ZERO EMISSION CONTAINER MOVEMENT SYSTEMS

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Transportation Solutions (or not!)

"You'll appreciate this – it's cutting-edge technology."

Ports ZECMS Project
Objectives

- Develop system with technologies & creative financing plans via Private-Public Partnership (P3), utilizing Design, Build, Finance, Operate, and Maintain (DBFOM) framework
- Reduce drayage truck traffic & emissions
- Maintain or improve cargo velocity and productivity
- Provide system that interfaces with terminal operations & intermodal rail facilities

Zero Emission Container Movement Systems (ZECMS)

- Joint POLA/POLB ZECMS initiative for potential demo project of moving containers from ports to near-dock railyards
- I-710 Corridor EIR/EIS: includes evaluation of alternative technologies for moving containers from ports to Hobart/East L.A. railyards

POLA ZECMS Initiative

- RFP for Proof of concept Fall 2009
- Currently reviewing proposals

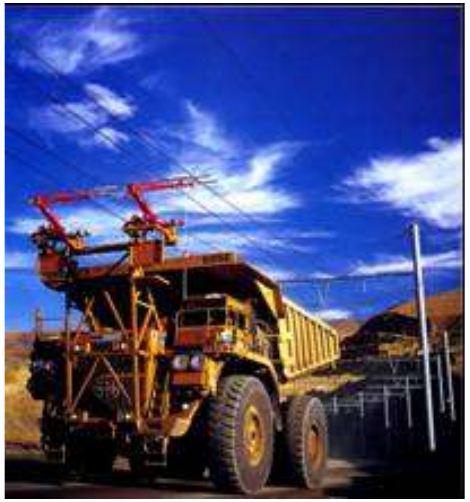
I-710 Corridor ZECMS Market Analysis

Assumptions:

- An alternative technology could serve part of the projected 2035 near-dock and off-dock intermodal container markets
- An alternative technology could also serve parts of other geographic markets
- The on-dock market will continue to be served by rail
- An alternative technology in the I-710 Corridor could be considered an initial segment of a regional network
- No intermediate stops for the Automated Fixed Guideway system

I-710 Corridor ZECMS Technologies

Zero Emission Trucks



I-710 Corridor ZECMS Technologies

Zero Emission Trucks

- Lowest Cost
- Maximum flexibility
- Utilizes a combination of existing technologies
- Utilizes existing roadway system
- Does not require additional intermodal yards
- Open to a range of propulsion technologies
  - Electrified motor
  - Linear induction
  - Hybrid

I-710 Corridor ZECMS Technologies

Zero Emission Trucks

- **Zero Emission Trucks** (Are able to operate on a truckway and on a conventional highway.)
  - Electric Motor / Wayside Power
  - Electric Motor / Battery Power
  - Electric Motor / Wayside and/or Battery Power
  - Hybrid Electric/Diesel
  - Hybrid Electric/LNG
  - Linear Induction / Diesel
  - Linear Induction / Electric Motor / Battery Power
  - Linear Induction / LNG Power

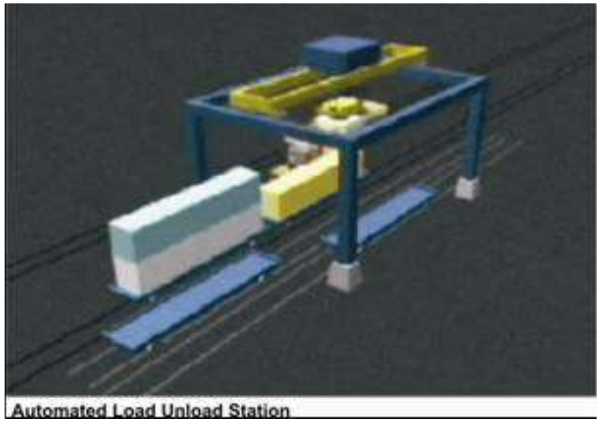
I-710 Corridor ZECMS Technologies

Automated Fixed Guideway

Magnetic Levitation

Electrified Conventional Rail

Exclusive Contact Guideway



Automated Load Unload Station

Electric Cargo Conveyor System

I-710 Corridor ZECMS Technologies

Automated Fixed Guideway

- Many companies are promoting this technology family
  - Currently unproven
- Not flexible
  - Limited markets
- Requires expanded on-dock and near-dock intermodal yards
- Requires extensive network of collection and distribution guideways
- High cost
- May become feasible as the technology advances

