

IH 35 FEASIBILITY STUDY



COOKE COUNTY, TEXAS



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For: The Wichita Falls District of the Texas Department of Transportation

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IH 35 Feasibility Study

I. INTRODUCTION

The Texas Department of Transportation (TxDOT) has contracted with Carter & Burgess, Inc. (C&B) to study needed improvements to Interstate Highway 35 (IH 35) in Cooke County. The purpose of the study is to assess the feasibility of improvements required to upgrade IH 35 to current design standards and provide for future traffic needs (2030). The study area limits are from the Texas/Oklahoma border to the Cooke/Denton County line which is approximately twenty-two miles.

II. PURPOSE AND NEED

IH 35 is the primary north-south transportation route through the state of Texas. Recent population and economic growth have strained the aging facility. In 2005, 42,000 cars per day utilized IH 35 through Cooke County. The current traffic projections indicate that by 2030 the traffic will almost double to 80,000+ cars per day. In Denton County, traffic modeling numbers indicate these numbers are accurate. To meet this demand, a minimum increase from two to three lanes in each direction will be required. Insufficient capacity is not the only challenge IH 35 faces; the existing horizontal and vertical geometry does not meet current standards for a 70 mph design speed and the existing infrastructure will start needing rehabilitation.

There are two mainlane centerline curves that have substandard radii. The first is a curve just south of California Street in the City of Gainesville that has a radius of 1885 feet, which only meets a 65 mph design speed. The second is a curve just south of the Red River and it has a radius of 1400 feet, which only meets 60 mph. The reverse curves at the Denton County line conform to design standards, but only meet the minimum required radius. According to TxDOT accident records, approximately 32 accidents have occurred in the vicinity of these curves since 2004. In addition, the tangent length between the curves at FM 372 is 31 feet above the minimum for a broken back curve. Twelve of the 32 accidents occurred in this specific area.

Several of the intersections and interchanges in the study area have outdated configurations including ramps of inadequate length. The jug handle configurations north of Hockley Creek Road, County Road 218 and FM 1202 are the result of antiquated two-way frontage road operation. Neither this intersection design nor short ramps safely support high-speed traffic movements. Short ramps do not provide adequate distance for comfortable acceleration onto the mainlanes and deceleration onto the frontage roads.

The IH 35 mainlane pavement through Cooke County from the City of Gainesville to the Red River is aged. The mainlanes were constructed in 1950s and before have been overlaid several times with asphalt. The pavement from the City of Gainesville to the Denton County line is approximately 20 years old. This pavement is in relatively good condition, but is expected to require rehabilitation in the next 10 to 15 years.

III. ALTERNATIVES ANALYSIS

A. No Build

The No Build alternative is the alternative against which all of the other alternatives are compared. The No Build alternative includes already programmed improvements such as reconstruction of the US 82 interchange, which has already gone through the TxDOT letting process. Construction is expected to be complete by 2009. The No Build alternative cost as presented in the Alternative Evaluation Summary includes the cost of major rehabilitation of existing IH35. The cost includes no additional major transportation improvements in the study area. This alternative may be selected as preferred if none of the other alternatives prove feasible through the alternative evaluation process.

B. Alternative 1

The proposed roadway typical section for Alternative 1 has six twelve-foot travel lanes (three lanes in each direction) and ten-foot shoulders with a fixed concrete barrier in the median. Alternative 1 includes two, twelve-foot lane continuous one-way frontage roads with three lane frontage roads through Gainesville. The alignment of this alternative generally follows existing IH 35. Existing right-of-way (ROW) is utilized except in cases where the existing alignment does not meet current design criteria or where interchange improvements are required.

C. Alternative 2

Alternative 2 is a six-lane roadway much like Alternative 1, which follows the existing IH 35 alignment. However, in addition to a fixed concrete barrier between northbound and southbound traffic, there is a grassy median wide enough to accommodate a future fourth lane in each direction. The future fourth lane in Alternative 2 allows for the continuation of the planned fourth lane through Denton County. Frontage roads identical to those in Alternative 1 are included in Alternative 2.

D. Alternative 3

Alternative 3 is a six-lane (three in each direction) roadway with a grassy median wide enough to accommodate future expansion. Instead of following the existing IH 35 alignment, this alternative is on a completely new location west of existing IH 35. Because it is on a new location, the alignment is void of the many curves on the existing alignment.

