Location

Georgia Street Bridge Location

Georgia Street Timeline

- Built in 1914 in San Diego, CA
- Two 640-Foot Long Anchor Block Retaining Walls
- 3-Hinge Concrete Arch Bridge
- Many Past Repairs Since 1947

Recent Timeline and Designation

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Georgia Street Timeline

- Built in 1914 in San Diego, CA
- Two 640-Foot Long Anchor Block Retaining Walls
- 3-Hinge Concrete Arch Bridge
- Many Past Repairs Since 1947
- 1994 City of San Diego Designated Bridge and Walls Historic
- 1999 Placed on Historic Register
- 2002 Vulnerability Study to Replace by Others
- 2009 Begin New Retrofit/Replace Studies
- 2012 Caltrans Approved Rehabilitation/Retrofit
- 2016 Construction Began

Recent Timeline and Designation

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Visual Inspection

Existing Condition

Existing Condition

Existing Condition

Existing Condition

Existing Condition

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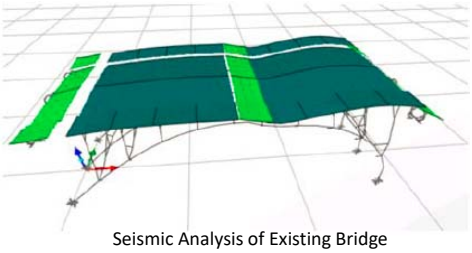
Seismic Vulnerabilities

- Global Analysis
  - Floating slabs need to be continuous
  - Abutment restraint will lower superstructure demand
  - Ensure stability of hinges (axial and bending)



Seismic Analysis of Existing Bridge

- Component Analysis
  - Spandrel columns have insufficient shear capacity
  - Center spandrels have very high shear
  - Arch-ribs insufficient shear/torsion steel
  - Abutment and retaining walls need strengthening

Seismic Analysis and Design

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Functional Deficiencies

- Barrier rails not sufficient
- No sidewalk ADA ramps
- Asphalt paving at sidewalk elevation
- Substandard vertical and horizontal clearance
- Bridge width is substandard
- Bridge does not support modern live loads

Existing Condition

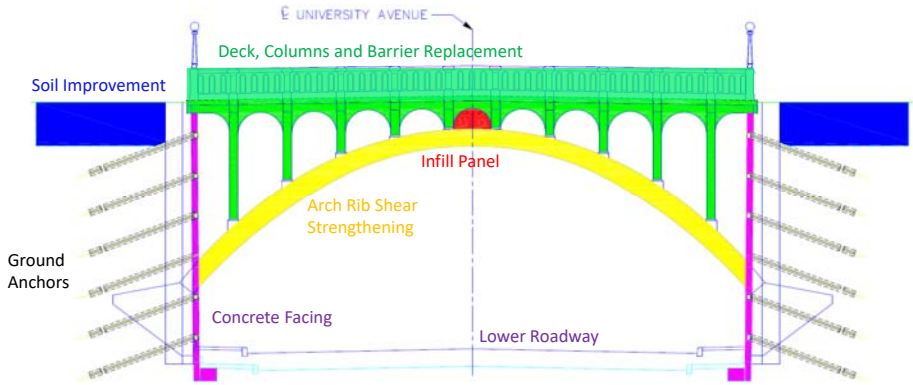
Historic Preservation

- Community Meetings
  - SOHO, North Park Planning Committee, Uptown Planners

- NEPA CE – CEQA IS/MND Finding of no Adverse Effect with Standard Conditions – Rehabilitation
  - Arch ribs to remain
  - Historic corner lighting
  - Wall facing
  - Barrier rails
  - Shear panel design
  - Geometry, texture, color to match as-built
  - Replace sidewalks (historic scoring)
  - Remove street lighting

Preservation of Historic Resource

Retrofit Strategy (preferred)

