



● **Board of Directors**
Engineering and Operations Committee

5/13/2014 Board Meeting

8-5

Subject

Appropriate \$3.4 million; and authorize: (1) final design of seismic upgrades to Metropolitan's Headquarters Building in Los Angeles; and (2) amendments to agreements with ABSG Consulting, Inc., Simpson Gumpertz & Heger, Inc., and UC Irvine to provide specialized engineering services (Approp. 15473)

Description

This action authorizes final design of seismic upgrades to Metropolitan's Headquarters Building at Union Station in Los Angeles. The recommended upgrades would reduce the risk of significant damage in the event of a major earthquake and the associated business disruption. This action would also authorize amendments to three professional services agreements to provide specialized technical support for the design.

Timing and Urgency

In December 2011, Metropolitan's Board authorized staff to conduct detailed structural analyses of the Headquarters Building based on updated seismic and building codes. Those analyses have now been completed. While the Headquarters Building meets building code requirements and is safe to occupy, structural upgrades are recommended in order to enhance the seismic performance of the building and reduce the risk of costly structural repairs in the event of a major earthquake.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is categorized as an Infrastructure Reliability project. Funds for this action are available within Metropolitan's capital expenditure plan for fiscal year 2013/14.

Detailed Report

Metropolitan's Headquarters Building at Union Station is a 520,000-square-foot concrete-frame structure consisting of a 12-story high-rise tower attached to a lower 5-story wing. The business functions located in this building are critical for maintaining the continuity of Metropolitan's operations. In addition to housing Metropolitan staff, the building has a number of tenants including the State of California's Division of the State Architect, Office of Statewide Health Planning and Development, and Department of Parks and Recreation.

The Headquarters Building was constructed by a developer in the 1990s under a development agreement with Metropolitan. The building was designed to be an "Essential Facility" based on the building codes in effect at that time, meaning it was intended to remain occupied and functional following a major earthquake. Other types of structures which are built under this category include schools, hospitals, and police/fire stations. Buildings which are not constructed under the Essential Facility category are expected to allow occupants to safely exit the structure following a major earthquake, but may experience significant damage and may not be economically feasible to repair.

Metropolitan began occupying the Headquarters Building in 1998. In 2008, staff detected sagging and cracking of several beams. In response, several repairs were performed and a preliminary seismic assessment of the building was initiated. The preliminary seismic assessment concluded that the Headquarters Building does not

meet the performance criteria for an Essential Facility based on the current building code. In addition, the assessment identified some areas of potential seismic vulnerability.

In December 2011, Metropolitan's Board authorized detailed structural analyses to determine whether seismic upgrades are needed for the Headquarters Building. The detailed analyses were conducted by ABSG Consulting, Inc. and were peer-reviewed by Simpson Gumpertz & Heger, Inc., both of which are recognized leaders in structural and seismic design. As part of this effort, large-scale component testing of select beam specimens was conducted by the University of California at Irvine in its testing laboratory. In addition, material testing was conducted. The latter testing was performed to confirm the actual strength values of the existing building components and the design properties to be utilized in the structural analyses. The material testing results indicated that the strength of the existing concrete is approximately 30 percent greater than originally specified. However, component testing of some of the beam specimens revealed vulnerabilities that could affect building performance during a major earthquake.

Results from the component and material testing programs were utilized in a sophisticated computer model to evaluate the building's expected performance during an earthquake. This analysis confirmed that the building does not meet current building code criteria for an Essential Facility. Although the Headquarters Building would perform well during a moderate seismic event, the building would experience significant damage during a major earthquake. To mitigate potential damage, beams with large utility penetrations, floor diaphragms at the connection between the wing and the tower, and exterior cladding should be reinforced. The building remains safe to occupy, but seismic strengthening to meet updated code levels would be prudent in order for operations and business functions to continue following a major earthquake.

