

## Product Evaluation

Product ID: 8090-2-4-7  
Initiation Date: June 15, 2000  
Revision Date: April 11, 2018

**RE: Review of ARSA MP152S and ARSA MP152  
Structural Plate Corrugated Steel Pipe (SPCSP)**

### **PRODUCT**

The ARSA MP152S and MP152 is a galvanized structural plate, which is fabricated by SIDERAR in ARGENTINA and will be distributed by FSI Culvert Inc. located in Alberta.

## **VENDOR CLAIMS AND INFORMATION**

### **CLAIMS**

#### ARSA MP152S

Standard large span bolted multiple plates.

- Standard shapes: ellipses, high profile arches, low profile arches and pear shapes.
- Design Purposes: for long span structures, bridges, tunnels, pedestrian and vehicle underpasses.
- Corrugation Profile is 152 mm x 50 mm (the corrugation profile does conform to the CSA Standard for Structural Plate CSP).

#### ARSA MP152

Standard wide span bolted multiple plates.

- Standard shapes: round, pipe arch and arch.
- Design Purposes: for long span structures, bridges, tunnels, pedestrian and vehicle underpasses.
- Corrugation Profile is 152 mm x 50 mm (the corrugation profile does conform to the CSA Standard for Structural Plate CSP).

### **HISTORY**

Aceros Revestidos S.A. (ARSA) is a division of Techint Group Argentina which manufactures and sells galvanized and corrugated steel plate structures, such as corrugated steel culverts and long wide span structures. The company is ISO9002 certified.

ARSA has been in the corrugated steel plate structure business for more than 50 years. Their products are manufactured to International standards (AASHTO).

### **POTENTIAL USAGE**

The most common culvert material type for structural plate is galvanized SPCSP which has performed very well in non-aggressive environments. MP152S and 152 SPCSP is expected to perform very well in the proper environment.

Galvanized steel pipe generally performs well when the pH of the soil immediately adjacent to the pipe and the pH of the flow which the pipe will carry are between 6 and 10 and when the electrical resistivity is greater than 3000 ohm-cm.

### **STANDARDS**

AASHTO M167      Corrugated Steel Structural Plate, Zinc Coated, for Field Bolted Pipe, Pipe-Arches and Arches.

## ALBERTA TRANSPORTATION COMMENTS

### CONCERNS

CSA G401, Section 3.1.5.1 Structural Plate, indicates a higher minimum yield strength (195 MPa) than AASHTO M167, Section 5.1.3 Mechanical Requirements, Table 2 (190 MPa). What is the typical yield strength of the ARSA Structural Plate Corrugated Steel Pipe Product?

### ADDITIONAL TECHNICAL INFORMATION REQUIRED FROM PROPONENT

Culverts with a diameter equal to or greater than 1.5 meters are classified as bridge size structures, and as such must be designed, fabricated and constructed in accordance with all the requirements of the "Engineering Consultant Guidelines for Highway and Bridges – Volumes 1 & 2", and the codes and documents references contained within the manuals.

Suppliers of new culvert materials should be familiar with the design and fabrication processes contained within the manuals that are applicable to their product. They should also ensure that all technical information, design parameters, materials data etc for their product that are necessary to meet the design requirements of the manuals are available to the hydrotechnical, structural, fabrication, and construction engineers upon request.

FSI Culvert Inc. needs to ensure that the MP152S and 152 products meet the intent of the requirements of Section 18 of the Bridge Construction Specification of CSP and SPCSP Structures and complies with all requirements of CSA Standard G401 for Corrugated Steel Pipe Products.

Bolting configuration: A joint research project between Alberta Transportation (AT), and the University of Alberta (U of A) carried out in 1987 proved conclusively that the ductile performance of the longitudinal seams of SPCSP's could be significantly improved depending on how they were lapped. Based on the findings of the U of A report AT's current standard is to only allow two-bolt configurations for longitudinal seams, and that the seams be lapped in accordance with the recommendations of the report i.e. that the bolts in the valleys are closest to the visible edge.

If a supplier wishes to deviate from AT's current two-bolt standard, then it is their responsibility to provide satisfactory proof to AT that the system of bolting proposed will provide equal or superior performance to the current standard in terms of ductility and strength. (Copies of the 1987 U of A report are available upon request).

### RECOMMENDATIONS

ARSA MP152S and ARSA MP152 Structural Plate Corrugated Steel Pipe (SPCSP) be accepted as a Proven Product based on its field performance.

### TRIAL PROJECTS

Bridge File:

6642 (installation date: July, 2001) Contact Name: Ralph Witten  
77612 (installation date: July, 2001) Contact Name: Ralph Witten

Joe Filice

cc New Product Evaluation Standing Committee - Terry Willis  
Clive Clarke/ Abdul Waheed

JF/nv