

# I-345 Feasibility Study Public Meeting

December 11, 2012

# Feasibility Study Team

TxDOT – Dallas District & Bridge Division

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APM

Halff Associates

Civil Associates

# Project Limits



From Louise Avenue (South of I-30)

To Ross Ave (South of Woodall Rogers/Spur 366)

# Need for Feasibility Study

- I-345 was constructed in 1974.
- Located between I-30 and Spur 366 (Woodall Rogers).
- High Daily Traffic Volume
- The Feasibility Study evaluation of alternatives is based on the growing cost of continued maintenance and preservation of the structure.

# Purpose for Feasibility Study

The purpose of the Feasibility Study is to evaluate nine (9) alternatives intended to:

- improve the structural condition of the bridge
- reduce maintenance cost
- reduce the frequency of maintenance and preservation activities.

# Feasibility Study Schedule

Notice to Proceed	June 2012
Develop Conceptual Alternatives	Sept-Dec 2012
Stakeholder Meeting	November 2012
Public Meeting	December 2012
Finalize Feasibility Report	Summer 2013

# Existing Condition



High Traffic Volumes

2010 Average Daily  
Traffic – 170,000

# Existing Condition



- Unsymmetrical Columns Layout
- Ramps Underneath Vertical Clearance Limitation



# Existing Condition



- Unsymmetrical Columns Layout
- City Streets Underneath – Vertical Clearance Limitations

# Existing Condition



# Existing Condition

- Bridge Designed and Built In 1974
- Unique Design –
  - A - Two Steel Girder Superstructure Framing
  - B - Concrete Deck Not Mechanically Connected (Bolted) to Floor Beams and Girders
  - C - Unsymmetrical Column Layout

# Study Alternatives

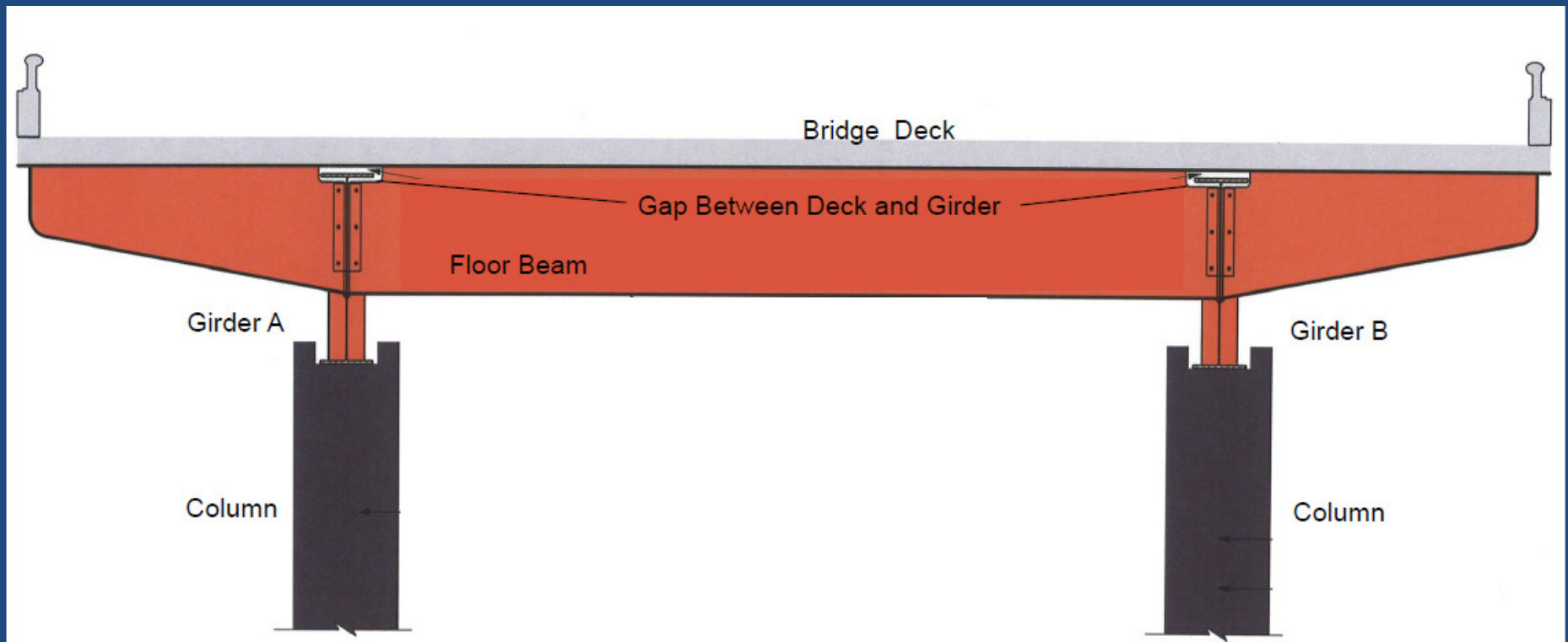
1. No-Build
2. Strengthen Superstructure By Connecting the top of the Steel Girders with the Concrete Bridge Deck
3. Add Columns To Provide Symmetrical Support
4. Strengthen Local Connections
5. Strengthen Superstructure by Adding Girders & Bent Caps
6. Rapid Bridge Replacement (Roll-out, Roll-in)
7. Close Down I-345 During Fast Track Superstructure & Cap Replacement (Similar To Pierce Elevation in Houston)
8. Hybrid Alternative (Combination of Alternatives 2 Thru 7)
9. Complete Facility Reconstruction