Options for Seismic Upgrades

Seismic retrofit of existing buildings is not mandated by the building code unless other significant additions or alterations are being made. Given the importance of the Headquarters Building to Metropolitan's operations, staff recommends that voluntary seismic upgrades be initiated. When performing voluntary seismic improvements, the building owner may select the desired seismic performance level. A range of retrofit options is available:

- **Option No. 1 – Upgrade to the current requirements for existing State-occupied buildings.** The State Department of General Services (DGS) has established certain seismic performance criteria for State occupancy of existing buildings. Although considered an elevated standard for existing buildings, this level of performance is less than current building code requirements for an Essential Facility. This option would increase the Headquarter Building's level of seismic performance and safety, and would reduce the risk of significant damage and resulting business interruption due to a major earthquake. The upgrade work would be moderate and would consist mainly of less-disruptive carbon fiber strengthening of structural elements such as beams and diaphragms. In addition, nonstructural elements such as exterior cladding would be modified. The construction cost for this option is anticipated to range from \$20 million to \$25 million.
- **Option No. 2 – Upgrade to current building code performance levels for an Essential Facility.** This option would meet the original design intent for the Headquarters Building, but at today's increased seismic intensity levels and the current building code. This option would provide the highest performance level, but at significantly increased cost. Due to the increased seismic design forces in the current building code, this retrofit would require installation of new structural elements such as shear walls and braced frames. Construction of new structural elements would have a greater impact on building occupants, and would impact office layouts and circulation where the new elements are located. Full replacement of the exterior cladding would also be required. The construction cost for this option is expected to exceed \$90 million.
- **Option No. 3 – No upgrade to the building.** Under this option, staff would continue to monitor the Headquarters Building, but upgrades would not proceed at this time. The building would remain at a reduced seismic performance level. The building would likely experience significant damage during a large earthquake, which could require significant time to complete repairs before the building could be reoccupied. This option is not recommended due to the potential impact it could have on Metropolitan's business operations.

Staff recommends proceeding with Option No. 1 to perform voluntary seismic upgrades that would meet DGS requirements for existing State-occupied buildings. The upgrades would reduce the risk of significant building damage and business disruption in the event of a major earthquake. This recommendation is consistent with Metropolitan's proactive approach toward seismic safety, which includes an ongoing program to structurally upgrade key facilities throughout the distribution system.

Headquarters Building Seismic Upgrades – Final Design Phase (\$3,400,000)

The recommended upgrades include carbon fiber reinforcing of beams, strengthening of the building diaphragm on the floors where the low-rise wing and tower intersect, and modifications to the exterior cladding. Planned final design phase activities include detailed structural modeling; large-scale component testing of modified beams; preparation of drawings and specifications; local agency permitting; development of a construction cost estimate; receipt of competitive bids; and all other activities in advance of award of a construction contract. The final design is recommended to be performed by ABSG Consulting, Inc. The component testing of beam retrofits to confirm seismic performance is recommended to be performed by UC Irvine. In addition, all component testing and final design activities will be reviewed and independently verified by Simpson Gumpertz & Heger, Inc. Each of these professional services agreements is described below. Metropolitan staff will perform technical oversight, prepare environmental documentation, initiate permitting activities, and perform project management. Upon completion of final design, staff will return to the Board for award of a construction contract.

This action appropriates \$3.4 million and authorizes final design of seismic upgrades to the Headquarters Building. Requested funds include \$426,000 for additional component testing; \$1.9 million for final design and peer review; \$481,000 for permitting and design review; \$243,000 for bidding and project management; and \$350,000 for remaining budget. The final design cost as a percentage of the estimated construction cost is approximately 10.1 percent. Engineering Services' goal for design of projects with construction cost greater than \$3 million is 9 to 12 percent. As noted previously, the construction cost for the recommended upgrades is estimated to range from \$20 million to \$25 million.

ABSG Consulting, Inc. – Amendment to Agreement for Design Services

ABSG Consulting, Inc. performed the detailed seismic assessment of the Headquarters Building, and is recommended to perform final design of the planned upgrades. ABSG specializes in the structural analysis, design, and retrofit of high-rise buildings, which is an expertise that Metropolitan does not maintain in-house. The planned scope includes planning of the additional component tests; performing detailed structural modeling using the test results; preparing drawings and specifications; and developing a construction cost estimate. The estimated cost for these services is \$1.8 million.

