



DIRECTOR'S CLAIMS BOARD
ODOT Project 1041(10)
Claim 12-101041-06
Open Grid Roadway Deck Welding
Decided: June 20, 2013

On Friday, April 26, 2013 at ODOT's Central Office in Room 4A, the Director's Claims Board ("Board") heard oral presentations of The Ruhlin Company ("Ruhlin" or "Contractor") and ODOT District 12 ("District" or "ODOT") relative to the subject claim on Project 1041(10) CUY-Willow Avenue Lift Bridge ("Project"). Prior to the oral presentations and in accordance with the Dispute Resolution and Administrative Claim Process set forth in the contract, the Board received written documentation from the Contractor on December 21, 2012 and from the District on February 20, 2013.

The Board consisted of: Megan O'Callaghan, P.E., Deputy Director, Division of Construction Management; David Humphrey, P.E., Administrator, Office of Pavement Engineering (representing James Young, P.E. Deputy Director, Division of Engineering); and Cary Betzing, P.E., District 10 Construction Administrator.

The District 12 representatives at the hearing were: Greg Kronstain, P.E. and Randy Over, P.E.

The Ruhlin Company was represented by Chuck Fisher and Ben Neal.

Pam Clawson, P.E., Dispute Resolution Coordinator, Division of Construction Management served as the Secretary of the Board. Jim Welter, P.E., Division of Construction Management, Structures Construction Specialist and Jeff Chandler, P.E., Office of Materials Management observed the hearing.

PROJECT DESCRIPTION:

The Project rehabilitated the lift span roadway and sidewalk of the Willow Avenue vertical lift bridge in the City of Cleveland over the Cuyahoga River. The mechanical and electrical components that control the bridge were also rehabilitated.

Ruhlin was awarded the contract which was executed on May 12, 2010. The original contract amount was \$3,913,242.50 and the original contract completion date was June 30, 2011. The completion date was subsequently revised to April 30, 2013. The final inspection of the project was completed on February 13, 2013. The current contract amount is \$4,195,871.86.

CLAIM OVERVIEW:

Ruhlin replaced the existing open grid deck surface with a new open grid deck surface. The end grid deck panels were to be concrete filled. Following the installation of the grid deck panels and after the bridge was open to traffic, it was observed that the bearing bars were not fully bearing on the new steel stringers. To more fully assess the extent of this problem the District directed the Contractor to hire "a qualified independent company to perform a complete inspection of the welds on all the grid deck panels on the bridge. This company is required to submit for approval a recommended repair/replacement procedure based on their findings." The Contractor complied with this direction and the consultant identified 27 missed welds and 18 gaps between the bearing bars and the stringers. Of the 18 gaps, 16 were on the two end panels. The District determined the work was nonconforming and directed the Contractor to correct the gaps in the two end panels at its own cost. Ruhlin claims it installed the open grid deck in reasonable close conformity with the contract requirements and should be reimbursed for its costs to retain the consultant inspector (\$8,551.98) and correct the gaps (\$15,506.35) for a total of **\$24,058.32**.

SUMMARY OF THE CONTRACTOR'S POSITION:

Ruhlin acknowledged there were gaps between the bearing bars and the stringers. It explained this gap was due to allowable tolerance in the fabrication of the stringers. Ruhlin stated the Contract Documents were silent with respect to allowable gaps.

Ruhlin explained it temporarily loaded the floor with a rubber tired roller to keep the bearing bars in contact with the stringers to facilitate welding because it was concerned clamps would scratch the newly painted steel stringers. It also acknowledged that AAHSTO requires root openings greater than ¼" be shimmed prior to welding. Ruhlin admits it did not use shims as directed because the welding would burn through a shim that thin.

The new open grid deck system had been installed and the bridge had been opened to traffic when the District informed Ruhlin the gaps were unacceptable and the concrete filled deck panels at the ends of the bridges had to be removed and replaced. Ruhlin requested clarification regarding the locations where the gaps were out of compliance as well as the specification setting forth the tolerance. The District responded it expected "full bearing". Ruhlin argued "full bearing" is not a contract requirement.

To determine the extent of the situation, the District ordered Ruhlin to hire a qualified independent company to perform inspection of all the welds on the deck grating as well as provide a recommended repair/replacement procedure based on their findings. The District and Ruhlin agreed to use KS Associates. KS identified 18 welds that had at least a 3/16" gap between the bearing bar and top flange. 16 of these welds were in the concrete filled deck end sections. KS also identified 27 missing welds. The KS report stated: "the main grid deck bearing bar only carries concrete fill grid deck dead load, and that the live load is distributed between the concrete and the main grid deck bar. For this reason, KS recommends no repair other than replacing the concrete over stringer 2 at panel 78 as soon as possible so the concrete can distribute the load."

