

Chapter I Purpose and Need for Project

A. Project Description

The study area is located in Clay County, Missouri and is situated in the cities of Liberty, Pleasant Valley, and northern Kansas City, between the M-152 interchange at I-35; and the Pleasant Valley interchange at I-35, US 69, Pleasant Valley Road, and W Liberty Drive (Figures I-1 and I-2). The proposed action is comprised of an overpass of I-35 that will connect Flintlock Road north of I-35 at NE 76th Street to Flintlock Road (formerly Hughes Road) south of I-35 at W Liberty Drive. Flintlock Road north of I-35 falls in the City of Kansas City. South of I-35, Flintlock Road falls in the cities of Liberty and Pleasant Valley (see Figure I-2).

1. PROJECT HISTORY

In 2001, the City of Liberty, Missouri created an Economic Development Plan to promote and retain high quality jobs and provide for the public and private financial resources necessary to keep the community's asset base healthy. Part of this plan was to identify emerging locations of economic growth. One of these emerging growth areas identified in the Economic Development Plan is the area surrounding South Liberty Parkway, previously known as South Liberty Roadway (see Figure I-2). This is an emerging growth area due to its high profile location, visibility from I-35 and South Liberty Parkway, access to major street systems, potential transit access, reasonable commuting distance to Downtown Kansas City, and proximity to the Claycomo Ford Plant as well as other employment centers in the northern Kansas City Metropolitan Region.

