I-440 DESIGN BUILD
PROJECT UPDATE

Clint Butler
Arcadis
Project Manager
25 July 2018
I-440 Project: What is Design-Build?

A design-build project combines design and construction in a single contract.

TDOT defines the standards, scope, and specifications

The selected design-builder satisfies those requirements
Design-Build Project Delivery
### Owner’s Representative Scope

#### PRELIMINARY DESIGN
- Preliminary (30%) design plans for all roadways, bridges, noise walls, and drainage
- Pavement Design
- Project coordination/meetings
- Construction Schedule
- Cost Estimate

#### PROCUREMENT PHASE
- Develop RFP document
- Support TDOT from RFP release to Contract Award
- Assist with technical input, clarification, and contract development.

#### POST AWARD SERVICES
- Review project schedule, shop drawings, and change orders
- Attend meetings
What is in the RFP?

• Contract Book 3: Project Specific Information
• Contract Book 2: Design-Build Contract
• Contract Book 1: Instructions To Design-Builders
• The Department’s
  - supplemental specifications
  - construction circular letters
  - standard specifications
  - design guidelines
  - standard drawings
  - DB standard guidance
• All other programmatic plans and material included by reference
What is in the RFP?

• Contract Book 3 : Project Specific Information
  - Scope of Work (Roadway, Structures, Utilities, Environmental, ROW etc.)
  - Pavement Design
  - Personnel requirements
  - NEPA documents
  - Reference information (preliminary design, survey reports etc.)

• Contract Book 2 : Contract
  - Agreement between Parties
  - Terms and Conditions
  - Special Provisions
  - Design and Construction services

• Contract Book 1 : Instructions to Design-Builders
  - Scope of Solicitation / Project Description and Overview
  - Project Goals including Completion Date
  - Critical Path Method (CPM) requirements
  - Technical and Price Proposal requirements
  - Technical Response Categories and Scoring
  - Price Proposal Evaluation Methodology
  - ATC requirements
Aggressive Schedule

- **June 16, 2017**: Request for Owners Representative
- **August 2, 2017**: Final Selection for Owners Representative
- **August 16, 2017**: Released Request for Qualifications for I-440
- **August 18, 2017**: Short-Listed Design Builders
- **October 13, 2017**: Statement of Qualifications
- **January 12, 2018**: Completed Request for Proposal/Preliminary Plans
- **July 13, 2018**: Technical Proposals
- **July 27, 2018**: Price Proposals Due
- **August 17, 2018**: Anticipated Award of DB Contract
I-440 Traffic Continues Growing

(AADT) Annual Average Daily Traffic

- 2016 – 94,801 (Along the corridor)
  - Lowest between Murphy Road and West End
    - 85,890 (2021)
    - 104,360 (2041)

- 2021 – 102,968 (Along the corridor)
  - Highest between Hillsboro Road & I-65
    - 115,740 (2021)
    - 138,400 (2041)

- 2041 – 123,688 (Along the corridor)
  - 5% Trucks
I-440 Project Goals

- **Address Pavement**
  - Concrete is **30 years old**, severe deterioration
  - Recent paving not going to last

- **Improve Safety**
  - Crash rates are double **(1.8x)** the statewide average
  - Since 2008, there have been **16 fatalities** on I-440

- **Address Congestion**
  - Hillsboro Road / 21st Avenue
  - West End Avenue
  - Bridge over I-65
  - Eastbound Murphy Road Ramp Queue
  - Westbound Hillsboro Road Ramp Queue
Pavement Sections

Existing Concrete Pavement
- 10” Concrete Pavement
- 3.5”-13.8” Aggregate

Proposed Asphalt Pavement
- Minimum Depth to Refusal – 21.6”
I-440 Existing

- Two travel lanes, east and west
- Auxiliary lanes between interchanges
- 8-ft inside shoulders, 12-ft outside
- 2-ft curb
- 13-ft grass median
I-440 Proposed Improvements

- Remove/replace pavement
- Three travel lanes in each direction
- Auxiliary lanes between interchanges
- New noise walls
- ITS
- New lighting
- Landscaping
I-440 Overpasses

- Bridges designed in 1981 and 1982
- Bridges built in 1985
- All single-spans except I-65 which is a six-span
Traffic Control Considerations

• Emergency response challenges due to construction conditions and related congestion
• Closure of exit only lanes and merge conditions from on-ramps will create delays along entire I-440 corridor
• Substantial congestion on local network and I-440
• Minimizing construction time
I-440 Traffic Control Options

Option 01: Traditional Construction over 36 months

Option 02: Segmented Closures over 10 months

Option 03: Hybrid of Traditional Construction and Segmented Closures
Option 01

Traditional Construction over 36 months

- Daytime: two lanes remain open each direction, no exit only lanes
- Nighttime: one lane open each direction
- Yield to merge onto I-440
Traffic Control Durations

- **Option 01**: 2 Lanes Open
- **Option 02**: East Segment Closure, West Segment Closure
- **Option 03**: East Segment 2 Lanes Open, West Segment Closure
All crossroads open throughout construction
- Exception: Two I-65 weekend closures TBD
I-440 Proposed Bridge Widening

- Bridge safety improvements add four (4) steel beams
- Each beam is 6’ H x 32” D weighing 493,000 lbs.
- More than 1,026,000 lbs. of new steel support each bridge, totaling more than 2 million lbs. of new steel eastbound/westbound
- Two I-65 @ I-440 weekend closures allowed outside I-440 segmented closures
I-440 Reconstruction Restrictions

• Closures would occur in two segments, with only one segment being closed at any given time

• East segment must be completed first

• Closure periods can only be from either
  - March 4 – November 7, 2019
  - January 6 - November 6, 2020

• No full segmented closure would be in place from Thanksgiving through New Year holidays

• Contractor must maintain access for emergency services

• Substantial liquidated damages would be assessed against the contractor if opening dates are not met or if project is not completed on time
I-440 Reconstruction – Key Dates

- **July 13, 2018** – Technical Proposals
- **July 27, 2018** – Price Proposals
- **August 2018** – Award of I-440 Reconstruction contract
- **Late Fall 2018** – Construction activities begin
Delay Management During Construction

Develop intersection control strategies and striping improvements:

- 15 arterial and 3 interstate corridors
- Over 165 signalized intersections
- Multiple striping improvement locations anticipated

Active corridor management

- Monitor real time traffic flow
- Adjust timing to minimize delay

Benefits

- Better utilization of street network ~ reduced delay
- Real time adjustments ~ instant queue reduction
- Combined Metro and TDOT coordination improves driver safety and traffic flow
I-440 RECONSTRUCTION PROJECT

For more info: