

## MEMO

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**SUBJECT:** IH 30/IH 35E Reconstruction – Project Pegasus  
Final Technical Memorandum - Evaluation of Conceptual Alternatives – Task 7.5

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### 1.0 OVERVIEW

The evaluation process provided the technical framework through which potential alternatives were comparatively analyzed. This analysis determined how well the alternatives addressed the identified objectives of the Project Pegasus. The primary objective of Project Pegasus is to relieve traffic congestion along IH 30, IH 35E, and throughout the Mixmaster interchange. The goals for the project include:

- Maximizing the traffic carrying capacity of the freeway system by integrating high occupancy vehicle (HOV) lanes, intelligent transportation systems (ITS), Transportation Systems Management (TSM), and Travel Demand Management (TDM) elements into the design;
- Minimizing the need for additional right-of-way;
- Providing more reliable transportation facilities by decreasing congestion and travel times;
- Improving interregional connections to existing and proposed roadways and transit facilities;
- Enhancing travel and accessibility to downtown Dallas, major employment areas and activity centers within the corridor;
- Enhancing bicycle and pedestrian access across the facilities;
- Integrating urban design elements to reflect the character and location of the surrounding communities;
- Developing a technically and financially feasible solution.

During the evaluation process, alternatives were compared to each other and the No-Build Alternative using an established set of evaluation criteria for traffic conditions in the design year of 2026. The application of criteria and measures is intended to pinpoint the major differences between alternatives, help facilitate the decision of which alternative(s) should be developed further in Task 8, and balance design standards, safety, transportation needs, costs, and social, economic, and environmental concerns.

### 2.0 EVALUATION METHODOLOGY

A set of criteria has been developed to assist in evaluating each alternative. Broad categories such as transportation, urban design, social, economic, environmental, and hydraulic issues have been further defined into evaluation categories. This rating or scoring provided information for the recommended improvements. As many of the evaluation measures as possible were quantified. Each measure was rated, compared to the other alternatives based upon the following scoring system:

**++ Significantly Positive** - Positive performance upon a measure as compared to the other alternatives.

- + **Moderately Positive** - Slight positive performance on the measure as compared to the other alternatives.
- O **Neutral** - Alternative has no affect, one way or the other upon the measure as compared to the other alternatives.
- **Moderately Negative** - Poor but acceptable performance on a measure compared to the other alternatives.
- **Significantly Negative** - Unacceptable performance on a measure compared to the other alternatives.

The symbol rating for these categories ranged from a significantly positive rating to a significantly negative rating. The alternatives with the highest ratings indicated the best candidate for recommendation for further evaluation.

The evaluation criterion has been organized into four major categories, which are described in more detail in the following sections. These categories and criteria are based upon the established objectives of this study, evaluation criteria guidelines from the US Department of Transportation, guidance from the National Environmental Policy Act (NEPA), and public and agency input.

### **Traffic Operations**

Critical Movements – This criterion assess an alternative’s ability to handle critical freeway and intersection movements during peak hour conditions.

Weaving – Quantitative assessment of the weaving distance between critical movements during peak hour conditions.

Volume to Capacity Ratio – Ratio that divides the vehicle volume by the theoretical roadway capacity based on the Highway Capacity Manual (HCM). The vehicle volume is based on peak hour traffic and the capacity is based on the roadway geometry and cross-section.

Peak Hour Level of Service – Quantitative assessment based on the HCM grading system of “A” through “F.” LOS A indicates free-flow traffic conditions during peak hour and LOS F indicates forced flow conditions during peak hour.

### **Design and Construction**

FHWA Interstate Design Standards – This criterion assess the alternative’s adherence to FHWA and TxDOT desirable design standards for Interstate, urban freeways.

Constructability/Disruption during Construction – This criterion considers the difficulty in constructing an alternative as well as the disruption to adjacent properties and drivers during construction.

Drainage and Utilities – Qualitative assessment of the drainage needs and effect to existing utilities.

### **Social, Economic and Environmental**

Right-of-Way Requirements – Impacts are based on the number of parcels affected, number of buildings displaced, and evaluation of the remaining parcels regarding use and accessibility.

Change in Accessibility to Adjacent Properties and Developments – This criterion evaluates the access limitations and restrictions (for vehicles, pedestrians, and bicycles) resulting from an alternative to properties adjacent to the freeways as well as existing and proposed developments along the corridor.

Effects to Sensitive Areas – Evaluation of effects or impacts to sensitive areas such as parkland, historical sites, or cultural resources. Effects could include increased noise, visual impacts, or increased opportunities for urban design elements.

### **Costs**

Construction Costs – Construction costs for each alternative will include construction, drainage, and mitigation.

Right-of-Way Costs – Cost of acquiring land corridors needed for the construction of an alternative. Right-of-way costs will include utility relocations and relocation expenses.

Cost Effectiveness – The ratio of cost per unit of desired results (e.g., cost per ton of emissions reduction, or cost per person served).

## **3.0 DEFINITION OF CONCEPTUAL ALTERNATIVES**

Between November 2001 and May 2002, conceptual alternatives were developed for IH 30 and IH 35E. The alternatives were based on identified deficiencies and travel patterns in the study area, previous planning efforts, and public and agency input. Previous planning efforts include the Trinity Parkway Corridor Major Transportation Investment Study (MTIS) recommendations for IH 30 and IH 35E. The MTIS attempted to maximize the carrying capacity of the IH 30 and IH 35E while maintaining the existing bridges and pavement. These MTIS recommendations were based on corridor-level traffic volumes for the Year 2020. During Project Pegasus, the conceptual alternatives developed were based on the MTIS recommendation but reflect the development and changes that have occurred in the corridor since the MTIS and are based on detailed Year 2026 traffic projections. Additionally, these conceptual alternatives recognize that by the time major freeway construction would begin in the Project Pegasus corridor, the freeway would be 50+ years old and the bridges and pavement would need to be replaced and the entire freeway brought up to current design standards to improve operations and safety.

### **3.1 No-Build Alternative**

The No-Build Alternative assumes no major investments in transportation improvements in the corridor beyond those already programmed and funded by the City of Dallas, Dallas County, DART, TxDOT, or Federal entities by the Year 2025. These programmed and funded improvements are included in the approved Metropolitan Transportation Plan (NCTCOG *Mobility 2025 Update*), Capital Improvement Plans

for the City of Dallas, Dallas County, and the 2002-2004 Transportation Improvement Program (TIP). The No-Build Alternative includes a range of strategies such as the Congestion Management System (CMS), Employer Trip Reductions (ETR) programs, intersection and signal improvements, Advanced Transportation Management, bicycle and pedestrian improvements, transit rail improvements, and numerous roadway improvements. These improvements include the Spur 366 (Woodall Rodgers) Extension, IH 30 (Tom Landry Highway) widening and reconstruction, SH 183 widening and reconstruction, construction of the Trinity Parkway, and widening of both Hampton/Inwood and Motor Street.

### **3.2 Build Alternatives**

To facilitate the development of alternatives, the project was divided into three areas:

- IH 30 Canyon
- IH 30/IH 35 Interchange (Mixmaster)
- IH 35E Lower Stemmons

#### **3.2.1 IH 30 Canyon**

Two alternatives were developed for the IH 30 Canyon area of the project. Alternative C-2 is similar to the MTIS recommendations. Both alternatives eliminate IH 30 West (Tom Landry Highway) HOV lane to South Central Expressway that was part of the MTIS recommendations. Based on detailed 2026 traffic projections, this dedicated HOV lane is not needed. The following highlights the major design elements of each alternative.