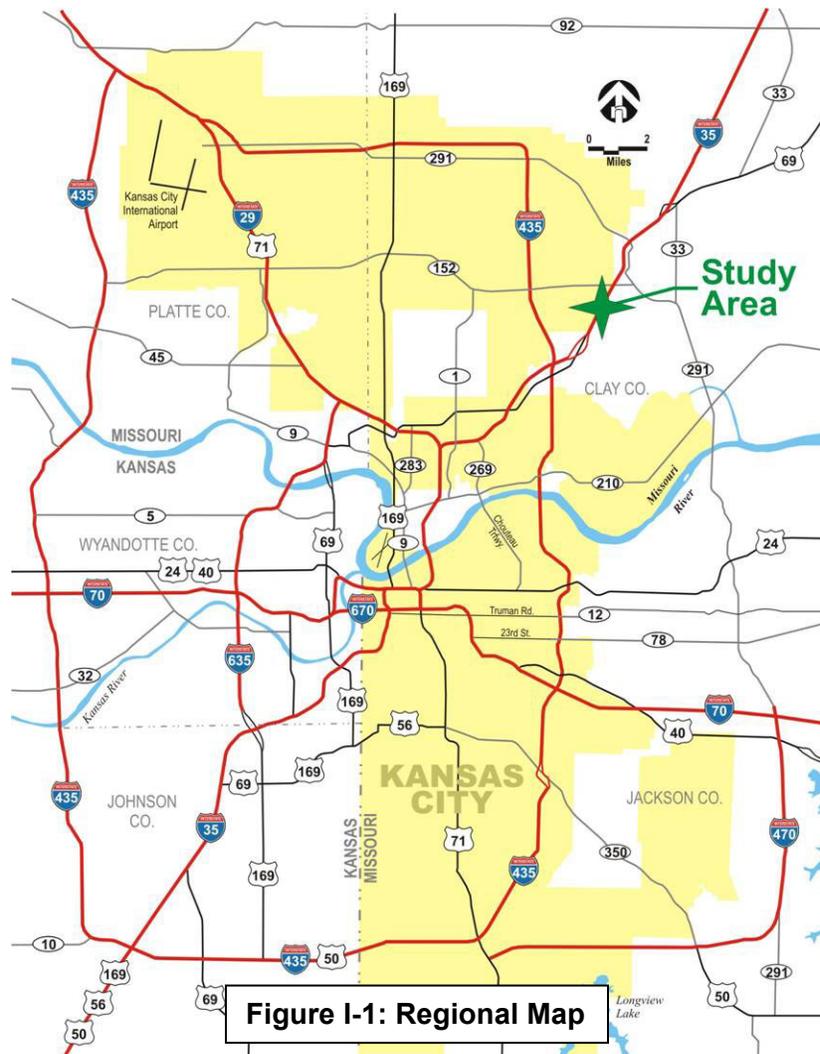


Figure I-1: Regional Map

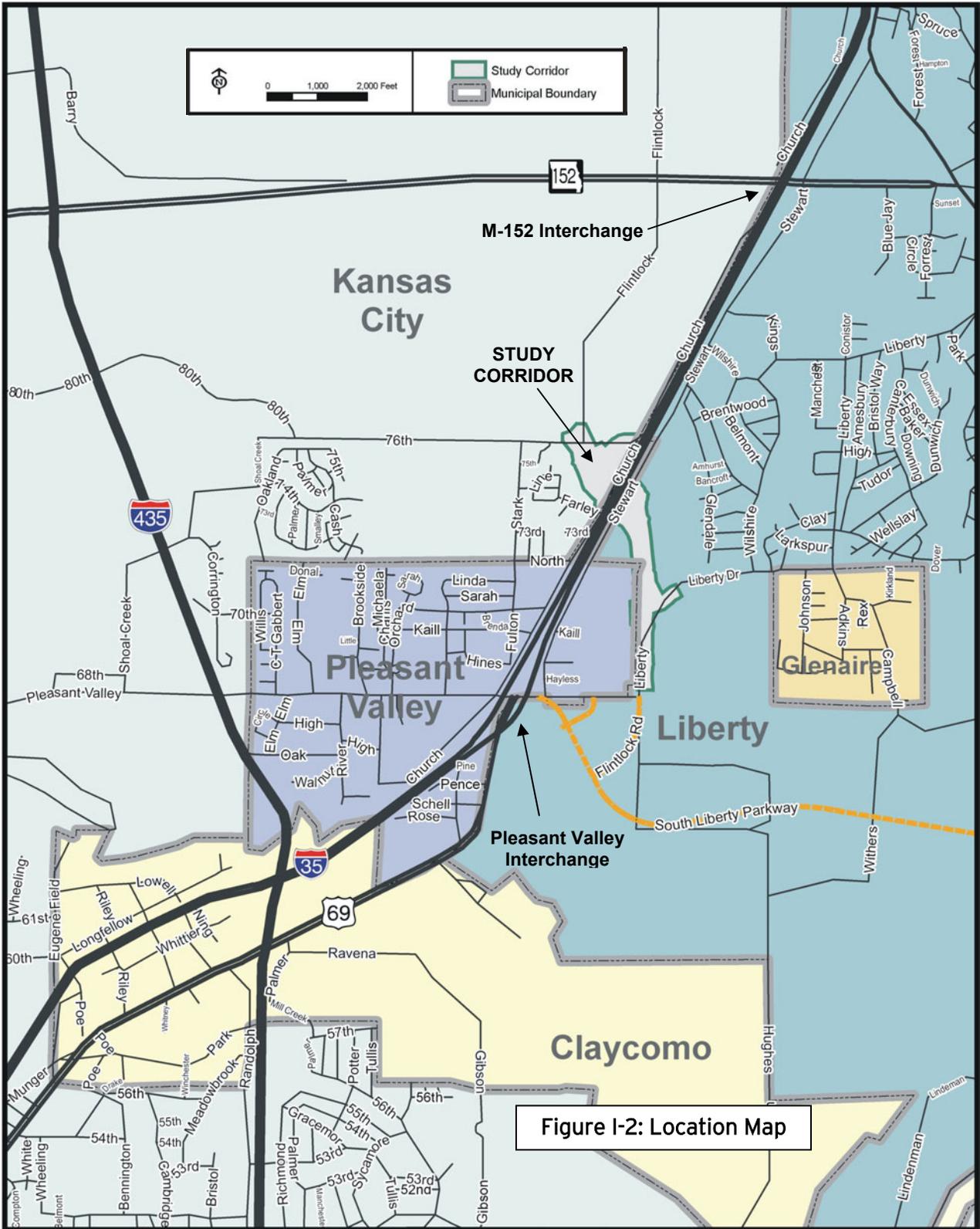


Figure I-2: Location Map

The construction of the South Valley Middle and Junior High Schools and new residential developments north and south of I-35 have provided an impetus to move the Flintlock Road Overpass from concept to construction. The Liberty School District boundaries currently extend to the west side of I-35 and north to M-152. The location of the school requires students west of I-35 to be bused south through the Pleasant Valley interchange or north to the M-152 interchange in order to cross I-35. The Liberty school district views this as a safety concern due to the high volumes of traffic and congestion at these interchanges. Currently, children on the west side of I-35 do not have a bicycle or pedestrian route to the South Valley Schools.

