



Colorado River Aqueduct Cholla Wash Cut-and-Cover Conduit Lining

Engineering and Operations Committee

Item 7-5

November 8, 2021

Current Action

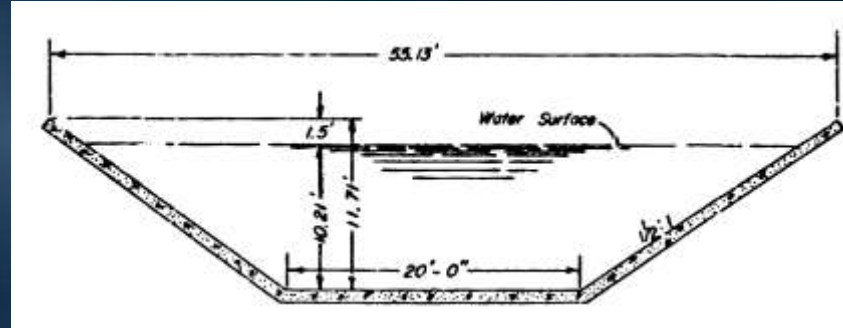
- Award \$3,280,920 contract to J.F. Shea Construction, Inc. for lining the Cholla Wash cut-and-cover conduit at Mile Marker 126 on the Colorado River Aqueduct

Location Map

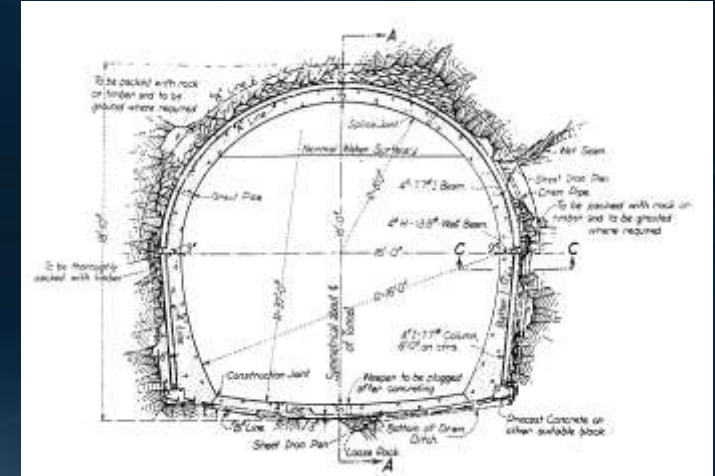


Background

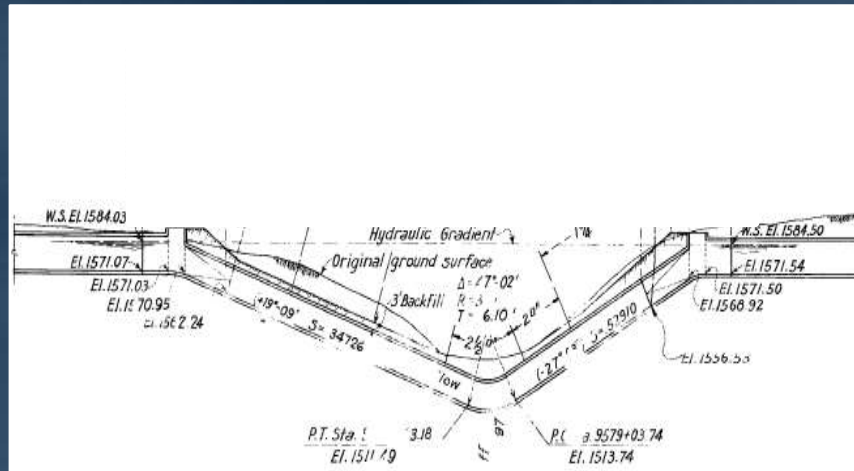
- Conveyance System – 242 total miles
 - 63 miles of open canal
 - 55 miles of cut-and-cover conduit
 - 29 miles of siphons
 - 92 miles of tunnels
 - 4 reservoirs
- Conveyance Capacity
 - Original – 1605 cfs
 - Current – 1800 cfs



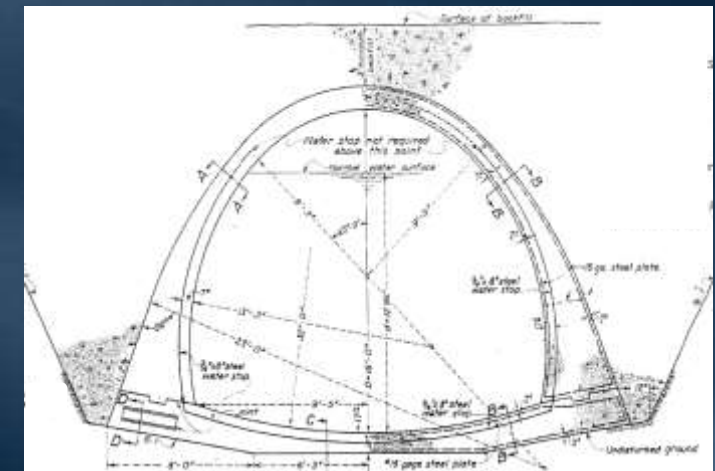
Canal (Typ.)



