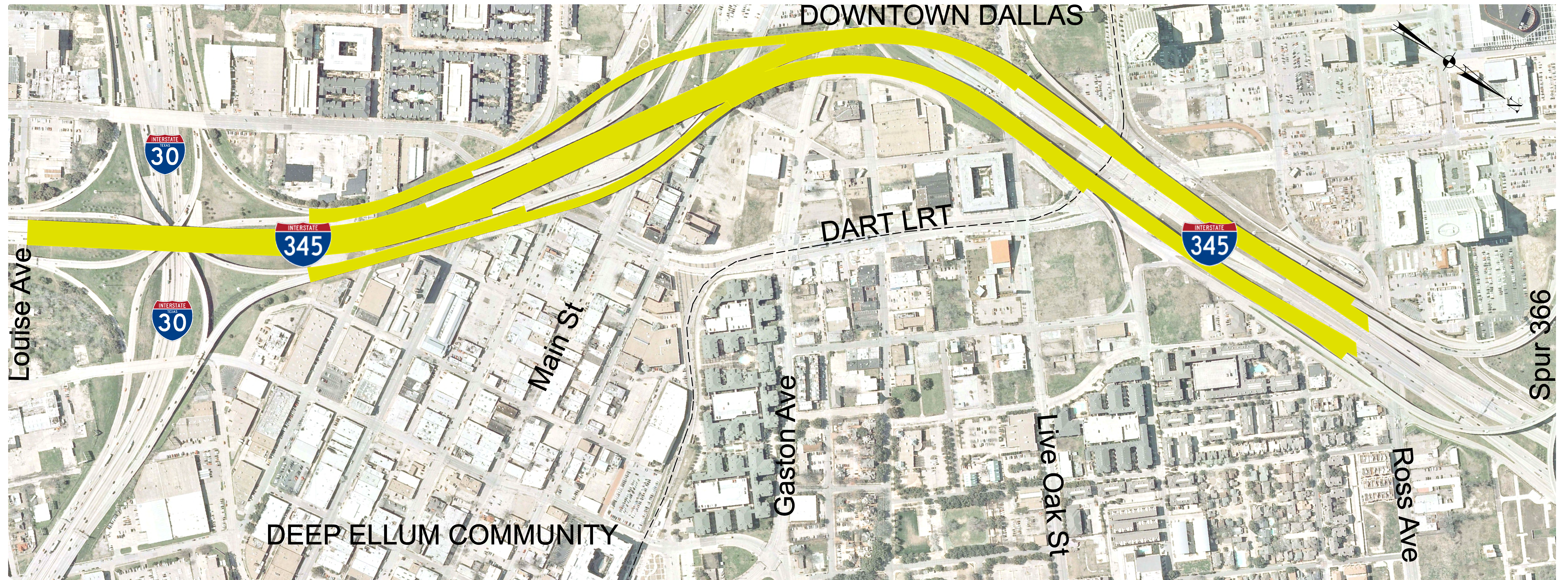


ALTERNATIVE # 1: NO BUILD



Applicable to Entire Project - All 66 Bridge Units

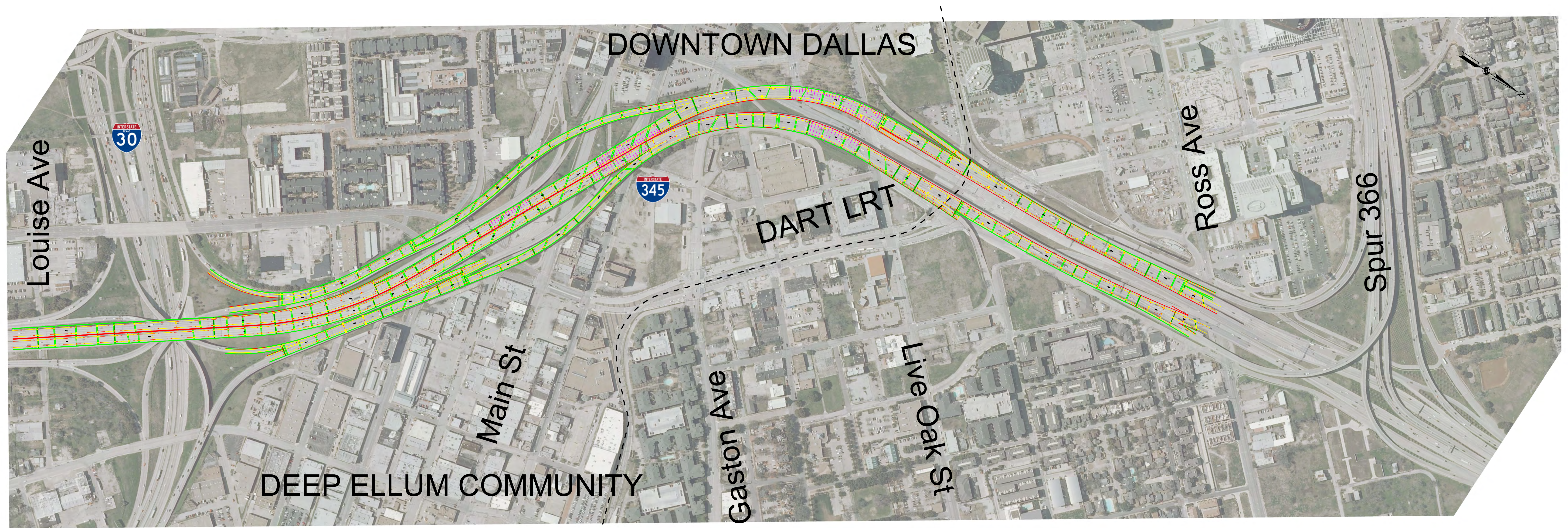
BENEFITS

- No Initial Capital Cost

CHALLENGES

- Expected Increase in the Frequency of Repairs
- Expected Increase in the Amount of Repairs

