I-40/Douglas Boulevard Bridge Replacement and Interchange Reconstruction
Oklahoma County

Public Meeting
January 17, 2017
Stakeholders
I-40/Douglas Improvements

Project Location

St. Anthony
A member of SSM Health

Midwest City
Where the Spirit Flies High

United States Government Department of Transportation

S.E. 29TH ST

Air Force Materiel Command

Seal of the City of Oklahoma City
Meeting Purpose
I-40/Douglas Improvements

- Purpose and Need for Project
- 3 Interchange Alternatives Considered
- Public Input/Feedback
Existing Douglas Boulevard and Bridge
I-40/Douglas Improvements

**Existing Douglas Boulevard**
- Four 12-Ft Wide Lanes, with Additional Left-Turn and Right-Turn Lanes
- Existing Annual Average Daily Traffic is 26,100 vehicles per day (vpd)
- Traffic Signal @ S.E. 29th Street
- Traffic Signal South of Interchange @ Lancer Gate
Existing Douglas Boulevard and Bridge

I-40/Douglas Improvements

**Existing Douglas Bridge**
- Four Through Lanes, Two Loop Ramp Weaving Lanes, Curb and Gutter, 3-Ft Wide Sidewalks on Each Side
- Six-Span 80-Ft Wide Concrete Continuous Slab Bridge (Built in 1962)
- ODOT Bridge Inspection Report Rates Bridge as “Functionally Obsolete” Due to Substandard Horizontal Clearance (Bridge Piers Are Located at Outside Edge of the Right Shoulders along I-40)
Existing I-40
I-40/Douglas Improvements

Existing I-40 Through the Interchange
- Four 12-ft Wide Lanes
- 3-ft Wide Inside Shoulders, 10-ft Wide Outside Shoulders
- 40-ft Wide Grass Median-Cable Barrier
- Existing Annual Average Daily Traffic is 54,600 vpd
- Existing Bridge Piers @ Edge of Outside Shoulders
- Not Enough Space Under the Existing Bridge to Add Lanes to I-40
Existing I-40/Douglas Interchange

I-40/Douglas Improvements

**Existing Interchange – Full Cloverleaf**
- E.B. and W.B. Collector-Distributor Roads
- Ramp Spacing Industrial to Douglas is Short (600 Feet)
- Traffic Weaving (Douglas 400 ft., CD Rd. 370 ft.)
- Outer Ramps 18-ft Wide, Loop Ramps 20-ft. Wide
- Ramps With Highest Traffic Volumes: S.B. to W.B.--6,100 vpd, E.B. to N.B.--6,100 vpd
- Ramps With Second Highest Traffic Volumes: E.B. to S.B.--2,800 vpd, N.B. to W.B.--2,800 vpd
Collision History
I-40/Douglas Improvements

Collision Summary

- 450 Collisions Within the Cloverleaf Ramp Extents
- Fatality – 0
- Incapacitating Injury – 10
- Non-Incapacitating Injury – 45
- Possible Injury – 69
- Property Damage 324
Purpose and Need
I-40/Douglas Improvements

- Correct Functionally Obsolete Douglas Boulevard Bridge
- Improve Safety
Proposed Project
I-40/Douglas Improvements

- Replace Douglas Boulevard Bridge
- Widen I-40 from 4 Lanes to 6 Lanes
- Improve I-40/Douglas Boulevard Interchange
- 3 Interchange Alternatives
  - Single Point Urban Interchange (SPUI)
  - Tight Urban Diamond Interchange (TUDI) with Future Flyover
  - Cloverleaf Reconstruction
- Remove Engle Road Bridge Over I-40
- Modify Access At I-40 and Industrial Blvd. Interchange to Improve Safety and Operations between Industrial Blvd. and Douglas Blvd.
Alternative 1
Single Point Urban Interchange (SPUI)

• Basic Diamond
• Single Signalized Intersection in Center of Bridge
• Douglas Blvd: 6 Through Lanes, Dual Left-Turn Lanes, Single and Dual Right-Turn Lanes
• Removes Collector Distributor Roads and Loop Ramps - Eliminates Weaving Sections and Improves Safety
• Modification of Access East of Industrial Blvd. - Eliminates Weaving Sections on I-40 and Improves Safety
• Longer I-40 Exit and Entrance Ramps Improves Safety
Alternative 1
Single Point Urban Interchange (SPUI)

What is a SPUI?