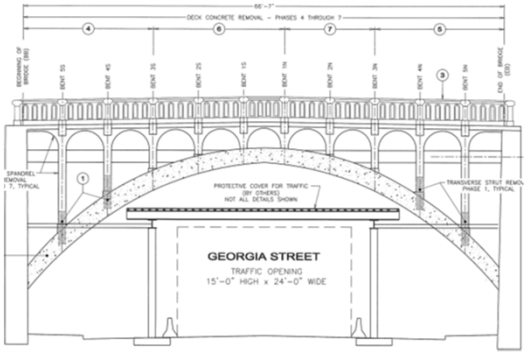


Bridge Elevation

Retrofit/Rehabilitation/Reconstruction

Construction Requirements

- Prevent any damage to arch ribs
- Stabilize the abutments and walls
- Maintain two lanes of traffic
- Stabilize the top of abutments prior to bridge demolition
- Protect the traffic during construction



Retrofit/Rehabilitation/Reconstruction

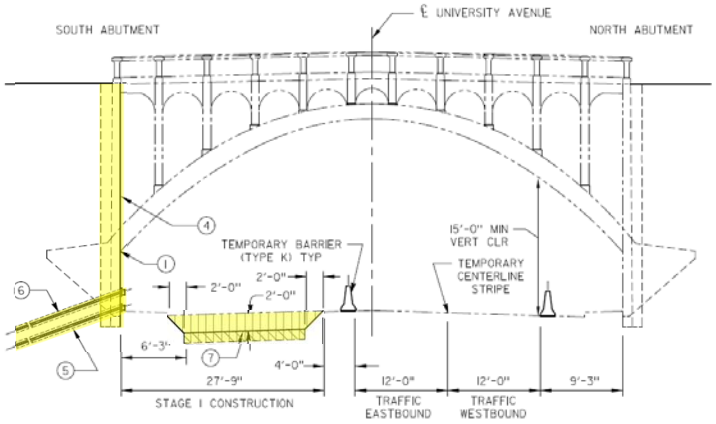
Construction

- Winning Bid
  - Reyes Construction, Inc.
  - $8.3M in June 2016 with NTP in June 2016
- Bid Volatility
  - Range = 75% of winning bid
- Construction Schedule – Summer 2016-Fall 2017
- Construction Team
  - Contractor: Reyes Construction, Inc.
  - Resident Engineer: City of San Diego
  - RE Support: T.Y. Lin International Group

Construction Phasing

- Stage 1-3
  - Stabilize Walls
  - Partially Stabilize Abutments
  - Lower University Avenue

