



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**

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)**



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

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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 totally 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

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“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**

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State Building Seismic Program

PROJECT	STATE'S ESTIMATE	BID AMOUNT	BID SAVINGS
FISCAL YEAR 2002-03			
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
FISCAL YEAR 2003-04			
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
FISCAL YEAR 2004-05			
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
FISCAL YEAR 2005-06			
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
FISCAL YEAR 2006-07			
Hospital Wing B, DVI, Tracy	\$1,699,000	\$1,725,000	(\$26,000)

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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**

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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**