##### Alternative C-1

- Meets design standards for lanes widths and shoulders
- Eliminates the current collector-distributor (C-D) roads adjacent to the mainlanes
- Eliminates the Cadiz and St. Paul bridges over IH 30
- Eliminates left-hand entrances and exits and associated bridges over IH 30
- Includes diamond-type interchanges at Griffin and South Central/Harwood
- Simplifies the South Central Expressway interchange
- Includes (surface) frontage roads from Good-Latimer to Lamar
- Provides direct access to IH 30 from IH 45 direct connections

##### Alternative C-2

- Includes C-D roads parallel to the mainlanes (as opposed to surface frontage roads)
- Eliminates the Cadiz and St. Paul bridges over IH 30
- Eliminates left-hand entrances and exits and associated bridges over IH 30
- Simplifies South Central Expressway interchange
- Moves the IH 35/IH 30 split further west
- Includes braided ramps near Old City Park, the height of which would be above the surface streets

### 3.2.2 IH 30/IH 35E Mixmaster

Four alternatives were developed for the IH 30/IH 35E Mixmaster area. Alternative M-1 is similar to the MTIS recommendations. All alternatives eliminate IH 30 West (Tom Landry Highway) HOV lane to South Central Expressway included in the MTIS recommendations. Based on detailed 2026 traffic projections, this dedicated HOV lane is not needed. The following highlights the major design elements of each alternative.

#### Alternative M-1

- Meets design standards for lane and shoulder widths
- Eliminates left-hand merges and diverges
- Eliminates forced lane changes to stay on same freeway and provides lane continuity
- Includes direct connections in all directions
- Places HOV access to Commerce Street instead of Houston/Jefferson

#### Alternative M-2

- Meets design standards for lane and shoulder widths
- Eliminates left-hand merges and diverges
- Eliminates forced lane changes to stay on same freeway and provides lane continuity
- Shifts IH 35E west of TXU substation
- Includes direct connections in all directions
- Places HOV access to Commerce Street instead of Houston/Jefferson

#### Alternative M-3

- Meets design standards for lane and shoulder widths
- Eliminates left-hand merges and diverges
- Eliminates forced lane changes to stay on same freeway and provides lane continuity
- Shifts IH 35E east of TXU substation
- Includes direct connections in all directions
- Places HOV access to Commerce Street instead of Houston/Jefferson

#### Alternative M-4

- Meets design standards for lane and shoulder widths
- Realigns/straightens IH 35E over Houston/Jefferson Street Viaducts
- Retains existing IH 30 alignment
- Eliminates left-hand merges and diverges
- Eliminates forced lane changes to stay on same freeway and provides lane continuity
- Places HOV access to Commerce Street instead of Houston/Jefferson

The Alternative M-3 will not be evaluated because it is critically flawed due to the introduction of a more severe geometric design (a nine degree horizontal curve) than exists today. M-3 is the same as M-2 but consolidates the IH 35E mainlanes east of the TXU substation rather than west.

### 3.2.3 IH 35E Lower Stemmons

Several alternatives were developed for the IH 35E. In the area from Commerce to Oak Lawn, only one alternative was developed due to design constraints such as large buildings and the DART railroad. From Oak Lawn to Empire Central, three alternative designs were developed. There is one main alternative with slight variations developed at specific areas. The following highlights the major design elements of each alternative.

#### Alternative S-1 (from Commerce to Oak Lawn)

- Meets design standards for lane and shoulder widths
- At-grade HOV from Commerce to the North
- Reverses ramps to/from Dallas North Tollway (DNT) and Woodall Rodgers
- Add C-D roads from DNT to Woodall
- Adds continuous frontage roads

#### Alternative S-2A (from Oak Lawn to Empire Central)

- At-Grade, reversible HOV with connections to frontage roads and mainlanes from SH 183
- At-Grade, reversible HOV with connections to frontage roads and mainlanes from IH 35E, south
- Improves route continuity for northbound IH 35E by placing SH 183 diverge lanes on right side

#### Alternative S-2B (from Oak Lawn to Empire Central - Braided Ramp Option)

- At-grade, reversible HOV with connections to frontage roads and mainlanes from SH 183
- At-grade, reversible HOV with connections to frontage roads and mainlanes from IH 35E, south
- Improves route continuity for northbound IH 35E by placing SH 183 diverge lanes on right side
- Eliminates inside merge at SH 183/IH 35E
- Uses braided ramps between Wycliff and Motor and on northbound between Inwood and Commonwealth

#### Alternative S-2C (from Oak Lawn to Empire Central - Commonwealth Bypass)

- At-grade, reversible HOV with connections to frontage roads and mainlanes from SH 183
- At-grade, reversible HOV with connections to frontage roads and mainlanes from IH 35E, south
- Improves route continuity for northbound IH 35E by placing SH 183 diverge lanes on right side
- Eliminates inside merge at SH 183/IH 35E
- Realigns Commonwealth horizontally and vertically to increase access to and from Commonwealth and to improve access to Mockingbird

## 4.0 EVALUATION OF ALTERNATIVES

Based on the alternatives developed as of June 2002 and the methodology discussed in Section 2.0, the alternatives were evaluated by the study team.

### 4.1 IH 30 Canyon Alternatives

#### 4.1.1 Traffic Operations

##### Critical Movements

- No-Build: --  
The existing freeway and C-D road provide circuitous and less direct access to adjacent properties.
- Alternative C-1: ++  
This alternative would improve access and movements to adjacent properties, provide better access to/from IH 35E and IH 45, and provide more driver-friendly access.
- Alternative C-2: -  
This alternative would improve access and movements to adjacent properties; however, the C-D roads provide more circuitous and difficult access to other freeways and local streets, which is more difficult/confusing for drivers. Traffic would have to exit to the C-D roads well in advance of their destination. The alternative would provide better access to/from IH 35E.

##### Weaving

- No-Build: O  
The existing freeway does have some weaving problems due to left-hand entrances and exits.
- Alternative C-1: O  
This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps. However, it would introduce two major weaving areas between ramps and a possible weaving issue on frontage roads. Further refinement of alternative and analysis of traffic may reduce or eliminate these potential weaving issues.
- Alternative C-2: O  
This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps. However, it would introduce numerous weaving areas on C-D roads and a possible weaving issue on frontage roads. Further refinement of alternative and analysis of traffic may reduce or eliminate these potential weaving issues.

##### Volume to Capacity Ratio

- No-Build: --  
Under the No-Build condition, the V/C ratio would not be improved and average between 1.10 and 1.30. The existing freeway has three mainlanes in each direction, three lane C-D roads in each direction, no HOV lane, and no continuous frontage/surface streets.
- Alternative C-1: +  
This alternative would improve the V/C ratio and average between 0.85 and 0.95. This alternative includes six mainlanes in each direction, a one-lane reversible HOV, and continuous two-three lane frontage/surface roads.

- Alternative C-2: ++  
This alternative would improve the V/C ratio and average between 0.70 and 0.80. This alternative includes four mainlanes westbound, three mainlanes eastbound, two three-lane C-D roads in each direction, and a one-lane reversible HOV.

#### Peak Hour Level of Service

- No-Build: --  
Under the No-Build condition, the existing freeway is estimated to operate at LOS of F with nine hours of reoccurring congestion in the Year 2020.
- Alternative C-1: +  
This alternative would improve the LOS on the mainlanes with the introduction of the additional mainlanes, an HOV lane and continuous frontage/surface roads. The peak hour LOS would still be F in the design year. The elimination of the left-hand entrance and exits would improve the operations and help improve LOS.
- Alternative C-2: +  
This alternative would improve the LOS on the mainlanes with the introduction of an additional mainlane and the HOV lane. The peak hour LOS would still be F in the design year. The elimination of the left-hand entrance and exits would improve the operations and help improve LOS.

#### **4.1.2 Design and Construction**

##### FHWA Interstate Design Standards

- No-Build: --  
Does not meet current design standards set by TxDOT and FHWA for interstate freeways. The current design includes left-hand entrances and exits, inadequate vertical clearances, no shoulders, curbed shoulders, narrow lane widths, inadequate radii on ramps, inadequate ramp length, and inadequate signing and lighting.
- Alternative C-1: ++  
This alternative meets current standards for interstate design. Further refinement of alternative may improve distance from ramps to cross-streets. No design exceptions or waivers are anticipated.
- Alternative C-2: ++  
This alternative meets current standards for interstate design. Further refinement of alternative may improve distance from ramps to cross-streets and weaving areas. No design exceptions or waiver is anticipated.