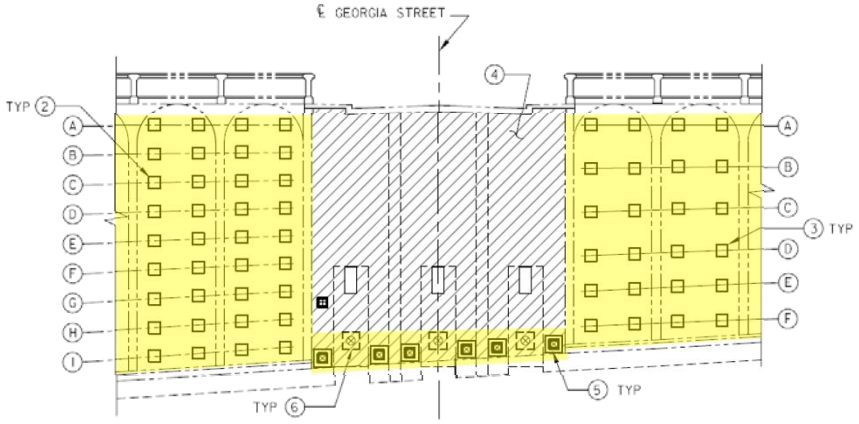
Proposed Staging- Stages 1-3



STAGE 1
BRIDGE ELEVATION
NOT TO SCALE

Retrofit/Rehabilitation/Reconstruction

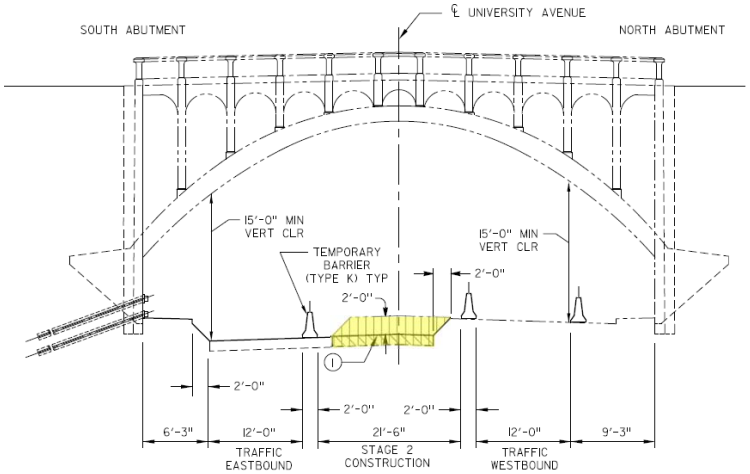
Proposed Staging- Stages 1-3



STAGE 1
SOUTH ABUTMENT ELEVATION

Retrofit/Rehabilitation/Reconstruction

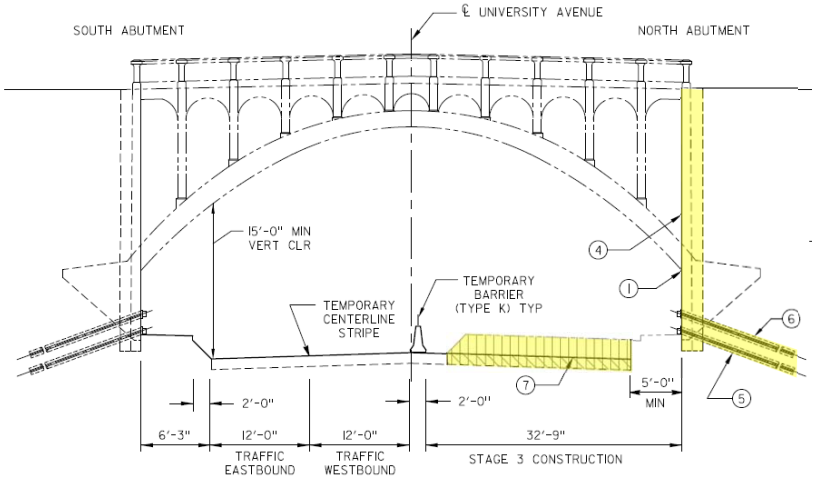
Proposed Staging- Stages 1-3



STAGE 2
BRIDGE ELEVATION
NOT TO SCALE

Retrofit/Rehabilitation/Reconstruction

Proposed Staging- Stages 1-3

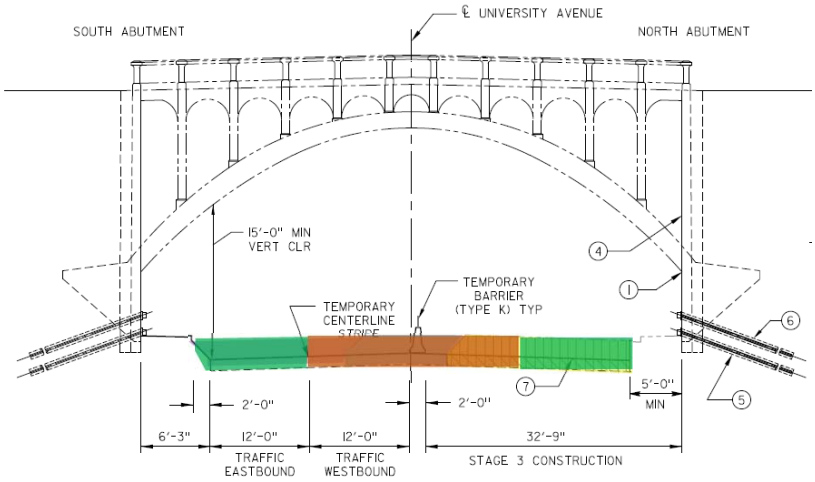


STAGE 3
BRIDGE ELEVATION
NOT TO SCALE

Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 1-3

Lowering Roadway in Two Stages



Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 1-3