Enough ROW would be acquired for future frontage roads, but they are not included in the typical section for this alternative. An additional \$27 million would be required to build continuous frontage roads along Alternative 3. Interchanges will be provided at major cross streets, but the main goal of this alternative is moving traffic through the area. Alternative 3 bypasses the City of Valley View and the City of Gainesville. If this alternative were chosen as the preferred alignment, the existing IH 35 through Cooke County would become a Business Route.

E. Valley View Alternatives

Potential ROW impacts through the City of Valley View prompted examination of bypass alternatives. Three alternatives could be used in conjunction with Alternative 1 or 2 that bypass the City of Valley View. All three options have the same typical section as Alternative 3. None of the Valley View bypass Alternatives includes frontage roads.

Alternative Valley View 1 follows the alignment of Alternative 3 from the County Line to the Rest Stop where it ties back in to the existing IH 35 alignment. Alternative Valley View 2 moves the IH 35 alignment west approximately one half mile. Alternative Valley View 2 departs from the existing alignment north of Elmgrove Road and stays half a mile west of the existing alignment until it ties back in at the Rest Stop. Alternative Valley View 3 departs from the existing alignment at the County Line and ties back to the existing alignment at the Rest Stop. Alternative 2 and 3 impact Valley View Independent School District (ISD) property. At the request of the school district, these options have been removed from further consideration.

The right-of way through the City of Valley View is constrained by the proximity of the Burlington Northern Santa Fe (BNSF) railroad track and the existing northbound frontage road. In addition, the largest industry in the City of Valley View, Alan Ritchey, Inc., is located between the northbound IH 35 frontage road and BNSF railroad. Relocating the IH 35 centerline westward to completely avoid impacts to the east would require significant ROW acquisition including Valley View ISD property. One solution to alleviate this constraint is to relocate a portion of the BNSF railroad track.

F. BNSF Relocation

The City of Valley View has three at grade railroad crossing locations: FM 922, Krahl Road, and Hockley Creek Road. The crossing at FM 922 is of particular concern. There is only sixty feet between the railroad crossing bars and the IH 35 northbound frontage road intersection with FM 922. Because FM 922 is a major school bus route, this distance is not adequate. A school bus barely fits between the crossing gates and the stop bar, which creates serious safety concerns. Citizens also regularly experience waits in excess of 30 minutes to cross the tracks and have expressed a desire for the project to study the possibility of one or more grade separated crossings of the BNSF railroad.

The proposed relocated track would depart from the existing alignment at the Spring Creek crossing which is mile marker 398.98. The track alignment would be moved to the east approximately 850 feet from its existing location at FM 922. The alignment would continue along a straight path for approximately 4.55 miles until it ties back in to existing near Hockley Creek at mile marker 403.62. This relocation would allow grade separation of the railroad and FM 922 which would greatly improve safety. The existing railroad ROW would then be used for IH 35 improvements.

IV. ALTERNATIVE EVALUATION SUMMARY

The following is a summary of the alternative evaluation matrix developed to summarize the advantages and disadvantages of each of the alternatives presented at the public meeting. Safety, mobility, ROW impacts, environmental effects and 2006 construction costs were considered in the evaluation criteria. The matrix is located in the Appendix.

