Transbay Transit Center Project
Shoring Wall and Excavation Construction

June 8, 2010
• Subsurface conditions and Transit Centre box
• Excavation process
• Movement analyses
• Movement monitoring
• Summary
1852 Shoreline and Site Conditions Relative to the DTX and the Terminal
Borehole Locations and Adjacent 3rd Party Geotechnical Data
Train Box and Superstructure: Transverse Section

Underside of base mat: -41 ft NAVD88
Vertical Section Along Minna Street
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Construction of train box inside temporary braced shoring wall

BART Project
1969/70

MMT Project
1994

Photo courtesy of San Francisco Public Library
Soil-Cement Walls – Sequence of Installation

1) Mixing of First Primary Panel

2) Mixing of Second Primary Panel

3) Mixing of Secondary Panel Between Two Primary Panels
DMM Rig during constructability trials

Installation of Beam
Typical Cross Lot Bracing
Deep Excavation Along The Embarcadero
Muni Metro Turnback Project
Typical Diagonal Bracing of Deep Excavations
Gap Building and EBMUD Wet Weather Building
Many ways of providing internal support to deep excavations
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West Base Case I
East Base Case I
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Ground and Wall Monitoring Instrumentation

- **PZC-1**: Piezometer Cluster No. 1 — Vibrating Wire Piezometers installed at various depths adjacent to trestle piles
- **EX-1**: Extensometer No. 1 installed at piezometer cluster PZC-1
- **DS-1**: Deep Settlement Marker No. 1 installed at the level of the foundation of the closest building

Inclometer No. 3 installed behind the shoring wall
Inclometer No. 1 installed through shoring wall
Standpipe piezometer No. 1 installed in dune sand (P-1-DS) and Colma sand (P-1-C)
Piezometer No. 6 installed in fill
Monitoring ground movements

**Extensometer**

Real time extensometer & inclinometer installation

Inclinometers and extensometers (sub surface displacements).

Can be real time or manual

Inclinometer (x, y, 0.002 in/ft)

Extensometer (z, +/- 0.01 inch)
Deep settlement marker and levelling points
Summary

• Established ground and groundwater conditions
• Successful constructability trials of shoring walls
• Excavation processes identified
• Calibrated soil models using numerical analysis methods
• Predicted ground movements
• General ground and water movement controls established for general conditions
• Shoring wall package is ready for market.