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MEMO

TO: Timothy Nesbitt, P.E. **DATE:** April 15, 2003

FROM: Sandy Wesch-Schulze, P.E., AICP

SUBJECT: IH 30/IH 35E Reconstruction – Project Pegasus
Final Technical Memorandum - Evaluation of Refined Alternatives – Task 8.5

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 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/managed (HOV/M) 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 selected to develop further into a design schematic; and balance design standards, safety, transportation needs, costs, and social, economic, and environmental concerns.

1.1 PHASE 1 CONCEPTUAL ALTERNATIVE DEVELOPMENT AND EVALUATION

Conceptual alternatives were developed and evaluated for IH 30 and IH 35E from November 2001 to May 2002. These alternatives were based on previous planning efforts including the Trinity Parkway Corridor Major Transportation Investment Study (MTIS) recommendations for IH 30 and IH 35E. During Project Pegasus, the conceptual alternatives developed were based on the MTIS recommendation but reflect the development and changes that have occurred in the corridors since the 1998 MTIS was approved and were based on detailed 2026 traffic projections. Additionally, these conceptual alternatives recognized that

by the time major freeway construction would begin in the corridors, the freeways 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.

The alternatives were evaluated to determine how well each addressed the identified objectives of the project. 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. Based on the Phase 1 evaluation, the following alternatives were selected to be studied in more detail in Phase 2:

- 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

Additionally, there were comments and concerns raised by the public and agency work group members during Phase 1 as issues to be addressed during the Phase 2 refinement of alternatives. As the study team continued to develop the alternatives to a higher level of detail, the following comments and concerns raised during the Phase 1 evaluation were incorporated, as appropriate:

- Include opportunities for urban design
- Include access from westbound Woodall Rodgers to northbound 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 business 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

1.2 PHASE 2 REFINEMENT OF ALTERNATIVES

During Phase 2, the study continued to develop the alternatives from Phase 1 to a higher level of detail and incorporate, as appropriate, comments and concerns from the public and study work groups. A list of comments and actions/comment were also developed to help track and resolve issues and concerns (see Table 1). The refined alternatives and evaluation have been presented to the Project Coordination Work

Table 1. Issues and Concerns

(During development of alternatives and the schematic, 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.)

Comment	Status	Response
1. Include opportunities for urban design	On-Going	This will be more fully addressed once a preferred alternative is selected for further development. The study team has been, and will continue, coordinating with the city staff and developers on proposed locations and locally-developed opportunities/funds for decks in the Canyon and pedestrian & bicycle access across the roadways. Interest has been expressed for both as well as for signature bridges on IH 30 and IH 35E over the Trinity River, but the local funding sources needed to implement these elements have not been identified by the city.
2. Include access from Woodall Rodgers to Dallas North Tollway (DNT)	✓	The proposed design allows for these direct movements: • Eastbound Woodall (Extension) to northbound DNT • Southbound DNT to westbound Woodall (Extension) • Southbound DNT to eastbound Woodall Because of right-of-way restrictions and the need to accommodate other high-demand access connections, the study team cannot geometrically/physically provide a connection from westbound Woodall Rodgers to northbound DNT. One of the issues the study team has to design around is the 23 feet less feet of right-of-way (since the 1998 MTIS solution) near the American Airline Center due to the recently completed, independently designed DART retaining wall which is nine inches from the existing right-of-way line. The arena location itself was determined after the MTIS was completed. To get everything to fit within this now further constrained right-of-way, the collector-distributor (C-D) road is proposed to be double-decked over the frontage road on the east side of northbound IH 35E (similar to the existing westbound lanes of Woodall Rodgers). The C-D road on the west side will also require double-decking. Future traffic projections indicate only 3,800 vehicles per day (vpd) or 380 vehicles in the 2026 peak hour would make this movement. When compared to other movements in 2026, this movement is very minor. Other traffic volumes that must be accommodated within this 1.5 mile long section of IH 35E are the 46,000+ vpd from westbound Woodall Rodgers to northbound IH 35E; 22,000 vpd from IH 35E to northbound DNT; and the 100,000+ vpd remaining on northbound IH 35E. In addition, a majority of the present-day vehicles using Woodall Rodgers via IH 45 and westbound IH 30 (east of IH 45) are doing so because of the congestion in the Canyon/Mixmaster. With better wayfinding signage and improved/updated roadways, vehicles will be directed through an improved Canyon and Mixmaster to access the DNT north. Note: For confirmation purposes only, more information is being developed on the origin-destination and travel patterns of vehicles using westbound Woodall Rodgers to northbound DNT.

Comment	Status	Response
3. Freeway to freeway access is improved but local access is more limited	✓	IH 30 and IH 35E were designed and constructed in the 1950's. Since that time, traffic volumes have increased dramatically and roadway design standards have changed. Because of these two items, ramps must be spaced further apart and left-hand entrance and exit ramps eliminated to improve traffic flow/operations. The goal of the design team is to meet current TxDOT and FHWA design standards for interstate highways. Any variance from these set design standards will require extensive justification and is subject to non-approval by FHWA. Additionally, FHWA must approve all new access points along the freeways (including HOV/M lane access from the Interstate mainlanes) and reconfigured interchanges on the Interstate. • Collector-distributor roadways along IH 30 from east of Sylvan to Industrial (across the Trinity River) have been determined to be warranted and included in the design. • Access to Continental has also been improved from southbound IH 35E & southbound DNT.
4. Provide more direct access to/from the Industrial Boulevard area, Colorado Boulevard, and Beckley Avenue	✓	• Collector-distributor roadways along IH 30 from east of Sylvan to Industrial (across the Trinity River) have been determined to be warranted and included in the design. • Collector-distributor roadways are proposed for IH 35E from the Mixmaster to Colorado, which will allow for access to/from Colorado under Alternative M-1. The M-1 Alternative provides adequate access from all directions. Access to Colorado under the Alternative M-2 is more limited and circuitous. • A design for ramps to/from IH 30 at Beckley has not been developed without significant impacts to the community, altering access to Sylvan and the main post office, and the direct connections to/from IH 35E. TxDOT has analyzed this request numerous times over the past 10 years and has found the major obstacle being the nearby 30 foot high west levee. TxDOT is unable to develop a solution that meets FHWA and TxDOT interstate highway standards for design, does not impact traffic on the direct connections to/from IH 35E, does not impact existing local access, and does not displace numerous businesses. TxDOT has stated the city needs to take the lead for developing any other designs to provide access and submit them to TxDOT for review.
5. Cadiz should not be made one-way	✓	Cadiz from Industrial to Lamar will not be converted to one-way operation as proposed during the Phase 1 evaluation.
6. Minimize impacts to businesses and right-of-way impacts, especially in the Mixmaster area	✓	Efforts have been made to reduce right-of-way impacts along both corridors and in the Mixmaster. Along IH 35E, north of Oak Lawn, the HOV lane width has been reduced from 44 feet to 28 feet (this is acceptable in constrained right-of-way areas, though it is neither preferred nor optimal). Twenty-eight feet allows for two full width travel lanes and only nominal shoulders, but still allows for passing if a vehicle breaks down within the barrier-separated facility.
7. Utilize the recently completed northbound IH 35E/HOV bridge	✓	The alignment of the northbound IH 35E mainlanes and HOV/M lane will be shifted to utilize the recently completed bridge. The bridge will have to be widened to accommodate the additional lanes.
8. Check for planned development districts along the corridor – this may escalate right-of-way costs	On-Going	

Comment	Status	Response
9. Maximize/lengthen weaving areas between ramps	On-Going	The design team is maximizing the weaving areas between ramps as much as possible. IH 30 and IH 35E were designed and constructed in the 1950's. Traffic volumes have increased dramatically and roadway design standards have changed. Because of these two items, ramps must be spaced further apart and some ramps (for major movements) will be two lanes. The goal of the design team is to meet current TxDOT and FHWA design standards for interstate highways. Any variance from the set standards will require extensive justification and be subject to non-approval by FHWA in Washington, D.C.
10. Include more quantitative information in the next phase (Phase 2) of evaluation	✓	See page 38, Table 5 of this memorandum. Additional quantitative information will be contained in the Environmental Assessment and Interstate Access Justification Report.
11. Consider building the freeways for a higher Level-of-Service than F+4 in the design year 2026. What are the impacts to designing the freeway of operate at LOS C or D.	✓	Typically, the FHWA requires a LOS of C or D for a new or reconstructed highway. However, in highly congested, urban areas with high traffic volumes and constrained right-of-way, the FHWA would like the best LOS possible. During the MTIS, a LOS of F+4 hours of peak period congestion was agreed upon, consensus goal. This goal was established through a public/FHWA process and based on the standard established in Mobility 2020, the Metropolitan Transportation Plan (MTP) for the Dallas-Fort Worth region. The LOS of F+4 for the MTP was based on the need to have a financially constrained MTP, and the need to meet conformity requirements for air quality. All other urban freeways projects (i.e., IH 635, SH 183) have used this same LOS goal. From a regional/traffic modeling perspective, some congestion is helpful; it can encourage people to telecommute, take the bus or rail, or carpool and reduce the single-occupant travel demand and congestion. The goal of the alternatives is to help move the traffic more efficiently and create smoother operating facility. The alternatives developed for Project Pegasus will provide a safer, less confusing facility for the drivers by including full inside and outside shoulders, 12 foot wide travel lanes, improved sight distances, and removing left-hand entrances and exits. Based on the MTIS, we are regionally maximizing the existing roadways. During the MTIS, the community agreed that an average 2026 congestion of four hours per day would be acceptable in 2020 considering the present day LOS F+6 hours.
12. No access from northbound IH 35E to Reunion or Commerce	✓	Access from northbound IH 35E to Reunion and Commerce has been included in the M-1 and M-2 designs.

