

## Tricon Precast, Ltd.

# *Redi-Span™ Arch Bridge System*

## Installation Instructions

### Safety Considerations

Safety should always be a primary concern while handling the Redi-Span™ Arch Bridge System. Always double check rigging connections, tag lines, and rigging devices thoroughly before lifting units. If there is every any doubt regarding the integrity of the rigging or lifting devices, please notify Tricon Precast, Ltd. immediately.

### Site Conditions

Site conditions should be considered when planning an installation of the Redi-Span™ Arch Bridge System. A site that is accessible, away from traffic, open, and if all possible, dry and compacted is an ideal condition. If conditions are not ideal, please contact Tricon Precast, Ltd. so that we can assist with planning. Erecting units is not recommended during a rainfall event.

### Foundation / Footings

Bridge footings may be either cast-in-place or precast. The footings should be constructed according to the approved shop drawings for the project specified. Please note the following for proper construction of the footings:

- Grade and Elevation – Grades and Elevations shall be set according to the approved shop drawings for the project specified.
- Forming – Construct forms in a rigid fashion to eliminate movement during placement of concrete. Forms must maintain a tolerance of no more than ¼ inch in 10 feet.
- Concrete – Concrete shall have a minimum compressive strength of 2,000 psi before placement of the bridge elements.
- Keyways – Keyways shall be constructed according to the approved shop drawings for the project specified. Please pay close attention to the width and depth of the keyway.
- Finish – The footings shall receive a smooth float finish and not vary more than ¼ inch in 10 feet.

## Installation

- Arch Bridge Elements
  - Lifting and Rotation – Elements are usually shipped on their sides. There are four lifting inserts located in the edge of the unit and four lifting inserts located in the roof of the unit. Attach the lifting devices and the rigging to the edge of the unit to remove from truck. Once the unit is set on the ground, remove the lifting devices and rigging from the inserts in the edge and attach them to the four inserts located on the roof. Rigging cables should be run thru two roller blocks to rotate. As the unit is being lifted, the cables will roll thru the roller block to allow the unit to rotate. Once the unit has been rotated in the upright position, affix two tag lines to assist in guiding and setting.
  - Grouting, Setting, Shimming – As units are being guided into place, pour a non-shrink grout into the keyways. Pour only enough grout to accommodate the lay length of that particular unit. Set the unit (according to the shop drawings) into the keyways. Check the true line and grade. If necessary, place plastic shims between the bottom of the unit and the keyway to accommodate line, plumb, and grade. Maintain a joint between units no less than  $\frac{1}{4}$  inch and no more than  $\frac{1}{2}$  inch.
  - $\frac{1}{2}$  Inch Strand – Some units are shipped with a  $\frac{1}{2}$ " strand that extends from one leg to the other. The purpose of this cable is to ensure the legs will not move out during installation. **DO NOT CUT THE STRAND UNTIL THE GROUT IN THE KEYWAY HAS SET UP AND CURED.** Cutting the strand before the grout has set up could cause the legs on the unit to slide outward and crack, affecting the structural integrity.
  - Connections – If required, connect units according to the approved shop drawings for the project specified.
  - Joint Treatment – Fill all joints with an approved Mastic Joint Sealer, primer, and a wrap of no less than 12 inches wide. If a lap is required, maintain at least 6 inches of overlap. Cover all recessed holes used for lifting as well. Follow manufactures recommendations when applying sealer and wrap.
- Headwall Elements
  - Lifting – Elements are usually shipped face down. Attach all rigging and lifting devices to the lifting inserts located in the back of the unit to unload. Once the unit is unloaded and placed on the ground, unhook lifting devices from the inserts in the back of the unit and hook them into the lifting devices that are located in the top of the unit. There are usually two for each unit.

- Connection – Screw in the ¾ inch all-thread into the two inserts located at the center of the crown. Slide the tapered alignment plugs over the all-thread. These will be used to assist in the alignment of the units. Set the unit on the alignment plug, ensuring all other holes line up properly. Once set and aligned, screw in the 1 ¼ inch coil rod into the roof of the Redi-Span Unit. Place the flat washer over the coil rod. Place two nuts on each coil rod and tighten. Once alignment, plumb, and level is checked, fill the pipes with grout.
- Joint Treatment – Fill all joints with an approved Mastic Joint Sealer, primer, and a wrap of no less than 12 inches wide. If a lap is required, maintain at least 6 inches of overlap. Cover all recessed holes used for lifting as well. Follow manufactures recommendations when applying sealer and wrap.
- Wingwall Elements utilizing Tricon’s ***Retained Soil Wall System™***
  - Please consult the Construction Manual for installation of the wingwalls utilizing Tricon’s ***Retained Soil Wall System™***.
  - Wingwalls shall be constructed by approved shop drawings for the project specified.

**Backfill**

- Backfill should be placed according to contract documents specified for the project.
- A minimum of 1 foot of backfill must be placed on top of the structure before any compaction equipment is allowed on the structure, unless otherwise approved by the engineer.
- At no time shall equipment operating over design loads be permitted on the bridge units.
- Pay close attention to operating compaction equipment too close to the wing walls or headwalls. A minimum distance of 4 feet is recommended. Use smaller compaction equipment in these areas. (Walk Behind Compactor)

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