Tunnel (Typ.)



Siphon (Typ.)



Cut-and-Cover Conduit (Typ.)

Conveyance System – Cleaning

- Routine system cleaning to maintain flow capacity
- Operating at max capacity requires
 - Frequent monitoring
 - Regular maintenance (scraping/cleaning)
 - Chlorine applications



Conveyance System – High Water Flows

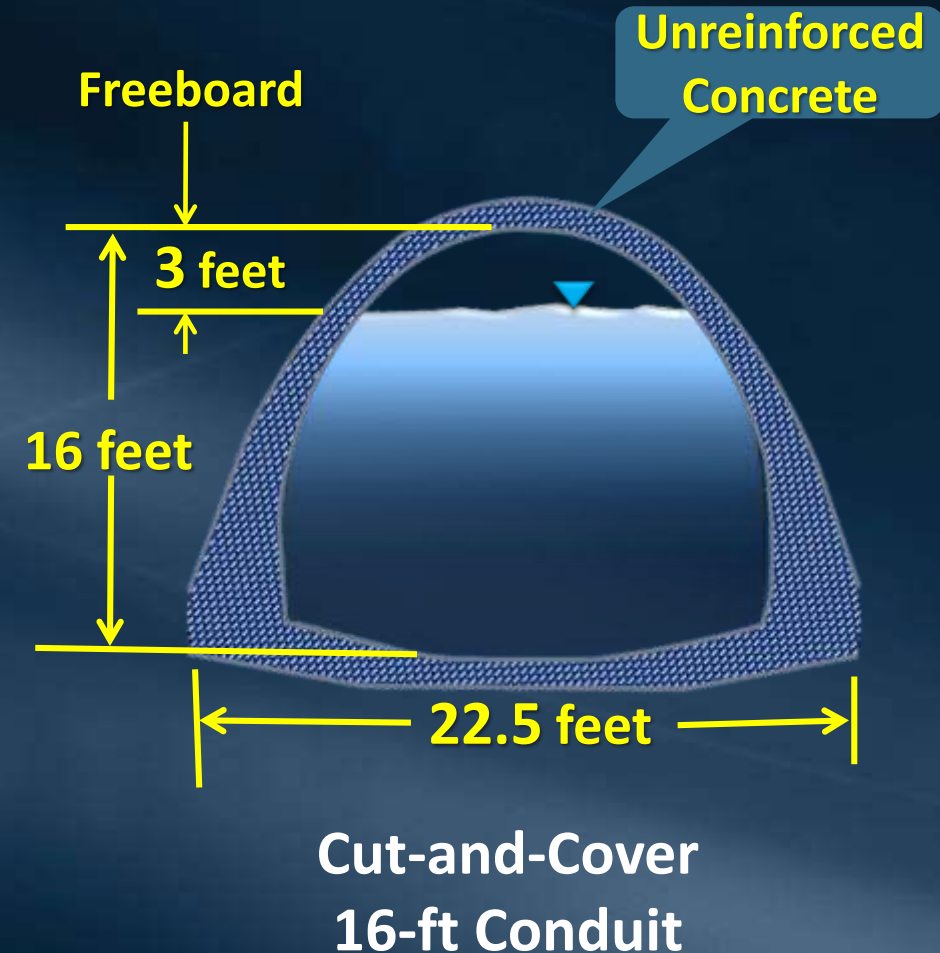
- High aqueduct flows observed despite routine system cleaning
- High aqueduct flows potentially cause:
 - Elevated water levels & reduced hydraulic freeboard
 - Potential water overtopping in canal sections
 - Potential pressurization of buried conduits



Canal Overtopping

Cholla Wash Cut-and-Cover Conduit

- Concrete horse-shoe shaped structure
 - No steel reinforcement in conduit
 - Originally designed for open-channel water surface flows
 - Avoid pressurizing conduits
- Application of epoxy lining to interior of conduit
 - Demonstration project
 - Provides for smoother wall surfaces
 - Potentially allows for open-channel water surfaces under high flow conditions