Improvements at the M-152 and Pleasant Valley interchanges in recent years have helped to improve safety and capacity at those locations. However, continued growth along the M-152 corridor, within the Liberty Triangle (at the intersection of I-35, M-291, and M-152), and along the South Liberty Parkway and Flintlock Road corridors will continue to impact safety and capacity. The proposed action, which is included in the Mid-America Regional Council's (MARC) Long Range Transportation Plan (LRTP), will provide another alternative to traffic crossing I-35.

2. PROGRAM DATA

The proposed Flintlock Road Overpass is a cooperative effort of the City of Kansas City, Missouri; the City of Liberty; the Liberty School District; and the Economic Development Corporation of Kansas City. Design and construction of the bridge over I-35 would be coordinated with the Missouri Department of Transportation (MoDOT). The Federal Highway Administration (FHWA) will fund approximately \$19.2 million of the project through the approved Federal Transportation Bill, SAFETEA-LU. The remainder of the project funding will be provided by the cities of Liberty and Kansas City, Missouri, and the Economic Development Corporation of Kansas City.

3. DESCRIPTION OF EXISTING TRANSPORTATION FACILITIES

The proposed roadway would overpass I-35 and connect Flintlock Road at NE 76th Street in northern Kansas City, Missouri to Flintlock Road near Liberty Drive in Liberty. Typical sections of the existing Flintlock Roads are shown in Exhibit I-1. Flintlock Road north of NE 76th Street is a four-lane divided arterial with curb and gutter, an enclosed storm drainage system, and street lighting. Flintlock Road was constructed in 2003 with asphalt pavement, a 16-foot grass median, 12-foot wide lanes and 5-foot sidewalks on both sides of the roadway. Currently, Flintlock Road runs north-south and ties into NE 76th Street which runs east-west.

Near Flintlock Road, NE 76th Street is a two-lane asphalt roadway with 10-foot wide lanes that was constructed in 1960. A 49-foot long concrete girder bridge on NE 76th Street is located 270 feet west of Flintlock Road and a 30-foot long steel I-beam bridge on NE 76th Street is located 140 feet east of Flintlock Road. Kansas City, Missouri has studied replacing these two bridges. NE 76th Street has recently been improved a few hundred feet west of the western most bridge in anticipation of an ultimate four-lane secondary arterial section. At this location, the centerline of NE 76th Street jogs south and becomes a wider two-lane facility with curb and gutter along the south edge of the roadway. Along the north edge of the roadway, grass shoulders provide for future widening.

The new portion of Flintlock Road south of W Liberty Drive has just been completed as part of the City of Liberty's South Liberty Parkway project. It is a four-lane divided arterial roadway with curb and gutter and an enclosed storm drainage system. It has asphalt pavement with a 15-foot grass median, 11-foot wide lanes and a 10-foot multi-purpose trail along the east side. West Liberty Drive runs perpendicular into Flintlock Road from the west and then curves 90 degrees to the north. The new portion of Flintlock Road runs north-south and becomes Liberty Drive at this intersection. West of the intersection with Flintlock Road, W Liberty Drive is a two-lane asphalt roadway with shoulders.

Interstate 35 at the proposed overpass location is a four-lane interstate highway with a 30-foot grass median and asphalt shoulders. In the future, I-35 may be widened to six lanes with shoulders and a median safety barrier. This will be determined as part of a future Major Investment Study (MIS), according to the MARC's LRTP. South of this location, I-35 has been widened, which occurred into the existing median. Tables I-1 and I-2 list the existing roadways and bridges within the project limits.

Table I-1: Existing Roadways

Roadway	Pavement		Year Built	Roadbed Width
	Width	Type		
Flintlock–Kansas City	48' divided	Asphalt	2003	72'
Flintlock–Liberty	44' divided	Asphalt	2005	67'
76 th St.	20' undivided	Asphalt	1960	20'
Liberty Drive	24' undivided	Asphalt	N/A	40'

Table I-2: Existing Bridges

Bridge No.	Location	Type	Length	Width	Year Built
N107B21	W. of N. Flintlock	Concrete Girder	49'	26'	1960
N107B22	E. of N. Flintlock	Steel I-Beam	30'	20'	1960

B. System Linkage

The proposed action is to provide a north and south system linkage by constructing an overpass of I-35 along the extension of Flintlock Road. The proposed linkage would connect Flintlock Road at NE 76th Street in Kansas City, Missouri to Flintlock Road at W Liberty Drive in Liberty, Missouri. Currently no connection exists between these two segments of Flintlock Road.

