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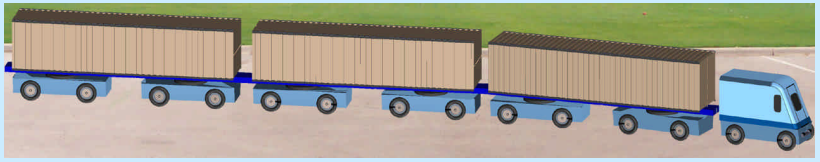
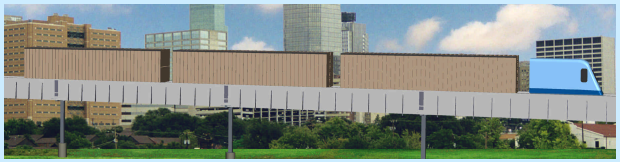
TRANSPORTATION SYSTEMS, Inc.

CargoRail™ Heavy Duty *CargoTram*™ Shipment Option

Near-term & Low-cost Solution for Ports of LB & LA Cargo Container Freeway Truck Problem



Dockside, road & street hybrid operation



Elevated guideway electric operation

MegaRail® Transportation Systems, Inc.
Fort Worth, Texas

Reduced Trucks & Air Pollution at Affordable Cost

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

The Key Objectives

- **Move the containers – Current & future**
- **Eliminate container trucks**
- **Reduce diesel exhaust fumes**
- **Avoid taking great swaths of the cities**
- **Do it at the lowest risk and cost !**

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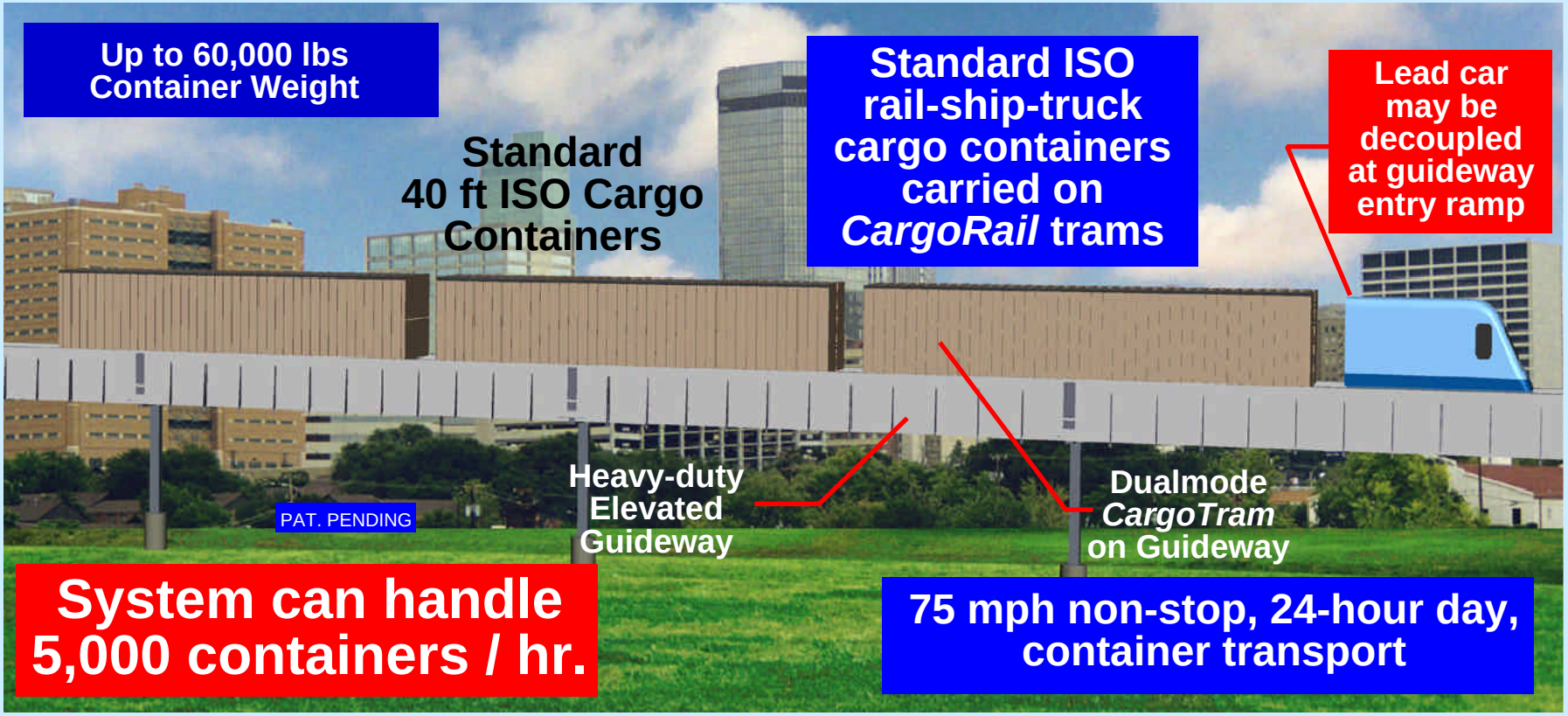
CargoTram™ Heavy Cargo System