This action authorizes an increase of \$1.8 million to the existing agreement with ABSG Consulting, Inc., for a new not-to-exceed total of \$2.3 million, to perform final design of seismic upgrades to the Headquarters Building. ABSG was selected through a competitive process via Request for Qualifications No. 1012. Amendment of the ABSG agreement is consistent with the agreement's scope of work and with the planned approach for execution of the upgrade project. Due to the specialized nature of the work, no Small Business Enterprise (SBE) participation level has been established for this agreement.

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

Simpson Gumpertz & Heger, Inc. performed peer review of the preliminary design and initial component testing for the Headquarters Building, and is recommended to perform peer review of the additional component testing and final design. Peer review is considered standard practice for complex structural analyses to ensure that independent verification is performed by an industry expert for the type of seismic upgrades planned. The principal investigator from Simpson Gumpertz & Heger is a recognized expert in complex structural analyses and seismic retrofit design of existing structures. The planned scope of work includes examination of the component testing program; interpretation of test results; conducting concurrent analyses to independently verify design calculations; and thorough review of the final design. Simpson Gumpertz & Heger will report directly to Metropolitan for this third-party independent verification effort. The estimated cost for these services is \$100,000.

This action authorizes an increase of \$100,000 to the existing agreement with Simpson Gumpertz & Heger, Inc., for a new not-to-exceed total of \$300,000, to provide peer review for final design of the Headquarters Building seismic upgrades. The firm was selected through a competitive process via Request for Qualifications No. 1012. Due to the specialized nature of the work, no SBE participation level has been established for this agreement.

UC Irvine – Amendment to Agreement for Component Testing

University of California at Irvine performed the initial component testing for the Headquarters Building seismic assessment, and is recommended to perform the additional component testing. Testing of modified beam specimens is needed to confirm component response and behavior, to substantiate design properties, and to comply with building code requirements for the selected repair method. The planned scope of work will involve constructing new specimens, testing the specimens to obtain design properties for various retrofit alternatives, and preparing a final report with the results. The estimated cost for these services is \$426,000.

This action authorizes an increase of \$426,000 to the existing agreement with UC Irvine, for a new not-to-exceed total of \$675,000, to perform additional component testing associated with the Headquarters Building seismic upgrades. UC Irvine was selected for this work through a competitive process. Due to the specialized nature of the work, no SBE participation level has been established for this agreement.

Summary

This action appropriates \$3.4 million, authorizes final design of seismic upgrades to Metropolitan's Headquarters Building in Los Angeles, and authorizes amendments to three professional services agreements. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds have been included in the fiscal year 2013/14 capital expenditure plan. See [Attachment 1](#) for the Financial Statement and [Attachment 2](#) for the Location Map.

This work is included within capital Appropriation No. 15473, the Headquarters Building Seismic Upgrades appropriation, which was initiated in 2011. With the present action, the total funding for Appropriation No. 15473 will increase from \$1.92 million to \$5.32 million.

Project Milestone

October 2015 – Start of construction for seismic upgrades to the Headquarters Building

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 Options #1 and #2:

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).

The CEQA determination is: Determine that pursuant to CEQA, the proposed action qualifies under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #3:

None required

Board Options

Option #1

Adopt the CEQA determination that this action is categorically exempt, and

- a. Appropriate \$3.4 million;
- b. Authorize final design of upgrades to Metropolitan's Headquarters Building to meet seismic requirements for existing State-occupied buildings;
- c. Authorize increase of \$1.8 million to the existing agreement with ABSG Consulting, Inc., for a new not-to-exceed total of \$2.3 million;
- d. Authorize increase of \$100,000 to the existing agreement with Simpson Gumpertz & Heger, Inc., for a new not-to-exceed total of \$300,000; and
- e. Authorize increase of \$426,000 to the existing agreement with UC Irvine, for a new not-to-exceed total of \$675,000.

