

7th Street Bridge Project

Public Scoping Meeting October 14, 2013



Public Scoping Meeting Agenda

- Welcome and introduction –Judith Buethe/David Leamon, PE/Hans Strandgaard, PE
- Presentation (40 minutes)
 - Bridge information Chris Serroels, PE
 - Traffic conditions –John Gard, PE
- Funding and schedule– Hans Strandgaard, PE
 Staff available at four tables to answer questions and receive public input following presentation (Bridge, Roadway, Traffic, Environmental)

Project area to study





Project Opportunities:

- Improve mobility of cars, pedestrian and bicycles
- •Make a safer crossing
- •Return Truck traffic
- •Fix hydraulic issues
- Provide a new landmark for the area

Planned Gateway Park







 Carries Seventh Street over the Tuolumne River and surrounding flood plain















- Arch Bridge
- Truss Bridge
- Superstructure
- Substructure
- Abutments
- Piers
- Piles

SpanJoint



stanislaus-Cin

7th Street Bridge Project













figure 1.2. Sheet pile protecting a bridge pilet







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- Carries Seventh Street over the Tuolumne River and surrounding flood plain
- Constructed in 1917
- Bridge Superstructure (Deck)
 - "Canticrete" arch bridge
 - Steel truss surrounded by concrete
 - Steel provides strength
 - Concrete provides support, protection against rusting, and to hide the steel (aesthetics)
 - Expansion joints every other span









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- Bridge Substructure (Supports)
 - Abutments and piers made of concrete
 - Concrete piles only 20 feet long in flood plain
 - Timber piles at water piers, unknown length









- Roadway
 - Two 12 foot lanes (standard width)
 - No shoulders
 - Four-foot sidewalks













• Lion monuments at bridge ends



- 7th Street Bridge Project
- 1917: Originally designed for smaller truck (12-ton truck; 24,000 pound)
- 1931: "Excessive" deflections at joints due to vehicles, requiring frequent deck repairs
- 1937: Order to post load limits signed
- 1953: Cracking and spalling (flaking) of concrete around the steel members noted



 1960s: Deflections across mid-span joints evident

• 1970s: Deflections increased dramatically

 1971: Load restricted to 10 tons with 10 mph speed limit on trucks and buses





 1974-1976: Repair or reconstruction considered

- 1976: Engineering study conclusions
 - "Unlucky Span No. 13"
 - "Incipient failure"
 - Recommends additional support be constructed





 1979: 4-ton load limit established to reduce maintenance costs and allow current speed to be maintained

 1990s: County and City begin studies to evaluate bridge options



Structural Condition



- Based on 2011 Caltrans Inspection:
 - Sufficiency Rating = 2 (out of 100), lowest in Area
 - Deck: Fair condition (describe VG,G,F, P, Ser, Crit)
 - Superstructure: Poor condition
 - Substructure: Fair condition
 - Structural Evaluation: Intolerable, high priority for replacement
 - Deck Geometry: Intolerable, high priority for replacement



- Use of the bridge:
 - Roadway shoulders: substandard width
 - Sidewalks: substandard width, deteriorated condition, constant repair required













- Inadequate Strength (normal loads):
 - Superstructure: structurally deficient, substandard capacity, deteriorated condition
 - Substructure: deteriorated condition, evidence of pile exposure

























- Inadequate Strength (earthquake):
 - Steel truss members break: causes collapse
 - Seat width too small at abutment: causes collapse
 - Piers break: causes collapse
 - Piles break



- Inadequate Strength (river flows):
 - Scour Critical: could cause collapse
 - Insufficient freeboard (water hits bridge, note that railroad bridge raised): causes more flooding



Bridge Deficiencies-Scour













Retrofit and Rehabilitation Strategy



- How do we fix the deficiencies?
 - Replace the driving surface (deck)
 - Add a new center girder (and new floor beams)
 - Repair and upgrade the abutments
 - Strengthen piers with new concrete and large 4' diameter piles
- Requires long duration, full bridge closure to fix



Retrofit and Rehabilitation Strategy



- Retrofit and rehabilitation cost:
 - Very expensive, more than building new bridge
- Strategy does not correct all problems:
 - Deck and sidewalk width still too narrow
 - Hydraulic freeboard (water still hits bridge)
 - Don't know if steel truss pieces have rusted (surrounded by concrete)
 - Substandard railings: cars can crash through and cause collapse of bridge
 - Continuing deterioration of architectural features







Existing Average Daily Traffic (ADT) volumes in study area

<1% trucks on 7th Street Bridge

7% trucks on 9th Street Bridge







Eastbound traffic on Tuolumne Blvd

Intersection currently operates at Level of Service (LOS) D

Northbound traffic on 7th Street



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- 7th Street Bridge traffic volume growth:
 - Existing: 15,900 ADT
 - ➢ Year 2020: 20,200 ADT
 - ➢Year 2040: 31,000 ADT
- Additional capacity is needed to accommodate planned growth





- Operations at 7th Street/Tuolumne Blvd./B Street Intersection (PM Peak Hour)
 - Existing: LOS D
 2030 No Project: LOS F
 2030 With Project: LOS E
- Travel Time Comparison on NB 7th Street from Crows Landing Rd. to B Street (PM Peak Hour)
 - Existing:
 - 2030 No Project:
 - > 2030 With Project:

- 2.5 minutes
- 7 minutes
- 2 minutes

7th Street Bridge Closure





Effect of 7th Street Bridge Closure Under Existing Conditions

•Majority of Traffic Would Divert to Highway 99

Highway 99 Operations Across
 River Would Worsen During PM
 Peak Hour:
 ▶NB: LOS C to D

SB: LOS D to E

•Effects on Bicycle/Pedestrian Circulation





- Show Traffic Videos
- Conclusion: Need more than 2 traffic lanes



Funding



- Federal Government sponsors the Highway Bridge Program (HBP) to rehabilitate or replace substandard bridges.
- The County has applied for and received funding to do the engineering and environmental work associated with rehabilitating or replacing the existing bridge.
- The environmental process will address historic aspect of the bridge and what if anything needs to be done about that.



Schedule

- Develop Alternatives
- Workshop/Present Alternatives
- Environmental Studies
- Project Report
- Type Select Bridge
- Final Design
- Right-of-Way
- Construction

Now Jan 2014 Now-2014 Late 2014 2015 2015-2016 2016 2017-2019



Questions



- We need your help: What are your concerns about the project?
- Matt Franck-environmental process
- Judith Buethe-how to provide input and close
- Please share your questions and comments with us:
 - Bridge Table
 - Environmental Table
 - Roadway Table
 - Traffic Table
- www.7thStreetBridge.ORG



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