ALTERNATIVE #2: STRENGTHENING SUPERSTRUCTURE BY CONNECTING TOP OF STEEL GIRDERS TO CONCRETE DECK



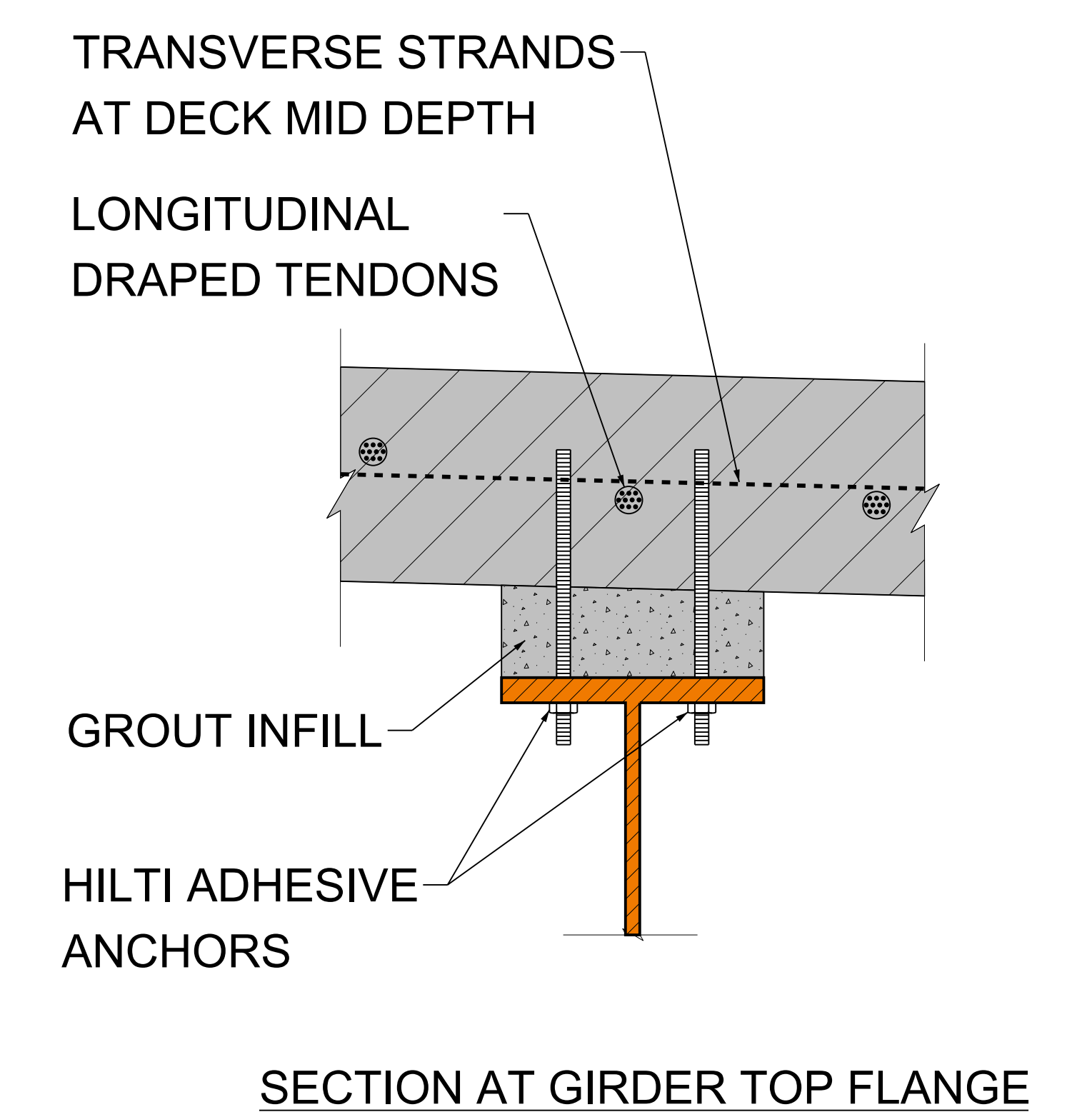
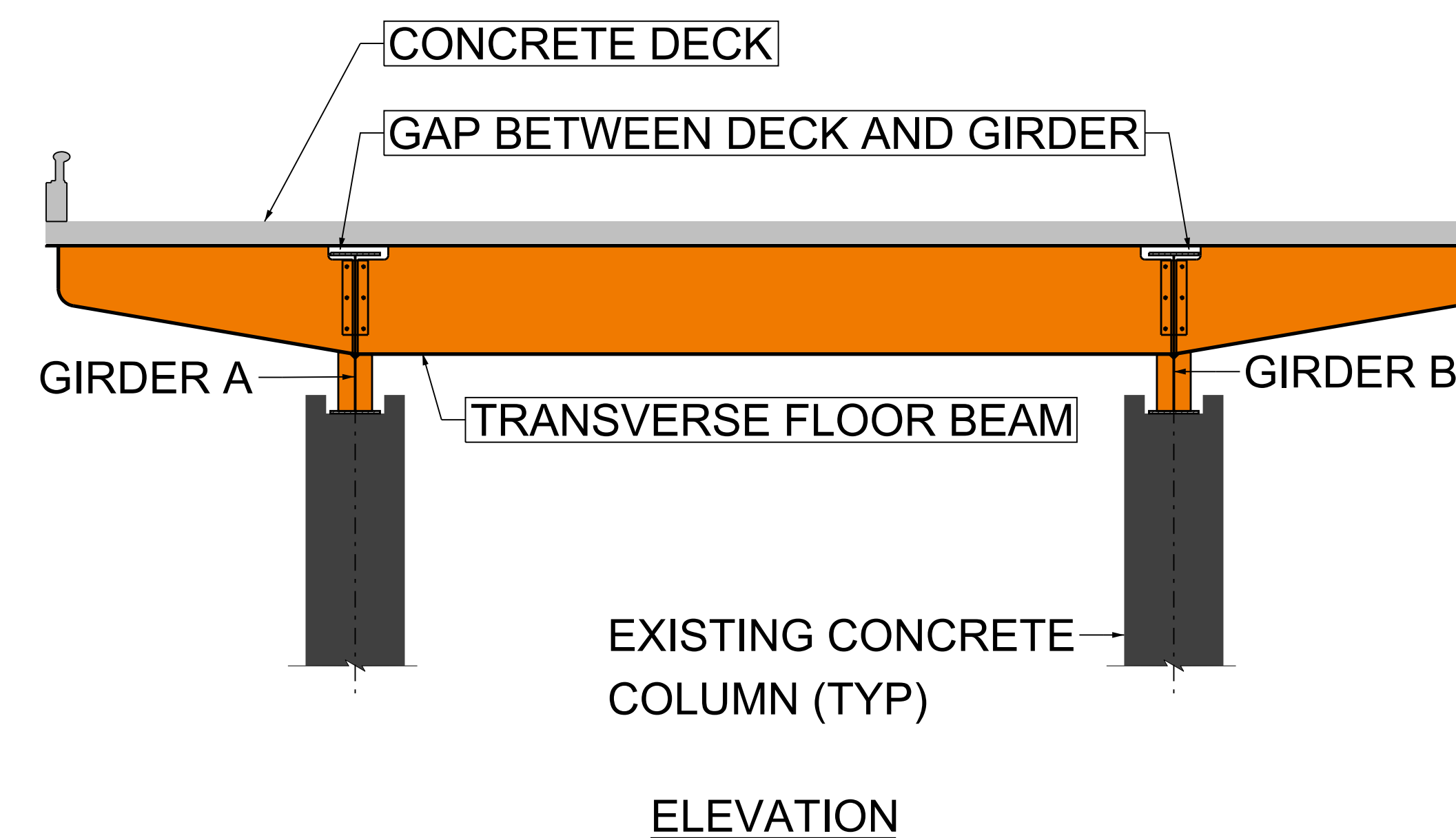
Drilling into Girders Top Flange and Concrete Deck to Insert Bolt-Like Connectors. Applicable to All 66 Bridge Units.