Group, Community Work Group, and at the January 2003 Public Meetings. The refined designs were also placed on the project website for public review and copies of the drawings sent to FHWA, City of Dallas, Dallas County, DART, and NCTCOG for comment.

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 assesses 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 decreased opportunities for urban design elements.

Costs

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

Right-of-Way Costs (ROW) – 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 (CE) – The ratio of the annualized construction, right-of-way, and maintenance cost of the alternative divided by the annualized peak hour capacity of the alternative.

3.0 REFINEMENT OF ALTERNATIVES

Between May 2002 to December 2002, the alternatives developed in Phase 1 were refined. These refinements were based on identified deficiencies and travel patterns in the study area, previous planning efforts, projected average daily traffic volume numbers for 2026, and public and agency input.

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, and/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 Freeway) Extension, IH 30 (Tom Landry Highway) widening and reconstruction, SH 183 widening and reconstruction, construction of the Trinity Parkway, widening of both Hampton/Inwood and Motor Street, and interchange improvements at Oak Lawn at the DNT.

3.2 Build Alternatives

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

- IH 30 Canyon (from IH 45 to west of Lamar)
- IH 30/IH 35 Interchange (Mixmaster)
- IH 35E Lower Stemmons

The alternatives include HOV/M lanes and C-D roads. An HOV/M lane is an exclusive traffic lane for vehicles with more than one passenger but could allow single occupant vehicle-toll. A C-D road is transitional roadway with no traffic signals located between freeway mainlanes and local access roads. It reduces weaving and access points on the freeway; access to adjacent properties is not permitted.

3.2.1 IH 30 Canyon

From Phase 1, one build alternative for the IH 30 Canyon area was recommended for further evaluation in Phase 2. The following highlights the major design elements of the alternative.

<u>Alternative C-1</u>

- Meets desirable design standards for mainlane and HOV/M lane 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 elongated 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
- Allows for urban design elements such as the future inclusion of a deck structure(s) over IH 30 and Convention Center expansion

3.2.2 IH 30/IH 35E Mixmaster

Two alternatives in the IH 30/IH 35E Mixmaster area were recommended for further evaluation in Phase 2. The following highlights the major design elements of each alternative.

Alternative M-1

- Meets design standards for lane and shoulder widths, with exception of the HOV/M lane shoulders
- 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/M access to Commerce Street instead of Houston/Jefferson
- Improved access to Cadiz
- Includes IH 35E and IH 30 C-D roads over Trinity River to help maintain local access
- Access provided to Colorado Boulevard
- Utilizes the existing IH 35E Northbound Flyover Bridge

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/M access to Commerce Street instead of Houston/Jefferson
- Includes IH 35E and IH 30 C-D roads over Trinity River to help maintain local access
- Improved access to Cadiz and Beckley Streets

3.2.3 IH 35E Lower Stemmons

From Phase 1, one build alternative for the IH 35E from Commerce to Oak Lawn and one alternative from Oak Lawn to Empire Central were recommended for further evaluation in Phase 2. The following highlights the major design elements of the alternative.

Alternative S-1 (from Commerce to Oak Lawn)

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

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

- At-grade, two-lane reversible HOV/M with connections to frontage roads and mainlanes from SH 183
- At-grade, two-lane reversible HOV/M with connections to frontage roads and mainlanes from IH 35E, south

- Improves route continuity for northbound IH 35E by placing SH 183 merge/diverge lanes on right side
- Eliminates the 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 roads through the IH 30 Canyon provide circuitous access to downtown due to the different sets of travel lanes and less direct access to adjacent properties due to a lack of continuous frontage roads.
- Alternative C-1: ++
  This alternative would improve access and movements to adjacent properties by providing continuous frontage roads and provide better access to and from IH 35E and IH 45 by simplifying the routing between freeways. Overall this alternative would provide more driver-friendly routing and access through the IH 30 Canyon due to its simplified mainlane and ramp configuration.

Weaving

- No-Build: O
  The existing freeway does have some weaving problems due to left-hand entrances and exits.
- Alternative C-1: +
  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 on the mainlanes between ramps and a possible weaving issue on frontage roads. The mainlane weaving areas occur in both directions on IH 30 between Akard and Ervay Streets. The potential frontage road weaving issue occurs on the westbound frontage road as it approaches Griffin Street. An option of braided ramps has been studied as well as the option of increasing the weaving distance in these areas. Both options would require the removal of the Harwood Bridge but would not eliminate the weaving area on the frontage road. These two options are still in the refinement stage of the project. Further refinement of this 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/M lane, and no continuous frontage/surface streets.
- Alternative C-1: +
  This alternative would improve the V/C ratio and average between 0.72 and 0.85. This alternative includes six mainlanes in each direction, a one-lane reversible HOV/M, and continuous two to three lane frontage roads. This alternative would increase the capacity of the existing freeway by approximately 55%.

Peak Hour Level of Service

- No-Build: --
  Under the No-Build condition, the existing freeway is estimated to operate at severe LOS F (stop-and-go with no maneuverability) in 2026.
- Alternative C-1: +
  This alternative would improve the LOS on the mainlanes with the introduction of the additional mainlanes, an HOV/M lane and continuous frontage/surface roads. The peak hour LOS would still be F in the design year. Travel speeds would be below posted limits but the freeway traffic would move at a more constant speed, rather than stop-and-go conditions and peak hour traffic would not last as long. Peak hour LOS would be greatly improved over the No-Build condition because of the increased capacity, elimination of the left-hand entrance and exits, and improved geometry.

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 this alternative may improve the weaving/storage distance from ramps to cross-streets. No design exceptions or waivers are anticipated but further analysis is needed during schematic development.

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 limited, ramp tunnel/cut and cover. No design

exceptions or waivers are anticipated. All bridges across the freeway would be replaced except for Cadiz and St. Paul. 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.

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 approximately two acres of right-of-way from four parcels. No right-of-way from Old City Park or Farmers Market would be needed. Potentially two 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 (than existing) would be needed in the future 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 to the city (for Old City Park and Farmers Market expansion) or another interested party.

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 is 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 four off-ramps. This alternative allows for the inclusion of a city-developed trail along the south right-of way and freeway deck(s) near Old City Park/Farmers Market, City Hall, and the Convention Center. This trail and deck could increase and encourage pedestrian access in the corridor and help link the north and south sides of 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 closer to the Weisfeld building, which is eligible for listing on National Register of Historic Places. 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 freeway decking 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 to the city for Old City Park and Farmers Market or to another interested party.

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.

Right-of-Way Costs

- No-Build: ++
  No improvements would be made; therefore, no additional right-of-way would be needed.
- Alternative C-1: O
  This right-of-way for this alternative is estimated to cost between $2 and $3 million.

Cost Effectiveness

- No-Build: ++
  The CE for this alternative 0.43, based on an annualized maintenance cost of $2.1 million a year and an annualized peak hour capacity of 4.8 million trips.
- Alternative C-1: +
  The CE for this alternative 0.94, based on an annualized construction and maintenance cost of $7.1 million a year and an annualized peak hour capacity of 7.5 million trips.

4.2 IH 30/IH 35E Mixmaster Alternatives

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, from eastbound IH 30 to southbound IH 35E, from southbound IH 35E to westbound IH 30, and eastbound IH 30 to northbound IH 35E. An extensive system of added frontage and C-D roads are used to provide access to local streets. The frontage road system interconnects in four of the eight directions.
- Alternative M-2: O
  This alternative includes direct connectors from northbound IH 35E to westbound IH 30 and from eastbound IH 30 to southbound IH 35E, from southbound IH 35E to westbound IH 30, and eastbound IH 30 to northbound IH 35E. The frontage road system interconnects in only two of the eight directions, which results in less access to local streets from all of the freeways compared with Alternative M-1. Local access is more restrictive than Alternative M-1 because of geometric constraints. However, this alternative provides more direct access between the freeways with less weaving. This alternative does not provide access to Colorado from southbound IH 35E.

