

# Memorandum

To: CHAIR AND COMMISSIONERS

CTC Meeting: July 25-26, 2007

Reference No.: 4.9  
Information Item

From: CINDY McKIM  
Chief Financial Officer

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Subject: **REPORT ON COMPARISON OF COST INCREASES STATEWIDE AND IN THE BAY AREA FOR SEISMIC RETROFIT OF OFFICE BUILDINGS**

## **SUMMARY:**

At the January 31-February 1, 2007 California Transportation Commission (Commission) meeting, the California Department of Transportation (Department) presented an action item under Reference 2.5b. (5) (Tab 53) to de-allocate \$44,300,000 originally allocated for a State Highway Operations and Protection Program (SHOPP) project to retrofit the District 4 office building in Oakland. At that time, the Commission requested additional information regarding retrofit activities being undertaken statewide, including other Bay Area office buildings.

Currently, there are no seismic retrofit projects similar to the District 4 seismic retrofit project in the Bay Area. Information on the cost comparison of the District 4 seismic retrofit project to other similar statewide seismic retrofit projects will be made available by the Department of General Services (DGS) at the July 25-26, 2007 Commission meeting.

## **BACKGROUND**

In 1992, the Department of General Services Seismic Building Program (DGSBSP) conducted seismic structural evaluations of State buildings that were in non-compliance with the seismic provisions set forth in the 1988 Uniform Building Code. The DGSBSP conducted 854 seismic structural evaluations of State buildings located in the Bay Area. The Risk Acceptability Table utilized was a scale of Level I through Level VII, with Risk Level VII being the highest level of risk.

From the 854 evaluations, 22 buildings were classified as a Risk Level V or greater (substantial structural damage to the building, substantial risk to life). The disposition of the 22 Bay Area State buildings identified as Risk Level V or greater are as follows:

- 6 – Retrofitted
- 2 – Demolished
- 9 – Sold
- 5 – Yet to be retrofitted

A valid comparison between the District 4 Oakland Seismic Retrofit Project and the six Bay Area seismic retrofitted buildings is not feasible because the retrofitted buildings are significantly smaller, have a different building construction type (not a moment resistant frame building), and the retrofit application was less complex. The construction cost of these Bay Area seismic retrofit projects ranged from \$3.5 million to \$6.0 million per project.

Attachment



# **California Department of Transportation District 4 Oakland Seismic Retrofit Project**

**Presentation to the  
California Transportation Commission**

**July 26, 2007**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## State Building Seismic Program

- **California Department of General Services, Division of the State Architect (DGS-DSA)**
- **Legislature enacted the Earthquake Safety and Public Buildings Rehabilitation Act (Senate Bill 1250) in 1990**
  - ✓ **Authorized \$250 million for financing the seismic retrofit, reconstruction, repair, replacement or relocation of State-owned buildings**
- **The DGS-DSA developed a “5-Step Evaluation Process” to assess approximately 14,000 State-owned buildings**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## State Building Seismic Program (cont'd)

- **5-Step Evaluation Process**
  - ✓ **Structural Assessment**
  - ✓ **General Structural Evaluation**
  - ✓ **Detail Structural Evaluation**
  - ✓ **Cost Analysis Studies**
  - ✓ **Recommendations**
  
- **“Top 50” Buildings**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## Project Background

- **15 Story Steel Moment Resisting Frame (SMRF) Building**
- **Constructed in 1991**
- **Approximately 750,000 gross square feet**
- **Houses approximately 2,000 Department employees**
  - ✓ **Includes Bay Area Traffic Management Center (TMC)**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## Project History

- **Northridge Earthquake 1994**
  - ✓ **FEMA developed guidelines for Steel Moment Resisting Frame**
- **Seismic Studies**
  - ✓ **UC Berkeley Study confirmed connections vulnerability**
  - ✓ **DGS Study (ABS Consulting) identified building at Risk Level V**
    - **Degenkolb Engineers confirmed building Risk Level V**
  - ✓ **Recommended upgrade to Risk Level III**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



