



2007 - I-215 / 4500 South Bridge

Description

Meta Fields

Project Location :

4500 South (SR-266) over I-215 in Salt Lake City

Mobility Impact Time : ABC: weekend closure of I-215 (53 hours) 10-day closure of 4500 South ;
Conventional: 40-50 weeks of construction-related congestion

Impact Category : Tier 2 (within 3 days)

Dimensions : 172-ft long and 82-ft wide single-span bridge roll-in; 1,600-ton self-weight

Average Daily Traffic At Time Of Construction : 66000

Traffic Management : Traffic management alternative, if constructed conventionally: extended detour

Existing Bridge Description : Four-span bridge (F-156) 244-ft-long and 77.2-ft-wide. Built in 1971, it had a deteriorated superstructure and substructure that required replacement in 2007.

Construction Method : The replacement superstructure was built near site on temporary supports while the replacement abutments were built below the existing bridge with I-215 traffic maintained. The abutments were built on cast-in-place spread footing foundations with full-height cast-in-place wingwalls while 4500 South traffic remained operational. Free-draining backfill was used to minimize needed compaction behind the abutments. The free-draining backfill used a prescriptive compaction method with a vibratory roller; no compaction tests were required. Friday Evening I-215 and the 4500 South bridges were closed. Saturday The two existing spans crossing I-215 were removed in seven hours with self-propelled modular transporters (SPMTs), while the two smaller existing end spans and substructures were demolished conventionally. Sunday SPMTs moved the replacement superstructure into place. The removal and replacement took 53 hours over a weekend; the move would have taken less time but was delayed to allow for daylight observance of the move by showcase participants. Monday morning 3 a.m. I-215 was reopened to traffic with the 4500 South Bridge reopened 10 days later. Precast approach slabs helped speed the bridge reopening.

Stakeholder Feedback : Construction Manager General Contractor (CMGC) was critical to making this project successful in the extremely short amount of planning and construction time allotted. Use of CMGC allowed the contractor and designer to work in a collaborative manner at the early part of the planning stage to seek improved constructability solutions.

High Performance Material : Lightweight concrete deck

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Costs : The project cost was approximately \$7.0 million which includes \$2.5 million associated ABC costs. The SPMT cost was approximately \$800,000 with the additional money for temporary soil nail walls, grading of the staging area, temporary abutments, temporary abutment containers, permanent abutment configuration, and additional labor. The use of ABC saved \$4.0 million in user costs.

Funding Source : Federal and State

Incentive Program : HfL (Highways for LIFE): \$1,000,000

Contract Plans : 1

Construction Schedule : 1

Other Related Url : 3

Foundations & Walls : CIP substructure under traffic

Rapid Embankment : self-compacting backfill

Year Abc Built : 2007

State : UT

Owner : State

Location : Urban

Spans : One-span

Beam Material : Concrete

Max Span Length Ft : 172

Total Bridge Length Ft : 172

Construction Equipment : SPMTs

State Id # : F-I215(126)13