Weaving

- No-Build: --
  The existing interchange has numerous major weaving areas on mainlanes. Currently, drivers must change lanes to stay on the same freeway and there are several left-hand merges and diverges.
- Alternative M-1: ++
  This alternative would eliminate the existing weaving issues created by the left-hand entrance and exit ramps and would not force drivers to change lanes to stay on the same freeway. However, it would introduce several non-major weaving areas: two on the mainlanes, one on the C-D roads, and five on the frontage roads. The mainlane weaving areas include one on southbound IH 35E as it crosses the Trinity River and one on northbound IH 35E between Reunion and Commerce. Other weaving areas occur on the eastbound IH 30 C-D road as it passes beneath the viaducts and at various locations on the frontage roads. During Phase 2, three of the weaving areas were redesigned and lengthened. Further refinement of this alternative and analysis of traffic may further 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 and would not force drivers to change lanes to stay on the same freeway. However, it would introduce several non-major weaving areas: two on the mainlanes, one on the C-D roads, and three on the frontage roads. The mainlane weaving areas include one on northbound IH 35E between Reunion and Commerce (as in M-1) and one on westbound IH 30 as it crosses the Trinity River. Other weaving

areas occur on the eastbound IH 30 C-D road west of Hotel Street and at various locations on the frontage roads. Further refinement of this 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/M lane on IH 35E, and a two-lane frontage road by Reunion Arena. There are no continuous frontage/surface streets.
- Alternative M-1: ++
  This alternative would improve the V/C ratio and average between 0.60 and 0.65 on dedicated IH 30 and IH 35E mainlanes; eastbound IH 30 would have two lanes, westbound IH 30 would have three lanes, and IH 35E would have three lanes in each direction. Additionally, this alternative would include a one-lane reversible HOV/M from IH 30, two-lane reversible HOV/M on IH 35E, a three to four-lane C-D road between IH 30 and IH 35E, and several ramps, director connectors, and frontage roads. None of the individual ramps, connectors, or sets of mainlanes exceed a V/C ratio of 1.0. This alternative would double the capacity of the existing freeway.
- Alternative M-2: +
  This alternative would improve the V/C ratio and average between 0.65 and 0.70 on dedicated IH 30 and IH 35E mainlanes; both IH 30 and IH 35E would have three lanes in each direction. This alternative would also include a one-lane reversible HOV/M from IH 30, a two-lane reversible HOV/M on IH 35E, and several ramps, director connectors, and frontage roads. Alternative M-2 has two individual facilities that exceed 1.0 (the direct connector from southbound IH 35E to eastbound IH 30 and the direct connector from westbound IH 30 to northbound IH 35E). This alternative would increase the capacity of the existing freeway by approximately 50%.

Peak Hour Level of Service

- No-Build: --
  Under the No-Build condition, the existing freeway is estimated to operate at severe LOS F in 2026.
- Alternative M-1: +
  This alternative would improve the LOS on the mainlanes with the introduction of the HOV/M lanes and C-D roads. Travel speeds would be below posted limits but the freeway traffic would move at a more constant speed, rather than stop-and-go conditions and peak hour traffic would not last as long. Peak hour LOS would be greatly improved over the No-Build condition because of the increased capacity, elimination of the left-hand entrance and exits, and improved geometry.
- Alternative M-2: +
  This alternative would improve the LOS on the mainlanes with the introduction of the HOV/M lanes and C-D roads. Travel speeds would be below posted limits but the freeway traffic would move at a more constant speed, rather than stop-and-go conditions and peak hour traffic would not last as long. Peak hour LOS would be greatly improved over the No-Build condition because of the increased capacity, elimination of the left-hand entrance and exits, and improved geometry.

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 shoulders. The HOV/M lane has reduced shoulder widths but meets minimum standards. A design exception would be needed for the existing horizontal (curvature) alignments of the IH 30 and IH 35E interchange. No other design exceptions are anticipated but further analysis is needed during schematic development.
- Alternative M-2: +
  This alternative meets design standards for lane widths and shoulders. The HOV/M lane has reduced shoulder widths but meets minimum standards. A design exception would be needed for the existing horizontal (curvature) alignments of the IH 30 and IH 35E interchange. No other design exceptions are anticipated but further analysis is needed during schematic development.

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 and IH 30 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 detouring around existing bridge columns. Bridge columns for the interchanges can be constructed in existing open areas while maintaining existing traffic patterns to minimize disruption. 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 (location) alignment, possibly reducing disruptions as compared to M-1. The proposed frontage and C-D roads along IH 35E and IH 30 could help maintain traffic during construction. Houston/Jefferson area and IH 30 would still have disruptions. Bridge columns for the interchanges can be constructed in existing open areas while maintaining existing traffic patterns to minimize disruption. 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 the Mixmaster to attain vertical clearances may require some storm drain line construction. The depressed exit ramp from

northbound IH 35E to Reunion/Commerce may require a pump system to drain. Culvert extension and/or additional grading may be required within the limits of the interchange to maintain existing drainage patterns.

- Alternative M-2: -
  No major changes in drainage system, although any lowering of IH 30 through the Mixmaster to attain vertical clearances may require some storm drain line construction. The depressed exit ramp from northbound IH 35E to Reunion/Commerce may require a pump system to drain. Culvert extension and/or additional grading may be required within the limits of the interchange to maintain existing drainage patterns.

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: O
  This alternative would require approximately 11 acres of right-of-way from 18 parcels. Potentially 15 structures and three other parking areas would be impacted.
- Alternative M-2: -
  This alternative would require approximately 15 acres of right-of-way from 20 parcels. Potentially 18 structures and two 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.

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 ten off-ramps and eight on-ramps. Access to/from downtown and major employers would be similar to current conditions. HOV/M 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/M system is operational per an agreement with the Texas Historical Commission. Ramp relocations would alter some existing routes to/from Industrial but all properties and developments would remain accessible.
- Alternative M-2: - -
  This alternative includes nine off-ramps and eight on-ramps. Access to/from downtown and major employers would be similar to current conditions. HOV/M 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/M system is operational per an agreement with the Texas Historical Commission. Ramp relocations would alter some existing routes to/from Industrial and Colorado but all properties and developments would remain accessible.

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 and the HOV connection to the Houston Street Viaduct would remain in place.
- 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. The permanent HOV/M connecting to Commerce would remove the connection between the Houston and Jefferson Viaducts per an agreement with the Texas Historical Commission. Additionally, placing the HOV/M 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. The permanent HOV/M connecting to Commerce would remove the connection between the Houston and Jefferson Viaducts per an agreement with the Texas Historical Commission. Additionally, placing the HOV/M 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 improves would be made, therefore, no construction would be would be needed.
- Alternative M-1: O
  This alternative is estimated to cost approximately $238 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 approximately $234 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 improves would be made, therefore, no additional right-of-way would be needed.
- Alternative M-1: -
  This right-of-way for this alternative is estimated to cost between $8 and $10 million.
- Alternative M-2: -
  This right-of-way for this alternative is estimated to cost between $11 and $13 million.

Cost Effectiveness

- No-Build: +
  The CE for this alternative is 0.69, based on an annualized maintenance cost of $4.2 million a year and an annualized peak hour capacity of 6.2 million trips.
- Alternative M-1: O
  The CE for this alternative is 1.70, based on an annualized construction and maintenance cost of $21.2 million a year and an annualized peak hour capacity of 12.4 million trips.
- Alternative M-2: -
  The CE for this alternative is 2.28, based on an annualized construction and maintenance cost of $21.1 million a year and an annualized peak hour capacity of 9.3 million trips.

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 IH 35E from both the DNT and Woodall Rodgers would be improved. Access from southbound DNT to both east and westbound, and from eastbound Woodall to northbound DNT are included in the design. Access from westbound Woodall Rodgers to northbound DNT is not included because of geometric and right-of-way constraints. Additionally, this minor connection/movement would only serve 3800 vehicles per day in 2026. Westbound Woodall Rodgers traffic could access northbound DNT via McKinnon Street.
- Alternative S-2C (Oak Lawn to Empire Central): ++
  All current critical movements would be served and the HOV/M ramps would provide additional access at major commuter destinations. Improvements are made to the IH 35E/SH 183 interchange and access to the proposed Trinity Parkway is provided.

Weaving

- No-Build: --
  From Commerce to Oak Lawn, there are two severe weaving areas on the mainlanes between the DNT and Woodall Rodgers. From Oak Lawn to SH 183, there are seven mainlane weave sections with LOS deficiencies.
- Alternative S-1 (Commerce to Oak Lawn): ++
  This alternative would grade-separate the ramps to/from the DNT and Woodall Rodgers, eliminating the severe weaving condition on the mainlanes. However, three minor weaving areas would be introduced, one less severe weaving area on the mainlanes and two on the frontage roads. The mainlane weaving area would be on the southbound mainlanes between Woodall Rodgers and the railroad bridge. The other weaving areas would be on the northbound frontage road between the ramp from eastbound

Woodall Rodgers and the diverge to the C-D road, and on the southbound frontage road between the DNT exit ramp and the on-ramp to IH 35E.

- Alternative S-2C (Oak Lawn to Empire Central): +
  This alternative retains the same number of mainlane-weave sections between ramps as does the existing facility, but the length of the weaving areas would optimally exceed the lengths provided today. The mainlane weave areas on northbound IH 35E would be near Market Center Boulevard, Motor, and Inwood Streets, as well as between the Trinity Parkway off-ramp and the Empire Central exit. The mainlane weave areas on southbound IH 35E would be between Commonwealth and Inwood, near Motor Street, and near Market Center Boulevard. The proposed design utilizes auxiliary lanes between on-ramp/off-ramp combinations to facilitate operations in freeway weave areas. The termination of the two HOV/M facilities does introduce two morning-only weaving maneuvers and two afternoon-only weaving maneuvers, but these are less severe merging areas compared to the weaving areas between mainlane ramps.

Volume to Capacity Ratio

- No-Build: --
  Under the No-Build condition, the V/C ratio would not be improved. The average V/C ration 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 0.75 and 0.80. This alternative would provide four to six lanes in each direction on IH 35E with two-lane reversible HOV/M in the center, three to four-lane C-D roads on both sides, and continuous two-lane frontage roads in both northbound and southbound directions. This alternative would increase the capacity of the existing freeway over 55%.
- Alternative S-2C (Oak Lawn to Empire Central): +
  This alternative would improve the V/C ratio and average between 0.75 and 0.85. This alternative would provide six lanes in each direction on IH 35E, a two-lane reversible HOV/M, and two continuous two-lane frontage roads. This alternative would increase the capacity of the existing freeway over 30%.