Containers on electrically-powered dualmode trams

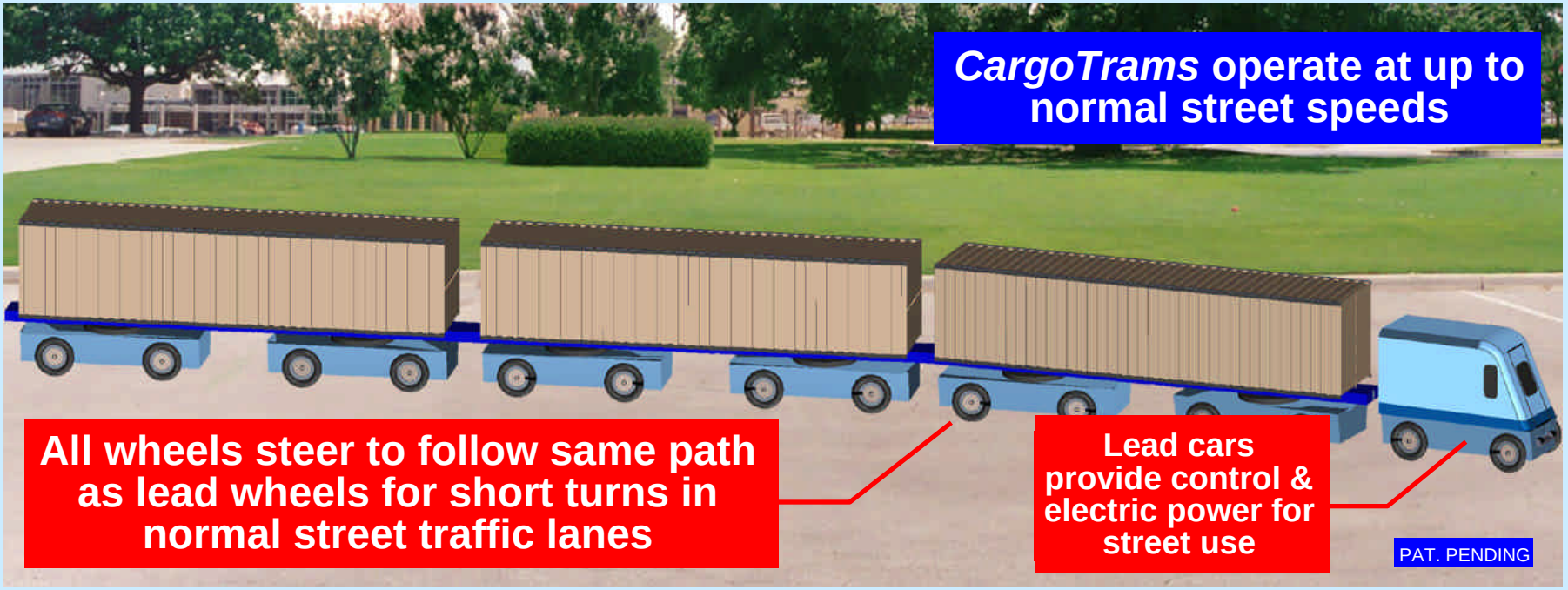


Three car tram shown – Longer or shorter trams may be used

(Lead cars may be decoupled and left at ends of line)

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

(Three-car trams provide 70,000 containers / day rail capacity)

No new dockside or transfer terminal installations

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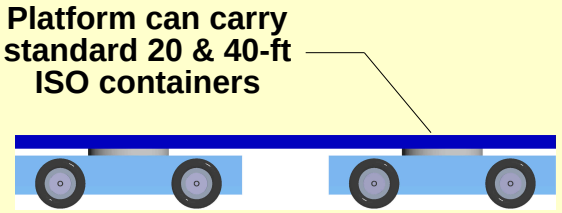
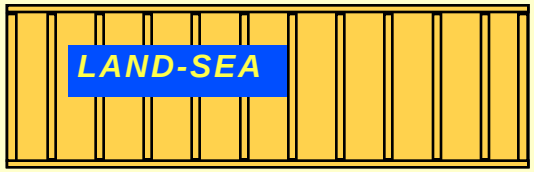
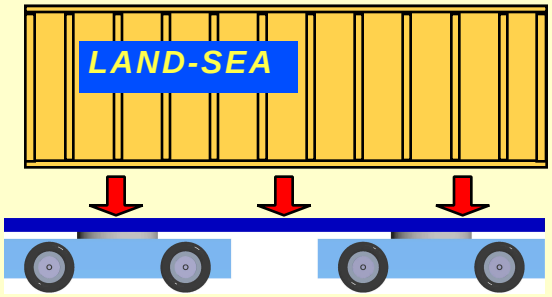
Easy *CargoTram* Loading



Empty Heavy CargoTram Car

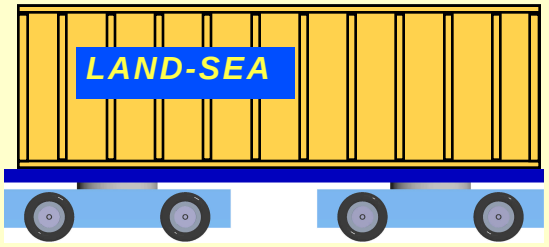


Standard Land-Sea Cargo Container



Cargo Containers Loaded onto Car

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



Loaded *CargoTram* Car

Fully compatible with current cargo facillities

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 generator 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