BENEFITS

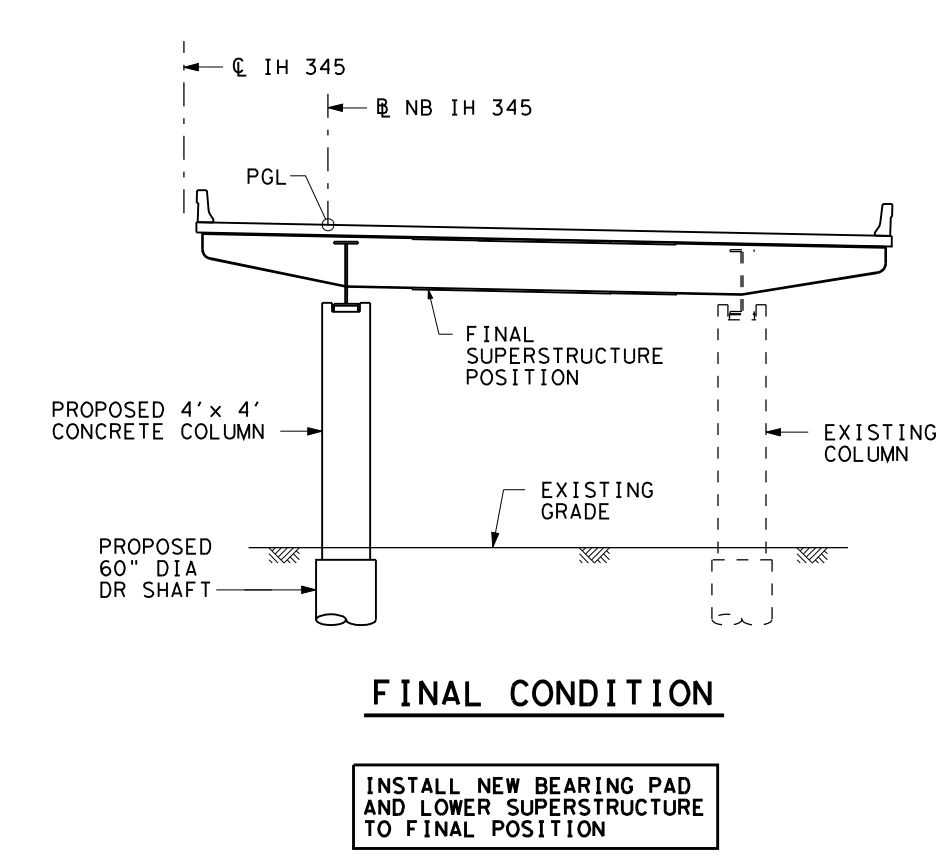
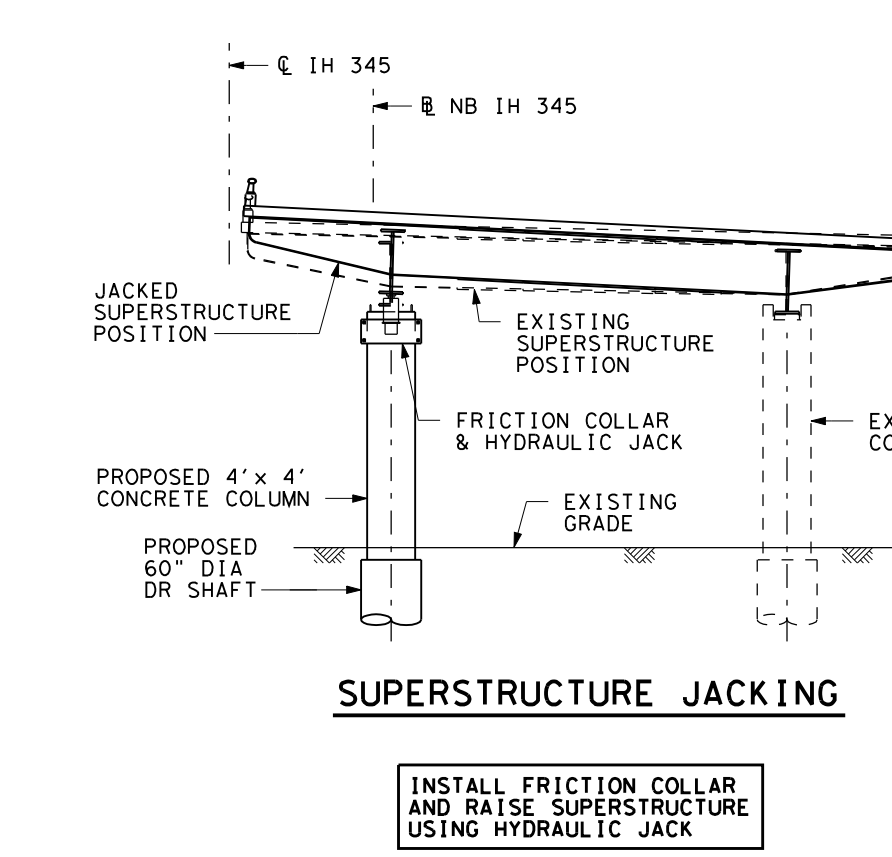
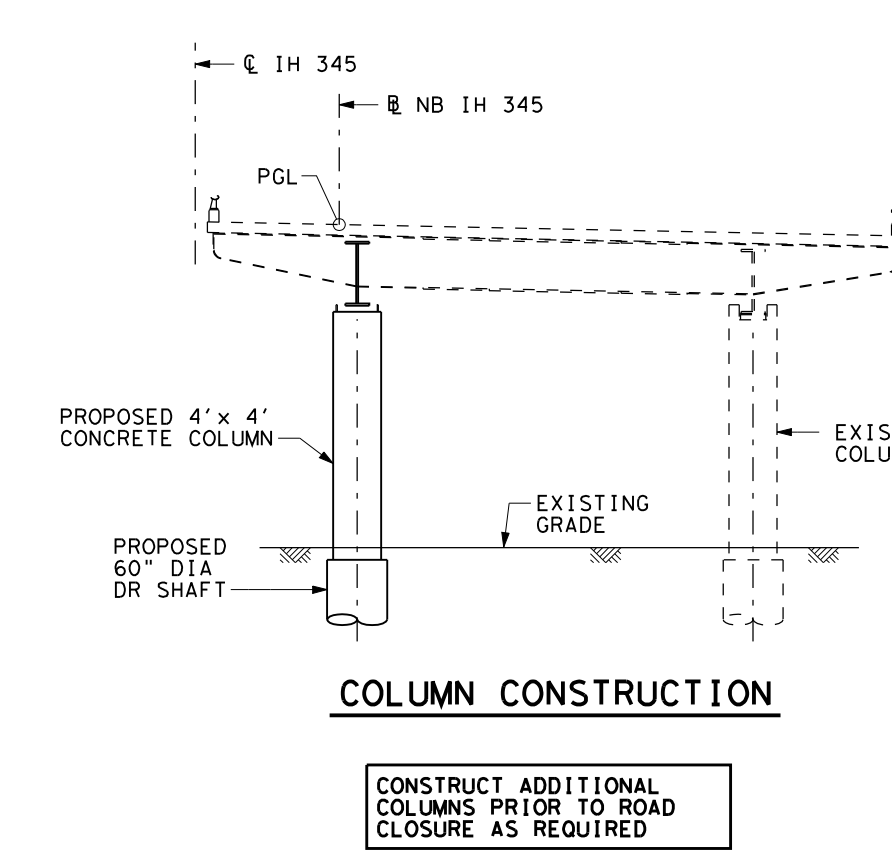
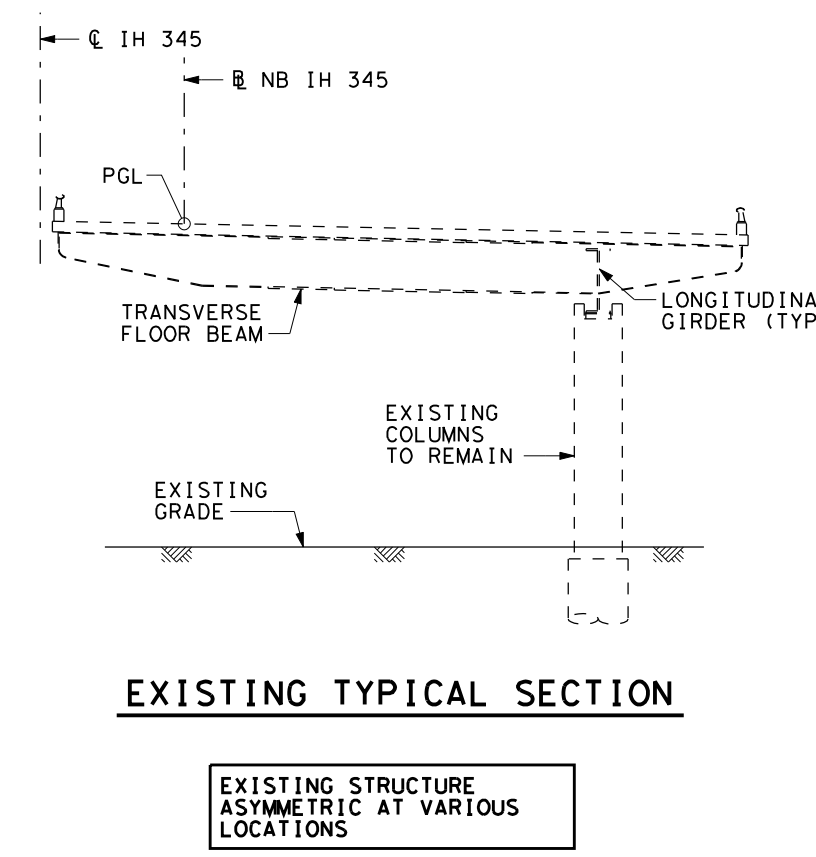
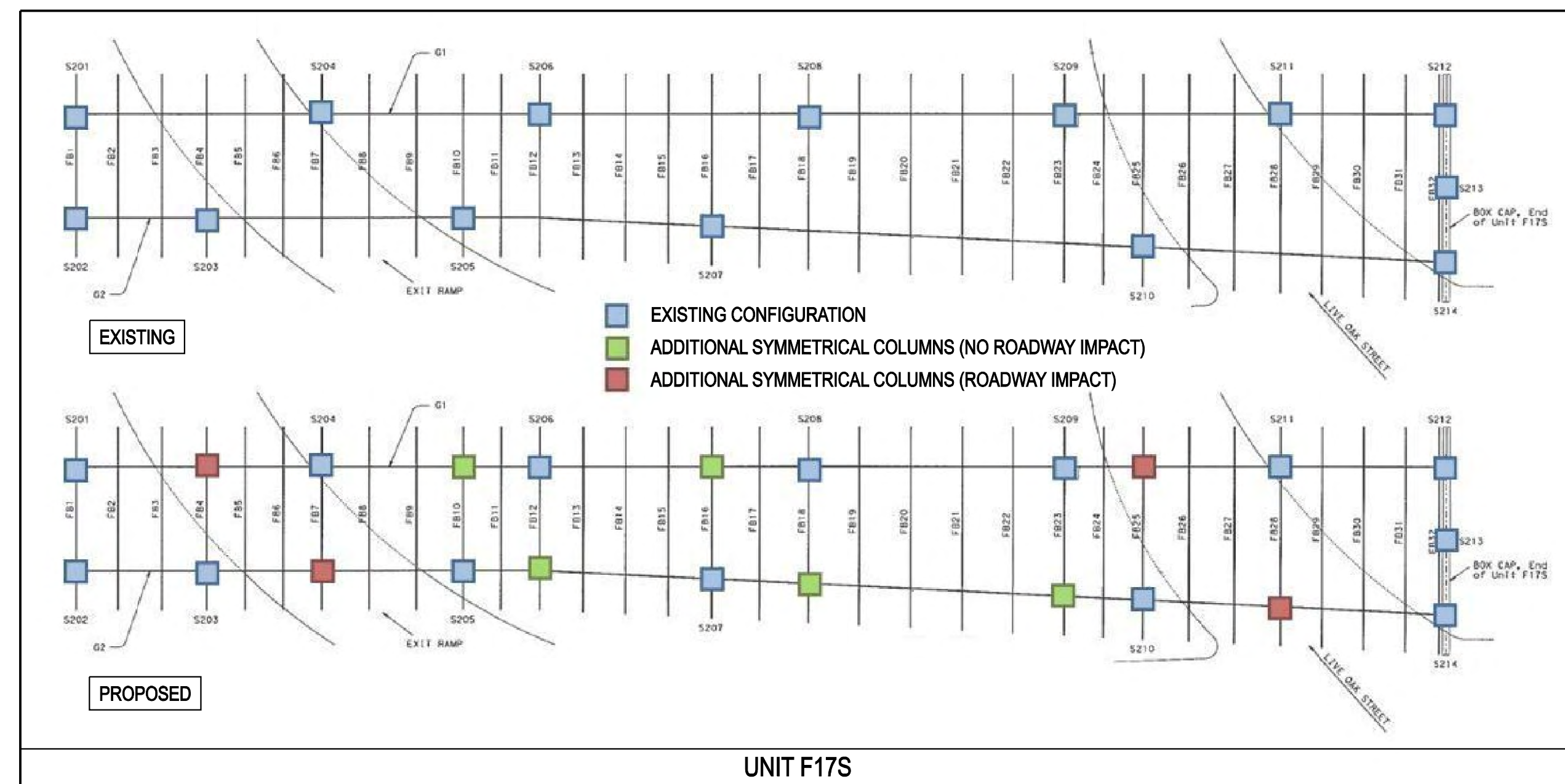
- Reduction in Girders Deflection, Vibration, Bending Stresses, and Local Distortion
- Improve the Structural Behavior
- Reduce Maintenance Cost

