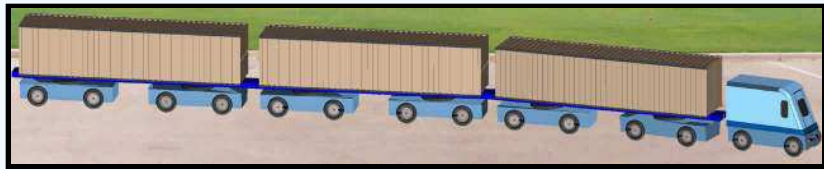




**CargoWay™ Heavy Duty
CargoTram™ SuperWay™
Cargo Transport**

**The Green
PPP Option**

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



Dockside, road & street CNG-hybrid operation



Elevated *SuperWay* electric operation

Reduced Trucks & Air Pollution at Affordable Cost

ROAM Transport Systems, Fort Worth, Texas

SuperWay, MegaWay, CargoWay, MicroWay, CarLiner, CarFerry, SkyCoach, CargoLiner, WhisperLiner, MegaLiner, & PersonLiner are trademarks of ROAM Transport Systems
U.S. PATS. 6,039,135, 6,401,625, 6,435,100, 6,615,740, 6,742,458, 6,834,595, 6,837,167, & 7,926,425 B2
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ROAM graphics & photos

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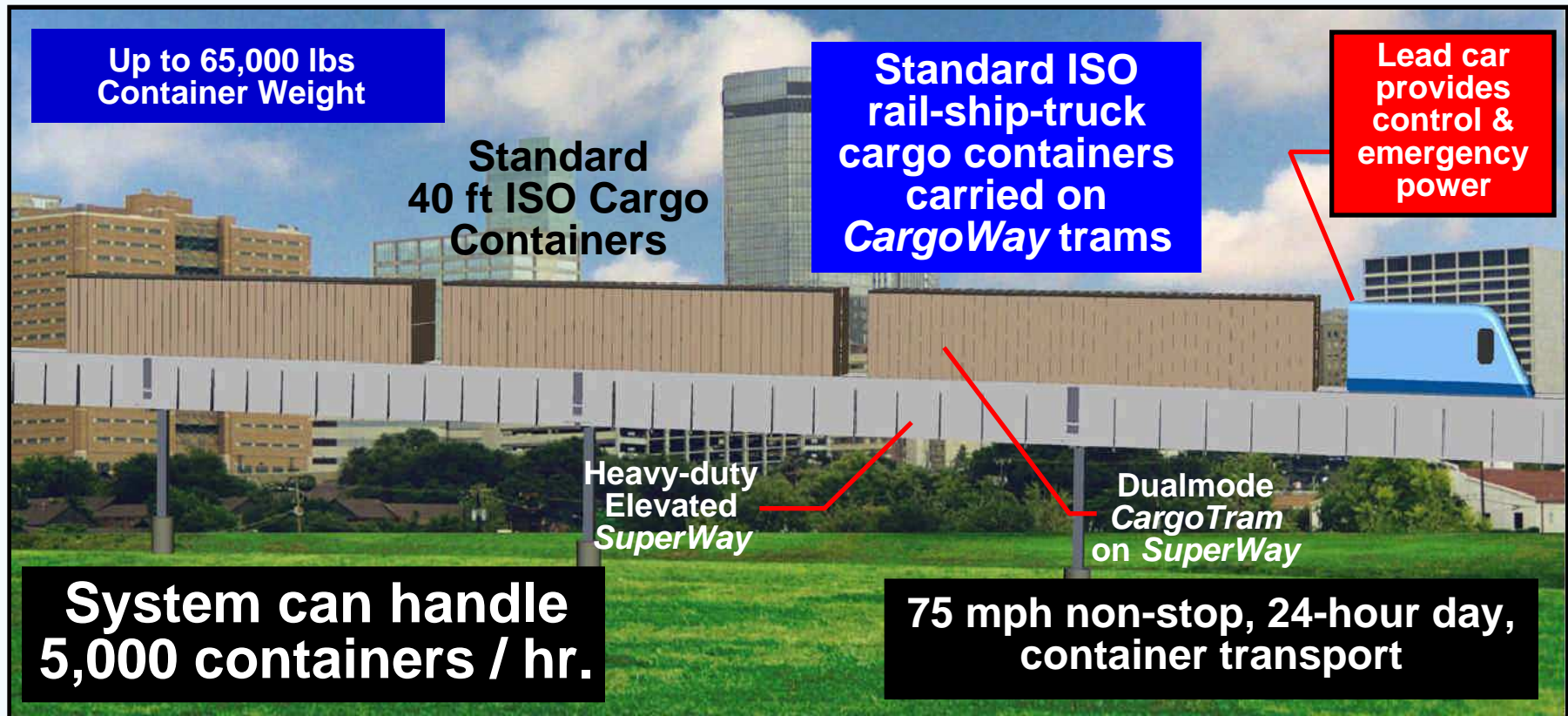
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The Key Objectives

