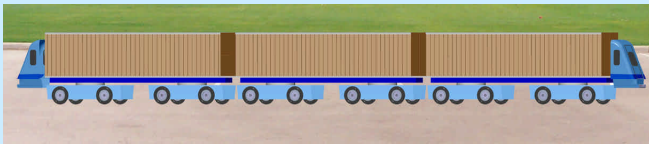


# **CargoRail™ Heavy Duty CargoTram™ Shipment Option**

**Near-term & Affordable Solution for  
Gateway Cities CoG to the  
Cal 91/I-605 Freeway Truck Problem**



**Dockside, road & street hybrid operation**



**Elevated guideway electric operation**

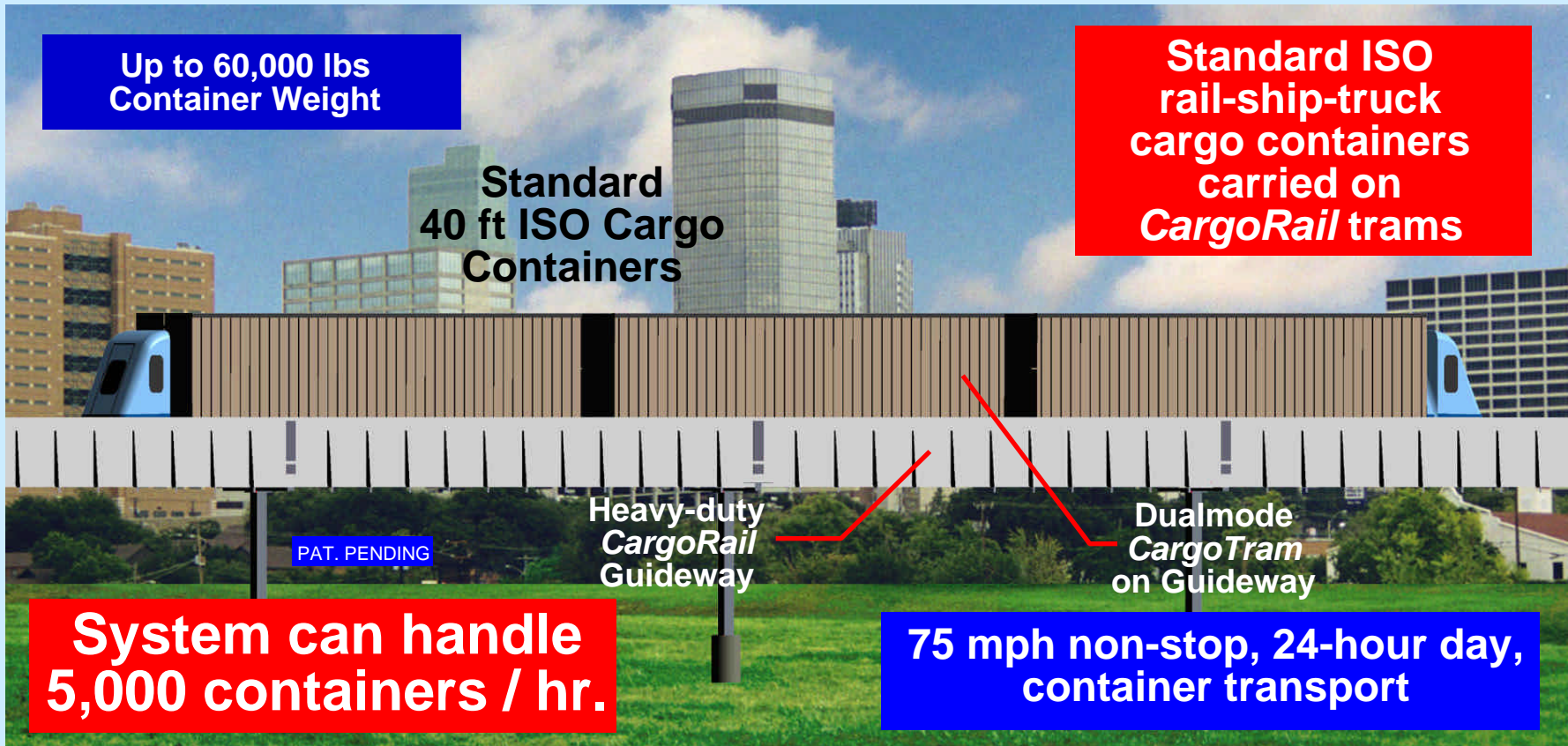
MegaRail® Transportation Systems, Inc.  
Fort Worth, Texas