CHALLENGES

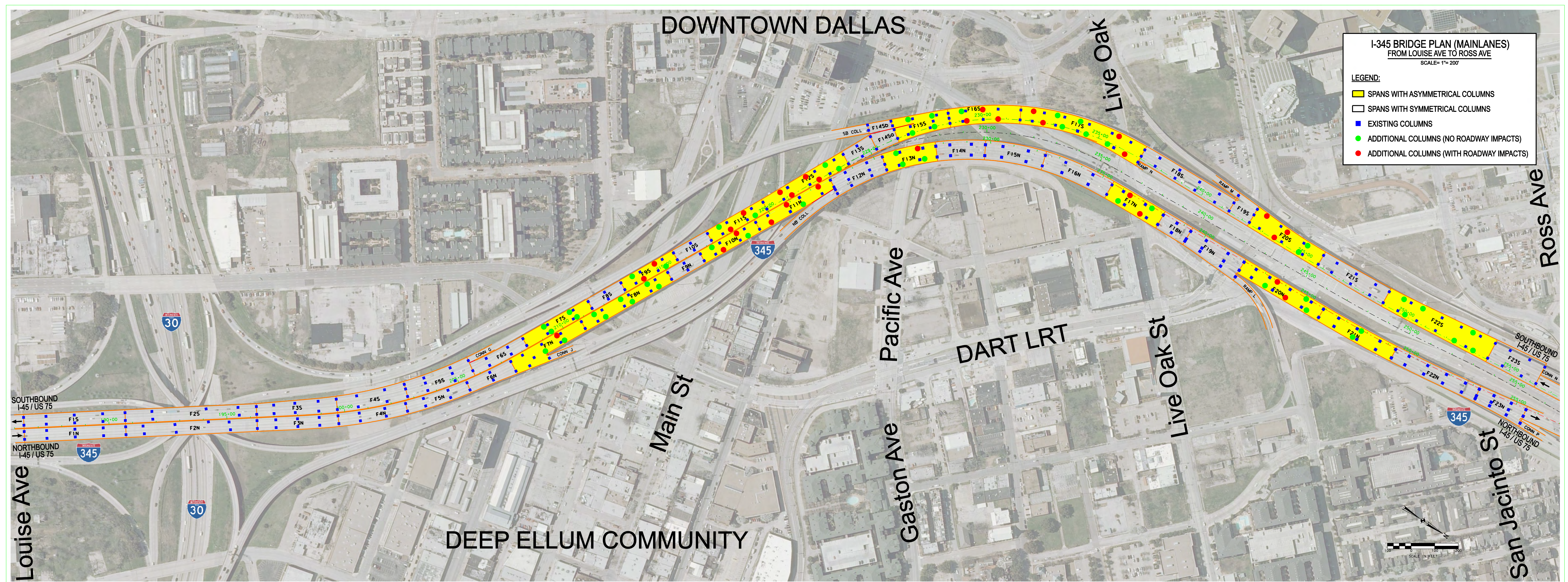
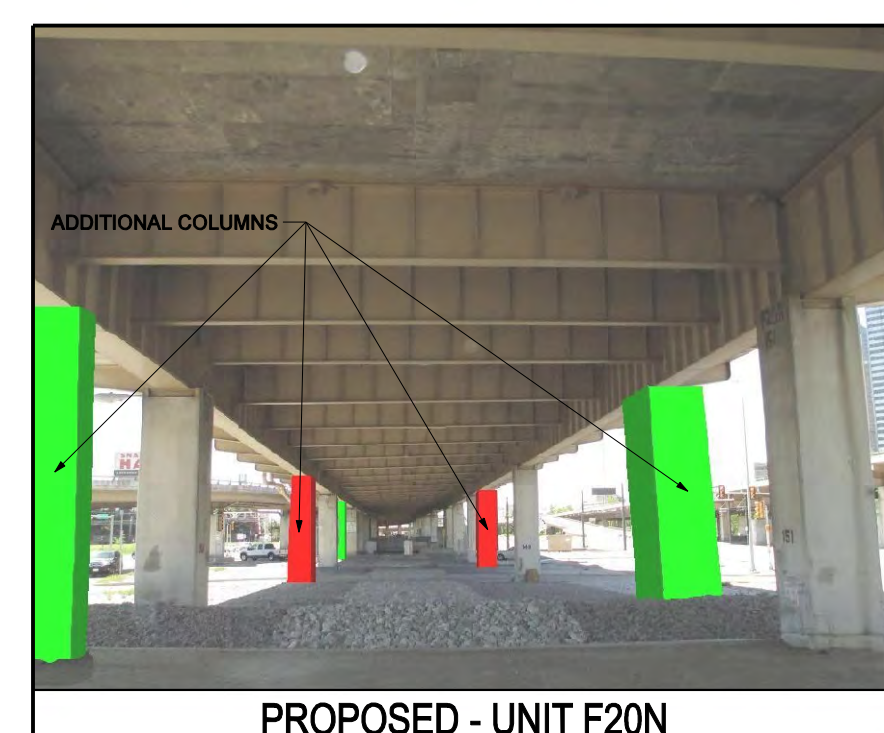
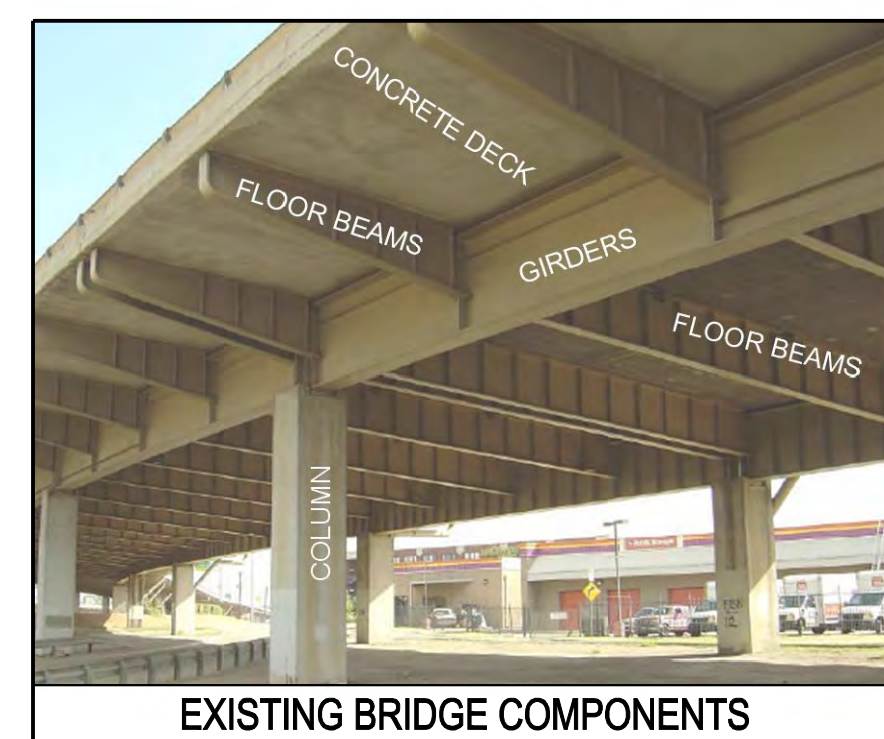
- Minimize Roadway Impact During Construction.



ALTERNATIVE #3: ADD COLUMNS FOR SYMMETRICAL SUPPORT



CONSTRUCTION SEQUENCING



Not Applicable to Entire Project, Only Units with Existing Asymmetrical Column Spacing

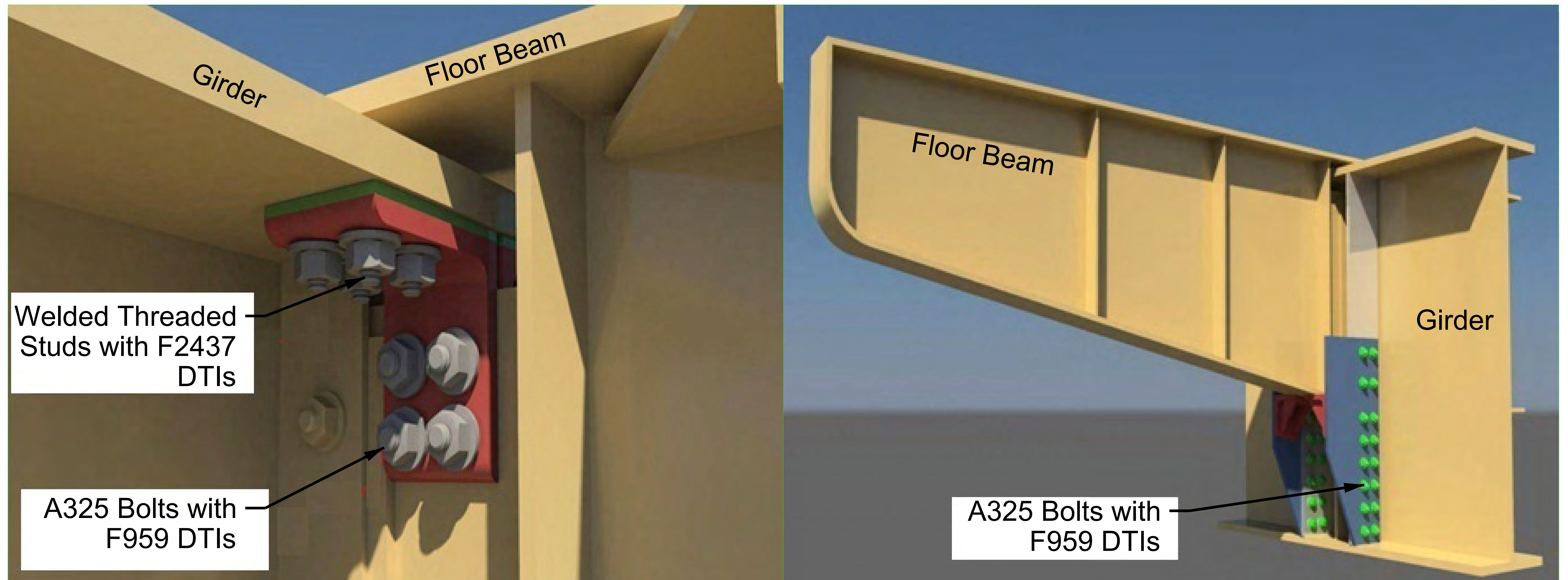
BENEFITS

- Reduce Span Lengths
- Reduce Local Distortion
- Reduce Structural Stresses
- Reduce Maintenance Costs

