IM-I065 (470)  
Partial Bridge Deck Replacement Project  
I-65 over Cottage Hill Road  
Southwest Region - Mobile  

Jason Shaw, P.E.  
Maintenance Engineer  
ALDOT - Mobile Area

Location  
- MP 2.59 on I-65  
- Approximately 3000 LF north of US-90  
- Approximately 1 mile south of Airport Blvd

History of Bridge  
- Year Built – 1961  
- Cost - $132,730.74  
- ADT – < 35,000  
- Dual Bridges  
- Curb-to-Curb – 28’

History of Bridge - 1961 Facts  
- Gasoline 27 Cents/Gallon  
- Average new home $12K  
- Average new Car $5K

History of Bridge  
- Year Widened – 1986  
- Cost - $6,184,832.09  
- ADT – 61,380  
- Added lanes inside  
- 10’ Outside Shoulder  
- Curb-to-Curb – 56’

Gasoline 27 Cents/Gallon  
Average new home $12K  
Average new Car $5K
History of Bridge – 1986 Facts
- Gasoline 89 Cents/Gallon
- Average new home $90K
- Average new Car $9K

History of Bridge

Deck Deterioration Over Time
- 1974 Condition Grade 8 (oldest insp. Record)
- 1977 Condition Grade 7 (1st mention cracking)
- 1984 Condition Grade 6 (Cracks at 1/8” th.)
- 1987 Condition Grade 7 (after widening)
- 1990 Condition Grade 6 (1st mention of spalls)
- 1994 Condition Grade 5 (heavy in ‘old section’)
- Remained grade 5 until recent repair project
  - With many patches in place
  - Amount of spall repairs greatly increased in the last five years

Element Level Bridge Inspection Data
- Total Area – 28,396 SQFT
  - CS1 – 11,753 SQFT
  - CS2 – 5,530 SQFT
  - CS3 – 11,113 SQFT
  - CS4 – 0

*Would have provided a much better rate of deterioration...

Deck Deterioration – cont.
- Condition State 3 (Spalling) – “Spall greater than 1 in. deep or greater than 6 in. diameter. Patched area that is unsound or showing distress. Does not warrant a structural review”
- Condition State 3 (Cracking) – “Width greater than 0.05 in. or heavy pattern (map) cracking”

Inspection Pictures
Repairs

9 repairs between 2015 and 2016

Project Development

- Original scope was hydroblast/polymer overlay
- To be funded with Special Maintenance Funds
- $600K based on contractor provided estimate
- Bridge Bureau/Materials and Test consultation
- Maybe overlay will work, further investigation needed

Project Development - Coring

- 10% of bridge deck delaminating
- High porosity extending the full depth of deck
- Aggregate paste bond weak in concrete cores
- Average comp. strength of deck low for age
**Project Development – Scope Change**
- Full depth replacement original 2 lane sections
- Increased cost from $600K to almost $3M
- Extended duration due to scope change
- Extensive detour and traffic disruption required

**Traffic Control Considerations**
- Impacts on heavy commuter traffic area
- Calendar year considerations such as Hurricane season, Thanksgiving/Christmas holidays and Mardi Gras
- Difficult detour route including Airport Blvd and US-90/Government Street
- Monitoring queue lengths during ER work
- Incentive project to expedite closures

**Traffic Control Considerations**

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**Project Letting**
- August 26th letting
- McInnis Construction low bid at $2,998,884.62
- Begin work date 10/5/16
- Incentive period 10/14/16 – 11/4/16 (21 days)
- Incentive work completed 10/25/16
- I-65 interruption in place for 11 days

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Southwest Region - Mobile

Travis Tyler
Vice President – Operations
McInnis Construction
3 Major Elements to the project
- Shoring
- Demolition
  - Alternate Demolition Methods
  - Deck Replacement

Placed Shoring Columns under each girder at the webwall locations before demolition began

Hydroblast the entire deck saving the rebar
Hydroblast over the girders only and remove the slabs
Chipping over the girders and remove the slabs

We determined that the most cost effective method was to Hydroblast over the girders only
Estimated 4500 gallons of water per machine per hour
3 machines running at once
278900 gallons actually used
Lined the drip line with 2 layers of sand bags
Covered Cottage Hill Rd with 4 inches of sand
Demolition

- NBL - Started Shifting Traffic at 9 pm Friday October 14th
- NBL - Started Hydroblasting at 1:30 pm Saturday October 15th with 2 Machines
- NBL - Hydroblasting complete at 10 pm Saturday October 15th
- NBL - Hand Chipping began over the beams and 2 Hydroblasting machines moved to SBL to join the 3rd machine that had already begun
- NBL - Hand Chipping completed Tuesday around 3 pm Tournament

Demolition

- SBL - Hydroblasting started midway thru the NBL with 3rd Machine
- SBL - Hydroblasting complete on SBL Sunday around 10:30 am 21 hrs after beginning
- SBL - Hand Chipping Began at 1:30 pm Monday
- SBL - Hand Chipping completed at 2:55 pm Friday

Deck Replacement

- Began laying decking as hand chipping began
- Began Pouring NBL before SBL decking was complete
- First pour was made at 4:00 am Thursday morning on NBL
- Last pour of the NBL was Saturday at 8:45 am
- Opened traffic on NBL Sunday around 3 pm
- Began SBL Saturday morning at 9 am
- Finished pouring SBL at 3 pm Monday
- Opened traffic Tuesday 8 pm
**Deck Replacement**

- Total Contract - $2,998,884.62
- Time 40 calendar days
- 21 day incentive/disincentive at $50k a day
- Completed in 11 days

**Cottage Hill Rd**

- Total Contract - $2,998,884.62
- Time 40 calendar days
- 21 day incentive/disincentive at $50k a day
- Completed in 11 days

**Partners**

- ALDOT
- Hydro-Tech
- Hosea O. Weaver and Sons
- CThorton
- Team Steel
- Ozark Striping
- Ozark Safety Services
- A-1 Sealing
- Thompson Engineering
- The Bridge Builders of Alabama