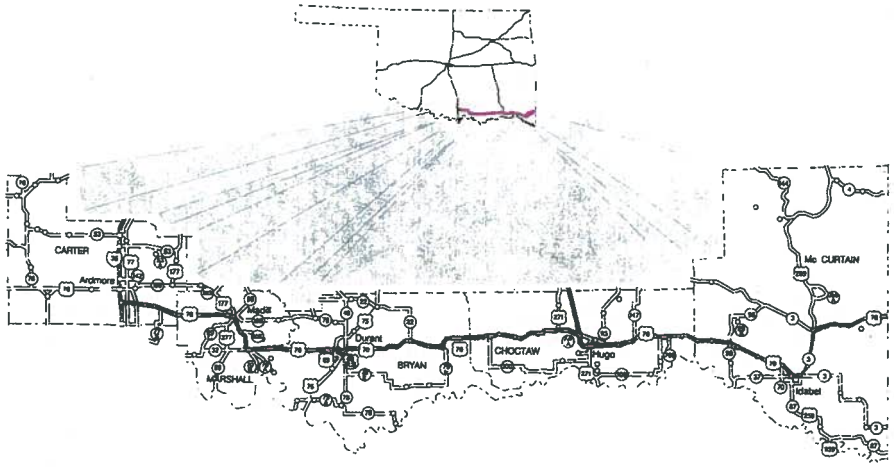
# US 70 FEASIBILITY STUDY

for

## Oklahoma Department of Transportation




**April 1997**

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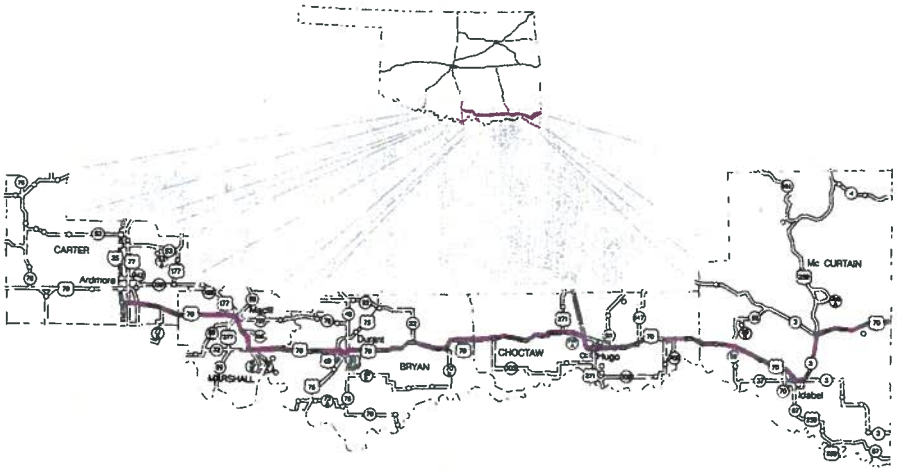


**April 1997**

Prepared By:

The Benham Group with Parsons Brinckerhoff

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# I INTRODUCTION

## Background of Study

The Oklahoma Statewide Intermodal Transportation Plan, completed in May 1995, identified 16 highways in the state as Transportation Improvement Corridors. One of these highways was US 70, extending from I-35 south of Ardmore to the Arkansas State Line.

Transportation Improvement Corridors are highways needing improvement by the Year 2020 primarily due to predicted future deficiencies in level of service, which is the ability to adequately carry projected traffic loads.

Oklahoma's sixteen improvement corridors are illustrated in Figure 1- 1. The US 70 corridor in the lower right area of the map is identified in red. US 70 is functionally classified as a principal arterial. Arterials are designed to convey large traffic volumes rapidly over long distances. Rural and urban arterials are connected to allow through traffic movements at an acceptable level of service.

## National Highway System

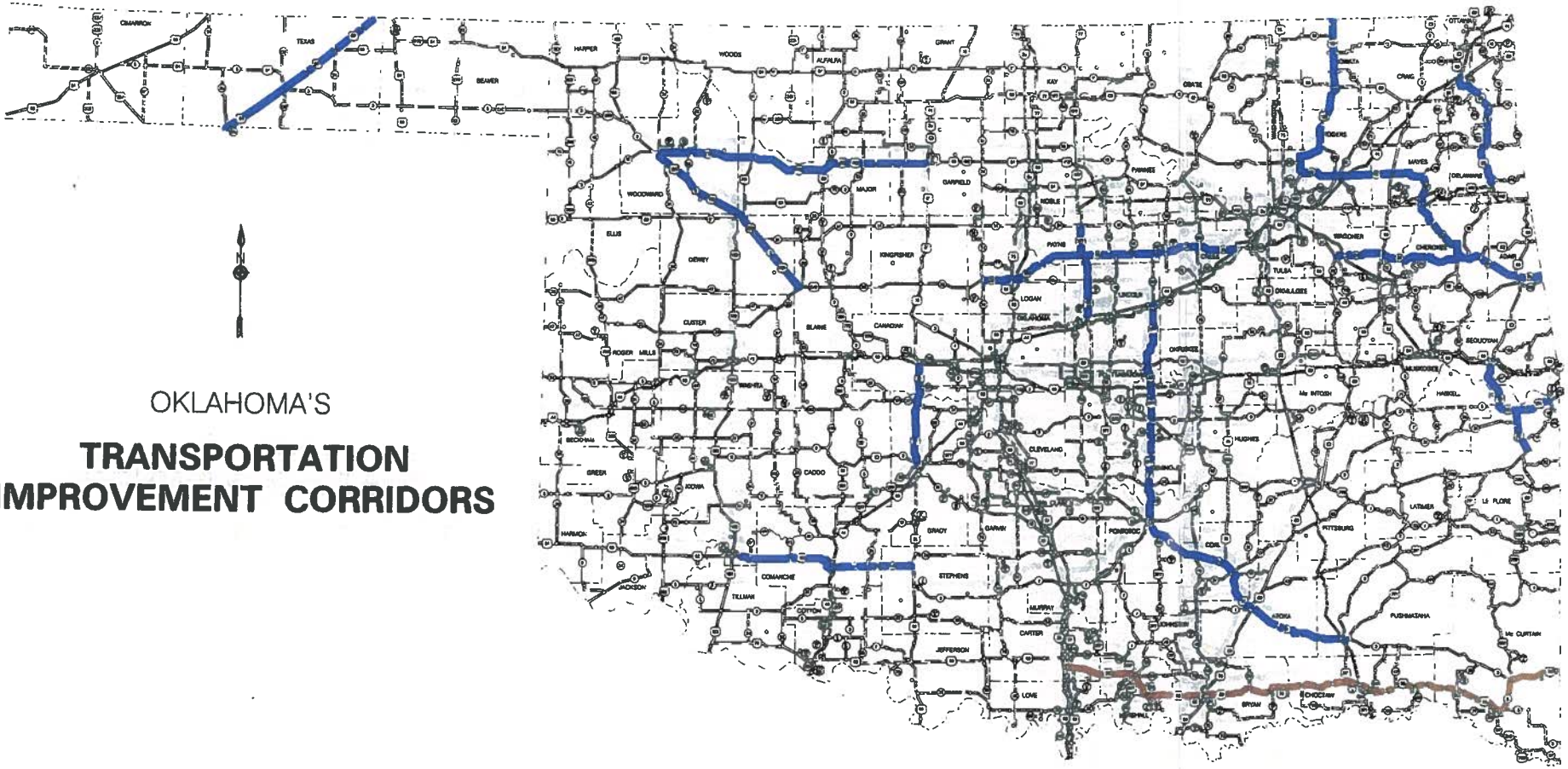
US 70 is also part of the National Highway System (NHS) in Oklahoma. The NHS contains all Interstates, other Freeways and Expressways, and all Principal Arterial roads in the state. The NHS system comprises the largest category of Federal Highway Funding under the current ISTEA legislation. Figure 1-2 illustrates the location of all the NHS routes in Oklahoma, with US 70 in the southeastern portion of the state shown in red.

## US 70 Feasibility Study

The focus of this feasibility study was to evaluate US 70 for improvement to four lanes from one mile west of I-35 at Ardmore to the Arkansas State Line, a total distance of approximately 180 miles. The study included an inventory of existing conditions in the corridor including traffic data and capacities, sufficiency ratings and environmental conditions. Also investigated were alternate bypass routes at 10 communities in the corridor, and a study of alternate alignments between Madill and Durant. A public involvement program during the study period was also part of the investigation. Recommended improvements throughout the corridor, including priorities for implementation, which are economical and contain minimal environmental impact were also determined. The recommendations will become a framework for future project planning and accomplishment in the entire US 70 corridor. A time line with key project events is shown in Appendix A.

OKLAHOMA'S

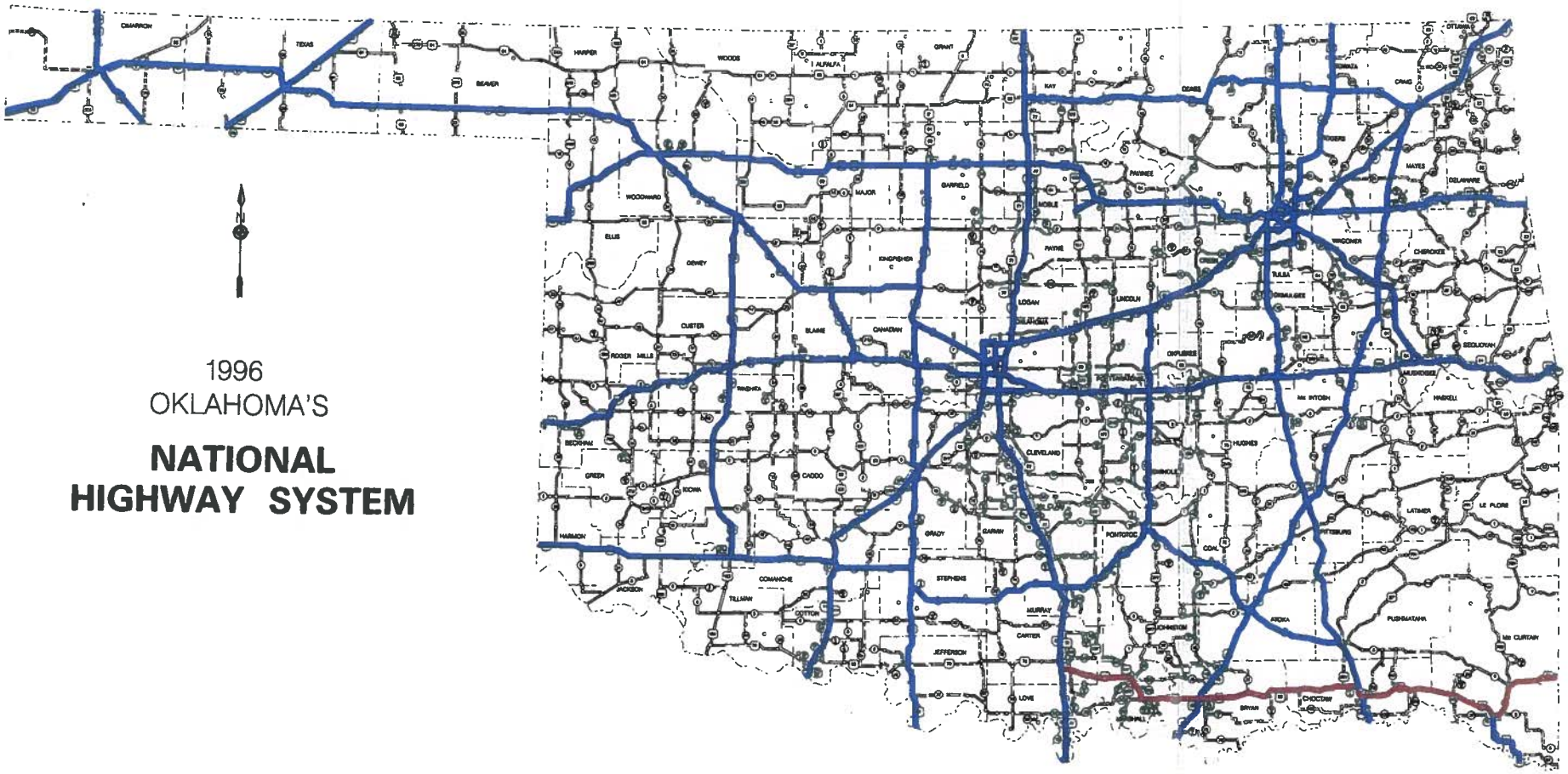
# TRANSPORTATION IMPROVEMENT CORRIDORS




US 70 Feasibility Study

**TRANSPORTATION IMPROVEMENT CORRIDORS**

Figure 1 – 1



1996
OKLAHOMA'S

# NATIONAL HIGHWAY SYSTEM

US 70 Feasibility Study

**NATIONAL HIGHWAY SYSTEM MAP**

Figure 1 – 2

# II EXISTING ROADWAY DATA

(~1995)

## Number of Traffic Lanes

Existing US 70 is predominantly a two-lane highway between Ardmore and the Arkansas state line. A small number of areas contain multiple lanes. Four-lane, divided sections are located in the following areas:

- West of Ardmore, between Lone Grove and I-35.
- South of Ardmore, between I-35 and SH 77.
- Near the T-intersection of US 70 and SH 199 in the north portion of Madill.
- At Durant, west of US 69/75.
- At Hugo, portions of the bypass around the west and south side of town.
- From east of Idabel to south of Broken Bow.

An additional two lanes and median are currently under construction from east of Broken Bow to the Mountain Fork River, extending for approximately 6 miles. Scheduled to begin construction in 1997, the bypass around the north side of Idabel will also be a four-lane divided roadway.

Undivided sections with greater than two lanes appear along the study corridor, predominantly in the major urban areas. Madill has a stretch of three lane section in the south portion of town. Durant has a four-lane section in the western area of downtown. Idabel has four-lane undivided highway running through its city limits. A short five lane section containing a two-way left turn lane is located approximately halfway between Idabel and Broken Bow. South of and through the Broken Bow city limits, a four-lane section exists.

The locations of two and four-lane roadway along the entire existing route are shown in Figure 2-1

## Existing Roadway Conditions

**Surface Width and Type:** US 70 between Ardmore and the Arkansas state line has primarily a 24 foot wide asphaltic concrete surface. Some segments of US 70 are surfaced wider than 24 feet and some are composed of portland cement concrete. Significant segments with surfacing widths other than 24 feet are shown below.

| Location | Width (Feet) |
|---|---|
| Ardmore, I-35 to US 77 | 48 |
| Madill, SH 199 to SH 99 | 35-60 |
| Kingston, town center | 40-60 |
| Durant, west of US 69/75 to east of SH 78 North | 26-70 |

| | |
|---|---|
| Bokchito, town center | 71 |
| Choctaw County Line to Boswell | 22 |
| Boswell, town center | 71 |
| Boswell to six miles east of Boswell | 22 |
| Hugo, Indian Nation Turnpike to US 271 South | 48 |
| Hugo, US 70 Business to SH 93 North | 8-52 |
| Fort Towson, town center | 71 |
| Valliant, town center | 51 |
| Idabel, western city limits to one mile north of SH 3 | 48 |
| Between Idabel and Broken Bow, five miles north of SH 3 | 48 |
| Broken Bow, one mile south of city limits to US 259 | 50 |

Most of US 70 has an asphaltic concrete surface but there are stretches of concrete pavement. These areas are located:

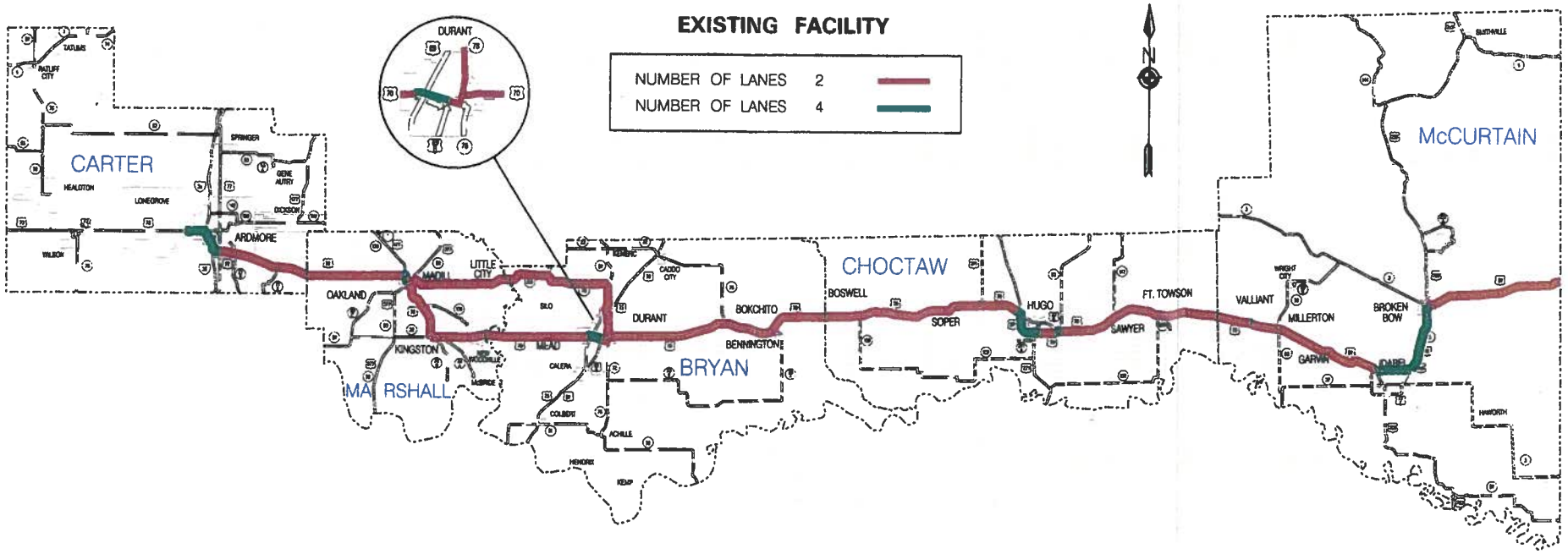
- At Madill, from near the SH 199 junction to the SH 99 junction.
- Through the Kingston city limits.
- West of US 69/75 in Durant.
- East of Bokchito.
- From the Choctaw County Line through Boswell.
- Along the Hugo bypass, between the Indian Nation Turnpike and US 271 South.
- In the downtowns of Fort Towson, Valliant, Idabel and Broken Bow.

**Shoulder Width and Type:** Paved outside shoulders have been installed along most of the roadway in the corridor. Paved outside shoulder dimensions vary from four feet to ten feet wide. In areas of divided roadway the paved inside shoulder width is four feet. Some roadway sections have curb on both sides in place of a shoulder. Curbs often replace the paved shoulders for the widened segments of US 70, particularly in the towns. A few areas have sod shoulders. These sodded areas are east and west of Boswell and east of US 271 North near Hugo, extending for approximately 9.3 and 2.6 miles, respectively.