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

CargoTram™ Heavy Cargo System

Containers on electrically-powered dualmode trams

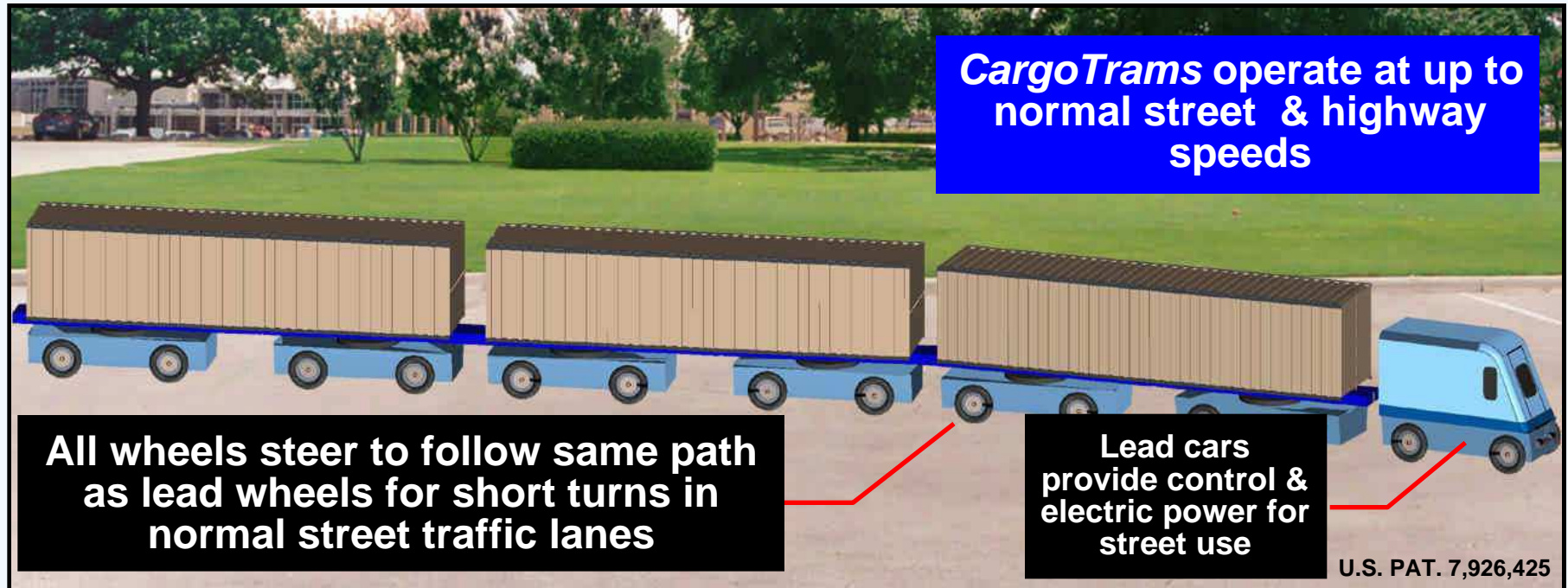


Three car tram shown – Longer or shorter trams may be used
(Dualmode trams may enter and exit *SuperWay* at MULTIPLE points)

U.S. PAT. 7,926,425

Port, Transfer Facility & Street Operation

Containers move on hybrid powered dualmode trams



Dualmode **CargoTrams** operate in port, rail yards, on streets & roads 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

CargoTrams are not “fixed guideway” Systems

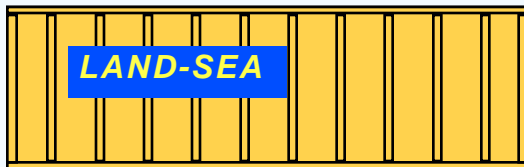
Trams operate on *SuperWays* & on the the ground

- ***CargoWay*** is not a “fixed guideway system”
- ***CargoTrams*** are dualmode – Roads & ***SuperWay***
- ***SuperWays*** have multiple entry & exit ramps
- ***SuperWay*** entrances & exits end at port boundary
- Multiple entry and exit ramps at ports
- ***SuperWays*** – elevated, low-weight super-freeways
- No overhead structures in ports or rail yards

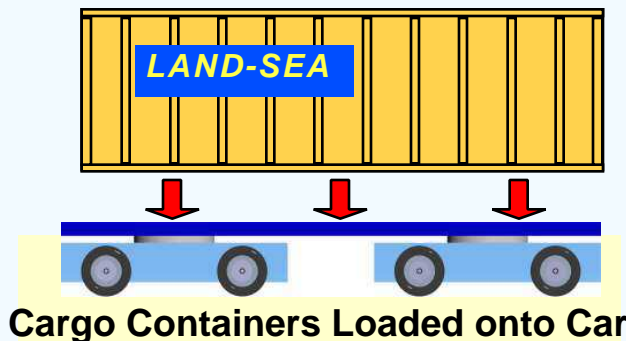
Trams run as battery/CNG hybrids on the ground

Easy *CargoTram* Loading on Ground

Platform can carry
standard 20 & 40-ft
ISO containers



Standard Land-Sea Cargo Container



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

Fully compatible with current cargo facilities

Capability Overview

Dedicated Heavy *CargoWay* Lines

- **Low-cost** elevated *SuperWay* – Over any ROW
- Electrical Power on *SuperWay* – **No air pollution!**
- Car-based switches – Allows multiple entry/exits!
- Dualmode Hybrid Operation – CNG generator power
 - For port, rail yard, street & highway operation
- *CargoTrams* Load and Unload – Just like trucks
- Max *SuperWay* Capacity – 5,000 veh / hr / dir @75-mph