Soil Nail Installation Using Temporary Steel Casing

Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 1-3

Reinforce and Shotcrete Wall Unsound Concrete

Retrofit/Rehabilitation/Reconstruction

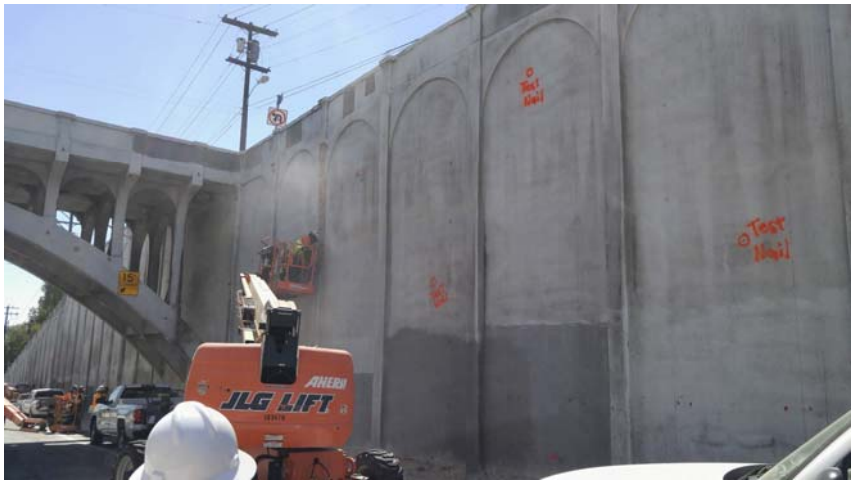
Challenges/ Issues/ Modifications- Stages 1-3

Existing Wall Curved Alignment

Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 1-3

Collaboration with Contractor/CM



Retrofit/Rehabilitation/Reconstruction

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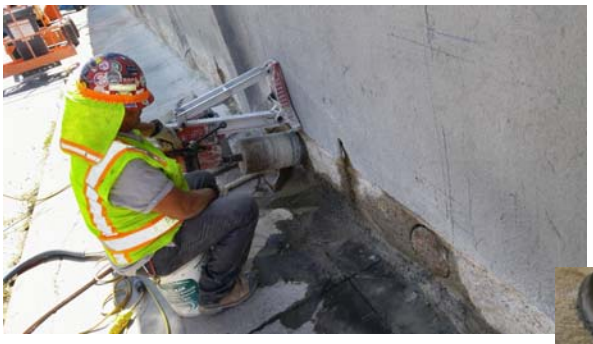
Construction Photos- Stages 1-3

Coring Abutment and Retaining Walls



Retrofit/Rehabilitation/Reconstruction

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Construction Photos- Stages 1-3