**Federal Safety Standards:** Most of the corridor does not meet the federal safety standards as defined in ODOT's Roadway Inventory Manual. These safety standards require relatively flat slopes, no stationary objects within a clear zone extending various distances from the pavement edge, all bridges carrying full shoulder width and a minimum length on box culverts of 84 feet. Those segments of the US 70 study corridor meeting the federal safety standard criteria are:

- The entire length in Carter County.
- A one mile segment approximately three miles west of Soper.
- The east end of the Hugo bypass near the US 70 Business junction.

**Accident Data:** There are several segments of existing US 70 that have experienced a relatively high crash rate, as compared to other similar facilities in the state. These areas of critically high crash rates are shown in Figure 2-2.



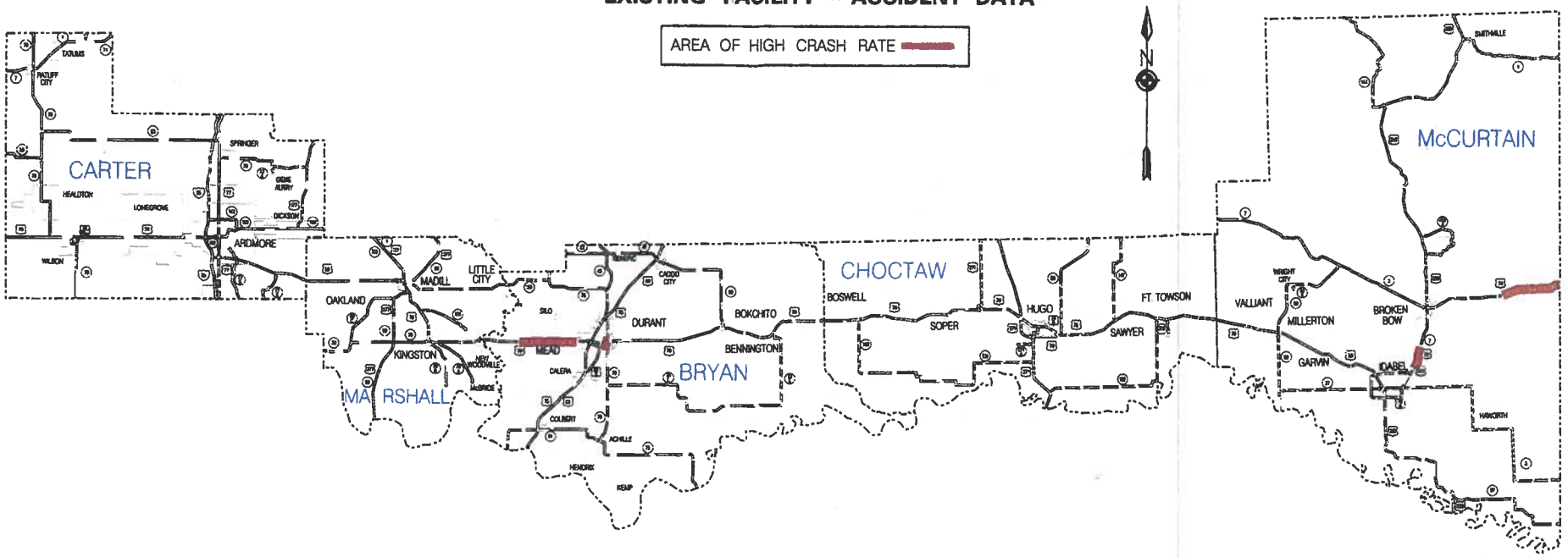

US 70 Feasibility Study

**NUMBER OF TRAFFIC LANES**

Figure 2 – 1

## EXISTING FACILITY - ACCIDENT DATA

AREA OF HIGH CRASH RATE




US 70 Feasibility Study

**ACCIDENT DATA**

Figure 2 - 2

## Existing Right-of-Way Widths and Access Control

Various right-of-way widths exist throughout the route. As noted earlier, most of the route is a two-lane facility; hence a majority of the existing right-of-way widths range between 100 and 150 feet. Most of right-of-way in the towns along the route is 100 feet or less. The minimum width in the corridor is 60 feet, located in downtown Durant. In the areas of four-lane divided roadway the existing right-of-way varies from 175 feet to 300 feet. The 175 foot right-of-way exists west of US 69/75 in Durant. South of Ardmore and along the Hugo bypass are areas of 300 foot right-of-way. Figure 2-3 illustrates the range of existing right-of-way widths along the study route. Appendix B contains roadway data for US 70 including right-of-way widths for each section along the study corridor.

There is no access control for right-of-way along US 70 except for the Hugo bypass area. No access control means the number of points of ingress or egress onto the roadway are unlimited except for control over the placement and geometrics of connections as necessary for the safety of the traveling public. In the Hugo bypass area full access control is used. This type of control gives preference to through traffic by providing access connections with selected public roads at interchanges only. Full access control also prohibits at-grade crossings or direct private driveway connections.

## Sufficiency Ratings

ODOT prepares a statewide needs study and sufficiency rating report biennially. The latest study was published in 1995 and contains sufficiency ratings as of July 1, 1994. The study assesses the adequacy of the design and condition of the existing State Highway System to serve traffic for the next 20 years. Elements of design and condition are assigned relative point values to objectively evaluate the roadway. These point values are related to prescribed minimum design and condition standards and represent the maximum value that any element can earn. The sum of these standard elemental values is 100, which equates to the maximum possible rating for a given section. The factors rated and their maximum point values for roadways and structures are shown in Tables 2-1 and 2-2. Overall sufficiency ratings are categorized as follows:

- Adequate 80-100
- Tolerable 70-79
- Inadequate 60-69
- Critical 00-59

| RURAL ROADWAY | | | | URBAN OR MUNICIPAL ROADWAY | | | |
|---|---|---|---|---|---|---|---|
| **DESIGN** | | **CONDITION** | | **DESIGN** | | **CONDITION** | |
| Surface Width | 16 | Foundation | 14 | Surface Width | 16 | Foundation | 14 |
| Surface Type | 8 | Wearing Surface | 10 | Traffic Control | 18 | Wearing Surface | 10 |
| Shoulder Width & Type | 6 | Drainage | 7 | Cross Section | 10 | Drainage | 7 |
| Curvature | 8 | Shoulders | 4 | Surface Type | 8 | Curb or Shoulder | 4 |
| Gradient | 5 | | | Drainage | 5 | | |
| Stopping Sight Distance | 8 | **Total Cond. Rating** | 35 | Alignment | 8 | **Total Cond. Rating** | 35 |
| Passing Opportunity | 8 | | | | | | |
| Hazards | 6 | | | **Total Design Rating** | 65 | | |
| **Total Design Rating** | 65 | **Total Design & Cond. Rating 65 + 35 =** | 100 | | | **Total Design & Cond. Rating 65 + 35 =** | 100 |

Table 2- 1 Elements of Roadway Sufficiency Ratings

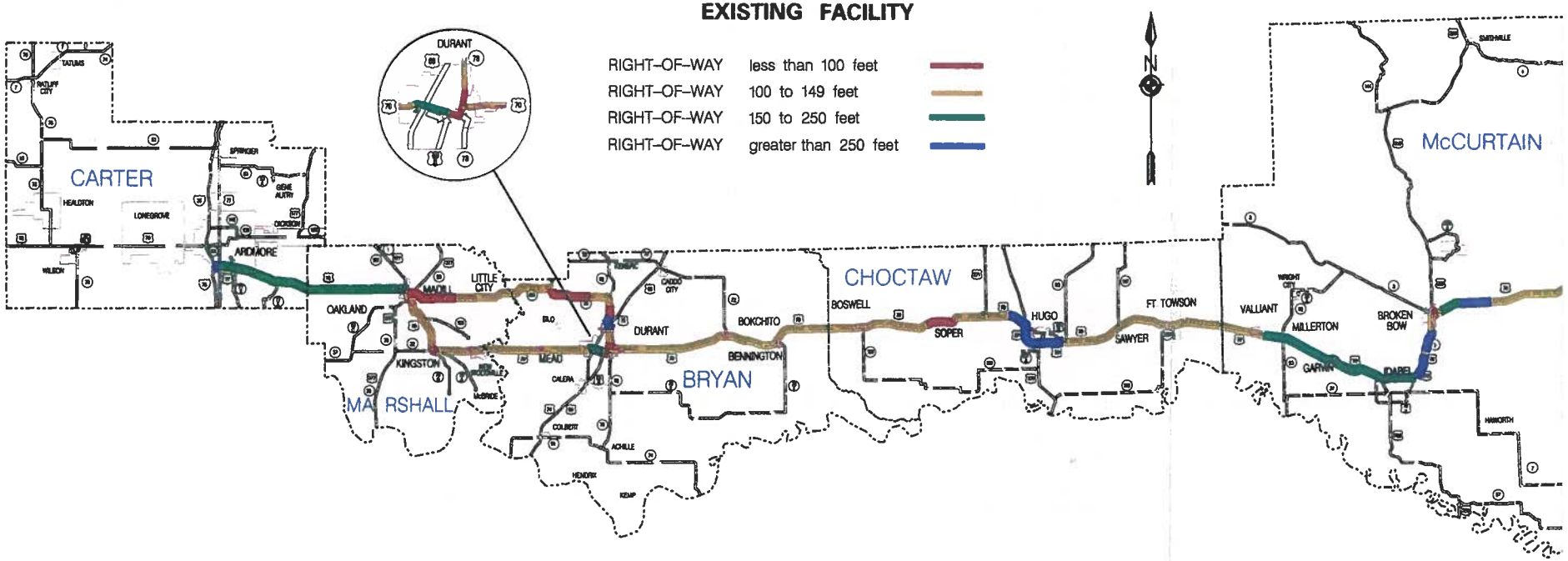
| STRUCTURES | | | |
|---|---|---|---|
| **DESIGN** | | **CONDITION** | |
| Roadway Width | 30 | Substructure | 15 |
| Load Limitation | 20 | Superstructure | 15 |
| Length | 10 | Deck | 5 |
| Hazards | 5 | | |
| | | **Total Cond. Rating** | 35 |
| **Total Design Rating** | 65 | | |
| | | **Total Design & Cond. Rating 65 + 35 =** | 100 |

Table 2 - 2 Elements of Bridge/Structure Sufficiency Ratings

Areas of the study corridor receiving an inadequate or critical rating were located:

- In and between Madill and Kingston.
- Between Lake Texoma and US 69/75 North in Durant.
- In the vicinity of the small community of Blue located east of Durant.
- East and west of Soper.
- East of US 271 North junction.
- East of Hugo to east of Sawyer.
- From the Mountain Fork River to the Arkansas State Line.

These areas are highlighted in yellow and red in Figure 2-4. Sufficiency ratings for the entire corridor are shown in Appendix C.

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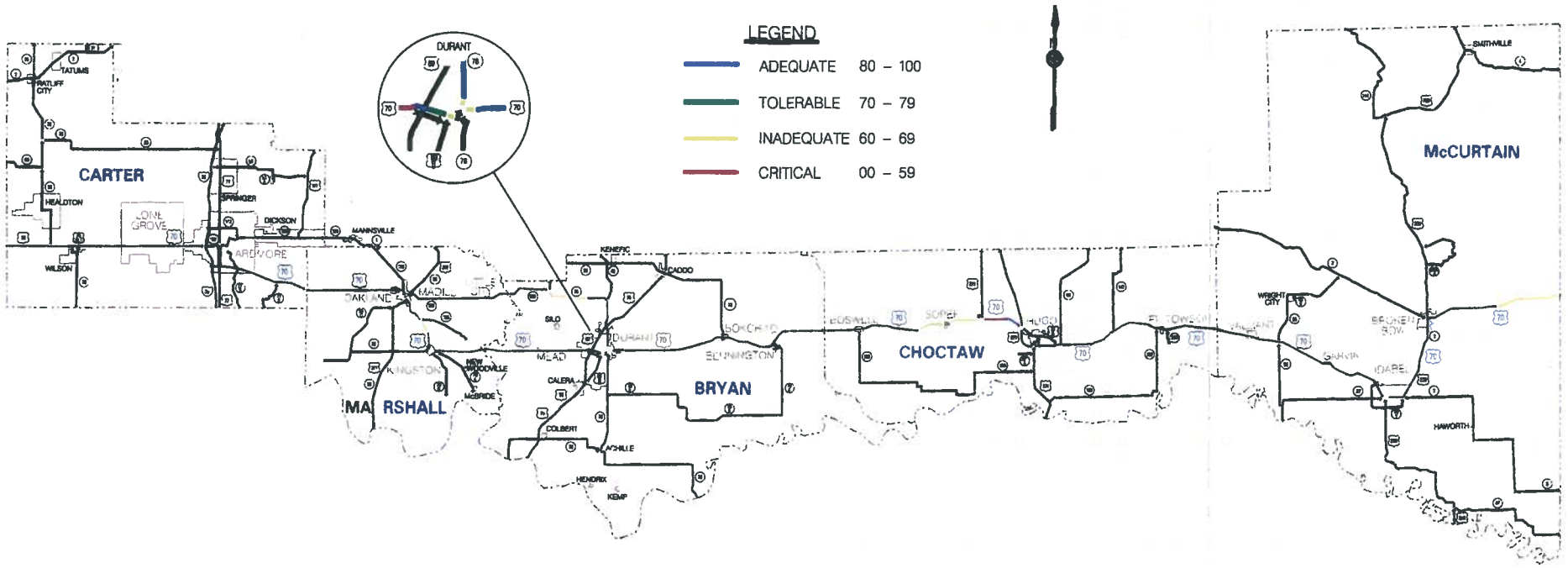
**EXISTING RIGHT OF WAY**

Figure 2 – 3

# OKLAHOMA DEPARTMENT OF TRANSPORTATION
# HIGHWAY SUFFICIENCY RATINGS

SUFFICIENCY RATINGS AS OF JULY 1, 1994




US 70 Feasibility Study

**SUFFICIENCY RATINGS**

Figure 2 – 4

## Traffic Volumes: 1995 and 2020

**Introduction:** In order to measure the volume of traffic on facilities in the US 70 corridor and, subsequently, to determine volume-to-capacity (V/C) ratios and levels of service, traffic counts were conducted at various stations on major roadways in the corridor. The data collected from these counts are used to develop average daily traffic (ADT) figures, which facilitate further analysis. The traffic counts were conducted prior to when public schools were in session, during a two-week period from August 6-17, 1995, to account for the increase in summer recreational traffic along the US 70 corridor.

Three types of vehicle traffic counts were conducted during the period stated:

- 24-hour vehicle counts
- Machine classification counts
- Manual classification counts

ODOT requested the classification counts at specific sites on US 70. A machine counter was stationed for one week at the Lake Texoma Bridge between Madill and Durant. The manual counts were conducted at two additional stations along US 70.

**24-Hour Vehicle Counts:** Twenty 24-hour traffic counts were conducted on weekdays during the two-week counting period (Table 2-3). Seventeen of these counts were completed at stations along US 70, from seven miles east of I-35 in Carter County to just east of Broken Bow in McCurtain County. Three counts were conducted along other, adjoining roadways:

- SH 199 east of Madill
- US 69/75 northeast of Durant
- SH 78 northeast of Durant

In addition to the 24-hour traffic volumes, ADT has been factored for each station based on seasonal and daily traffic variations. Factors used to develop ADT were based on ODOT's *Oklahoma Traffic Characteristics 1991*. Station numbers indicated in Table 2-3 correspond with ODOT count map station numbers.

The highest and lowest counts were recorded at stations located off of US 70. Volumes ranged from 1,248 (ADT=1,200), on SH 199 in Marshall County east of Madill, to 16,168 (ADT=11,900) on US 69/75 in Bryan County northeast of Durant. Volumes on US 70 ranged from 2,214 (ADT=2,100), east of SH 70E and Bennington in Bryan County, to 12,977 (ADT=11,700) west of SH 70T in Idabel, McCurtain County. Five stations recorded 24-hour volumes over 9,000, while eleven stations ranged between 4,000 and 7,000 vehicles, leaving four stations with approximately 3,500 vehicles or less. Three of the five highest volume stations were in McCurtain County and two were located in Bryan County. Three of the four lowest volume stations were located in Bryan and Choctaw counties.

Table 2-3

U. S. 70 24 HOUR COUNTS AND ADT

| STATION* | COUNTY | LOCATION | DATE | VOLUME | ADT |
|---|---|---|---|---|---|
| 60 | CARTER | US 70 7 MI. EAST OF IH 35 | AUG 7/8 | 5,024 | 4,700 |
| 15 | MARSHALL | SH 199 EAST OF MADILL W. OF LITTLE CITY | AUG 7/8 | 1,248 | 1,200 |
| 31 | MARSHALL | US 70 EAST OF SH 70A NEAR KINGSTON | AUG 7/8 | 5,597 | 5,200 |
| 17 | BRYAN | US 70 WEST OF DURANT CITY LIMITS | AUG 7/8 | 11,008 | 10,200 |
| 15 | BRYAN | SH 78 NORTH OF US 69/75 N. OF DURANT | AUG 8/9 | 4,078 | 3,800 |
| 19 | BRYAN | US 69/75 NE OF SH 78 NE OF DURANT | AUG 8/9 | 16,168 | 11,900 |
| 21 | BRYAN | US 70 EAST OF DURANT CITY LIMITS | AUG 8/9 | 6,041 | 5,600 |
| 31 | BRYAN | US 70 EAST OF SH 22/BOKCHITO | AUG 8/9 | 3,520 | 3,300 |
| 34** | BRYAN | US 70 EAST OF SH 70E/BENNIGNTON | AUG 8/9 | 2,214 | 2,100 |
| 5 | CHOCTAW | US 70 EAST OF SH 109/BOSWELL | AUG 9/10 | 2,837 | 2,600 |
| 9 | CHOCTAW | US 70 EAST OF US 271 & WEST OF TOLL RD. | AUG 9/10 | 4,232 | 3,900 |
| 10 | CHOCTAW | US 70/271 SOUTH OF US 70b NEAR HUGO | AUG 9/10 | 5,060 | 4,700 |
| 12 | CHOCTAW | US 70 EAST OF US 271 SOUTH OF HUGO | AUG 9/10 | 5,519 | 5,100 |
| 14 | CHOCTAW | US 70 EAST OF SH 93 & EAST OF HUGO | AUG 14/15 | 6,758 | 6,300 |
| 19 | CHOCTAW | US 70 WEST OF SH 109 & EAST OF SH 147 | AUG 10/11 | 4,418 | 4,000 |
| 21 | CHOCTAW | US 70 EAST OF SH 109 & WEST OF SH 209 | AUG 10/11 | 4,382 | 4,000 |
| 26 | McCURTAIN | US 70 WEST OF VALIANT | AUG 10/11 | 9,014 | 8,100 |
| 37 | McCURTAIN | US 70 WEST OF SH 70T IN IDABEL | AUG 10/11 | 12,977 | 11,700 |
| 38 | McCURTAIN | US 70 NORTH OF IDABEL | AUG 15/16 | 9,864 | 8,900 |
| 23*** | McCURTAIN | US 70 EAST OF BROKEN BOW | AUG 15/16 | 5,579 | 5,000 |

Source: Parson Brinkerhoff and Traffic Monitoring by Wiley, August 1995

* STATION NUMBERS ARE THOSE CORRESPONDING TO ODOT COUNT MAPS.

** STATION # 34 BRYAN COUNTY HAD TO BE MOVED TO CHOCTAW COUNTY DUE TO CONSTRUCTION.

*** STATION # 23 McCURTAIN COUNTY HAD TO BE MOVED .8 MILES EAST DUE TO CONSTRUCTION.

**Machine Classification Counts:** A single machine classification counter was stationed on US 70 at the Lake Texoma Bridge between Madill and Durant for eight days, August 7-14, 1995. This machine automatically counted and classified all vehicles traversing the bridge during that time. The data collected provided vehicle volumes for seven 24-hour periods, grouped according to 15 vehicle classifications. The 15 classes are as follows:

- 01 Motorcycles
- 02 Cars
- 03 Pickup trucks and vans
- 04 Buses, 2 and 3 axles
- 05 Dual, 6 wheels
- 06 3 axles, single unit
- 07 4 axles, single unit
- 08 2-axle tractor - single trailer; 3-axle tractor - single trailer; 2-axle tractor - 2-axle trailer
- 09 3-axle tractor - 2-axle trailer
- 10 6-axle or 7-axle single trailer
- 11 5-axle multi-trailer
- 12 6-axle multi-trailer
- 13 7-axle multi-trailer
- 14 Not used
- 15 Unclassified

Tables 1 through 7 in Appendix D summarize hourly traffic volumes for the Lake Texoma station by 24-hour period and by classification. Total daily vehicle volumes by day of the week were as follows:

- Monday 4,806
- Tuesday 4,749
- Wednesday 4,531
- Thursday 4,921
- Friday 5,717
- Saturday 5,881
- Sunday 4,736

The daily volumes for class 1, motorcycles, were judged to be inordinately high for US 70. ODOT and the study team concurred in the assumption that the classification counter misplaced some vehicles into the motorcycle class.

**Manual Classification Counts:** In addition to the week-long machine classification counts, two manual classification counts were conducted at stations on US 70. The two count stations were located at a site east of Broken Bow (Appendix D, Table 8) and a site

east of Hugo (Appendix D, Table 9). In both cases, volumes were recorded from 6 a.m. to 2 p.m. one day and 2 p.m. to 10 p.m. on another day. The Broken Bow station recorded a total volume of 4,180 and the Hugo station recorded 5,200 vehicles.

The classification scheme for the manual count followed FHWA vehicle classification, similar to the machine count but with all the separate categories for vehicles towing trailers. The classes are listed below:

- 1 Motorcycles
- 2 Cars
- 2A Cars with single-axle trailers
- 2B Cars with 2-axle trailers
- 3 Pick-up trucks and vans
- 3A Pick-up trucks and vans with single-axle trailers
- 3B Pick-up trucks and vans with 2-axle trailers
- 4 Buses, 2 axles
- 4A Buses, 3 axles
- 5 Dual, 6 wheels
- 5A Dual with single-axle trailer
- 5B Dual with 2-axle trailer
- 5C Dual with 3-axle trailer
- 6 3 axles, single unit
- 6A 3-axle single unit with single-axle trailer
- 6B 3-axle single unit with 2-axle trailer
- 6C 3-axle single unit with 3-axle trailer
- 7 4 axles, single unit
- 7A 4-axle single unit with single-axle trailer
- 7B 4-axle single unit with 2-axle trailer
- 7C 4-axle single unit with 3-axle trailer
- 8 2-axle tractor with single-axle trailer
- 8A 3-axle tractor with single-axle trailer
- 8B 2-axle tractor with 2-axle trailer
- 9 3-axle tractor with 2-axle trailer
- 9A 3-axle tractor with 2-axle (extended spacing) trailer
- 10 3-axle tractor with 3-axle trailer
- 11 5-axle multi-trailer
- 12 6-axle multi-trailer
- 13 7-axle multi-trailer
- 14 Unclassified

**2020 Traffic Volumes:** Trend line forecasted traffic volumes were based on review and analysis of existing traffic data and historical traffic trends in the region documented by ODOT. Documented sources included *1991 Oklahoma Traffic Historical*, *Oklahoma Traffic Characteristics 1991*, and numerous traffic data collection efforts and planning reports for facilities within the US 70 corridor (Appendix D). Table 2-4 below compares

estimated traffic volumes on US 70 in 1995 with traffic volume projections for 2020. For both years, the estimates in the table assume Alternative 1, the no-build alternative. (Alternatives for traffic forecasting purposes are described in Chapter VI). These projections are also indicated geographically in Figures 2-5 and 2-6. The highest growth rate forecast for a segment was for segment 3--between Interstate 35 and US 77 South, which is expected to increase by nearly 105 percent in total traffic volume. (Highway segments for the no-build and all build scenarios are listed in Table 2-5 and shown in Figure 2-7). The highest growth in actual number of vehicles is expected to occur in the segment with the highest volume for both 1995 and 2020--segment 2, which runs west from Interstate 35 to the town of Lone Grove, and is expected to exhibit an increase in ADT of 8,400 vehicles. The highest increases are expected in the four highway segments located in the vicinity of Ardmore and in segment 16, which runs from Idabel to Broken Bow, with projected increases ranging from approximately 69 percent for segment 1 to 105 percent for segment 4, as previously noted. The remaining segments are all projected to show growth within the 50 to 60 percent range during the 25-year period between 1995 and 2020, with the slowest rate of growth (50 percent) expected for segment 8--from near State Highway 106 to the Marshall/Bryan County line.

**Table 2-4**
**1995 and 2020 Traffic Volumes and Percent Growth**

| Segment | 1995 ADT | 2020 ADT | Percent Growth |
|---|---|---|---|
| 1 | 6,800 | 11,500 | 69.1% |
| 2 | 11,400 | 19,800 | 73.7% |
| 3 | 4,300 | 8,800 | 104.7% |
| 4 | 4,100 | 6,600 | 70.0% |
| 5 | 3,900 | 6,200 | 59.0% |
| 6 | 8,500 | 13,600 | 60.0% |
| 7 | 6,800 | 10,900 | 60.3% |
| 8 | 5,200 | 7,800 | 50.0% |
| 9 | 4,700 | 7,500 | 59.6% |
| 10 | 10,200 | 16,300 | 59.8% |
| 11 | 5,600 | 9,000 | 60.7% |
| 12 | 3,700 | 5,900 | 59.5% |
| 13 | 3,300 | 5,300 | 60.6% |
| 14 | 5,400 | 8,600 | 59.3% |
| 15 | 6,000 | 9,600 | 60.0% |
| 16 | 8,900 | 14,200 | 59.6% |
| 17 | 4,500 | 7,000 | 55.6% |

Source: Parsons Brinckerhoff, 1996

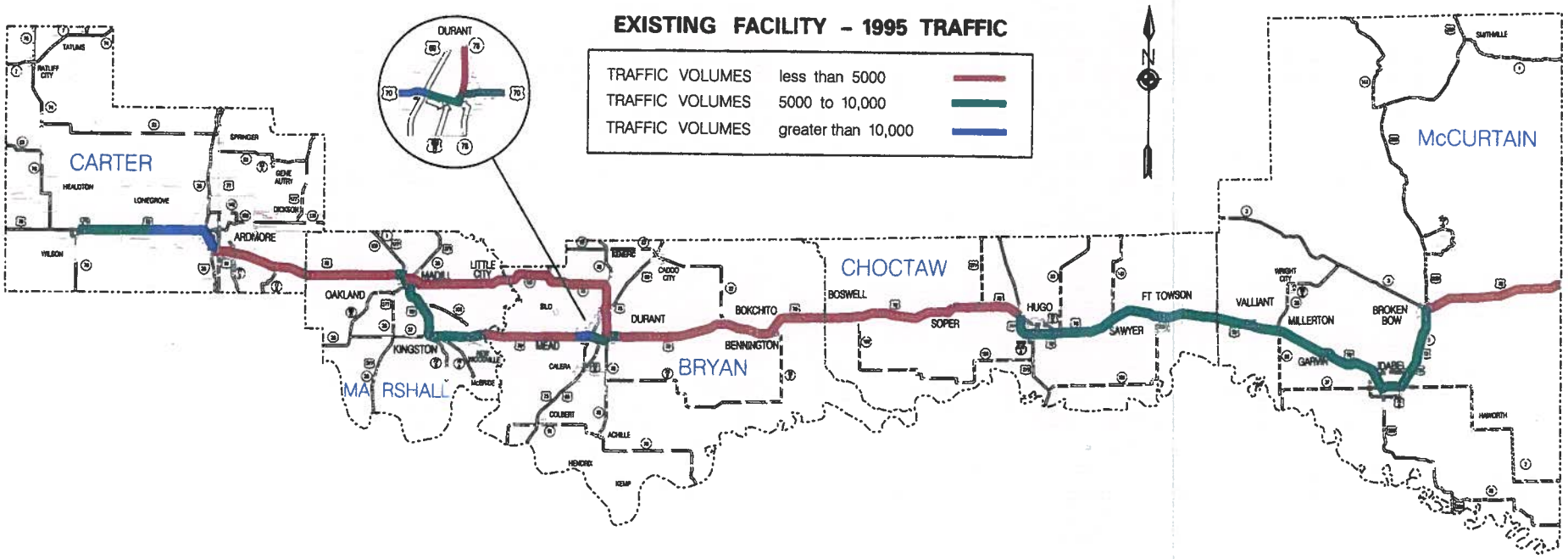
**Table 2-5**
**Descriptions of US 70 Corridor Highway Segments**

| Segment | Route | Description |
|---|---|---|
| 1 | US 70 West | SH 76 to Lone Grove |
| 2 | US 70 West | Lone Grove to IH 35 east |
| 2A | US 70 Bypass | West of Ardmore to US 70 & IH 35 southeast |
| 3 | US 70 East | IH 35 East to SH 77 south |
| 4 | US 70 East | SH 77 south to Carter/Marshall County line |
| 5 | US 70 East | Carter/Marshall County line to Oakland |
| 6 | US 70 East | Oakland (future bypass) to US 3 |
| 6A | US 70 East | Oakland to US 177 / SH 199 |
| 6B | Old US 70 East | US 177 / SH 199 to US 377 |
| 7 | US 70 East | US 377 to (future bypass) near SH 106 |
| 7A | US 70 Bypass | US 177 to US 377 / SH 99 |
| 7B | US 70 Bypass | US 377 / SH 99 to SH 199 |
| 7C | US 70 Bypass | SH 199 to existing US 70 near SH 106 |
| 8 | US 70 East | Near SH 106 to Marshall/Bryan County line |
| 8A | US 70 Bypass | North of Kingston to east of Kingston |
| 8B | US 70 East | Near SH 106 to bypass north of Kingston |
| 8C | Old US 70 | Bypass north of Kingston to east of city |
| 8D | US 70 East | Bypass east of Kingston to Bryan County line |
| 9 | US 70 East | Marshall/Bryan County line to west of Durant |
| 10 | US 70 East | Future bypass west of Durant to US 69 / 75 |
| 10A | US 70 Bypass | West of Durant to US 69 / 75 south of Durant |
| 11 | US 70 East | US 69 / 75 to future bypass east of Durant |
| 11A | US 70 Bypass | US 69 / 75 south of Durant to east of Durant |
| 12 | US 70 East | Future bypass east of Durant to Choctaw County line |
| 12A | US 70 Alt North | US 70 east of Durant to US 69 / 75 north |
| 12B | US 70 Alt North | US 69 / 75 north of Durant (SH 48) to SH 78 |
| 12C | US 70 Alt North | SH 48 / 78 to SH 78 / 199 |
| 12D | US 70 Alt North | SH 78 / 199 to Marshall/Bryan County line |
| 12E | US 70 Alt North | Marshall/Bryan County line to future bypass |
| 13 | US 70 East | Bryan/Choctaw County line to Hugo |
| 14 | US 70 East | Hugo to Choctaw/McCurtain County line |
| 15 | US 70 East | Choctaw/McCurtain County line to Idabel |
| 16 | US 70 East | Idabel to Broken Bow |
| 17 | US 70 East | Broken Bow to Oklahoma/Arkansas state line |

Source: Parsons Brinckerhoff, 1995

## Origin - Destination Studies

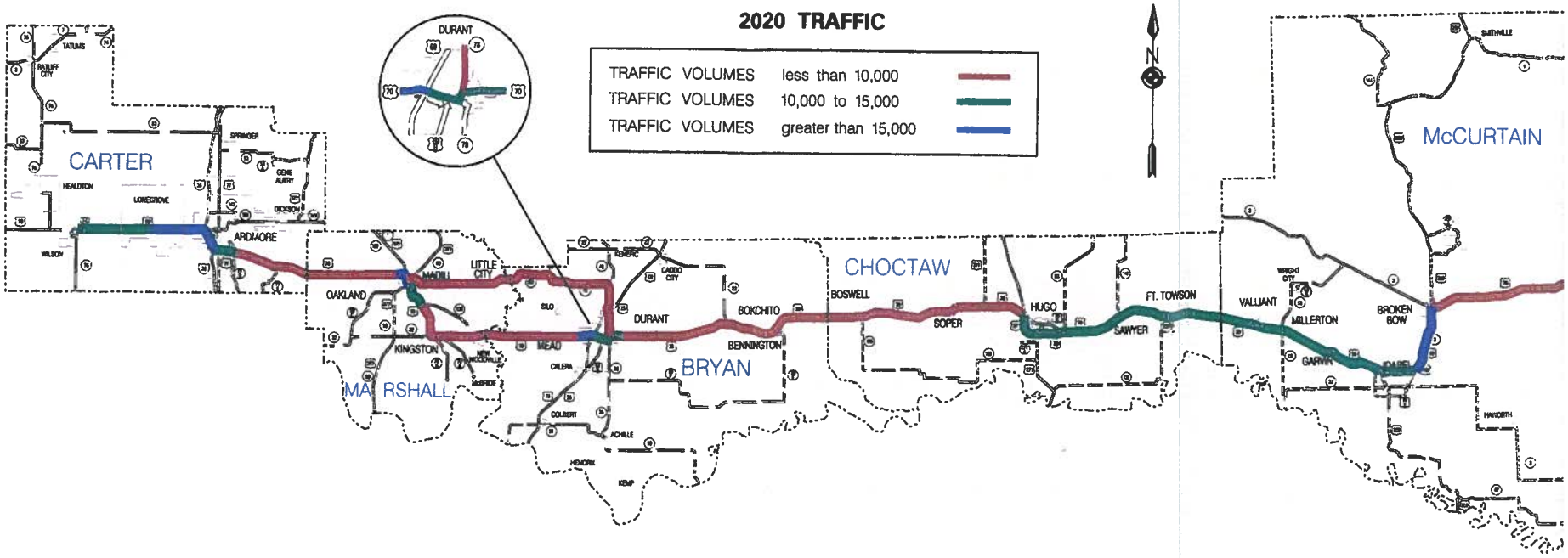
**Introduction:** License plate surveys were conducted on the principal arterials leading into and out of Ardmore, Madill, and Durant to determine the amount of "external local" and "external through" traffic in each area. External local traffic consists of those vehicles traveling from an origin outside the study area to a destination within the study area. External through traffic has both origin and destination outside the study area and is only passing through the area. The resulting data are central to analysis of the need for