• Grade Separated Two Level Diamond

• One Large Intersection Instead of Two Separate Diamond Ramp Intersections

• At-Grade Intersection is Located at the Center of the Interchange and is Signalized

• All Through Arterial Traffic and All Traffic Turning Left Onto or From the Interchange Ramps is Controlled with the Signal

• The Right Turn Movements May Be Free-Flow (Merge or Yield) or Signalized. Right-Turns Do Not Pass Through the Central Signal

• For Left Turns, Opposing Traffic is on the Right
Alternative 1
Single Point Urban Interchange (SPUI)

Signal Phasing
Phase 1: Left-Turns from Douglas to I-40
Phase 2: Through Traffic on Douglas
Phase 3: Left-Turns from I-40 to Douglas
Alternative 1
Single Point Urban Interchange (SPUI)

I-40 and Morgan Road, Oklahoma City
When To Consider a SPUI?

- Traffic Volumes are High and There is Major Congestion
- Left Turn Volumes are High
- Right-of-Way is Restricted
- Truck Volumes are High

In Most Cases When We Consider A SPUI as an Interchange Alternative, We Also Evaluate a Tight Urban Diamond Interchange (TUDI) as an Alternative as Well.
Alternative 2
Tight Urban Diamond Interchange (TUDI)

Hruskocy Gate (Tinker)
S.E. 29th St
Engle Bridge Removed
Douglas Blvd
EXISTING TRAFFIC SIGNAL
S.E. 29th St
RENNY RD
ST ANTHONY HEALTHPLEX EAST (ER)

PROPOSED TRAFFIC SIGNALS
HRUSKO CY GATE (TINKER)
TO HRUSKO CY GATE (TINKER)
PROPOSED ROADSAY
PROPOSED BRIDGE
FUTURE PROJECT TO BE DETERMINED

LEGEND

SEC. 14 T11N R2W
SEC. 13 T11N R2W
SEC. 13 T11N R2W
Alternative 2
Tight Urban Diamond Interchange (TUDI) With Future Ramp Flyover

What is a TUDI?
• Grade Separated Two Level Diamond
• Two Separate Diamond Ramp Intersections
• Ramp Spacing 250’-400’ (Operates Better Than Wider Diamonds)
• Two Continuous Left-Turn Lanes for Each Direction Between Signals
• Typically Costs Less Than a SPUI Due to Smaller Bridge
• Good Option When Right-of-Way is Restricted
• Accommodates High Traffic Volumes

Initial Construction is the TUDI.
Future Ramp Flyover Would Be Constructed In the Future
Alternative 2
Tight Urban Diamond Interchange (TUDI) With Future Ramp Flyover

**TUDI with Flyover**
- Basic Diamond with 2 Signalized Intersections
- Douglas Blvd: 6 Through Lanes, Dual Left-Turn Lanes, Single and Dual Right-Turn Lanes
- Flyover Bridge Improves Traffic Operations for the N.B. to W.B Movement
- Removes Collector Distributor Roads and Loop Ramps - Eliminates Weaving Sections and Improves Safety
- Modification of Access East of Industrial Blvd. - Eliminates Weaving Sections on I-40 and Improves Safety
- Longer I-40 Exit and Entrance Ramps Improves Safety
Alternative 3
Reconstruction of Cloverleaf Interchange

Cloverleaf Interchange

- Free-Flow Movements – No Signals
- Douglas Blvd: 4 Through Lanes, Two Lanes for Loop Ramp Weaving
- Space for Two Additional Lanes in Median For Future Left Turn Lanes
- Collector Distributor Lanes Reconstructed to 2 Lanes Wide in Merge Areas
- Modification of Access East of Industrial Blvd.
  - Eliminates Weaving Sections on I-40 and Improves Safety
- Longer I-40 Exit and Entrance Ramps Improves Safety
Reconnaissance Performed to Identify Constraints