Alternatives	Advantages	Disadvantages	Cost (millions)	ROW (acres)
No Build	<ul style="list-style-type: none"> ▪ No new ROW required ▪ No major reconstruction 	<ul style="list-style-type: none"> ▪ Traffic Congestion ▪ Decreased Safety 	<ul style="list-style-type: none"> ▪ \$118 	<ul style="list-style-type: none"> ▪ 0
Alternative 1	<ul style="list-style-type: none"> ▪ Utilizes existing ROW ▪ Minimizes ROW width 	<ul style="list-style-type: none"> ▪ No space for future expansion ▪ Requires 8 relocations 	<ul style="list-style-type: none"> ▪ \$222 	<ul style="list-style-type: none"> ▪ 35
Alternative 2	<ul style="list-style-type: none"> ▪ Utilizes existing ROW ▪ Allows future expansion ▪ Consistent with # of lanes proposed in Denton Co. ▪ Supported by the public 	<ul style="list-style-type: none"> ▪ Requires 30+ relocations 	<ul style="list-style-type: none"> ▪ \$230 	<ul style="list-style-type: none"> ▪ 75
Alternative 3	<ul style="list-style-type: none"> ▪ Moves traffic out of town ▪ Straight alignment ▪ Better access control ▪ Increased safety ▪ Minimize disruption during construction 	<ul style="list-style-type: none"> ▪ Requires 11+ relocations ▪ Requires more ROW acreage ▪ Impacts Camp Howze ▪ No Frontage Roads 	<ul style="list-style-type: none"> ▪ \$323 	<ul style="list-style-type: none"> ▪ 925
Valley View 1	<ul style="list-style-type: none"> ▪ Eliminates problems with narrow ROW ▪ Provides room to develop to the east ▪ Moves traffic out of town 	<ul style="list-style-type: none"> ▪ Impacts Floodplain ▪ Not publicly supported ▪ No Frontage Roads ▪ Requires 3 relocations 	<ul style="list-style-type: none"> ▪ \$227 	<ul style="list-style-type: none"> ▪ 376
Valley View 2	<ul style="list-style-type: none"> ▪ Eliminates problems with narrow ROW ▪ Provides space for private development ▪ Moves traffic out of town 	<ul style="list-style-type: none"> ▪ Impacts ISD property ▪ Impacts Floodplain ▪ Not publicly supported ▪ No Frontage Roads 	<ul style="list-style-type: none"> ▪ \$228 	<ul style="list-style-type: none"> ▪ 357
Valley View 3	<ul style="list-style-type: none"> ▪ Provides space for private development ▪ Moves traffic out of town 	<ul style="list-style-type: none"> ▪ Impacts ISD property ▪ Not publicly supported ▪ No Frontage Roads 	<ul style="list-style-type: none"> ▪ \$214 	<ul style="list-style-type: none"> ▪ 273
BNSF Relocation	<ul style="list-style-type: none"> ▪ Provide grade separated crossing at FM 922 ▪ Increased safety ▪ IH 35 expansion space to the east ▪ Provides space for private development ▪ RR relocation assistance dollars may be available 	<ul style="list-style-type: none"> ▪ ROW required ▪ Cost 	<ul style="list-style-type: none"> ▪ \$8.5 	<ul style="list-style-type: none"> ▪ 61

All construction costs presented in the Alternative Evaluation Summary are based on 2006 TxDOT average unit bid prices. For estimating purposes, agricultural land was valued at \$2000 per acre and land within city limits was valued at \$20,000 per acre. Frontage roads are only included in the Alternative 1 and 2 cost. If all the alternatives were to include frontage road construction, an additional \$27 million would need to be added to Alternative 3 and an additional \$18 million would need to be added to each of the Valley View Alternatives. The cost of the No Build Alternative represents the 2006 cost to complete major rehabilitation work on the existing IH 35 roadway. This cost is also included in the Alternative 3 cost because the existing IH 35 roadway would become a Business Route and would still require major rehabilitation.

V. PUBLIC INPUT

On December 13, 2006, TxDOT held two Stakeholder Meetings, one in the City of Gainesville and one in the City of Valley View. Public officials, affected business owners, church and school representatives, and TxDOT personnel were invited. Thirteen people attended the Gainesville meeting and nine people attended the Valley View meeting.

The first public meeting was conducted as an open house. It was held in the City of Gainesville on January 16, 2007. A C&B representative greeted attendees at the door and then asked them to sign in. Each attendee was given a project fact sheet and a comment form. Everyone was encouraged to review the exhibits placed on tables around the room and submit their comments in the comment boxes.

Texas Department of Transportation personnel and members of the Carter & Burgess Consultant Team were available near the exhibits to answer questions. A PowerPoint presentation documenting the study process was projected onto the screen at the front of the room and seating was available for those interested in watching.

One hundred forty people attended and forty comments have been received to date. A large majority support Alternative 2 because the proposed centerline follows the existing alignment and allows room for a future expansion. Several other comments expressed support for smoothing out the IH 35 mainlane centerline curves, minimizing ROW impacts and relocating the railroad.

VI. RECOMMENDATION

After reviewing all the available data, we recommend Alternative 2 as the preferred alternate. Alternative 2 is preferred by a large majority of the public who expressed their opinions and it is also supported by local public officials.

We recommend relocating the BNSF railroad and eliminating all three at-grade railroad crossings. Due to lack of public support, none of the Valley View Alternatives are recommended.