CHALLENGES

- Minimize Roadway Impacts During Construction
- Maintaining Horizontal / Vertical Clearances
- Construction of Columns / Installation of Bearings

ALTERNATIVE #4: STRENGTHEN LOCAL CONNECTIONS



Not Applicable to Entire Project - Only Connections That Need Improvement

BENEFITS

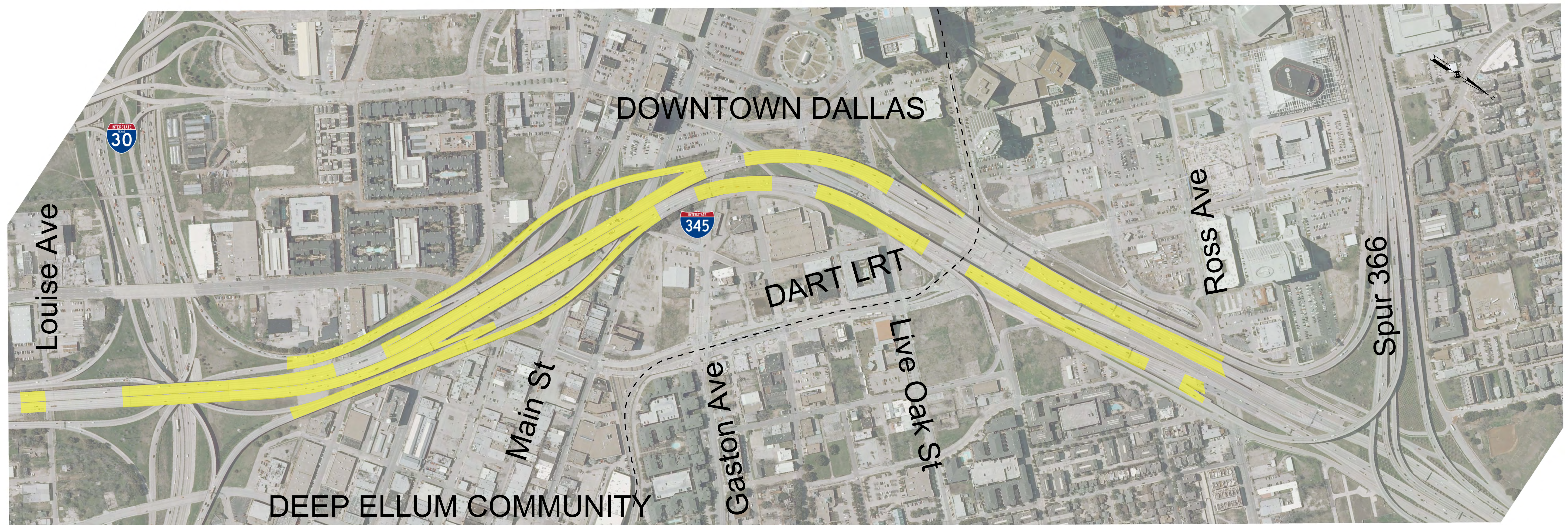
- Reduce Local Stresses
- Strengthen Connections
- Reduce Maintenance Costs

CHALLENGES

- Minimize Roadway Impact During Construction

ALTERNATIVE #5: STRENGTHENING SUPERSTRUCTURE BY ADDING GIRDERS AND BENT CAPS

Units where Alternative 5 Applies



Additional precast bent caps at existing columns and longitudinal steel girders from below bridge deck. Applicable to 51 bridge units out of a total of 66 bridge units

BENEFITS

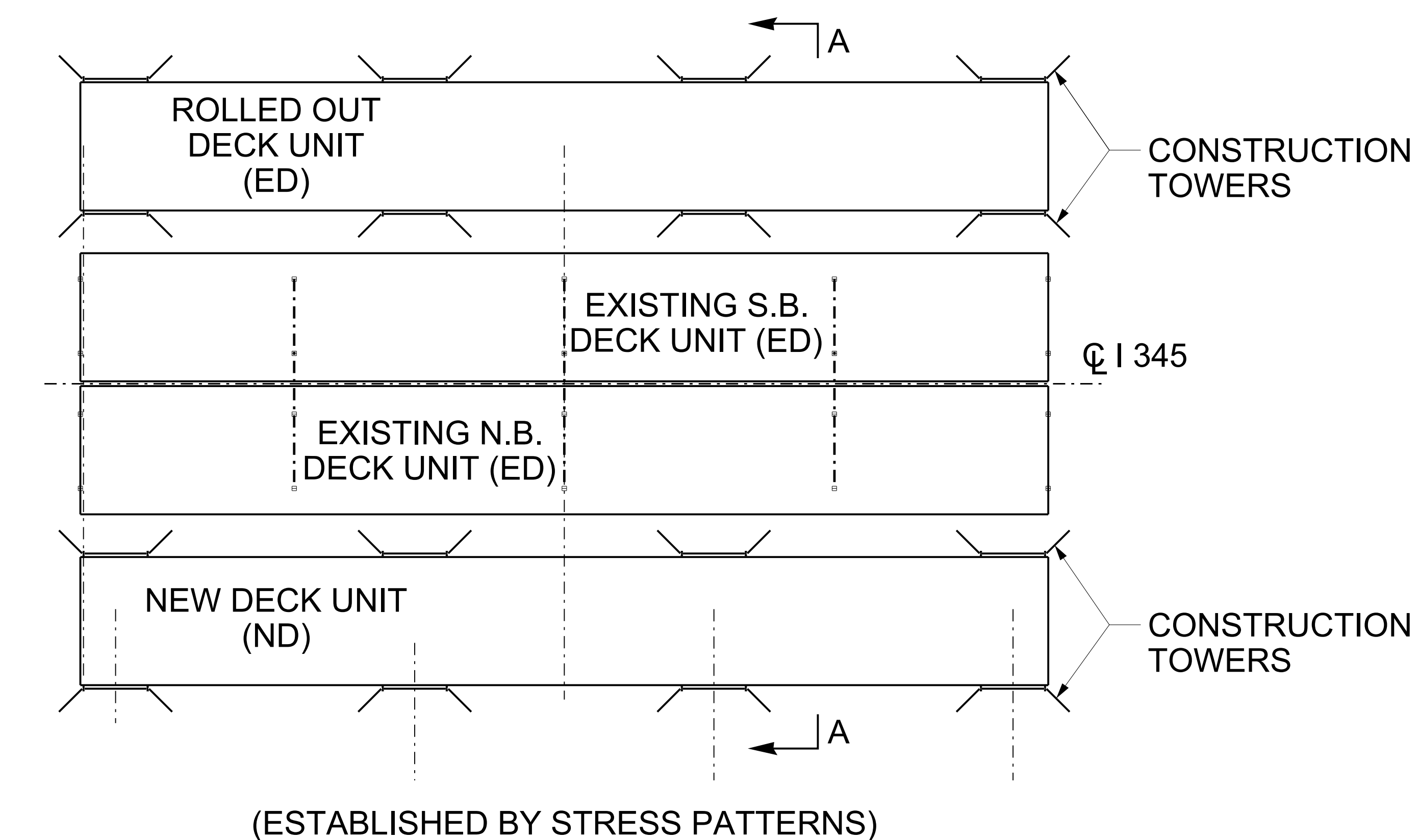
- Reduce Deflection, Bending Stresses, and Local Distortion in the Girders
- Improve Structural Performance
- Reduce Maintenance Cost