I-710 Corridor ZECMS Technologies

Potential Fatal Flaws

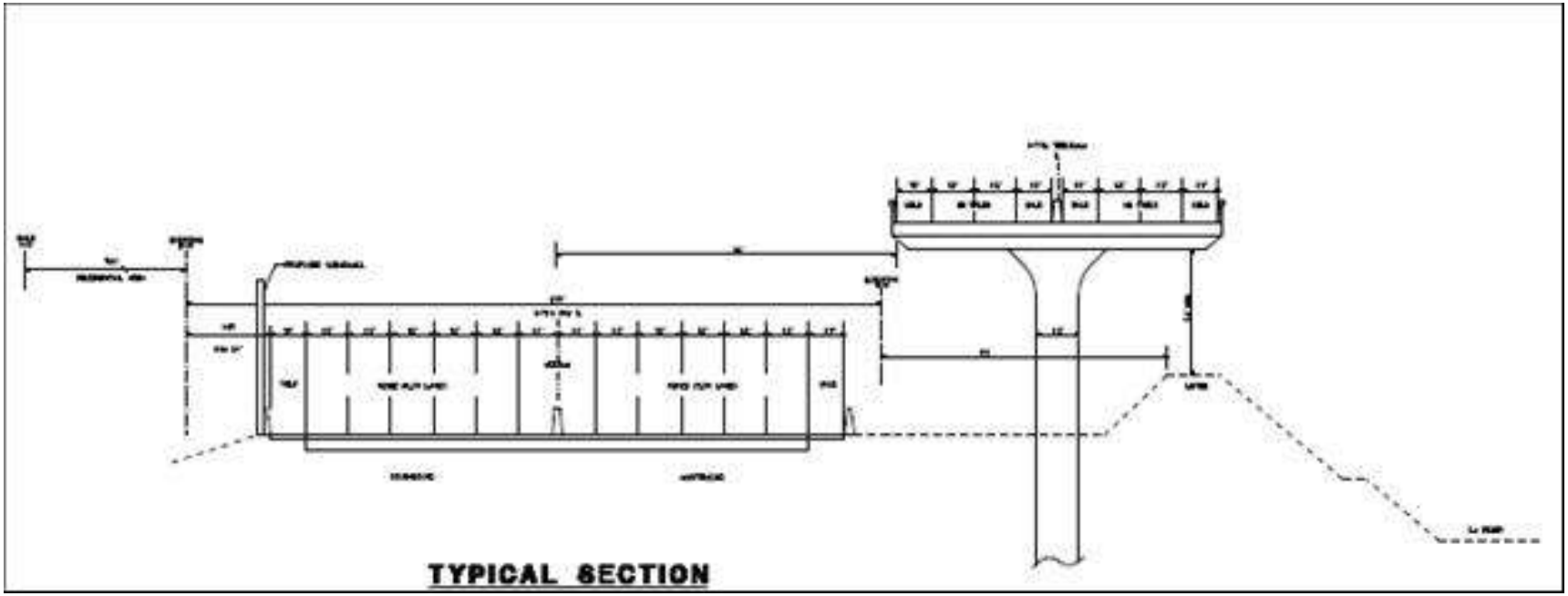
- Fixed Guideway Family
  - Cost
  - Serves limited market
  - Expansion limitations
  - Loading/unloading space requirements
  - Level of research and development required

I-710 Corridor ZECMS Implementation Phasing

1. Truck Lanes
2. Low Emission Diesel Trucks
3. Zero Emission Trucks
4. Fixed Guideway

I-710 Corridor ZECMS Concept Plan

Zero Emission Truck



Fits within the available I-710 freeway right-of-way
Both at-grade and elevated

Contact

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