THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

BOARD ACTION

- Board of Directors
  Engineering and Operations Committee

12/13/2011 Board Meeting

7-5

Subject

Appropriate $1.5 million; and authorize: (1) Detailed structural analyses and preliminary design of modifications to Metropolitan's Headquarters Building in Los Angeles; and (2) Agreement with ABSG Consulting, Inc. to provide technical support (Approp. 15473)

Description

This action authorizes detailed structural analyses of Metropolitan's Headquarters Building at Union Station in Los Angeles. The initial assessment concluded that the Headquarters Building remains safe for occupancy during a major earthquake event, but does not currently meet the code criteria to be classified as an essential facility. When the Headquarters Building was designed in the late 1990s, Metropolitan's intent was that it meet building code criteria for classification as an "essential facility." This classification would allow the Headquarters Building to remain fully operational following a major earthquake.

This action also authorizes preliminary design of structural modifications and a professional services agreement to provide specialized technical support. In the event of a significant earthquake, the planned modifications will reduce the risk of significant damage and will minimize the associated business disruption.

Timing and Urgency

Metropolitan's Headquarters Building at Union Station in Los Angeles was designed and constructed under a design-build agreement in the late 1990s. Metropolitan's intent at that time was that the building be designed as an essential facility, meaning that the structure would remain fully operational immediately following a major earthquake.

Metropolitan first occupied the building in 1998. Since 2008, Metropolitan has discovered a series of potential design flaws and construction defects. Following the latest discovery in 2010, staff performed an initial seismic assessment of the building to evaluate its seismic vulnerability. This assessment concluded that the building remains safe for occupancy but does not meet current building code requirements for an essential facility. The Headquarters Building may instead fall in to the lesser category of "regular facility", and may require significant repairs in the event of a major earthquake. Staff recommends that detailed structural analyses be conducted to determine the full extent of potential seismic upgrades for the building.

This project has been reviewed with Metropolitan's updated Capital Investment Plan (CIP) prioritization criteria and is categorized as an Infrastructure Reliability project. Since the initial seismic assessment of the Headquarters Building was completed following board adoption of the fiscal year 2011/12 budget, this work is not budgeted. However, approval of this action will not cause the fiscal year 2011/12 capital budget to be exceeded, due to savings experienced on other capital projects.

Background

The Headquarters Building at Union Station in Los Angeles is a 520,000-square-foot concrete-frame structure consisting of a 12-story high-rise portion connected to a lower 5-story wing. The building is essential to Metropolitan's business operations. In addition to Metropolitan staff, the building houses several tenants such as

the State of California's Division of the State Architect, Office of Statewide Health Planning and Development, and Department of Parks and Recreation.

Metropolitan's Headquarters Building was designed and constructed under a design-build agreement in the late 1990s. Under Metropolitan's agreement with the building developer, the building was to be designed and constructed as an "essential facility," meaning that the structure would remain fully operational immediately following a major earthquake.

In 2008, staff discovered an exposed beam in the parking garage that was visibly sagging. Review of the design calculations disclosed that design changes by the developer had led to the omission of a post-tensioning tendon required for the beam to adequately support the load. Shoring was installed between columns to provide additional support under the deficient beam. In 2009, four additional beams with cracks were observed in the parking garage area. Review of design calculations indicated that loading for the beams was underestimated. Supports were again installed to shore up the deficient beams. Staff then performed an evaluation of all beams on the two garage levels, but no additional problems were uncovered.

In 2010, the greater Los Angeles area experienced the Magnitude 4.4 Pico Rivera Earthquake. A routine post-earthquake inspection of the Headquarters Building revealed cracking of a lobby floor beam. The cracking was not identified at that time to be the result of design errors or construction defects. The beam was repaired with carbon fiber reinforcing.

Given the poor performance of the beam in response to such a moderate earthquake, staff performed an initial seismic assessment of the entire building. This seismic assessment identified additional areas of potential concern, and staff concluded that the building did not meet building code requirements for an essential facility. Staff's findings were later confirmed by an independent consultant who specializes in seismic design and evaluation of high-rise building structures. The consultant verified the deficiencies within the developer's original design. While the building remains safe for occupancy, performance of more detailed structural analyses was recommended.