##### Constructability/Disruption during Construction

- No-Build: ++  
Because no construction would be required, no disruption would occur.
- Alternative C-1: O  
Some portions of the existing freeway could be used during construction. The proposed frontage roads could help maintain traffic. The alternative would require the reconstruction of portions of IH 45 to build the ramp to/from South Central Expressway in a tunnel/cut and cover. No design exceptions or waivers are anticipated. All bridges across the freeway would be replaced. The operations of DART

LRT and UP RR would need to be maintained during construction. No unusual construction methods would be necessary.

- Alternative C-2: O

Some portions of the existing freeway could be used during construction. The C-D roads could help maintain traffic. The alternative would require the reconstruction of portions of IH 45 to build the ramp to/from South Central Expressway which would be in a tunnel/cut and cover. No design exceptions or waivers are anticipated. All bridges across the freeway would be replaced. The operations of DART LRT and UP RR would need to be maintained during construction. No unusual construction methods would be necessary.

#### Drainage and Utilities

- No-Build: - O

Because no construction would be required, there would be no changes or relocation of drainage structures or utilities. There are no existing drainage problems in the corridor.

- Alternative C-1: O

This alternative would not require major changes to vertical profile or introduce drainage issues. The existing drainage system would need to be upgraded and no major utility would need to be relocated.

- Alternative C-2: O

This alternative would not require major changes to vertical profile or introduce drainage issues. The existing drainage system would need to be upgraded and no major utility would need to be relocated.

#### **4.1.3 Social, Economic and Environmental**

##### Right-of-Way Requirements

- No-Build: ++

No improvements would be made; therefore, no additional right-of-way would be needed.

- Alternative C-1: O

This alternative would require right-of-way from approximately eight parcels. Potentially six structures and two other parking areas would be impacted. However, with the elimination of the C-D roads, elimination of left-hand entrances and exit ramps, and simplification of the South Central Expressway interchange road, less right-of-way would be needed in the area of Farmers Market and Old City Park. After the completion of construction, this right-of-way would most likely be considered surplus/excess and could be sold/leased back to the city for Old City Park and Farmers Market.

- Alternative C-2: --

This alternative would require right-of-way from approximately 12 parcels. Potentially nine structures and three parking areas would be impacted. However, with the elimination of the left-hand entrances and exit ramps and simplification of the South Central Expressway interchange road, less right-of-way would be needed in the area of Farmers Market and Old City Park. After the completion of construction, this right-of-way would most likely be considered surplus/excess and could be sold/leased back to the city for Old City Park and Farmers Market.

### Change in Accessibility to Adjacent Properties and Developments

- No-Build: O  
The access to adjacent properties and developments would not be changed. The current design includes three off-ramps and two on-ramps between the freeway and surface streets and two on-ramps and two off-ramps between the mainlanes. Existing pedestrian access is limited in the area.
- Alternative C-1: +  
This alternative would include continuous frontage roads from Good-Latimer to the west of Lamar which would improve access and allow the existing street system to return to its original function. This alternative would provide more direct access to downtown. Access to/from downtown and major employers would be focused at interchanges with South Central/Harwood and Griffin/Lamar. Ramp relocations would alter some existing routes but all properties and developments would remain accessible. The design includes four on-ramps and five off-ramps. This alternative allows for the inclusion of a cut and cover near Old City Park/Farmers Market and the Convention Center and a trail along the south right-of way could increase and encourage pedestrian access in the corridor.
- Alternative C-2: -  
This alternative would require traffic to exit to C-D roads well in advance to access cross streets. There would be no direct ramps to and from the surface streets; access would only be to/from the C-D roads only. Ramp relocations would alter some existing routes but all properties and developments would remain accessible. The design includes three on-ramps and two off-ramps between the mainlanes and C-D roads and four off-ramps and three on-ramps between the C-D roads and the surface streets. This alternative allows for the inclusion of a cut and cover near Old City Park/Farmers Market and the Convention Center could increase and encourage pedestrian access in the corridor.

### Effects to Sensitive Areas

- No-Build: O  
The No-Build would not impact any sensitive area. However, the current design provides very limited opportunities for urban design elements.
- Alternative C-1: +  
This alternative would place a frontage road near the Weisfeld building, which is eligible for listing on National Register of Historic Places. It would also directly impact a potentially eligible historical home on West Griffin, near Wall. Noise may be lessened because the mainlanes would be farther away from sensitive receivers such as Old City Park. It also would provide opportunities for urban design elements such as pedestrian access across freeway and cut and cover to integrate both side of freeway near the Convention Center and between Harwood and South Central Expressway and a trail along the south right-of-way After the completion of construction, excess State owned right-of-way would most likely be considered surplus/excess and could be sold/conveyed back to the city for Old City Park and Farmers Market.
- Alternative C-2: -  
This alternative would directly impact two structures, which may be eligible for listing on National Register of Historic Places. It would also directly impact two potentially eligible historical homes on West Griffin. There would be potential visual impacts due to braided ramps near Old City Park. It also would provide opportunities for urban design elements such as pedestrian access across freeway and

cut and cover to integrate both side of freeway near the Convention Center and between Harwood and South Central Expressway. After the completion of construction, excess State owned right-of-way would most likely be considered surplus/excess and could be sold/conveyed back to the city for Old City Park and Farmers Market. A wider structure would be needed to cover freeway and C-D roads.

#### 4.1.4 Costs

##### Construction Costs

- No-Build: ++  
No improvements would be made, therefore, no construction would be expended.
- Alternative C-1: -  
This alternative is estimated to cost between \$80 and \$85 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative C-2: --  
This alternative is estimated to cost between \$110 and \$115 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.

##### Right-of-Way Costs

- No-Build: ++  
No improvements would be made; therefore, no additional right-of-way would be needed.
- Alternative C-1: -  
This right-of-way for this alternative is estimated to cost between \$6 and \$8 million.
- Alternative C-2: --  
This right-of-way for this alternative is estimated to cost between \$7 and \$9 million.

##### Cost Effectiveness

This evaluation criterion was not used during this phase of the evaluation. Without detailed traffic analysis, it is difficult to assess the cost effectiveness of the alternatives. During the next phase of evaluation, more detailed traffic analysis will be conducted.

## 4.2 IH 30/IH 35E Mixmaster Alternatives

As previously stated, the Alternative M-3 was not evaluated because it was critically flawed due to introduction of nine degree horizontal curve.

### 4.2.1 Traffic Operations

#### Critical Movements

- No-Build: -  
The existing interchange does not include direct connectors from northbound IH 35E to westbound IH 30 or from eastbound IH 30 to southbound IH 35E.
- Alternative M-1: +  
This alternative includes direct connectors from northbound IH 35E to westbound IH 30 and from eastbound IH 30 to southbound IH 35E. An extensive system of frontage and C-D roads are needed to provide access to local streets. Does not provide access to Colorado from southbound IH 35E; further refinement of this alternative may include this access.
- Alternative M-2: ++  
This alternative includes direct connectors from northbound IH 35E to westbound IH 30 and from eastbound IH 30 to southbound IH 35E. Provides better access than M-1 to the Industrial Boulevard area and more direct access to other freeways. Does not provide access to Colorado from southbound IH 35E; further refinement of this alternative may include this access.
- Alternative M-4: +  
This alternative includes direct connectors from northbound IH 35E to westbound IH 30 and from eastbound IH 30 to southbound IH 35E. Does not provide access to Colorado from southbound IH 35E; further refinement of this alternative may include this access.

#### Weaving

- No-Build: --  
The existing interchange has numerous major weaving areas on mainlanes. Currently, drivers must change lanes to stay on the same freeway.
- Alternative M-1: O  
This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps. However, it would introduce five weaving areas on the C-D and frontage roads. Further refinement of alternative and analysis of traffic may reduce or eliminate these potential weaving issues.
- Alternative M-2: ++  
This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps. However, it would introduce three weaving areas on the frontage roads. Further refinement of alternative and analysis of traffic may reduce or eliminate these potential weaving issues.
- Alternative M-4: ++  
This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps. However, it would introduce three weaving areas on the C-D and frontage roads. Further refinement of alternative and analysis of traffic may reduce or eliminate these potential weaving issues.

