

Historic San Diego Streetcar Trolley Powered by MagneRail for Balboa Park

by

Innovative Transportation Systems Corp.

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An Affiliate of Shapery Enterprises

The Challenge:

- To replicate the bygone era of not allowing individual cars onto the Plaza de Panama yet provide mobility for people who may need assistance from both the east and west sides of the Park without the need to modify the Historic Cabrillo Bridge.

The Solution

- An historic fixed rail trolley system using historic San Diego trolleys is the preferred mode that will connect a new parking garage on the west end of Cabrillo Bridge with the new proposed parking structure next to the Organ Pavilion and proceeding to the east end of the Promenade with stops along the way.
- An historic trolley system is being proposed that utilizes modern linear motor technology eliminating unsightly overhead catenary wires.



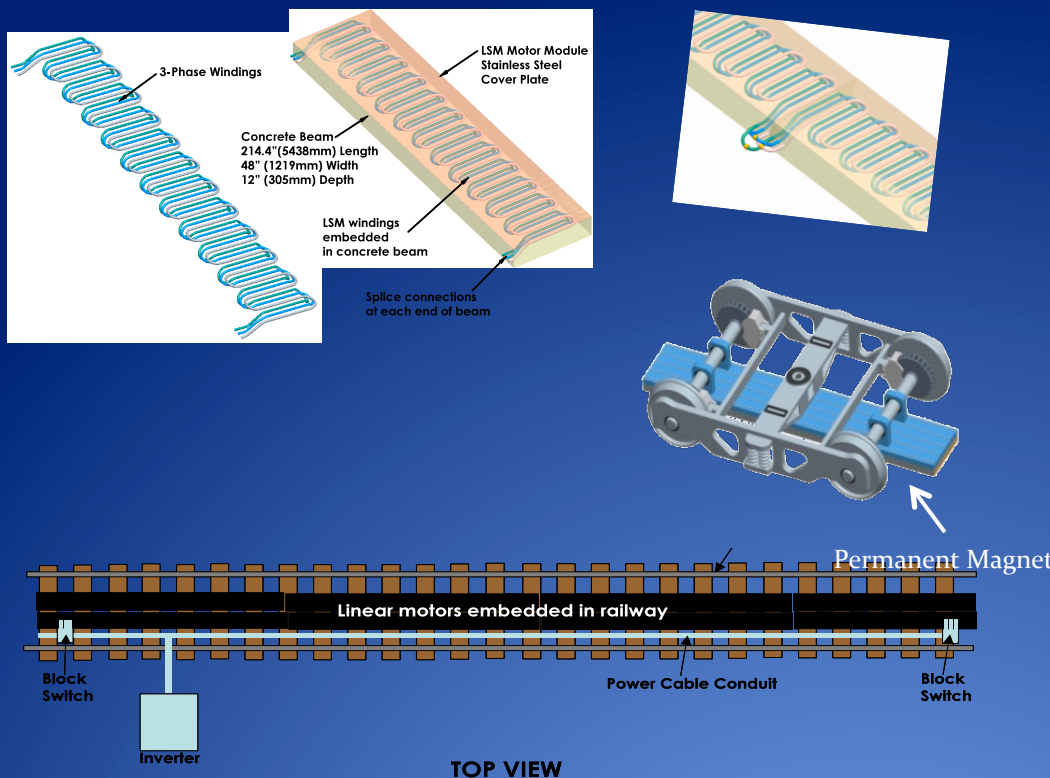
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- The ideal solution is to use restored historic San Diego streetcars/trolleys and to power them using MagneRail.



MagneRail Technology

Key building blocks of MagneRail



- LSM motors are three-phase electric windings around an iron core encased in a modular concrete beam (17' L x 4' W x 7" D).
- They are connected end-to-end and attached to the top of the cross ties of existing railroad tracks.
- The LSM system can be paved over for trolley and streetcar type of operation.
- Electric block switches are connected to each LSM section. When powered from the electric grid, the LSM motor winding creates a magnetic flux .
- The magnetic flux interacts with the permanent magnets mounted beneath a railcar's bogie and provides the propulsion to move the rail car while a computer system controls its motion.



