

## Product Evaluation

### RE: Review of “ULTRA-COR” Structural Plate Culvert

#### **PRODUCT**

ULTRA-COR is a Galvanized Deep Corrugated Structural Plate Arch Pipe that is fabricated by Atlantic Industries Limited located Dorchester New Brunswick.

#### **VENDOR CLAIMS AND INFORMATION**

##### **CLAIMS**

With the introduction of ULTRA-COR, Atlantic Industries Limited is taking engineered structural plate to new dimensions in capability and performance. ULTRA-COR as the worlds deepest corrugation profile, combines all the advantages of lightweight construction with previously unheard of strength and durability. ULTRA-COR’s deep corrugation will allow it to reach greater spans and withstand the heaviest of loads. Product web link: <http://www.ail.ca/en/home/default.aspx>

##### **DESCRIPTION**

ULTRA-COR is a deep corrugation profile developed for use in arch and box culvert applications.

ULTRA-COR corrugation profile is 500mm pitch and 237 mm depth.

ULTRA-COR is also available with Best-Kote Polymer coating.

##### **POTENTIAL USAGE**

ULTRA-COR intended purpose is for corrugated metal arch and box culverts.

ULTRA-COR is currently being used as a service road overpass on the Trans-Canada highway in Newfoundland.

##### **STANDARDS**

CAN/CSA-S6 – a design method including material and manufacturing requirements has been incorporated in the 3<sup>rd</sup> supplement of the 2006 Canadian Highway Bridge Design Code. It has passed public review and is in the proceeding through final edits.

ASTM A761 – A material specification has been passed by the subcommittee and is scheduled for voting at the main committee in November 2012.

Atlantic Industries can provide confidential proprietary testing information.

#### **ALBERTA TRANSPORTATION COMMENTS**

##### **ADDITIONAL TECHNICAL REQUIREMENTS**

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.

Atlantic Industries shall ensure that the Bridge Plate product meets the requirements of Section 18 of the Bridge Construction Specification of CSP and SPCSP Structures (i.e. fabrication, inspection, sampling and testing, handling and shipping requirements).

**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).

#### **EXPERIENCE**

Alberta transportation has no experience with this product.

#### **RECOMMENDATIONS**

ULTRA-COR be listed as a Potential Product under Alberta Transportation Products List, Culvert – Structural Plate Corrugated Metal Pipe – Proprietary, based on the information provided. Final acceptance as a proven product will be based on field performance.

### **TRIAL PROJECTS**

Joe Filice

cc New Product Evaluation Standing Committee – Roger Skirrow  
Clayton Matwychuk  
Dave Besuyen