

DENVER BOARD OF WATER COMMISSIONERS

Meeting Date: February 13, 2013

Board Item: V-A-10

**Agreement with Pure Technologies for  
Conduit No. 94 Electromagnetic Inspection  
Agreement 14800A**

Action by Consent       Action       Information

On February 1, 2013, a proposal was received for the Conduit No. 94 (C94) Electromagnetic (EM) Inspection. C94 is an approximately 15.8 mile-long conduit that carries water from the Moffat Treatment Plant to the 56th Avenue Pump Station and Reservoir. This 60-, 66-, and 72-inch conduit was constructed in the mid-1970s using prestressed concrete cylinder pipe (PCCP) for 10.5 miles of the conduit. Unfortunately, the C94 PCCP was manufactured in an era when manufacturer's used high tensile strength wire (ASTM A 648-73 Class IV) which is known around the country to break and cause premature pipe failures (see Figure 1).

To date, C94 has failed at two locations, one near 56th Avenue and Delaware Street in May 1997, and the other near 56th Avenue and Interstate-25 in February 2008. Wire breaks were the cause of the 1997 failure while a pressure surge event caused the steel pipe failure in 2008.

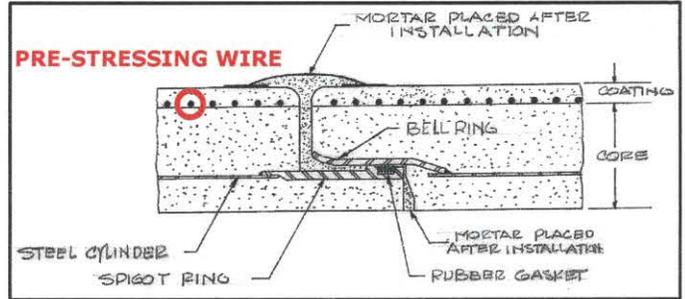


Figure 1 – Typical PCCP Joint

Currently, 2.0 miles of the original 10.5 miles of C94 PCCP have been replaced with steel pipe. Denver Water (DW) proactively monitors the remaining 8.5 miles of PCCP. In 1999, 2003, 2007, and 2008, DW contracted with the Pressure Pipe Inspection Company Ltd. (PPIC) for EM inspections of C94. EM inspections locate distressed pipes by estimating the position, distribution, and quantity of broken pre-stressing wires within a particular section of pipe. Results of these inspections indicate less than 3% of the pipes are distressed and less than 1% of the pipes require immediate replacement. Immediate replacements were completed in 2000, 2004, 2011, and another replacement is planned for early 2013. EM inspections allow DW to safely and cost effectively extend the service life of the PCCP by prioritizing and minimizing replacement expenses based on the real structural condition of individual pipes. Please note the estimated replacement cost for the remaining 8.5 miles of C94 PCCP is \$34M.

This EM inspection coincides with a scheduled outage of C94 for the replacement of three distressed PCCP pipes. This 2013 EM inspection will evaluate a 3.2-mile portion of the C94 PCCP and the 2014 EM inspection will evaluate the balance (5.3-miles) of the C94 PCCP. A sole source solicitation is necessary for this inspection because the consulting firm utilizes proprietary inspection equipment. An agreement has been negotiated with Pure Technologies, Ltd. (formerly known as PPIC) to provide professional services in the amount of \$149,000.00.

No Minority and Women Business Enterprise (MWBE) goal was established for this work due to its specialized nature.

The 2013 Capital Improvement Plan (MPC 1DD0101) does not include sufficient funds for this project.

**Recommendation:**

It is recommended the Board award Agreement 14800A to Pure Technologies, Ltd. for Conduit No. 94 Electromagnetic Inspection Project in the amount of \$149,000.00.

**Budget Considerations**

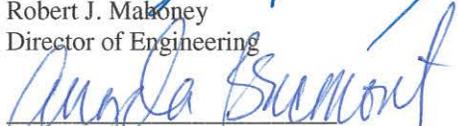
Budgeted Item       Unbudgeted Item      Master Plan Code(s): 1DD0101  
 Funds transferred from another project:

**Budget Information**

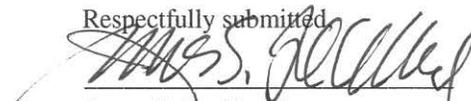
2013 Budget	\$	118,307.00
Amount Requested This Item	\$	149,000.00
YTD Expenditures	\$	0.00
Additional Expenditures Anticipated	\$	0.00
Revised 2013 Estimate	\$	149,000.00
Variance Required	\$	30,693.00

**Approvals:**

  
Robert J. Makoney  
Director of Engineering

  
Angela Brimont  
Director of Finance

Respectfully submitted,

  
James S. Lochhead  
CEO/Manager