Ruhlin acknowledged the 27 missing welds on the bridge deck and fixed those immediately. Ruhlin claims the Contract required installation of approximately 12,416 welds on the deck and reasoned only 18 gaps met the criteria for reasonably close conformity. However, the District "completely ignored" KS' recommendation, as well as Ruhlin's reasonably close conformity argument, and directed the removal and replacement of the concrete filled panels to correct the gaps. The District agreed to accept the gaps elsewhere on the bridge.

Ruhlin acknowledged it was required to use a shim if the opening was larger than ¼". However, when Ruhlin re-measured the gaps it found only 4 welds that exceeded ¼" yet the District continued to require Ruhlin repair the locations KS Associates identified with a gap that exceeded 3/16" in the concrete filled panels. On November 6, 2012 Ruhlin proposed a method to fix the gaps without removal and replacement of the entire concrete filled panels. The District accepted the proposal on November 8, 2012 and the work was completed by November 17, 2012.

In further support of its claim, Ruhlin argues it was not the District that required this rework but the City of Cleveland with which it does not have privity of contract. Ruhlin also argues the District does not have the authority to require it to contract with a third party to prove the acceptability of its work and therefore it should be reimbursed for its costs to hire KS Associates.

As such, Ruhlin claims it is entitled to compensation for its costs to retain the consultant inspector (\$8,551.98) and correct the gaps (\$15,506.35) for a total of **\$24,058.32**.

SUMMARY OF THE DISTRICT'S POSITION:

The District explained this bridge is in an area of heavy industrial traffic. The past bridge was a problem to maintain because the welds on the old open grid deck surface regularly would pop loose and frequent repair of the welds was required. The plans took this into account and

required longer, more frequent welds than the original deck and more weld length than the manufacturer recommended. The reason there was no mention of a tolerance in the plans and specifications was because there was to be no gap. The bearing bars were to be fully bearing on the stringers.

The District cited *AASHTO Standard Specifications for Highway Bridges, Division II, Section 12, Steel Grid Flooring 12.6 Connection to Supports* which reads: "Before any welding is done, the floor shall either be temporarily loaded or it shall be clamped down to make a tight joint with full bearing." If tolerances are not specified in the contract then the parties look to the industry standards with *AASHTO* being the industry standard. The Contractor did not ask a pre-bid question nor did it submit a Request for Information about the gap tolerance prior to welding.

The District determined due to the critical nature of these welds and the problems seen with the previous deck, it would not be willing to accept the Work as being in reasonably close conformity. The District has that option by contract.

In response to Ruhlin's allegation that the City of Cleveland was driving the decision, the District responded the City of Cleveland was to be the maintaining agency. The District pointed out Cleveland initially wanted the entire flooring replaced. However, the District determined this was not necessary and directed Ruhlin to perform the repair.

When the gaps were first noticed from standing underneath the bridge the District knew there was a potential for more gaps in areas much less accessible. To quickly and accurately identify the extent of the problem it directed Ruhlin to hire KS Associates. KS was to identify the locations of the gaps and recommend a repair/replacement procedure. The District had the option of accepting or rejecting the recommendation. KS Associates referred to the *Bridge Grid Flooring Manufacturers Association Installation Tolerances & Guidelines for Open Grid Decks* in its decision. The District disagreed with this reference and determined *AASHTO* is the proper industry standard for this highway work.

KS Associates found 27 missing welds, which Ruhlin acknowledged and fixed at its cost and the 18 welds with a gap exceeding 3/16" between the bearing bars and the stringers. If KS had not identified defects then the District would have paid for the inspection. However, since the inspection did find defects then the Contractor should not be reimbursed in accordance with C&MS 105.10. The 18 welds were not completed as shown in the plans and must be repaired at the Contractor's cost. Therefore, the Contractor is not entitled to additional compensation for this claim.

DIRECTOR'S CLAIMS BOARD FINDINGS:

Facts

After careful review of the submitted documents and with due consideration of the information provided at the hearing, the Board determined the following to be significant findings relevant to the issue of entitlement:

1. There is no provision in the contract for a gap between the bearing bar and the stringers.
2. C&MS Section 101.03 defines "Reasonably Close Conformity" as "compliance with reasonable and customary manufacturing and construction tolerances where working tolerances are not specified."
3. The *AASHTO Guide Specifications for Highway Construction Section 12.6 Steel Grid Flooring Connection to Supports* reads: "Before any welding is done, the floor shall either be temporarily loaded or it shall be clamped down to make a tight joint with full bearing. To minimize the stresses induced through clamping down, any differential elevation of 1/4 inch or more over a 4-foot supporting member shall be shimmed before welding the shim, the grid, and the supporting

member.”