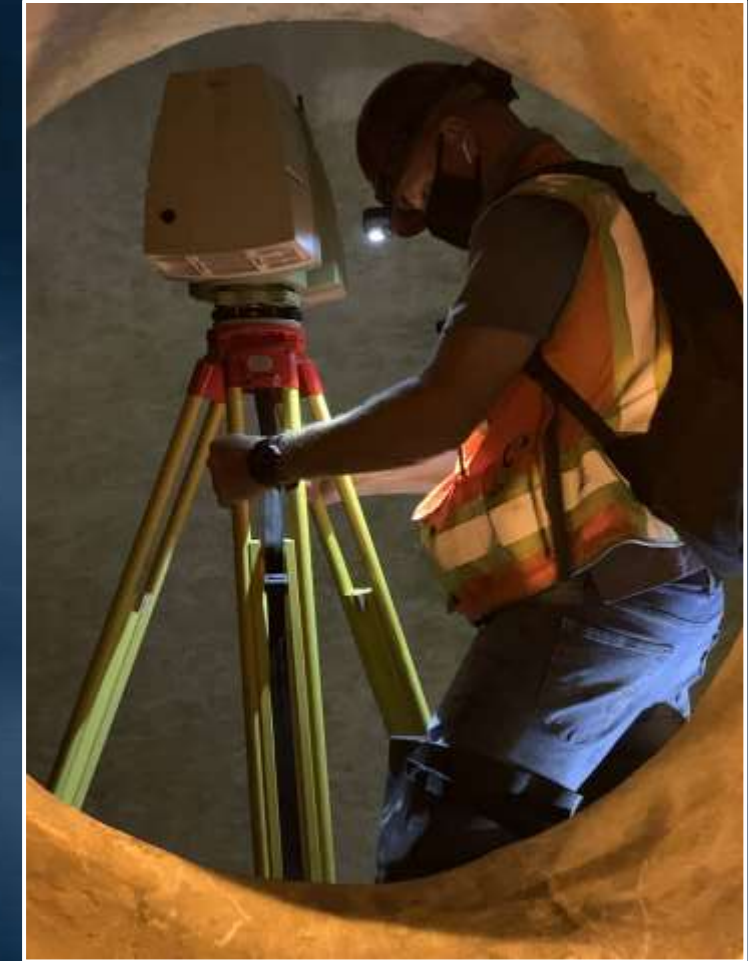
Contractor Scope

- Install temporary ventilation system
- Prepare conduit surfaces
- Repair concrete cracks
- Epoxy line 500 linear feet of conduit



Metropolitan Scope

- Perform project-specific shutdown activities
- Scrape the conduit prior to contractor entry
- Perform 3D survey/inspection of entire Cholla Wash conduit
- Support Activities
 - Construction inspection
 - Contract administration & PM
 - Submittal reviews & record drawings



3-D Survey

Bid Results

Specifications No. 2016

Bids Received	October 12, 2021
No. of Bidders**	2
Bidder	J.F. Shea Construction, Inc.
Bid Amount	\$3,280,920
Engineer's estimate	\$2,000,000
SBE Participation*	8%

*SBE (Small Business Enterprise) participation level set at 5%

** Other bid non-responsive

Alternatives Considered

- Various liner products evaluated
 - Polyurethane, polyester, vinyl & epoxies
- Selected Alternative – Epoxy Lining (Demonstration project)
 - Ease of application in moist & damp environment
 - Smooth finish & long-term durability
- Proceed with project vs. cancel project due to high bid
 - Verify current conduit conditions
 - Begin collecting data/results in 2022 on liner effectiveness
 - Verify lining process production rates & efficiencies
 - Apply lessons learned to potential future lining projects

Allocation of Budgeted Funds

Contract

J.F. Shea Construction, Inc.	\$3,280,920
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Metropolitan Labor

Force construction	200,000
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Construction inspection	350,000
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Submittals review & record drawings	165,000
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Contract administration & PM	210,000
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<u>Remaining Budget</u>	<u>294,080</u>
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Total:	\$4,500,000
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Total construction cost: \$3,480,920

Project Schedule

Activity	2021	2022
CRA Cholla Wash Cut-and-Cover (MM126) Lining		



Construction



Shutdown



Board Action



Completion

Board Options

- Option #1
 - Award \$3,280,920 contract to J.F. Shea Construction, Inc. for the lining of Cholla Wash cut-and-cover conduit along the Colorado River Aqueduct.
- Option #2
 - Do not proceed with the project at this time.

Staff Recommendation

- Option #1