US 70 Feasibility Study

**TRAFFIC VOLUMES: 1995**

Figure 2 – 5

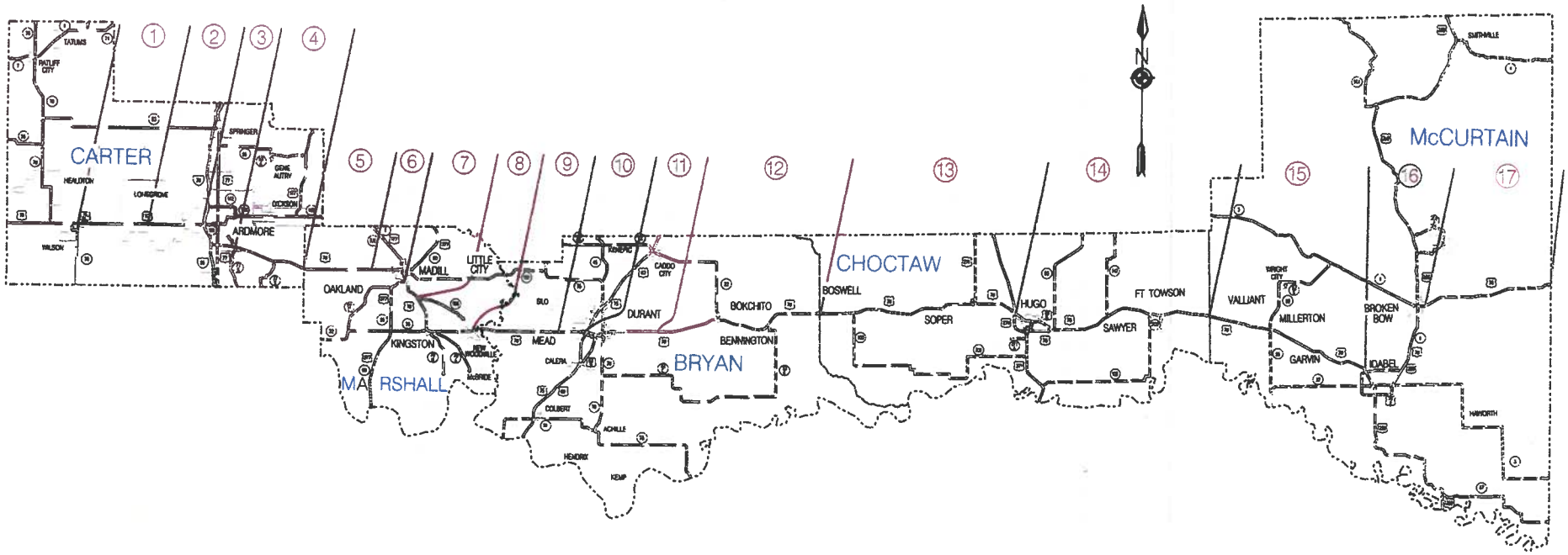



US 70 Feasibility Study

**TRAFFIC VOLUMES: 2020**

Figure 2 – 6

## US 70 CORRIDOR HIGHWAY SEGMENTS




US 70 Feasibility Study

**CORRIDOR HIGHWAY SEGMENTS**

Figure 2 - 7

# US 70 - RURAL PRINCIPAL ARTERIAL

| DESIGN ELEMENT | | | SECTION | DIVIDED MULTILANE | |
|---|---|---|---|---|---|
| | | | | ENGLISH | METRIC |
| STANDARD DESIGNATION | | | - | RPA - 2 | RPA - 2 |
| DESIGN YEAR (GEOMETRICS) | | | 5.3 | 20 YEARS | 20 YEARS |
| DESIGN SPEED | | | 5.2 | 70 MPH | 120 KM/H |
| ACCESS CONTROL | | | 5.4 | REG/PART CONTROL | REG/PART. CONTROL |
| LEVEL OF SERVICE | | | 5.3 | MIN:C DES:B | MIN:C DES:B |
| LANE WIDTH | | | 8.1 | 12' | 3.6 M |
| SHOULDER | | TYPE | 8.1 | PAVED | PAVED |
| | | WIDTH (RIGHT) | 8.1 | MIN:8' DES: 10' | MIN: 2.4M DES: 3.0M |
| | | (LEFT) | | 4' | 1.2M |
| CROSS SLOPE | | TRAVEL LANE | 8.1 | 2% | 2% |
| | | SHOULDER | 8.1 | 2% - 4% | 2% - 4% |
| AUXILIARY LANES | | LANE WIDTH | 8.1 | 12' | 3.6 M |
| | | SHOULDER WIDTH | 8.1 | MIN: 4' (PAVED) | MIN:1.2 M (PAVED) |
| MEDIAN WIDTH | | | 8.2 | REC: 46' DES: 64' | REC: 14.0M DES: 20.0M |
| RIGHT-OF-WAY WIDTH | | | 8.6 | DAYLIGHT + 25' | DAYLIGHT + 8.0M |
| CLEAR ZONE | | | 11.2 | SEE SECTION 11.2 | SEE SECTION 11.2 |
| SIDE SLOPES | CUT | FORE SLOPE | 8.3 | 6:1 | 1:6 |
| | | DITCH WIDTH | 8.3 | 8' | 2.4 M |
| | | BACK SLOPE | 8.3 | 4:1 | 1:4 |
| | FILL | 0' - 4' (0M - 1.2M) | 8.3 | 6:1 | 1:6 |
| | | 4' - 10' (1.2M -3.0M) | 8.3 | 6:1 TO CZ 4:1 TO TOE | 1:6 TO CZ 1:4 TO TOE |
| | | > 10' (>3.0M) | 8.3 | 6:1 TO CZ 3:1 TO TOE | 1:6 TO CZ 1:3 TO TOE |
| DESIRABLE STOPPING SIGHT DISTANCE | | | 5.7 | 70 MPH<br>850' | 120 KM/H<br>290 M |
| INTERSECTION SIGHT DISTANCE | | | 9.2 | SEE SECTION 9.2 | SEE SECTION 9.2 |
| DECISION SIGHT DISTANCE | | | 5.7 | SEE SECTION 5.7 | SEE SECTION 5.7 |
| PASSING SIGHT DISTANCE | | | 5.7 | 2500' | 790 M |
| MAXIMUM DEGREE OF CURVATURE | | E MAX= 0.06 | 6.1 | 2 DEG. 45 MIN. | 756 M |
| (MINIMUM RADIUS OF CURVE) | | E MAX= 0.08 | 6.1 | 3 DEGREE | 667 M |
| SUPERELEVATION RATE | | | 6.2 | SEE SECTION 6.2 | SEE SECTION 6.2 |
| VERTICAL CURVATURE FOR | | CREST | 7.2 | K=540 | K=209 |
| DESIRABLE STOPPING SIGHT DISTANCE | | SAG | 7.2 | K=220 | K=74 |
| MAXIMUM GRADE | | | 7.1 | 3% | 3% |
| MINIMUM GRADE | | | 7.1 | MIN: 0% DES: 0.5% | MIN: 0% DES: 0.5% |
| NEW/RECONSTRUCTED BRIDGES | | STRUCTURAL CAPACITY | - | HS-20/OK OVLD TRUCK | MS-18/OK OVLD TRUCK |
| | | WIDTH | 8.4 | FULL APPROACH | FULL APPROACH |
| EXISTING BRIDGES TO REMAIN | | STRUCTURAL CAPACITY | - | HS-20 (INV. RATING) | MS-18 (INV. RATING) |
| | | WIDTH | 8.4 | MIN: 28' | MIN: 8.4 M |
| VERTICAL CLEARANCE | | NEW / REPLACED | 7.4 | 16'-9" | 5.1 M |
| | | EXISTING | 7.4 | 14'-6" | 4.4 M |

Table 2 - 9

| | | | | | |
|---|---|---|---|---|---|
| DESIGN YEAR (GEOMETRICS) | | | 5.3 | 20 YEARS | 20 YEARS |
| DESIGN SPEED | | | 5.2 | 45 - 60 MPH | 70 - 100 KM/H |
| ACCESS CONTROL | | | 5.4 | REG/PART. CONTROL | REG/PART. CONTROL |
| LEVEL OF SERVICE | | | 5.3 | MIN:D DES:C | MIN:D DES:C |
| LANE WIDTH | | | 8.1 | 12' | 3.6 M |
| SHOULDER / CURB OFFSET | | TYPE | 8.1 | PAVED | PAVED |
| | | WIDTH | 8.1 | RIGHT: 2' LEFT: 2' | RIGHT: 0.6M LEFT: 0.6M |
| CROSS SLOPE | | TRAVEL LANE | 8.1 | 2% | 2% |
| | | SHOULDER / CURB OFFSET | 8.1 | 2% | 2% - 4% |
| AUXILIARY LANES | | LANE WIDTH | 8.1 | 12' | 3.6 M |
| | | SHOULDER / CURB OFFSET | 8.1 | MIN: 2' | MIN: 1.2 M |
| TWLT LANE WIDTH | | | 9.4 | 14' | 4.2 M |
| PARKING LANE WIDTH | | | 17.1 | MIN: 11' DES: 12' | MIN: 3.3 M DES: 3.6 M |
| MEDIAN WIDTH | | | 8.2 | SITE SPECIFIC | SITE SPECIFIC |
| RIGHT-OF-WAY WIDTH | | | 8.6 | SITE SPECIFIC | SITE SPECIFIC |
| CLEAR ZONE | | | 11.2 | 1.5' | 500 MM |
| SIDE SLOPES | CUT | FORE SLOPE | 8.3 | NA | 1:4 |
| | | DITCH WIDTH | 8.3 | NA | 2.4 M |
| | | BACK SLOPE | 8.3 | 3:1 | 1:3 |
| | FILL | 0' - 4' (0M - 1.2M) | 8.3 | 3:1 | 1:3 |
| | | 4' - 10' (1.2M -3.0M) | 8.3 | 3:1 | 1:3 |
| | | > 10' (>3.0M) | 8.3 | 3:1 | 1:3 |
| DESIRABLE STOPPING SIGHT DISTANCE | | | 5.7 | 60 MPH<br>650' | 90 KM/H<br>170 M |
| INTERSECTION SIGHT DISTANCE | | | 9.2 | SEE SECTION 9.2 | SEE SECTION 9.2 |
| DECISION SIGHT DISTANCE | | | 5.7 | SEE SECTION 5.7 | SEE SECTION 5.7 |
| MAXIMUM DEGREE OF CURVATURE | | E MAX= 0.04 | 6.1 | NA | 336 M |
| (MINIMUM RADIUS OF CURVE) | | E MAX= 0.06 | 6.1 | 4 DEGREE 15 MINUTE | 304 M |
| SUPERELEVATION RATE | | | 6.2 | SEE SECTION 6.2 | SEE SECTION 6.2 |
| VERTICAL CURVATURE FOR | | CREST | 7.2 | K=310 | K=72 |
| DESIRABLE STOPPING SIGHT DISTANCE | | SAG | 7.2 | K=160 | K=41 |
| MAXIMUM GRADE | | | 7.1 | 5% | 5% |
| MINIMUM GRADE | | | 7.1 | MIN: 0.4% DES: 0.5% | MIN: 0.4% DES: 0.5% |
| NEW / RECONSTRUCTED BRIDGES | | STRUCTURAL CAPACITY | - | HS-20/OK OVLD TRUCK | MS-18/OK OVLD TRUCK |
| | | WIDTH | 8.4 | FULL APPROACH | FULL APPROACH |
| EXISTING BRIDGES TO REMAIN | | STRUCTURAL CAPACITY | - | HS-20 (INV. RATING) | MS-18 (INV. RATING) |
| IN PLACE | | WIDTH | 8.4 | SITE SPECIFIC | SITE SPECIFIC |
| VERTICAL CLEARANCE | | NEW / REPLACED | 7.4 | 16'-9" | 5.1 M |
| | | EXISTING | 7.4 | 14'-6" | 4.4 M |

Table 2 - 10

## Table 2-7
## Madill License Plate Origin & Destination Survey
## Station to Station External Through Volumes (Bi-Directional)

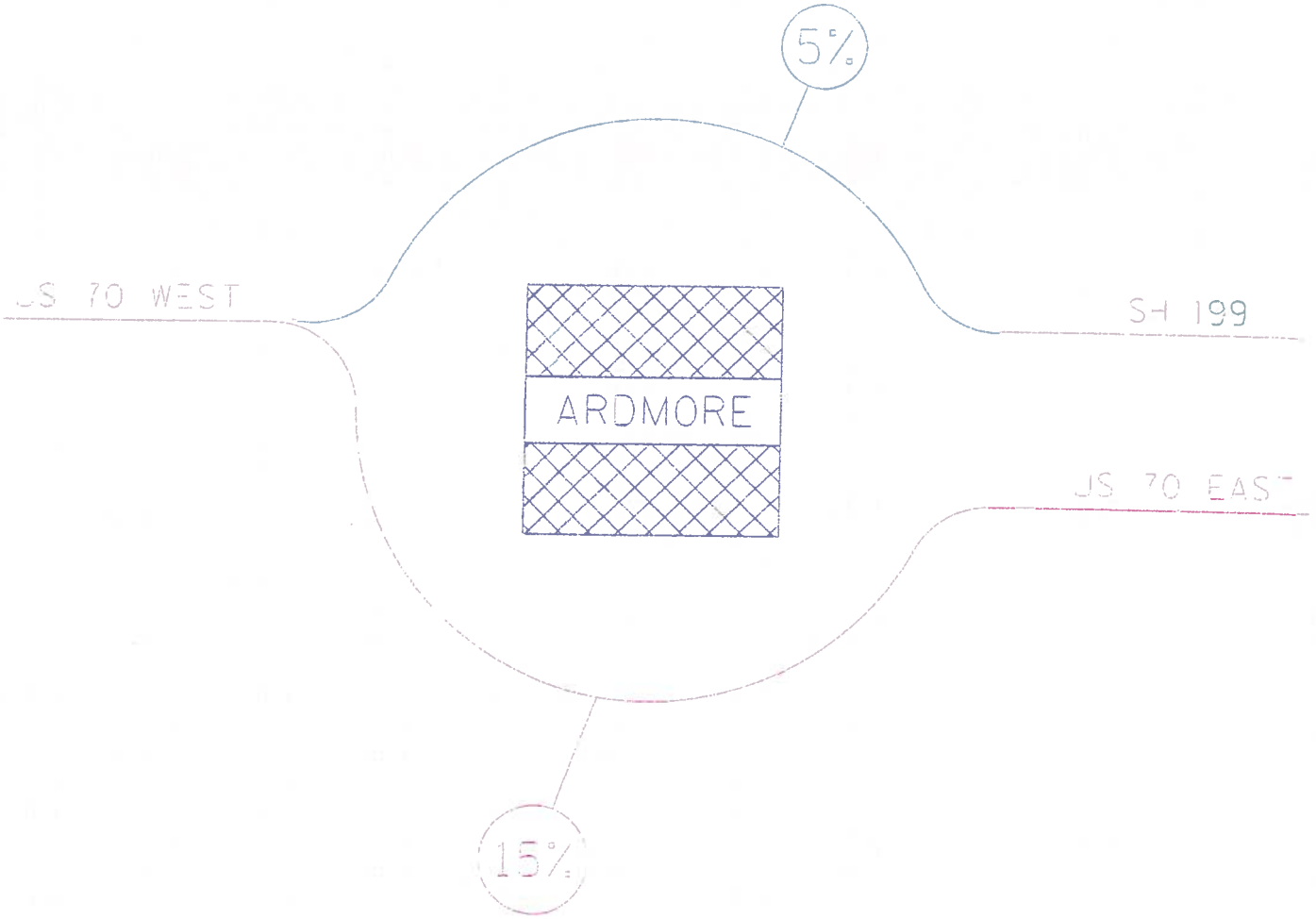
| Location & Station No. | SH 199-Station 1 | | US 70E-Station No. 2 | | US 377S-Station No. 3 | | US 70W - Station No. 4 | | SH 199W-Station No. 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Through Volume | Percent of Total | Through Volume | Percent of Total | Through Volume | Percent of Total | Through Volume | Percent of Total | Through Volume | Percent of Total |
| S 70 E - Station No. 2 | 0 | 0% | | | | | | | | |
| S 377 S - Station No. 3 | 0 | 0% | 0 | 0% | | | | | | |
| S 70 W - Station No. 4 | 15 | 8% | 103 | 21% | 24 | 6% | | | | |
| H 199 W - Station No. 5 | 5 | 5% | 18 | 12% | 6 | 6% | 0 | 0% | | |
| S 377N - Station No. 6 | 0 | 0% | 0 | 0% | 0 | 0% | 10 | 8% | 0 | 0% |

Source: Parsons Brinkerhoff, August 1995

## Table 2-8
## Durant License Plate Origin & Destination Survey
## Station to Station External Through Volumes (Bi-Directional)

| Location & Station No. | US 69/75 Station No. 1 | | US 70E-Station No. 2 | | US 69/75 Station No. 3 | | US 70W - Station No. 4 | |
|---|---|---|---|---|---|---|---|---|
| | Through Volume | Percent of Total | Through Volume | Percent of Total | Through Volume | Percent of Total | Through Volume | Percent of Total |
| US 70E- Station No. 2 | 0 | 0% | | | | | | |
| US 69/75- Station No. 3 | 194 | 18% | 55 | 7% | | | | |
| US 70W- Station No. 4 | 57 | 7% | 53 | 7% | 0 | 0% | | |
| SH 78S - Station No. 5 | 0 | 0% | 0 | 0% | 20 | 8% | 10 | 4% |

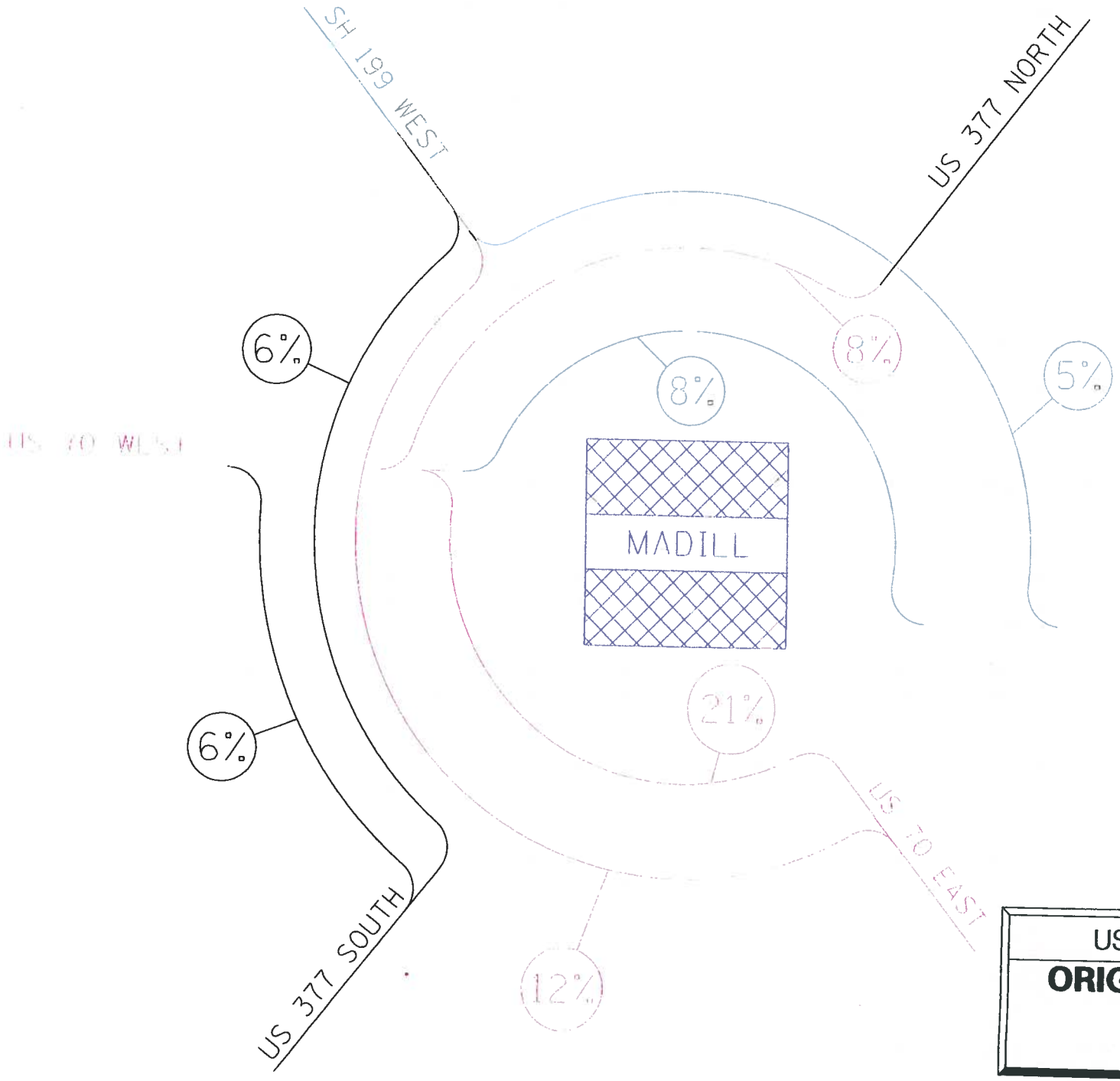
Source: Parsons Brinckerhoff, August 1995




US 70 Feasibility Study

**ORIGIN/DESTINATION: ARDMORE**

Figure 2 – 8

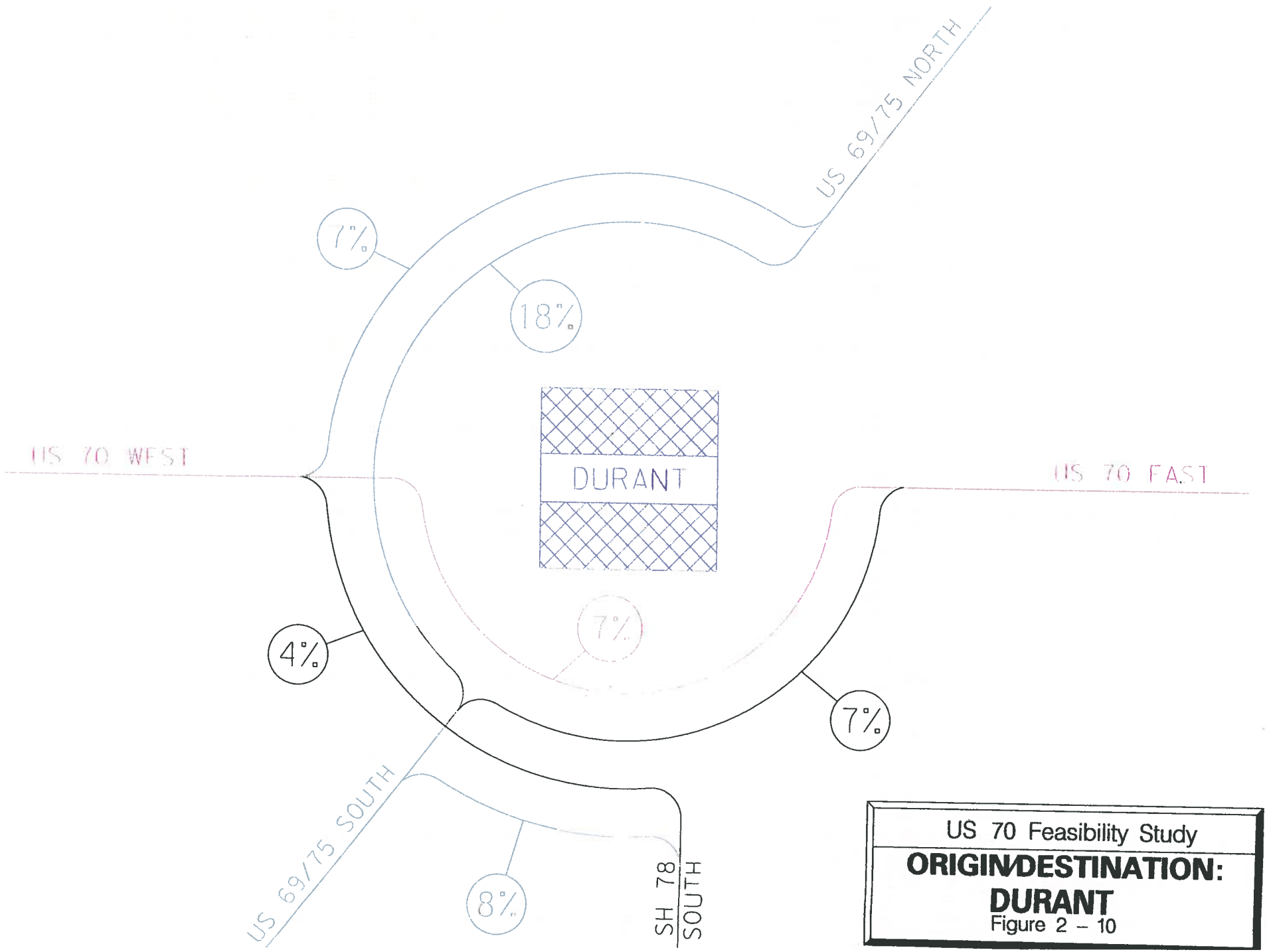



US 70 Feasibility Study

**ORIGIN/DESTINATION:**

**MADILL**

Figure 2 – 9




US 70 Feasibility Study

**ORIGIN/DESTINATION:**
**DURANT**

Figure 2 – 10

## Typical Sections

Two typical sections for US 70 improvements were developed for the study, a rural section and a municipal section. The rural section will be utilized mostly in the stretches between the towns and along the bypass routes. The municipal section is used for routes through towns or rural areas where right-of-way is limited.