4. The Contractor did not inquire about a gap tolerance prior to or during the welding.
5. The Contractor elected to temporarily load the deck as opposed to using shims.
6. By letter of April 10, 2012 the District directed the Contractor to “hire a qualified independent company to perform a complete inspection of the welds on all the grid deck panels on the bridge. This company is required to submit for approval a recommended repair/replacement procedure based on their findings.”
7. The April 10, 2012 letter did not indicate how this independent inspection firm would be paid.
8. The independent consultant identified 27 missing welds, which the Contractor immediately corrected at its own cost.
9. The independent consultant also identified 18 welds with a gap exceeding 3/16” between the bearing bars and the stringers.
10. The Ohio Department of Transportation and The Ruhlin Company are in privity of contract for this project. Although the City of Cleveland is the maintaining agency for this bridge, the City of Cleveland did not have the authority to direct the work of the Contractor. The District took the City’s concerns into consideration but ultimately provided all direction pertaining to this project to the Contractor.

Conclusions

The District and the Contractor agree there is no specified tolerance in the Contract Documents for gaps between the bearing bar and the stringer. In the definition of “Reasonably Close Conformity” C&MS Section 101.03 states “where working tolerances are not specified...reasonably close conformity means compliance with reasonable and customary manufacturing and construction tolerances...” Ruhlin points to the *Bridge Grid Flooring Manufacturers Association’s Installation Tolerances and Guidelines for Open Grid Decks* and the District refers to *AASHTO Guide Specifications for Highway Construction Section 12.6 Steel Grid Flooring Connection to Supports* which specifies “full bearing”. Both publications offer “customary manufacturing and construction tolerances” but AASHTO is clearly the guide for construction of highway bridges.

Ruhlin requested the District consider the 18 welds with a gap exceeding 3/16” to be within “reasonably close conformity” of the plans and specifications since these 18 were out of a total of 12,416 welds done on the deck. Section 101.03 under the definition of “reasonably close conformity” allows the District Construction Administrator (a Professional Engineer) “to accept variations beyond such tolerances as reasonably close conformity where they will not affect the value or utility of the Work and the interests of the Department.” History with this bridge has shown welds are highly susceptible to fatigue failure due to the high volume of truck traffic and service loads on the bridge. Because of this history the District determined only full bearing of the bearing bars on the stringers would be acceptable. The District reasoned, to ensure a long service life, it should receive the bridge from the Contractor with as few spots prone to fatigue failure as possible. The gaps at the bearing bar/stringer interface are, arguably, a potential point for early fatigue failure.

The Board agrees the intent of the plan is to have “full bearing” on the stringers. The Board also supports the District’s decision to reject the welds at the gaps. The District’s decision was not arbitrary and capricious because the District provided a reasonable explanation in support of its refusal. The Board concludes the Contractor is not entitled to additional compensation for the weld repairs.

Ruhlin was directed by District 12 to hire KS Associates to identify the locations of the gaps and recommend a repair/replacement procedure. The District is not provided authority by the Contract to require a contractor, at its own expense, to provide a third party inspection of its work. The Board rejects the District’s reliance on C&MS Section 105.10 as it is not relevant to this case. The welds did not need to be uncovered. The District’s inspector could have observed and measured the welds. The District will reimburse Ruhlin for KS Associates’ services based on its invoice with no markups.

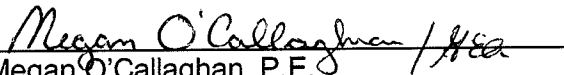
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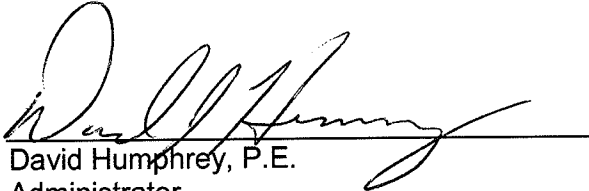
The Contractor is entitled to the cost of KS Associates' services as documented by invoice with no markups.

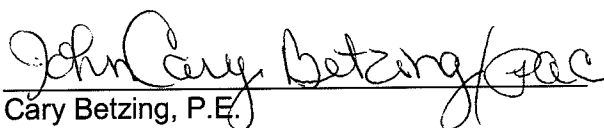
The aforementioned findings are an "offer to compromise" a claim on behalf of the Ohio Department of Transportation as that phrase is set forth in Rule 408 of the Ohio Rules of Evidence; therefore, any admission of fact herein or any statement regarding an offer to resolve the claim herein is deemed inadmissible in a subsequent legal proceeding.

This recommendation is submitted this 20th day of June, 2013.

Director's Claims Board:


Megan O'Callaghan, P.E.
Deputy Director
Division of Construction Management


David Humphrey, P.E.
Administrator
Office of Pavement Engineering


Cary Betzing, P.E.
District Construction Administrator
District 10

Approval of this recommendation:


Jerry Wray
Director, Ohio Department of Transportation

6-21-13
Date