**Reduced Noise & Air Pollution at a Cost You can Afford**

U.S. PATS. 6,039,135, 6,401,625, 6,435,100, 6,615,740, 6,742,458, 6,834,595 & 6,837,167  
OTHER U.S. & INTERNATIONAL PATENTS PENDING

# **CargoTram™ Heavy Cargo Transfer System**

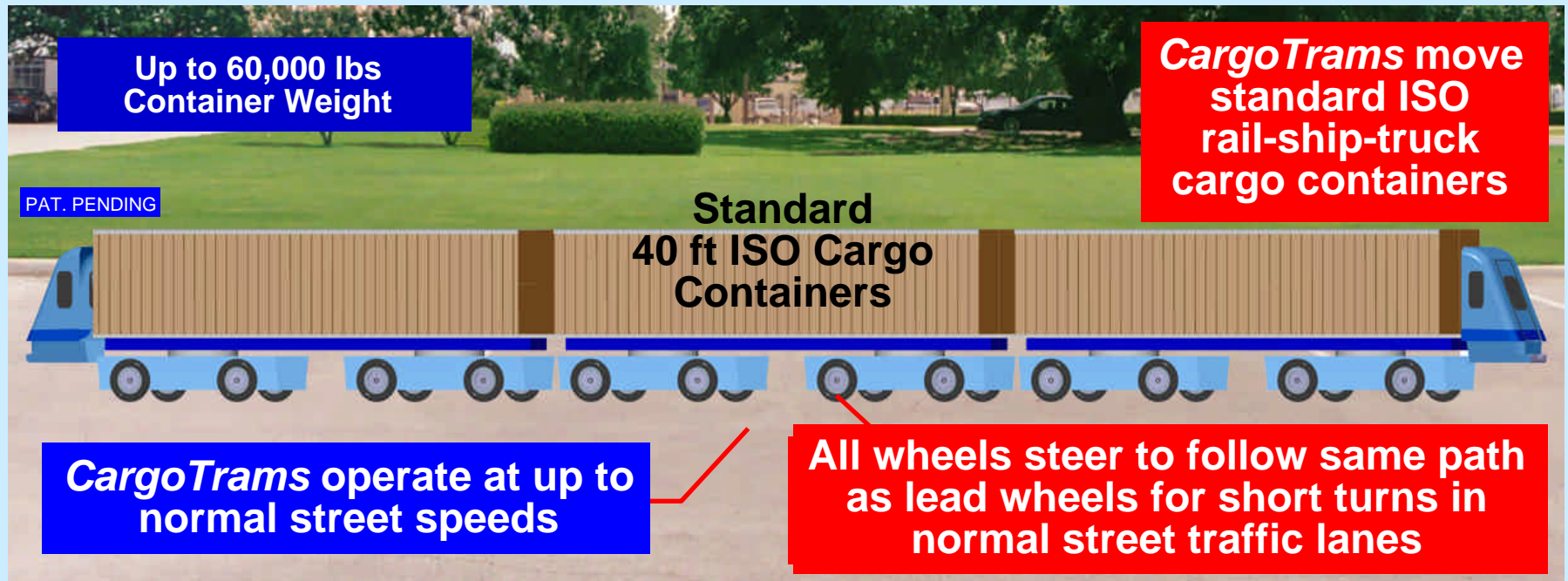
**Containers on electrically-powered dualmode trams**