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

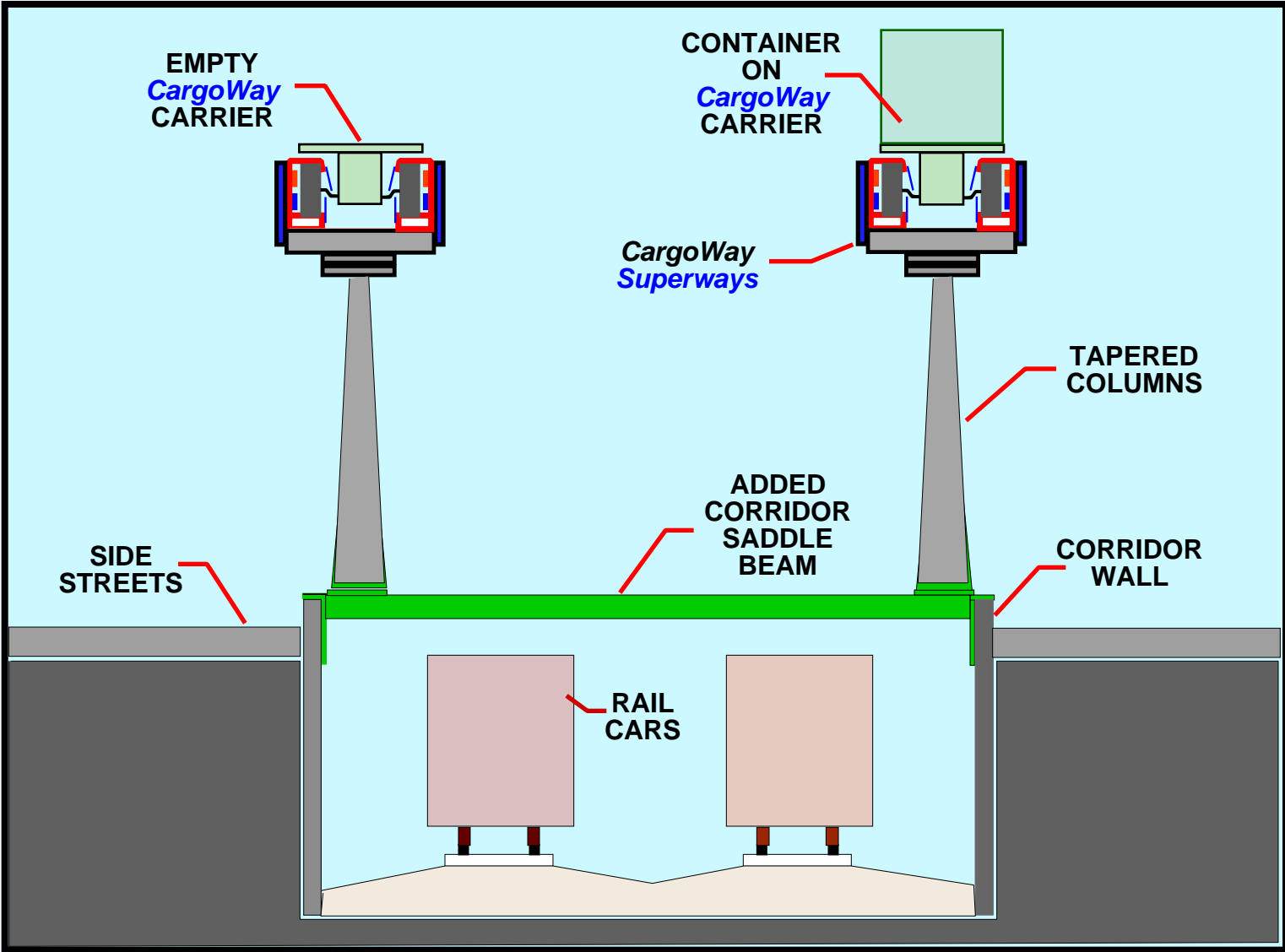
CargoTram vs Truck Performance

- 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 enter & exit at ramps along line to reach warehouse districts via city streets as low-pollution tandem trucks**

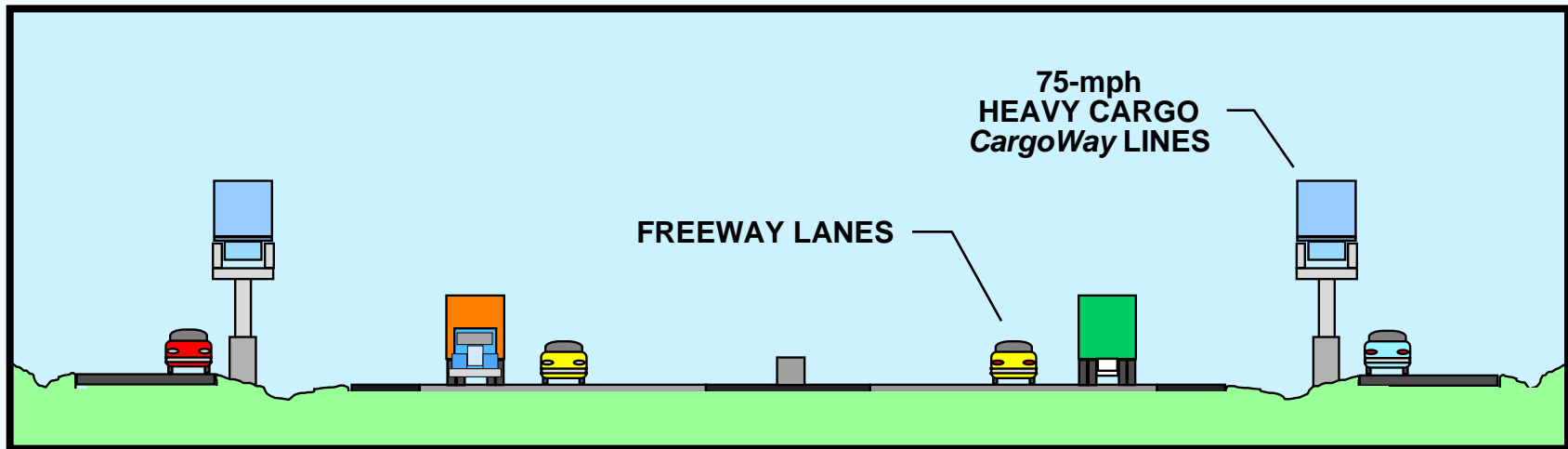
Sit-on-Top Alameda Corridor Installation

No impact on Alameda Corridor rail line or Street Traffic



Installation along freeway

Heavy cargo *CargoWay* lines



- Can use current highway right of way
- Minimum traffic disruption for installation
 - Rapid installation of factory-built sections
 - Concrete piers - only on-site construction

***CargoTram* is Low Risk**

Current prototype project offers full function demo

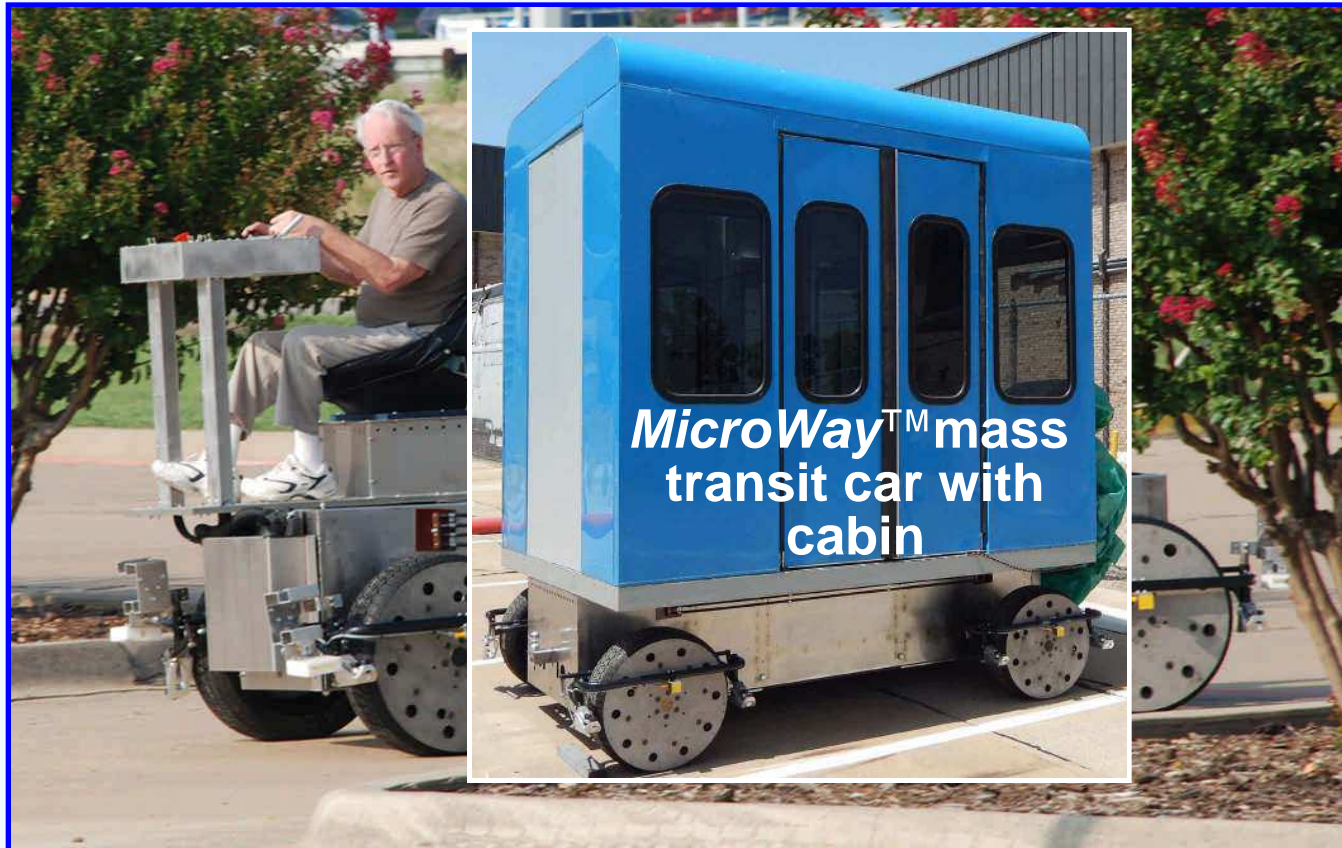
- **No new technology required*** – All standard hardware
 - Side power delivery – Inside enclosed wheelway tubes for safety
 - Heavy-duty electric power steering actuators
 - Side reference bar steering proven in other applications
 - Heavy-duty, flat-free truck tires • Backup mechanical steering
 - Permanent-magnet hub motors – Electric bus type

