

Structural Plate

Tim Miller – Contech Engineered
Solutions

32nd Annual North Central Local Roads Conference
Rapid City, SD - October 18-19, 2017



Structural Plate

85 years of use in critical highway applications



Structural Plate Material

MULTIPLATE | SUPERSPAN
BRIDGECOR



STEEL



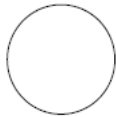
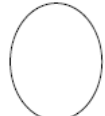
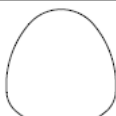

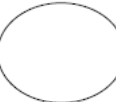



ALUMINUM STRUCTURAL PLATE
ALUMINUM BOX CULVERT



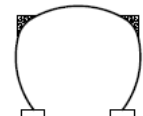
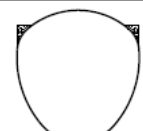





ALUMINUM



Structural Plate Shapes

Shapes		Sizes=Span x Rise
Round		5' to 50'-6"
Vertical Ellipse		4'-8" x 5'-2" to 25' x 27'-8"
Underpass		12'-2" x 11'-0" to 20'-4" x 17'-9"
Pipe-Arch		6'-1" x 4'-7" to 20'-7" x 13'-2"
Horizontal Ellipse		7'-4" x 5'-6" to 14'-11" x 11'-2"
Arch (single radius)		6' x 1'-10" to 54'-4" x 27'-2"
Arch (2-radius)		18'-5" x 8'-4" to 50'-7" x 19'-11"
Low-Profile Arch*		19'-5" x 6'-9" to 45'-0" x 18'-8"

High-Profile *		20'-1" x 9'-1" to 35'-4" x 20'-0"
Horizontal Ellipse		19'-4" x 12'-9" to 37'-2" x 22'-2"
Pear- Arch		23'-11" x 23'-4" to 30'-4" x 25'-10"
Pear		23'-8" x 25'-5" to 29'-11" x 31'-3"
Box Culvert		8'-9" x 2'-6" to 35'-3" x 13'-7"
Elliptical/Circular Arch **		12' to 102'
H-20 Bridge ** Pedestrian **		spans up to 300' spans up to 300'

Durability - Galvanizing Steel PLATE

Galvanized Steel MULTI-PLATE requires a pH between 6 – 10 and resistivity between 2000 – 8000 ohm-cm for a minimum 50 year design life.



Durability - Aluminum Alloy

5052 Aluminum Alloy Structural Plate requires a pH between 4 – 9 and resistivity above 500 ohm-cm for a minimum 75 year design life with clean granular backfill material.



NCSPA Website Design Life Calculator

<https://ncspa.org/>

Information to Enter

- Life Expectancy
- PH and Resistivity
- Open Bottom Structure
 - Asphalt Coating
- Concrete paved invert



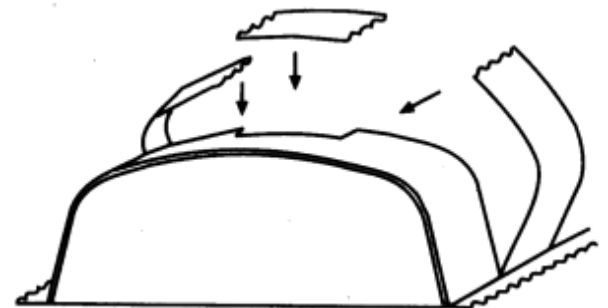
Freight Economy



Multiplate Installation



Aluminum Installation



Preassembly In Shop or Out of Stream



Backfill with aggregate to proper density

Backfill with clean aggregate to proper density.

AASHTO A-1, A-2-4, A-2-5, A-3 aggregate.

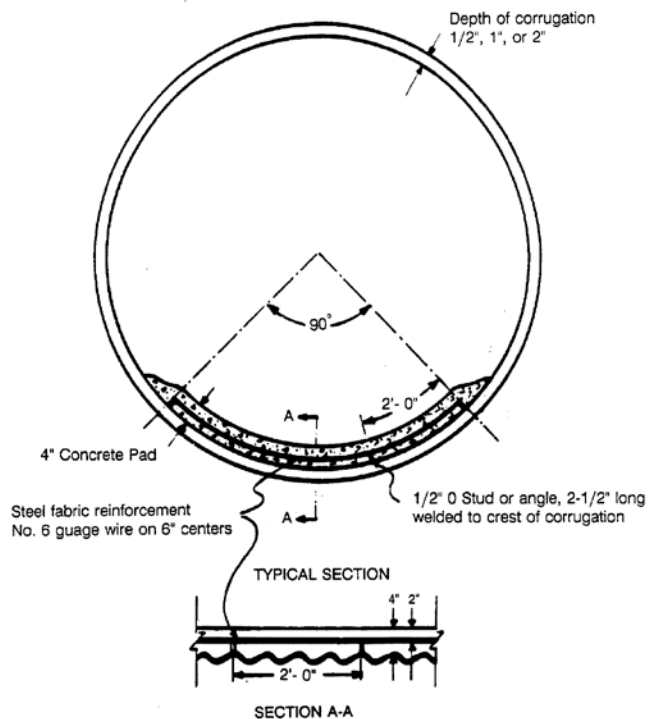
Compact symmetrically on each side. 8" – 10" loose lifts compacted to a minimum 90% density per AASHTO T180.



Plate Extensions



Invert Paving





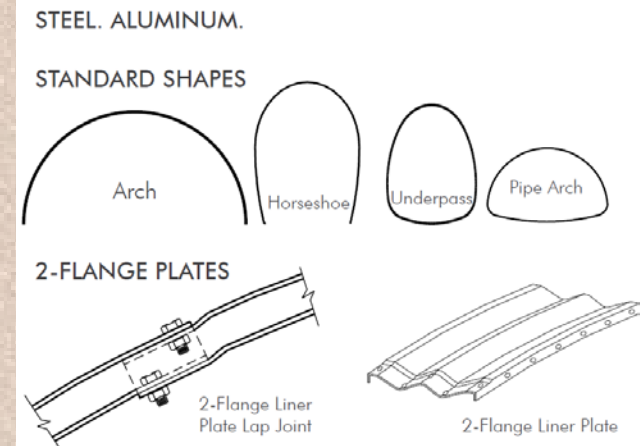
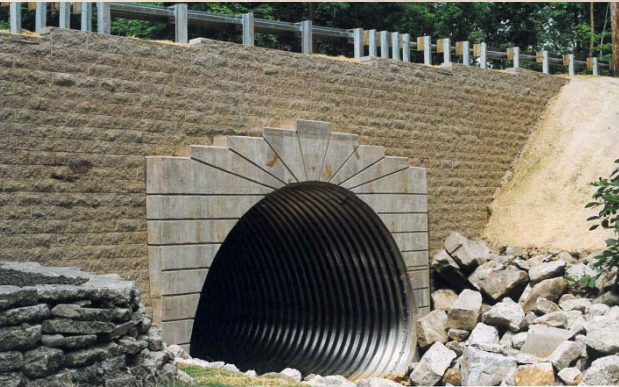
Bid Alternates - Bridge or Culvert



Bid Alternates



Reline, Rehab, Liner Plate



PLATE

PRECAST

TUNNEL LINER PLATE

Bridge Reline



Bridge Reline



Plate Strength 120' cover



Buried Bridge



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