**Three car tram shown – Longer or shorter trams may be used**

# Tram Port, Transfer Facility & Street Operation

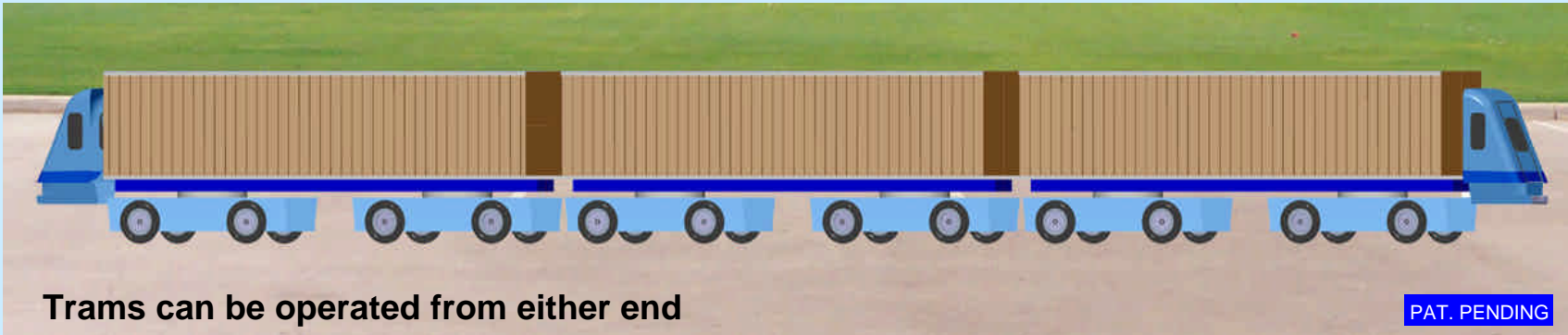
Containers move on hybrid powered dualmode trams



Dualmode *CargoTrams* operate in port, transfer facility & on streets as trucks  
Three car tram shown – Longer or shorter trams may be used

**No new dockside or transfer terminal installations**

## **CargoRail – Dualmode *CargoTram*!**



Dualmode *CargoTram* operates on ground as hybrid – Similar to MicoRail™ tram shown below  
**Adds only ramps at port & terminal entry – ( No dockside mods )**

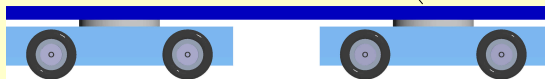


Smaller *MicroRail* dualmode *CargoTram* also operates on guideway & on ground in hybrid mode

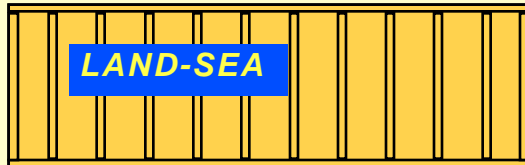
**Prototype *MicroRail* tram demos dualmode tram concept**

# Easy *CargoTram* Car Loading

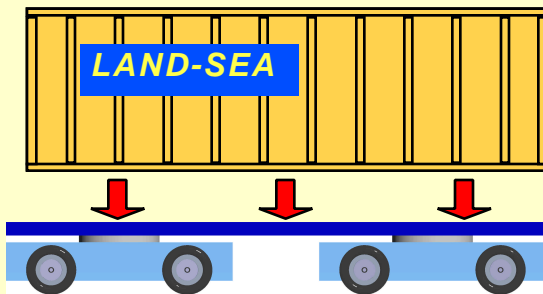
Platform for  
standard 20 & 40-ft  
ISO containers



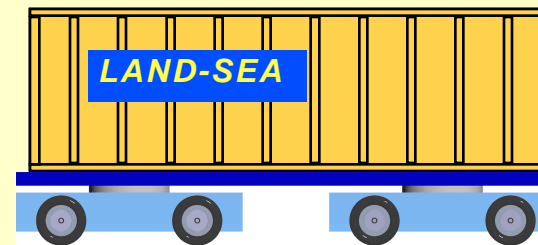
Empty Heavy CargoTram Car



Standard Land-Sea Cargo Container



Cargo Containers Loaded onto Car



Loaded *CargoTram* Car

- Standard land-sea ISO cargo containers are easily loaded
- Standard dockside & transfer area container handling equipment
- **No new equipment needed**