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

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

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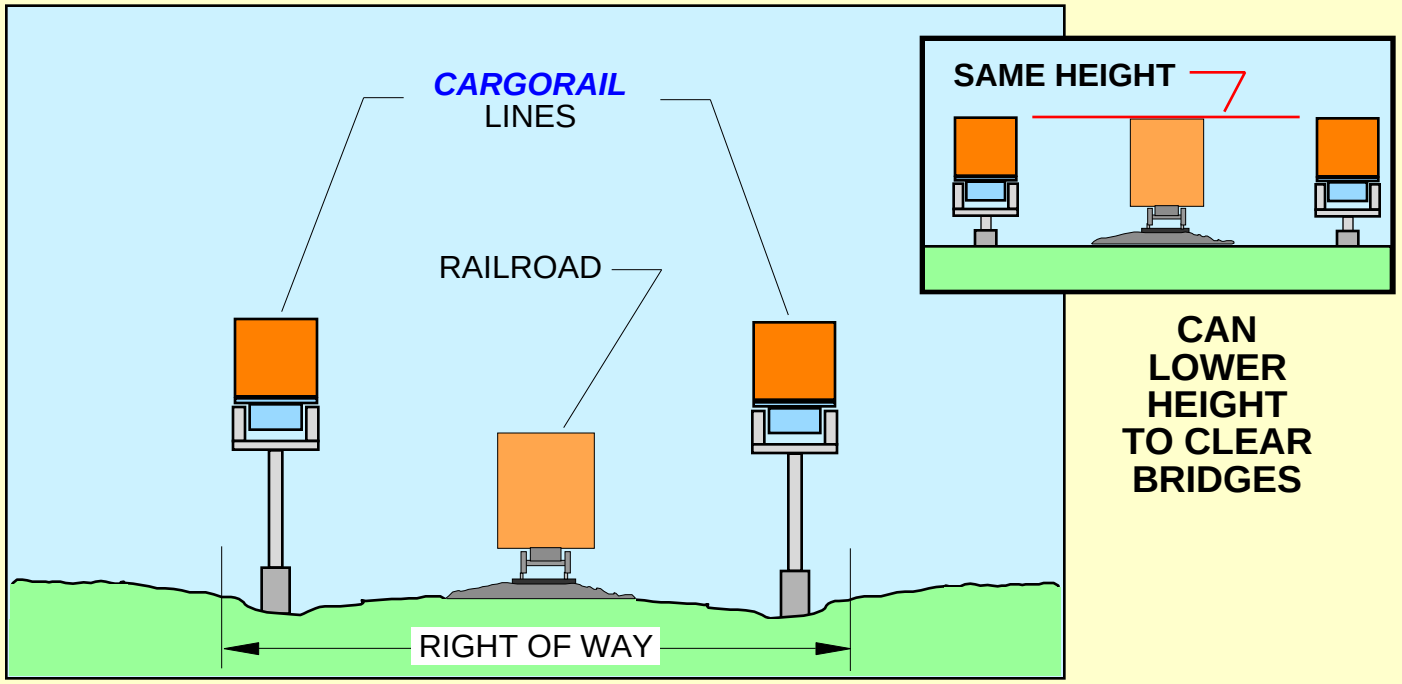
CargoRail Installed Along Railway



- **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**

CargoTram is Low Risk

Current prototype project offers full function demo

- **No new technology required – All standard hardware**
  - **Side rail power delivery – Inside enclosed rail tubes for safety**
  - **Heavy-duty electric power steering actuators**
  - **Heavy-duty truck tires**
  - **Permanent-magnet hub motors – Electric bus type**

The Low Risk, Low Cost Choice

Production Prototypes being Built

- **Full-function *MicroRail*™ prototype this winter**
  (Demos all functions including dualmode rail & street operation)
- ***CargoRail* is merely a larger, heavier version**

Car undercarriage

Completed guideway section

No new technology!