Risk Level	Building	Risk to Life	Systems	Occupancy
I	Potentially no structural damage: Repairable.	Negligible	All systems will probably remain operational	Immediate with only negligible disruption during clean up
II	Negligible structural damage: Repairable. Minor non-structural damage: Repairable.	Negligible	Minor disruptions for hours to days	Minor disruption, return within hours
III	Minor structural damage: Repairable. Moderate non-structural damage: Extensive repair.	Minor	Disruption of systems for days to months	Return within weeks, with minor disruptions
IV	Moderate structural damage: Substantial repair. Substantial non-structural damage: Extensive repair.	Moderate	Disruption of systems for months to years	Partially to fully vacated during repairs
V	Substantial structural damage: Partial collapse likely: Repair may not be cost effective. Extensive non-structural damage: Repair may not be cost effective.	Substantial	Total disruption of systems: repair may not be cost effective	Totally vacated during repairs
VI	Extensive structural damage, partial to total collapse likely: Repair may not be cost effective. Extensive non-structural damage: Repair may not be cost effective.	Extensive, but not imminent. Extrication protracted and difficult.	Total disruption of systems: repair may not be cost effective	Totally vacated during repairs
VII	Unstable under existing vertical loads or earthquake	Imminent threat to occupants and/or adjacent property.	Total disruption of systems: most likely not repairable	Should be vacated until structural upgrading is accomplished

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## “Top 50” Buildings Versus

### District 4 Oakland Seismic Retrofit Project

- **No valid comparison except for Risk Level V (substantial structural damage to the building; substantial risk to life)**
- **Buildings not in compliance with seismic provisions set forth in 1976 Uniform Building Code**
- **Construction type is mostly reinforced concrete shear wall**
- **Seismic projects are significantly smaller and less complicated**
- **Construction cost is less**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## State Building Seismic Program

PROJECT	STATE'S ESTIMATE	BID AMOUNT	BID SAVINGS
<b>FISCAL YEAR 2002-03</b>			
CalTrans District 1 Office Bldg, Eureka	\$4,036,000	\$4,007,700	\$28,300
Dining Rooms B,D,Q,L CMC San Luis Obispo	\$4,422,000	\$1,816,835	\$2,605,165
Kitchen & Dining Rooms, San Quentin	\$2,669,000	\$2,449,000	\$220,000
Laundry Building, Metro State Hospital, Norwalk	\$1,246,000	\$697,000	\$549,000
Mt. Whitney Fish Hatchery	\$1,390,000	\$1,198,210	\$191,790
Porter Administration Building, Sonoma	\$1,626,000	\$714,998	\$911,002
<b>FISCAL YEAR 2003-04</b>			
Bldg 22 Modulares, San Quentin	\$3,790,000	\$3,996,625	(\$206,625)
Building 199, Q Unit, Napa State Hospital	\$1,650,000	\$1,300,000	\$350,000
CalTrans District 2 Office Bldg, Redding	\$2,067,300	\$1,879,000	\$188,300
Hospital Wing Q, Soledad	\$1,456,000	\$1,227,000	\$229,000
Kitchen & Dining Rooms, Atascadero	\$642,000	\$357,600	\$284,400
<b>FISCAL YEAR 2004-05</b>			
Admin Bldg A, San Luis Obispo	\$1,750,000	\$1,185,900	\$564,100
CalTrans HQ Bldg, Annex I & II, Sacramento	\$6,811,000	\$7,890,000	(\$1,079,000)
Office Building, Fresno	\$868,000	\$826,286	\$41,714
<b>FISCAL YEAR 2005-06</b>			
Dorms E1-E2-E3-E4, Tehachapi	\$1,687,000	\$1,569,000	\$118,000
Bldg 22 Retrofit, San Quentin	\$12,605,200	\$19,354,000	(\$6,748,800)
Dorms F5-F6-F7-F8, Tehachapi	\$1,729,000	\$1,613,000	\$116,000
<b>FISCAL YEAR 2006-07</b>			
Hospital Wing B, DVI, Tracy	\$1,699,000	\$1,725,000	(\$26,000)

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## Project Status

- **Project Construction Budget: \$44,300,000**
- **Bids received on December 7, 2006**
- **25% over budget**
- **Proposed FY 2007-08 Project Construction Budget: \$62,337,000**
- **Cost Increases:**
  - ✓ **Steel: \$8,000,000**
  - ✓ **Removal and Reinstallation of Building Skin: \$4,000,000**
  - ✓ **Escalation: \$5,000,000**
  - ✓ **Soft Cost: \$1,000,000**

# California Department of Transportation District 4 Oakland Seismic Retrofit Project



## Cost Issues

- **As-Built Conditions versus As-Built Plans**
- **Glass Fiber Reinforced Concrete (GFRC) issue**
- **Limited number of general contractor and subcontractor bids**
- **Ventilation and air quality requirement issue**
- **Limited work space issue**
- **Steel worker's union evening construction requirements**
- **Dust Control issue**
- **Noise abatement**