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# **AMERON REINFORCED CONCRETE CYLINDER PIPE**



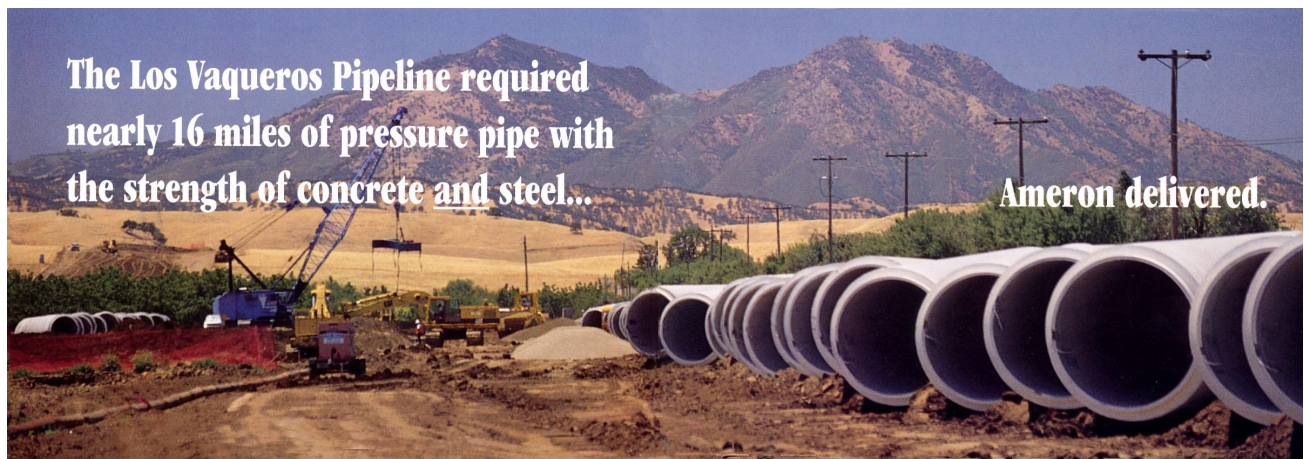
# A HISTORY OF SUCCESSFUL PERFORMANCE

Since before the 1920's, most of the concrete pressure pipe in the U.S. was reinforced concrete cylinder pipe (RCCP). As the names would indicate, the construction of this pipe uses mild steel reinforcement that is cast into the concrete wall of the pipe. New installations of reinforced concrete cylinder pipe have been completed for various applications such as water transmission, sewer force mains, inverted siphons, subaqueous pipelines and liners for pressure tunnels. Recently RCCP has been specified for cooling water pipelines at power plants.

**Design basis:** Design of reinforced concrete cylinder pipe is covered by Chapter 7 of the AWWA M9 Manual. The design procedure addresses external loads and internal pressures individually and in combinations. AWWA C300 limits the reinforcing steel furnished in the cage(s) to no less than 40 percent of the total reinforcing steel in the pipe. The maximum loads and pressures for this type of pipe depend on the the pipe diameter, wall thickness and strength limitations of the concrete and steel.



Installing 84" RCCP for a power plant cooling water pipeline



Ameron's 78-, 90- and 96-inch Reinforced Concrete Cylinder Pipe for the Los Vaqueros Reservoir



# AMERON'S RCCP MEETS THE AWWA STANDARDS

**Manufacturing:** Manufacture of reinforced concrete cylinder pipe begins with a hydrostatically tested steel cylinder and attached steel joint rings. The cylinder assembly and one or more reinforcing cages are positioned between inside and outside forms, and the concrete is placed by vertical casting. Steam or water is used to cure the concrete.

**Size range:** Reinforced concrete cylinder pipe is manufactured in diameters of 30-144 in., with larger sizes limited only by the restrictions of transportation to the job site. Standard lengths are in the 8-24 ft range.

**Joints:** The standard joint for reinforced cylinder pipe, as shown in Fig. 2, consists of steel spigot and bell rings and a rubber gasket. The external joint recess is grouted in the field after installation.