* Patented combination

The Low Risk, Low Cost Choice

Prototype Test & Demo Vehicles

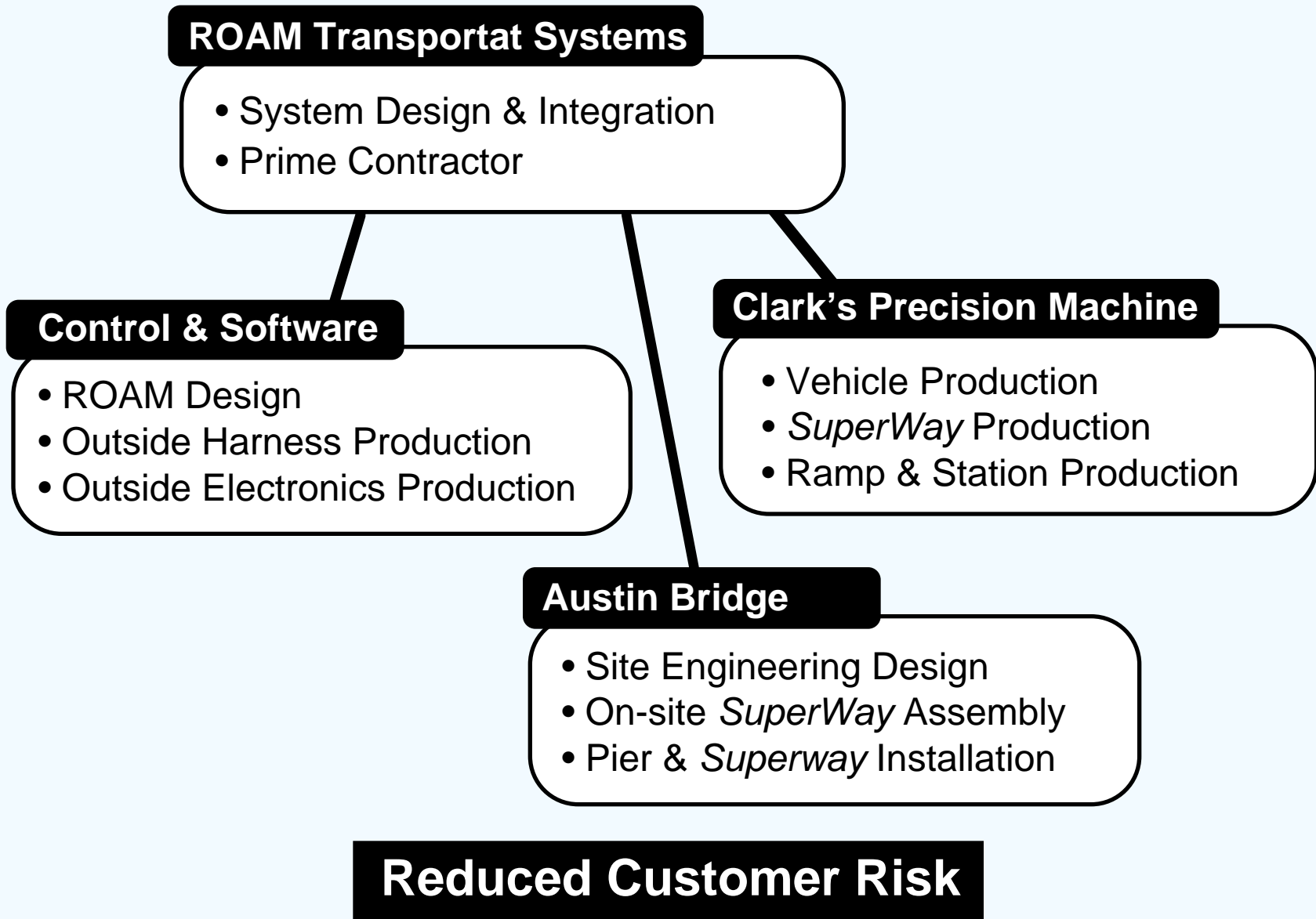
Road and *SuperWay* tested



Hybrid dualmode car chassis unit in test & transit demo car
(Dualmode version operates both on *SuperWay* & streets)

Not just a “paper” system – It’s real and here!

Proven Industry Team



LA Metro Studied I-710 Truck Problem

Logical agency to solve problem

- Port responsibility ends at port boundary
- Metro has both charter and funding authority
 - Contracted with URS to find solution
 - Study identified six possible alignments
 - UPRR corridor
 - LA river corridor
 - Alameda corridor
 - Metro Blue Line Corridor
 - Transmission Line Corridor
 - I-710 Corridor
- *CargoWay* – only solution likely to be profitable
- *SuperWay* ramps can allow SCIG & ICFT access

MTA public-private-partnership opportunity

I-710 Container Truck Solution

No impact on Alameda Corridor rail line or I-710



***CargoWay* total 75-mph System Cost**

- **Total Installed *SuperWay* Cost – \$290M**
 - Typical 20-mi dual guideway = 40-lane-mi \$6M/mi = \$240M
 - Likely cost for street/*SuperWay*/river spans = \$50M
- **Total Carrier Cost – 692* x \$304,000 = \$210M**
- **Other Cost \$40M**
- **Total *CargoWay* System Cost = \$560M**