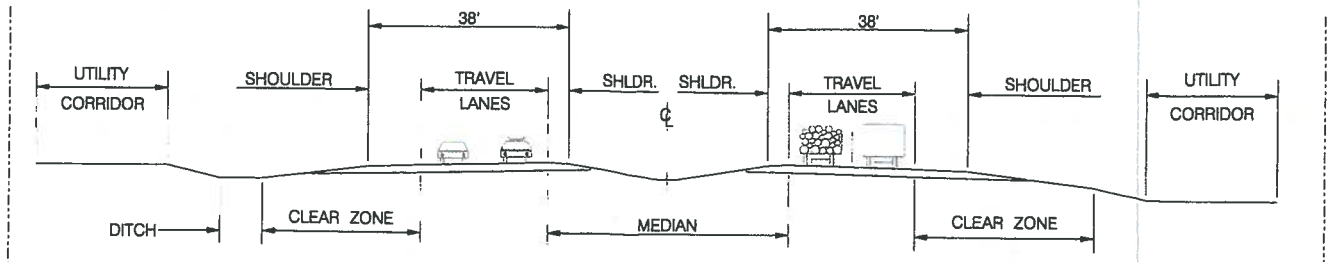
The rural section is a divided multilane roadway with paved shoulders. Two 12-foot traffic lanes, a 10-foot outside shoulder and a 4-foot inside shoulder compose the 38 foot roadway width shown at the top of Figure 2-11. Drainage from the roadway will be carried away by open ditches located in the median and beyond the outside shoulders. The minimum amount of right-of-way required to construct this section is 250 feet. Right-of-way requirements may be considerably greater than 250 feet, depending upon adjacent terrain, design requirements, utilities and other factors. The rural section's design elements are listed in Table 2-9. At the time of construction, if traffic volumes do not warrant a four-lane roadway, it is the intent of ODOT that two lanes will be constructed to one side of the right-of-way. This two-on-four concept is also illustrated in the center of Figure 2-11.

The municipal section consists of a five lane roadway, including a center two-way left turn lane. Each lane width of the four travel lanes is 12 feet. A two foot offset is located between the outside lane and the mountable curb along each edge. A 16 foot two-way left turn lane is the middle component of the 68 foot wide roadway shown at the bottom of Figure 2-9. A drainage system with curb inlets would also be required. The curbed section would require at least 120 feet of right-of-way to allow for placement of utilities and other appurtenances behind the curb. The design elements for the municipal section are shown in Table 2-10.

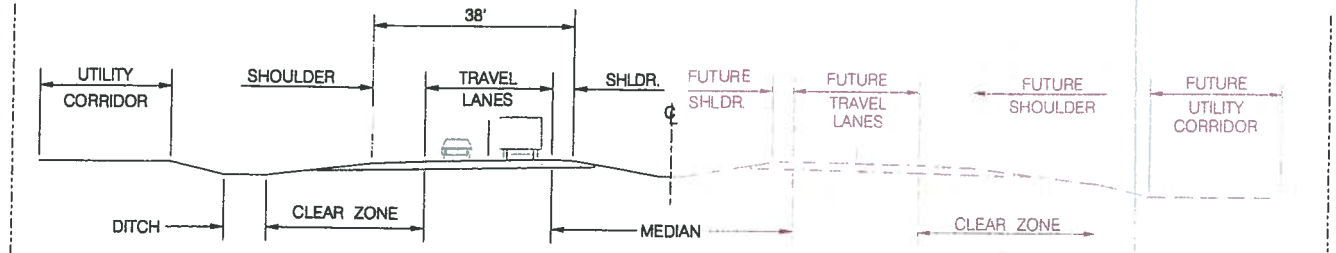
## Environmental

Data for the evaluation of existing environmental conditions on highway alternatives was obtained from federal, state, and local agencies, as well as various published sources of data. A list of agencies contacted is included in Appendix I-1. Some agencies provided data specific to the proposed impact areas, but because of the size of the project, many agencies made their files available for the feasibility study and permitted the needed data to be extracted. Copies of selected agency database segments are included in Appendix I-2. Following initial data collections, a set of base maps was made and field-verified during a reconnaissance of major alternatives.

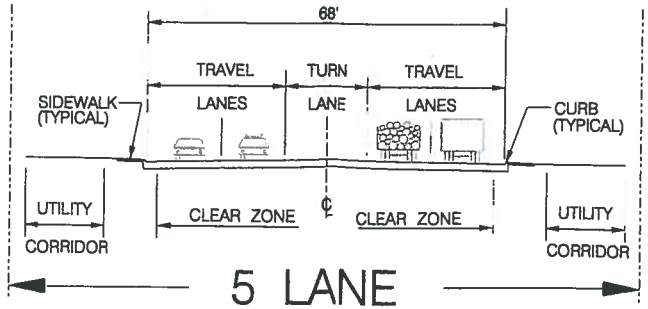
Following the reconnaissance, selected environmental considerations within a corridor 1800 feet wide in rural areas and ½ mile wide in urban areas were identified and mapped. In general, the number and density of environmental considerations tended to reflect the density of past use of the road segment. The exception is wetlands, which tend to be evenly distributed. The constraint maps are provided in Appendix I-3.




4 LANE DIVIDED [ULTIMATE]
(250' MINIMUM & VARIABLE R / W)




2 LANE ON 4 LANE R / W
(250' MINIMUM & VARIABLE R / W)




5 LANE
(120' MINIMUM & VARIABLE R / W)

US 70 Feasibility Study

**TYPICAL SECTIONS**

Figure 2 – 11

**Programmed Projects along US 70 Corridor**

All projects programmed in the study corridor between Fiscal Year 1995 and 2000 are located in Field Division 2. No projects were programmed for US 70 in Carter County, located in Field Division 7. A total of 9 projects are listed this period.

- For Fiscal Year 1996, the Idabel north bypass is programmed. This project involves construction on a new alignment of an approximate 3.8 mile bypass of US 70. Estimated cost of this project around the northern edge of Idabel is $7,000,000.

- Choctaw County is the site of two projects programmed for 1997. From the US 271 junction to east Hugo, the lanes and shoulders of US 70 are to be reconstructed. The project is projected to cost $3,000,000. Another project for the relocation of utilities along this same segment is estimated at $500,000.

- Two projects are programmed for Fiscal Year 1998. One of the sites is in east Durant, the other site is east of Broken Bow. The $1,000,000 project at Durant involves acquiring the additional right-of-way necessary to four-lane US 70 from US 69 Business east three miles. East of Broken Bow, a 5.4 mile stretch of existing US 70 roadway is to be rehabilitated. This rehabilitation of the existing lanes and bridges has been estimated to cost $4,500,000.

- The utility relocations and construction of the additional lanes for the previously mentioned Durant project will start during Fiscal Year 1999. Of the estimated $6,000,000, $1,000,000 is for the utility contract and $5,000,000 is for the roadway construction.

- Fiscal Year 2000 projects are for work east of Hugo. From SH 93 east 3 miles, US 70 is to be reconstructed. In addition to the roadway work, utility relocations are programmed. The total cost for both projects was estimated to be $3,500,000.

# III DATA ANALYSIS - RURAL

## Criteria for Project Prioritization

One of the study objectives was to prioritize improvements to US 70 along the entire corridor. To accomplish this objective, the corridor was divided into segments. Each segment in the study corridor was analyzed to determine the priority of each project. The segments were compared using three factors: accident rate, sufficiency rating, and future Level of Service. Each factor was weighted equally and the three items were added together. Subsections with lower total scores were given the higher priority. Priority categories were subdivided into three groups: high, moderate, and low, to create logical sections for improvements. Approximately one third of the total projects were assigned to each priority level.

The accident data as shown in Figure 2-2 illustrated the road segments with high crash rates. Those areas with a high crash rate were assigned a value of 1. For the road segments not exhibiting a high crash rate a value of 3 was given. Critical accident areas were located in the Madill area, west of Durant, in the Idabel area, between Idabel and Broken Bow, and west of the Arkansas State Line.

The condition of the existing roadway was considered by the ODOT sufficiency ratings. Sufficiency ratings of each subsection were also assigned a value between 1 and 3. If the roadway was considered adequate, it received a value of 3. A tolerable section had a value of 2. Those segments deemed to be inadequate or critical were given a score of 1. Sufficiency ratings for the corridor are illustrated in Figure 2-4 and listed in Appendix C.

The ability of the existing roadway to accommodate the future traffic for the Year 2020 was considered via the Level of Service category. Level of Service (LOS) values range from A to F, with LOS A indicating free flow of traffic and LOS F indicating extreme congestion. A more detailed explanation is provided in Chapter VI. For this analysis, LOS A had a value of 3. Each following level of service was given a value of half point lower. LOS B resulted on a value of 2.5 and so on until LOS F, which had a value of 0.5. Table 6-5 in Chapter VI lists the level of service for Year 2020 traffic along the corridor.

The lowest total score possible was 2.5. This score would indicate a road segment with a high accident rate, critical sufficiency rating, and LOS F. Likewise, the highest total score would be 9. Characteristics of such a section would be an area without a high accident rate, an adequate sufficiency rating, and LOS A. For each priority project the ratings of the three factors are shown in the spreadsheets in Appendix E.

## Environmental Considerations

Environmental and cultural/social considerations on the rural highway segments are underground storage tanks (gas stations/convenience stores), abandoned/closed gas stations, aboveground storage tanks, schools, cemeteries, parks, junkyards/salvage yards, industrial areas (active and vacant), automotive maintenance businesses, county highway barns, electrical substations, sewage disposal plants, water treatment plants, historic building sites from 19th Century General Land Office maps, known archaeological sites, National Register of Historic Places/Oklahoma Landmarks Inventory properties, churches, 100-year floodplains, and mapped potential wetlands. Data for each road segment are included in Appendix I-4.

Generally, there are no clusters of considerations that might cause exceptional problems, but there are two exceptions. On the existing US 70 route between Kingston and Durant, expanding the lake crossing may have a greater impact on significant archaeological sites and Section 4f recreational areas. Additionally, on existing SH 199, the site of a proposed realignment for US 70, the road passes near Ft. Washita, a state park and National Register property, where there may be some impact on unrecorded historical archaeological sites associated with the fort.

## Cost Elements for Rural Projects

A goal of the study was to break the US 70 study corridor into constructable projects. For the purposes of this study a constructable project was a roadway segment whose total improvement cost was estimated to be approximately five million dollars. Due to urban limits, topographic features, and other factors, some of the projects were less than the target amount while others were significantly higher. In most instances bridge construction was the reason for a total amount exceeding five million dollars.

Using the roadway subsections from the Needs Study as a guide, costs to upgrade each subsection were calculated. The typical sections shown in Figure 2-11 describe the ultimate facilities after improvements. The estimates were based on the improvement type for each subsection. Four improvement types were considered for the rural sections. The first type was new four-lane construction on a new alignment. The second improvement category was parallel construction of two new lanes with no improvement to the existing roadway. The third type also added two new parallel lanes in addition to widening and resurfacing the existing lanes. The final category of improvements to rural sections called for two new parallel lanes along with major improvements to the existing lanes. Corrections in the vertical and horizontal alignment were considered major improvements.

Within each of the four rural improvement types four grading types were utilized to determine the appropriate per mile cost. The grading types were classified by the type of terrain and the amount of cut and fill required to maintain proper gradeline. These are defined in more detail in Appendix F.

Knowing the grading type for each improvement category, construction costs on a per mile basis were estimated. Roadway costs per mile for grading and drainage work, base and surface materials, sodding and signing, right-of-way and utilities were factored into the basic roadway cost equation. Costs for bridges and stream crossing structures were done individually and added to the roadway price. Per mile cost information was taken from ODOT's 1994 Needs Study. The detailed cost estimates for the priority projects in each county are presented in Appendix F.

Combining the roadway and structure costs produced the price to improve the subsection. Adjacent subsections were grouped together to arrive at a total cost near the target project cost of approximately five million dollars. Roadway cost, structure cost and total construction cost for each priority project are presented in Appendix E.

# IV DATA ANALYSIS - MUNICIPAL

## Locations Considered for Bypasses

The existing alignment of US 70 runs through several towns and communities in the study area. Existing right-of-way widths and environmental concerns along the route necessitated the investigation of realigning US 70 through or around these communities. Towns in which there is insufficient right-of-way to construct the proposed 5-lane sections are Madill, Kingston, Durant, Bokchito, Boswell, Soper, and Valliant. According to ODOT policy if a bypass replaces a portion of a State Highway, the old highway will revert back to local responsibility for continuing maintenance.

As a result of a previous request, a bypass route around the southwest portion of Ardmore was added to the feasibility study. The Ardmore bypass was to connect US 70 west of I-35 to US 70 east of I-35. Currently the two US 70 segments are offset by over two miles along I-35. US 70 traffic must exit one segment and travel along I-35 before proceeding on the other segment of US 70.

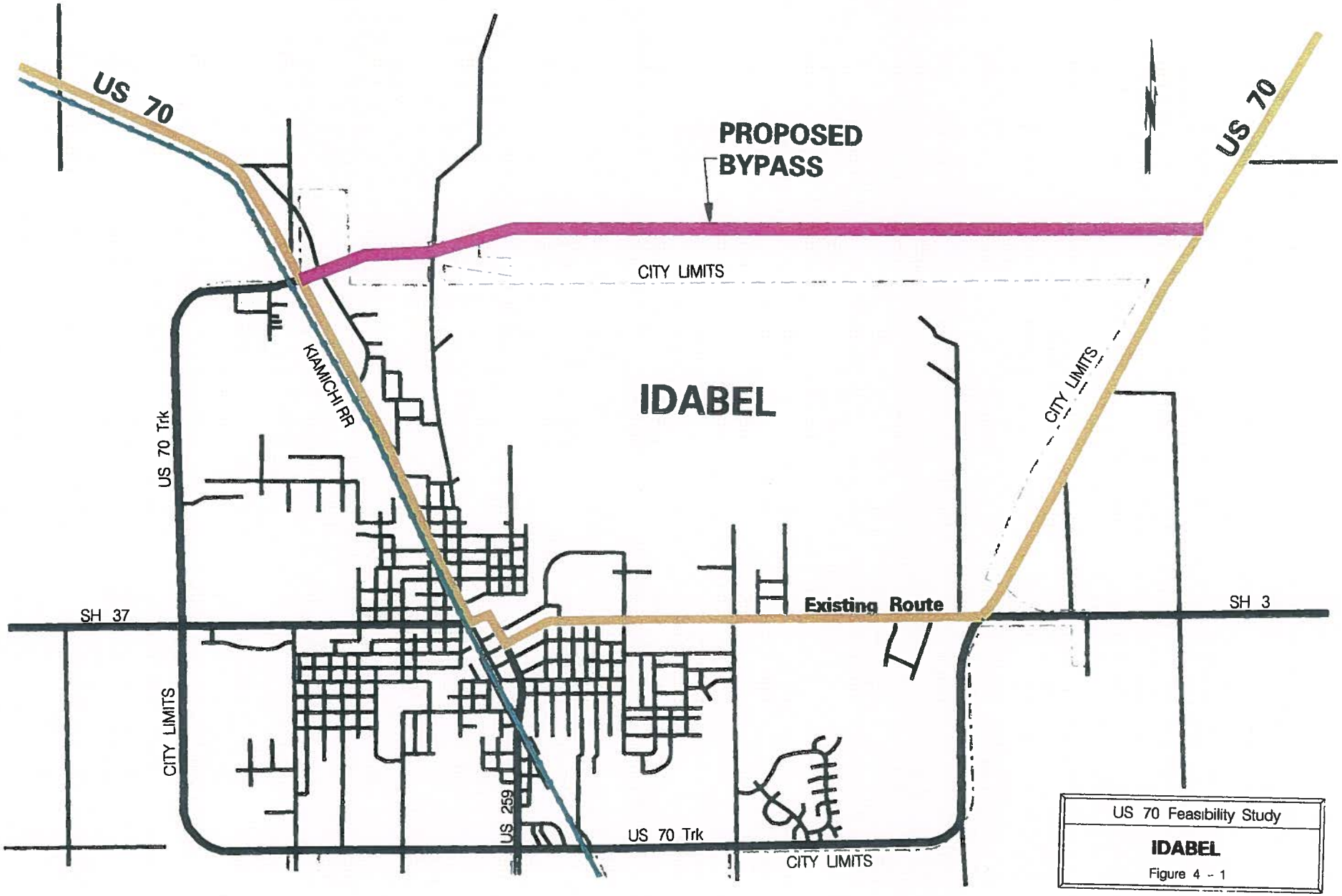
Construction plans have been completed by ODOT for a bypass around the north side of Idabel. The proposed alignment circumvents downtown Idabel by connecting US 70 in the northwest quadrant of Idabel with US 70 near the northeast edge of town. Construction of the bypass is scheduled to start in 1997. Figure 4-1 shows the approximate location of the proposed north bypass of Idabel. The total length of the bypass is approximately 3.8 miles.

