# Bay Area Rapid Transit District Mitigation Project

## Full Mitigation Best Practice Story

*San Francisco County, California*

**San Francisco, CA -** The Bay Area Rapid Transit (BART) Train Operations Center is located in a very high seismic hazard area of Northern California. BART services the entire San Francisco Bay metropolitan area and is a major economic driver impacting the region. In October of 1989 a 7.1 magnitude earthquake struck the region causing widespread damage to buildings and transportation infrastructure.

Damages to the Bay Area transportation infrastructure included the collapse of the double-decker Cypress Freeway in Oakland and failure of a section of the upper deck of the Oakland Bay Bridge; however, all was not lost because commuters had the option of using the still operational BART system to travel from the East Bay to San Francisco.

The BART system is a critical part of the regional transportation infrastructure serving four counties and as such all Bay Area commuters are affected by large scale outages.

The Train Operations Building is the core of the BART system. The lower portion of the building houses the train operations center, which is the critical nerve center of the computerized train system. Additionally, the central office of the Metro Police is located in that sub grade portion of the building.

After being evaluated by engineers, the above grade portion of the Train Operations Building was found to pose a significant collapse hazard and a great risk to life safety and the function of critical train operations. A FEMA Pre-Disaster Mitigation grant provided funds for the disassembly of the above ground portion of the Train Operations Building at Metro Center.

Removing the threat of collapse from the Train Operations Center means that the BART employees can safely carry on their duties throughout a major seismic event which could conceivably include the evacuation of train tunnels and eventually the resumption of normal train service which will be a vital component of the region's overall recovery.

This project is a unique and well reasoned mitigation strategy that promises to assist the region in enduring and recovering from the next major seismic event without some of the devastating effects of lingering loss of transportation infrastructural capacity.

| Activity/Project Location | |
|---|---|
| Geographical Area: | **Single County in a State** |
| FEMA Region: | **Region IX** |
| State: | **California** |
| County: | **San Francisco County** |

## Key Activity/Project Information

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|---|---|
| Sector: | **Public** |
| Hazard Type: | **Earthquake** |
| Activity/Project Type: | **Retrofitting, Structural** |
| Activity/Project Start Date: | **01/2001** |
| Activity/Project End Date: | **Ongoing** |
| Funding Source: | **Pre-Disaster Mitigation (PDM)** |

## Activity/Project Economic Analysis

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|---|---|
| Cost: | **Amount Not Available** |
| Non FEMA Cost: | |

## Activity/Project Disaster Information

| | |
|---|---|
| Mitigation Resulted From Federal Disaster? | **Yes** |
| Federal Disaster #: | **845 , 10/18/1989** |
| Value Tested By Disaster? | **Unknown** |
| Repetitive Loss Property? | **Unknown** |

## Reference URLs

| | |
|---|---|
| Reference URL 1: | **http://www.bart.gov** |
| Reference URL 2: | **http://www.fema.gov/government/grant/pdm/index.shtm** |

## Main Points

- In October of 1989 a 7.1 magnitude earthquake struck the region causing widespread damage to buildings and transportation infrastructure.
- After being evaluated by engineers, the above grade portion of the Train Operations Building was found to pose a significant collapse hazard and a great risk to life safety and the function of critical train operations.
- A FEMA Pre-Disaster Mitigation grant provided funds for the disassembly of the above ground portion of the Train Operations Building at Metro Center.
- Removing the threat of collapse from the Train Operations Center means that the BART employees can safely carry on their duties throughout a major seismic event which could conceivably include the evacuation of train tunnels and eventually the resumption of normal train service which will be a vital component of the region’s overall recovery.