Because of anticipated traffic volumes, we recommend all frontage roads operate as one-way. Although one-way operation may require additional structures to allow for turning movements, two-way frontage roads would cause a larger ROW impact and substantially complicate traffic operations. One-way frontage roads are significantly safer than two way frontage roads. Consideration should be given to changing

frontage road operation to one-way as early in the process as practical, since the interchanges through the project will be rebuilt. One-way operation will allow for much safer traffic control during construction.

As a further recommendation, we suggest exceeding the design standards as much as is practical in all cases to provide for a safer roadway. Using desirable 4R standards or better for the design will allow for a safer roadway. However, we do not recommend using 5R standards because the ROW requirements would substantially increase. Conforming to 5R standards would require doubling stopping sight distance, horizontal curve lengths, sag vertical curve K values and quadrupling crest vertical curve K values.

An analysis of possible traffic growth reveals that if traffic continues to grow as projected from 2006 to 2030 and beyond to 2050, traffic counts will be in the range of 133,000 ADT in 2050. If the DHV of 0.10 is used, traffic will operate at a level of service C with four travel lanes in each direction assuming a 50-50 split. If current traffic growth does not accelerate beyond 2030, the preferred alternative geometry should accommodate traffic volumes for the next 50 years.

APPENDIX



0 0.5 miles 1 mile 1.5 miles
GRAPHIC SCALE IN MILES

BEGIN STUDY
OKLAHOMA
RED RIVER
TEXAS

ALTERNATIVE 3

GAINESVILLE

ALTERNATIVE 1 & 2

MATCHLINE RIGHT



0 0.5 miles 1 mile 1.5 miles
GRAPHIC SCALE IN MILES

MATCHLINE LEFT

ALTERNATIVE 3

VALLEY VIEW 3

VALLEY VIEW 2

VALLEY VIEW 1

COOKE CO.
DENTON CO.
END STUDY

BNSF RELOCATION

VALLEY VIEW

ALTERNATIVE 1 & 2

**Preliminary Subject
to Revision**

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I-35 Study in Cooke County
From Red River to Denton County Line

STUDY AREA
ALTERNATIVES LOCATION
MAP

TxDOT Wichita Falls IH 35 Corridor Study
Summary of crashes in the vicinity of curves along IH 35 Mainlanes