- Wetlands and Waters
- Threatened & Endangered Species Critical Habitat
- Archeological Sites and Historic Properties
- Aboveground or Underground Storage Tanks
- Oil/Gas Wells
- Residences
- Commercial Facilities
- Tribal Properties
- Utilities
## Comparison of Alternatives
### I-40/Douglas Improvements

<table>
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<tr>
<th>Comparison Parameters</th>
<th>Alternative 1 Single Point Urban Interchange (SPUI)</th>
<th>Alternative 2 Tight Urban Diamond Interchange (TUDI) with Future Ramp Flyover</th>
<th>Alternative 3 Cloverleaf Interchange Reconstruction</th>
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</thead>
</table>
| **Traffic Operations**¹       | • I-40 Facilities: Good  
• 1 Interchange Signal on Douglas  
• SPUI Operates Better than TUDI for All Movements Except NB to WB Movement | • I-40 Facilities: Good  
• 2 Interchange Signals on Douglas  
• NB to WB Movement Operates Better than SPUI (All Other Movements Operate Better With the SPUI) | • I-40 Facilities: Good  
• No Interchange Signal on Douglas  
• Traffic on Douglas Remains Free-Flow  
• Weaving on Douglas and CD Roads Remains |
| **Interchange Geometry**       | • Ramp Design Speed 50 mph  
• All Weaving Eliminated  
• Flat Dual Left-Turn Curves Allow for Ease of Movement Between Ramps and Douglas | • Ramp Design Speed 35-50 mph  
• All Weaving Eliminated  
• Dual Left-Turns Between Ramps and Douglas Will Be at Slow Speed Due to Ramp Intersection Angles | • Ramp Design Speed 20 mph  
• Loops and Weaving on Douglas and CD Roads Remain  
• CD Roads Reconstructed 2 Lanes Wide in Ramp Merge Areas |
| **Environmental Impacts**²    | Minimal Wetland and Stream Impacts                                                                                     | Minimal Wetland and Stream Impacts                                                                                 | Minimal Wetland and Stream Impacts                                                                                 |
| **Utility Relocations**       | 7 Utilities Impacted                                                                                                    | 7 Utilities Impacted                                                                                                 | 7 Utilities Impacted                                                                                                 |
| **Right-of-Way Impacts**      | Approx. 0.74 Acres  
S.W. Quadrant—Oklahoma County                                                                                     | Approx. 0.74 Acres  
S.W. Quadrant—Oklahoma County                                                                                     | Approx. 0.74 Acres  
S.W. Quadrant—Oklahoma County                                                                                     |
| **Total Project Cost**        | $47 million                                                                                                            | $56 million                                                                                                       | $45 million                                                                                                       |

Colors are to aid visual comparison only; i.e., green, yellow, and red indicate which alternate is better, neutral, and worse, respectively, for each parameter of comparison. The color scheme has relevance only to the comparison of Alternatives 1, 2, and 3, and is not meant to imply any parameter is "ideal", as compared to other projects or situations.

**Notes:**
1: By 2045, the Douglas & 29th Street intersection will need additional lanes to ensure proper interchange operations. In addition, eastbound to northbound pm traffic will need an additional route alternative to ensure proper interchange operations.
2: No other environmental constraints identified.
What Happens Next? / Process

I-40/Douglas Improvements

- Consider Comments from Public Meeting
- Select a Preferred Interchange Alternative & Complete Preliminary Design Report
- Complete Detailed Environmental Studies and Design Plans
- 8-Year Construction Work Plan:
  - Right-of-Way (Year 2017)
  - Utilities (Year 2017)
  - Construction (Year 2020)
Submit Your Comments

I-40/Douglas Improvements

- Leave your written comments with us tonight.
- Download and submit a comment form at:
  www.odot.org/publicmeetings
- Submit your written comments by mail to:
  Oklahoma Department of Transportation
  Environmental Programs Division
  200 N. E. 21st Street
  Oklahoma City, OK  73105
- Fax your written comments to:
  (405) 522-5193
- Email your comments to:
  Odot-environment@odot.org
- Please submit your comments by January 31, 2017.
Thank you!