Peak Hour Level of Service

- No-Build: --
  Under the No-Build condition, the existing freeway is estimated to operate at severe LOS F in 2026.
- Alternative S-1 (Commerce to Oak Lawn): +
  This alternative would improve the LOS on the mainlanes with the introduction of the HOV/M lanes and C-D and frontage roads. Travel speeds would be below posted limits but the freeway traffic would move at a more constant speed, rather than stop-and-go conditions and peak hour traffic would not last as long. Peak hour LOS would be greatly improved over the No-Build condition because of the increased capacity, improvement and relocation of ramps, reduction of the number of weaving areas, and improved geometry.

- Alternative S-2C (Oak Lawn to Empire Central): +
  This alternative would improve the LOS on the mainlanes with the introduction of the HOV/M lanes. The improved ramp layouts, two-lane ramps, and use of auxiliary lanes would all contribute to improved peak-hour LOS versus the No-Build alternative. Travel speeds would be below posted limits but the freeway traffic would move at a more constant speed, rather than stop-and-go conditions and peak hour traffic would not last as long. Peak hour LOS would be greatly improved over the No-Build condition because of the increased capacity, improvement and relocation of ramps, and improved geometry. The reconfigured Commonwealth interchange would significantly increase capacity and improve LOS at this location.

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 but a design exception will be needed for existing horizontal alignment. No other design exceptions are anticipated but further analysis is needed during schematic development. The proposed HOV/M lanes do not meet desirable design standards for shoulder widths, but do meet minimum standards.
- Alternative S-2C (Oak Lawn to Empire Central): +
  No design exceptions are anticipated but further analysis is needed during schematic development. Some design elements may meet minimum rather than desirable standards in order to minimize the need for additional right-of-way. The proposed HOV/M lanes would not meet desirable design standards for shoulder widths, but do meet minimum standards.

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 would be replaced except for the bridge of an abandoned railroad spur between Continental and Hi Line. The operations of UP RR must be maintained during construction, specifically adjacent to the retaining wall on the east side. The narrow right-of-way width would limit and complicate construction detours. However, the C-D and frontage roads are located adjacent to existing IH 35E and can be constructed initially and then used for traffic while the mainlanes are reconstructed.
- Alternative S-2C (Oak Lawn to Empire Central): O
  Normal construction techniques would be used. All bridges crossing the freeway would be replaced. The addition of HOV/M and general-purpose lanes and relocation of some frontage roads offers the expectation of managed lane reductions during construction.

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-2C (Oak Lawn to Empire Central): O
  No significant drainage or utility issues as a result of the new construction. Sufficient capacity exists for expected 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 six parcels and require approximately 1.6 acres of additional right-of-way. Potentially, three structures (two buildings and one parking garage) and two other parking areas would be impacted. The parking garage is associated with the Dallas County Halfway House.
- Alternative S-2C (Oak Lawn to Empire Central): O:
  The total right-of-way requirement for this section is approximately 14 acres from 74 parcels. Two buildings (Western Warehouse & Justin Boots) would have to be removed, and the following buildings may have impacts: DuPont Flooring (which shares a wall with Justin Boots, but appears to be a separate structure; the ADP building (between Embassy Suites & Homewood Suites on the southbound frontage road) would be about nine feet behind the back of curb of the southbound frontage road. The northbound frontage road between Inwood and Commonwealth would be moved out (away from the mainlanes) and thus be closer to the buildings in this area (in the vicinity of Gonzalez Funeral Home) but it does not appear that any buildings would have to be removed. In several locations (approximately 13), additional right-of-way would impact the parking for existing buildings.

Change in Accessibility to Adjacent Properties and Developments

- No-Build: O
  Congestion levels in future years would affect adjacent properties and activity centers in the vicinity. From Commerce to Oak Lawn there are 13 on and off-ramps ramps. From Oak Lawn to SH 183, the freeway currently has 29 on and off-ramps.
- Alternative S-1 (Commerce to Oak Lawn): O
  This alternative would include eight on-ramps and seven off-ramps. 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-2C (Oak Lawn to Empire Central): O
  Under this alternative, the total number of ramps would be reduced to 27 (which includes 4 new HOV/M-to/from frontage road ramps). The total number of general-purpose ramps would be reduced from 29 to 23. Ramps eliminated include a northbound off-ramp to Market Center, and on-off ramp pair between IH 35E (south) and Motor Street. Three existing ramps are also eliminated between Commonwealth Boulevard and Mockingbird Lane, primarily due to the proposed Trinity Parkway Interchange. These are the northbound off-ramp to Mockingbird, the southbound on ramp to SH 183 from Mockingbird, and the southbound exit from IH 35E to Commonwealth Boulevard. The two Mockingbird/IH 35E (south) movements would be served by off and on-ramps just south of Commonwealth. The Mockingbird traffic would bypass the Commonwealth interchange. The following is a brief summary of the ramp changes:

  IH 35E Interchanges
  a. Oak Lawn-Market Center-- Add HOV/M "wishbone ramps" northbound exit and southbound entrance ramps, eliminate direct northbound exit to Market Center.
  b. Market Center-Wycliff-- Reversal of both northbound and southbound ramps (to southbound entrance & northbound exit)
  c. Wycliff-Motor-- Remove northbound exit to Motor and southbound entrance from Motor Street
  d. Motor-Inwood-- No changes northbound; reverse southbound entrance & exit ramps
  e. Inwood-Commonwealth-- northbound reverse entrance and exit ramps; southbound, no changes. HOV/M Wishbone northbound entrance and southbound exit ramps added
  f. Commonwealth-Mockingbird-- Remove northbound Mockingbird exit (access still provided with Commonwealth exit ramp). Remove southbound exit to Commonwealth (precluded by SH 183/IH 35E merge).
  g. Mockingbird-Empire Central-- Reverse northbound entrance and exit ramps. Southbound exit to Mockingbird would come off the Trinity Parkway ramp (braided over southbound entrance from Empire Central).

  SH 183 Interchanges
  a. Commonwealth-Mockingbird-- Southbound entrance & exit ramps removed due to conflict with SH 183/IH 35E merge.
  b. Mockingbird-Empire Central-- Westbound exit to Empire Central removed; eastbound entrance from Empire Central removed (both due to conflicts with the HOV/M, SH 183, and Trinity Parkway merge).

<u>Effects to Sensitive Areas</u>

- 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 approximately 0.67 acres of 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. Additionally, a pedestrian tunnel would replace the bridge of the abandoned railroad spur between Continental and Hi Line. This tunnel would provide access from the design district to the DART station at the American Airlines Center. It would also allow the vertical profile of the mainlanes to be reduced by approximately 10 feet.

- Alternative S-2C (Oak Lawn to Empire Central): -
  This alternative could increase noise levels at Pegasus Park because the roadway would be closer to the park. The elevated Commonwealth alignment and ramp structure may also visually impact Pegasus Park. The DuPont Flooring appears to be eligible for listing on the National Register of Historic Places. Justin Boots, which may share a common wall but appears to be a separate structure from the DuPont building would be removed. The HOV/M 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 approximately $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.
- Alternative S-2C (Oak Lawn to SH 183 - Commonwealth Bypass): -
  This alternative is estimated to cost approximately $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. 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 improves would be made, therefore, no additional right-of-way would be needed.
- Alternative S-1 (Commerce to Oak Lawn): O
  This right-of-way for this alternative is estimated to cost between $2 and $3 million.
- Alternative S-2C (Oak Lawn to Empire Central): -
  This right-of-way for this alternative is estimated to cost approximately $11 million for 14 acres of property. Existing uses affected include businesses, parking, and some billboards.

Cost Effectiveness

- No-Build: +
  The CE for the IH 35E from Commerce to Oak Lawn is 0.38, based on an annualized maintenance cost of $2.5 million a year and an annualized peak hour capacity of 6.5 million trips. The CE for the IH 35E from Oak Lawn to Empire Central is 1.06, based on an annualized maintenance cost of $6.1 million a year and an annualized peak hour capacity of 5.7 million trips.
- Alternative S-1 (Commerce to Oak Lawn): +
  The CE for this alternative 1.00, based on an annualized construction and maintenance cost of $10.3 million a year and an annualized peak hour capacity of 10.3 million trips.
- Alternative S-2C (Oak Lawn to Empire Central): --
  The CE for this alternative 2.97, based on an annualized construction and maintenance cost of $22.6 million a year and an annualized peak hour capacity of 7.6 million trips.

5.0 PUBLIC COMMENTS

Two public meetings were held on January 28th and 30th to solicit public input and comment on the Phase 2 alternatives and evaluation. The follow lists the comments regarding the design that were received:

- Include opportunities for urban design
- Minimize right-of-way impacts
- Harwood Street bridge should not been eliminated
- Improve intersections with cross street by including right-turn lanes
- Include better signage

6.0 AGENCY COMMENTS

The Phase 2 refined alternative drawings and draft technical memorandum were sent to the Federal Highway Administration, Dallas County, DART, NTTA, City of Dallas, and TTI for review. Table 2 lists the agency comments received and responses.