Lowest cost solution to I-710 Truck Problem

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

Based upon 2009 LA-MTA 5,000 40-ft containers/day

Line also offers ICFT/SCIG access

Dualmode *CargoTrams* access both LA & LB ramps



- *CargoTrams* access *SuperWay* ramps for both ports
- Access ICFT & SCIG facilities via *SuperWay* ramps
- *CargoWay* could eliminate ICFT & SCIG facilities need

PPP with MTA is Good Investment

Option 1

- **20-mi, Two-way *SuperWay* – 75-mph Speed**
- **Cost / Container Now – Apx. \$300 (\$200 truck + \$100 tax)**
- ***CargoWay* O&M Cost / Container – \$25**
- **Public ROW, Private Investment – \$560M**
- **IRR & NPV – Based on 3,000 containers/13-hr day – 360 days/yr**
 - **6% cost of money – \$175 / container earnings**
 - **\$560-M system cost**
- **9-yr NPV = + \$137,923,429 & IRR = 11.9%**
- **10-yr NPV = + \$249,792,302 & IRR = 15.13%**

PPP with MTA is Good Investment

Option 2

- **20-mi, Two-way *SuperWay* – 75-mph Speed**
- **Cost / Container Now – Apx. \$300 (\$200 truck + \$100 tax)**
- ***CargoWay* O&M Cost / Container – \$25**
- **Public ROW + \$560M revenue bonds, Private – \$205M**
- **IRR & NPV – Based on 3,000 containers/13-hr day – 360 days/yr**
 - **6% cost of money – \$175 / container earnings**
 - **\$560-M system cost**
- **9-yr NPV = + \$366,500,000 & IRR = 19.9%**
- **10-yr NPV = + \$475,500,000 & IRR = 22.2%**

Low Cost and Self-funding

Revenue Bonds - No State or Federal Tax Dollars

- **MTA Revenue Bonds Fund Construction**
- **No Federal Action or Funds**
- **Bonds Retired from Revenue**
- **Operation and Maintenance from Revenue**
- **Lower cost and faster service to customers**
- **Keep Ports Competitive – Allow Growth**

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!

Suggested Action

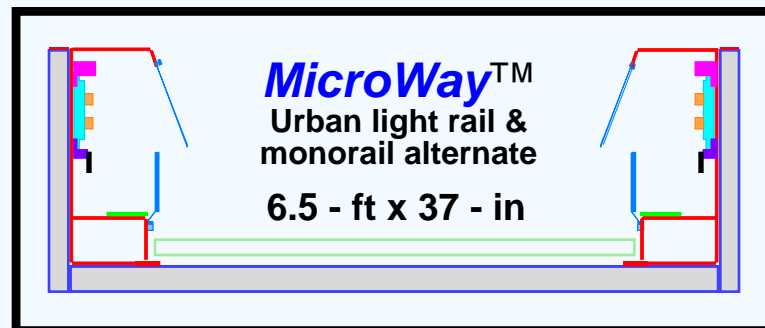
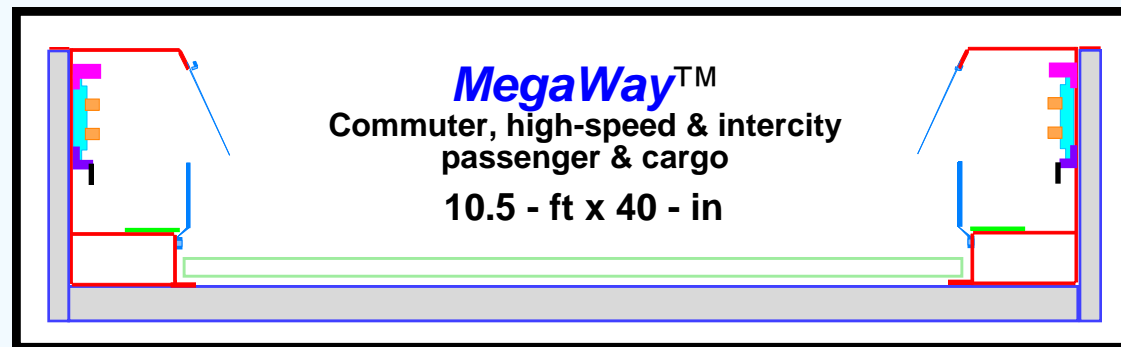
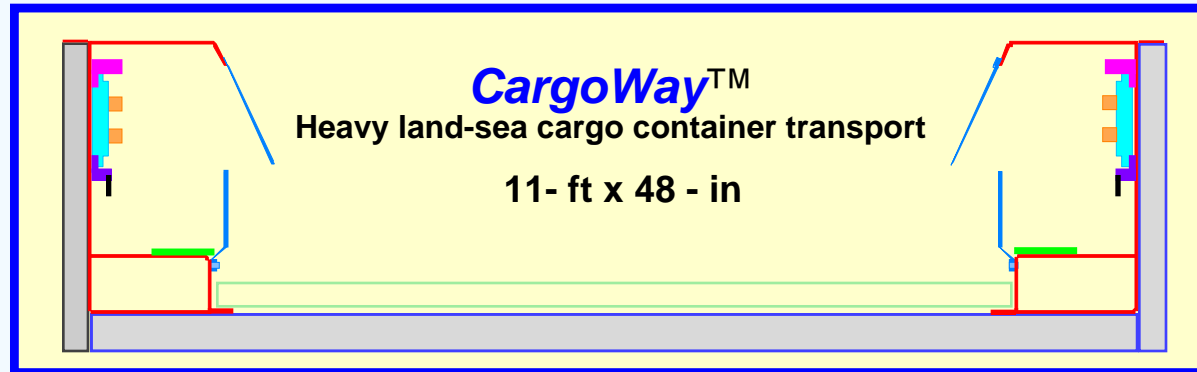
Contract for low-cost demo project

- Build & Install 1/2-mile demonstration *SuperWay*
- Build single, three-carrier dualmode tram
- Demo to prove ground & rail operation
 - Full demo in Fort Worth
- Complete demo project in twenty-six months
- Total demo project cost – \$20M

