KCHA
SPRING CONFERENCE
DODGE CITY, KS

May 6, 2014

ALUMINUM BOX CULVERTS

143 STRUCTURES

9 TO 35 FOOT SPANS

DURABILITY

100 Years +

STRUCTURAL CAPACITY

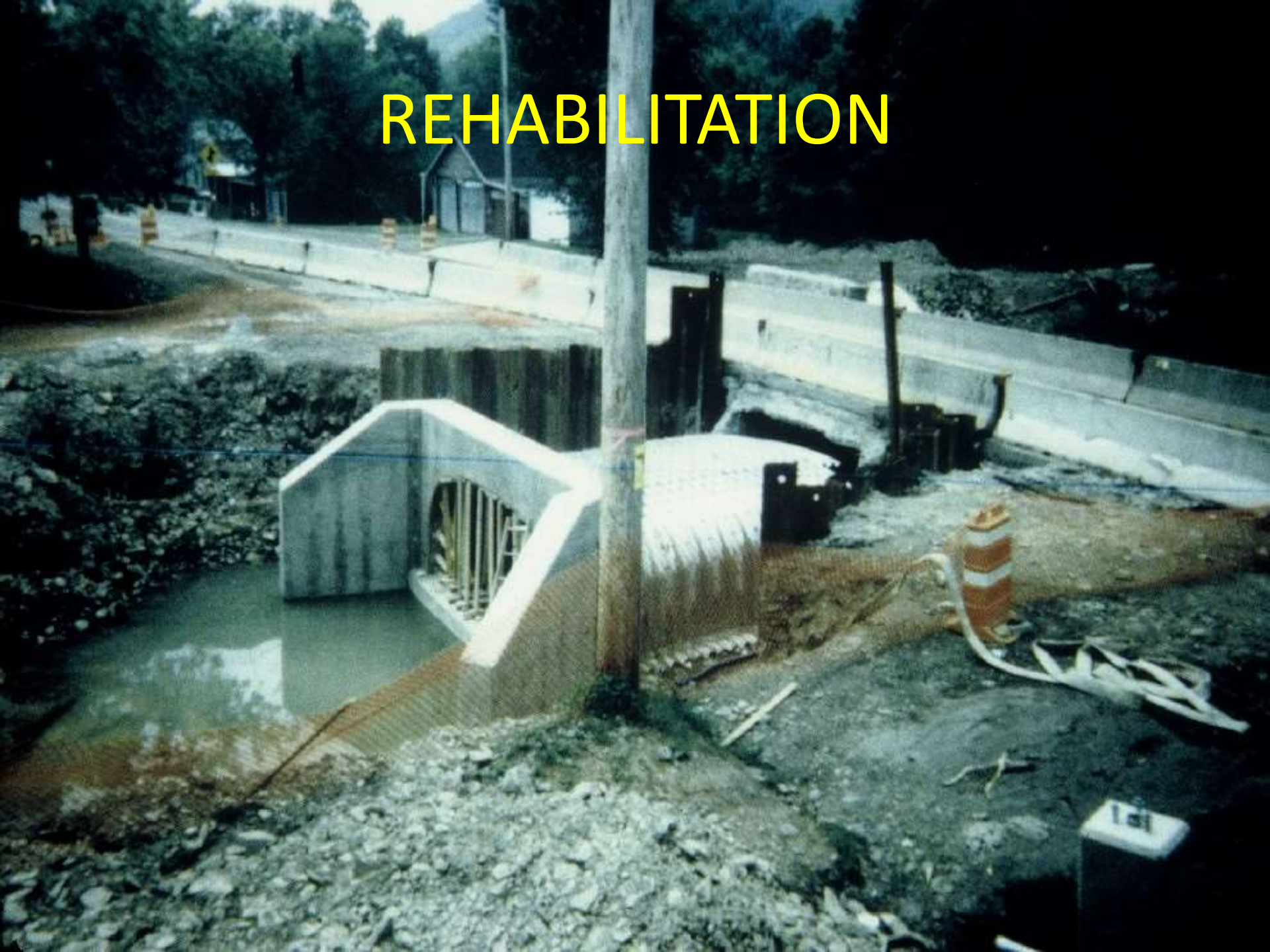
- STANDARD AASHTO DESIGNS AVAILABLE FOR:
- HS-20
- HS-25
- HL-93
- LOAD RATINGS ARE AVAILABLE
- STANDARD COVER HEIGHTS OF 1.4’ – 5.0’

INSTALLATION OPTIONS


G90E LC
JOHN DEERE

PRE-ERECTED ALBC on FOOTINGS
PRECAST OR CAST IN PLACE


END TREATMENT


REHABILITATION

Aluminum Box Culvert w/ full invert
Assembly Photos

Start by laying out corrugated invert. For larger sizes with two piece inverts, hold plates vertical for easier assembly.

