measured a welding current of approximately 580 amps, 29 volts and Ms. Duan Ziuzhi appeared to be certified to make this weld. This QA Inspector observed the base materials had been preheated with electric heaters prior to welding. Items observed on this date appeared to generally comply with applicable contract documents.

OBG Bay 14

Segments 13E and 14E

This QA Inspector observed ZPMC welder Mr. Jin Rong, stencil 066471 used flux cored welding procedure WPS-B-T-2232-ESAB to make OBG segment 14E weld SEG3019K-013. ZPMC QC had recorded a welding current of 290 amps, 25.9 volts and a welding travel speed of 280mm per minute. This QA Inspector measured a welding current of approximately 320 amps, 30.6 volts and Mr. Jin Rong appeared to be certified to make this weld. This QA Inspector observed that the maximum welding voltage listed in the welding procedure specification is 26.6 volts and that Mr. Ye Bing had a welding voltage that was approximately 4.0 volts above the maximum limit. ABF CWI Mr. Bao Qian observed the welding voltage and he adjusted the welding machine voltage to approximately 26 volts. Following adjustment of the welding machine, items observed on this date appeared to generally comply with applicable contract documents. See the photograph below for additional information.

This QA Inspector observed ZPMC welder Mr. Han Lin stencil 062782 used flux cored welding procedure WPS-B-T-2232-ESAB to make OBG segment 14E weld SEG3019M-034. This QA Inspector observed ZPMC QC had recorded a welding current of 300 amps, 26.1 volts and a travel speed of 295mm per minute. This QA Inspector measured a welding current of approximately 320 amps, 26.0 volts and Han Lin appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Li, stencil 044772 used shielded metal arc welding procedure specification WPS-B-P-2232-FCM-1 to complete weld SEG3019Y-056. This QA Inspector observed ZPMC has recorded a welding current of 165 amps, 25.1 volts a welding travel speed of 112mm per minute and Mr. Wang Li appeared to be certified to make this weld.

Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Chen Chuanzong, stencil 044824 used flux cored welding procedure specification WPS-B-T-2231-ESAB to make OBG segment 14E weld SEG3019A-010. This QA Inspector observed ZPMC QC recorded a welding of 290 amps, 26.1 volts and a welding travel speed of 247mm per minute. This QA Inspector observed Mr. Chen Chuanzong appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder stencil 201081 used shielded metal arc welding procedure specification WPS-B-P-2113-FCM-1 to complete OBG segment 14E weld SEG3019S-297. This QA Inspector observed ZPMC has recorded a welding current of 160 amps, 26.1 volts and a welding travel speed of 113mm per minute. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Hai Yang, stencil 068994 used flux cored welding

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procedure WPS-B-T-2232-ESAB to make OBG segment 14E weld SA3019L-1-001. ZPMC QC had recorded a welding current of 298 amps, 26.1 volts and a welding travel speed of 265mm per minute. Mr. Wang Hai Yang appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Jian Zhou, stencil 067571 used shielded metal arc welding procedure WPS-B-P-2214-TC-U4B-FCM-1 to make OBG segment 13AE weld SEG3007AD-050. This QA Inspector observed ZPMC QC has recorded a welding current of 158 amps 25.1 volts and a welding travel speed of 118 mm per minute. This QA Inspector observed Mr. Jian Zhou appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Chen Hongjun, stencil 067609 used shielded metal arc welding procedure WPS-B-P-2214-TC-U4B-FCM-1 to make OBG segment 13AE weld SEG3007AD-051. This QA Inspector observed ZPMC QC has recorded a welding current of 153 amps 25.33 volts and a welding travel speed of 115 mm per minute. This QA Inspector observed Mr. Chen Hongjun appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Wang Zhengbin, stencil 216086 used shielded metal arc welding procedure WPS-345-SMAW-2G(2F)-FCM-Repair-1 to make a weld repair of ultrasonic rejections to OBG segment 13AE weld SEG3007H-123. ZPMC CWI Mr. Lv Li Qing presented this QA Inspector with weld repair document B-WR-19130 that documents the repair of this weld. QC Inspectors have recorded the depth of this repair was 9mm, and a welding current of 160 amps. This QA Inspector observed Mr. Wang Zhengbin appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. He Huohong, stencil 219136 used shielded metal arc procedure WPS-B-P-2112-FCM-1 to make various temporary tack welds between various OBG segment 13AE flange plates including 3678B and 3189D. This QA Inspector observed Mr. He Huohong appeared to have been tack welding and when this QA Inspector arrived where this tack welding was taking place location of the partially completed tack weld did not appear to have been preheated prior to welding. This QA Inspector also observed the shielded metal electrodes that Mr. He Huohong was using had been stored in a portable rod oven which was cool to the touch. This QA inspector showed ABF CWI Mr. Bao Qian the cool base material and the unheated welding electrodes and ABF CWI Mr. Bao Qian instructed Mr. He Huohong to return the cold electrodes and obtain fresh heated welding electrodes. This QA Inspector observed the workers used a long rose bud torch to preheat the base material prior to additional tack welding. This QA Inspector measured a welding current of approximately 160 amps and Mr. He Huohong appeared to be certified to make this weld. Items observed on this date do not appear to fully comply with applicable contract documents.