### Volume to Capacity Ratio

- No-Build: --  
Under the No-Build condition, the V/C ratio would not be improved and average between 0.90 and 1.00. IH 30 and IH 35E are combined in the interchange and share four mainlanes in each direction, with a one-lane reversible HOV lane on IH 35E, and a two-lane frontage by Reunion Arena. There are no continuous frontage/surface streets.
- Alternative M-1: ++  
This alternative would improve the V/C ratio and average between 0.55 and 0.65 on the IH 30 and IH 35E mainlanes. For this alternative, westbound IH 30 would have two lanes, westbound IH 30 would have three lanes, northbound IH 35E has four lanes, southbound IH 35E would have three lanes, a one-lane reversible HOV from IH 30, two-lane reversible HOV on IH 35E, and three/four lane frontage/C-D roads.
- Alternative M-2: +  
This alternative would improve the V/C ratio and average between 0.60 and 0.70 on the IH 30 and IH 35E mainlanes. For this alternative, both IH 30 and IH 35E would have three lanes in each direction, a one-lane reversible HOV from IH 30, two-lane reversible HOV on IH 35E, and three/four lane frontage/C-D roads.
- Alternative M-4: +  
This alternative would improve the V/C ratio and average between 0.60 and 0.70 on the IH 30 and IH 35E mainlanes. For this alternative, IH 30 would have three lanes in each direction and IH 35E would have four lanes in each direction, a one-lane reversible HOV from IH 30, two-lane reversible HOV on IH 35E, and three/four lane frontage/C-D roads.

### Peak Hour Level of Service

- No-Build: --  
Under the No-Build condition, the existing freeway is estimated to operate at LOS of F with nine hours of reoccurring congestion in Year 2020.
- Alternative M-1: +  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The elimination of the left-hand entrance and exits and continuity of the mainlanes would improve the operations and help improve LOS.
- Alternative M-2: +  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The elimination of the left-hand entrance and exits and continuity of the mainlanes would improve the operations and help improve LOS.
- Alternative M-4: +  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The elimination of the left-hand entrance and exits and continuity of the mainlanes would improve the operations and help improve LOS.

#### 4.2.2 Design and Construction

##### FHWA Interstate Design Standards

- No-Build: --  
Does not meet current design standards set by TxDOT and FHWA for interstate freeways. The current design includes left-hand entrances and exits, inadequate vertical clearances, no shoulders, narrow lane widths, inadequate radii on ramps, inadequate ramp length, and inadequate signing and lighting.
- Alternative M-1: +  
This alternative meets design standards for lane widths and shoulder. Design exceptions would be needed for the horizontal alignments of IH 30 and IH 35E.
- Alternative M-2: O  
This alternative meets design standards for lane widths and shoulder. Due to the alignments and constraints of the existing corridor, design exceptions would be needed for the horizontal and vertical alignments.
- Alternative M-4: +  
This alternative meets design standards for lane widths and shoulder. A design exception would be needed for the horizontal alignment of IH 30.

##### Constructability/Disruption during Construction

- No-Build: ++  
Because no construction would be required, no disruption would occur.
- Alternative M-1: -  
The IH 30 and IH 35E bridges over the Trinity River would essentially follow the same alignments as existing; detouring during construction in those areas would be disruptive. The proposed frontage and C-D roads along IH 35E could help maintain traffic during construction. In addition, reconstructing all roadways under Houston/Jefferson would make detouring difficult because of a lack of right-of-way and bridge columns. No unusual construction methods would be necessary.
- Alternative M-2: O  
Similar issues as M-1 except that some of IH 35E would be built on new alignment, possibly reducing disruptions as compared to M-1. Houston/Jefferson area and IH 30 would still have disruptions. No unusual construction methods would be necessary.
- Alternative M-4: O  
Similar issues as M-1 except that some of IH 35E would be built on new alignment, possibly reducing disruptions as compared to M-1. Houston/Jefferson area and IH 30 would still have disruptions. No unusual construction methods would be necessary.

##### Drainage and Utilities

- No-Build: O  
Because no construction would be required, no changes in drainage or utilities would be needed.
- Alternative M-1: -  
No major changes in drainage system, although any lowering of IH 30 through Mixmaster to attain vertical clearances may require some storm drain line construction.

- Alternative M-2: -  
No major changes in drainage system, although any lowering of IH 30 through Mixmaster to attain vertical clearances may require some storm drain line construction.
- Alternative M-4: O  
No major changes in drainage system would be required.

#### **4.2.3 Social, Economic and Environmental**

##### Right-of-Way Requirements

- No-Build: ++  
No improvements would be made; therefore, no additional right-of-way would be needed.
- Alternative M-1: -  
This alternative would require right-of-way from between 15 to 20 parcels. Potentially 13 structures and four other parking areas would be impacted.
- Alternative M-2: O  
This alternative would require right-of-way from between 20 and 25 parcels. Potentially 18 structures and three other parking areas would be impacted. However, with the shifting of IH 35E west of the TXU substation there would be excess/surplus right-of-way near Industrial and Cadiz. After the completion of construction, this right-of-way would most likely be considered surplus/excess and could be sold to adjacent property owners or other interested parties.
- Alternative M-4: --  
This alternative would require right-of-way from between 35 and 40 parcels. Potentially 30 structures (including 13 residences) and five other parking areas would be impacted. However, with the shifting of IH 35E there would be excess/surplus right-of-way near Industrial and Cadiz. After the completion of construction, this right-of-way would most likely be considered surplus/excess and could be sold to adjacent property owners or other interested parties.

##### Change in Accessibility to Adjacent Properties and Developments

- No-Build: O  
The access to adjacent properties and developments would not be changed. The current design includes 16 off-ramps and 19 on-ramps.
- Alternative M-1: -  
This alternative includes 12 off-ramps and 12 on-ramps. Access to/from downtown and major employers would be similar to current conditions. HOV access would be provided at Commerce to provide access to/from downtown because the current HOV connection to Houston Street Viaduct must be removed when the permanent HOV system is operational per an agreement with the Texas Historical Commission. Ramp relocations would alter some existing routes but all properties and developments would remain accessible. Property owners in the area have express concern about loss of direct access to Industrial from IH 30 and Colorado from IH 35E.
- Alternative M-2: O  
This alternative includes 14 off-ramps and 13 on-ramps. Access to/from downtown and major employers would be similar to current conditions. HOV access would be provided at Commerce to provide access to/from downtown because the current HOV connection to Houston Street Viaduct must

be removed when the permanent HOV system is operational per an agreement with the Texas Historical Commission. Ramp relocations would alter some existing routes but all properties and developments would remain accessible. . Property owners in the area have express concern about loss of direct access to Industrial from IH 30 and Colorado from IH 35E..

▪ Alternative M-4: --

This alternative includes 10 off-ramps and 10 on-ramps. Access to/from downtown and major employers would be similar to current conditions. HOV access would be provided at Commerce to provide access to/from downtown because the current HOV connection to Houston Street Viaduct must be removed when the permanent HOV system is operational per an agreement with the Texas Historical Commission. Ramp relocations would alter some existing routes but all properties and developments would remain accessible. Property owners in the area have express concern about loss of direct access to Industrial from IH 30 and Colorado from IH 35E.

Effects to Sensitive Areas

▪ No-Build: +

The No-Build would not impact any sensitive area. However, the current design provides very limited opportunities for urban design elements.

▪ Alternative M-1: O

This alternative would require the use of three additional openings under the Houston Street Viaduct, which could be an impact to the bridge because of its historic character. Permanent HOV connecting to Commerce would remove the connection between the Houston and Jefferson Viaducts. Additionally, placing the HOV entrance/exits at Commerce rather than Reunion would not interfere with plans by the city to create a pedestrian link from downtown to the Trinity River along Reunion Boulevard.

▪ Alternative M-2: O

This alternative would require the use of four additional openings under the Houston Street Viaduct, which could be an impact to the bridge because of its historic character. Permanent HOV connecting to Commerce would remove the connection between the Houston and Jefferson Viaducts. Additionally, placing the HOV entrance/exits at Commerce rather than Reunion would not interfere with plans by the city to create a pedestrian link from downtown to the Trinity River along Reunion Boulevard.