Low Risk, Low Cost Project Proves System

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

CargoWay™ - One of Family of Systems

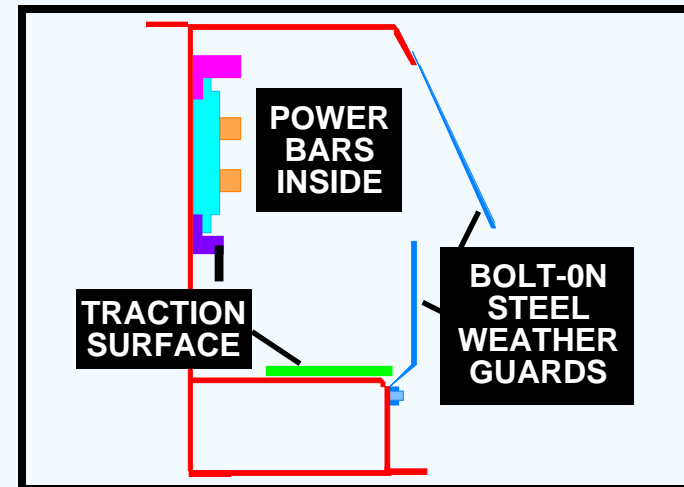


Prototype tested

Low-cost, All-weather, Enclosed *WheelWays*

- Low-cost *WheelWays*

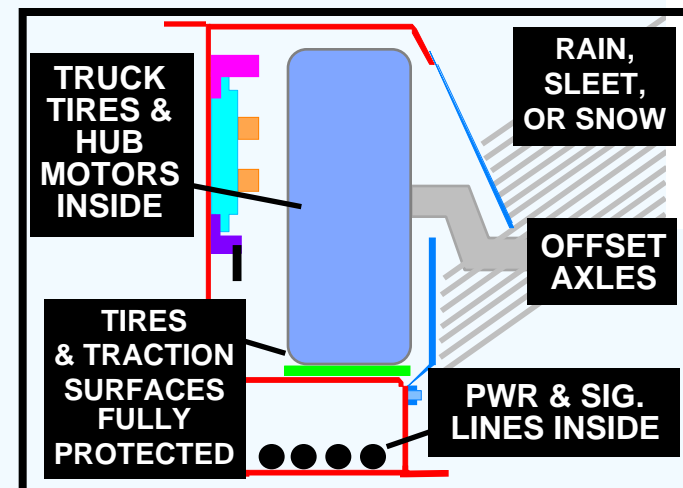
- Parts cut from flat steel
- Machine-welded construction
- Low material & labor costs
- Bolt-in electric power bars
- Truck guideway sections to site



Single wheelway cross-sections

- All-weather, *WheelWays*

- Wheels & power collectors inside
- Protected electric power bars
- Dry & ice-free traction surfaces
- Safe operation in any weather
- Whisper-quiet operation

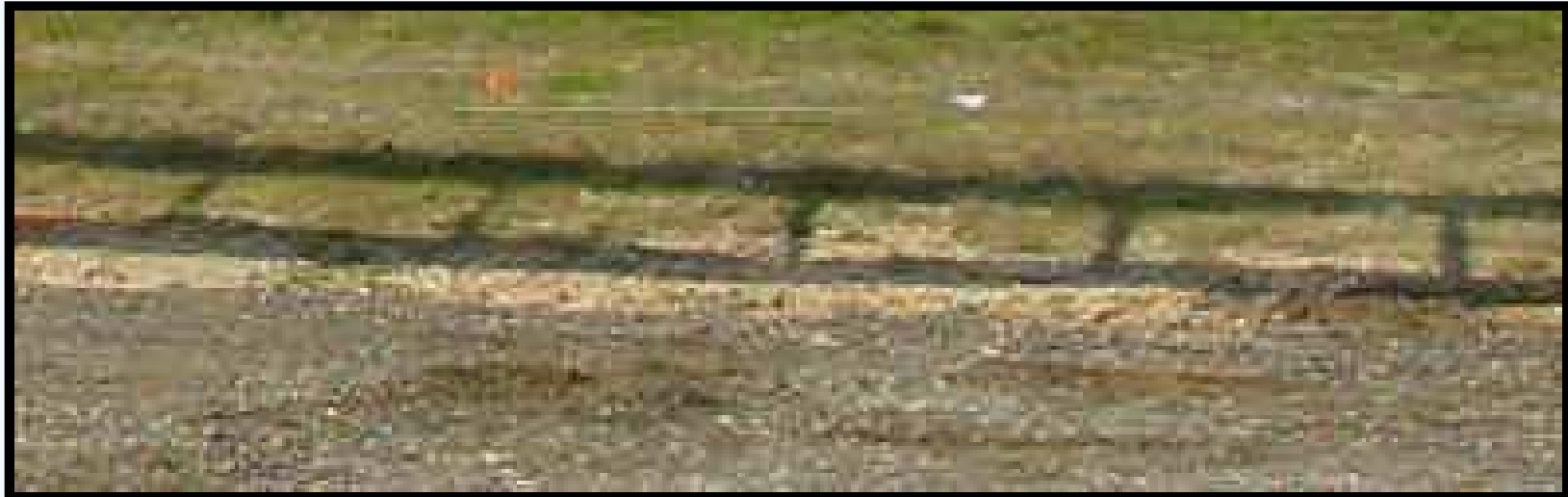


WheelWays & cross-members form self-supporting “U” structure

Attractive, *Low Profile* Stainless *SuperWay*



Guideways elevated above street & pedestrian traffic - *MicroWay SuperWay* photo
Minimum sky blockage – No wide elevated conventional train shadows



U.S. Patent 6,837,167

Technology Summary

Unique, patented new combination of proven technology (8 patents)

Enclosed stainless-steel *WheelWays* - US Pat. 6,039,135

- Simple welded steel factory fabrication
- Standard power rails

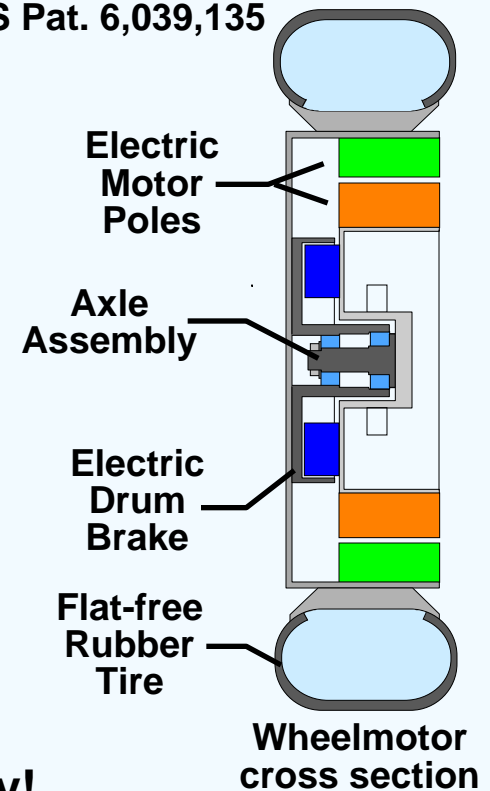
Flat-free tires – Current technology

Permanent-magnet electric motors

- Current commercial motor technology
- Electric motor wheels – Some electric cars

Car-based steering & switching

- Smooth non-contact electronic steering
- Switching – By cars as on conventional freeway!



Only the combination & SuperWay are new!