**Fully compatible with current cargo facilities**



# ***CargoTram* Capability Overview**

## **Dedicated Heavy *CargoRail* Lines**

- **Low-cost** Guideway – Over railroad or public ROW
- Electrically Powered on Rail – **No air pollution!**
- **Vehicle-based switching** – No slow rail moving!
- **Dualmode Hybrid Operation** – CNG & battery power
  - **For port, transfer facility & street operation**
- ***CargoTrams* Load and Unload** – Just like trucks
- **Max Guideway Capacity** – 5,000 veh / hr / dir @75-mph

**Quake resistant, bolted together,  
low-mass steel guideway on steel posts**

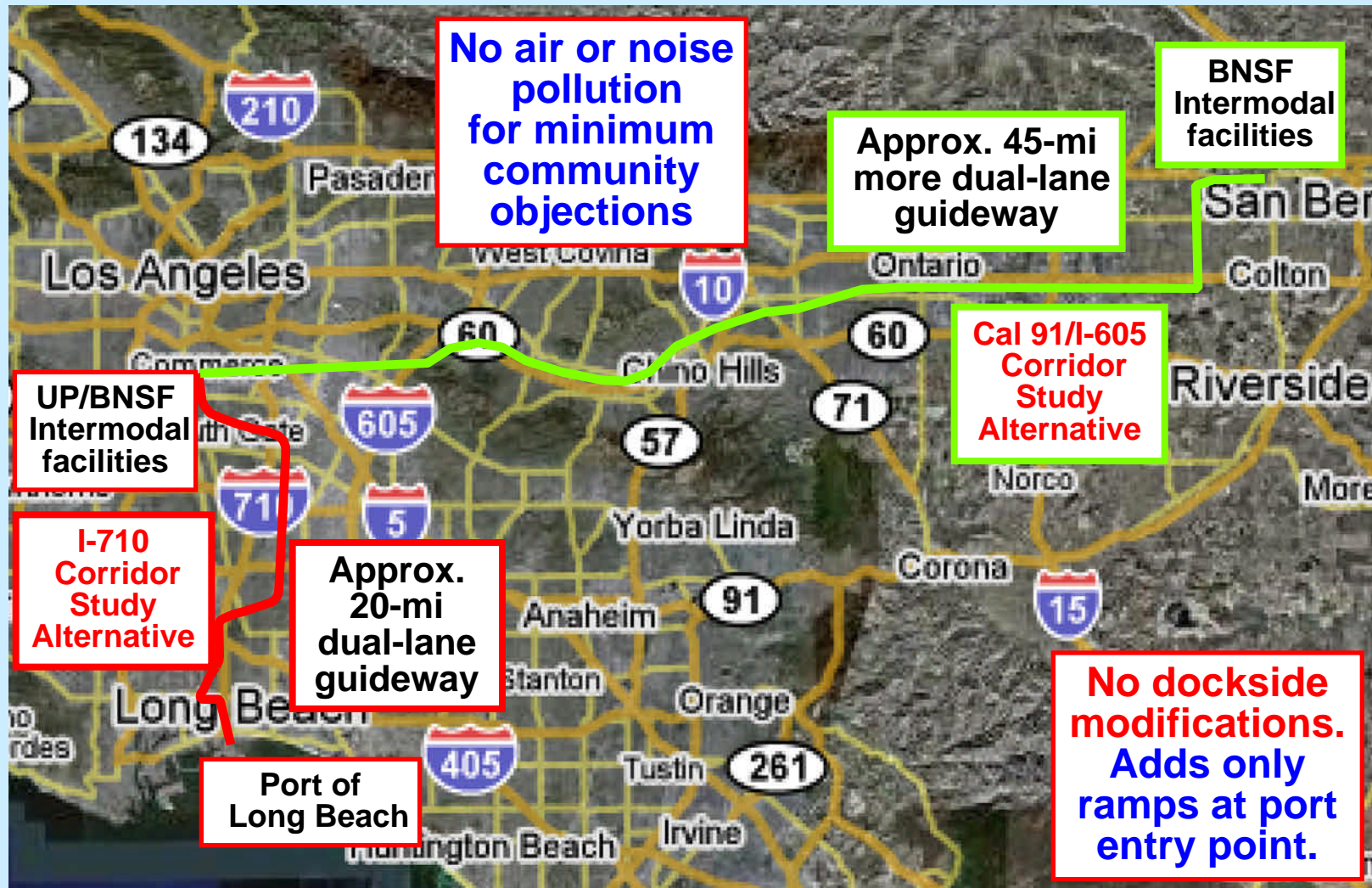
## ***CargoTram* vs Truck Performance**

- **Three Times as Many Containers per Load**
- **Approximately 40% More Throughput**
- **60% Fewer Drivers – Reduce Labor Cost**