## Criteria for Bypass Alternative Consideration

At each potential bypass location, several alternate routes were considered, in addition to improvements along the existing route. Five factors were evaluated in the initial determination of the preferred route alternative at a town. These five factors were as follows:

- Total cost
- Ability to serve US 70 traffic
- Number of relocations or displacements
- Affect on the local businesses
- Environmental considerations along the route

Bypasses and routes through town were assigned identical beginning and end points to allow for comparison between the different options.




US 70 Feasibility Study

**IDABEL**

Figure 4 - 1

Costs for the five lane municipal section and four-lane divided section were computed. Most of the existing route alternatives were evaluated using the five lane section throughout their extents. A majority of the bypass routes were estimated using the four-lane divided section. Costs of routes going through a town are generally higher due such factors as higher right-of-way costs, utility relocations, and necessity for storm sewer systems.

Traveling through a town on the existing route often causes motorists to observe a lower speed limit in the city limits. Traffic control devices such as stop signs and traffic signals are present in some of the larger communities. In most instances, the bypass alternatives are near or outside the city limits, resulting in a longer route. Despite the additional length, US 70 traffic may still opt for the bypass route to avoid the speed reductions on the existing route through town and the congestion the downtown area.

Widening to a five lane section in a developed area could cause the displacement of homes or businesses near the route. Some of the businesses may not have to be relocated but they would lose parking in front of their establishment. Homeowners may perceive an elevated noise level due to the traffic lanes located closer to their residences. Bypass alignments were chosen to lessen the impact on existing structures and residences.

Relocating US 70 away from the area of the towns could affect businesses along the existing route. Some businesses may leave the downtown area and move out to the bypass. Other businesses not moving may see benefits due to less congestion and truck traffic in town. Less vehicular traffic in the downtown area could increase safety in the area and promote pedestrian travel.

The most common environmental issue along the existing route through the various towns is the presence of underground storage tanks. Parks and cemeteries are located adjacent to the existing route in several locations. Bypass routes are normally located in undeveloped areas. Some of these areas contain wetlands and floodplains. Bypass alternatives as well as the existing route alternative were affected by railroad tracks along or crossing the routes.

The bypass alternatives were presented at the initial public meetings in May 1996. Comments received at these meetings were evaluated and the alternatives were refined appropriately. The alternatives at each location were then further evaluated with the objective screening criteria to determine a preferred alternative.

Each of the five factors for construction was evaluated on a scale of 1 to 5, with 1 being the most preferable and 5 being the least preferable. The scores from the factors were added together and the alternative with the lowest total became the tentative preferred alternative. In the case of a tie between the existing route and a bypass alternative the existing route was the preferred choice.

The preferred alternatives were presented at the public meetings in October 1996. Comments received at these meetings were also considered in developing a recommended route.

**Environmental Analysis**

Environmental and cultural/social considerations on the urban highway segments are underground storage tanks (gas stations/convenience stores), abandoned/closed gas stations, aboveground storage tanks, schools, cemeteries, parks, industrial areas, automotive maintenance businesses, electrical substations, sewage disposal plants, historic building sites from 19th Century General Land Office maps, known archaeological sites, National Register of Historic Places/Oklahoma Landmarks Inventory properties, churches, 100-year floodplains, and mapped potential wetlands. Data for each town are included in Appendix I-5.

The most significant environmental considerations in the towns are cultural/social. Other kinds of considerations or issues can be removed or mitigated in place, but under normal circumstances, significant cultural resources must be left in place.

All of the towns along US 70 are old enough to be considered historical. Some date back to the Indian Territory days. Others, while generally more modern, have elements that date back to those times. As a rule, the larger and wealthier the town, the more significant cultural resources exist to complicate matters. In addition to simple density of elements, larger towns tend to have more National Register nominations and larger public and private structures. The most complex of the towns being considered here are Durant and Oakland/Madill.

**Discussion of Individual Alternative Bypass Routes**

1. **Madill:** Four alternatives for the alignment of US 70 in the Madill/Oakland area were also considered. The first alternative was the improvement of existing US 70 through the two towns. A bypass around the southwest edge of both communities was also considered. A third alternative was a bypass running north of Oakland and around the north and east edges of Madill. The fourth alternative was a route along existing US 70 through Oakland and continuing east of the US 70/SH 199 intersection across the north and east sides of Madill. The four alternatives are shown in Figure 4-2.

    a. **Existing Route:** The existing alignment from the west edge of Oakland to south of Madill is approximately 4.8 miles in length. Through Oakland, US 70 has two 12-foot lanes with 8-foot shoulders

within 160 feet of right-of-way. In the vicinity of the US 70/SH 199 intersection, multilane sections inside 180 feet of right-of-way exist. In Madill, from near Harris Street to around Francis Street, the predominant section is two lanes wide with 7 foot shoulders. In this area of town the right-of-way generally is 100 feet. As US 70 heads south out of Madill, the roadway section remains two lanes in width, except for a short length of three-lane roadway south of the US 70/SH 99 intersection. All of the right-of-way along this segment is 120 feet.

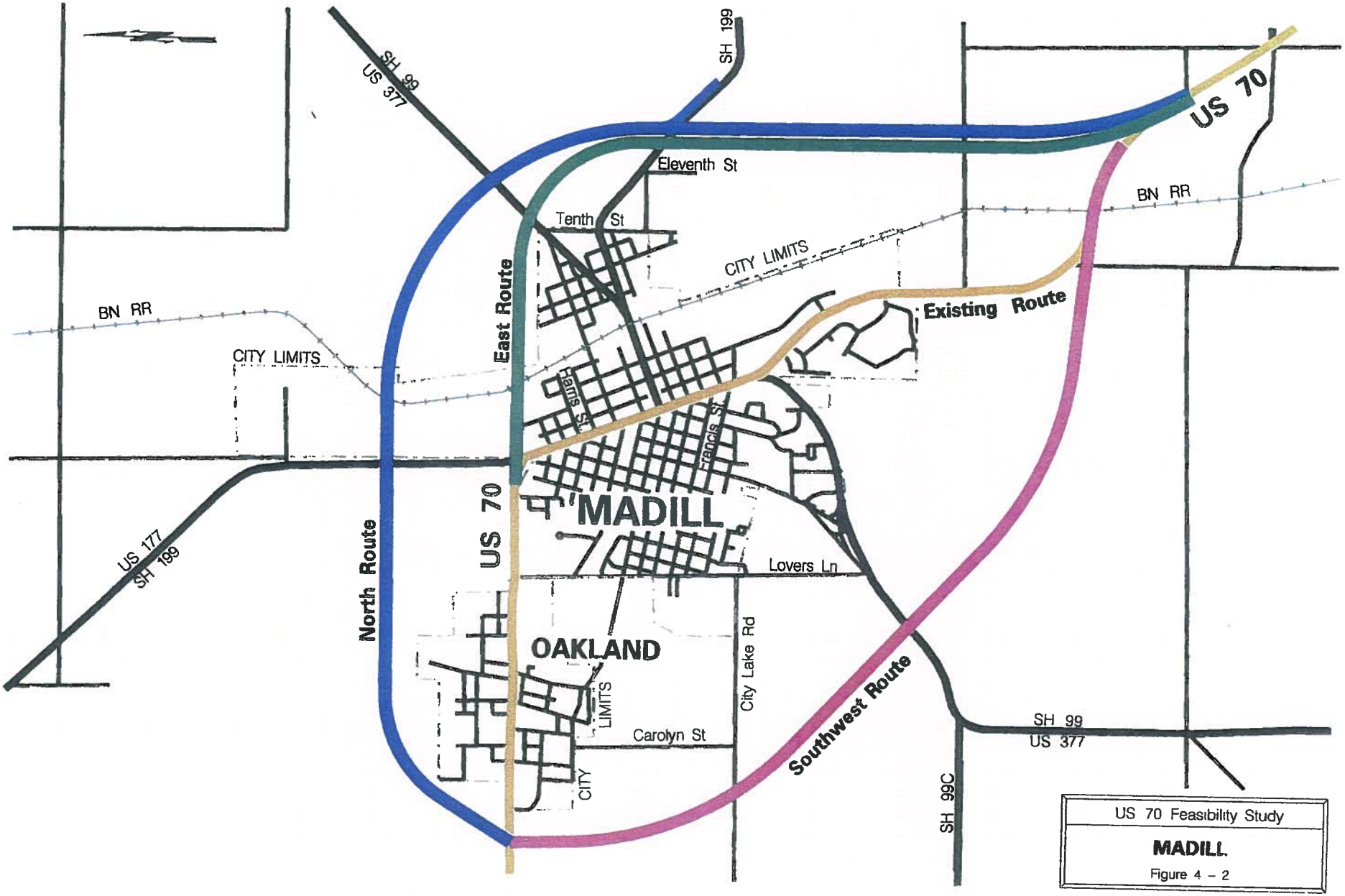
Most of route has adequate existing right-of-way to accommodate the proposed five lane section. However, the portion not having adequate right-of-way is in the developed business area of Madill. Numerous businesses and property owners would be encroached upon by the widened roadway. In addition several underground storage tank sites would be affected by the widening.

Presently, motorists traveling through Madill on the existing route must reduce their speed through town and possibly stop at the two traffic signals. In addition, turning movements into and out of the businesses along the route impede the through traffic flow. The cost estimated to upgrade existing US 70 through Oakland and Madill is in excess of 17.0 million dollars.

b. **Southwest Bypass:** The route around the west of Oakland and traversing in a southeasterly direction to a terminus at the railroad underpass south of Madill is 4.5 miles long. This alignment intersects City Lake Road and SH 99. Between SH 99 and the end of the route, the alignment crosses tree-lined creeks and wooded areas.

This alternative would result in minimal displacements of businesses and residences. Environmentally, this alignment does not appear to present any significant impacts. The through traffic on US 70 could efficiently move around Madill and Oakland without going through their business districts. The cost estimate for the southwest alternative was based on a four-lane divided section throughout. The shortest of the alternatives, it is also the least costly at approximately 9.0 million dollars.

c. **North Bypass:** Similar to the southwest route, the north bypass begins on the west side of Oakland. It generally traverses just outside the west and north boundary of Oakland. Near the northeast corner


SH 99
US 377
SH 199
US 70
Eleventh St
Tenth St
BN RR
CITY LIMITS
East Route
Existing Route
Hams St
Francis St
MADILL
US 70
North Route
US 177
SH 199
Lovers Ln
OAKLAND
City Lake Rd
CITY LIMITS
Carolyn St
Southwest Route
SH 99
US 377
SH 99C
US 70 Feasibility Study
MADILL
Figure 4 – 2

of Oakland the route crosses Glasses Creek. It proceeds in an easterly direction over SH 199 and the Burlington Northern Railroad. East of the railroad, the bypass crosses Glasses Creek again and remains south of the creek as it crosses SH 99. The route then turns south and crosses SH 199 and Whiskey Creek before it ends east of the existing railroad underpass south of Madill. This four-lane divided roadway alternative is 6.1 miles long, the longest of the four considerations.

Few residences and businesses are in close proximity to this route. Travelers on US 70 would have to go around both Madill and Oakland on this lengthy route. The major environmental concern is the broad floodplains associated with Glasses Creek. This bypass is the mostly costly of the four alternatives at approximately 18.8 million dollars.

d. **East Bypass**: The east route blends part of the existing US 70 alignment with a new bypass around the east side of Madill. Existing US 70 from the western Oakland city limits to the intersection of US 70/SH 199 would be widened to a five lane section. The new bypass alignment around Madill would commence at the US 70/SH 199 intersection. It would proceed as a four-lane divided section due east over the Burlington Northern Railroad and cross SH 99 before turning south. Once across SH 99 the route would follow the same alignment along the east edge of Madill as the North route. Total length of the east route is over 5.7 miles.

A portion of the a housing complex owned by Madill Housing Authority is located on this alignment between US 177 and the railroad . In this same area the town's wastewater plant is adjacent to the route. Drivers on US 70 would still proceed through Oakland and could go through downtown Madill if they chose to not use the longer bypass around the east side of Madill. Compared to the other alternatives, fewer floodplains are in the area of this route. Also, since most of the route is east of SH 199, there is less potential for conflicts with historical sites. The estimated cost of this alternative is approximately 17.7 million dollars.

Each of the four Madill alternatives are a component of one or more of the three route alternatives between Madill and Durant. These alternatives are discussed further in Chapter V. The existing route, north bypass and east bypass can be modified to connect to any route alternative. The southwest route is only feasible when used in conjunction with the existing US 70 route

alternative. In the final analysis, the Madill route chosen may be modified to complement the preferred route alternative.

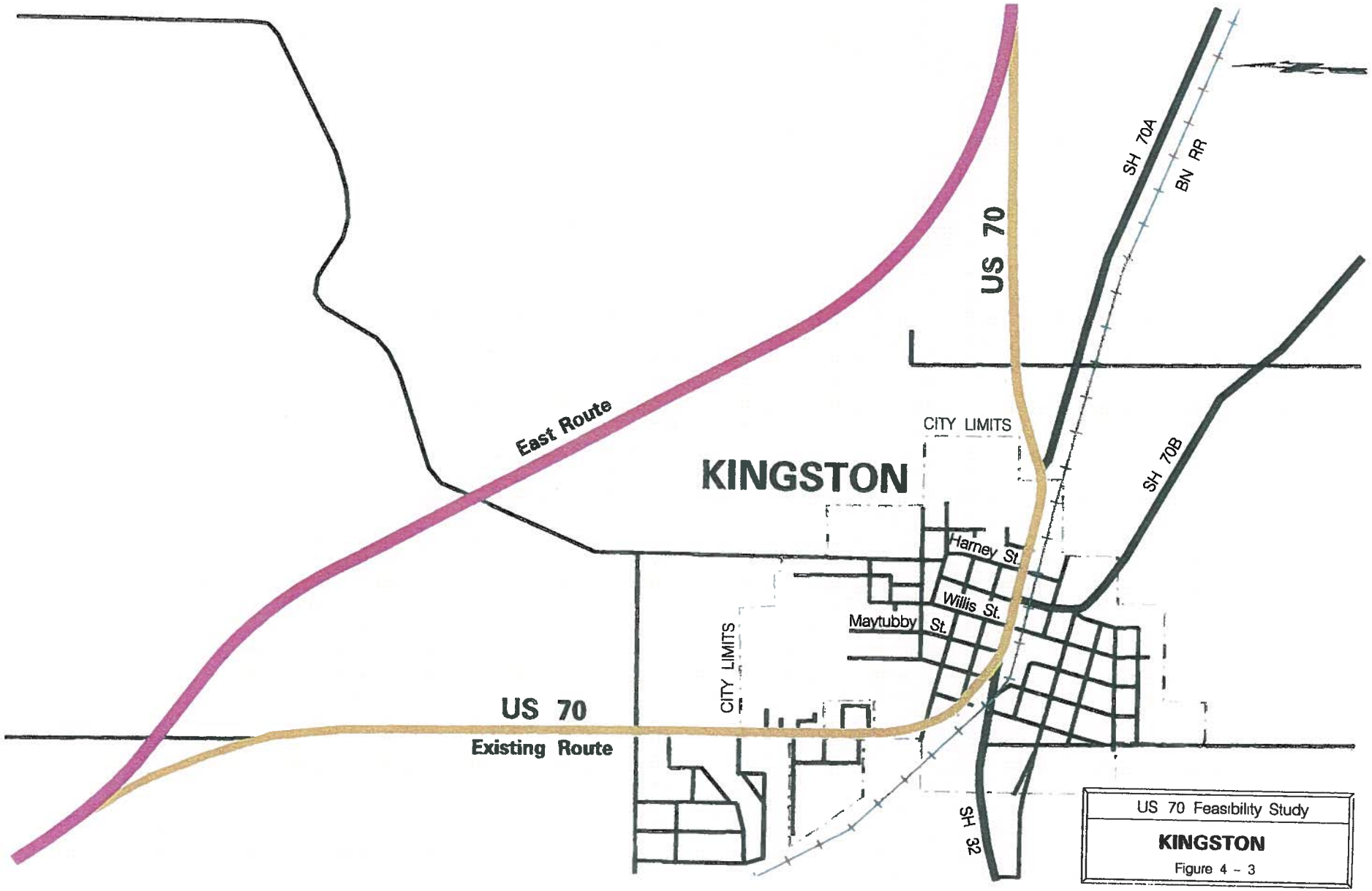
2. **Kingston:** Two alternatives were proposed at Kingston, including improvement of the existing route and an east bypass route. Alignments for the two routes are shown in Figure 4-3.

   a. **Existing Route:** US 70 enters Kingston on a north-south alignment in the northwest portion of town. Near the west edge of downtown it turns and heads in an easterly direction out of town. The length considered was 4.1 miles long. North of the downtown area, US 70 is located in 130 feet of right-of-way. The roadway is composed of two 12-foot lanes with 10 foot shoulders. Near Maytubby Street the pavement width increases to 40 feet with no shoulders. This section is located in 100 feet of right-of-way. One block east at Willis Street, the surface becomes 60 feet wide with curbs and continues two blocks to Harney Street. On-street parking is allowed in this area. The right-of-way width is 80 feet. East of Harney Street the roadway section changes to two 12-foot lanes with 8 to 10 foot shoulders. Right-of-way widths east of Harney Street are 80 feet and expand to 100 feet west of the US 70/ SH 70A intersection.

      Adequate right of way exists between the north edge of town and Maytubby Street for the five lane section to be constructed. In the area east of Maytubby Street additional right-of-way would be required. Also the on-street parking in portions of this segment would have to be removed.

      The horizontal geometrics, in particular the curves at each end of the downtown area, need to be modified. Currently the US 70 traffic must decrease speed as it enters and proceeds through the business area. Government Land Office sites are located near US 70 as well as several underground storage tanks. The cost to upgrade US 70 to a five lane section through Kingston is approximately 12.0 million dollars.

   b. **East Bypass:** The alignment for a bypass around Kingston is located east of town, outside the city limits, extending for a length of 3.4 miles. All of the bypass would be a four-lane divided section. Most of the area along the route is undeveloped. A nursing home at the north end of the bypass would be avoided.


US 70
SH 70A
BN RR
East Route
CITY LIMITS
KINGSTON
SH 70B
Harney St.
Willis St.
Maytubby St.
CITY LIMITS
US 70
Existing Route
SH 32
US 70 Feasibility Study
KINGSTON
Figure 4 - 3

Service to US 70 traffic would be greatly improved. Motorists could bypass the town without having to decrease their speed or mix with local traffic. Few displacements of residences or businesses would be required. No major floodplains or archaeological sites would be affected. The historic sites in town would be avoided. The total cost of the east bypass would be approximately 6.9 million dollars.

3. **Durant:** Three options were initially considered at Durant. They included improvements of the existing route, north bypass and a south bypass. After the first public meetings in July 1996 and subsequent discussions with city officials the existing route was eliminated as an alternative. Since the existing route went through a heavily developed residential area and the downtown business district, acquiring the additional right-of-way to construct the new section would be cost prohibitive. Numerous relocations and environmental issues would require mediation. Also due to local input, the north bypass was modified from a route across the entire north part of Durant to a shorter segment in the northeast quadrant of the city. The northwest portion of Durant is primarily a residential area and was considered by the local representatives to be an undesirable bypass location. In order for the area to continue to develop it was decided to omit a route from this quadrant of Durant. The south route was similarly altered to avoid a residential area and landfill. The revised south bypass route still serves the industrial interests located near the airport south of Durant.