## Alternative 1: No-Build

- Continue yearly inspection costs
- Continue maintenance costs.
- Structural issues are mostly related to zones of beam connections
- Expect repair costs to increase with bridge age

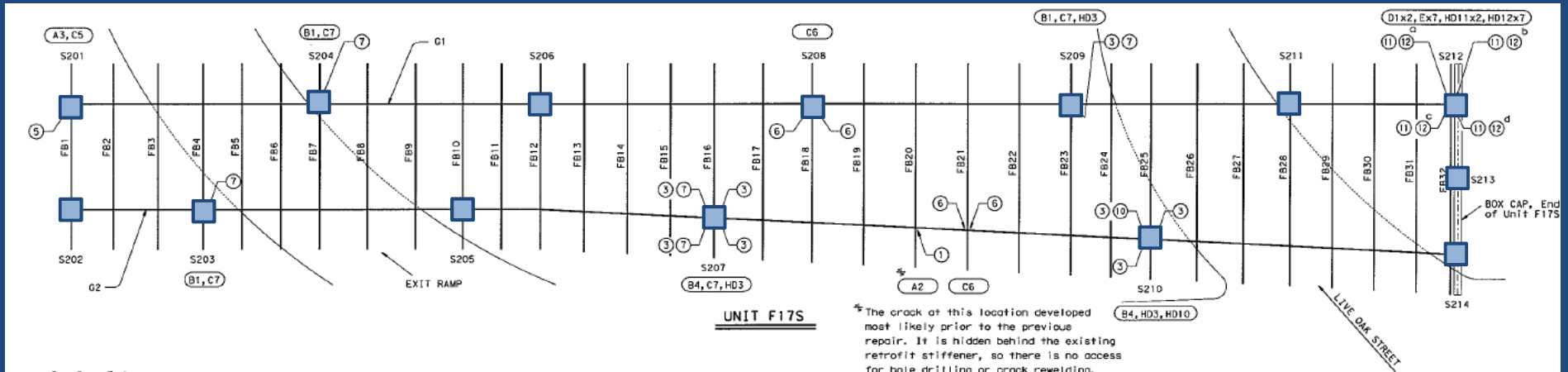


## Alternative 2: Connecting Girders to Bridge Deck



- Reduction in girders deflection and vibration
- Reduction in girder primary and secondary bending stresses
- Improve structural performance of girders