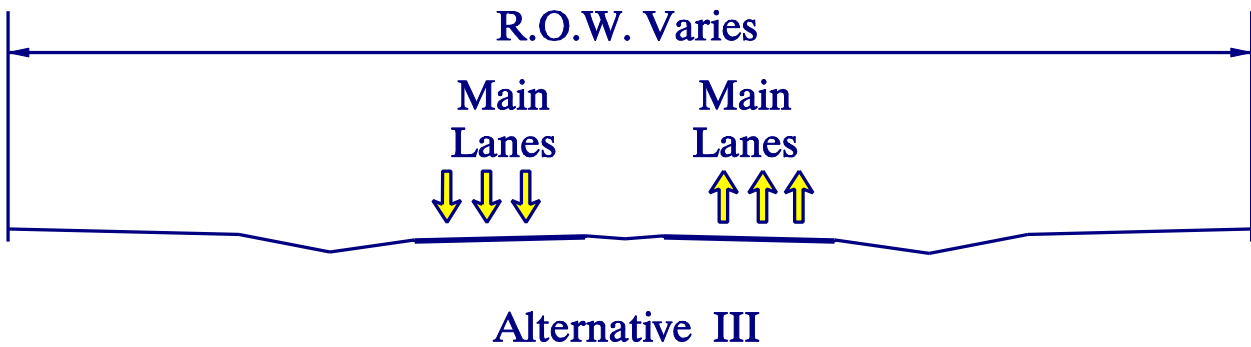
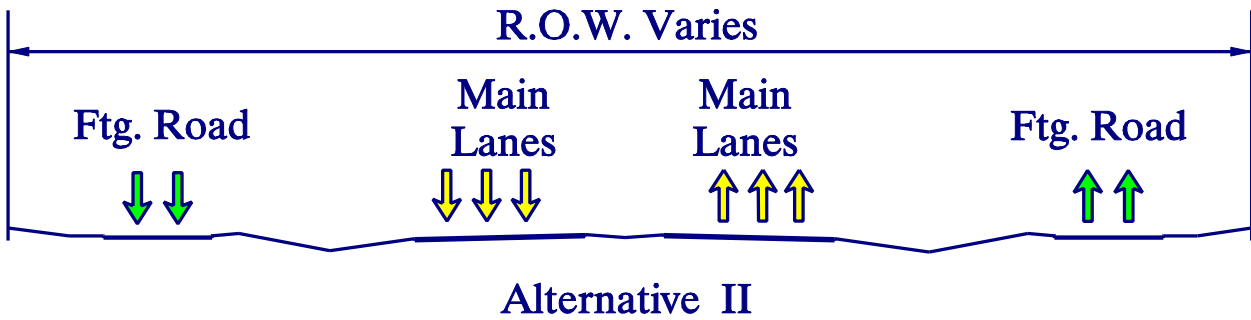
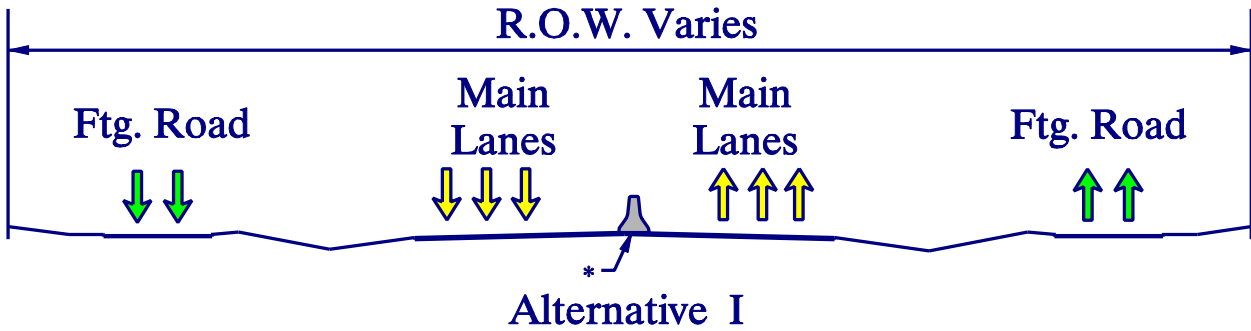
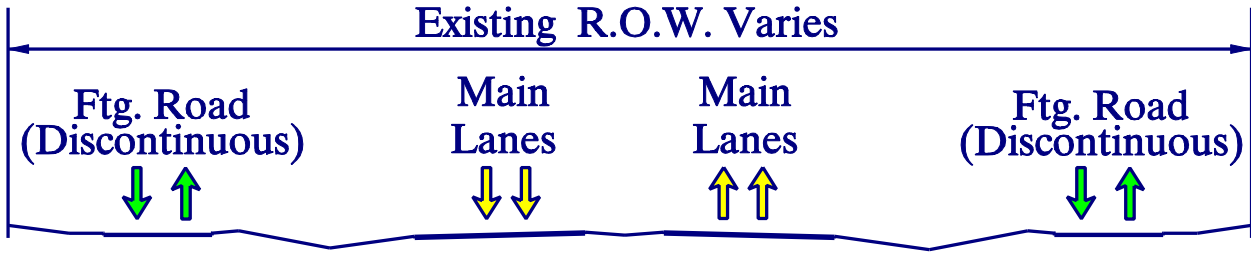
Location	DATE	LOCATION		ACCIDENT TYPE/ CAUSE
	(mo/yr)	Main Street	Cross Street	
Curves at Cooke/Denton County Line	Jan-06	IH 35 SB Mainlanes	Mile Post 483	Hydroplaning; 2 vehicle collision
	Mar-04	IH 35 NB Mainlanes	Mile Post 483	Vehicle hit object in road
	Jan-06	IH 35 SB Mainlanes	FM 3002	Hydroplaning; 1 vehicle crash
	Mar-06	IH 35 NB Mainlanes	FM 3002	Rear-end
	Mar-04	IH 35 NB Mainlanes	FM 3002	Traveling too fast; lost control
Curve on the South end of Gainesville	Jul-06	IH 35 SB Mainlanes	FM 3002	Trailer became detached
	Apr-04	IH 35 NB Mainlanes	Mile Post 496	Hydroplaning
	Jul-06	IH 35 NB Mainlanes	Mile Post 496	Tire blow-out
	Aug-06	IH 35 SB Mainlanes	Mile Post 496	Took exit too fast; 1 vehicle crash
	Feb-04	IH 35 NB Mainlanes	Mile Post 496	Unsafe lane-change; veh forced off road
	Nov-04	IH 35 NB Mainlanes	Mile Post 496	Unsafe lane-change; veh forced off road
Curve in the FM 372 area	Sep-06	IH 35 NB Mainlanes	Mile Post 496	Vehicle lost control
	Oct-04	IH 35 SB Mainlanes	Mile Post 496	Vehicle lost control; 1 vehicle crash
	Feb-04	IH 35 NB Mainlanes	Mile Post 500	Asleep at wheel
	Jan-05	IH 35 NB Mainlanes	Mile Post 500	Asleep at wheel
	Jan-06	IH 35 SB Mainlanes	Mile Post 500	Asleep at wheel; 1 vehicle crash
	Feb-04	IH 35 NB Mainlanes	Mile Post 500	Icy road
	Dec-04	IH 35 NB Mainlanes	Mile Post 500	Icy road
	Jun-06	IH 35 SB Mainlanes	Mile Post 500	Rear-end
	May-06	IH 35 NB Mainlanes	FM 372	Rear-end (road rage)
	Mar-05	IH 35 NB Mainlanes	FM 372	Tire blow-out
	May-06	IH 35 SB Mainlanes	FM 372	Tire blow-out
Curve south of Red River Bridge	Feb-06	IH 35 NB Mainlanes	FM 372	Traveling too fast; lost control
	May-06	IH 35 NB Mainlanes	FM 372	Took turn too fast
	Jan-04	IH 35 SB Mainlanes	FM 372	Vehicle hit object in road
	Feb-06	IH 35 NB Mainlanes	Mile Post 504	Braked too fast; trailer came loose; 3 vehicle collision
	Nov-04	IH 35 NB Mainlanes	Mile Post 504	Hydroplaning; 2 vehicle collision
	Dec-04	IH 35 NB Mainlanes	Mile Post 504	Hydroplaning; 1 vehicle crash
	Nov-04	IH 35 SB Mainlanes	Mile Post 504	Hydroplaning; 2 vehicle collision
	Feb-05	IH 35 NB Mainlanes	Mile Post 504	Rear-end
	Aug-06	IH 35 NB Mainlanes	Mile Post 504	Took turn too fast; 1 vehicle crash
	Feb-06	IH 35 SB Mainlanes	Mile Post 504	Vehicle lost control (DWI); 2 vehicle crash