Table 2. Agency Comments

Comment	Response
Federal Highway Administration	
1. Page 4, Table 1, Comment 3 – The last sentence in the response section is not quite correct. The FHWA Texas Division can review and approve or disapprove variances to the Interstate standards. FHWA Washington must approve all new access points (including HOV/M lane access from the Interstate mainlanes) and reconfigured interchanges on the Interstate. If this project adjusts the location of existing ramps or reverses them, the Division Office can approve/disapprove these also.	The last sentence has been revised to read, "Any variance from these set design standards will require extensive justification and be subject to non-approval by FHWA." Another sentence was also added to clarify the approval needed for changes in access, "Additionally, FHWA must approve all new access points (including HOV/M lane access from the Interstate mainlanes) and reconfigured interchanges on the Interstate."
2. Page 12, Part 4.1.3, Right of Way Requirements, second bullet – Please clarify if right of way will be needed from the Farmers Market and Old City Park	No right-of-way would be needed from these two areas. The text has been revised.

Comment	Response
3. Page 23, Effects to Sensitive Areas a. Second bullet – Do we know at this time if the right of way taking from Stemmons Park can be processed as a programmatic Section 4(f) b. Third bullet – The increased noise levels and visual impact on Pegasus Park may be constructive use impacts that would require a Section 4(f) evaluation.	At this time, it does not appear the right-of-way impact to Stemmons Park could be processed as a Programmatic Section 4(f) because the amount of right-of-way needed is greater than 10% of the park acreage. During the EA, the potential noise and visual impacts will be assessed to determine if there is constructive use of all the parks located along the corridor.
Dallas County	
1. In the Canyon, Dallas County would prefer the braided alternative.	Comment noted. However, upon further traffic analysis, the braided ramp would create a difficult weave between traffic coming from IH 45 and traffic exiting to Griffin/Lamar. It would also greatly reduce the weaving distance from the South Central/Harwood on ramp to IH 30; traffic would be force to weave over four lanes in about 1000 feet to stay on IH 30. Based on subsequent meetings with the City of Dallas staff, TTI, TxDOT, and the consultant team, the preferred solution is to keep the Harwood bridge in place and operational, such that the westbound on-ramp from Harwood to westbound IH 30 will need to be one-lane as opposed to an optimum two lane ramp.
2. In Alternative M-2, IH 35E northbound going to IH 30 east, it appears that the ramp has only one lane. Currently there are two lanes, so there is concern as to the backup that might cause. Would it be possible to at least keep it at two lanes?	Comment noted. Alternative M-2 is not being recommended as the preferred alternative for the Mixmaster.
3. In the Mixmaster, from Commerce, going IH 35E east onto the HOV lane, there appears to be only 600 feet or so to weave over two lanes, it that correct? It looks a bit tight.	This item was reviewed during the March 2003 Value Engineering (VE) Study. The HOV connections have been revised and simplified thereby improving or eliminating weaving areas.
DART	
1. Further vertical information and column locations will be needed at all rail crossings to verify that minimum horizontal and vertical clearances are met.	Comment noted.
2. It would be helpful to provide TRE/DART Right-of-Way information on schematic and indicate where construction is planned within this right-of-way.	Existing and proposed right-of-way lines have been added to the drawings.
3. Show existing rail along IH 35 and the American Airlines Arena and where it crosses the DNT on/off ramps. Proposed rail information in this area may be obtained through DART and ACT21, upon written request.	The existing rail alignment along IH 35E will be added.
4. It appears that the DNT on/off ramps are to be constructed very close to the existing TRE tracks. Can the DNT on-ramp gain enough elevation in the length shown to clear these tracks?	Ramps to/from the DNT are designed with the required 26-foot of vertical clearance over the TRE and DART LRT.
5. As you may already know, the DNT on/off ramps will require coordination between DART, NTTA and TxDOT.	Comment noted.
NTTA	
1. The current Parkway plans for having indirect connections to IH 35E should still be able to be maintained. The eastbound to southbound connection, which is essentially a frontage road extending from Jefferson into the southbound IH 35E frontage, can still be implemented without modification. The northbound IH 35E movement to westbound Trinity movement will require some modification to work for Pegasus Alternative M-1. The IH 35E ramp will likely have to come off the northbound IH 35E exit to Industrial.	This is an item that will be further evaluated during schematic design based on the new traffic data from NCTCOG. Any modification to ramping will have to be evaluated based on more detailed traffic analysis and the selection of the preferred alternative for the Trinity Parkway.

Comment	Response
2. The Pegasus Alternative M-2 will be problematic because it shifts the southbound IH 35E collector/distributor road about 400 feet west. This could inhibit the possibility of connecting into Jefferson Boulevard due to lack of vertical clearance from the Trinity/IH 35E ramp to get under the southbound IH 35E collector/distributor road before coming up to meet the Jefferson bridge.	Comment noted. Alternative M-2 is not being recommended as the preferred alternative for the Mixmaster.
City of Dallas	
1. Alternative C-1	
a. The Harwood Street bridge provides a vital vehicle/pedestrian link between the Farmer's Market and Old City Park, and on a larger scale, the Cedars District and the Central Business District. The City of Dallas desires to maintain this connection. We are fully cognizant of the poor weaving level of service on westbound IH 30; however, we prefer to explore options to improve the weave and retain the Harwood Street bridge over the Canyon in place.	1.a. Based on subsequent meetings with the City of Dallas staff, TTI, TxDOT, and the consultant team, the Harwood bridge will remain. The westbound on-ramp from Harwood to westbound IH 30 will be condensed to one-lane.
b. The City of Dallas desires to preserve the option to "deck" over the Canyon mainlanes between Central Expressway and Harwood Street, and between Ervay Street and Akard Street. Similarly, we desire to preserve the option to expand the Convention Center over the Canyon between Griffin Street and the railroad tracks located to the west of Lamar Street. At the appropriate time, it would be beneficial if the City's structural design representatives could meet with TxDOT's structural design representatives to discuss retaining wall and median bents/columns design requirements necessary to preserve future "decking" projects.	1.b. Comment noted.
c. Based on the current alternative with the Harwood street bridge in place, the City of Dallas desires U-turns for the eastbound to westbound IH 30 Service Road at Harwood Street and the westbound to eastbound IH 30 service Road at Ervay Street movements.	1.c. Comment noted. These U-turns will be added during schematic development.
d. As discussed previously with your staff, access to westbound IH 30 from the Harwood Street entrance appears very restricted due to the limited weaving distance.	1.d See response to comment 1.a.
2. Alternative M-1 and M-2	
a. It was our understanding that Alternative M-2 had already been deleted from consideration. Regardless, based on the reduced right-of-way impacts to businesses within the Mixmaster/lower Industrial Boulevard area as well as the greater vehicle access to this area, we recommend only Alternative M-1 continue forward for further refinement. It was also clear from the Community Workshop meetings that the community supported Alternative M-1 over Alternative M-2 as well.	2.a. Both Alternatives M-1 and M-2 were selected for evaluation in Phase 2. This requires both alternatives to be developed to the same level and evaluated prior to elimination. Based on the Phase 2 evaluation and comments from the public and agencies, only Alternative M-1 has been recommended for further development in the schematic phase.
b. The City of Dallas desires to provide IH 30 entrance/exit ramps at Beckley Avenue. Funding has been proposed in our next bond program for a feasibility study regarding the Beckley ramps.	2.b. Comment noted –see Table 1 Issues and Concerns/Response number 4.
c. Per citizen comments at previous Community Work Group meetings, realign the southbound IH 35E entrance ramp from Industrial Boulevard and tighten the radius in order to maximize the usability of the remaining property located northeast of the Jefferson Boulevard Viaduct and Industrial Boulevard.	2.c. This change has been made to the design.

