SEQUENCE OF INSTALLATION

1. Contour the eroded bank and prepare for delivery of A-Jacks. Two halves of each A-Jacks arrive on pallets. A large lift truck or backhoe with forks is necessary to unload the pallets and transport them to the installation site.

2. Streambed material is excavated out of a shallow trench at the toe of the eroding bank with a track hoe. The base elevation of the trench should be well below the elevation of the streambed, preferably with the tops of the A-Jacks on the first layer at the existing bed level of the stream.

3. A-Jacks are assembled by sliding one half into another to form a complete unit. Rows of A-Jacks are assembled to interlock in horizontal as well as vertical directions. Embankments may require as many as three rows of A-Jacks at the toe.

4. Sediment from the toe trench is placed into rows of A-Jacks by the excavator. The vertical streambank is sloped down over the A-Jacks and compacted with the face of the bucket.

5. Both rooted stock and cuttings are planted between A-Jacks and extended into the water table. Additional cuttings, rooted stock, and grasses are placed behind the A-Jacks along the earth bank.

6. Placing A-Jacks in modules allows for faster placement by the contractor. It also allows the A-Jacks to be placed effectively in underwater scour applications and on larger projects where it is necessary to place the A-Jacks in stacks.
Streambank erosion often produces steep banks with little or no vegetation. These unprotected banks are even more susceptible to erosion due to over steepening, loss of ground cover, groundwater discharge, and stream erosion at the base of the bank. The cost of stabilization may be quite high using conventional hard methods, particularly for high banks. A-Jacks concrete armor units provide an alternative which, when used with biostabilization techniques, develops a cost-effective solution.

A-Jacks are high stability concrete armor units designed to interlock into a flexible, highly permeable matrix. A-Jacks can be installed either individually or in modules. The interstices formed within the A-Jacks matrix provide approximately 40% void space in the uniform placement pattern. The voids provide habitat for fish and other marine life when applied as a reef, revetment or as a salt support system in river applications. Whether or not A-Jacks are applied as a revetment on riverbanks or lake shores, the voids may be backfilled with suitable soils and planted with a variety of vegetation including grasses, shrubs and trees above the normal base flow.

**STREAMBANK APPLICATION**

**A-JACKS AT WORK**

- **BEALES SCOUGH**
  - Eroded Bank Pre-Construction
  - Construction
  - 3 Years Later

- **QU’APPPELLE RIVER, SASKATCHEWAN**
  - Energy Dissipation
  - Energy Dissipation on an Outfall
  - Flood Event
  - 2 Years Later

- **BOW RIVER, ALBERTA**
  - Flood Event
  - Installation
  - 3 Years Later

- **SHEKAK RIVER, ONTARIO**
  - Spring Flood Event
  - 2 Years Later

**ENERGY DISSIPATION AND BRIDGE SCOUR APPLICATION**

The ability of the A-Jacks system to dissipate energy and resist the erosive forces of flowing water allows this system to protect channel boundaries from scour and erosion. Extensive laboratory research was performed on both model and full scale units in order to evaluate the hydraulic properties of the A-Jacks units. Field tests confirmed that the A-Jacks system provides a flexible, nonerodible barrier between the channel subgrade and the potentially damaging flow of water. An A-Jacks Design Manual for the hydraulic design of open-channel conveyance ways and pier scour countermeasures is available upon request.

**FIELD AND LAB TESTING**

- **Localized Pier Scour**
  - Energy Dissipation
  - In the hydraulic testing laboratory, vortices produced by flowing water removed bed material from around the base of the pier.

- **Pier Scour Countermeasures**
  - A-Jacks effectively resisted the high-velocity flows and protected the pier from local scour by reducing the rate of sediment transport.

**A-JACKS UNIT SPECIFICATIONS**

<table>
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<th>A-JACKS UNIT</th>
<th>LENGTH L (INCHES)</th>
<th>ARM THICKNESS T (INCHES)</th>
<th>FILLET LENGTH C (INCHES)</th>
<th>VOLUME FT³</th>
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*Estimated Concrete Density - 140 PCF*

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