▪ Alternative M-4: --

This alternative would introduce an elevated freeway. This could have visual impacts to Houston Street Viaduct, downtown skyline, and a signature bridge on IH 30. Mitigation could possibly be implemented to offset this impact but would increase overall project costs and approval times. The displacement of the home near Colorado may be an Environmental Justice issue. This area is low-income and minority, no other residences are being displaced. This would likely be considered a disproportionate impact. Permanent HOV connecting to Commerce would remove the connection between the Houston and Jefferson Viaducts. Additionally, placing the HOV entrance/exits at Commerce rather than Reunion would not interfere with plans by the city to create a pedestrian link from downtown to the Trinity River along Reunion Boulevard.

#### 4.2.4 Costs

##### Construction Costs

- No-Build: ++  
No improvements would be made, therefore, no construction would be needed.
- Alternative M-1: -  
This alternative is estimated to cost between \$195 and \$200 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative M-2: O  
This alternative is estimated to cost between \$190 and \$195 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative M-4: --  
This alternative is estimated to cost between \$240 and \$250 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.

##### Right-of-Way Costs

- No-Build: ++  
No improvements would be made, therefore, no additional right-of-way would be needed.
- Alternative M-1: O  
This right-of-way for this alternative is estimated to cost between \$5 and \$8 million.
- Alternative M-2: -  
This right-of-way for this alternative is estimated to cost between \$11 and \$13 million.
- Alternative M-4: --  
This right-of-way for this alternative is estimated to cost between \$15 and \$18 million.

##### Cost Effectiveness

This evaluation criterion was not used during this phase of the evaluation. Without detailed traffic analysis, it is difficult to assess the cost effectiveness of the alternatives. During the next phase of evaluation, more detailed traffic analysis will be conducted.

### 4.3 IH 35E Lower Stemmons Alternatives

#### 4.3.1 Traffic Operations

##### Critical Movements

- No-Build: O  
All critical movements served, but significant level-of-service deficiencies occur during peak periods.
- Alternative S-1 (Commerce to Oak Lawn): +  
This option would provide similar access as today with some improvement. Access to/from both the DNT and Woodall Rodgers would be improved. Access from northbound Woodall Rodgers to northbound DNT is not included but would only be 3800 vehicles per day in the Year 2026.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): -  
This option would provide similar access as today with some improvement but eliminate access to Commonwealth.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): O  
This option would provide similar access as today with some improvement but maintains only partial Commonwealth.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): +  
This option would provide similar access as today with some improvement.

##### Weaving

- No-Build: --  
From Commerce to Oak Lawn, there are two major weaving areas between the DNT and Woodall Rodgers. From Oak Lawn to SH 183, there are seven mainlane weave sections with level-of-service deficiencies.
- Alternative S-1 (Commerce to Oak Lawn): ++  
This option would reverse the ramps to/from the DNT and Woodall Rodgers, eliminating the severe weaving condition on the mainlanes.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): O  
This option would reduce the number of mainlane weave sections to five but introduce two other weaving areas near the HOV transition points. The length of the weaving area exceeds the length provided today.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): +  
This option would reduce the number of mainlane weave sections to four but introduce two other weaving areas near the HOV transition points. The length of the weaving area exceeds the length provided today.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): +  
This option would reduce the number of mainlane weave sections to four but introduce two other weaving areas near the HOV transition points. The length of the weaving area exceeds the length provided today.

### Volume to Capacity Ratio

- No-Build: --  
Under the No-Build condition, the V/C ratio would not be improved. The average V/C ratio on IH 35E from Commerce to Oak Lawn would average between 0.90 and 1.00 and 1.20 to 1.30 from Oak Lawn to Empire Central. The current design for IH 35E provides 10 mainlanes and discontinuous frontage roads.
- Alternative S-1 (Commerce to Oak Lawn): ++  
This alternative would improve the V/C ratio and average between 0.70 and 0.80. This alternative would provide five to six lanes in each direction on IH 35E, a two-lane reversible HOV, and three-lane C-D road on the east side, and two two-lane frontage roads.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): +  
This alternative would improve the V/C ratio and average between 0.80 and 0.90. This alternative would provide six lanes in each direction on IH 35E, a two-lane reversible HOV, and two two-lane frontage roads.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): +  
This alternative would improve the V/C ratio and average between 0.80 and 0.90. This alternative would provide six lanes in each direction on IH 35E, a two-lane reversible HOV, and two two-lane frontage roads.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): +  
This alternative would improve the V/C ratio and average between 0.80 and 0.90. This alternative would provide six lanes in each direction on IH 35E, a two-lane reversible HOV, and two two-lane frontage roads.

### Peak Hour Level of Service

- No-Build: --  
Under the No-Build condition, the existing freeway was estimated to operate at LOS of F with nine hours of congestion in Year 2020.
- Alternative S-1 (Commerce to Oak Lawn): +  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D and frontage roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The improvement of ramps and reduction in weaving areas would improve the operations and help improve LOS.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): -  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D and frontage roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The improvement of ramps and reduction in weaving areas would improve the operations and help improve LOS.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): O  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D and frontage roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The improvement of ramps and reduction in weaving areas would improve the operations and help improve LOS. The braided ramps would add capacity and improve LOS.

- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): +  
This alternative would improve the LOS on the mainlanes with the introduction of the HOV lanes and C-D and frontage roads. The peak hour LOS would still be F in the design year but well below nine hours a day expected. The improvement of ramps and reduction in weaving areas would improve the operations and help improve LOS. The braided ramps and Commonwealth improvements would add capacity and improve LOS at Commonwealth and Mockingbird.

#### 4.3.2 Design and Construction

##### FHWA Interstate Design Standards

- No-Build: --  
Does not meet current design standards set by TxDOT and FHWA for interstate freeways. The current design includes left-hand entrances and exits, inadequate vertical clearances, no shoulders, curbed shoulders, narrow lane widths, inadequate radii on ramps, ramp length, and inadequate signing and lighting.
- Alternative S-1 (Commerce to Oak Lawn): +  
Meets design standards with a few possible design exceptions may be needed for vertical design.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): +  
No design exceptions anticipated, but some design elements may be minimum rather than desirable.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): +  
No design exceptions anticipated, but some design elements may be minimum rather than desirable.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): +  
No design exceptions anticipated, but some design elements may be minimum rather than desirable.

##### Constructability/Disruption during Construction

- No-Build: ++  
Because no construction would be required, no disruption would occur.
- Alternative S-1 (Commerce to Oak Lawn): --  
All bridges crossing the freeway would be replaced. The operations of UP RR must be maintained during construction. The narrow right-of-way width would limit and complicate construction detours.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): -  
Normal construction techniques would be used. All bridges crossing the freeway would be replaced. The addition of HOV and general-purpose lanes and relocation of some frontage roads offers the expectation of minimal lane reductions.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): -  
Normal construction techniques would be used. All bridges crossing the freeway would be replaced. The addition of HOV and general-purpose lanes and relocation of some frontage roads offers the expectation of minimal lane reductions.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): -  
Normal construction techniques would be used. All bridges crossing the freeway would be replaced. The addition of HOV and general-purpose lanes and relocation of some frontage roads offers the expectation of minimal lane reductions.

### Drainage and Utilities

- No-Build: O  
Because no construction would be required, no changes in drainage or utilities would be needed. Some cross-streets such as Continental and Hi Line are flooded during periods of intense rainfall. No significant drainage or utility deficiencies exist.
- Alternative S-1 (Commerce to Oak Lawn): +  
No major drainage reconstruction needed other than that needed to accommodate the potentially increased area of paving. Drainage patterns can remain the same but the flooding problems would be eliminated at Continental and Hi Line.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): O  
No significant drainage or utility issues as a result of the new construction. Sufficient capacity exists for minimal increase in runoff.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): O  
No significant drainage or utility issues as a result of the new construction. Sufficient capacity exists for minimal increase in runoff.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): O  
No significant drainage or utility issues as a result of the new construction. Sufficient capacity exists for minimal increase in runoff.