Comment	Response
d. As previously discussed with your staff, there does not appear to be adequate weaving distance between motorists exiting to Griffin Street from IH 35E north/IH 30 west and those motorists coming from IH 35E south to IH 30 east.	2.d. This item was reviewed during the March 2003 VE Study. The design has been revised. The northbound IH 35E/eastbound IH 30 C-D road has been reduced to two-lanes so the one-lane ramp from southbound IH 35E/eastbound IH 30 C-D road has its own lane.
3. Alternative S-1 a. The schematics need to depict the proposed bicycle/pedestrian connection under Stemmons Freeway between the Design District and the DART platform adjacent American Airlines Arena. b. We believe the proposed deletion of the westbound Woodall Rodgers to northbound Dallas North Tollway movement needs further review. We will reserve comment on this issue until after the Texas Transportation Institute completes their study and our City Council has been briefed. Another movement not allowed under the current design alternative is the westbound Woodall Rodgers Freeway to Oak Lawn Avenue movement. The proposed deletion of this movement needs further study as well. c. The City of Dallas desires a U-turn for the southbound to northbound IH 35E service road at Continental Avenue movement. d. Please explore that whether or not grade separating the northbound IH 35E service road at Hi Line Drive is feasible. It appears the right of way widens at Hi Line Drive and there maybe an opportunity to grade separate the service road. Service road ramps to and from Hi Line Drive could then be provided.	3.a. Comment noted. The proposed connection will be shown on the schematic. 3.b. Comment noted. This item was reviewed during the March 2003 VE Study. A conceptual design was developed but is not geometrically feasible. The design would greatly reduce needed weaving areas for higher volume movements and would not meet vertical design standards. 3.c. Comment noted. This U-turn will be added during schematic development. 3.d. The northbound frontage is under the parallel, northbound C-D at Hi Line. There is not adequate horizontal distance to provide a ramp from the elevated C-D down to Hi Line Road. As an absolute minimum, a ramp is 26 feet wide (14 foot travel lane, 10 foot outside shoulder, 2 inside shoulder). Additionally, the minimum distance between ramp intersections is 800 feet from gore to gore. In the current design, there is only 740 feet from Hi Line Road to the gore of the C-D road as it diverges to allow traffic from downtown and eastbound Woodall Rodgers onto northbound IH 35E. This gore would have to be moved further south and would greatly impact/ reduce the length of the weaving area on the C-D. The projected traffic volumes at Hi Line are low and do not warrant a grade separation nor direct/independent ramps.
4. Alternative S-2C a. Motor Street is a primary emergency route leading to Parkland Hospital and Children's medical Center. It is critical that either a northbound Stemmons Freeway exit ramp to Motor Street or a northbound Service Road bypass lane over Wycliff Avenue be provided. b. The proposed freeway ramp changes/deletions for Market Center Blvd. and Wycliff Avenue will have a significant impact on traffic patterns and access to this area. We recommend TxDOT contact key property owners in this area and advise/consult with them on the changes currently being proposed. If the westbound Woodall Rodgers to Oak Lawn Avenue movement cannot be restored, these same property owners also need to be advised/consulted with. c. It appears a southbound exit ramp from SH 183 to Commonwealth Drive can be provided. If so, the City of Dallas desires to have this movement restored.	4.a. Comment noted. This ramp has been braided with a new exit to Motor (the exit to Wycliff was moved north, Wycliff is now accessed by the new Market Center ramp) and an auxiliary lane has been added, providing a 1,850' weave distance before the exit to Inwood. 4.b. Comment noted. Property owners and tenants were contacted in November – December 2001. A meeting was held February 28, 2003, with the Stemmons Corridor Business Association to obtain comments on the proposed design, with follow-up meetings planned. 4.c. Comment noted. This item was reviewed during the March 2003 VE Study. Although there is physically enough room to insert a ramp in this location, major impacts to adjacent properties would occur, resulting in the acquisition of several buildings. Due to the low traffic volume projected to use this ramp and additional cost due to displacements, it was not justified.

Comment	Response
d. The City of Dallas desires a U-turn for the northbound to southbound IH 35E Service Road at Mockingbird Lane movement.	4.d. Comment noted. This is an item that will be further evaluated during the schematic design.
General Comments	
5. The City of Dallas is very interested in the urban design opportunities Project Pegasus will provide. We look forward to work with your staff over the upcoming months to brainstorm on urban design themes, as well as funding opportunities.	5. Comment noted.
6. One urban design opportunity brought up by TxDOT was possibly opening up Mill Creek. The City of Dallas desires that part of the urban design work being done during the schematic phase will include conceptual type renderings of Mill Creek.	6. Comment noted. TxDOT has suggested the city may want to consider opening Old Mill Creek outside TxDOT right-of-way. Within TxDOT right-of-way, Old Mill Creek is in a large drainage structure under IH 30. TxDOT does not propose opening the drainage structure to allow open flow within the freeway right-of-way. TxDOT will be preparing conceptual urban designs with freeway right-of-way only. Our understanding is that the Mill Creek floodplain/hydraulics are currently under study by the City of Dallas and that no conclusion or recommendations have been made on which to base/produce urban design scenarios.
7. It would be beneficial as far as raising the awareness of the urban design opportunities Project Pegasus could possibly provide if your staff could provide an urban design presentation (similar to the presentation at the December Community Work Group meeting) to the City's Transportation Committee in the near future.	7. Comment noted. Please coordinate/schedule the presentation with TxDOT.
8. Please provide a minimum of 10' sidewalks on all freeway cross-streets.	8. Comment noted. Sidewalks will be shown on the schematic.
9. Please use the attached Thoroughfare Plan for guidance regarding cross street cross-sections along the Stemmons corridor. (Please note that a Thoroughfare Plan amendment has recently been processed to upgrade Motor Street from a four lane divided designation to a six lane divided roadway.)	9. Comment noted. The thoroughfare plan will be reviewed and the proposed cross sections accommodated.
10. Transportation studies for the Cedars District (area just south of the Canyon) and the Dallas Central Business District are ongoing at this time. It is very likely that some of the recommendations from these studies will affect the cross-street cross-sections throughout the Canyon area. Pending the outcome of these studies, City staff will provide further guidance on the Canyon cross-street cross-sections.	10. Comment noted. Please keep TxDOT informed on the progress and findings of these studies.
11. At all two-way cross-streets, the City of Dallas would like side-by-side left turn lanes with advance left turn pockets provided.	11. Comment noted. This request will be evaluated during the schematic based on traffic analysis/demand and availability of right-of-way.
12. At all cross-streets identified as bicycle routes on the information previously provided to your staff please provide a minimum of 14 foot outside lanes widths.	12. Comment noted. Typical TxDOT design standards require 12 foot lanes and 2 foot curb offset which would provide a 14 foot outside lane.
Texas Transportation Institute (TTI)	
1. Alternative C westbound	
a. Under all designs, weaving is problematic under the volumes TTI is using, a redistribution of those provided for the MTIS design. The braided ramp westbound is actually not the best design, since it tightens up weaves on both ends. The best design from a weaving standpoint is the one that removes Harwood. However, even it has problems.	1.a. Based on subsequent meetings with the City of Dallas staff, TTI, TxDOT, and the consultant team, the Harwood bridge will remain. The westbound on-ramp from Harwood to westbound IH 30 will be condensed to one-lane.
b. The result will be less traffic accessing the freeway from the Harwood entrance ramp, particularly with a destination on IH 30 west of downtown. This will push more traffic down the frontage	1.b. Comment noted. The suggestion of a C-D road was discussed at a meeting with the city, but it also created other weaving and access issues.

Comment	Response
road system, and traffic analysis of intersection design will be critical. Getting new volumes from NCTCOG is necessary for detailed analysis. A collector/distributor road might be considered in lieu of a couple of main lanes. c. The U-turn lane at Griffin will help mitigate the close spacing of the ramp gore with the signal, allowing potential right turns to take a freer flowing route back into the downtown. A U-turn on Harwood for east bound is also suggested.	1.c. Comment noted. During schematic design, the intersections designs will be analyzed in more detail. The U-turn at Harwood will be added during schematic design.
2. Alternative C eastbound The connection from IH 30 west and IH 35E north to the northbound to eastbound ramp is a problem. It features a left entrance onto a three lane ramp, followed by a left lane drop. This will be a geometric bottleneck and under-serves the projected demand for this connection. Better to make the northbound to eastbound ramp two lanes, and give the connection its own lane. The weaving is still a problem, but at least traffic won't bottleneck at the merge.	2. This item was reviewed during the March 2003 VE Study. The design has been revised to consolidate access to Beckley and Industrial from eastbound IH 30 with one ramp west of the Trinity River.
3. Alternative M HOV: The HOV lane from eastbound IH 30 to northbound IH 35E gets its own lane on M-1 but on S-1 it appears to die on the left. This will be a full lane, and it needs its own lane, at least for some distance. Instead, could the seven lanes section northbound drop one lane at Woodall and one at Continental, similar to the way as it does today?	3. This item was reviewed during the March 2003 VE Study. The HOV/M lane system has been revised and the HOV/M gets it own lane as it enters IH 35E northbound.
4. Alternative S southbound a. The Commonwealth entrance ramp followed by the Inwood exit ramp forms a type A weave. The volumes on these ramps require more distance for weaving.	4.a. This item was reviewed during the March 2003 VE Study. A southbound braided ramp was provided just north of Inwood and south of Pegasus Park. This allows direct access to southbound IH 35E from Commonwealth and to Inwood from IH 35E. This alternative also allows the Commonwealth interchange to be configured as it is today and maintain existing access.
b. An auxiliary lane is needed between the Inwood entrance ramp and the Wycliff Exit ramp.	4.b. An auxiliary lane has been added as suggested with 1240' between painted gores.
c. The two-lane entrance ramp from Wycliff and the exit ramp to Oak Lawn both have high peak hour volumes and the ramping configuration cannot handle all of the traffic. The two-lane entrance ramp from Wycliff also conflicts with the three-lane exit to Woodall Rodgers. Traffic entering from Wycliff must cross a minimum two lanes, which includes the traffic heading to the Woodall Rogers and the Oak Lawn exits, in order to go south on IH 35E. Consider a change to the ramping configuration to accommodate the traffic and to change the merge design of the two-lane Wycliff entrance ramp to an outside taper rather than an inside merge.	4.c. Major changes have been made to the design in this area. A two lane southbound exit ramp has been added to directly serve both Market Center and Oak Lawn (via bypass lane). Wycliff still has a two lane entrance ramp (a taper has been added), but there are no other access points until the Woodall diverge 2500' downstream.
d. Southbound Dallas North Tollway entrance ramp is two lanes, with inside lane forced to merge. Tapering on the outside is better operationally, allowing the inside lane to get its own lane.	4.d. The inside ramp lane from the DNT could be given its own lane, but the merge for the outside ramp lane would have to occur immediately after the ramp gore. The lane taper would need to happen quickly to avoid overlap with the traffic weaving over to take the Continental exit ramp.
e. Similarly, the southbound ramp to Woodall Rodgers has a left lane drop. Better to taper on right.	4.e. As suggested, the lane taper for the C-D road has been moved to the right side in order to improve operations.
f. The Woodall Rogers entrance ramp and the Commerce exit ramp are too close together to accommodate the volumes on these ramps. Changing the ramping configuration from a type A weave to a type B or type C will not completely solve this	4.f. This item was reviewed during the March 2003 VE Study. The design has been revised to show the loop ramp from westbound Woodall Rodgers tying into the southbound frontage road and a bypass ramp added from the frontage road over Commerce. Westbound

