CargoRail™ Heavy Cargo Container Shipment Option

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

Reduced Noise & Air Pollution at a Cost You can Afford

MegaRail, Transportation Systems, Inc.
Fort Worth, Texas

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
CargoRail™ Manual Heavy Cargo System

Containers on electrically-powered dualmode trams

- Up to 60,000 lbs Container Weight
- Standard 40 ft ISO Cargo Containers
- Standard rail-ship-truck cargo containers carried on CargoRail trams
- PAT. PENDING

System can handle 5,000 containers / hr.

- Heavy-duty CargoRail Guideway
- Dualmode Container Tram on Rail
- 75 mph non-stop, 24-hour day, container transport

Convertible to automated single container carriers
( No throw-a-way in conversion )
CargoRail™ – Dualmode Cargo Tram!

Trams can be operated from either end

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

Smaller MicroRail dualmode cargo tram exits guideway & operates on street in hybrid mode

CargoRail dualmode tram similar to tram being prototyped
CargoRail™ System Risk is Low

Current operational prototype project offers full function demo

- Full-function MicroRail™ prototype this summer
  (Demos all technology including dualmode rail & street operation)
- CargoRail is merely a larger, heavier version
- Electric train-type side rail power delivery
- Heavy-duty electric power steering actuators
- Standard heavy-duty truck tires
- Electric bus type permanent-magnet hub motors

The Low Risk, Low Cost Choice
**CargoRail™ Automated Heavy Cargo System**

- **Heavy-duty lines for busy cargo routes**
  - Up to 60,000 lbs Container Weight
  - End Caps Reduce Drag
  - Standard 40 ft ISO Cargo Containers
  - Standard rail-ship-truck cargo containers carried on cargo ferries
  - Heavy-duty CargoRail Guideway
  - Automated Container Ferry

- **Major increase in container cargo capacity & speed**
  - 75 mph non-stop, 24-hour day, terminal-to-terminal shipment

- Over 5,000 containers/hour/direction rail capacity
**CargoRail™ Ferry Loading**

**Fast Loading of Standard Containers**

- Empty ferry has low drag for low energy operation
- Standard land-sea cargo containers are easily loaded
- End caps streamline loaded ferry for reduced energy

**Diagram Details**

- **Empty Heavy Cargo Ferry**
- **End Caps Fold Down for Low Drag**
- **Standard Land-Sea Cargo Container**
- **End Caps Hinge Away for Loading**
- **Cargo Containers Loaded onto Ferry**
- **End Caps Reduce Drag for Reduced Energy Use**
- **Loaded Ferry on Guideway**
CargoRail™ Capability

Dedicated Heavy Cargo Lines

- Heavy-duty Guideway – Over either railway or public ROW
- Electrically Powered – No air pollution!
- Ferries Load and Unload at Container Terminals
- Dualmode Hybrid Operation for Dockside Pickup & Intermodal Facility Drop Off
- CargoRail Capacity – Over 5,000 containers per hour / dir.
- Factory Built Steel Rail Tubes & Support Posts
Possible Long Beach Port *CargoRail™* Line

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

- No air or noise pollution for minimum community objections
- BNSF Intermodal facilities
- Cal 91/I-605 Corridor Study Alternative
- Approx. 45-mi of dual-lane guideway
- No dockside modifications. Adds only ramps at port entry point.

*CargoRail™* is a trademark of MegaRail Transportation Systems
CargoRail™ Installed Along Railway

Lines beside Railway Line

- Use current railroad right of way
- No impact on railroad use
- Minimum railroad disruption for installation
  - Rapid installation of factory-built parts
  - Concrete piers – only on-site construction
CargoRail™ Line
Cal 91 / I-605 route

- Total Installed Guideway
  - Typical 45-mi dual guideway = 90-lane-mi
  - Some special street/freeway/river spans may be required
- Total Carriers – 2,800
  - 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
- CargoRail System Cost – Comparable to a railroad cost
- Railroads ROW Overhead Use Cost – ????

