

REQUEST FOR DESIGN EXCEPTION

Number 6

County: Dallas
CSJ: 1068-04-126
Project: I-30 Managed Lanes
Highway/ Limits: I-35E to Ballpark Way

Proposed Project

I-30 is currently under reconstruction to widen from a 6 lane freeway to an 8 lane freeway. As part of the project, a wider median than normal was built to add a single reversible barrier separated HOV at a later date. Since the reconstruction of I-30 began, the single reversible HOV lane project has changed into a multilane managed lane (ML) project. The project has been approved as part of FHWA's Value Pricing Pilot Program.

The proposed ML project will add managed lanes in the median of the current construction project. The managed lane project will be constructed with a 4-2R-4 (4 freeway lanes-2 reversible managed lanes-4 freeway lanes) typical section from the Tarrant County Line to the west side of the I-30 Trinity River Bridge. There will also be two wishbones or flyover ramps constructed. One wishbone will be for SH 161 at Belt Line Road and the second will be between Cockrell Hill and Westmoreland.

The project also includes two transitions. One transition widens the Beckley and I-30 Trinity River Bridges, which provides traffic control for the ultimate I-30 signature bridge and provides an extra lane for the managed lane eastbound exit slip ramp. The other transition widens I-30 in Tarrant County, which allows us to transition from a 4-2R-4 section in Dallas County to match the current 3-3 section in Tarrant County.

Another important fact, the I-30 managed lane project is a Transportation Control Measure in the Dallas Fort Worth nonattainment area. This project must open as a managed lane facility with a HOV incentive by July 2007.

Justification

1. What are the minimum design values that cannot be attained?
 - 22' Wide Entrance and Exit Managed Lane (ML) Slip Ramps
 - 2' inside slip ramp shoulder

- 14' slip ramp lane
- 6' outside slip ramp shoulder

2. Why the minimum design values can not be attained?

Minimum design values can not be attained because of the limited pavement width. The plan for the I-30 corridor was to insert at a later date a HOV lane in the median by reducing the inside shoulders to 4 feet. In the managed lane design, we have added an additional managed lane from the Tarrant County Line to Sylvan Avenue and auxiliary lanes at different locations, which prohibit us from achieving several minimum design values.

To meet minimum design values, the overall roadway must be widened by at least 16'. Widening is not an option due to the extra planning, the excessive costs and the extra construction time to implement the widened facility. These costs include but are not limited to additional pavement, reconstruction of new bridges, reconstruction of retaining walls, construction of additional retaining walls, and the acquisition of more Right-of-Way.

3. What are the values that can be attained by the proposed design?

- 17' Slip Ramp Westbound Entrance to ML from Loop 12
 - 4' outside shoulder
 - 11' Lane
 - 2' inside shoulder
- 20' Slip Ramp Eastbound Exit from ML to Loop 12
 - 7' inside shoulder
 - 11' Lane
 - 2' outside
- 28' Slip ramp Westbound Entrance to ML from I-35E
 - 4' outside shoulder
 - 2-11' Lanes
 - 2' inside shoulder
- 17' Slip ramp Eastbound Exit from ML to I-35E
 - 4' inside shoulder
 - 11' Lane
 - 2' outside shoulder
- 32' Slip ramp Eastbound Entrance to ML from Tarrant County
 - 2' inside shoulder
 - 2-11' Lanes
 - 8' outside shoulder
- 32' Slip Ramp Westbound Exit from ML to Tarrant County
 - 2' inside shoulder
 - 2-11' Lanes
 - 8' outside shoulder

4. Summary and analysis of the crash history at this location.

Crash data for the existing facility was available for three full calendar years from 1998 to 2000. The geometry of I-30 during this 3 year cycle was undergoing reconstruction and rehabilitation efforts along a significant portion of the freeway section in question. The freeway as mentioned elsewhere is currently undergoing reconstruction intended to add additional lanes in each direction and improve roadway geometrics which includes horizontal and vertical alignment alterations, improved ramp merges and desirable inside and outside shoulders. While some sections of the freeway have been completed to the new desirable section, a majority is still under construction and it is therefore difficult to draw any conclusions concerning the impacts of reduced shoulder and lane widths when paired with the new proposed geometric design and additional lanes.

Year	Fatal Crashes	Incapacitated	Non-Incapacitated	Injury Crashes	Non-Injury Crashes	Total Crashes
1998	4	29	84	208	182	507
1999	9	18	80	208	195	510
2000	4	21	83	243	252	603

Table 1. Crash Data

We do not feel the requested design exception will increase the traffic crashes as compared to the existing facility. When completed, the overall geometric improvements to this facility are expected to improve the capacity and safety of this roadway section.

5. Brief description of alternatives considered and the reasons for eliminating each alternative.

A. No Build

The no build alternative assumes that there would be no managed lane constructed in the I-30 corridor. This alternative was eliminated because the DFW region has committed to build two HOV lanes in its approved air quality conformity plan by July, 2007. Failing to meet the guidelines of the approved air conformity plan could mean the loss of a significant amount of Federal matching transportation funds for the Dallas Fort Worth area.

B. Single Reversible HOV lane

The initial plan for this project was a single reversible HOV lane with 8 freeway lanes from Loop 12 to I-35E and 10 freeway lanes from NW 19th Street to Loop 12. This alternative was eliminated for two reasons. The HOV lane would become congested very shortly after opening and the Texas Transportation Commission's directive to look into managed lanes on all corridors in the process of being constructed or near construction.