### **4.3.3 Social, Economic and Environmental**

#### Right-of-Way Requirements

- No-Build: ++  
No improvements would be made; therefore, no additional right-of-way would be needed.
- Alternative S-1 (Commerce to Oak Lawn): O  
This alternative would potentially impact four structures and one other parking area. Additional right-of-way would be need for the southbound frontage road, including part of the county parking garage and several other parking lot areas.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): O  
This alternative would require right-of-way from approximately 30 parcels. Potentially one structure and 20 other parking areas would be impacted. Additional right-of-way may also affect parking or landscaping.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): -  
This alternative would require right-of-way from approximately 30 parcels. Potentially two structures and 30 other parking areas would be impacted. Additional right-of-way may also affect parking or landscaping.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): O:  
This alternative would require right-of-way from three fewer parcels that S-2A and S-2B. It would also impact one less structure and two less parking areas than Alternative S-2B. Additional right-of-way may also affect parking or landscaping.

### Change in Accessibility to Adjacent Properties and Developments

- No-Build: O  
Congestion levels in future years will affect adjacent properties and activity centers in the vicinity. From Commerce to Oak Lawn there are thirteen on and off-ramps ramps. From Oak Lawn to SH 183, the freeway currently has 26 on and off-ramps.
- Alternative S-1 (Commerce to Oak Lawn): O  
This alternative would reduce the number of ramps by one (seven off-ramps, five on-ramps, and three other ramps to the C-D or frontage roads). Ramp relocations would alter some existing routes but all properties and developments would remain accessible. Access to major employers and activity centers would be similar to current conditions.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): -  
This alternative would reduction the number of ramps from 26 to 22 (includes four HOV ramps). Ramp relocations would alter some existing routes but all properties and developments would remain accessible. It would also necessitate adjustment of driveway locations and possible driveway closures. The HOV connections to the frontage roads would occur under the freeway mainlanes could provide more opportunities for bicycle and pedestrian linkages across the freeway.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): O  
Use of braided ramps would allow increasing the number of ramps from 26 to 28 (includes four HOV ramps). Ramp relocations would alter some existing routes to adjacent establishments but all properties and developments would remain accessible. It would also necessitate adjustment of driveway locations and possible driveway closures. The HOV connections to the frontage roads would occur under the freeway mainlanes could provide more opportunities for bicycle and pedestrian linkages across the freeway.
- Alternative S-2C (Oak Lawn to SH 183-Commonwealth Bypass): O  
Use of braided ramps allows increase the number of ramps from 26 to 28 (includes four HOV ramps). Ramp relocations would alter some existing routes to adjacent establishments but all properties and developments would remain accessible. It would also necessitate adjustment of driveway locations and possible driveway closures. The HOV connections to the frontage roads would occur under the freeway mainlanes could provide more opportunities for bicycle and pedestrian linkages across the freeway.

### Effects to Sensitive Areas

- No-Build: O  
The No-Build would not impact any sensitive area. However, the current design provides very limited opportunities for urban design elements.
- Alternative S-1 (Commerce to Oak Lawn): -  
This alternative would require right-of-way from Stemmons Park and could increase noise levels because the roadway would be closer to the park. However, the ramp on the east side of IH 35E from the frontage road to eastbound Oak Lawn would be eliminated. The land used for the ramp is directly adjacent to Stemmons Park and could be used as mitigation for the parkland impacted. The design would allow for a trail along Turtle Creek under the frontage road.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): O

This alternative could increase noise levels at Pegasus Park because the roadway would be closer to the park. The HOV connections to the frontage roads would occur under the freeway mainlanes, minimizing visual impacts. It could also provide more opportunities for bicycle and pedestrian linkages across the freeway and parking areas under the freeway.

- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): O  
This alternative could increase noise levels at Pegasus Park because the roadway would be closer to the park. The HOV connections to the frontage roads would occur under the freeway mainlanes, minimizing visual impacts. It could also provide more opportunities for bicycle and pedestrian linkages across the freeway and parking areas under the freeway.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): -  
This alternative could increase noise levels at Pegasus Park because the roadway would be closer to the park. With the elevated Commonwealth alignment and ramp structure, may also visually impact Pegasus Park. The HOV connections to the frontage roads would occur under the freeway mainlanes, minimizing visual impacts. It could also provide more opportunities for bicycle and pedestrian linkages across the freeway and parking areas under the freeway.

#### 4.3.4 Costs

##### Construction Costs

- No-Build: ++  
No improves would be made, therefore, no construction would be would be needed.
- Alternative S-1 (Commerce to Oak Lawn): --  
This alternative is estimated to cost between \$105 and \$110 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. Commonwealth Bypass increases wall, embankment, and bridge quantities. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): O  
This alternative is estimated to cost between \$195 and \$200 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): -  
This alternative is estimated to cost between \$230 and \$235 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. Braided ramps increases wall, embankment, and bridge quantities. This construction cost does not include costs for aesthetic treatments or urban design elements.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): -  
This alternative is estimated to cost between \$215 and \$220 million to construct in 2002 dollars. Total freeway reconstruction would include typical unit costs for mainlanes, bridges, embankment, walls, utility adjustment, and traffic control. Commonwealth Bypass increases wall, embankment, and bridge

quantities. This construction cost does not include costs for aesthetic treatments or urban design elements.

#### Right-of-Way Costs

- No-Build: ++  
No improvements would be made, therefore, no additional right-of-way would be needed.
- Alternative S-1 (Commerce to Oak Lawn): +  
This right-of-way for this alternative is estimated to cost between \$2 and \$3 million.
- Alternative S-2A (Oak Lawn to SH 183 - Base Option): -  
This right-of-way for this alternative is estimated to cost between \$15 and \$18 million. Additional right of way is required. Existing uses affected include business and some billboards.
- Alternative S-2B (Oak Lawn to SH 183 - Braided Ramp Option): --  
This right-of-way for this alternative is estimated to cost between \$17 and \$20 million. Additional right of way is required. Existing uses affected include business and some billboards. More right-of-way required in vicinity of the braided ramps.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): O  
This right-of-way for this alternative is estimated to cost \$1 to \$2 million less than the other options regardless of the ramp combination selected south of Inwood. Additional right of way is required. Existing uses affected include business and some billboards.

#### Cost Effectiveness

This evaluation criterion was not used during this phase of the evaluation. Without detailed traffic analysis, it is difficult to assess the cost effectiveness of the alternatives. During the next phase of evaluation, more detailed traffic analysis will be conducted.

### **5.0 ALTERNATIVES RECOMMENDED FOR FURTHER DEVELOPMENT AND EVALUATION**

The alternatives analyzed represented a range of alignments and modes to try to meet the mobility needs of the corridor. The Phase 1 Conceptual Evaluation recommendations were based on cumulative ratings. The summary of Significantly Positive (++) , Moderately Positive (+) , Neutral (O) , Moderately Negative (-) , and Significantly Negative (- -) results are listed in Table 1. Tables 2 and 3 show the specific rating for each criterion and summary of effects.