Sources: 1. Gainesville Police Department
2. Texas Department of Public Safety

EVALUATION MATRIX

EVALUATION CATEGORY	No Build	ALT 1	ALT 2	ALT 3	ALT 1 Valley View	Leave BNSF	Move BNSF
RELOCATIONS	0	8	30	11	3	-	0
PROXIMITY TO DOWNTOWN	GOOD	GOOD	GOOD	GOOD	GOOD	-	-
NEW RED RIVER BRIDGE	NO	NO	NO	NO	-	-	-
ROADWAY CURVES	POOR	GOOD	GOOD	EXCELLENT	-	-	-
DRAINAGE	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
TERRAIN	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
THRU TRAFFIC FLOW	POOR	GOOD	GOOD	EXCELLENT	GOOD	FAIR	EXCELLENT
POTENTIAL FOR GROWTH	POOR	GOOD	GOOD	EXCELLENT	GOOD	POOR	EXCELLENT
CONTROL OF ACCESS	POOR	FAIR	FAIR	EXCELLENT	GOOD	-	-
CROSS TOWN ACCESS	POOR	GOOD	GOOD	EXCELLENT	-	FAIR	EXCELLENT
NUMBER OF AT-GRADE RR XINGS	3	-	-	-	-	3	0
HISTORICAL STRUCTURE IMPACTS	NO	NO	NO	NO	NO	-	-
WETLAND IMPACTS POTENTIAL	NO	NO	NO	NO	NO	-	-
SPECIES IMPACT POTENTIAL	NO	NO	NO	NO	NO	-	-
HAZARDOUS MATERIALS POTENTIAL	NO	NO	NO	YES	NO	-	-
ENVIRONMENTAL JUSTICE POTENTIAL	NO	YES	YES	NO	NO	-	-
ARCHAEOLOGICAL POTENTIAL	NO	NO	NO	YES	NO	-	-
NOISE IMPACT POTENTIAL	NO	NO	NO	NO	NO	-	-
PUBLIC SUPPORT	NO	FAIR	GOOD	POOR	POOR	FAIR	GOOD
COST (\$MILLIONS)	118	222	230	323	227	-	6.5

Alternative Typical Sections



* Concrete Traffic Barrier