SP-150199a
(Replaces SP-150199)

SPECIAL PROVISIONS
FOR
ARCH RIB BEARINGS

Scott County
IM-NHS-074-1(198)5--03-82

Effective Date
April 25, 2017

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150199a.01 DESCRIPTION.

A. This work consists of fabricating and installing the arch rib bearings at the arch rib-concrete interfaces with Piers 12 and 13. Furnishing, fabricating, and installing the shim plates and positioning plates at the arch rib bearings, surveying and field milling of the embedded bearing base plates, surveying arch rib segments R0 and milling arch rib segment R0 base plates, surveying the temporarily supported arch rib segments R0, and surveying arch rib segments R0 after post tensioning are included within this item.

B. All structural steel embedded in the pier concrete and post-tensioning materials are not included with this item, except that this item includes the field milling of the embedded base bearing plate. See Design No. 817.

C. Post-tensioning is not included with this item. See the Special Provisions for Post-Tensioning of Arch Rib Bearings.

150199a.02 MATERIAL.

Shim Plates and Positioning Plates shall be ASTM A 709 Grade 50W.

150199a.~~02~~ 03 SUBMITTALS.

A. General.

1. Submit detailed shop drawings, calculations, and manuals for all work related to fabrication and installation of the arch rib bearings. Provide shop drawings and calculations that are sealed by a Professional Engineer licensed in the state of Iowa. Do not commence work until the submittals have been approved.

2. All submittals are to accurately detail the actual methods, materials, equipment, etc., that will be used in the field on the project. Deviation is not permitted unless approved by the Engineer.

B. Submittals.
At a minimum, submit the following information:

1. A detailed proposed sequence of construction, including any variations from the suggested sequence provided herein.
2. Appropriate details of changes from the dimensions shown on the plans with clear and concise cross reference to the appropriate plans to which the variations apply.

~~**3.** The location of grout ports.~~

4 ~~**3.**~~ Detailed procedure for field milling of the embedded base bearing plate, including any equipment utilized and methods employed to determine the proper profile, alignment, and geometry.

5 ~~**4.**~~ Actual survey data for the top milled surface of the embedded base bearing plate. Submit this data after completion of milling, but prior to the installation of the shim plate.

6 ~~**5.**~~ If necessary, methods and equipment employed to determine the proper profile of the shim plate. Submit after Engineer's approval of the actual survey data for the top milled surface of the embedded base bearing plate.

7 ~~**6.**~~ Actual survey data for the geometric positioning of the temporarily supported Arch Rib Segment R0. Submit prior to post-tensioning.

7. Actual survey data for the geometric positioning of the post-tensioned Arch Rib Segments R0. Submit prior to grouting.

8. Detailed drawings for the positioning plates (conceptually depicted in contract drawings).

8 ~~**9.**~~ Details of any other equipment used during installation.

9 ~~**10.**~~ Any manufacturer's literature, where applicable.

C. Submittal Procedures.
Unless noted otherwise, submit the above in advance of the start of construction to allow a 30 calendar day review period. All submittals not approved and requiring resubmission shall be subject to the above review time period, with the review time beginning anew for each such submittal. Coordinate all submittals between various subordinates (contractors, suppliers, and engineers) to allow for a reasonable distribution of the review effort required by the Engineer at any given time.

150199a.~~03~~ 04 CONSTRUCTION.

A. General.

1. Perform all work in accordance with Section 2408 and as modified or appended herein.

2. ~~Supply base plates that are at least 1/4 inch over the specified thickness indicated in the plans.~~ Mill the~~se~~ base plates of arch rib segment R0 true and flat ~~to final thickness~~ after completion of all welding and nondestructive testing (NDT).

3. Mill the embedded base bearing plates in the field to attain the proper flatness, and surface finish values of the top surface of the plate to the tolerances indicated in the plans. The final elevation, as measured anywhere along the plate, shall not deviate from those provided in the plans by more than +/- 0.020 inch. The final thickness of the embedded base bearing plate shall be no less than the value provided in the plans.

4. Field apply a prime coat to the top surface of the embedded base bearing plates after milling.

5. Perform a survey of the top milled surface of the embedded base bearing plates. Do not install the shim plate until survey data is approved by the Engineer.