- **100% Cut in Container Trucks to Intermodal Center**
- **No Change in Dockside Operations**
- **All-wheel Steering for Less Turn Space**

**Plus *CargoTrams* can also exit at ramps along line to reach warehouse districts via city streets as low-pollution tandem trucks**

# Proposed Cal 91/I-705 Truck Solution Line\*

Uses existent railroad right of way – **No impact on rail lines**

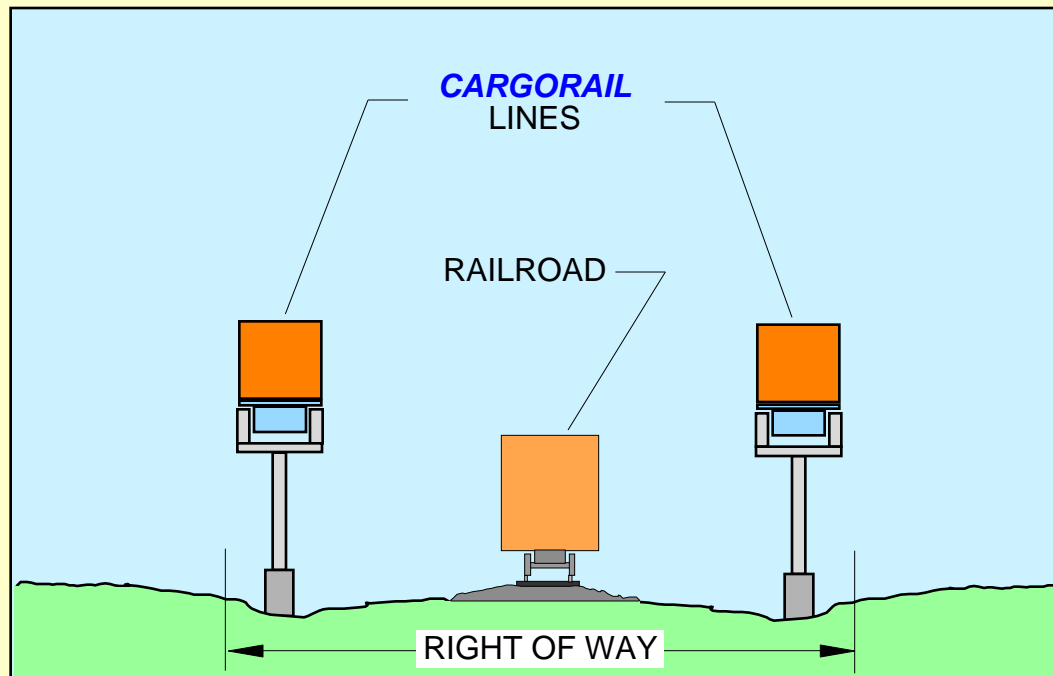


\*Extends I-710 truck solution (red) line

CargoRail™ is a trademark of MegaRail Transportation Systems



## **CargoRail Installed Along Railway**



- **Use current railroad right of way**
- **No impact on railroad use**
- **Minimum railroad disruption for installation**
  - **Rapid installation of factory-built rails & posts**
  - **Concrete piers – only on-site construction**