Drilling into Backfill and Formation

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stages 1-3

Soil Nail Installation

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stages 1-3

Soil Nails Installation Completed

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stages 1-3

Ground Anchor Installation

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stages 1-3

Abutment New Facing Construction

Retrofit/Rehabilitation/Reconstruction

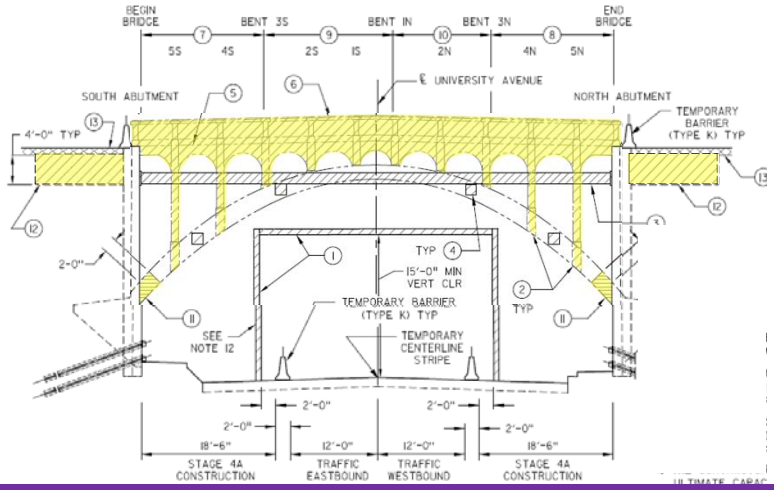
Construction Photos- Stages 1-3

Roadway Lowering

Retrofit/Rehabilitation/Reconstruction

Proposed Staging- Stage 4A

Bridge Demolition



Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stage 4A

Traffic Protective Cover

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stage 4A

Bridge Demolition

Retrofit/Rehabilitation/Reconstruction

Construction Photos- Stage 4A

Soil Improvement

Retrofit/Rehabilitation/Reconstruction

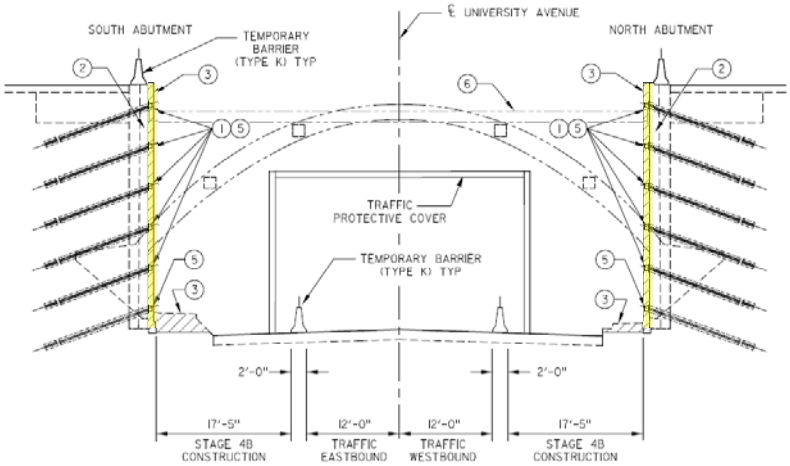
Construction Photos- Stage 4A

Installation of Remaining Ground Anchors

Retrofit/Rehabilitation/Reconstruction

Proposed Staging- Stage 4B

New Facing Construction



Retrofit/Rehabilitation/Reconstruction