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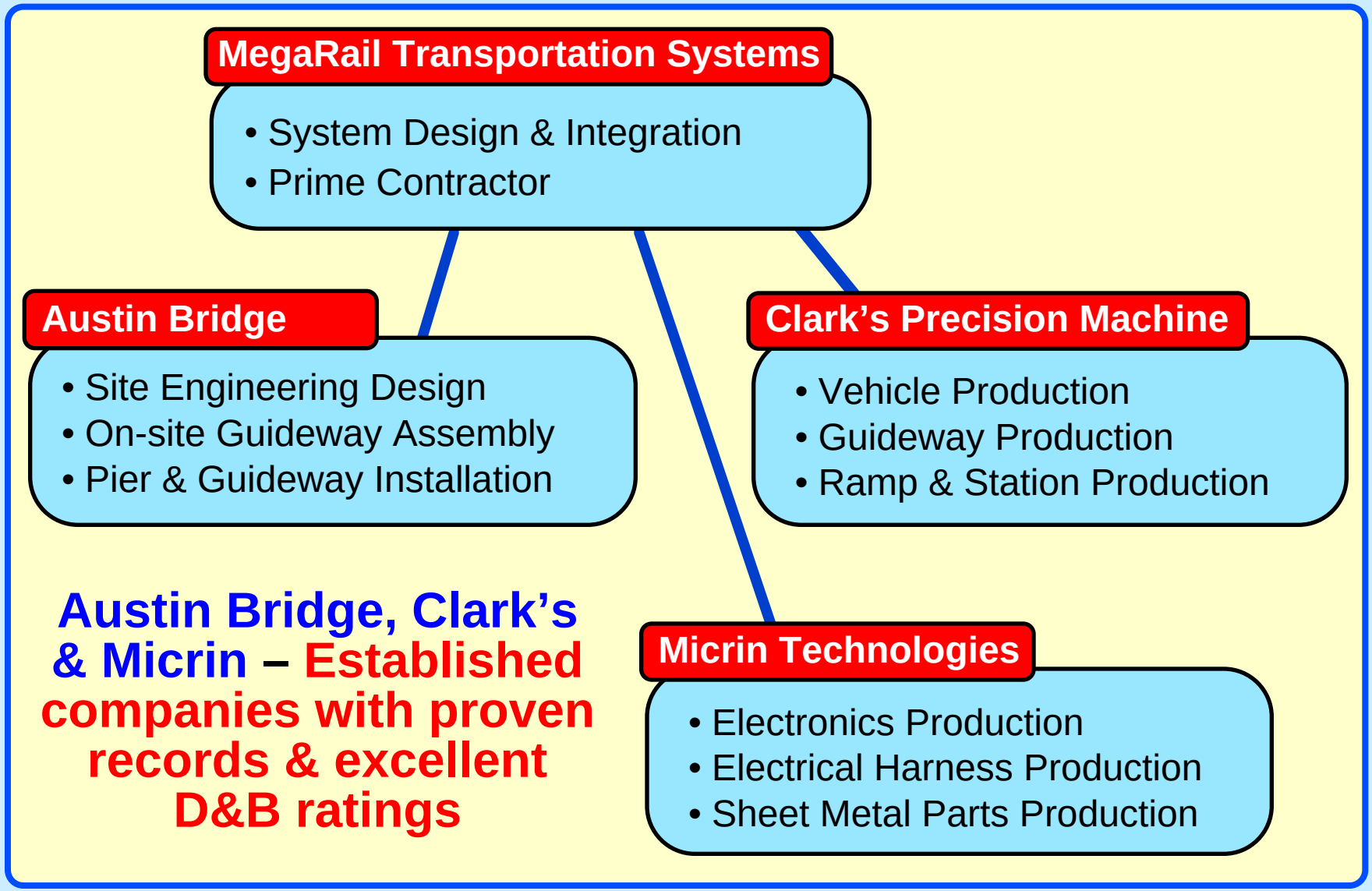
Proven Industry Team



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

Reduced Customer Risk

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I-710 Container Truck Solution Line

Uses old UP right of way – No impact on rail line

CargoRail™ is a trademark of MegaRail Transportation Systems

CRLBLA-6

CargoTram I-710 Line Cost

- **Total Installed Guideway Cost – $340M**
  - **Typical 20-mi dual guideway = 40-lane-mi $6M/mi = $240M**
  - **Likely cost for street/freeway/river spans = $100M – $200M**
- **Total Carrier Cost – 5,700* x $120,000 = $684M**
- **Total *CargoTram* System Cost = $927M – 1.27B**
- **Old UP ROW Overhead Use Cost – ???**

Lowest cost solution to I-710 Truck Problem

***Fewer carriers than trucks needed because of higher avg. speed**

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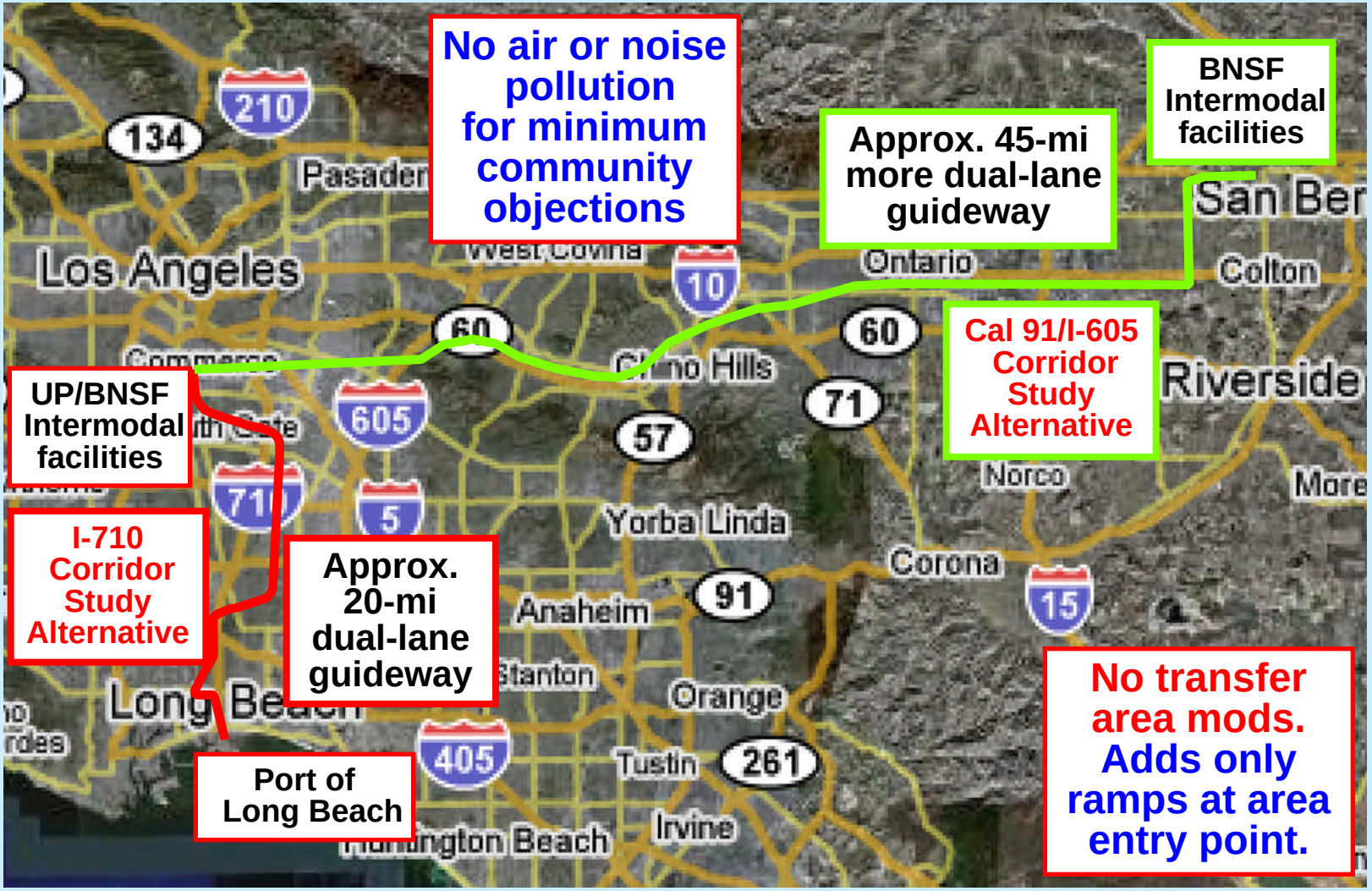
Cal 91 / I-605 Corridor Alternative

