

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 #: 74.28**WELDING INSPECTION REPORT****Resident Engineer:** Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-010121**Date Inspected:** 22-Oct-2009**Project Name:** SAS Superstructure**OSM Arrival Time:** 730**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1620**Contractor:** Goodwin Steel, UK**Location:** Stoke-on-Trent, UK

CWI Name:	None		
Inspected CWI report:	Yes	No	N/A
Electrode to specification:	Yes	No	N/A
Qualified Welders:	Yes	No	N/A
Approved Drawings:	Yes	No	N/A

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

Bridge No: 34-0006**Component:** Cable Band Castings**Summary of Items Observed:**

The following report is based on Caltrans METS QA Inspector Mike Brcic's observations at Goodwin Steel Castings, Stoke-on-Trent, UK on 22 October 2009.

MECHANICAL TESTING

The following tensile testing was performed by Goodwin Steel Castings Quality Control Technician, Mr. Martyn Hilditch. The testing was verified on the following Cable Band Casting tensile specimens today:

GG29439-1, Heat C7929 After second PWHT (retest due to previous failure)

Yield Strength	409 N/mm ²
Ultimate Tensile Strength	606 N/mm ²
Elongation	25 %
Reduction of area	45 %

GG29422-9, Heat F7558 Initial test

Yield Strength	439 N/mm ²
Ultimate Tensile Strength	690 N/mm ²
Elongation	22 %
Reduction of area	37 %

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GG29428-7, Heat C7650 Initial test (*Failed)

Yield Strength	318 N/mm ²
Ultimate Tensile Strength	548 N/mm ²
Elongation	32 %
Reduction of area	54 %

*Specimen Failed due to low Yield/Tensile Strength, results do not satisfy the requirements of ASTM A148 as referenced in contract Special Provisions, Sect 10-1.60.

GG29428-8, Heat C8051 Initial test (*Failed)

Yield Strength	424 N/mm ²
Ultimate Tensile Strength	638 N/mm ²
Elongation	24 %
Reduction of area	27 %

*Specimen Failed due to low Reduction of Area, results do not satisfy the requirements of ASTM A148 as referenced in contract Special Provisions, Sect 10-1.60.

GG29428-9 Heat F7662 Initial test

Yield Strength	416 N/mm ²
Ultimate Tensile Strength	688 N/mm ²
Elongation	26 %
Reduction of area	54 %

ASME SECT IX WELD PQR:

METS Caltrans Inspector Mr Brcic performed witness welding of PQR test plate. This FCAW procedure will be for a Minor Weld Repair with no Post Weld Heat Treatment and will be designated WPS-271. The welding variables were based on the FCAW procedure (WPS-270) for Major Weld Repair performed on 10/21/09, with the exception of interpass temperature, being 235° Celsius for WPS-271 versus 425° Celsius in WPS-270.

Welder: Terry Knall, Goodwin Steel Casting, Welding Supervisor

Material: 42mm cast plates, material ASTM A148 (plates Identified as 301 and 302)

Shielding: Argon w/20%CO₂ and 2%O₂. Flow rate was 12 to 13 liters per minute

Preheat: Minimum per PWPS 160°C, verified using 170°C temp stick

Interpass: Maximum per PWPS 235°C, verified using 232°C temp stick

Joint design: Double Bevel/Double Groove with a included angle of 60°

Root: Opening ranged from 1 to 2mm, root face was 1mm.

Consumable: 1.2mm AWS A5.20 E71T-1M cored weld wire, manufacturer's designation, Hyundai 71 MAG.
(batch/lot # BS EN439M24)

Travel Speed: Ranged from 225mm/per minute to 96mm/per minute (weave passes increased in width as bevel opened to a top pass of 31mm in width).

Amps/Voltage: Volts 25 / Amps 186, these variables were averages observed during the deposit of the first and second pass on the 2nd Side.

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Parameters observed appeared to be consistent with the PQR observed on 10/21/09.

Welder verified Back gouge to clean material, visually.

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

Summary of Conversations:

No significant conversations took place that this Inspector was a party to.

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, 1(510)385-5910, who represents the Office of Structural Materials for your project.

Inspected By:	Brcic,Michael	Quality Assurance Inspector
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Reviewed By:	Edmondson,Fred	QA Reviewer
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