## Estimated *CargoRail*<sup>™</sup> Line Installed Cost

**Cal 91 / I-605 route** – Cost based upon extending I-710 line

- **Total Installed Guideway Cost – \$640M**
  - Typical 45-mi dual guideway = 90-lane-mi \$6M/mi = \$540M
  - Likely cost for street/freeway/river spans = \$100M – \$200M
- **Total Carrier Cost – 2,800 x \$120,000 = \$336M**
  - *CargoRail* = 75-mph – Average urban trucks = 35-mph
  - *CargoRail* carrier capacity per hour = 2.1 that for truck
  - *CargoRail* carriers to replace current 6,000 trucks = 2,800
- **Total *CargoRail* System Cost = \$976M – 1.08B**
- **Railroads ROW Overhead Use Cost – ???**

**Lowest cost solution to Cal 91/I-605 Truck Problem**

# Low Cost – Self-funding System

Revenue Bonds - No State or Federal Tax Dollars

- State or Local Revenue Bonds Fund Construction
- **No Federal Action or Funds**
- **Bonds Retired from Revenue**
- **Operation and Maintenance from Revenue**
- **Lower cost and faster service to shippers**

**Low Risk, No Cost to Taxpayer Solution!**

## ***CargoTram* Major Benefits Summary**

**Solve critical truck and port capacity problems**

- **Reduce Major Air Pollution Source**
- **Remove Many Large Trucks from Highways**
- **Increase Highway Capacity for other Traffic**
- **Decrease Highway Maintenance Cost**
- **Increase Highway Safety & Reduce Delays**
- **Increase Port Capacity at No Cost**
- **No dockside or intermodal facility modifications**

**All this with a system you can afford!**



## ***CargoTram* is Low Risk**

Current prototype project offers full function demo

- Full-function ***MicroRail*™** prototype this summer  
( Demos all functions including dualmode rail & street operation )
- ***CargoTram* is merely a larger, heavier version**
- **No new technology required**
  - Electric train-type side rail power delivery
  - Heavy-duty electric power steering actuators
  - Heavy-duty truck tires
  - **Electric bus type permanent-magnet hub motors**

**The Low Risk, Low Cost Choice**

# We offer a Proven Industry Team

## MegaRail Transportation Systems

- System Design & Integration
- Prime Contractor

## Austin Bridge

- Site Engineering Design
- On-site Guideway Assembly
- Pier & Guideway Installation

## Clark's Precision Machine

- Vehicle Production
- Guideway Production
- Station Production

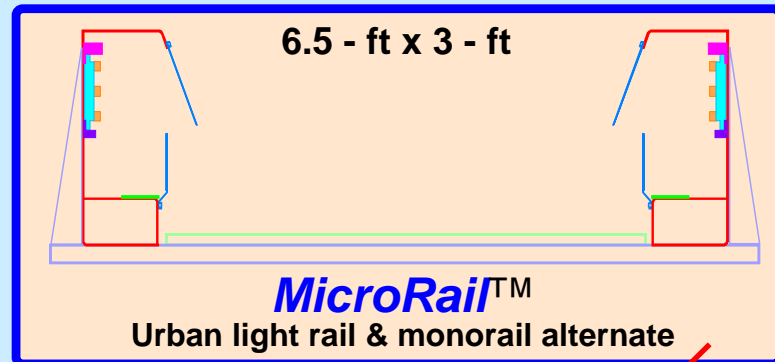
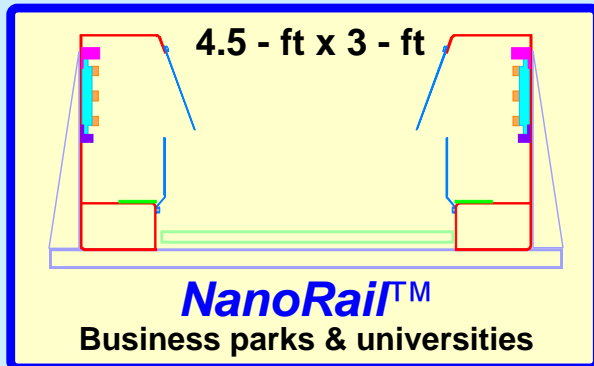
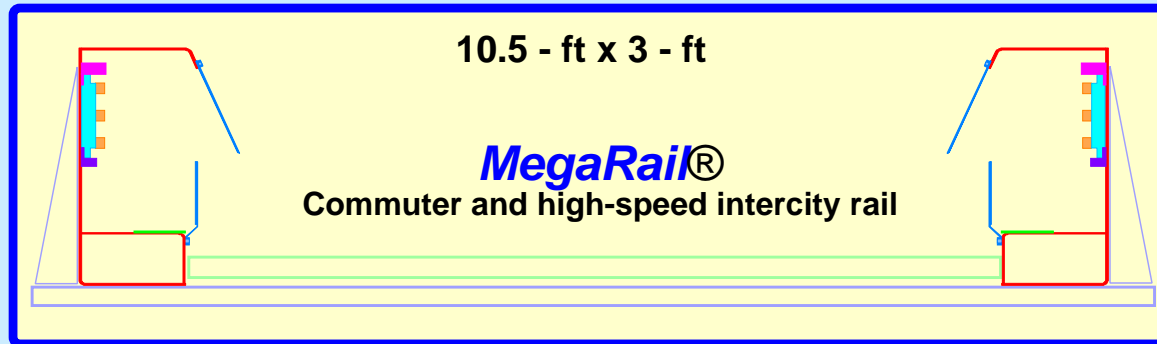
**Austin Bridge, Clark's  
& Micrin – Established  
companies with proven  
records & excellent  
D&B ratings**