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



CargoRail™ is a trademark of MegaRail Transportation Systems

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CargoTram™ Cal 91 / I-605 Cost

- **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**
- **Total *CargoTram* System Cost = $976M – 1.08B**
- **Railroad ROW Overhead Use Cost – ???**

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

Assumes I-710 line is available

***Fewer carriers than trucks needed because of higher avg. speed**

Line also solves LA Port Truck Problem

Dualmode *CargoTrams* access Long Beach ramps

- ***CargoTrams*** **access LB rail ramps via W. Ocean Way**
- **Access SCIG facility via LB *CargoRail* line**
- **Or reach LA and/or San Bernardino facilities**

Total *CargoTram* System Installed Cost

- **LB I-710 Alternative Route = $927M to $1.27B**
- **LB Cal-91/I-605 Alternative Route = $976M to $1.08B**
- **LA Alternative using I-710 Guideway = $360M**
  3,000 additional *CargoTrams* cost to serve Port of LA
- **Total LB & LA Ports Truck Problem Solved = $2.5B**

Lowest cost solution available

Low Cost and Self-funding

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!

Benefits

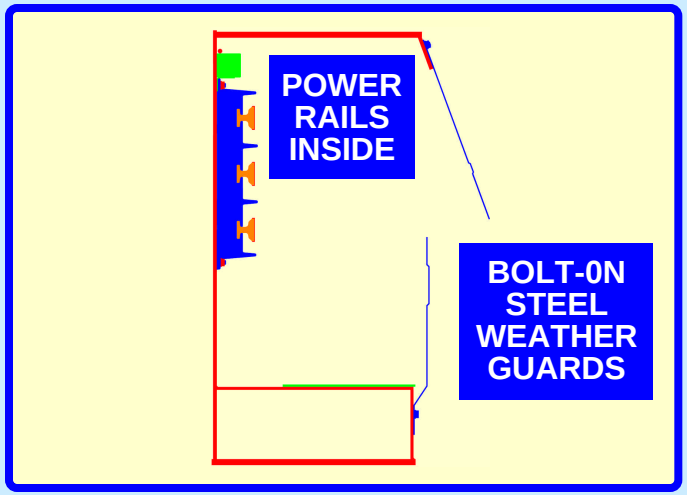
Solve critical truck, rail and port capacity problems

- **Reduce Major Air Pollution Source**
- **Reduce Container Trucks on Highways**
- **Increase Highway Capacity for other Traffic**
- **Decrease Highway Maintenance Cost**
- **Increase Highway Safety & Reduce Delays**
- **Increase Port & Railroad Capacity**
- **No dockside or intermodal facility modifications**

All this with a system you can afford!

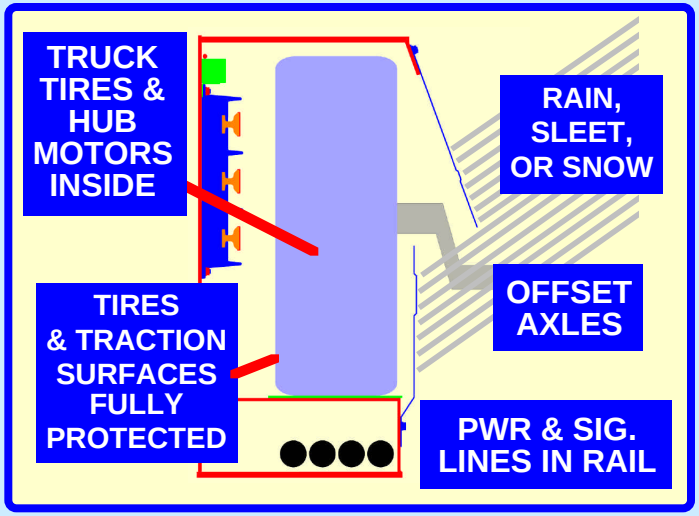
Low-cost, All-weather, Enclosed Rails

- **Low-cost guideway rails**
  - Parts cut from flat steel
  - Machine-welded construction
  - Low material & labor costs
  - Bolt-in electric power rails
  - Truck to site & bolt together