**Table 1. Evaluation Summary**

Alternative	Ratings					Recommended for Further Development and Evaluation
	++	+	O	-	--	
<b><i>IH 30 Canyon</i></b>						
No-Build	4	0	4	0	4	Yes, per NEPA
Alternative C-1	2	4	4	2	0	Yes
Alternative C-2	2	1	3	3	3	No
<b><i>IH 30/IH 35E Mixmaster</i></b>						
No-Build	4	1	2	1	4	Yes, per NEPA
Alternative M-1	1	3	3	5	0	Yes
Alternative M-2	2	2	6	2	0	Yes
Alternative M-4	2	3	2	0	5	No
<b><i>IH 35E Lower Stemmons</i></b>						
No-Build	4	0	4	0	4	Yes, per NEPA
Alternative S-1	2	5	2	1	2	Yes
Alternative S-2A	0	2	5	5	0	No
Alternative S-2B	0	3	5	4	0	No
Alternative S-2C	0	5	4	3	0	Yes

Based on the evaluation measures and criteria established, the following alternatives have been recommended for further development and evaluation:

- No-Build Alternative
- IH 30 Canyon
  - Alternative C-1
- IH 30/IH 35E Mixmaster
  - Alternative M-1
  - Alternative M-2
- IH 35E Lower Stemmons
  - Alternative S-1 between Commerce and Oak Lawn
  - Alternative S-2C between Oak Lawn and Empire Central

## Table 2. Conceptual Alternative Evaluation Summary

Alternative	Description	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs		
		Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs	Right-of-Way Costs	Cost Effectiveness
<b>IH 30 CANYON</b>														
<b>No-Build</b>	- No Improvements to Existing Conditions	--	O	--	--	--	++	O	++	O	O	++	++	*
<b>Alternative C-1</b>	- Meets design standards for lanes widths and shoulders - Eliminates the current collector-distributor roads adjacent to the mainlanes - Eliminates the Cadiz and St. Paul bridges over IH 30 - Eliminates left-hand entrances and exits - Includes diamond-type interchanges at Griffin and South Central/Harwood - Simplifies the South Central Expressway interchange - Includes (surface) frontage roads from Good-Latimer to Lamar - Provides direct access to IH 30 from the IH 45 connections	++	O	+	+	++	O	O	O	+	+	-	-	*
<b>Alternative C-2</b>	- Includes collector-distributor roads parallel to the mainlanes - Eliminates the Cadiz and St. Paul bridges over IH 30 - Eliminates left-hand entrances and exits - Simplifies South Central Expressway interchange - Moves the IH 35/IH 30 split further west - Includes braided ramps near Old City Park	-	O	++	+	++	O	O	--	-	-	--	--	*

**Ratings:** ++ **Significantly positive** - Positive performance upon a measure as compared to the other alternatives.  
 + **Moderately positive** - Slight positive performance on the measure as compared to the other alternatives.  
 O **Neutral** - Alternative has no affect, one way or the other upon the measure as compared to the other alternatives.  
 - **Moderately negative** - Poor but acceptable performance on a measure compared to the other alternatives.  
 -- **Significantly negative** - Unacceptable performance on a measure compared to the other alternatives.

## Table 2. Conceptual Alternative Evaluation Summary

Alternative	Description	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs		
		Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs	Right-of-Way Costs	Cost Effectiveness
<b>IH 30/IH 35E MIXMASTER</b>														
<b>No-Build</b>	- No Improvements to Existing Conditions	-	--	--	--	--	++	O	++	O	+	++	++	*
<b>Alternative M-1</b>	- Meets Design Standards for Lane & Shoulder Widths - Eliminates Left-Hand Merges & Diverges - Eliminates Forced Lane Changes to Stay on Same Freeway - Includes Direct Connections in all Directions - Places HOV Access to Commerce Street instead of Houston/Jefferson	+	O	++	+	+	-	-	-	-	O	-	O	*
<b>Alternative M-2</b>	- Meets Design Standards for Lane & Shoulder Widths - Eliminates Left-Hand Merges & Diverges - Eliminates Forced Lane Changes to Stay on Same Freeway - Shifts IH 35E West of TXU Substation - Includes Direct Connections in all Directions - Places HOV Access to Commerce Street instead of Houston/Jefferson	++	++	+	+	O	O	-	O	O	O	O	-	*
<b>Alternative M-3</b>	- Meets Design Standards for Lane & Shoulder Widths - Eliminates Left-Hand Merges & Diverges - Eliminates Forced Lane Changes to Stay on Same Freeway - Shifts IH 35E East of TXU Substation - Includes Direct Connections in all Directions - Places HOV Access to Commerce Street instead of Houston/Jefferson	<i>This design would introduce a more severe geometric design than the existing interchange. Consequently, this alternative is no longer being considered.</i>												
<b>Alternative M-4</b>	- Meets Design Standards for Lane & Shoulder Widths - Realigns/Straightens IH 35E over Houston/Jefferson Street Viaducts - Retains Existing IH 30 Alignment - Eliminates Left-Hand Merges & Diverges - Eliminates Forced Lane Changes to Stay on Same Freeway - Places HOV Access to Commerce Street instead of Houston/Jefferson	+	++	+	+	+	O	O	--	--	--	--	--	*

- Ratings:** ++ **Significantly positive** - Positive performance upon a measure as compared to the other alternatives.  
+ **Moderately positive** - Slight positive performance on the measure as compared to the other alternatives.  
O **Neutral** - Alternative has no affect, one way or the other upon the measure as compared to the other alternatives.  
- **Moderately negative** - Poor but acceptable performance on a measure compared to the other alternatives.  
-- **Significantly negative** - Unacceptable performance on a measure compared to the other alternatives.

## Table 2. Conceptual Alternative Evaluation Summary

Alternative	Description	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs		
		Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs	Right-of-Way Costs	Cost Effectiveness
<b>IH 35E LOWER STEMMONS</b>														
<b>From Commerce to Oak Lawn</b>														
<b>No-Build</b>	- No Improvements to Existing Conditions	O	--	--	--	--	++	O	++	O	O	++	++	*
<b>Alternative S-1</b>	- Meets Design Standards for Lane and Shoulder Widths - At-Grade HOV from Commerce to the North - Reverses Ramps to/from DNT and Woodall Rodgers - Add Collector-Distributor Roads from DNT to Woodall - Adds Continuous Frontage Roads	+	++	++	+	+	--	+	O	O	-	--	+	*
<b>From Oak Lawn to Empire Central</b>														
<b>No-Build</b>	- No Improvements to Existing Conditions	+	--	--	--	--	++	O	++	O	O	++	++	*
<b>Alternative S-2A</b>	- Meets Design Standards for Lane & Shoulder Widths - Adds Continuous Frontage Roads - At-Grade HOV with Connections to Frontage Roads - Eliminates Need to Change Lanes to Stay on Northbound IH 35E at SH 183	-	O	+	-	+	-	O	O	-	O	O	-	*
<b>Alternative S-2B Braided Ramps</b>	- At-grade HOV, connections to frontage roads & mainlanes - Improves route continuity for northbound IH 35E - Eliminates inside merge at SH 183/IH 35E - Uses braided ramps between Wycliff & Motor and on northbound between Inwood & Commonwealth	O	+	+	O	+	-	O	-	O	O	-	-	*
<b>Alternative S-2C Commonwealth Bypass</b>	- At-grade HOV, connections to frontage roads & mainlanes - Improves route continuity for northbound IH 35E - Eliminates inside merge at SH 183/IH 35E - Realigns Commonwealth to increase access & to improve access to Mockingbird	+	+	+	+	+	-	O	O	O	-	-	O	*

Ratings: ++ **Significantly positive** - Positive performance upon a measure as compared to the other alternatives.  
 + **Moderately positive** - Slight positive performance on the measure as compared to the other alternatives.  
 O **Neutral** - Alternative has no affect, one way or the other upon the measure as compared to the other alternatives.  
 - **Moderately negative** - Poor but acceptable performance on a measure compared to the other alternatives.  
 -- **Significantly negative** - Unacceptable performance on a measure compared to the other alternatives.