## Micrin Technologies

- Electronics Production
- Electrical Harness Production
- Sheet Metal Parts Production

**Reduced Customer Risk**

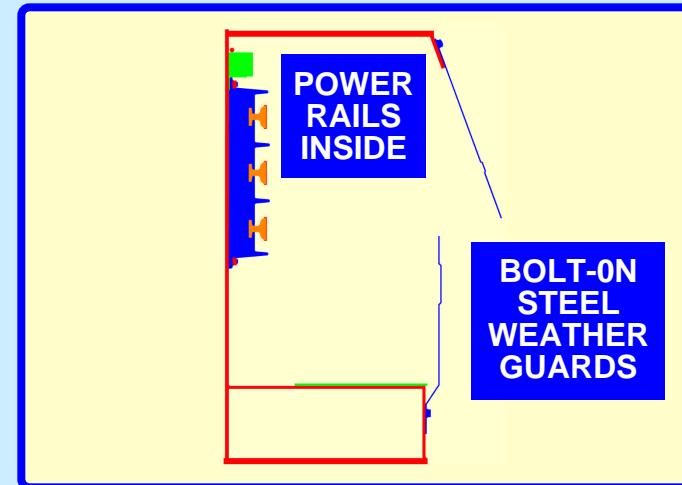
# CargoRail from Family of Related Systems



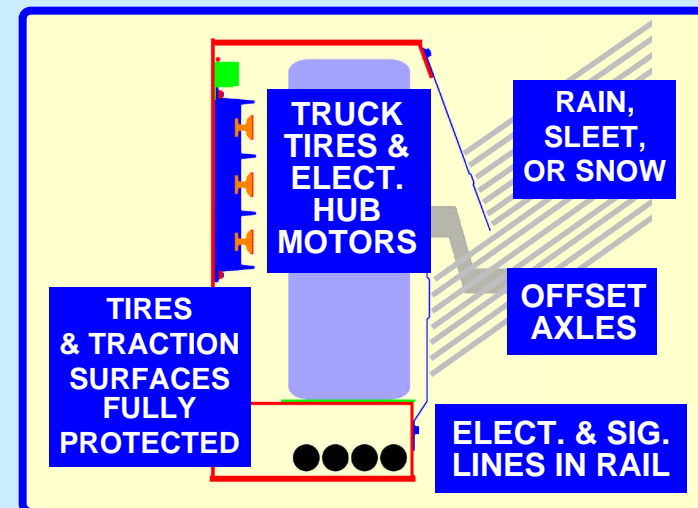
**Production prototype now under construction**