CHALLENGES

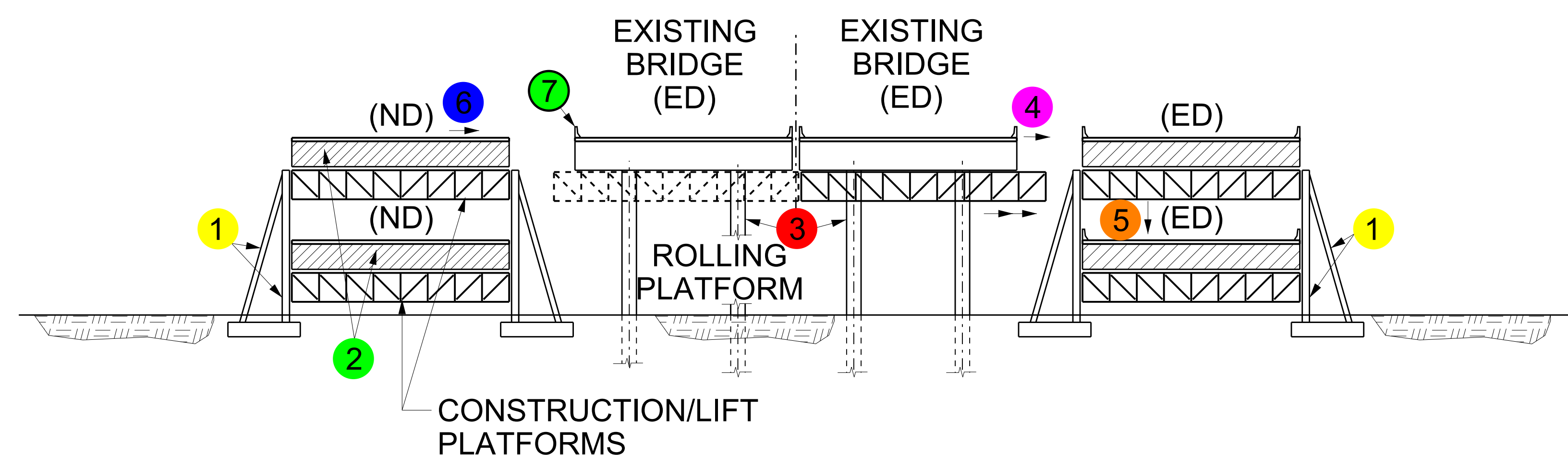
- Maintain Required Vertical Clearances
- Minimize Roadway Impact During Construction



ALTERNATIVE #6: RAPID BRIDGE REPLACEMENT (ROLL - OUT / ROLL - IN)



PLAN



SECTION A-A

TYPICAL ROLLING SEQUENCE

- 1 Erect towers on both sides of existing deck (ED).
- 2 Build new decks (ND), north and south units on tower lower and upper platforms.
- 3 As needed, some substructures may be abandoned and new aligned columns or bents will be constructed.
- 4 Roll-out existing decks (ED) over rolling platform to construction towers.
- 5 Hydraulically lower existing deck unit (ED) for controlled dismantling.
- 6 Roll-in new deck unit into final position.
- 7 Connect precast rails to (ND).
- 8 Dismantle and relocate towers and footings to next unit to be replaced.

Applicable at selected bridge units temporary towers can be erected

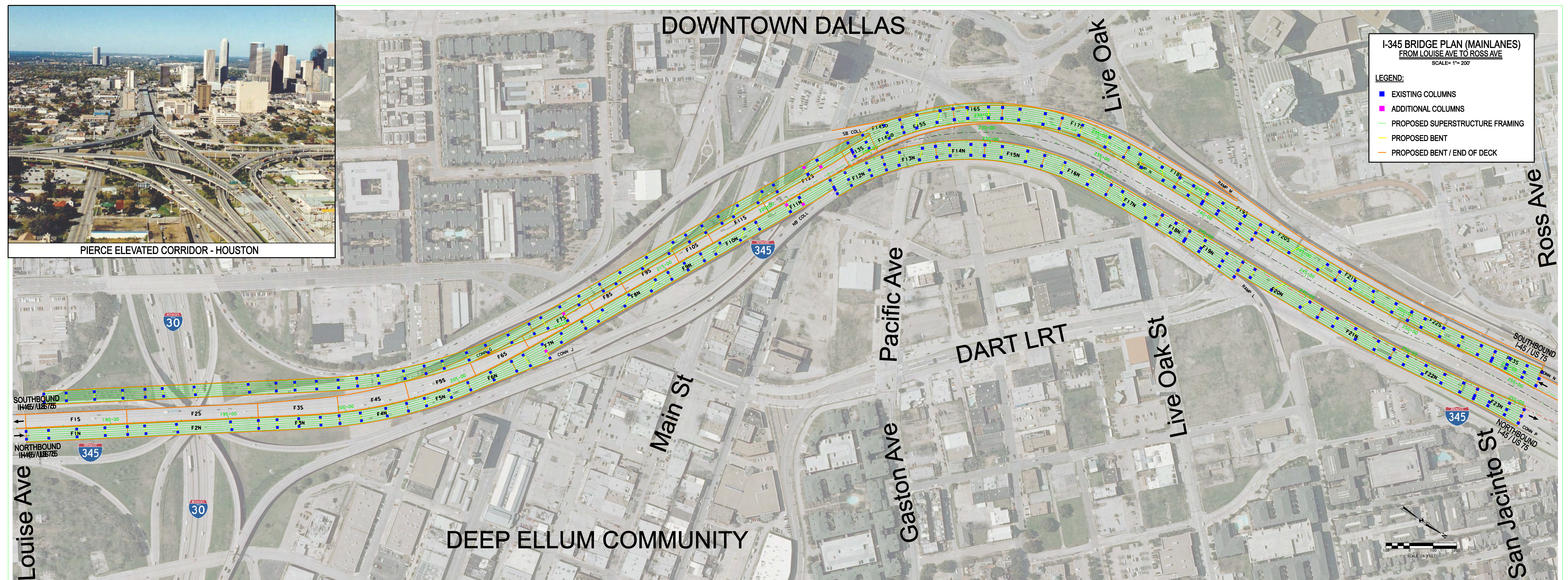
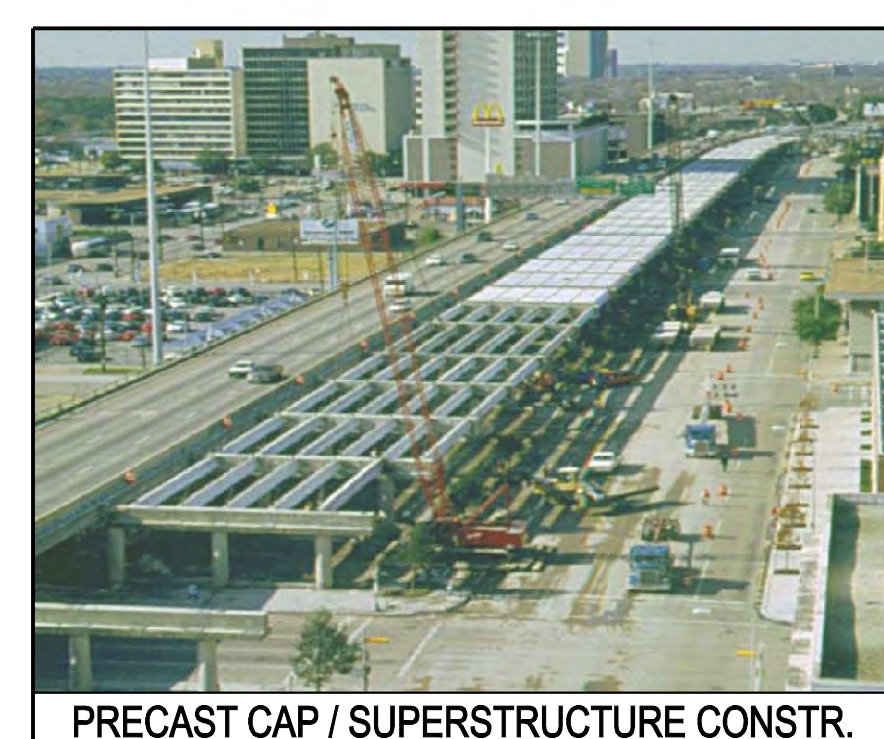
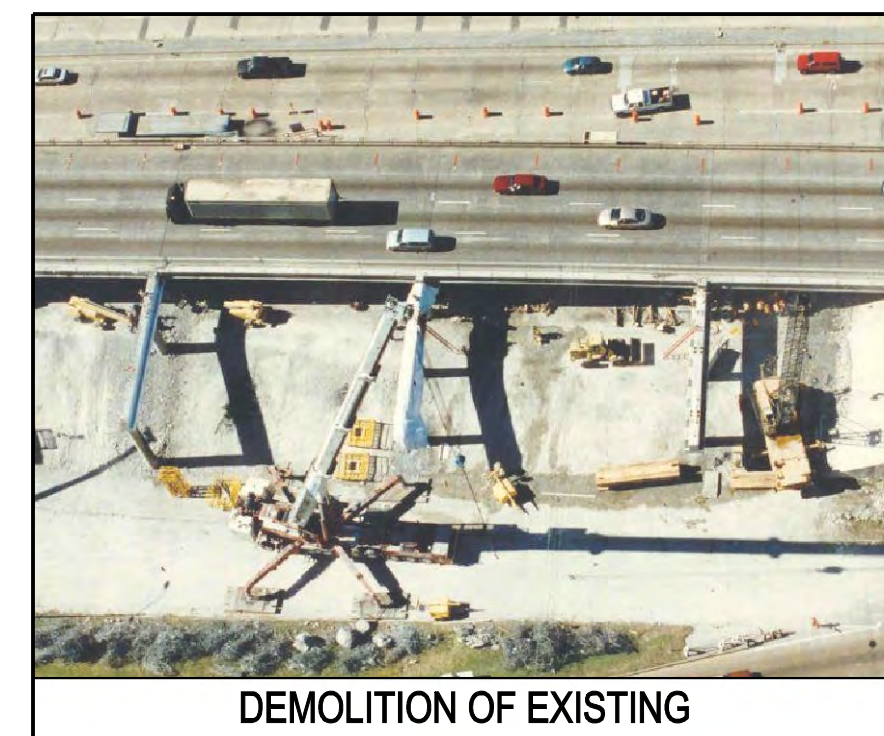
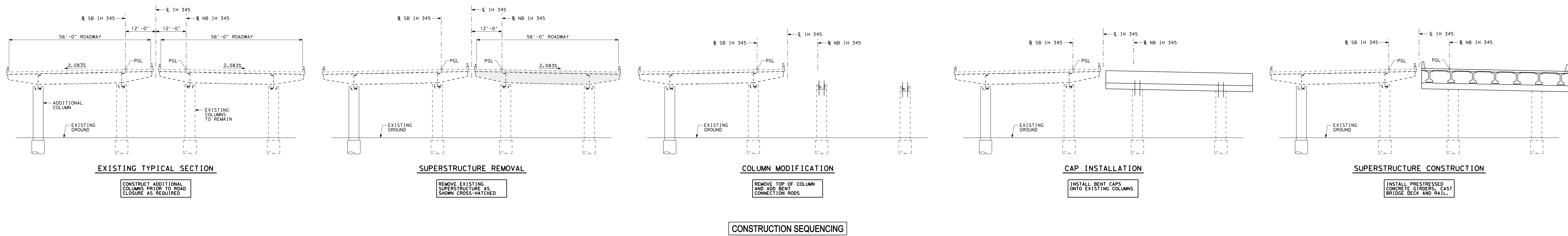
BENEFITS