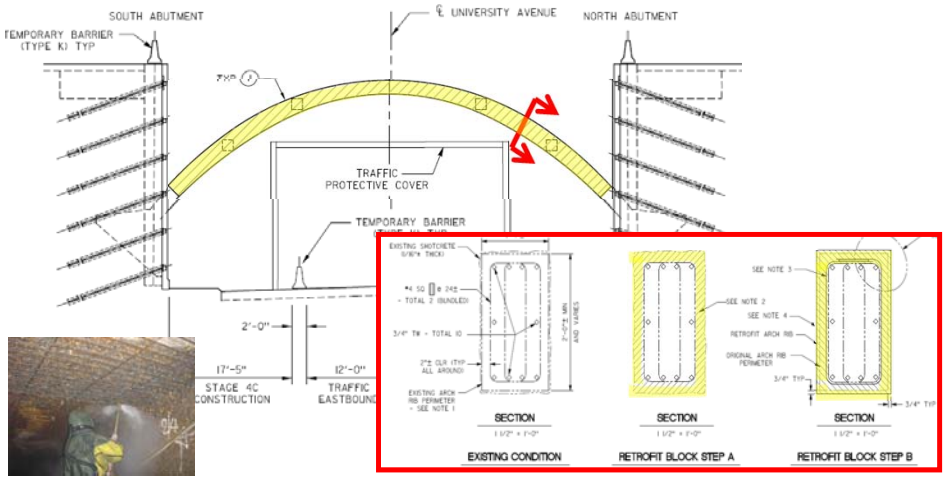
Proposed Staging- Stage 4B

New Facing Construction

Retrofit/Rehabilitation/Reconstruction

Proposed Staging- Stage 4C

Arch Rib Retrofit



Retrofit/Reconstruction

Proposed Staging- Stages 4C

Arch Rib Retrofit

Retrofit/Rehabilitation/Reconstruction

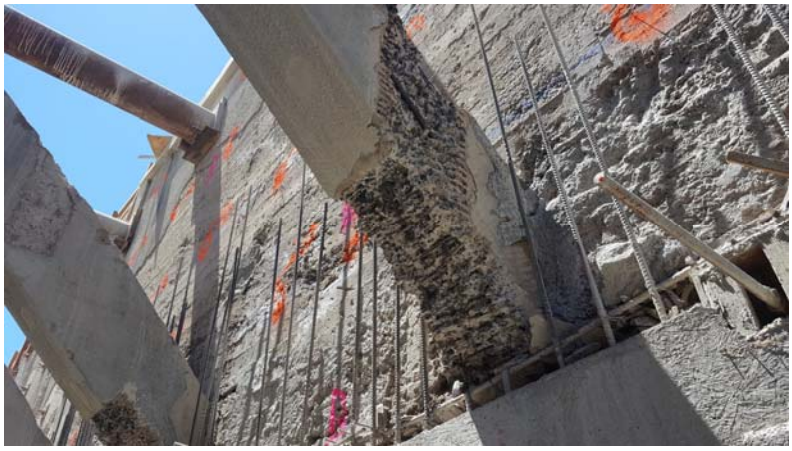
Proposed Staging- Stages 4C

Arch Rib Retrofit

Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 4C

Hydrodemolition- Alternative Means and Method



Retrofit/Rehabilitation/Reconstruction

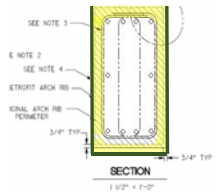
Challenges/ Issues/ Modifications- Stages 4C

Hydrodemolition- Alternative Means and Method

Retrofit/Rehabilitation/Reconstruction

Challenges/ Issues/ Modifications- Stages 4C

Arch Rib Fiber Reinforced Self-Consolidating Concrete

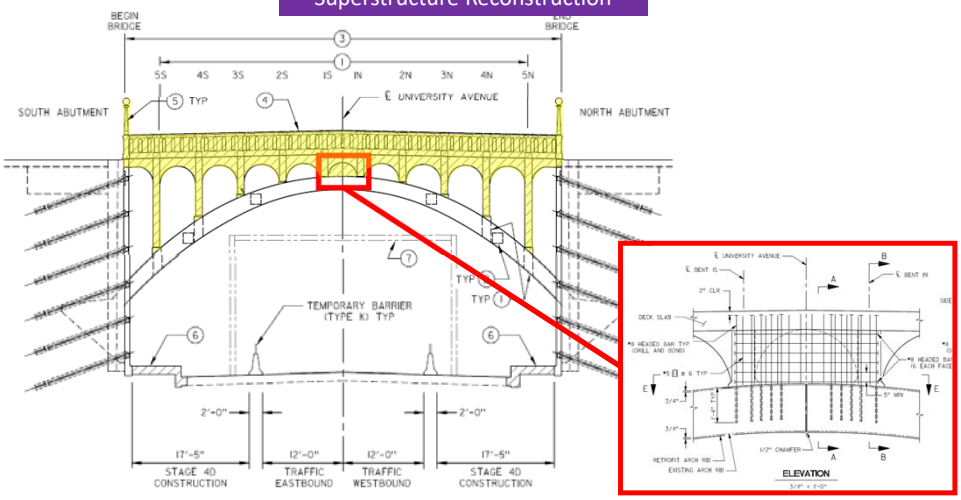


Arch Rib Mock-ups

Retrofit/Rehabilitation/Reconstruction

Proposed Staging- Stage 4D

Superstructure Reconstruction



Retrofit/Rehabilitation/Reconstruction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Caltrans
HELIX
Environmental Planning
TYLIN INTERNATIONAL
Nasland
SPARLING
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