Comment	Response
problem but it will help. The problem is also complicated by the westbound IH 30 exit ramp that follows the Commerce exit. Traffic entering from Woodall Rogers has to cross two lanes full of traffic bound for the westbound IH 30 and the Commerce Street exits in order to continue on southbound IH 35E. Detailed analysis is needed.	Woodall Rodgers traffic can access IH 30 and IH 35E without going through a signal.
g. In the southbound direction of IH 35E, there are two sections on the frontages roads where weaving could be a problem. In the first, the IH 35E exit ramp to Inwood Road may be too close to the Inwood Road interchange to allow good traffic flow on the frontage road. In the second, the IH 35E exit to Motor Street is too close to the IH 35E entrance from Inwood Road to provide enough room for this weave. Both of these sections should be reviewed and possibly changed based on a thorough traffic analysis.	4.g. This item was reviewed during the March 2003 VE Study. Both of these sections have been replaced with braided ramps that eliminate weaving problems.
5. Alternative S northbound	
a. The section of northbound IH 35E from the entrance from westbound IH 30 to the exit to Dallas North Tollway and Oak Lawn should be reviewed operationally. The current configuration has three lanes of northbound IH 35E combining with two lanes from westbound IH 30 to form five lanes. The far right lane has a forced merge with the left lane of a two lane entrance from eastbound IH 30 forming a very short six lane section followed closely by three exits (Woodall Rogers, Continental Road, and Dallas North Tollway/Oak Lawn). During the VE study, this configuration should be reconsidered to determine if there is an opportunity for improvement. Problems include northbound IH 35E traffic exiting to Woodall Rogers having to merge across three lanes of traffic from both IH 30 entrance ramps. Again, there is an inside merge on the entrance ramp from IH 35E which would be better as an outside taper.	5.a. This item was reviewed during the March 2003 VE Study. Weave distance on the IH 35E mainlanes was increase by joining the direct connectors from westbound and eastbound IH 30 to enter the northbound IH 35E mainlanes at one location.
b. In the northbound direction, the exit ramp to Dallas North Tollway and Oak Lawn merges with the traffic coming out of downtown area heading north on the Dallas North Tollway or IH 35E. The two-lane ramp exiting to the Dallas North Tollway/Oak Lawn merges in on the left of the two-lane entrance from the downtown area to make a four-lane connector but then the exit to the Dallas North Tollway/Oak Lawn is from the right two lanes. This corresponds to all of the traffic on this connection must weave except for the traffic heading out of downtown going to the Dallas North Tollway or Oak Lawn. This weave section fails and a change in the ramping configuration is recommended.	5.b. The distance provided for this weave is more than 2,200 feet in length. This item was reviewed during the March 2003 VE Study. The design was revised to split the four-lane C-D road to a one-lane ramp to northbound IH 35E and three-lanes to the DNT and Oak Lawn.
c. The two-lane entrance from Wycliff needs a taper design rather than an inside lane merge and the ramp is too close to the Oak Lawn exit ramp for the weave to work properly.	5.c. This ramp has now been braided with a new exit to Motor (the exit to Wycliff was moved north, Wycliff is now accessed by the new Market Center ramp) and an auxiliary lane has been added, providing a 1,850' weave distance before the exit to Inwood.
d. The three-lane section of northbound IH 35E merges with the two-lane entrance from Trinity Parkway to form a five-lane section that is followed closely by an exit to Empire Central. The traffic heading from northbound IH 35E to Empire Central exit must cross two lanes and the traffic from Trinity Parkway not exiting Empire Central. This weaving section appears problematic.	5.d. A braid has been provided here (northbound IH 35E to Empire Central exit ramp under the Trinity Parkway to northbound IH 35E ramp), eliminating the weave but also taking access away from Trinity Parkway traffic wanting to exit to Empire Central. This traffic would instead exit Regal Row and make a U-Turn to get back to Empire Central.

Comment	Response
e. In the northbound direction of IH 35E, there are two sections on the frontage roads where weaving could be a problem. In the first, the IH 35E exit to Inwood Road appears too close to the IH 35E entrance from Motor Street to provide enough room for this weave.	5.e. This item was reviewed during the March 2003 VE Study. A braided ramp has been provided in this area.
f. In the second, the IH 35E exit to Commonwealth is too close to the IH 35E entrance from Inwood Road to provide enough room for this weave. Both of these sections should be reviewed and possibly changed based on a thorough traffic analysis.	5.f. The design has been revised. The northbound on ramp has been eliminated from this location and combined with the proposed northbound IH 35E on ramp north of the TRE Rail Bridge. This on ramp will be two lanes which will split with one lane going to northbound IH 35E and one lane going to westbound SH 183. A westbound SH 183 exit to Mockingbird must be eliminated to accommodate this option, but this design reduces a frontage road weave north of Inwood, eliminates a potential bottleneck-causing weave from Inwood across three lanes to stay on northbound IH 35E (within less than 1200'), and significantly reduces the impacts to local businesses.
The Dallas Plan	
1. Urban Design & Economic Development a. I think a recent discussion noted that the size of the potential deck near the Farmers Market and Old City Park would be reduced in the latest designs of alternatives. I believe that decked area is important to our ability to support economic development on both sides of this roadway – in downtown and in the Cedars. The designs should provide as large an area of decking as possible.	1.a. Comment noted.
b. Changes in design that make it easier to access adjacent properties or districts, or changes that simplify this access, should receive 'credit' for this. For instance, I would rank C-1 as a '++' on this measure (see p. 12).	1.b. Comment noted. Due to the installation of the circulatory surface streets (frontage roads), access in the area via Alternative C-1 will greatly improve over the existing conditions. However, due to the presence of interfering and geometrically constraining cross street and adjacent ramps, the proposed improvements will remain less than ideal.
c. In the Mixmaster evaluation, the M-1 and M-2 alternatives seem to receive '-' on accessibility because there are fewer on- and off-ramps. If the design improves the safety or perceived ease of access because the design is clearer to the user, that should mean an improved ranking on accessibility.	1.c. Comment noted. The alternatives would require motorists to exit further away from their destination and travel along Industrial.
d. The ability to support increased pedestrian and transit access should be considered as part of accessibility on these options. This is mentioned on C-1 but not on the others.	1.d. Comment noted. Text is included on Alternatives S-1 and S-2C. The alternatives for the Mixmaster do not specifically increase pedestrian or transit access.
e. I understand that the projects as they now stand do not include costs for additional urban design amenities. But I do think there should be a more explicit consideration of whether the various alternatives provide the opportunity for enhanced urban design features.	1.e. Comment noted.
2. TXDOT/FHWA Standards In some cases (like on page 4) the text suggests that any change from interstate highway design standards '… will require extensive justification and be subject to non-approval …' In other places (like on page 15), variations from these standards are noted as exceptions that will be needed. And on page 7, the definition terms these as 'desirable' standards. Since this is reconstruction within a developed urban area, I believe we should try to meet the interstate standards wherever possible, but that we should probably recognize that we can (and should) ask for exceptions when those exceptions will have a significant beneficial effect on the design of surrounding business and neighborhood areas. If we need to go to Washington or Austin to explain the reasons for these changes, we	The study team will be preparing an Interstate Access Justification Report to request approval from the FHWA on changes or modifications to access to and from the interstate. Additionally, the study team will be required to prepare a Design Exception Report for situations where we cannot meet design standards. This report will also be sent to the FHWA for approval. The Design Exception Report ensures that the safety of the facility and the traveling public are not compromised. The study team expects several design exceptions because the design cannot be brought to interstate standards in all locations. The Design Exception Report must address the minimum design values, why these values cannot be attained, desirable values, accident history of the facility, alternatives considered and reasons for elimination,