For the final analysis, two choices were considered, a northeast bypass and a south bypass. Figure 4-4 illustrates the two bypass routes. Each of the two choices is connected to one of the three US 70 route alternatives being considered between Madill and Durant. The preferred alignment for a bypass of Durant will be the option that coincides with the overall US 70 route alternative between Madill and Durant.

a. **Northeast Bypass:** The northeast route is the eastern portion of the SH 199/SH 78 alignment being considered between Madill and Durant. It connects to SH 78 at the Cerlach Drive intersection. From that point it heads in a southeasterly direction outside the city limits, over the Union Pacific Railroad and Mineral Bayou. The route continues across McLean and connects to US 70 east of Durant near Sawmill Road. The rolling terrain along the alignment is heavily wooded west of McLean. Total length of the northeast bypass is 3.1 miles. The cost of this four-lane divided roadway segment is estimated to be approximately 9 million dollars.

b. **South Bypass:** The south bypass is the Durant alternative associated with both the Existing US 70 alignment option and the New US 70 alignment of the Madill to Durant route alternatives (See Chapter VI). The bypass commences in a southerly direction roughly 3/4 mile west of North 49th Avenue. It turns east and crosses over US 69/75 north of Rodeo Road. It continues on an eastern path over South Ninth Avenue, the Union Pacific railroad, and across SH 78. South of the McLean / Country Club Road intersection it turns to the north. The route ends at US 70 east of Durant near Sawmill Road. Total roadway mileage for this bypass is 9.3 miles. The cost of the four-lane divided bypass route is approximately 24.9 million dollars.

4. **Bokchito:** Three alignment alternatives were investigated. A north bypass around town, a bypass south of town and improvement of the existing route through the community were analyzed. All three routes are approximately 4 miles long and are shown in Figure 4-5.

a. **Existing Route:** Entering Bokchito from the west, US 70 is north of and parallels the Kiamichi Railroad line. As the existing route reaches the western city limits, the railroad tracks diverge to the southeast while US 70 continues in an easterly direction through the town. Outside the eastern edge of town, US 70 turns to the southeast and eventually parallels the railroad tracks. SH 22 serves as the major north-south road in Bokchito and is located in the downtown area.

Coming into town from the west the roadway is two lanes with 7-foot shoulders. Approximately one block west of SH 22 the roadway widens to 71 feet with curbs. This wide section permits on-street parking in front of the downtown businesses. The wider roadway continues to one block east of SH 22. At this point, the roadway returns to two lanes but has 10-foot shoulders as it exits Bokchito. The existing right-of-way is 100 feet through town. East of town the right-of-way changes to 130 feet.

Homes are located adjacent to the route both east and west of downtown. In the downtown area, businesses line the route. If the route was upgraded to a five lane section, most developments adjacent to the existing route would be affected. On-street parking in the downtown area would be removed. The cost to widen the 3.8 mile route is estimated to be over 15.4 million dollars.

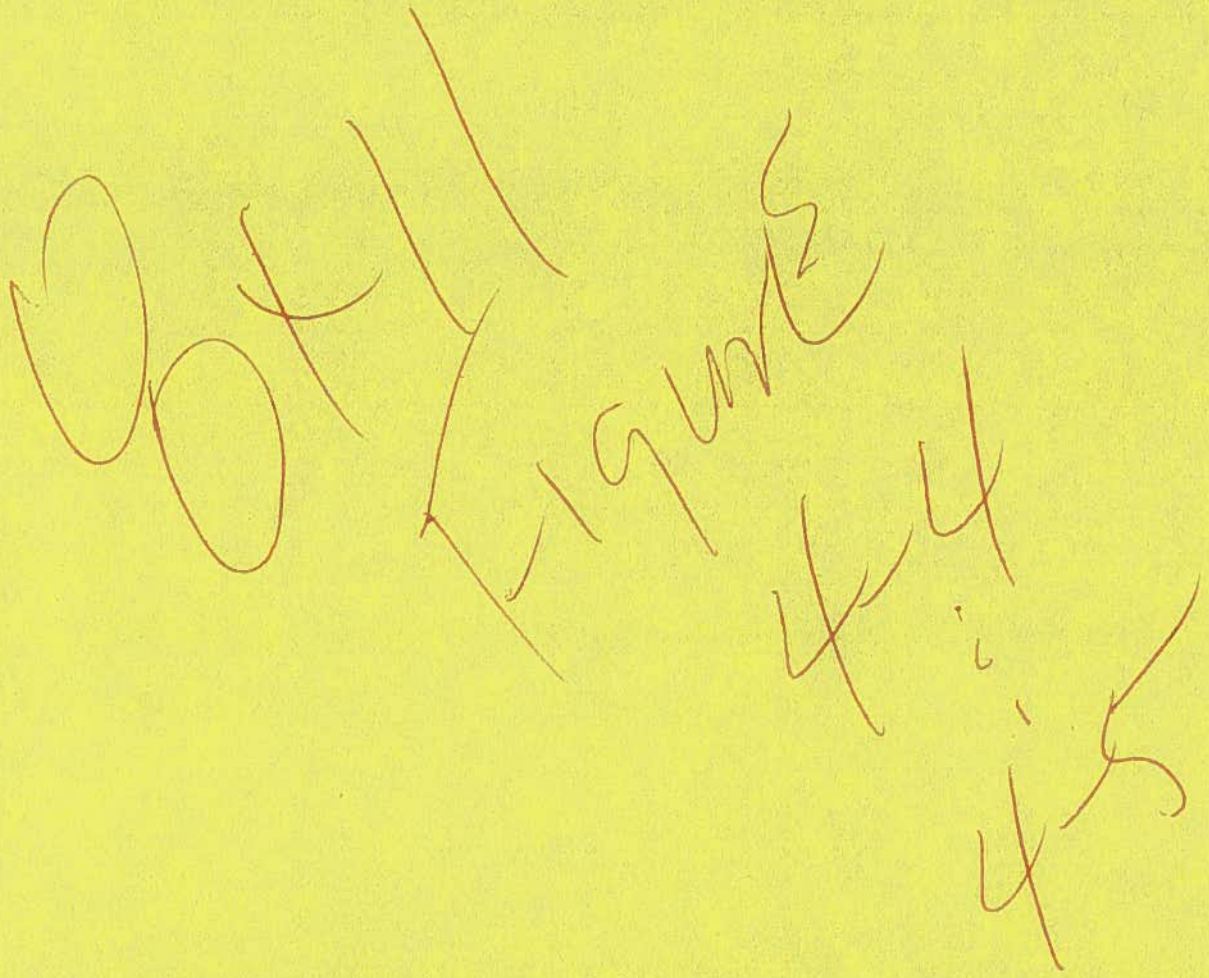


Figure 4-4
4-5

b. **South Bypass:** The south bypass route begins approximately 1 1/4 miles west of the city limits. It immediately crosses over the Kiamichi Railroad and heads in a easterly direction. It parallels the existing route but is located about 1/2 mile to the south outside the city limits. It then crosses the railroad again before tying to US 70 east of town.

This route is 3.6 miles long and is slightly shorter than the existing route. US 70 motorists would not have to veer to the north and travel through Bokchito on this alignment. Because it is south of the town, few residences would need to be relocated.

In addition to the previously mentioned railroad crossings, floodplains also lie in the path of this alignment. The cost of this four-lane divided option is approximately 11.4 million dollars. Over 33% of that amount is for the construction of the two railroad overpasses.

To alleviate the railroad overpasses, relocating the railroad tracks south of this route was considered. The Kiamichi Railroad does not stop in Bokchito so rail service to the community was not an issue. The cost to realign the railroad was estimated to exceed the costs of the grade separations. This modification to the south alternative was eliminated from consideration.

c. **North Bypass:** Most of the development in Bokchito has been north of existing US 70. This alignment bypasses around the north side of Bokchito, but results in a lengthy alternative. Locating the 4.3 mile route to the north of the town allows room for the four-lane divided roadway section.

Travelers passing the town heading east or west would be able to maintain their speed by avoiding the downtown area. Businesses in the downtown area would still be accessible to the US 70 traffic via the existing alignment and SH 22. Fewer wetlands and floodplains exists on this bypass alternative compared to the other routes. This bypass option is calculated to cost approximately 9.4 million dollars.

5. **Boswell:** Three alignment possibilities for the widened US 70 were considered for this community in western Choctaw County. Maintaining US 70 on its present alignment through the town as well as bypasses north and south of the town were the options. The north bypass goes completely

around the town. The south route is similar to the existing route except it is located approximately two blocks south of the current alignment. All three alignments are graphically illustrated in Figure 4-6.

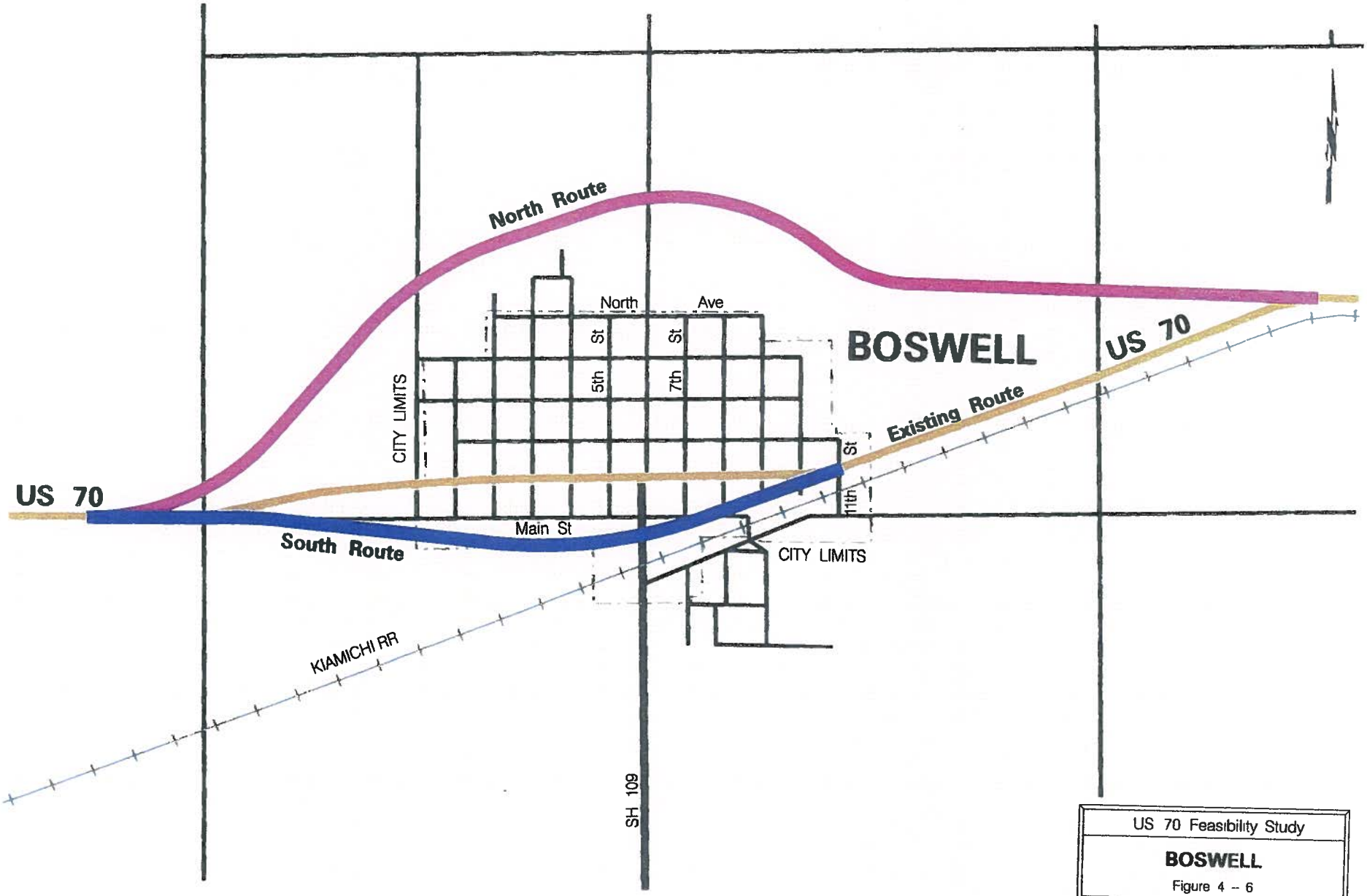
a. **Existing Route:** Outside the city limits the right-of-way is 130 feet wide to the west and 120 foot wide to the east. Inside the town, the right-of-way is 100 feet. West of town the pavement section has two 11-foot lanes with 8-foot sod shoulders. Inside the city limits the shoulders become paved and are 10 feet wide. For two blocks between Fifth and Seventh Streets the paved surface is a 71 foot wide, curbed section. On-street parking is allowed in this two block area. Proceeding to the eastern city limits, the route returns to two 11-foot lanes with 10-foot paved shoulders. Outside the eastern city limits, the shoulders are composed of sod.

   Some relocations and the loss of on-street parking in the downtown area would be necessitated by the upgrading of the existing route to a five lane section. Numerous underground storage tanks could be affected by the widenings. The cost to modify the 2.9 mile long route is over 8.2 million dollars.

b. **South Bypass:** The south route is a modification of the existing route through town. Its length is equal to the existing route length of approximately 2.9 miles. The bypass runs east and west south of Main Street until it crosses SH 109. East of SH 109, the Kiamichi railroad forces the alignment to turn to the northeast to avoid crossing the tracks. The south route parallels the railroad east of SH 109. Inside the city limits a five lane section is proposed. Those segments outside the city limits would be four-lane divided.

   Being bounded by residences to the north and the railroad to the south this alignment has little flexibility. Broad floodplains and the potential hazards of the railroad yard are environmental issues associated with this route. This route is the most expensive of the Boswell alternatives at over 9.3 million dollars.

c. **North Bypass:** The north route runs west and north of town and connects to US 70 northeast of town. A longer route than the other options, it is 3.1 miles long. The four-lane divided roadway would route US 70 traffic farther away from the downtown area. Land exists along this route for new development. Few displacements would be warranted and no apparent environmental impacts are




US 70 Feasibility Study

**BOSWELL**

Figure 4 – 6

present. At an estimated cost of approximately 5.1 million dollars, this alternative is the least expensive option of the three.

6. **Soper:** Two alternatives were considered at Soper as shown in Figure 4-7. The existing route traverses on a east-west bearing through town. A north bypass route, located west and north of Soper, was the other alternative. The bypass route is 2.1 miles long while the existing route has a length of 2.2 miles.

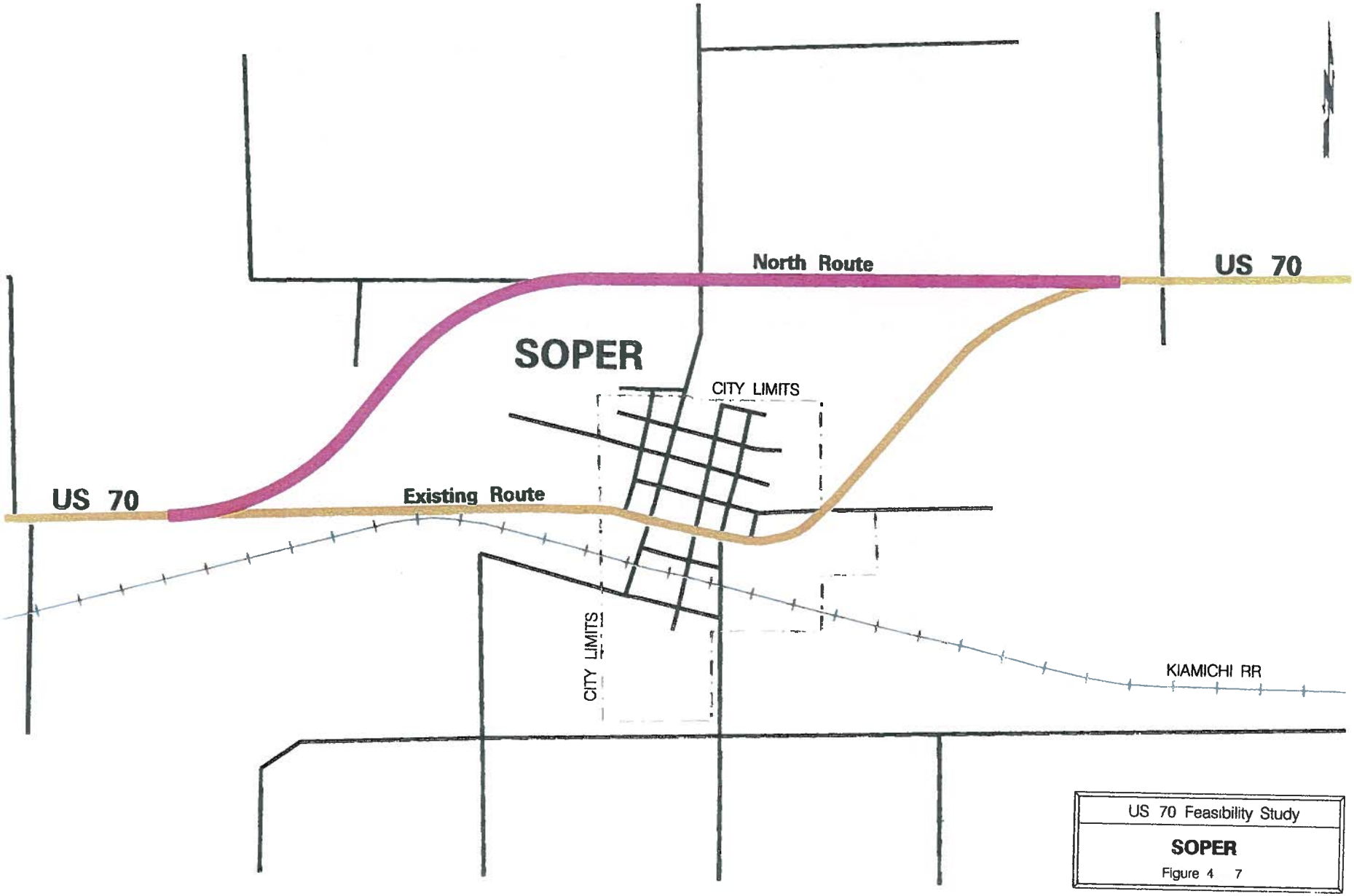
   a. **Existing Route:** The existing pavement on US 70 is 32 feet wide, including two 12-foot travel lanes and two 4-foot paved shoulders. The existing right-of-way, from roughly 2.5 miles west of Soper, into and through town is only 90 feet wide.