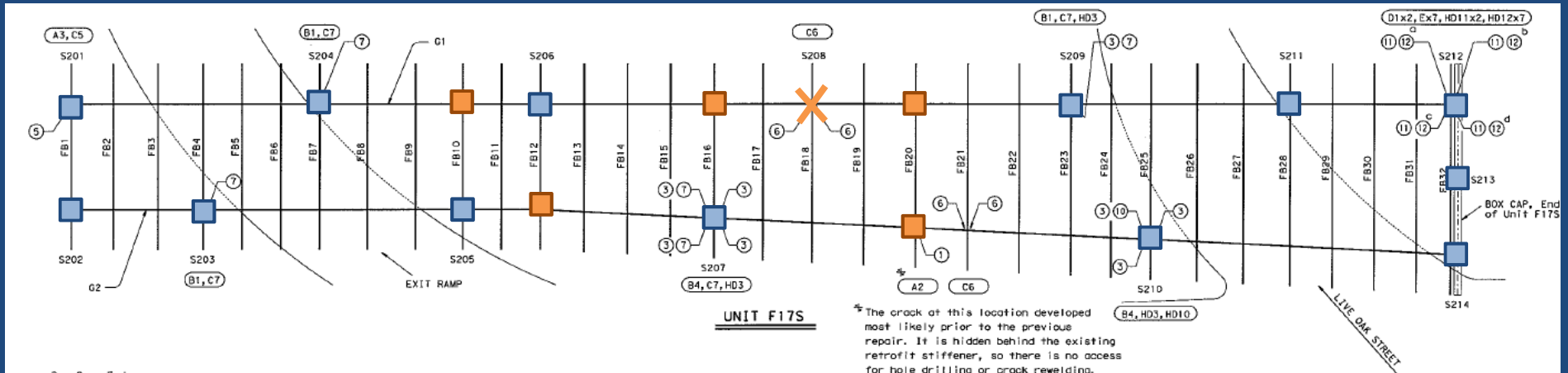
# Alternative 3: Add Columns for Symmetrical Support



■ Existing Column Configuration

- Additional symmetric columns will reduce bridge distortion as well as secondary bending and stresses
- Reduce stresses in the girders will improve structural behavior of members and connections