- Fast Construction
- Minimum Roadway Impact
- Improve Structural Performance
- Reduce Maintenance Cost

CHALLENGES

- Construction of Temporary Foundation for Each Tower
- Limited Application

ALTERNATIVE #7: FAST TRACK SUPERSTRUCTURE AND BENT CAP REPLACEMENT (SIMILAR TO I-45 "PIERCE ELEVATED", HOUSTON)



Similar to I-345, TxDOT successfully temporarily closed 1.5 Miles of elevated I-45 in Downtown Houston and reconstructed Northbound Bridge in 88 Days and Southbound Bridge in 72 Days.

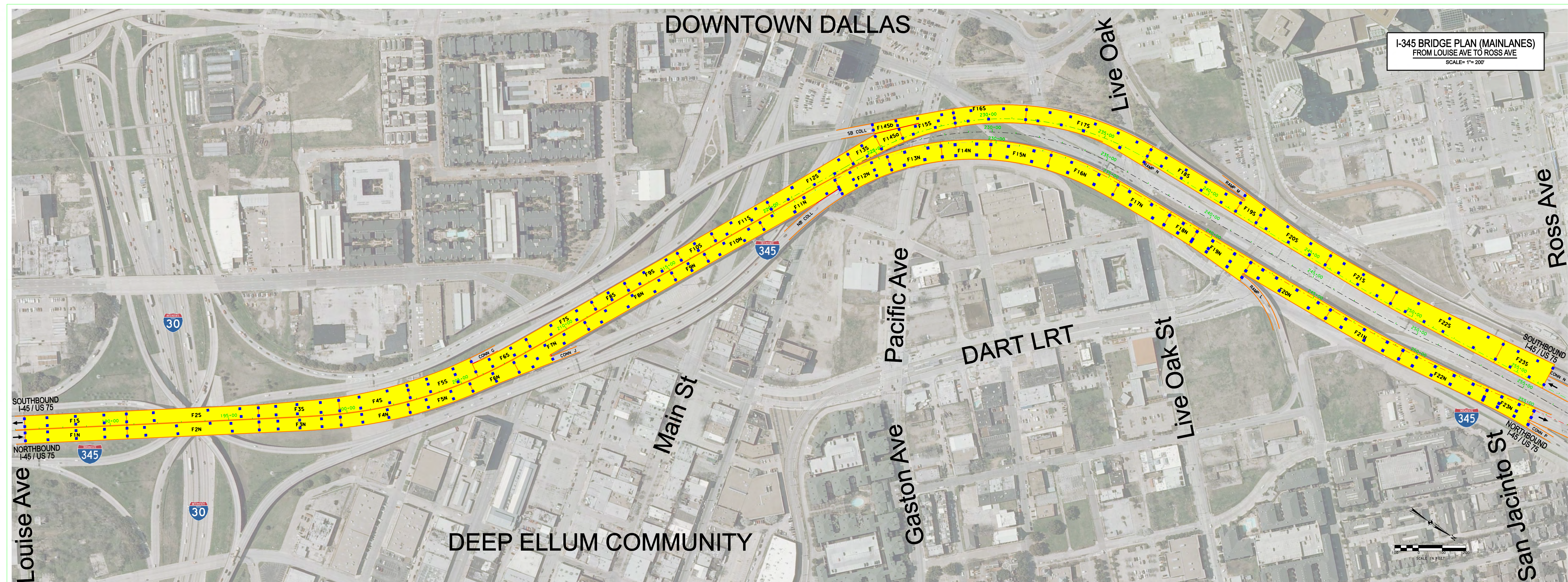
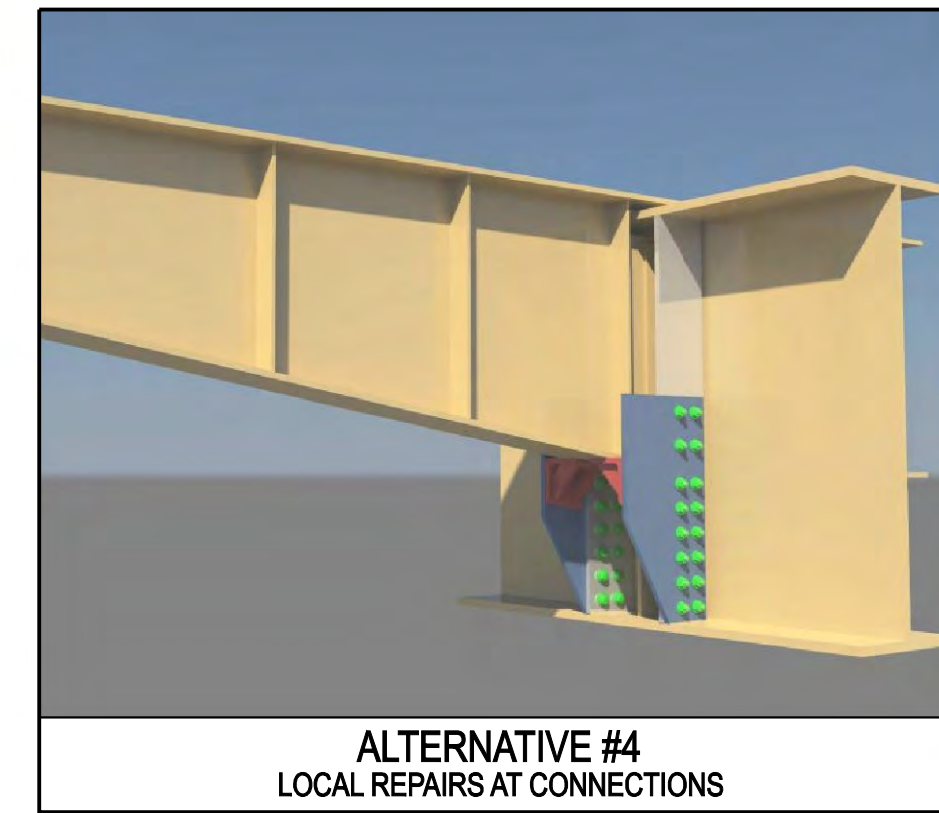
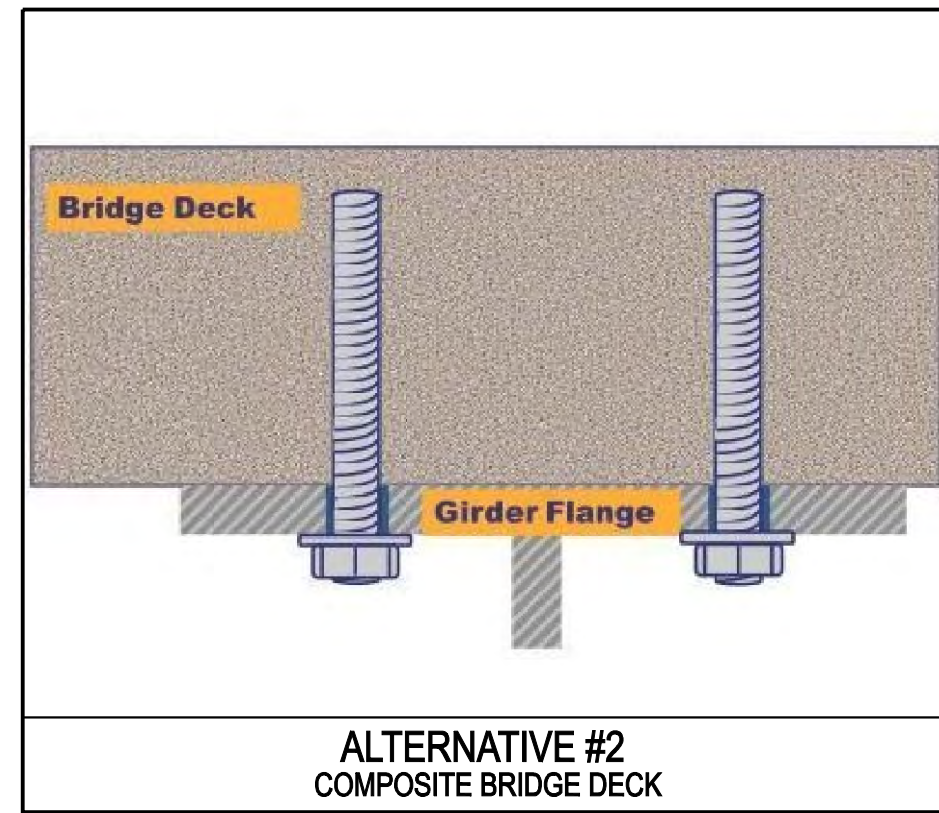
BENEFITS