Invert Assembly

After sorting and positioning, invert plates are bolted together.

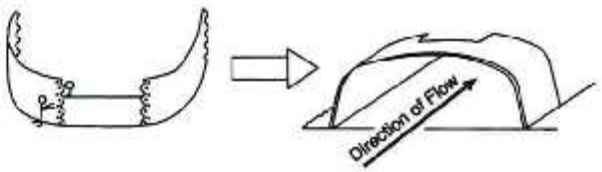
Invert Assembly

Add supplement plates (for larger sizes), and bolt supplement plate and base channel to invert.

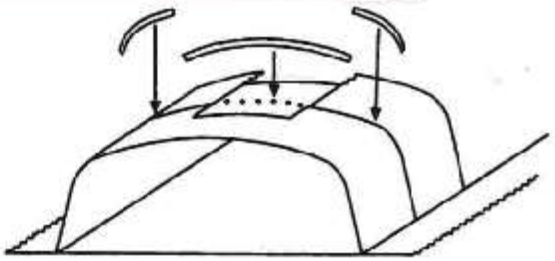
Completed Invert

Start Shell assembly at downstream end of structure

Assembly first section on side prior to putting in channels. Note staggered seam of plates for strength.



Add crown and haunch reinforcement ribs.



Rib Attachment

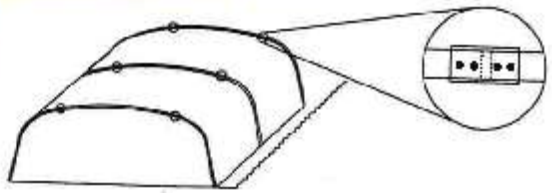
Rib Attachment

More plates and ribs are added.

Rib attachment

Shell is complete and reinforcing rib attachment starts to catch up.

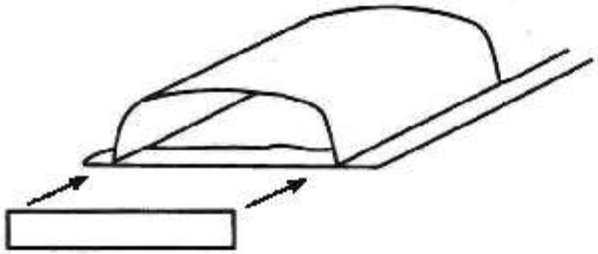
Bolt supplement rib to crown rib and haunch rib to transfer load throughout structure.



Bolt Tightening

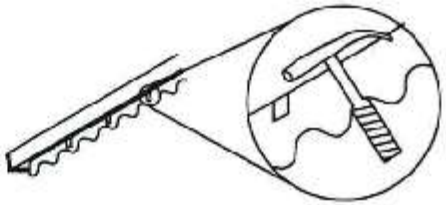
Up to this point, the structure has been “loose bolted” to ease assembly. Now all bolts are tightened to design torque.

Attach aluminum toe wall



Assembled Aluminum Box Culvert Ready to receive Base Wall

Attach scallop plate and geotextile fabric prior to backfilling.



Aluminum Box Culvert Headwall and Wing Wall Installation

Attaching Base wall to Structure

Make sure the flat side of the rib is facing the inside of the structure.

Attaching base wall one piece at a time.

Alternate method. Preassemble prior to attaching to culvert.

Holes must be drilled in both the rib and headwall at the project site. Every second or third corrugation should be sufficient. It is important the contractor use a machining lubricant to help drill through the thick ribs.

Base wall with knuckle joint attached and ready to receive wing walls.

Attaching preassembled wing wall (this example, four wing panels wide) to base wall.

Leveling Wing Wall with Base Wall. Note 2” X 4” board to cushion hoe bucket.

Aluminum Elbow Cap

This is welded at our plant to the angle of the wing wall indicated on the order.

Base wall dead man are attached to the structure ribs.

Drilling back side of headwall cap.

Setting Wing Wall Dead Man Anchors

Wing Wall Whale Beam.

Note the threaded washer which locks in the anchor rod inside the whale beam. Also note the nut on the back side of the wing wall.