Comment	Response
just need to be prepared to do so. We shouldn't view the interstate standards (used mostly for new freeways in undeveloped areas) as the non-negotiable determinant of these projects' designs.	percentage and total cost between proposed construction costs and costs to attain minimum standards, design conformity with adjacent roadway sections, potential project delay and consequences, and why the design exception is necessary.
3. Safety & 'Redundancy' Recently Michael Morris has emphasized the value of having alternative routes for people to use in the case of emergencies – routes that also provide alternatives during peak congestion periods. I think we should add this factor to the evaluation of alternatives.	Comment noted. This point will be added as part of the Purpose and Need in the Environmental Assessment.
4. Volumes, Capacity and Congestion One of the objectives for this project is to provide capacity for 2026 volumes at a Level of Service F+4 (4 hours per day of LOS F). Yet in the evaluation, the volume of traffic and the hours at LOS F are never stated. These numbers need to be included for all alternatives. This is an important factor for this evaluation and we can't really decide between alternatives without it.	The data is currently not available to cite/discuss the number of hours of delay in 2026; previous hours of delay were used only as a tool and based on the MTIS and 2020 traffic. The number of hours of delay can be misleading since the delay is based on the NCTCOG model and does not include delay occurring due to accidents of incidents. During the schematic design, a detailed corridor-level traffic model will be developed and LOS determined.
5. Misc. The abbreviation "HOV/M" is used repeatedly yet never spelled out. Since most people are familiar with HOV or HOT, but not HOM, this should be explained.	HOV/M is defined on page 1, first bullet.
6. Alternative C-1 I understand that the "Inside the Loop" Committee is trying to develop a means to bring Central Expressway down to grade level on the eastern edge of downtown. How would this design concept affect our Canyon alternatives?	Based on our review, the Inside the Loop Committee is suggesting to lower (in the future) the IH 45/345 overhead structure from Lamar to the north. Generally, this would not affect the design of the Canyon. However, if the proposal to lower IH 45 affected the IH 30/IH 45 interchange or the direct connections, it would have significant impacts on the design of the IH 30 Canyon.
7. Sensitive Areas a. I still don't understand how the use of additional openings under the Houston Street Viaduct affects its historical character. Weren't those intended to be used originally? b. There are a few mentions of structures that may be eligible for listing that may be impacted. However, there are no mentions of structures that are actually designated historic (other than the viaduct). If this project does not impact any other historic structures, that is a point that should be a positive for each of the alternatives. If it does, they should be mentioned and should be given greater consideration than those that are potentially eligible but have never been designated. c. As I read this evaluation, the no build Mixmaster option does not remove that HOV/M connection to Commerce. This should be a '-' ranking, not a '0'. d. Why are alternatives S-1 and S-2C rated as '-'? To me, the negatives of potential impact to structures adjacent to potentially historic structures are at least balanced with the very positive improvements of access to parks and the pedestrian connections between districts and parks, including the Trinity. At the very least, this should be a '0'. e. Where is the discussion about impacts on any natural/environmental areas?	7.a. The Houston Street Viaduct (circa 1911) predates the levees and urban roadways. The openings were originally used for the Trinity River not roadways. 7.b. Under Section 106 requirements and FHWA guidance, buildings that are considered eligible for listing on the National Register of Historic Properties must be treated and protected as if they were listed. 7.c. Comment noted. The rating has been changed as suggested. 7.d. Comment noted. 7.e. Comment noted. The text does include text on environmental issues such as parks, noise, visual impacts, and historic structures. The corridor is urban and lacks natural areas. More specific environmental information will be investigated and documented in the Environmental Assessment for the project.

7.0 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 2 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 3. Tables 4 and 5 show the specific rating for each criterion and summary of effects.

Table 3. Evaluation Summary

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

Based on the evaluation measures and criteria established and the summary contained herein, 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
- IH 35E Lower Stemmons
  - Alternative S-1 between Commerce and Oak Lawn
  - Alternative S-2C between Oak Lawn and Empire Central

Table 4. Phase 2 Refined 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	Right-of-Way Costs	Cost Effectiveness
IH 30 CANYON													
No-Build - No Improvements to Existing Conditions	- -	O	- -	- -	- -	+ +	O	+ +	O	O	+ +	+ +	+ +
Alternative C-1 - 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 split diamond-type interchanges at Griffin/Lamar 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	+

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 4. Phase 2 Refined 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	Right-of-Way Costs	Cost Effectiveness
IH 30/IH 35E MIXMASTER													
No-Build - No Improvements to Existing Conditions	-	- -	- -	- -	- -	+ +	O	+ +	O	-	+ +	+ +	+
Alternative M-1 - 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	-	O
Alternative M-2 - 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	-	-

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 4. Phase 2 Refined 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	Right-of-Way Costs	Cost Effectiveness
IH 35E LOWER STEMMONS													
From Commerce to Oak Lawn													
No-Build - No Improvements to Existing Conditions	O	- -	- -	- -	- -	+ +	O	+ +	O	O	+ +	+ +	+
Alternative S-1 - 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	-	-	O	+
From Oak Lawn to Empire Central													
No-Build - No Improvements to Existing Conditions	O	- -	- -	- -	- -	+ +	O	+ +	O	O	+ +	+ +	+
Alternative S-2C Commonwealth Bypass - 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 5. Phase 2 Refined 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)	Cost Effectiveness (using 2002 dollars)
IH 30 CANYON													
No-Build	Circuitous & less direct	Numerous weaving areas on C-D roads & mainlanes (due to left-hand entrances/exits)	1.10 to 1.30	Severe LOS F (stop-and-go)	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 2 on & 3 off ramps between the freeway & surface streets & 2 on & 2 off ramps between the mainlanes & C-D	Limited opportunities for urban design	$0	$0	0.43
Alternative C-1	Most direct access	2 major weaving areas; no left-hand entrances or exits	0.72 to 0.85 55% increase in capacity from existing	LOS F	Meets Current Standards	Some Disruption	No Change	4 parcels impacting 2 structures & 2 parking areas; would create surplus ROW near Farmers Market & Old City Park; 2 acres needed	Access focused on South Central/Harwood and Griffin/Lamar; 4 on & 4 off ramps	Increased opportunities for urban design, especially with surplus ROW	$76 million	$2 to 3 million	0.94
IH 30/IH 35E MIXMASTER													
No-Build	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 (several movements exceed 1.00)	Severe LOS F (stop-and-go)	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	0.69
Alternative M-1	D-Cs between IH 30 and IH 35E in all directions; more limited access to local streets	No major weaves on mainlanes; 2 non-major weaves on mainlanes, 1 on C-D & 5 on frontage roads; no left-hand entrances or exits	0.60 to 0.65 100% increase in capacity from existing	LOS F	Lane & Shoulder widths meet standards; design exception needed for horizontal alignment	Some Disruption	Some storm drain reconstruction required; extend existing culverts or grading to maintain existing; possible pump system to drain 1 ramp	18 parcels impacting 15 structures & 2 parking areas; 11 acres needed	8 on & 10 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	$240 million	$8 to $10 million	1.70
Alternative M-2	D-Cs between IH 30 and IH 35E in all directions; more limited access to local streets; limited access to Colorado	No major weaves on mainlanes; 2 non-major weaves on mainlanes, 1 on C-D & 3 on frontage roads; no left-hand entrances or exits	0.65 to 0.70 (two DCs exceed 1.00) 50% increase in capacity from existing	LOS F	Lane & Shoulder widths meet standards; design exceptions needed for horizontal alignment	Minor Disruption	Some storm drain reconstruction required; extend existing culverts or grading to maintain existing; possible pump system to drain 1 ramp	20 parcels impacting 18 structures & 2 parking areas; would create surplus ROW near Industrial and Cadiz; 15 acres needed	8 on & 9 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	$235 million	$11 to $13 million	2.28

Table 5. Phase 2 Refined 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)	Cost Effectiveness (using 2002 dollars)
IH 35E LOWER STEMMONS													
From Commerce to Oak Lawn													
No-Build	No Change	2 major weaving areas; left-hand entrance	0.90 to 1.00	Severe LOS F (stop-and-go)	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	0.38
Alternative S-1	All critical movements served	No major weaving areas (1 less severe on mainalanes and 2 on frontage)	0.75 to 0.80 55% increase in capacity from existing	LOS F	Lane & Shoulder widths meet standards; design exception needed for vertical design	Some Disruption	Improves drainage at Continental & Hi Line	6 parcels impacting 2 structures & 1 parking area; 1.6 acres needed	12 on & off ramps	Requires 0.67 acres from ROW from Stemmons Park; possible increase in noise at park	$105 to $110 million	$2 to $3 million	1.00
From Oak Lawn to Empire Central													
No-Build	No Change	7 major weaving areas	1.20 to 1.30	Severe LOS F (stop-and-go)	Does Not Meet Current Standards	No Construction	No Change	None Needed	No change; 29 on & off ramps between Oak Lawn & SH 183	Limited opportunities for urban design	$0	0	1.06
Alternative S-2C Commonwealth Bypass	No major changes	7 less severe weaving areas on mainlanes plus 2 HOV/M transition areas; inside merge at SH 183 eliminated; length of weaving areas exceeds lengths provided today	0.75 to 0.85 30% increase in capacity from existing	High LOS F	Meets Current Standards	Some Disruption	No Change	74 parcels impacting 2 structures & approximately 13 parking areas; 14 acres of ROW needed	23 on & off ramps; 4 HOV/M ramps	Could increase noise levels and visual impact Pegasus Park; increased opportunities for bicycle/pedestrian linkages	$250 million	$11 million	2.97

8.0 SCHEMATIC DESIGN

During schematic design, the study team will continue to develop the alternatives recommended in Section 7.0 to a higher level of detail and incorporate, as appropriate, comments and concerns from the public and study work groups. The following are key concerns raised during the Phase 2 of alternative refinement and which the designers will remain aware of during schematic design:

- Include opportunities for urban design
- Minimize business and right-of-way impacts
- Maximize/lengthen weaving areas between ramps
- Allow for improved access/circulation

9.0 NEXT STEPS

Based on public and agency comment, a combination of alternatives C-1, M-1, S-1, and S-2C are considered the preferred alternative for the design of IH 30 and IH 35E. A design schematic, Environmental Assessment, Interstate Access Justification Report, and Design Exception Report will then be prepared for this alternative. Assuming these documents are reviewed and subsequently approved by both TxDOT Austin and the FHWA, Public Hearings will be conducted to receive additional public input: anticipated for late 2003/early 2004. Project Pegasus is aiming for final (post-Public Hearing) Environmental Approval in mid 2004. After approval, detail construction plans can be developed and right-of-way acquisition started.