- Conventional Bridge Construction
- Short Construction Duration
- Reduce Maintenance Costs

CHALLENGES

- Traffic Operations During Construction
- Geometric Design Criteria
- Business / Resident Impacts During Construction

ALTERNATIVE #8: HYBRID ALTERNATIVE (COMBINATION OF 2 - 7)



Note: Alternative to be Determined

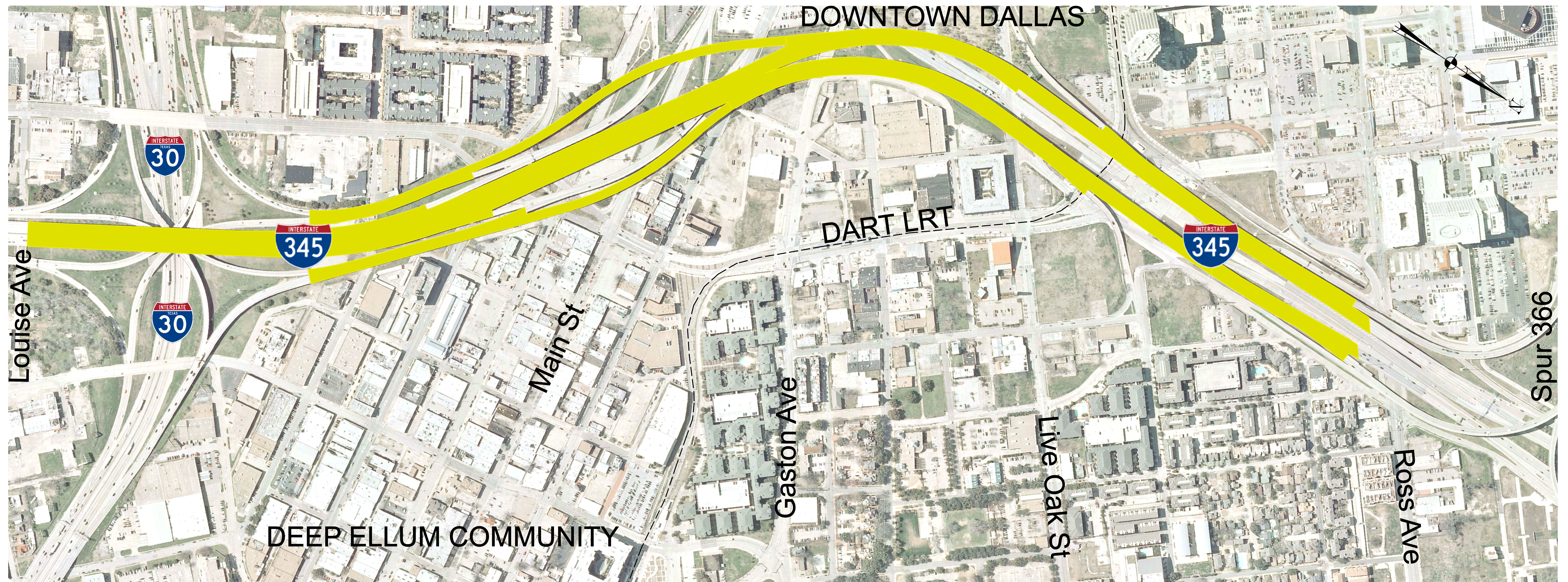
BENEFITS

- Optimization of Alternatives Based on Analysis and Evaluation Criteria
- Improve Structural Performance
- Reduce Maintenance Costs

CHALLENGES

- Implementation of Different Types of Construction
- Maintenance of Hybrid Solutions
- See Individual Alternative Exhibits for Other Challenges

ALTERNATIVE # 9: COMPLETE FACILITY RECONSTRUCTION



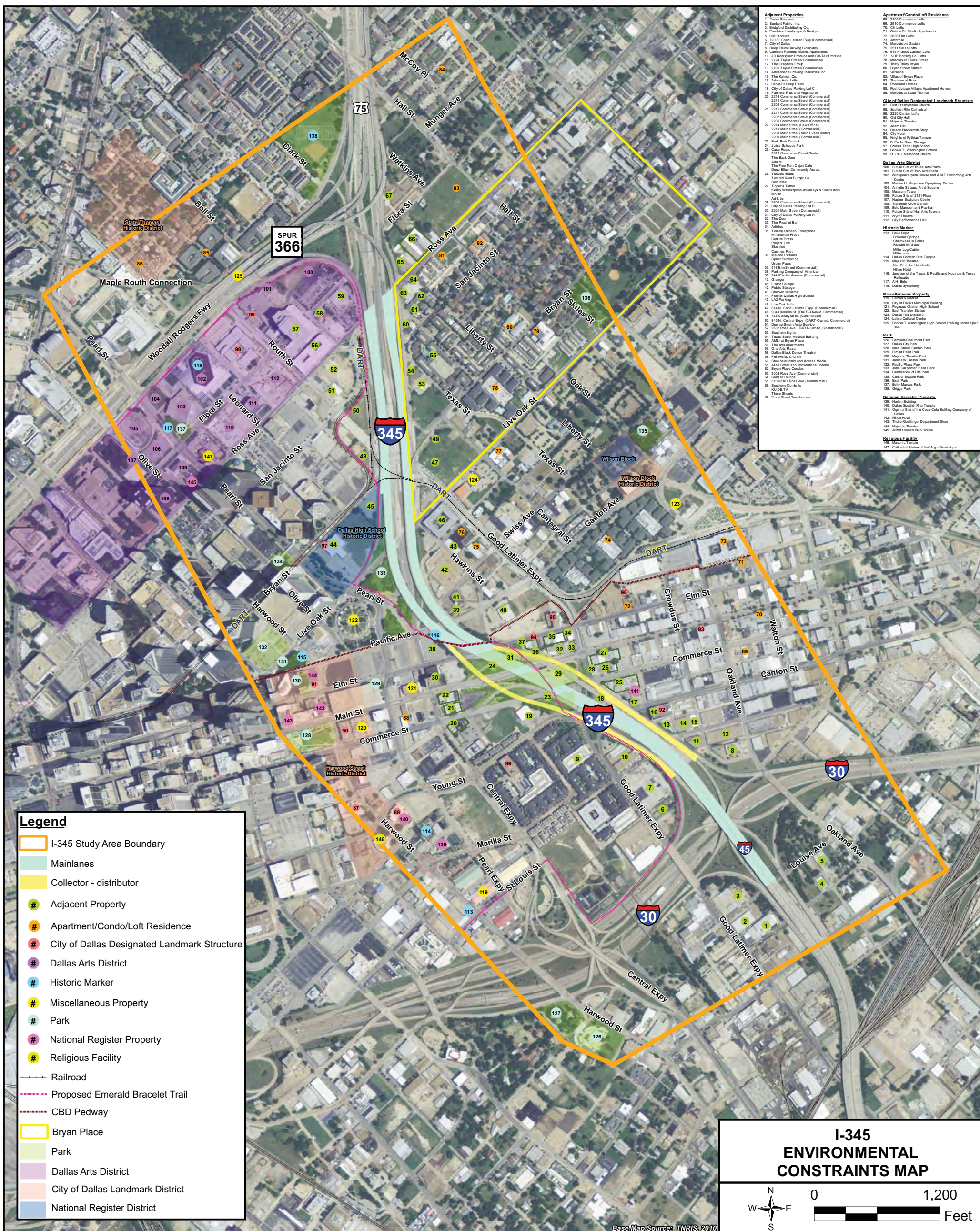
Applicable to Entire Project - All 66 Bridge Units

BENEFITS

- Bringing Facility up to Current Design Standards
- Reduce Maintenance Cost

CHALLENGES

- Requires Environmental Study
- Purchase Right-of-Way
- Utility Related Issues
- Funding
- Determine Type of Facility
- Community Impacts



STUDY ALTERNATIVES AND PROPOSED EVALUATION CRITERIA

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 Elevated in Houston)
8. Hybrid Alternative (Combination Of Alternatives 2 Thru 7)
9. Complete Facility Reconstruction

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