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

SuperWay cost – \$6 – 10M per lane-mile (Typical installed cost)

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

Environment friendly – *Low emissions*

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



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OTHER U.S. & INTERNATIONAL PATENTS PENDING

Cost Backup



The *CargoWay*[™] Cost Story

Why *CargoWay* cost is so much lower than other elevated systems

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Fixed Guideway System Higher Cost Roots

- **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 switches**
- **Most use longer guideway spans**
 - Leads to more massive & expensive guideway beams
- **Some use maglev support systems**
 - Complex & expensive suspension control systems
- **Extensive guideways required 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 super-freeeway
- **Short (50-foot), factory-built *SuperWay* spans**
 - Leads to *less massive and less costly* freeway 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 SuperWays* are Low Weight

- Lightweight *CargoTram* Carriers

- *CargoTram* single carrier max gross weight – 75,000-lbs
- *CargoTram* carrier length – 50-feet

50-foot long freeway sections

CargoTram max *SuperWay* load – 1 carrier x 75,000-lb

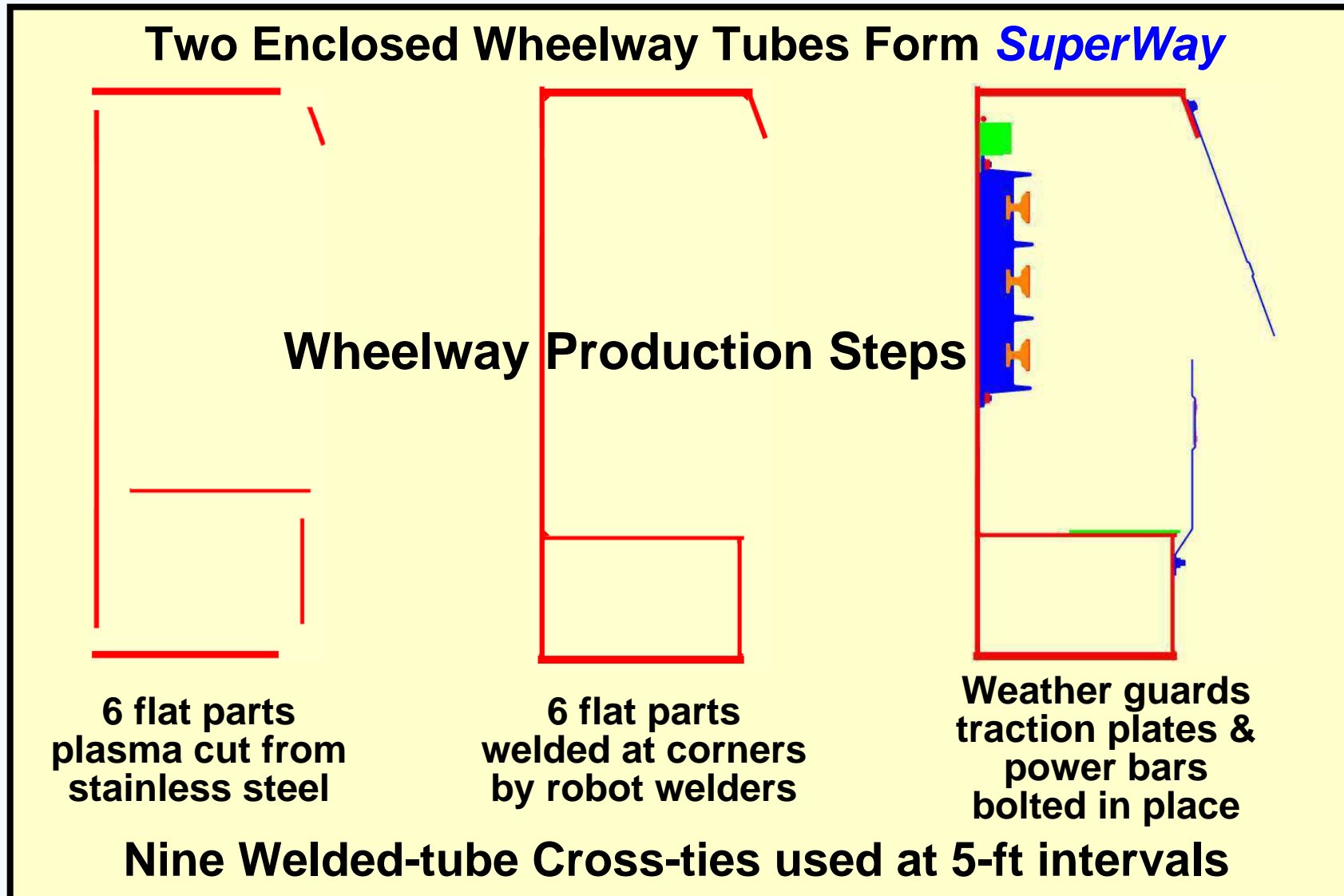
- Highly Efficient *CargoTram SuperWay* Design

- Self-supporting enclosed *SuperWay* wheelway tube design
- Wheelway tubes and cross-ties form strong “U”– channel section