Based on the results of the initial seismic assessment, staff recommends proceeding with detailed structural analyses and preliminary design of seismic modifications for the Headquarters Building. These efforts will protect Metropolitan's assets, reduce the risk of significant building damage, and minimize business disruption in the event of a major earthquake. The purpose of the recommended work is to determine the most cost-effective and least disruptive methods to seismically repair or retrofit the building. As part of preliminary design, concrete and reinforcing steel from the building will be sampled and tested to determine the actual as-constructed strength properties of the building's materials. In addition, scaled laboratory testing of structural components will be performed. The as-constructed material and component strength properties will be utilized to perform more detailed structural analyses. The detailed structural analyses will determine whether the beams, columns, and structural detailing at the connections are capable of withstanding anticipated lateral seismic loads. Repair plans and construction cost estimates will be developed for those areas that need seismic strengthening.

The purpose of the testing program and detailed analyses is to reduce overall project costs. These complementary efforts should reduce construction costs for the resulting seismic modifications.

Headquarters Building Seismic Modifications – Preliminary Design Phase ($1,500,000)

Planned preliminary design activities include the following: review of code and permit requirements; materials testing; scaled testing of structural components; detailed structural analyses and evaluation; preparation of a preliminary design report and environmental documentation; and development of a preliminary construction cost estimate. Repair plans will be developed for areas which would likely be damaged in a major earthquake. The detailed structural analyses and preliminary design will be performed by ABSG Consulting, Inc., as discussed below. The material and component testing will be performed by independent laboratories, selected using competitive processes, under new agreements planned to be awarded by the General Manager under his Administrative Code authority. Geotechnical investigations will be performed by URS Corporation under an existing agreement. Minor building services contracts will be issued to repair ceiling panels, patch drywall, or relocate utilities where material sampling is required. In addition, all materials and component testing, detailed

structural analyses, and preliminary design activities will be reviewed and independently verified by a structural engineering consultant, Simpson Gumpertz & Heger, Inc., as required by the building code. Metropolitan staff will perform technical oversight, prepare environmental documentation, initiate permitting activities, and perform project management.

A total of $1.5 million is requested to complete the recommended activities. The cost breakdown is as follows:

Task	Estimated Cost
Structural analyses (ABSG Consulting)	$ 360,000
Material and component testing	290,000
Preliminary design of repairs (ABSG Consulting)	115,000
Geotechnical investigations (URS)	100,000
Independent peer review (SGH)	175,000
Minor building repairs	50,000
Technical oversight and design review	150,000
Owner costs (Permitting, project management)	120,000
Remaining budget	140,000
Total funds requested	$ 1,500,000

Staff will return to the Board at a later date with recommendations for specific repairs and to seek authorization for final design.

ABSG Consulting, Inc. – New Agreement for Structural Engineering Support

ABSG Consulting, Inc. specializes in the structural analysis and design of high-rise buildings. ABSG Consulting reviewed the initial seismic assessment of the Headquarters Building, and is recommended to perform the detailed structural analyses and preliminary design portions of the planned work. Since seismic retrofitting of high-rise structures is an expertise which Metropolitan does not maintain in-house, technical support is relied upon from specialized consultants. ABSG Consulting was selected through a competitive process via Request for Qualifications No. 884. Due to the specialized nature of the work, no Small Business Enterprise (SBE) participation level has been established. The planned scope includes planning the materials and component testing program, evaluating test results and determining the material strength properties, performing detailed three-dimensional structural modeling to evaluate building stresses and deformation, preparing a preliminary design report and preliminary repair plans, and developing a preliminary cost estimate.

This action authorizes an agreement with ABSG Consulting, Inc., in an amount not to exceed $500,000, to provide specialized technical support for seismic modifications to the Headquarters Building.

Simpson Gumpertz & Heger, Inc. – New Agreement for Peer Review

Simpson Gumpertz & Heger, Inc. is recommended to perform peer review of all aspects of the materials and component testing, detailed analyses, and preliminary design. Peer review is required by the building code and is considered standard practice to ensure that independent verification is performed by an industry expert for the complex analyses planned, such as three-dimensional nonlinear time-history structural analyses. The principal investigator from Simpson Gumpertz & Heger is a recognized expert in complex structural analyses and seismic retrofit design of existing structures. The firm was selected through a competitive process via Request for Qualifications No. 884. The planned scope of work includes examination of the material and component testing program; interpretation of test results; conducting concurrent structural analyses to independently verify calculations; and thorough review of preliminary design prepared by others. Simpson Gumpertz & Heger will report directly to Metropolitan for this third party independent verification effort.