### Table 3. Conceptual Alternative Evaluation Summary

Alternative	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs	
	Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs (2002 dollars)	Right-of-Way Costs (2002 dollars)
<b>IH 30 CANYON</b>												
<b>No-Build</b>	Circuitous & less direct	Numerous weaving areas on C-D roads & mainlanes (due to left-hand entrances/exits)	1.10 to 1.30	F+9	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 2 on & 3 off ramps between the freeway & surface streets and 2 on & 2 off ramps between the mainlanes & C-D	Limited opportunities for urban design	\$0	\$0
<b>Alternative C-1</b>	Most direct access	2 major weaving areas; no left-hand entrances or exits	0.85 to 0.95	F+4	Meets Current Standards	Some Disruption	No Change	8 parcels impacting 6 structures & 2 parking areas; would create surplus ROW near Farmers Market & Old City Park	Access focused on South Central/Harwood and Griffin/Lamar; 4 on & 5 off ramps	Possible impacts to 1 historic property. Increased opportunities for urban design, especially with surplus ROW.	\$80 to \$85 million	\$6 to 8 million
<b>Alternative C-2</b>	Circuitous & less direct	Numerous weaving areas on C-D roads; no left-hand entrances or exits	0.70 to 0.80	F+4	Meets Current Standards	Some Disruption	No Change	12 parcels impacting 9 structures & 3 parking areas; would create surplus ROW near Farmers Market & Old City Park	No access from mainlanes to surface streets; 2 on & 3 off ramps between the freeway & C-D & 3 on & 4 off 3 on ramps between the C-D & J18 surface streets	Possible impacts to 2 historic properties. Braided ramps may create a visual impact. Increased opportunities for urban design, especially with surplus ROW.	\$110 to \$115 million	\$7 to \$9 million

### Table 3. Conceptual Alternative Evaluation Summary

Alternative	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs	
	Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs (2002 dollars)	Right-of-Way Costs (2002 dollars)
<b>IH 30/IH 35E MIXMASTER</b>												
<b>No-Build</b>	No DC from NB IH 35E to WB IH 30 or EB IH 30 to SB IH 35E	Numerous weaving areas on mainlanes due to left-hand entrances/exits	0.90 to 1.00	F+9	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 16 off & 19 on ramps	Limited opportunities for urban design	\$0	\$0
<b>Alternative M-1</b>	D-Cs between IH 30 and IH 35E in all directions; more limited access to local streets	No major weaves on mainlanes; 5 weaving areas on C-D & frontage roads; no left-hand entrances or exits	0.55 to 0.65	F+4	Lane & Shoulder widths meet standards; design exception needed for horizontal alignment	Minor Disruption	Some change	15 to 20 parcels impacting 13 structures & 4 parking areas	12 on & 12 off ramps; ramp relocation would alter some routes but all properties & development still accessible	Requires the use of 3 additional openings of the Houston Street Viaduct; does not interfere with proposed pedestrian linkage along Reunion from downtown to the Trinity	\$195 to \$200 million	\$5 to \$8 million
<b>Alternative M-2</b>	D-Cs between IH 30 and IH 35E in all directions; more limited access to local streets	No major weaves on mainlanes; 3 weaving areas frontage roads; no left-hand entrances or exits	0.60 to 0.70	F+4	Lane & Shoulder widths meet standards; design exceptions needed for horizontal & vertical alignment	Some Disruption	Some change	21 to 25 parcels impacting 18 structures & 3 parking areas; would create surplus ROW near Industrial and Cadiz	13 on & 14 off ramps; ramp relocation would alter some routes but all properties & development still accessible	Requires the use of 4 additional openings of the Houston Street Viaduct; does not interfere with proposed pedestrian linkage along Reunion from downtown to the Trinity	\$190 to \$195 million	\$11 to \$13 million
<b>Alternative M-4</b>	D-Cs between IH 30 and IH 35E in all directions; more limited access to local streets	No major weaves on mainlanes; 3 weaving areas frontage roads; no left-hand entrances or exits	0.60 to 0.70	F+4	Lane & Shoulder widths meet standards; design exception needed for horizontal alignment	Some Disruption	No Change	35 to 40 parcels impacting 30 structures (including 13 residences) & 5 parking areas; would create surplus ROW near Industrial and Cadiz	10 on & 10 off J22+A10ramps; ramp relocation would alter some routes but all properties & development still accessible	Elevates IH 35E over Houston Street Viaduct; possible visual impacts to downtown & IH 30 signature bridge; environmental justice issues near Colorado; does not interfere with proposed pedestrian linkage along Reunion from downtown to the Trinity	\$240 to \$250 million	\$15 to \$18 million

### Table 3. Conceptual Alternative Evaluation Summary

Alternative	Traffic Operations				Design & Construction			Social, Economic & Environmental			Costs	
	Critical Movements	Weaving	Volume to Capacity Ratio	Peak Hour Level of Service	FHWA Interstate Design Standards	Constructability/Disruption during Construction	Drainage and Utilities	Right-of-Way Requirements	Change in Accessibility to Adjacent Properties and Developments	Effects to Sensitive Areas	Construction Costs (2002 dollars)	Right-of-Way Costs (2002 dollars)
<b>IH 35E LOWER STEMMONS</b>												
<b>From Commerce to Oak Lawn</b>												
<b>No-Build</b>	No Change	2 major weaving areas	0.90 to 1.00	F+9	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 13 on & off ramps between the Commerce & Oak Lawn	Limited opportunities for urban design	\$0	\$0
<b>Alternative S-1</b>	All critical movements served	No major weaving areas	0.70 to 0.80	F+4	Lane & Shoulder widths meet standards; design exception needed for vertical design	Difficult Construction	Improvements at Continental & Hi Line	5 to 8 parcels impacting 4 structures & 1 parking area	12 on & off ramps	Requires ROW from Stemmons Park; possible increase in noise at park	\$105 to \$110 million	\$2 to \$3 million
<b>From Oak Lawn to Empire Central</b>												
<b>No-Build</b>	No Change	7 major weaving areas	1.20 to 1.30	F+9	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 16 on & off ramps between Oak Lawn & SH 183	Limited opportunities for urban design	\$0	\$0
<b>Alternative S-2A</b>	No major changes	7 major weaving areas (5 mainlane, 2 HOV); length of weaving areas exceeds lengths provided today	0.80 to 0.90	F+4	Meets Current Standards	Some Disruption	No Change	30 parcels impacting 1 structure & 20 parking areas	22 on & off ramps including 4 HOV ramps	Could increase noise levels at Pegasus Park; increased opportunities for bicycle/pedestrian linkages	\$195 to \$200 million	\$15 to \$18 million
<b>Alternative S-2B Braided Ramps</b>	No major changes	6 major weaving areas (4 mainlane, 2 HOV); length of weaving areas exceeds lengths provided today	0.80 to 0.90	F+4	Meets Current Standards	Some Disruption	No Change	30 parcels impacting 2 structures & 30 parking areas	28 on & off ramps including 4 HOV ramps	Could increase noise levels at Pegasus Park; increased opportunities for bicycle/pedestrian linkages	\$230 to \$235 million	\$17 to \$20 million
<b>Alternative S-2C Commonwealth Bypass</b>	No major changes	6 major weaving areas (4 mainlane, 2 HOV); length of weaving areas exceeds lengths provided today	0.80 to 0.90	F+4	Meets Current Standards	Some Disruption	No Change	27 parcels impacting 1 structure & 28 parking areas	28 on & off ramps including 4 HOV ramps	Could increase noise levels at Pegasus Park; increased visual impacts to Pegasus Park; increased opportunities for bicycle/pedestrian linkages	\$215 to \$220 million	\$14 to \$18 million

## 6.0 REFINEMENT OF ALTERNATIVES

During the Phase 2 refinement of the alternatives, the study team will continue to develop the alternatives to a higher level of detail and incorporate, as appropriate, comments and concerns from the public and study work groups. The following are concerns raised during the first phase of alternative development:

- Include opportunities for urban design
- Include access from Woodall Rodgers to DNT
- Freeway to freeway access is improved but local access is more limited
- Provide more direct access to/from the Industrial Boulevard area, Colorado Boulevard, and Beckley Avenue
- Cadiz should not be made one-way
- Minimize impacts to businesses and right-of-way impacts, especially in the Mixmaster area
- Utilize the recently completed northbound IH 35E/HOV bridge
- Check for planned development districts along the corridor – could escalate right-of-way costs
- Maximize/lengthen weaving areas between ramps
- Include more quantitative information in the next phase of evaluation

## 7.0 NEXT STEPS

The study team will be refining the remaining alternatives between August and December 2002. During this time, meetings will continue with the Project Coordination and Community work groups to continue to gain input for agencies and the public. Public meetings are tentatively schedule for January 2003. After the public meetings, the preferred alternative will be selected. A design schematic, environmental assessment, and interstate access justification report will then be prepared for the preferred alternative. Once these documents are reviewed by TxDOT Austin and FHWA, public hearings will be held. These are tentatively scheduled for late 2003. TxDOT anticipates schematic and environmental approval in mid 2004. After approval, detail construction plans can be developed and right-of-way acquisition started.