C. Concurrent Flow Managed Lanes

Our first attempt, to construct managed lanes on the I-30 corridor was a plan to include concurrent flow managed lanes on I-30 with pylons or concrete barriers. The proposal was to open 8 freeway lanes and 4 concurrent flow managed lanes from NW 19th Street to Loop 12 and 8 freeway lanes and 2 concurrent flow managed lanes from Loop 12 to I-35E. This alternative was eliminated because no shoulders were provided for the managed lanes, inside shoulders were not provided for the freeway lanes, the lanes were only separated by pylons, and it would require a declaration toll gantry twice the size of the proposed gantry.

D. Widen Freeway Facility

Widening of the pavement would be required on the outside edges of the pavement to meet minimum design standards. There are two reasons this alternative was eliminated. One, the recent and current construction projects on I-30 have been modified to allow for the addition of managed lanes in the median. Two, the excessive costs, and planning and construction time to implement the widened facility is not feasible. These costs include but are not limited to additional pavement, reconstruction of new bridges, reconstruction of retaining walls, construction of additional retaining walls, and the acquisition of more Right-of-Way.

6. What is the percentage and total dollar difference between the proposed construction cost and the cost of construction necessary to obtain minimum values?

Managed Lane Project Alternatives	Project Cost
Proposed	\$75 Million
Meet minimum design values	\$250 Million
Cost Difference	\$175 Million
Percentage Difference	230%

Table 2. Project Cost Comparisons

The total cost difference and the percentage difference between the proposed project and if the project was constructed to meet minimum design standards is given in Table 2. The alternative that would provide a 10' inside shoulder and 12' freeway lanes, and 12' managed lanes is 230% more expensive than the proposed project.

7. Does the design conform with adjacent roadway section?

Yes, the project does conform with the adjacent roadway sections.

Beginning of Project

I-30 in Tarrant County is a six lane freeway. The proposed project in Dallas County has a typical section of 8 freeway lanes and 2 managed lanes. For the managed lane project to conform to the Tarrant County typical section a transition had to be designed into the project from Ballpark Way to the Tarrant County Line.

In the eastbound direction, a concurrent HOV lane will be added to the 3 freeway lanes at Ballpark Way heading towards the Tarrant County Line. An additional freeway lane will be added at the SH 360 entrance ramp, which gives I-30 eastbound a total of 5 lanes. Those five lanes feed into the 2 managed lanes and the 4 freeway lanes at the Dallas/Tarrant County Line.

Westbound I-30 in Dallas has 4 freeway lanes and 2 managed lanes. 6 lanes must be transitioned down to 3 lanes. The proposed design has one freeway lane ending at the 19th Street exit ramp, one freeway lane ending at the SH 360 exit ramp, and the third freeway lane ending at the Ballpark Way exit ramp. Therefore, the project transitions from 6 lanes to 3 lanes in the westbound direction.

End of Project

Over the Trinity River Bridge, I-30 eastbound must transition from 4 freeway lanes and 2 managed lanes into the 4 lane split, two lanes to I-35E north and two lanes to I-35E south. The four freeway lanes are reduced to 3 freeway lanes by ending a lane at the Beckley exit ramp. The two managed lanes will be narrowed to one managed lane before exiting at the end of the managed lane into its own freeway lane. The remaining four lanes (3 lanes from the freeway and 1 lane from the managed lanes) will be continued to the I-35E split by building a temporary 4 lane eastbound Trinity River Bridge.

Westbound I-30 will have four lanes coming from I-35E. Two lanes each will come from the northbound and southbound directions. The four lanes will transition into two managed lanes and three freeway lanes. After a managed lane entrance ramp, a fourth freeway lane will be added to complete the transition into the 2 managed lanes and four freeway lanes in the westbound direction.

8. What would be the project delay and consequences as a result of meeting the minimum values?

The delay caused by meeting minimum values would be a minimum of 10 years. It would take at least 10 years to complete the necessary design and planning work, ROW acquisition, and utility relocation. To obtain sufficient funding for the project, the delay could extend to 20 years.

9. Short narrative of why you feel this design exception should be approved.

This design exception required for the I-30 managed lane project should be approved for several reasons. TxDOT must open two I-30 managed lanes by July 2007 to meet the air

quality Transportation Control Measures (TCMs) in the Dallas/Fort Worth (DFW) Ozone Nonattainment Area. The DFW region has committed to certain measures to the Environmental Protection Agency (EPA).

The I-30 managed lanes project is one of these commitments. We know the entire managed lane project cannot be built by July 2007, but if this design exception is approved we can open two reversible HOV lanes and create construction zones as the first stage construction. By opening in July 2007 two managed lanes, we will reduce the threat that Federal transportation dollars will be lost by the DFW area.

Approval of the design exception should also be granted because the corridor is currently undergoing a massive construction effort to upgrade an existing six-lane freeway facility. The planning, design and construction of this corridor will be nearing 20 years when construction is completed. Approval of this exception will allow the installation of the managed lanes to be done at considerably less cost and will limit the amount of future work and public inconvenience due to the managed lane construction.

The use of the 10' outside shoulders, 11' freeway lanes, 11' managed lanes, and below minimum inside shoulders provides the best operational characteristics without constructing a massive widening project.

We do plan on widening the roadway pavement width in certain locations to build the two wishbones, the managed lane declaration gantry, and two transition areas. Many agencies including DART, NTTA, TxDOT, City of Dallas, and City of Grand Prairie have reviewed the schematic many times to come up with the proposed design on the schematic. Every agency involved has come to an agreement on the proposed design through many coordination meetings.