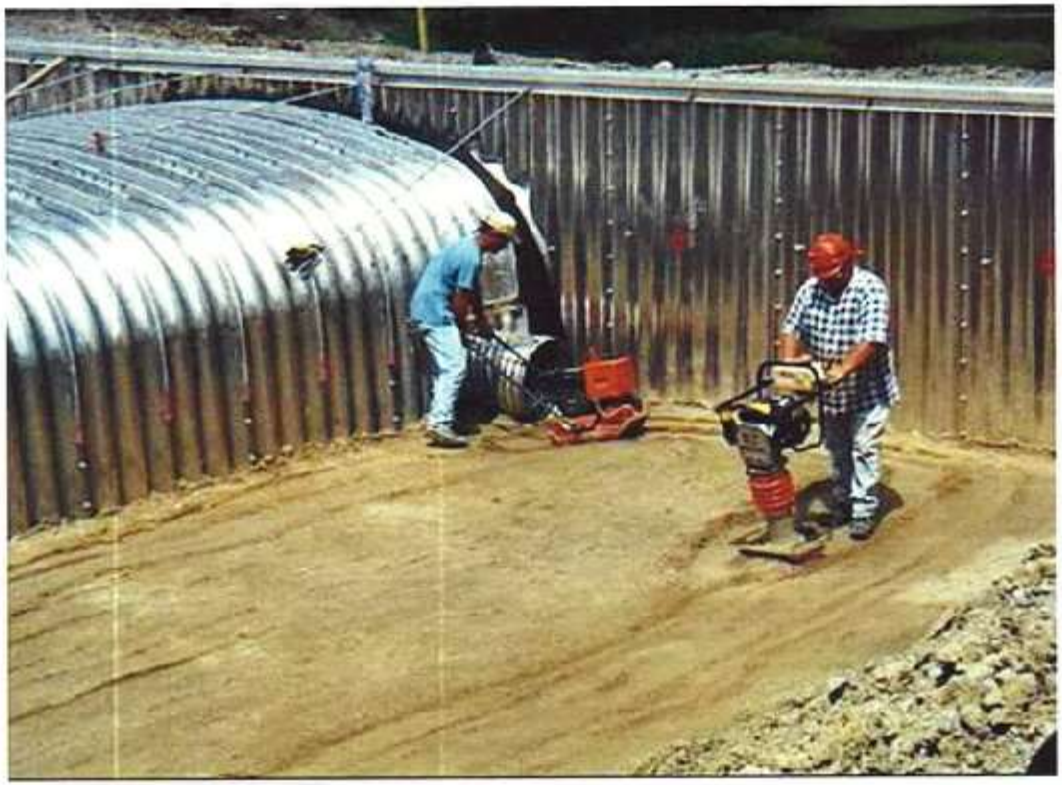
Tensioning the Dead Man Anchors

Filter Fabric placed between Base wall and Aluminum Box Culvert.

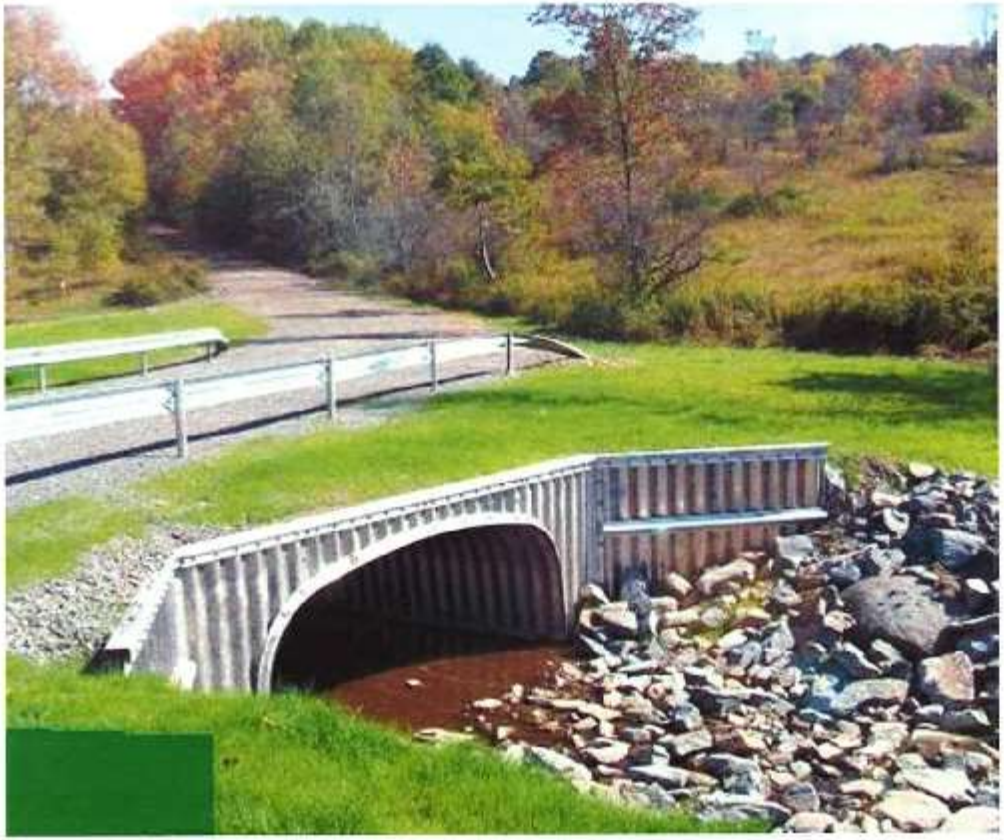
Head wall System ready for Backfill

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" loose lifts compacted to a minimum 90% density per AASHTO T180.

