



2007 – I-215 / 4500 South Bridge

Description

Meta Fields

Other Related Url 0 Other Related Link : <http://www.udot.utah.gov>

Construction Schedule 0 Construction Schedule File : 2458

Specifications 0 Spec File : 1979

Abc Construction Equipment : SPMT(s)

Miscellaneous Prefabricated : Precast approach slab; LWC deck

Prefabricated Bridge Systems : FDcBs (full-width concrete-decked steel beam unit)

Contracting : Full lane closure

Project Delivery : CM/GC

Decision Making Tools : State process

Longitude : -100

Latitude : 40.6741676

Nbi # : 0C 953

State Id # : F-I215(126)13

Construction Equipment : SPMTs

Total Bridge Length Ft : 172

Max Span Length Ft : 172

Beam Material : Concrete

Spans : One-span

Location : Urban

Owner : State

State : UT

Year Abc Built : 2007

Rapid Embankment : Self-compacting backfill

Foundations & Walls : CIP substructure under traffic

Other Related Url : 3

Construction Schedule : 1

Contract Plans : 1

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

Funding Source : Federal and State

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.

Contacts : Carmen Swanwick, P.E. Chief Structural Engineer Utah Department of Transportation
cswanwick@utah.gov 801-965-4981

High Performance Material : Lightweight concrete deck

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.

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.

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.

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

Average Daily Traffic At Time Of Construction : 66000

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

Primary Drivers : reduced onsite construction time; reduced traffic impacts; improved work-zone safety; improved site constructability; improved material quality and product durability

Impact Category : Tier 2 (within 3 days)

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

Project Location :

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