Single guideway rail cross-sections

- **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



Rails & cross-members form self-supporting "U" structure

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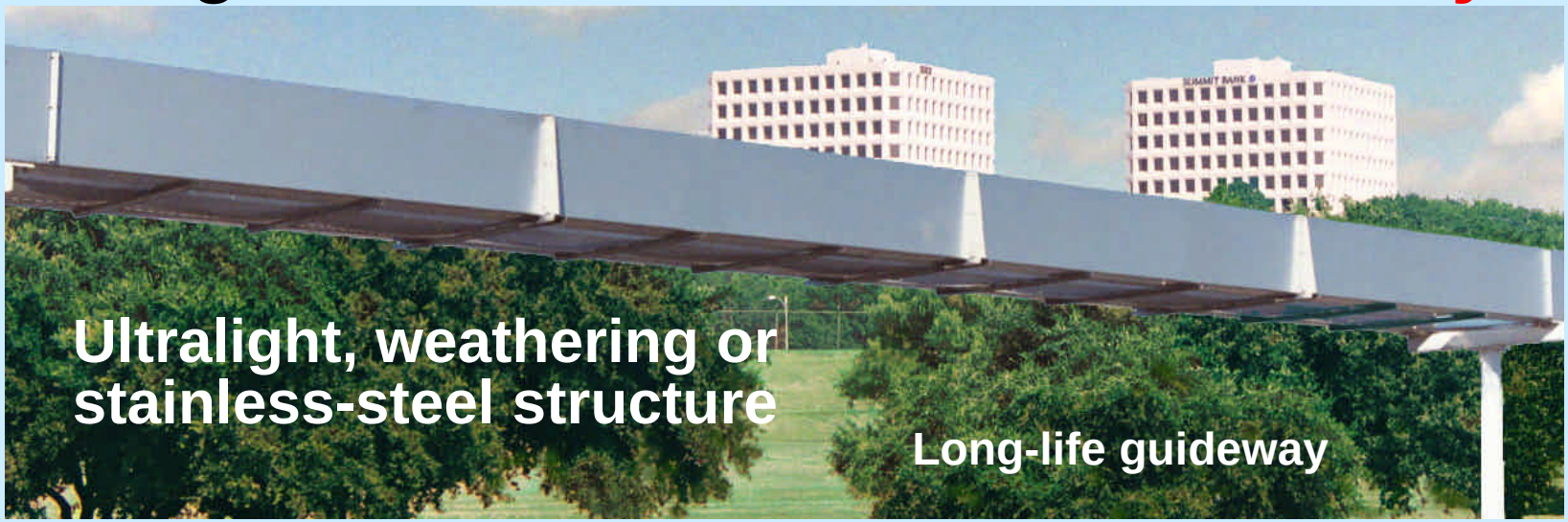
MegaRail has Built & Tested Guideway



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

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Technical Overview

Unique 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

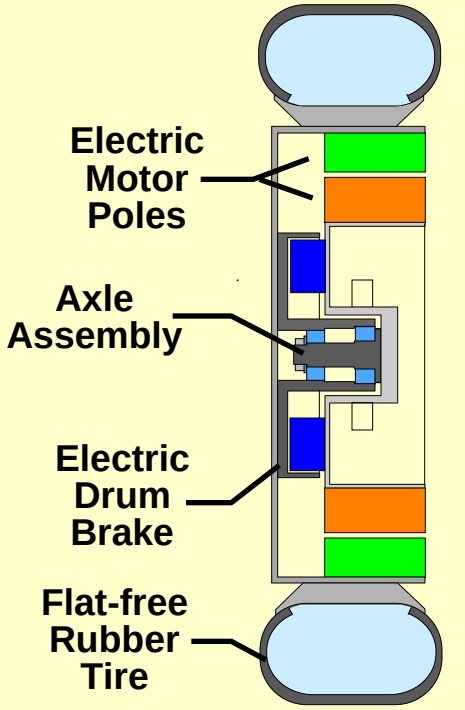
Flat-free tires – Current tire technology

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



Wheelmotor cross section

Only the combination & guideway are new!

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Suggested Gateway Cities COG 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

Contract MegaRail for concurrent final alignment & initial site engineering study – Cost TBD

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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

Guideway cost – $6 – 10M per lane-mile (Typical installed 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 Risk

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- Unprecedented level of service
- Low transportation user costs

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

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Cost Backup

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The *CargoTram*™ Cost Story

Why *CargoTram* Cost is so much lower than other elevated systems

MegaRail® Transportation Systems, Inc.
Fort Worth, Texas

Roots of Other Systems Higher Cost

- Most use linear motor propulsion
  - Expensive copper motor windings for length of guideway
  - Low efficiency = More power – Large inter-pole gap size
- Most use large moving guideway beam switches
- Most use longer guideway spans
  - Leads to more massive & expensive beams
- Some use maglev support systems
  - Complex & expensive suspension control systems
- Most need extensive guideways at terminals