# Alternative 3: Add Columns for Symmetrical Support

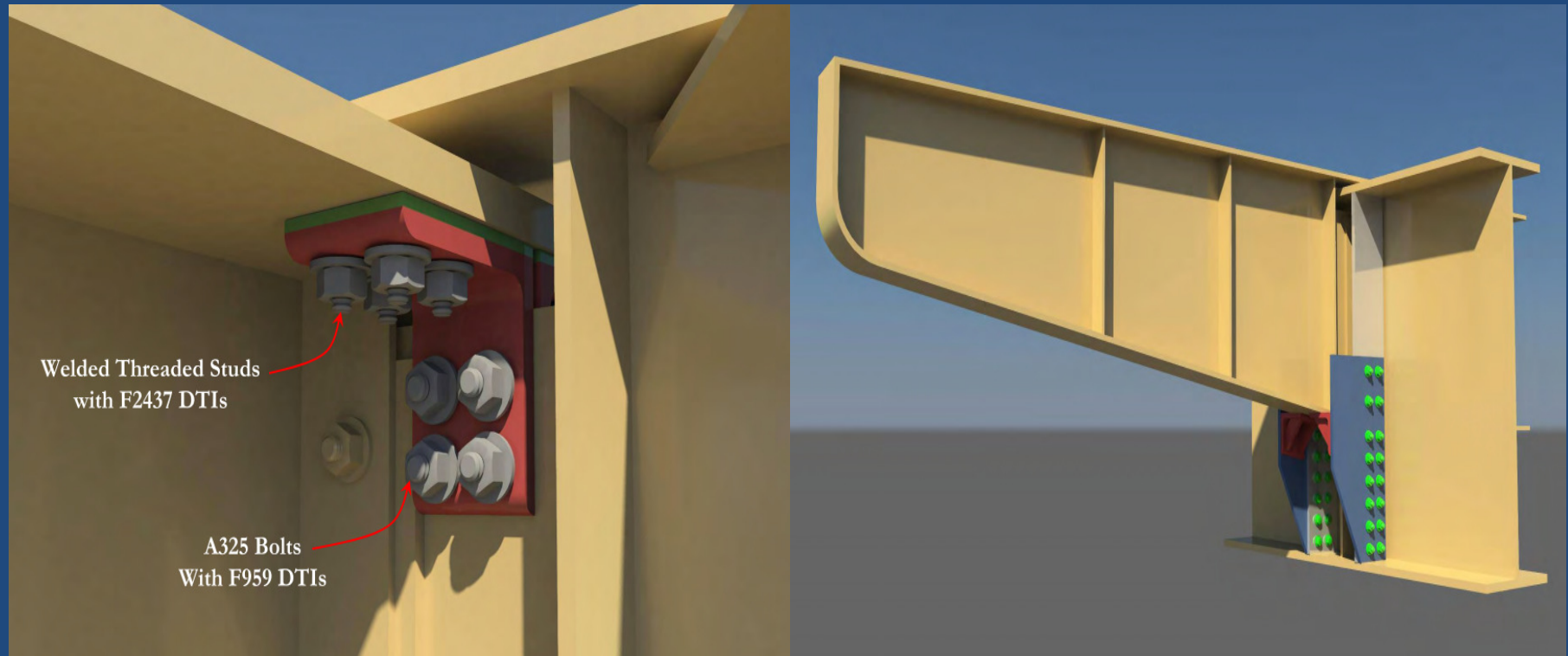


## Legend

- Existing column configuration
- Additional symmetrical columns (no roadway impact)
- Additional symmetrical columns (roadway impact)
- Add columns (“optimal” column configuration)
- ✗ Remove columns (“optimal” column configuration)



## Alternative 4: Strengthen Connections



Objective – Modify existing connections by adding stiffeners or bolted angles to reduce stresses and improve structural behavior.

## Alternative 5: Strengthen Superstructure by Adding Girders and Bent Caps

- Add precast bent caps at existing columns
- Add steel girders below deck to reduce existing girder loads
- Reduce bending stresses on existing floor beams and girders
- Improve structural performance of existing members of connections



