Western Bridge Engineers' Seminar

SEPTEMBER 25 - 28, 2011 | ARIZONA GRAND HOTEL | PHOENIX, ARIZONA

MULTI-USE PATH over LOOP 101 FREEWAY at 63RD AVENUE

Project History

As part of the Glendale Onboard (GO) Transportation Program, approved by voters in November 2001, the City proposed to provide a link between the existing bike routes north and south of Loop 101 by constructing a new multi-use bridge over the Loop 101 freeway in the vicinity of 63rd Avenue.

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Project Team - Design Phase

- City of Glendale (Owner)
- ADOT (Technical Review and Procurement)
- Parsons Transportation Group (Parsons) (Bridge and Civil Design)
- Logan Simpson Design, Inc (Landscape Design)
- R. A. Alcala and Associates (Lighting and Electrical)
- Speedie and Associates (Geotechnical)
- Robert Adams (City of Glendale Artistic Consultant)

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Scope of Work

The project consists of four principle components:

- Bicycle/pedestrian bridge over the Loop 101 Freeway at 63rd Avenue.
- Bicycle/pedestrian underpass beneath the eastbound frontage road.
- High-Intensity Activated Crosswalk(HAWK).
- Multi-use path from the north and south ends of the bicycle/pedestrian bridge to cross under the EB frontage road and back up to join the sidewalk and bicycle lanes along 63rd Avenue.

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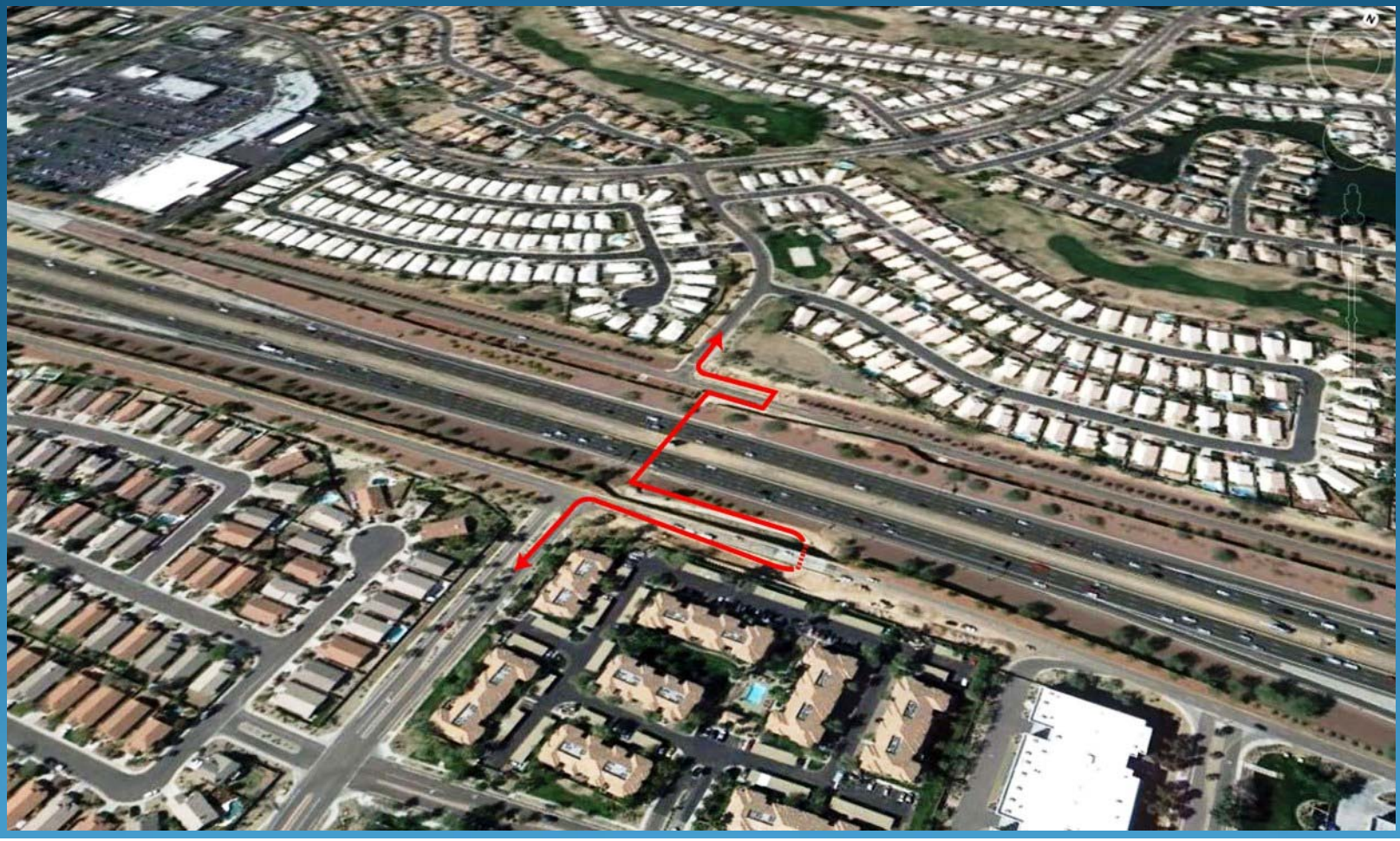
Scope of Work