Key *CargoTram* Low Cost Features

- **Simple electric wheelmotor propulsion**
  - **Small inter-pole gaps for high efficiency & low power**
  - **Simple & low-cost all steel guideway**
- **Short (50-foot), factory-built guideway spans**
  - **Leads to less massive and less costly guideway beams**
  - **Highly automated fabrication for low labor content**
- **Ordinary heavy truck tires & air bag suspension**
  - **No complex suspension control systems**
- **Vehicle-based switching – No moving guideway**
- **Dualmode trams – No guideways in terminals**

Why *CargoTram* Guideways are Light Weight

- **Lightweight *CargoTram* Carriers**
  - ***CargoTram*** **single carrier max gross weight – 64,000-lbs**
  - ***CargoTram*** **carrier length – 50-feet**

50-foot long guideway sections

CargoTram **max guideway load – 1 carrier x 64,000-lb**

- **Highly Efficient *CargoTram* Guideway Design**
  - **Self-supporting enclosed guideway rail tube design**
  - **Rail tubes and cross-ties form strong "U"– channel section**

50-foot long guideway sections for minimum structure size

CargoTram **50-ft guideway weight – 30,000-lbs**

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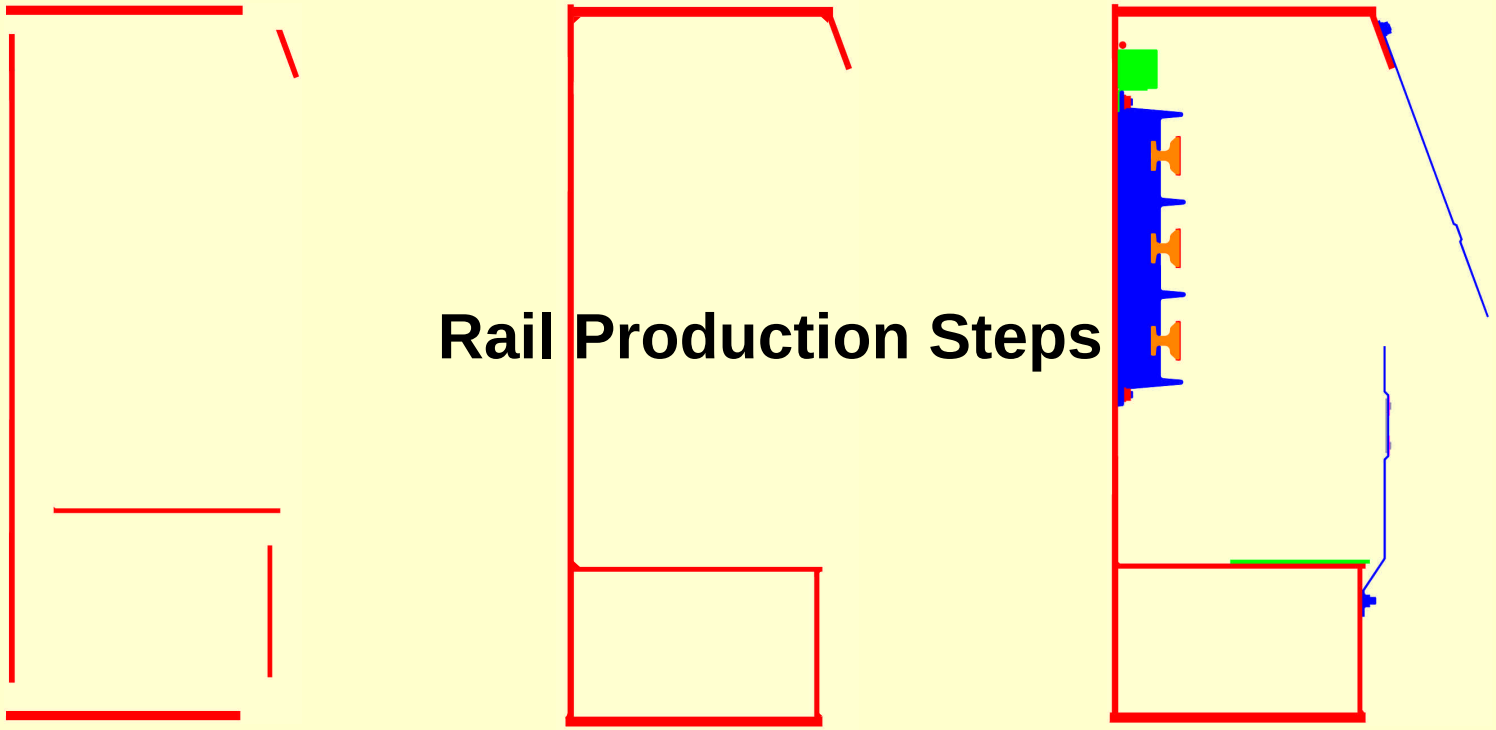
Low-cost Guideway Production Design