This QA Inspector observed ZPMC welder Mr. Zhou Hanjun, stencil 215458 used shielded metal arc procedure WPS-B-P-2112-FCM-1 to make various tack welds between OBG segment 14E vertical shear plate SA3361A-X4757B to bottom plate BP3084A. This QA Inspector observed Mr. Zhou Hanjun appeared to have been tack welding and when this QA Inspector arrived where this tack welding was taking place the workers immediately picked up an acetylene torch and proceeded to remove the cutting torch head and replace it with a long rose bud torch, which they used to preheat the base material prior to tack welding. Due to the location of the

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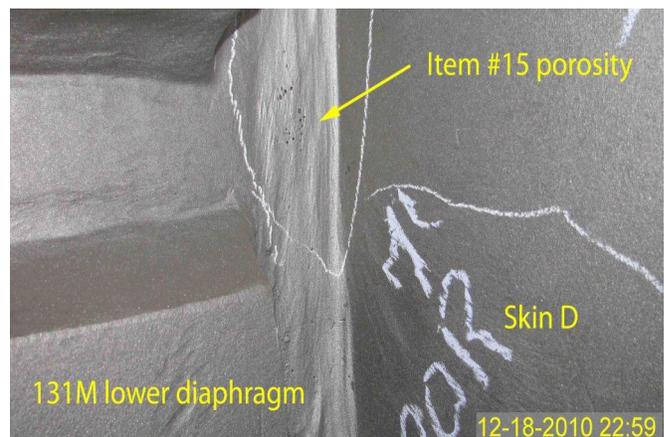
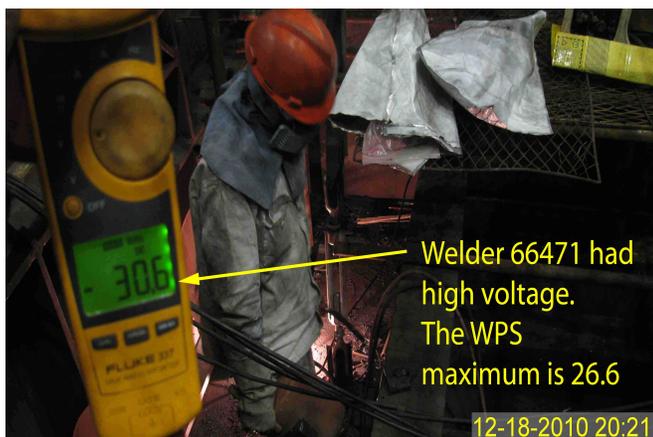
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welds this QA Inspector was not able to determine the location of the previous welding. This QA Inspector measured a welding current of approximately 160 amps and Mr. Zhou Hanjun appeared to be certified to make this weld. Items observed on this date appeared to generally comply with applicable contract documents.

Blast shop 2

ZPMC requested Caltrans personnel to perform visual inspections of West Tower Lift 4 interior surfaces between 116 meters elevation to 131 meters on December 18, 2010 at around 22:30 hours following the initial pre-blast cleaning of the steel surfaces. This QA Inspector along with other QA Inspectors performed random visual inspections of these areas. This QA Inspector visually observed approximately 30 locations that required grinding to resolve visual weld spatter, arc strikes, shallow nicks, scrapes, and other minor surface rejections and approximately five areas that require magnetic particle inspections. This QA Inspector observed item #13 as listed below. See the photographs below. QA, ABF and ZPMC Inspectors observed a total of sixteen locations which require weld repairs. Below are the items that his QA Inspector listed on a "Blast Inspection" incident report dated December 18, 2010.

1. Porosity at 200mm from end of skin C stiffener, approximate elevation 117M.
2. Gouge on skin D at elevation 116.76M.
3. Crack temporary tack weld skin D, back side of 119M lower diaphragm.
4. Crack temporary tack weld skin D, back side of 119M upper diaphragm.
5. Porosity fit lug weld to 119M upper diaphragm, near skin D.
6. Crack temporary tack weld skin D, back side of 123M lower diaphragm.
7. Gouge in fit lug weld on 123M lower diaphragm near skin B.
8. Crack temporary tack weld skin D, back side of 123M upper diaphragm.
9. Weld porosity between 123M upper diaphragm and skin D.
10. Weld porosity between back side of 127M lower diaphragm and skin D, near skin DE corner.
11. Crack temporary tack weld skin D, back side of 127M lower diaphragm.
12. Porosity corner plate to diaphragm plate back of 127M lower diaphragm, near skin DE corner.
13. Weld porosity between diaphragm and skin plate B at 127M lower diaphragm.
14. Crack temporary tack weld near skin B, back side of 127M upper diaphragm.
15. Weld porosity between front side of 131M lower diaphragm and skin A.
16. Base metal gouge on back side of 123M upper diaphragm and skin A, near AE corner.



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Summary of Conversations:

See Above.

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 James Devey +8615000026784, who represents the Office of Structural Materials for your project.

Inspected By:	Dawson,Paul	Quality Assurance Inspector
Reviewed By:	Carreon,Albert	QA Reviewer