50-foot long *SuperWay* sections for minimum structure size

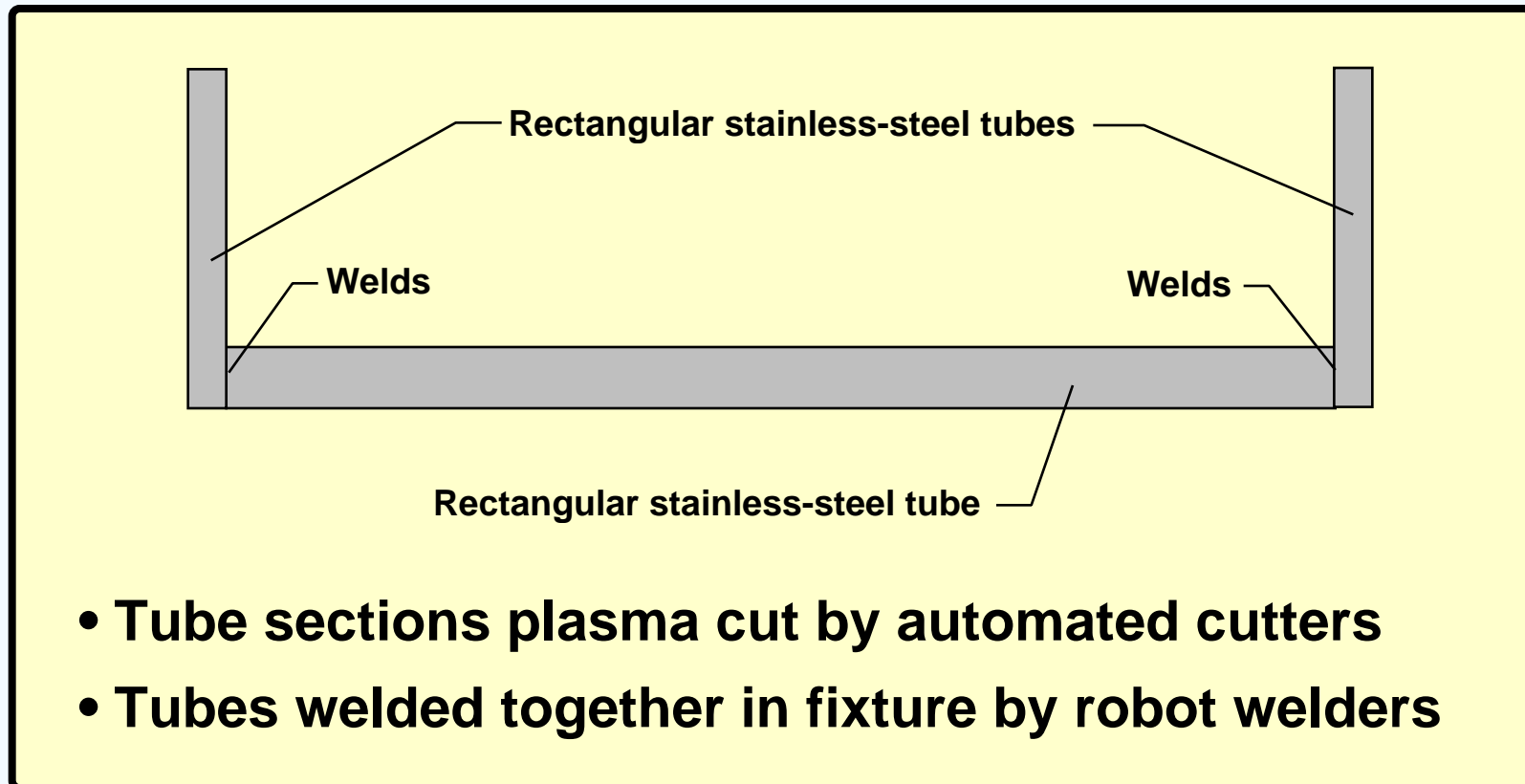
CargoTram 50-ft *SuperWay* weight – only 30,000-lbs

Low-cost *SuperWay* Production Design



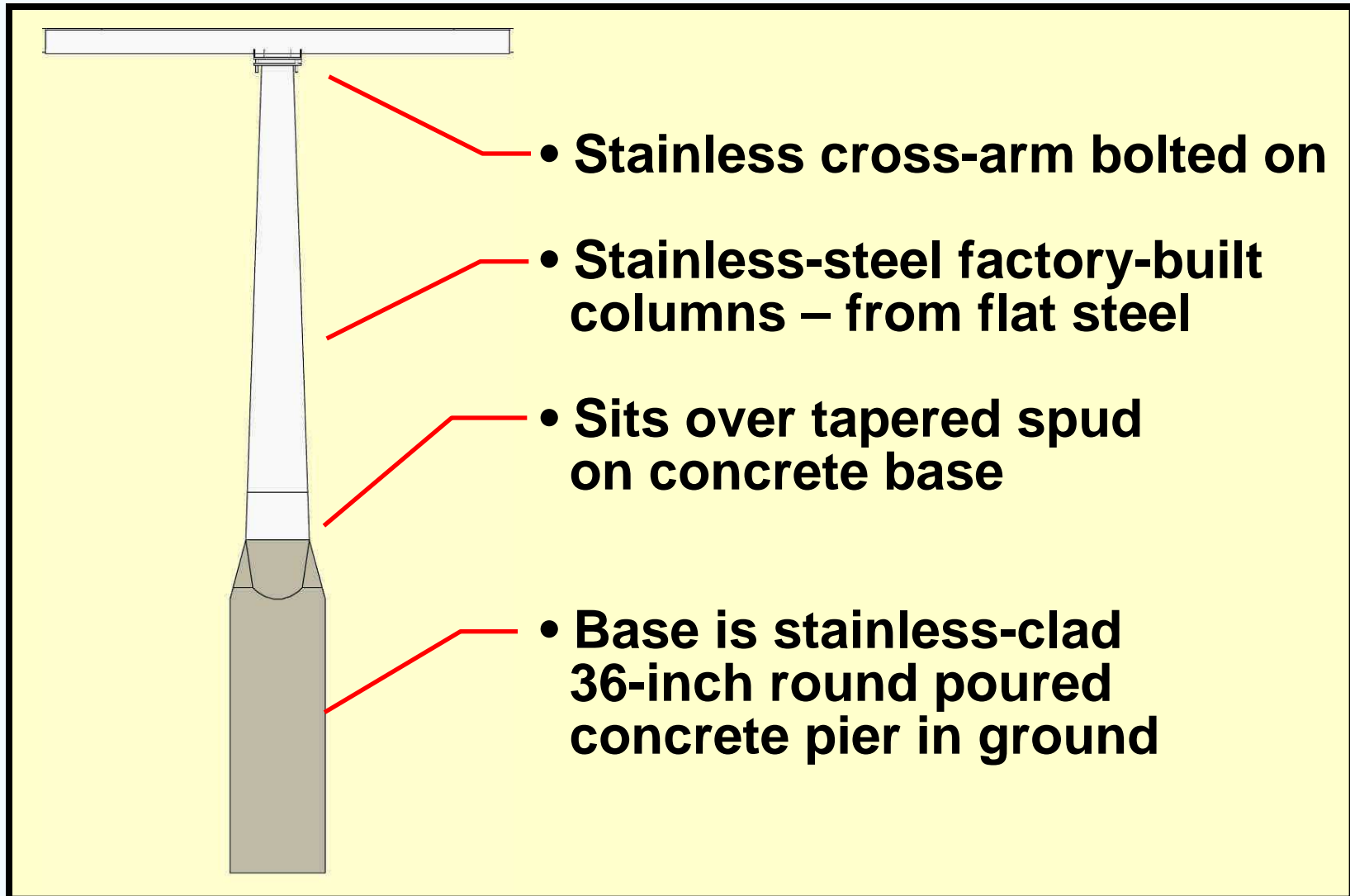
Cross-tie Assemblies Production

Made from welded, stainless-steel tubing



Cross-Tie assemblies welded in place at factory

Ultralight, Low-cost Factory-built Columns



ROAM has Solid *SuperWay* 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 – 10,000 pounds**
- **Low complexity control systems**

Carriers are light weight & low cost

***CargoTram* Cost & Availability Summary**

- ROAM 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
- ***SuperWay*** is 90% of cost – Firm bids secured
We know that system costs are correct!

***CargoTram* is the lowest cost approach**



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