City of Brisbane
Agenda Report

TO: Honorable Mayor and City Council

FROM: Director of Public Works/City Engineer via City Manager

SUBJECT: Crocker Prestressed Concrete Tank Rehabilitation (Project No. 9603)

DATE: Meeting of September 21, 2009

City Council Goals:

To design infrastructure and public facilities to be efficient, cost effective and to contribute to the cohesion and character of the community. (#2)

To maintain and improve infrastructure. (#3)

Purpose:

To obtain bids for a project that will provide rehabilitation to the existing Crocker Prestressed Concrete Tank in order to extend the service life of the structure. Proactively mitigating seismic and structural deficiencies in the infrastructure will minimize post-earthquake damages.

Recommendation:

Approve the plans and specifications, and authorize the publication of Notice Inviting Bids for construction of the Crocker Prestressed Concrete Tank Rehabilitation Project.

Background:

The July 2003 Water Master Plan prepared by Brown and Caldwell identified and recommended structurally evaluating and upgrading the Crocker Water Storage Tank to improve the identified structural deficiencies and short-term tank seismic performance, along with structurally evaluating and identifying appropriate remedial repairs to the Margaret and Guadalupe Water Storage Tanks.

The City Council approved the engineering design services contract for the Water Tank Seismic and Structural Upgrades (City Project No. 9603) with Pakpour Consulting Group, Inc. at the February 20, 2007 meeting. Pakpour Consulting Group, Inc. teamed with the structural engineering firm of Beyaz & Patel on the design of the Crocker Tank

rehabilitation, and on the seismic and structural analysis of Margaret and Guadalupe Water Storage Tanks.

The structural evaluations of Margaret and Guadalupe Water Storage Tanks determined that structural modifications are unnecessary on those reservoirs, and that the existing tank configurations meet the intent of current codes and standards for water storage tanks. The structural evaluation of Crocker Water Storage Tank determined significant mitigation would be required to meet applicable current codes and standards. The project title was changed from "Water Tank Seismic and Structural Upgrades Project" to "Crocker Prestressed Concrete Tank Rehabilitation Project" to focus the work directly on the deficiencies determined in the structural evaluation.

The engineer's design for the Crocker Prestressed Concrete Tank Rehabilitation Project includes field mapping, exposing and cleaning the damaged prestressed wire; sealing damaged sections with a polymer-reinforced motor; protecting the remaining prestressed wire with a corrosion inhibitor, leveling course, waterproofing agent and exterior coating, and installing a flexible coupling at the interface of the piping and tank shell.

City staff sought outside funding assistance, including preparing and submitting an application for federal funding under the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Program on December 28, 2007. The City was notified by FEMA on July 16, 2008 that the Crocker Tank Rehabilitation project was not chosen for federal funding.

For California Environmental Quality Act (CEQA) compliance, the project was determined to be Categorically Exempt, and a Notice of Exemption was prepared and submitted to the San Mateo County Recorder on July 23, 2009. No further action on this environmental determination is required by Council.

The Crocker Prestressed Concrete Tank Rehabilitation Project design is now complete and ready for bidding. The Notice Inviting Bids requires interested bidders attend a mandatory prebid meeting on October 1, 2009; bids will be submitted on October 22, 2009. The time allowed for project construction is 60 calendar days from issuance of the Notice to Proceed.

Discussion:

The goal of the recommended action is to extend the service life of the Crocker Water Storage Tank by mitigating the current structural post-tensioned wire degradation, providing preventative measures to stop any potential future degradation, and upgrading tank appurtenances to improve seismic strength of the tank structure. Upgrades planned for the piping to tank connection will add adequate flexibility at the interface to mitigate stresses under seismic conditions.

The engineer has determined that if the post-tensioned wires are left untouched, the unchecked corrosion will continue to degrade the post-tensioned wires, and the existing structure will quickly reach its remaining useful structural life.

Fiscal Impact:

Approved CIP design and construction budget (545-9603):	$692,000
Previously approved engineering design services contract:	$119,286
Engineer's construction cost estimate:	$485,500
Project contingency remaining:	$87,214

Measure of Success:

When structural mitigations are completed for the Crocker Tank it will meet all current applicable codes and standards, including American Water Works Association (AWWA), D-110-04 standard for pre-stressed tanks. This standard states that pre-stress tanks shall withstand earthquakes with peak ground accelerations that have a 10 percent chance of being exceeded in 50 years (500-year return period). After completion of the mitigation measures, minimal to no damage is expected during a 15-year return period seismic event.

The structural evaluation of the unanchored Margaret and Guadalupe Tanks, combined with the use of engineering experience and sound engineering judgment, has determined that the existing tank configurations meet the intent of the current AWWA standard and no structural modifications are necessary.

Attachments:

A. Crocker Prestressed Concrete Tank Rehabilitation Project Contract Documents
B. Engineering Design Services for Water Tank Seismic and Structural Upgrades 3/19/07 staff report

Director of Public Works/City Engineer

City Manager

A copy of supporting materials provided to the City Manager and Council Persons in connection with this agenda item is available for public inspection and copying at 50 Park Place, City of Brisbane Department of Public Works, Brisbane, CA, 94005, Telephone: (415) 508-2130.