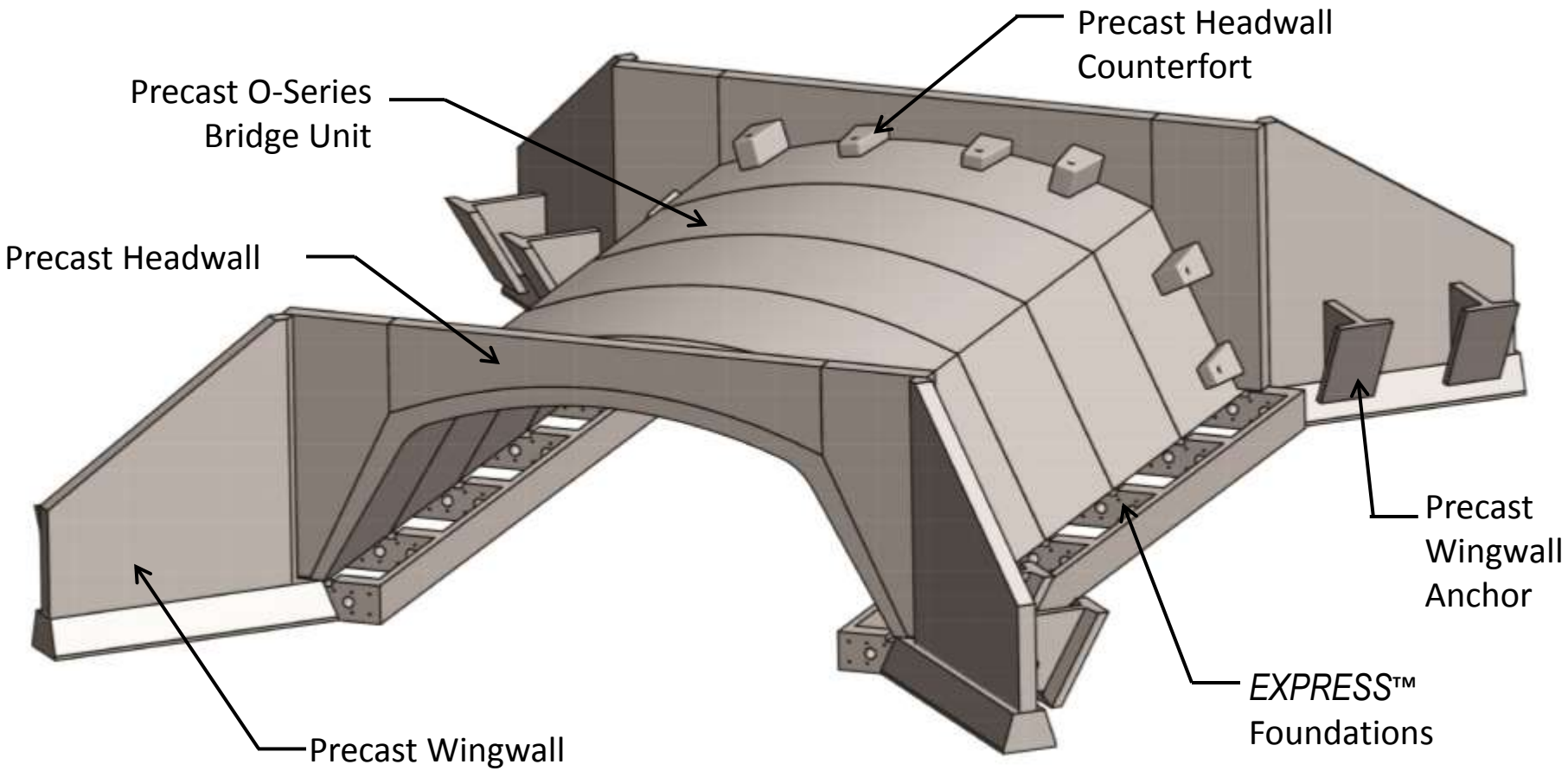


Finished Installation of Aluminum Box Culvert



OTHER CONTECH BRIDGE OPTIONS

CON SPAN O-SERIES



OFFERING KANSAS COUNTIES OPTIMUM VERSATILITY IN BRIDGE REPLACEMENT

CONTECH ENGINEERED SOLUTIONS
AND WELBORN SALES