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Balboa Park Historic Trolley System

Proposed Route and System

Westside Underground
Parking Garage below
Lawn Bowling Area

Art Museum
Trolley Station

Westside
Trolley Station

Eastside
Trolley Station

Organ Pavilion
Trolley Station

Gray Buildings © 2011 CyberCity

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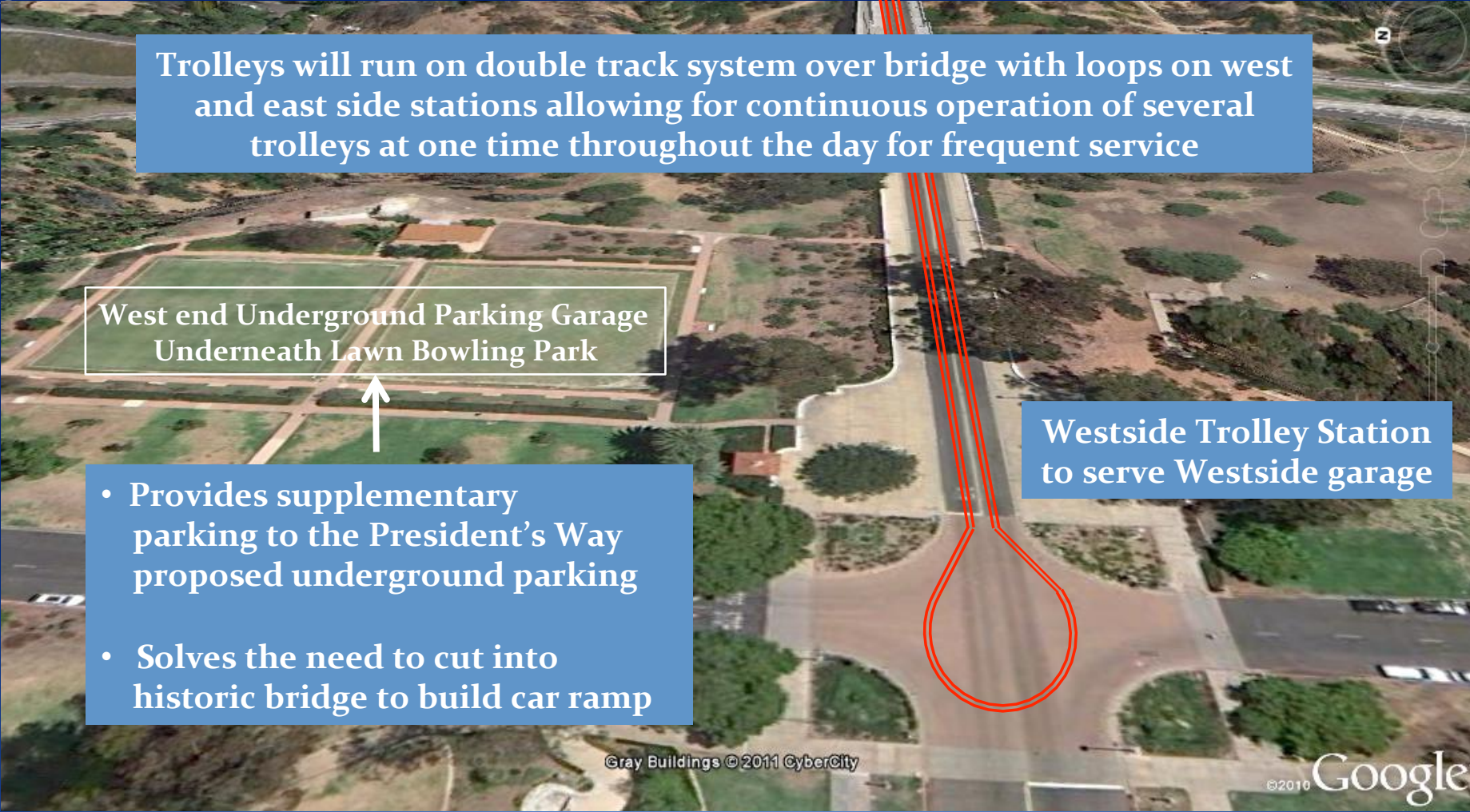
imagery Date: 8/23/2010 1994

32°43'53.75" N 117°09'07.96" W elev 292 ft

Eye alt 3216 ft



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Trolleys will run on double track system over bridge with loops on west and east side stations allowing for continuous operation of several trolleys at one time throughout the day for frequent service

West end Underground Parking Garage
Underneath Lawn Bowling Park

- Provides supplementary parking to the President's Way proposed underground parking
- Solves the need to cut into historic bridge to build car ramp