Lowest cost solution to Cal 91/I-605 Truck Problem
Potential for Self-funding

Revenue Bonds - No State or Federal Tax Dollars

- State or Local Revenue Bonds Fund Construction
- Bond Retirement from Revenue
- No Federal Legislative Action Necessary
- **Low Risk** - Shippers see lower cost and faster service
- Operation and Maintenance from Revenue

Low Risk, No Cost to Taxpayer Solution!
Suggested Action

Contract for low-cost demo project

- Build & Install 1/2-mile demonstration guideway
- Build one, three-carrier dualmode tram
- Use demo system to prove ground & rail operation
- Complete demo project within two years

Low Risk, Low Cost Project
Dualmode *CargoRail* vs Truck Performance

Major gains with low risk & cost

- Three Times as Many Containers per Load
- Approx. 40% More Throughput from Speed Increase
- Increased Container Security
- 60% Fewer Drivers — Reduce Labor Shortage & Cost Problems
- 100% Cut in Container Trucks to Intermodal Facility
CargoRail™ Major Benefits Summary

- Reduce Major Air Pollution Source – Heavy trucks
- Increase Highway Capacity for other Traffic
- Increase Container Security & Decrease Labor
- Decrease Highway Maintenance Cost
- Increase Safety & Reduce Traffic Delays
- Increase Port Capacity without Costly Expansions

All this with one single step!
Proven Industry Team

MegaRail Transportation Systems
- System Design & Integration
- Prime Contractor
- Owner & Operator (in some cases)

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

Clark’s Precision Machine
- Vehicle Production
- Guideway Production
- Station Production

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

Austin Bridge, Clark’s & Micrin are well-established companies with proven records & excellent D&B ratings

Reduced Risk to Customer
CargoRail from Family of Related Systems

**CargoRail™**
Heavy land-sea cargo container transport

**MegaRail®**
Commuter and high-speed intercity rail

**NanoRail™**
Business parks & universities

**MicroRail™**
Urban light rail & monorail alternate

Production prototype now under construction
Unique CargoRail™ Features

Simple, Light-weight Design Assures Low Cost

- Communications Devices
  - Inside Channel Beam
- Power Rail Assemblies
  - Inside Enclosed Rail Tube
- Traction Surface Assemblies
  - Inside Rail Channel
- Power & Signal Lines Routing
- Channel
- Rail Structure is 20 x 42 Stainless or Weathering Steel Beam
- Offset Axles
  - Support Wheels Through Cover Slots
- Thin Stainless Weather Covers
- Heavy Truck Tires with Electric Hubmotors

Factory-built Rail Components Enable Rapid Installation
Low-cost, All-weather, Enclosed Rails

- **Low-cost guideway rails**
  - Formed from flat steel
  - Machine-welded construction
  - Low material & labor costs
  - Bolt-in electric power rails
  - Truck or rail to installation site

- **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
**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 electrical side power rails

**Flat-free tires** – Current tire technology

**Permanent-magnet electric motors**

- Current commercial brushless-motor technology
- Electric motor wheels – current electric vehicles

**Truck-based steering & switching**

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

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

Performance – Beats heavy trucks or any other system

- Up to 5,000 container per hour per direction rail capacity
- Shorter trip times • Truck-type hill capability
- No dockside installations – Dualmode trams operate as trucks

First service – Within 30 months! – (Train-type manual control)
- Local & State Funding – No Federal funding delays

Total system cost – 20 – 30% of other system cost
- Local funding and control • No on-going operation subsidies

Environment friendly – Zero emissions
- No building or operating impacts to business or street traffic
- No earth moving • No added right-of-way • Noise free

Heavy truck alternate – Available NOW

- Low Cost
- Low Tech
- Low Risk
Revolutionary, High-speed, Multi-user 21st Century Transport!

offers -

• Unprecedented level of service
• Low transportation user costs

Near-term & affordable solution to traffic & air pollution problems