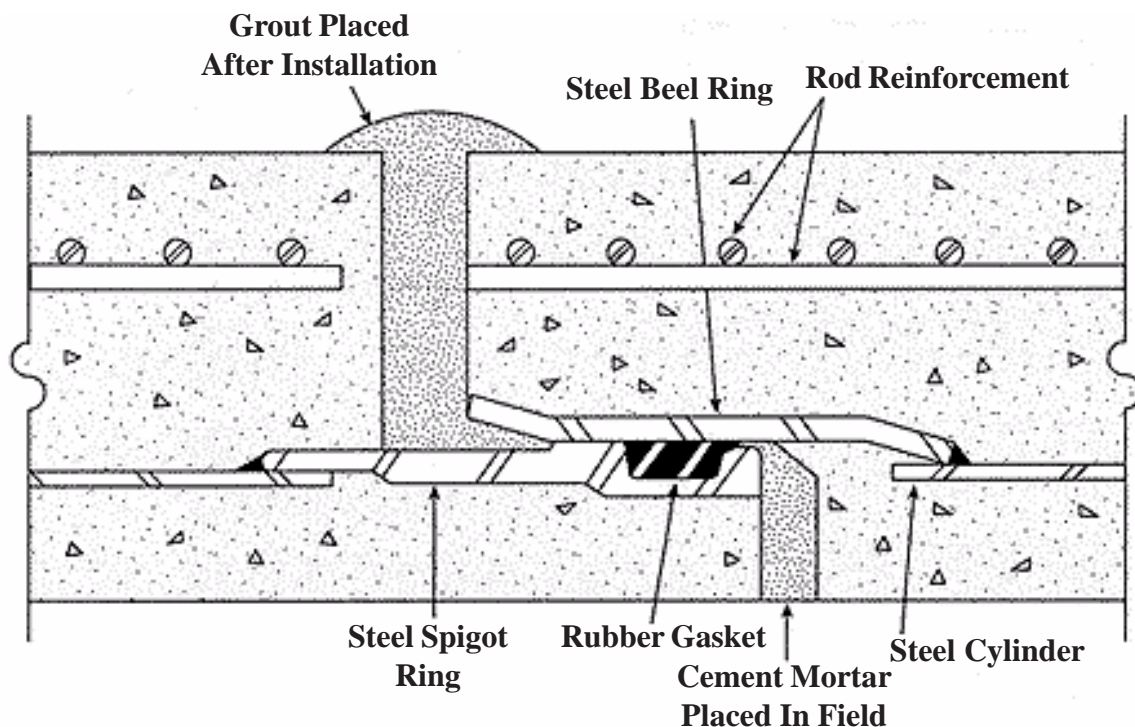


Fig. 2: Reinforced Concrete Cylinder Pipe

# PRODUCT FEATURES

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## **Specifications:**

American Water Works Association Standard C300; AWWA Manual M9

## **Applications:**

Water transmission, cooling water systems, sewer force mains, inverted siphons, subaqueous pipelines, liners for pressure tunnels

## **Pressure Classes:**

To 500 psi; external loads as required, including high cover

## **Diameter Range:**

30 through 144 inches

## **Laying Lengths:**

8 through 24 feet



Triple 144" RCCP Assembly ready to be launched into water



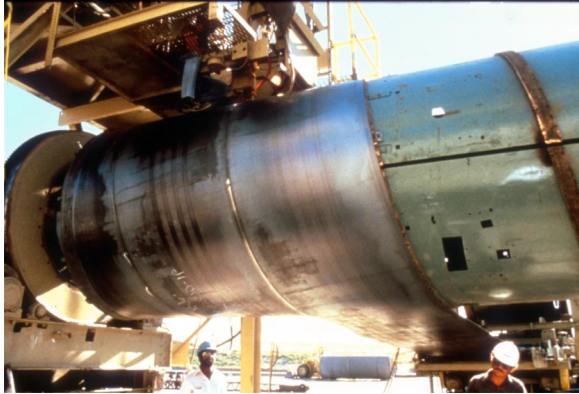
144" RCCP Assembly Pulled by a Tug to the Laying Barge



Using 108-inch-diameter RCCP for jacking application of the Interstate 8 crossing in San Diego