## Alternative 6: Rapid Bridge Replacement



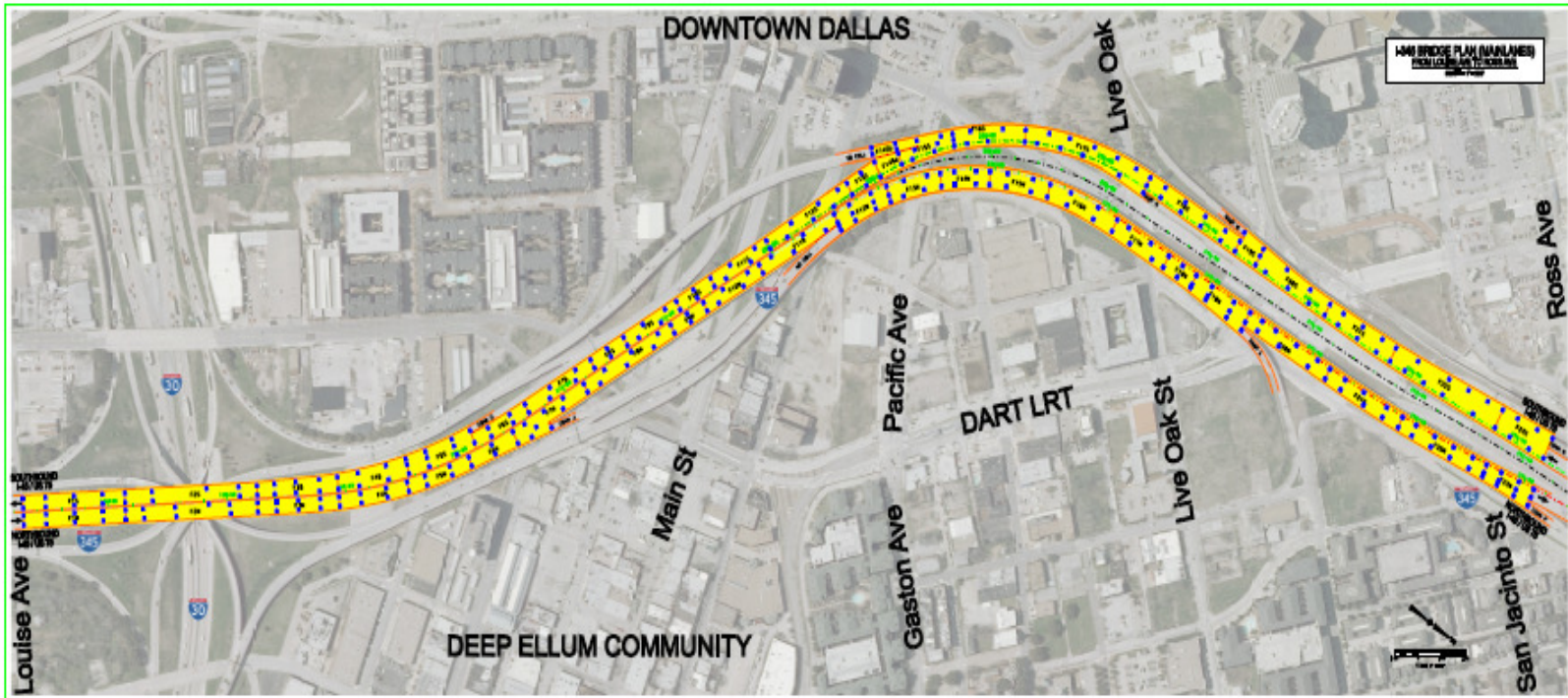
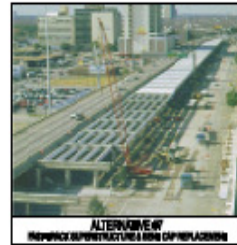
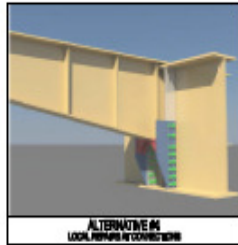
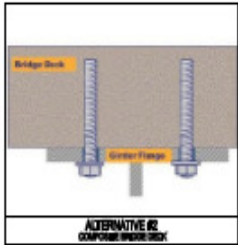
- Erect temporary towers on both sides of bridge
- Build new bridge deck
- Disconnect and Roll-out existing bridge deck onto temporary towers
- Dismantle old bridge deck
- Roll-in new bridge deck and connect
- Dismantle and move towers to next location

## Alternative 7: Fast Track Superstructure and Bent Cap Replacement

- Retrofit Existing Columns
- Use Precast Bent Cap Where Possible
- Use Precast Girders Where Possible
- Complete Shutdown of I-345. No Traffic Maintenance
- Very Rapid Construction – 3 to 4 Month Duration



# Alternative 8: Hybrid Alternative (Combination of 2-7)



## Alternative 9: Complete Facility Reconstruction

- Require environmental study
- Bring the facility up to current design standards
- Purchase Right-of-Way
- Determine type of facility
- Utility related issues
- Funding
- Community Impacts



## Proposed Evaluation Criteria

1	Initial Capital Cost
2	Ongoing Maintenance Cost
3	Construction Duration
4	Structural Life Expectancy
5	City Street Impact
6	Local Residents Impact
7	Local Businesses Impact
8	Construction Traffic Impact
9	DART Impact
10	Aesthetic Impact
11	Current Design Standards
12	Other Applicable Criteria

# Questions and Comments?

- TxDOT representatives are available to discuss the feasibility study and answer your questions.
- Before leaving tonight, please fill out a comment form. TxDOT needs your comments to help our engineers develop projects that more closely reflect the needs and values of the communities we serve. Thank you for your time and consideration.