Fiscal Impact: \$3.4 million in capital funds under Approp. 15473

Business Analysis: This option would fund final design for seismic upgrades that would raise the expected seismic performance of the Headquarters Building to the level required for existing State-occupied buildings. This option would increase protection of Metropolitan assets, reduce the risk of damage, and maintain the safety of building occupants. Under this option, the future construction cost for seismic upgrades is expected to range from \$20 million to \$25 million.

Option #2

Adopt the CEQA determination that this action is categorically exempt, and

- a. Appropriate \$12.9 million;
- b. Authorize final design of upgrades to restore the Essential Facility seismic performance level of Metropolitan's Headquarters Building;
- c. Authorize an increase of \$7.2 million to the existing agreement with ABSG Consulting, Inc., for a new not-to-exceed total of \$7.7 million;
- d. Authorize increase of \$350,000 to the existing agreement with Simpson Gumpertz & Heger, Inc., for a new not-to-exceed total of \$550,000; and
- e. Authorize increase of \$426,000 to the existing agreement with UC Irvine, for a new not-to-exceed total of \$675,000.

Fiscal Impact: \$12.9 million in capital funds under Approp. 15473

Business Analysis: This option would fund final design for seismic upgrades that would restore the seismic performance level of the Headquarters Building to current building code requirements for an Essential Facility. This option would better protect Metropolitan assets, reduce the risk of significant damage, and minimize business disruption in the event of a major earthquake. Under this option, the future construction cost for seismic upgrades is expected to exceed \$90 million.

Option #3

Do not proceed with seismic upgrades to Metropolitan's Headquarters Building.

Fiscal Impact: No additional funds required. This option could result in higher repair costs and greater business disruption in the event of a major earthquake.

Business Analysis: This option would maintain the existing seismic performance level of the Headquarters Building. This option would forgo an opportunity to reduce the risk of damage and business disruption in the event of a major earthquake.

Staff Recommendation

Option #1


Gordon Johnson
Manager/Chief Engineer,
Engineering Services

4/24/2014
Date


Jeffrey Knightlinger
General Manager

4/28/2014
Date

Attachment 1 – Financial Statement

Attachment 2 – Location Map

Ref# es12615265

Financial Statement for the Headquarters Building Seismic Upgrades

A breakdown of Board Action No. 3 for Appropriation No. 15473 for final design of seismic upgrades to Metropolitan’s Headquarters Building¹ is as follows:

	Previous Total Appropriated Amount (Aug. 2012)	Current Board Action No. 3 (May 2014)	New Total Appropriated Amount
Labor			
Studies & Investigations	\$ 150,000	\$ -	\$ 150,000
Final Design	25,000	-	25,000
Owner Costs (Program mgmt., design review, permitting, bidding)	138,000	554,000	692,000
Submittals Review & Record Drawings	6,000		6,000
Construction Inspection & Support	33,000	-	33,000
Metropolitan Force Construction	3,100	-	3,100
Materials & Supplies	30,000	-	30,000
Incidental Expenses	-	170,000	170,000
Professional/Technical Services	1,040,000	-	1,040,000
ABSG Consulting	-	1,800,000	1,800,000
Simpson Gumpertz & Heger	-	100,000	100,000
UC Irvine	-	426,000	426,000
Contracts	314,900	-	314,900
Remaining Budget	180,000	350,000	530,000
Total	\$ 1,920,000	\$ 3,400,000	\$ 5,320,000

Funding Request

Appropriation Name:	Headquarters Building Seismic Upgrades		
Source of Funds:	Revenue Bonds, Replacement and Refurbishment or General Funds		
Appropriation No.:	15473	Board Action No.:	3
Requested Amount:	\$ 3,400,000	Budget Page No.:	305
Total Appropriated Amount:	\$ 5,320,000	Total Appropriation Estimate:	\$ 12,820,000

¹ The total amount expended to date on the seismic assessment of the Headquarters Building is approximately \$1.3 million.

Metropolitan's Headquarters Building