# MANUFACTURING PROCESS

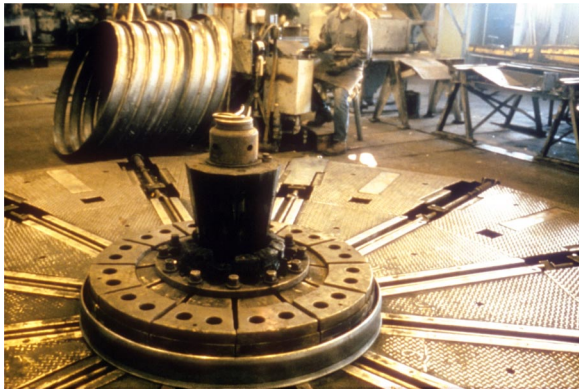
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**Cylinder Fabrication on the Drum Cylinder**



**Automatic Reinforcing Cage Fabrication Machine for RCCP**



**Sizing steel joint rings**



**Casting and curing the concrete cores**



**Preparing RCCP for shipment to jobsite**



# DOUBLE GASKET SPIGOT JOINT

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The reliability and durability of our standard, single, rubber-gasket joints have been proven for more than 50 years. However, in special applications, Ameron's double-gasket spigot pipe (see *Figure 3* below) can be specified and used for the following:

- Field testing a field joint prior to laying the next pipe section
- Field testing the pipe joints after the completion of the backfill
- In areas where water is not readily available for field hydrostatic testing of the completed pipeline
- For subaqueous installations
- For pipe installations in or near seismically active areas
- In high-fill areas with the possibility of long-term settlement
- In areas where the added protection of an additional gasket is desired

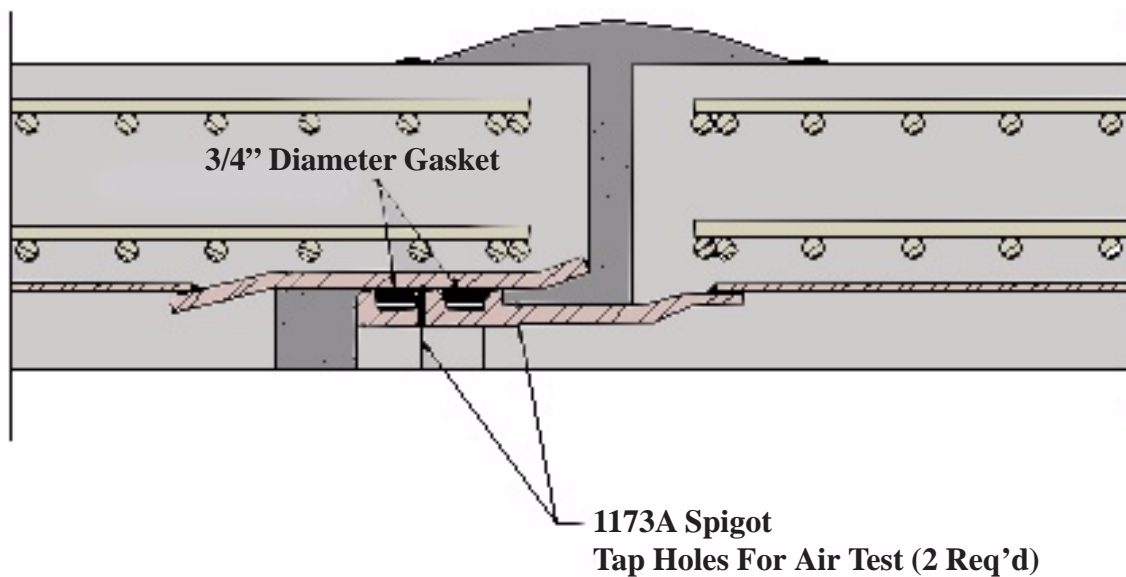


Figure 3: Double Gasket Spigot Joint

# AMERON'S OBJECTIVES

We believe the growth of our businesses will be based on how well we identify customer needs and satisfy them over the long term with products and services of superior value.

We also believe that satisfied, repeat customers are the lifeblood of any successful business and must be nurtured and cared for in the most professional and courteous manner

Our customers should expect and receive:

- *Strong commitment from us to the markets we serve.*
- *Products and services of consistently superior value.*
- *Professional and dedicated technical services provided promptly where needed.*
- *Well-trained, knowledgeable and motivated direct sales people and representatives.*
- *Professionally prepared, well-documented sales proposals, product literature, technical data and other support materials.*
- *Fast, courteous response in any transaction.*
- *Consistent, on-time delivery of products and*

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