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Bridge Selection Report

- Evaluated 4 alternatives for the crossing of 101L
  - 2-Span Steel Truss
  - Single-Span Steel Tied Arch
  - Single-Span Tied Arch with a Suspended Post-Tensioned Concrete Deck
  - 2-Span Steel Cable-Stayed ★
- Frontage Road Underpasses
  - Single-Span Concrete Precast Pre-stressed Box Beam ★
  - Single Span CIP Concrete Box Girder

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2- Span Steel Cable-Stayed Bridge

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Design Criteria

- Design Specifications
  - AASHTO Standard Specifications for Highway Bridges, 17th Edition
  - AASHTO Guide Specifications for the Design of Pedestrian Bridges, 1997
- Live Load
  - Pedestrian live load - 85 psf
  - Vehicular live load – H5 Truck

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Design Considerations

- Aesthetics were a key consideration and required input by the Glendale Arts Commission.
- Freeway closures were not desirable and could not be accommodated during special events.
- Limit impacts to utilities
- Footprint of project created challenges for crossings at frontage roads and over freeway

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Design Considerations

- To construct the bridge over the freeway 2 main design features were employed.
  - The bridge truss was designed to be fabricated in two parts for erection over the freeway. The truss was designed to be capable of supporting its self weight including the concrete deck and a 50 psf construction live load.
  - The adjustable cable-stayed anchors were located at the Pylon location so that all cable adjustment could be performed from the median. This eliminated freeway closures for the cable tensioning sequence.

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Aesthetic Considerations

- Limit exposed electrical conduit and boxes for a clean look.
- Integrate bridge fencing to create an open feel to both the path and on the bridge.
- Use of LED colored lights to illuminate the cables and create a washed effect for drivers view of the bridge truss.
- Colors
  - Pylon & Pier - Hearth Gold
  - Truss and Fencing - Northern Territory

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Project Team - Construction Phase

- City of Glendale (Owner)
- ADOT Phoenix Construction District (CA)
- Parsons (Post-Design Services)
- CS Construction, Inc (General Contractor)
- Arizona Structure Technologies, Inc (Bridge Fabricator)
- Tristar Engineering and Management, Inc (CM)

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Schedule

- Advertise – January 2010
- Bid Opening – April 2010 ($2.56M)
- Construction NTP – April 2010
- Construction Duration – 356 days

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Bridge Fabrication

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Bridge Erection

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Bridge Erection

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Cable Connections

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Erected Bridge

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Completed Bridge

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Open to the Public on May 21, 2011

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