Two Enclosed Rail Tubes Form Guideway



Rail Production Steps

6 flat parts plasma cut from stainless steel

6 flat parts welded at corners by robot welders

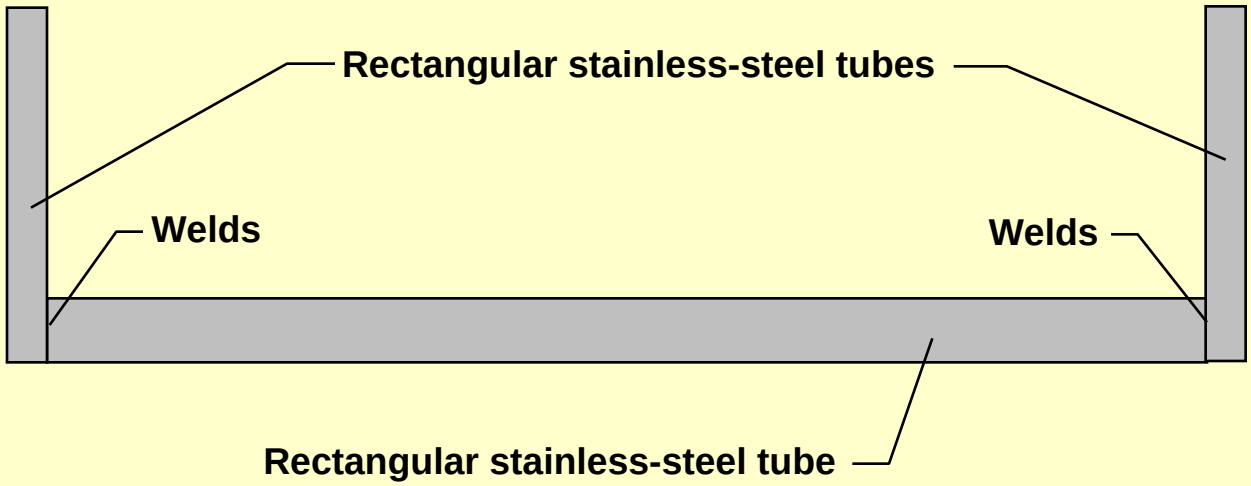
Weather guards traction plates & power rails bolted in place

Nine Welded-tube Cross-ties used at 5-ft intervals

CTCSTSTY-1

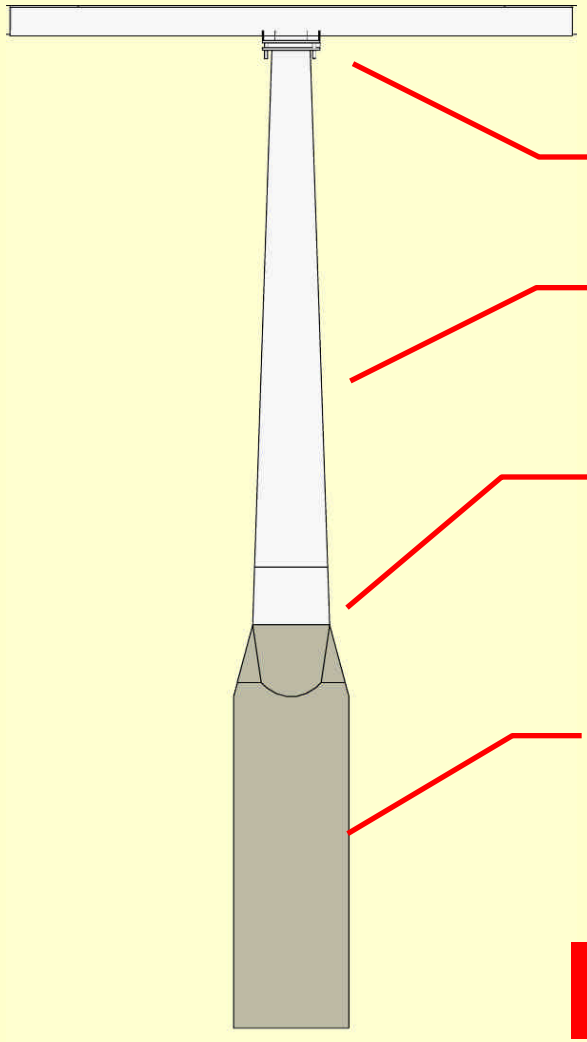
Cross-tie Assemblies Production

Made from welded, stainless-steel tubing



- Tube sections plasma cut by automated cutters
- Tubes welded together in fixture by robot welders

Ultralight, Low-cost Factory-built Columns



- Stainless cross-arm bolted on
- Stainless-steel factory-built columns – from flat steel
- Sits over tapered spud on concrete base
  (No bolting required)
- Base is 36-inch round stainless-shell concrete pier in ground

94,000-lb Max. load per pier

MegaRail has Solid Guideway Cost Data

- 201 Stainless-steel material cost is known
- Firm, fixed price bids from 3 manufacturers for guideway elements production
- Installation costs based on current structural steel erection costs
- Concrete pier cost from current pier costs

CargoTram Carriers Designed for Low Cost

Lightweight Design & Ease of Maintenance

- Systems in lower chassis unit for access ease
- All metal parts cut by robot plasma & laser cutters
- Most raw material is flat stainless-steel
- Entire structure of welded stainless sheet
- Empty carrier weight – 4,000 pounds
- Low complexity control systems

Carriers are light weight & low cost

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CargoTram Cost & Availability Summary

- ***MegaRail*** **does design, integration & support**
- **Subcontractor team able to provide capacity**
- **Installation subcontractor (Austin Bridge) capable of all field engineering & installation**
- **Major subsystems from established sources**
- **Guideway is 90% of cost – Firm bids secured**

We know that system costs are correct!

CargoTram **is the lowest cost approach**

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