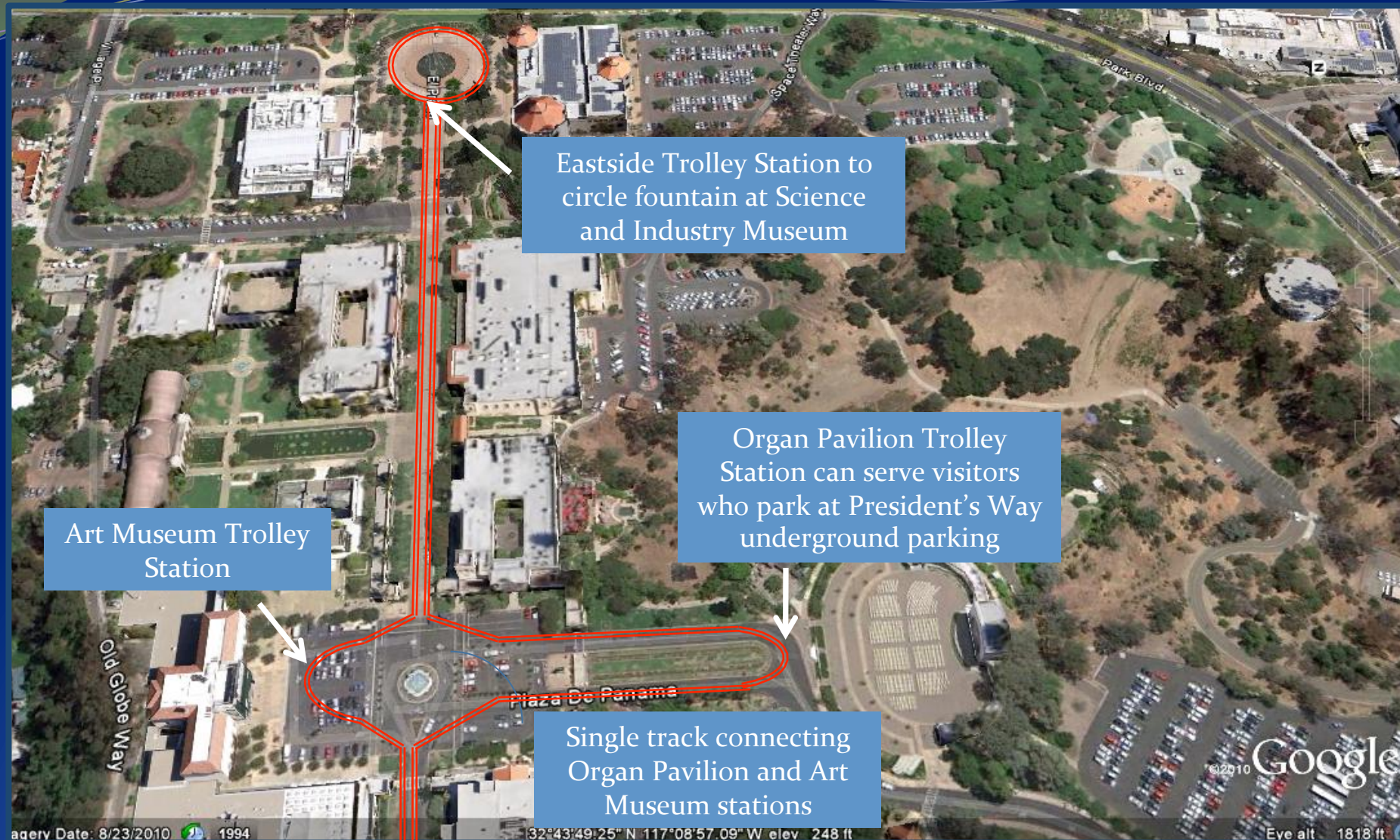
Westside Trolley Station
to serve Westside garage

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Eastside Trolley Station to circle fountain at Science and Industry Museum

Art Museum Trolley Station

Organ Pavilion Trolley Station can serve visitors who park at President's Way underground parking

Single track connecting Organ Pavilion and Art Museum stations

Image Date: 8/23/2010 1994

32°43'49.25" N 117°08'57.09" W elev 248 ft

©2010 Google Eye alt 1818 ft



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Benefits:

- Gives restored historic streetcars/ trolleys new life by conversion to MagneRail.
- No ugly overhead catenary wires.
- Safer as there is no live wire and only the LSM section underneath trolley is powered at any given time.
- The MagneRail trolley can be a new revenue generating attraction for Balboa Park.



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