# Low-cost, All-weather, Enclosed Rails

- **Low-cost guideway rails**
  - Parts cut from flat steel
  - Machine-welded construction
  - **Low material & labor costs**
  - Bolt-in electric power rails
  - Trucked to site & bolted together
- **All-weather, enclosed rails**
  - Wheels & power collectors inside
  - Protected electric power rails
  - Dry & ice-free traction surfaces
  - Safe operation in any weather
  - **Whisper-quiet operation**



Single guideway rail cross-sections



Rails & cross-members form **self-supporting structure**



# MegaRail has Built & Tested Guideway



**Ultralight, weathering or stainless-steel structure**

**Long-life guideway**

**Guideways elevated above street traffic - *MicroRail* guideway photo**  
**Minimum sky blockage – No wide elevated guideway shadows**



**View looking upward through guideway**  
***MicroRail* guideway shown**

U.S. Patent 6,837,167

## Suggested Action

### Contract for low-cost demo project

- Build & Install 1/2-mile demonstration guideway
- Build single, three-carrier dualmode tram
- Demo to prove ground & rail operation
  - Full demo in Fort Worth
  - Plus dock demo in Long Beach
- Complete demo project in twenty-six months
- Total demo project cost – \$12M

**Low Risk, Low Cost Project Proves System**

**Also contract MegaRail for concurrent final alignment & initial site engineering study – Cost TBD**

# Technical Summary

Unique **new** combination of **off-the-shelf, proven technology**

## Enclosed steel guideway rails - US Pat. 6,039,135

- Simple welded-steel factory fabrication
- Standard electric power rails

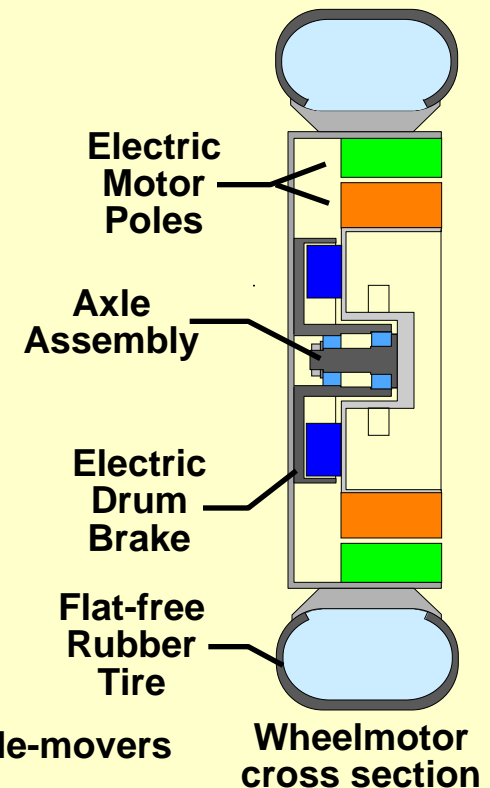
## Flat-free tires – Current tire technology

## Permanent-magnet electric motors

- **Current brushless type motors**
- Electric motor wheels – **Current electric buses**

## Vehicle-based steering & switching

- Truck-type steering with electronic control
- **No moving rail switches** – Used in some people-movers



***Only the combination & guideway are new!***

## **CargoTram Summary**

### **Performance – Beats heavy trucks or any other system**

- Up to **5,000 containers per hour per direction**
- Shorter trip times • **Truck-type hill capability**
- **No dockside modifications – Dualmode trams operate as trucks**

### **First service – Within 30 months! – ( Train-type manual control )**

- Local & State Funding – **No Federal funding delays**

### **Total system cost – \$6 – 10M per lane-mile (Typical cost)**

- Local funding and control • **No on-going operation subsidies**

### **Environment friendly – Zero emissions**

- No construction or operation impact to business or traffic
- No earth moving • **No added right-of-way** • **Noise free**

**• Low Cost**  
**• Low Tech**  
**• Low Risk**





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