      Outside the west edge of town a cemetery is located adjacent to the north US 70 right-of-way boundary. Directly across US 70 from the cemetery is the Kiamichi Railroad tracks. Widening the existing roadway to five lanes would require a minimum of 30 additional feet of right-of-way. It would be difficult to squeeze the five lane section between the cemetery and railroad tracks. Inside the city limits, any widening would involve the mediation of some underground storage tank sites. To improve US 70 through Soper would cost over 7.2 million dollars.

   b. **North Bypass:** The north route commences over 3/4 mile west of the city limits. It proceeds in a northeasterly direction to about ½ mile north of US 70. North of town the bypass turns to the east and joins an existing county road alignment. It follows the county road until it intersects US 70 northeast of Soper. At approximately 3.7 million dollars its cost would be about half of the cost of widening the existing route.

      In addition to being slightly shorter and less expensive than improving the existing alignment, the four-lane divided bypass route would better serve US 70 motorists. Fewer displacements or relocations would result from construction of the north route. The few wetlands in the proposed bypass corridor could be avoided by shifting the roadway alignment.

7. **Fort Towson:** Alternatives for the alignment of US 70 at Fort Towson were limited to two choices. The options were improving the existing route through town and a north bypass. Due to the presence of Lake Raymond




US 70 Feasibility Study

**SOPER**

Figure 4 7

Gary south and east of town, a south alternative was not considered. Alternatives at Fort Towson are shown in Figure 4-8.

a. **Existing Route:** Inside the city limits, the existing route is predominantly a two-lane road with 8-foot shoulders. A two block section in downtown is 71 feet wide and curbed, includes on-street parking is available. Outside of the city limits to the east and west US 70 is composed of two 12-foot lanes but the shoulder widths reduce to 4 and 5 feet. All of the right-of-way along the 3.1 mile stretch is 100 feet wide.

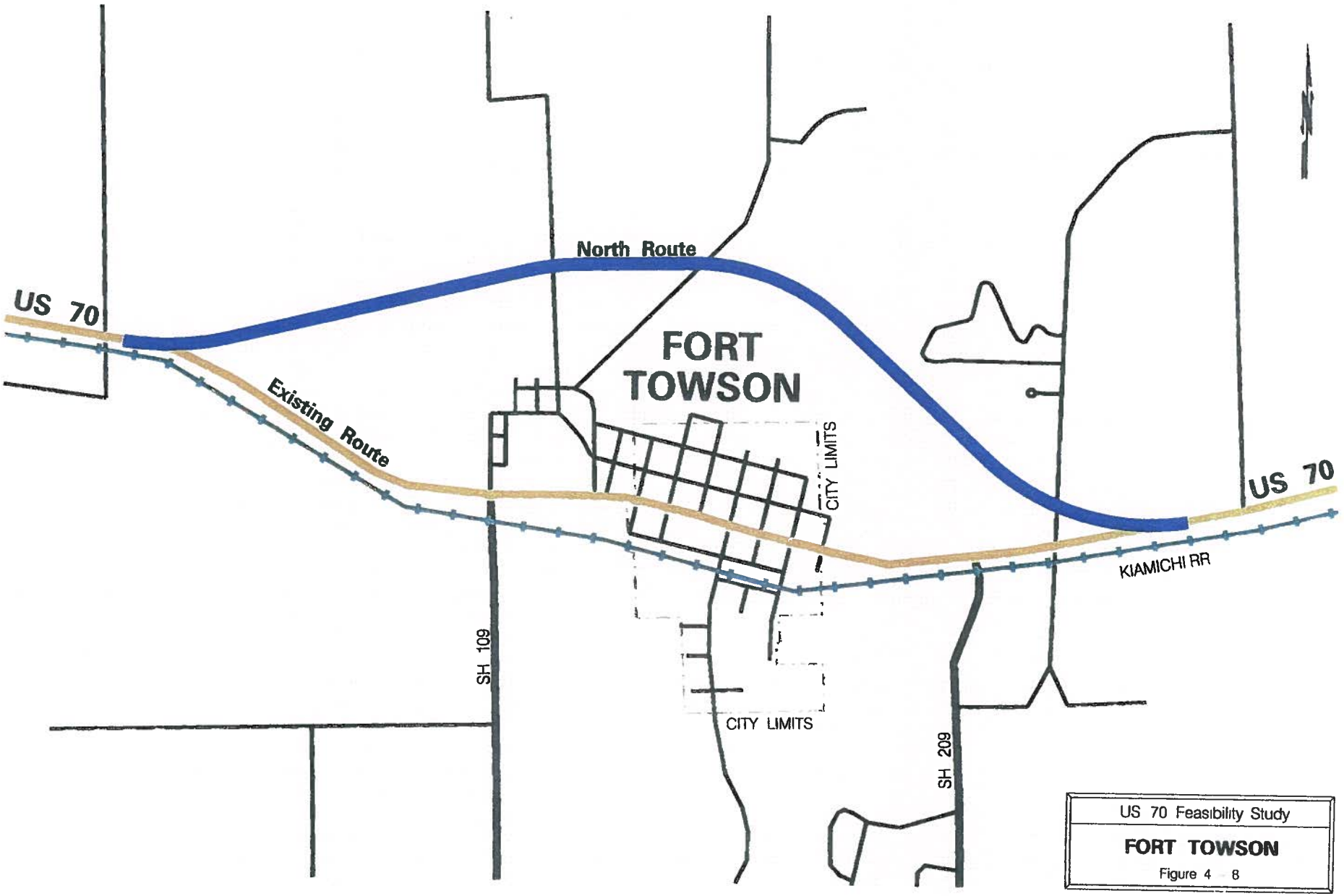
   Widening the route to a four-lane divided section outside the city limits and a five lane section inside the town would cost close to 9.9 million dollars. Although few residences and businesses along the route would be displaced, the parking in front of the downtown businesses would have to be removed. Numerous underground storage tanks are located along the route. Crossing Lake Raymond Gary and the state park south of the route are other environmental constraints.

b. **North Bypass:** Passing north of town and across the northern wetlands of Lake Raymond Gary, the north bypass is 3.2 miles long. All of the bypass would be constructed as a four-lane divided section. The cost of the bypass would be approximately 7.3 million dollars.

   The numerous environmental constraints associated with this route far outweigh the few displacements that would result from its construction. Crossing the broad floodplains and wetlands is only one of the challenges to this alignment. Avoiding the cemetery and other historic sites at Old Fort Towson northeast of town is also a concern.

8. **Valliant:** US 70 currently runs north of the Kiamichi Railroad through Valliant. The only bypass consideration was to a route north of town. Because of the large Weyerhaeuser facility located south of town, it was considered impractical to propose a south bypass. Both alternatives are depicted in Figure 4-9.

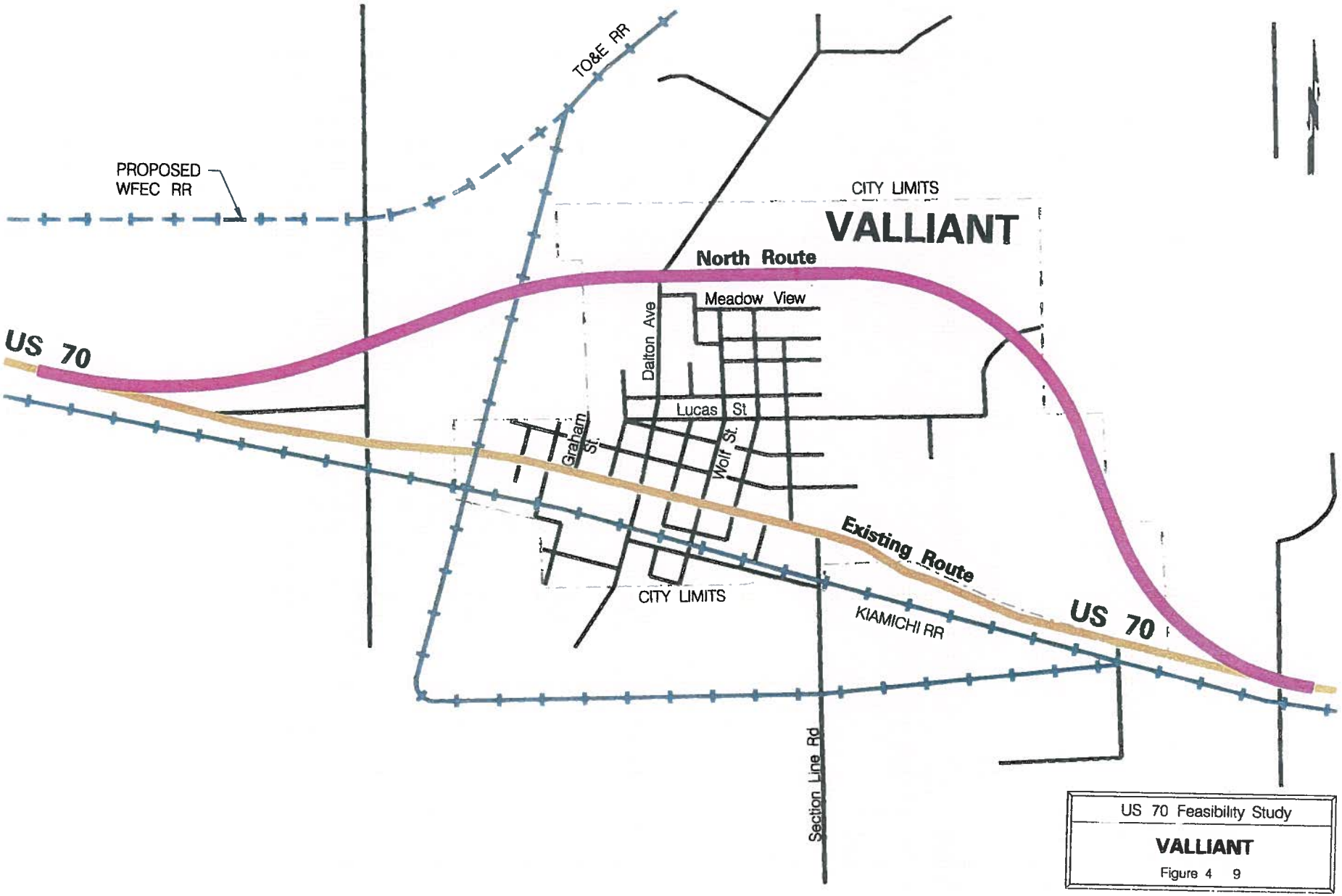
   a. **Existing Route:** Approaching from the west, US 70 is adjacent to the Kiamichi Railroad entering Valliant. Approximately ½ mile west of the city limits, US 70 diverges from the southeasterly bearing of the railroad tracks. Before entering the city limits, US 70 veers to the




US 70 Feasibility Study

**FORT TOWSON**

Figure 4 - 8




US 70 Feasibility Study

**VALLIANT**

Figure 4 9

northeast before it again becomes parallel to the Kiamichi railroad tracks. Just inside the west city boundary US 70 crosses at grade and perpendicular to the Texas, Oklahoma and Eastern (TO&E) Railroad line. Both the TO&E Railroad and Kiamichi Railroad provide rail access to the Weyerhauser facility south of town. US 70 remains offset one and a half blocks north of the Kiamichi Railroad as it passes through Valliant. Just east of Section Line Road the offset between US 70 and the Kiamichi railroad tracks begins to diminish. About one-half mile east of Section Line Road, US 70 and the railroad tracks become adjacent again. Two 12-foot lanes with 6-foot paved shoulders define the roadway as US 70 enters from the west. At Graham Street, US 70 shifts to a four-lane curbed section having a width of 51 feet. This section continues for four blocks until Wolf Street. East of Wolf Street, US 70 returns to a two-lane roadway with shoulders. All of these sections are located in 100 feet of right-of-way. East of town the right-of-way increases to a width of 150 feet.

In addition to being upgraded to a five lane section, a grade separation between US 70 and the TO&E Railroad would be necessary. Several relocations would result from the construction this grade separation at the west edge of town and the road widening through town. Driving through the town center would slow those motorists traveling along US 70. Several underground storage tank sites are located along the route. The cost to upgrade the existing 3 mile route is estimated to be over 13.3 million dollars.

b. **North Bypass:** The north route is approximately 1/3 mile longer than the existing route. It also would cross the TO&E Railroad but at an area near the northwest corner of town. The north route would be located north of Meadow View as it crosses Dalton Avenue. Near the northeast corner of town the bypass would turn to the southeast. The north route would continue in a southeasterly direction until it converged with US 70.

Few displacements would be caused by this bypass alignment. Compared to the existing route, fewer environmental issues would be present. For this four-lane divided section the estimated cost was approximately 6.8 million dollars.

9. **Ardmore:** Consideration for a bypass route around the southwest quadrant Ardmore was added to the US 70 Feasibility Study at the request of the City of Ardmore. The idea of realigning US 70 west of Ardmore to bypass the

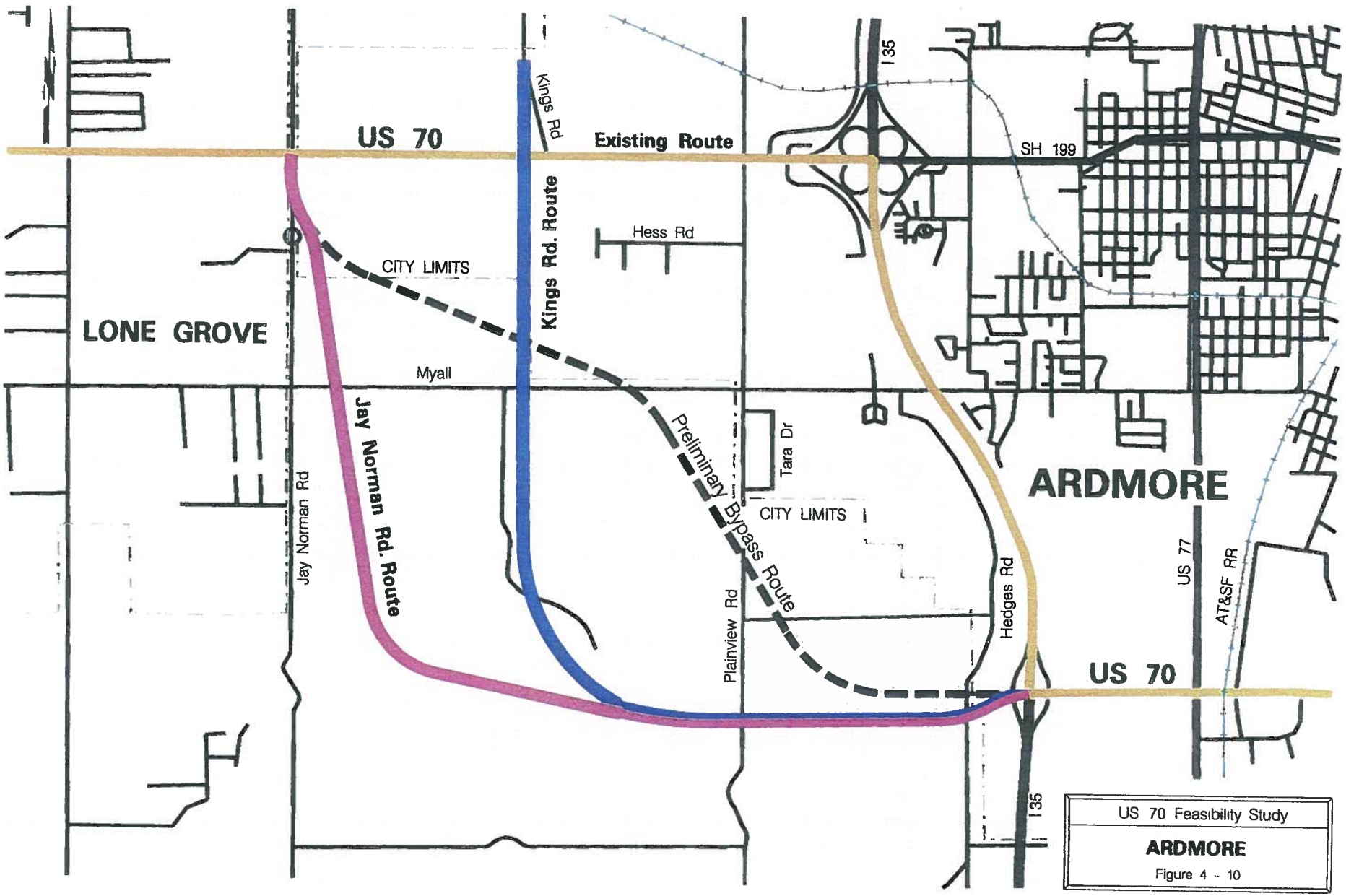
interchange of West Broadway and I-35 was brought to the attention of ODOT during the public meeting held in Ardmore for the Statewide Intermodal Transportation Plan in February 1995. In a letter from the City of Ardmore, Ardmore requested ODOT to add their town to the corridor study. ODOT agreed to investigate alignment possibilities for US 70 around southwest Ardmore. Ardmore's Comprehensive Plan shows a proposed conceptual bypass route extending west from the I-35/US 70 East intersection to Jay Norman Road and along Jay Norman Road until intersecting with US 70 West.

After modifying the alignment shown on the Comprehensive Plan and receiving comments from city officials, two bypass alignments were considered. Both routes have the same east terminus point, the intersection of I-35 and US 70 East. The names of the two alternatives were derived from their intersection with US 70 West. One route ends near the intersection of US 70 West and Kings Road. The other route connects with US 70 West at Jay Norman Road. The two alternatives are shown in Figure 4-10.

a. **Kings Road Route:** US 70 East is a four-lane divided section passing under I-35. The Kings Road route commences at the end of this section on the west side of I-35. The alternative turns to the southwest and crosses perpendicular to Hickory Creek. As the route continues to the west it crosses Plainview Road before veering to the northwest. Approximately a half mile west of Plainview Road the route turns to the north. Crossing perpendicular to Myall, the alignment intersects US 70 West, west of the Kings Road intersection. North of US 70, existing Kings Road would be realigned to form an at-grade intersection with the bypass route. Total length of the alternative is 4.6 miles.

   Most of the land along this route is open pasture. Wooded areas exist west of Plainview Road and north of Myall. North of Myall, residential acreages are located east of the route. Proposed residential developments in the area are east of the alignment. A proposed water tank for the City of Ardmore along US 70 West is located west of this alternative.

   Very few existing structures would need to be relocated with this alignment. Environmental issues along the route are limited to minor floodplains and wetlands. The cost of the route is estimated to be slightly over 10.1 million dollars.




US 70 Feasibility Study

**ARDMORE**

Figure 4 - 10

b. **Jay Norman Route:** The southern portion of this route is identical to the Kings Road alternative. The routes differ in where each turns to the north toward its intersection with US 70 West. The Jay Norman route continues further to the west before it heads north. It roughly parallels Jay Norman Road and crosses Myall at a point approximately one quarter mile east of Jay Norman Road. The route continues to veer toward existing Jay Norman Road and merges with the local road near the intersection of Jay Norman Road and US 70 West. Jay Norman Road would no longer connect to US 70. A cul-de-sac would be located on Jay Norman Road south of intersection of the bypass and US 70 west.

The route stays east of the residences located on the east side of Jay Norman Road, south of Myall. This results in a minor amount of relocations associated with this alternative. As in the case of the Kings Road route, only minor environmental constraints exist along the route. By locating this alternative further to the west, along the edge of the undeveloped areas, more flexibility is available for the future use of the land. The cost of this 4.9 mile long alternative is approximately 10.5 million dollars.