6. Provide shim plates with thickness tolerance of +/- 0.005 inch as measured anywhere along the surface of the plates. Each shim plate (1/2 inch nominal in contract drawings) shall be fabricated to the thickness required in order to obtain correct geometry of the arch rib bearings. In the event that shim plate thicknesses other than 1/2 inch are required to obtain correct geometry, an explanation of the required deviation shall be submitted to the engineer for review and approval.

7. In the event of any misalignment and only with the approval of the Engineer, the shim plate may be milled to the profile required to provide full contact bearing with the embedded base bearing plate.

8. Upon removal of the temporary duct covers, demonstrate to the Engineer that the ducts are free of dirt, debris, and water. If dirt, debris, or water is observed, clean the duct as directed by the Engineer.

9. Prior to post-tensioning the Alloy 2507 Duplex Stainless Steel all-thread-bars (S.S. all-thread-bars), survey the position of the Arch Rib Segment R0. Do not commence post-tensioning without approval of the Engineer.

10. After post-tensioning and prior to grouting the S.S. all-thread-bars, survey the position of the Arch Rib Segment R0. Do not commence grouting without approval of the Engineer.

B. Welding.

Ultrasonically Test (UT) (Tension Acceptance Criteria) 100% of all complete joint penetration (CJP) welds in the shim plate if the plate is constructed from more than one piece.

~~1. Perform fillet welding of round HSSs to anchor bearing plates and base plates in accordance with AWS D1.1/D1.1M Structural Welding Code – Steel. Magnetic Particle Test (MT) 100% of these fillet welds.~~

~~2. Ultrasonically Test (UT) (Tension Acceptance Criteria) 100% of all complete and partial joint penetration (CJP, PJP) welds in the arch rib bearings, including all CJP welds in the base plate if constructed from more than one plate.~~

~~3. MT 100% of all fillet welds in the arch rib bearings.~~

C. Suggested Sequence of Construction.

The suggested sequence of construction is as follows:

1. Assemble and install the arch rib anchorage assemblies. ~~See Special Provisions for Arch Rib Anchorage Assembly in Design No. 817.~~ (This step is included in the Special Provisions for Arch Rib Anchorage Assembly).

2. Survey and mill the base plate of Arch Rib Segments R0 in the shop

~~2~~ 3. Survey and ~~M~~mill the embedded base bearing plates in the field.

~~3~~ 4. Survey the top surface of the milled embedded base bearing plates.

5. Detail and fabricate the shim plates based on the survey data.

6. Field install the positioning plates on the embedded base plates.

~~4~~ 7. Remove temporary covers from post-tensioning ducts.

~~5~~ 8. Install the shim plate over the embedded base bearing plate.

~~**6.** Install the sealing rings into the holes in the shim plate.~~

~~7~~ 9. Install the Arch Rib Segment R0 over the shim plate and temporarily ~~secure in place~~ support until post tensioning operations are complete. (This step is included in the Special Provisions for Structural Steel).

~~8~~ 10. Install temporary covers over the post-tensioning ducts to protect from dirt, debris, and water until the upper portion of the S.S. all-thread-bars are installed.

~~**9.** Remove the temporary covers and insert the upper portions of the all-thread-bars into the ducts and thread the bars into the stop-type couplings in accordance with the manufacturer's recommendations.~~

~~**10.** Install the top anchor bearing plates as shown in the plans.~~

11. Perform a survey of the geometric position of the temporarily supported Arch Rib Segment R0.

~~**12.** Post-tension the all-thread-bars and grout the ducts in accordance with the Special Provisions for Post-Tensioning of Arch Rib Bearings.~~

12. Install the upper portion of the S.S. all-thread-bars and post-tension the S.S. all-thread-bars. (This step is included in the Special Provisions for Post-Tensioning of Arch Rib Bearings).

13. Perform a survey of the geometric position of the Arch Rib Segment R0 after post tensioning is complete.

14. Grout the ducts. (This step is included in the Special Provisions for Post-Tensioning of Arch Rib Bearings)

150199a.~~04~~ 05 METHOD OF MEASUREMENT.
No measurement will be made.

150199a.~~05~~ 06 BASIS OF PAYMENT.
No payment will be made. Furnishing, fabricating, and installing the shim plates and positioning plates at the arch rib bearings, surveying and field milling of the embedded bearing base plates, surveying arch rib segments R0 and milling arch rib segment R0 base plates, surveying the temporarily supported arch rib segments R0, and surveying arch rib segments R0 after post tensioning are included within the arch rib bearing item. Arch rib bearings will be considered incidental to the various structural steel and post-tensioning items included in this work.