The agreement with Simpson Gumpertz & Heger, Inc., to provide peer review services is planned to be awarded by the General Manager under his Administrative Code authority. The estimated cost of these services is $175,000.

URS Corporation – Geotechnical Investigations (No action required)

Geotechnical investigations are recommended to be performed by URS Corporation under an existing board-authorized agreement. Since geotechnical site investigations are a technical specialty for which Metropolitan does not have in-house expertise, Metropolitan relies on consulting firms for support. URS was selected through a competitive process via Request for Qualifications No. 931. For this agreement, Metropolitan has established a SBE participation level of 18 percent. The planned scope of work includes drilling test borings, taking soil samples for laboratory testing, and developing site-specific seismic parameters. The estimated cost of these services is $100,000.

Summary

This action appropriates $1.5 million, authorizes detailed structural analyses and preliminary design of seismic modifications for Metropolitan's Headquarters Building in Los Angeles, and authorizes an agreement with ABSG Consulting, Inc. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, but is not budgeted within the current fiscal year because the initial seismic assessment was completed following board adoption of the budget. Upon approval of this action, the fiscal year 2011/12 capital expenditure plan will be adjusted to reflect the new work. See **Attachment 1** for the Financial Statement and **Attachment 2** for the Location Map.

This work will be included within capital Appropriation No. 15473, the Headquarters Building Seismic Modification Program. This is the initial action for Appropriation No. 15473.

This project is consistent with Metropolitan's goals for sustainability by enhancing reliability of an existing facility.

Project Milestone

December 2012 – Completion of preliminary design

Policy

Metropolitan Water District Administrative Code Section 5108: Appropriations

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action consists of basic data collection and resource evaluation activities, which do not result in a serious or major disturbance to an environmental resource. This may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies as a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines). In addition, the proposed action is not defined as a project under CEQA because it involves continuing administrative activities, such as general policy and procedure making (Section 15378(b)(2) of the State CEQA Guidelines), and because it involves other government fiscal activities, which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines).

The CEQA determination for is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines) and, further, that the proposed action is not subject to CEQA pursuant to Sections 15378(b)(2) and 15378(b)(4) of the State CEQA Guidelines.

The CEQA determination for Option #2:

None required

Board Options

Option #1

Adopt the CEQA determination and

a. Appropriate $1.5 million;
b. Authorize detailed structural analyses and preliminary design of seismic modifications to Metropolitan's Headquarters Building at Union Station; and
c. Authorize agreement with ABSG Consulting, Inc., in an amount not to exceed $500,000.

Fiscal Impact: $1.5 million in unbudgeted funds under Approp. 15473
Business Analysis: This option will protect Metropolitan assets, reduce the risk of significant damage, and minimize business disruption in the event of a major earthquake.

Option #2

Do not authorize seismic modifications at this time.
Fiscal Impact: None
Business Analysis: This option would forego an opportunity to mitigate the risk of damage due to a significant seismic event, and to minimize business disruption.

Staff Recommendation

Option #1

11/16/2011
Gordon Johnson *Date*
Manager/Chief Engineer,
Engineering Services

12/1/2011
Jeffrey Kightlinger *Date*
General Manager

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12615265

Financial Statement for the Headquarters Building Seismic Modification Program

A breakdown of Board Action No. 1 for Appropriation No. 15473 for seismic modifications to Metropolitan's Headquarters Building in Los Angeles[1] is as follows:

	Total Appropriated Amount (Dec. 2011)
Labor	
Studies & Investigations	$ 150,000
Owner Costs (Program mgmt., permitting, envir. doc.)	120,000
Professional/Technical Services	
Material Testing Firm	50,000
Component Testing Firms	240,000
URS Corporation	100,000
Simpson Gumpertz & Heger, Inc.	175,000
ABSG Consulting, Inc.	475,000
Contracts	50,000
Remaining Budget	140,000
Total	**$ 1,500,000**

Funding Request

Program Name:	Headquarters Building Seismic Modification		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15473	**Board Action No.:**	1
Requested Amount:	**$** 1,500,000	**Capital Program No.:**	15473-I
Total Appropriated Amount:	**$** 1,500,000	**Capital Program Page No.:**	N/A
Total Program Estimate:	**$** 12,000,000	**Program Goal:**	I-Infrastructure Reliability

[1]This is the initial action for the Headquarters Building Seismic Modification Program

Metropolitan's Headquarters Building at Union Station in Los Angeles