In 1998, the City of Liberty identified interim and ultimate capacity improvements at the I-35 and Pleasant Valley interchange as well as the I-35 and M-152 interchange. In 2001, MoDOT and the City of Liberty completed interim capacity improvements at the Pleasant Valley interchange. In 2003, interim capacity improvements to the interchange at I-35 and M-152 were completed. East of I-35, Phase I of the South Liberty Parkway is under construction from the Pleasant Valley interchange and continues east two miles to Withers Road and is expected to be complete in early 2006. Once completed, South Liberty Parkway will provide access to land for new commercial, business and residential development opening approximately 1700 acres of land for new development. The Little Shoal Creek Valley area, west of I-35, is also experiencing substantial new residential and commercial growth along Flintlock Road north of NE 76th Street.

The increased traffic from the rapid economic growth in Kansas City, Missouri as well as in Liberty will cause additional capacity problems for the M-152 and Pleasant Valley interchanges in the future. The M-152 interchange serves a high volume of commercial truck and interstate traffic, and presently operates at a Level of Service of D during the PM peak hour traffic. Because of the high current and forecasted traffic volumes, future improvements to this interchange would require at least partial reconstruction to maintain an acceptable level of service. The Pleasant Valley interchange is located approximately one mile south of the proposed overpass and currently operates between a B and a C Level of Service during the AM and PM peak hours. Additional improvements to this interchange may require complete reconstruction including ramp reconfigurations. Reconstruction of the M-152 or Pleasant Valley interchanges for ultimate capacity improvements would be costly and would still not address all the future traffic congestion. The Flintlock Road Overpass will provide an alternative route for east/west travel across I-35, and will relieve some of this future traffic congestion.

C. Overview of Purpose and Need

An I-35 overpass will provide more direct access to and from the residential, commercial, and educational activity centers on both sides of I-35 and is a cost effective way to relieve congestion, increase safety, and promote economic growth between two communities. The specific purpose and need for the proposed action can be summarized as follows:

- **Traffic Safety** – Decrease the number and severity of crashes occurring at the M-152/I-35 and Pleasant Valley Road/I-35 interchanges.
- **Roadway Capacity** – Increase east/west roadway capacity by providing an alternate route for traffic wishing to cross I-35.
- **Increased Mobility** – Provide an alternate route across I-35 for residents living east and west of I-35.
- **Increased Economic Development Opportunities** – Increase access to the growing economic areas along M-152, Flintlock north of I-35, and along South Liberty Parkway once it is completed.

Each of the specific needs outlined above are discussed in more detail in the following sections.

1. TRAFFIC SAFETY

The proposed overpass will reduce traffic and reduce congestion at the M-152 and Pleasant Valley interchanges and improve safety for motorists wanting to cross I-35 and avoid the two interchanges. The proposed overpass will also provide a multi-use trail, connecting the Shoal Creek Communities in northern Kansas City to the Liberty communities east of I-35. With the proposed facility, children west of I-35 would have a new opportunity and more direct access to their school and athletic fields by walking or riding a bike across I-35. Complete safety and traffic analysis is summarized below and is included in the Flintlock Overpass Over I-35, Traffic Analysis Technical Report, which is available upon request.

Table I-3 shows the current accident data for the two interchanges. As shown in this table, the M-152 corridor has a high number of accidents and is significantly above the statewide average for a similar facility. A reduction of traffic through both interchanges would decrease the number of accidents within the two interchanges, and the severity of crashes will decrease with speed enforcement.

Table I-3: Accident Data

ITEM	SEGMENT			
	M-152 EB	M-152 WB	US 69 NB	US 69 SB
Segment Length (miles)	0.64	1.09	0.80	0.40
Segment Description	Flintlock to Conistor	Forrest to Flintlock	Pence to I-35	I-35 to Pence
Analysis Years (2000 - 2004)	5	5	5	5
Accidents: Total	467	553	82	39
Fatal	1	1	1	0
Disabling Injury	18	24	1	0
Minor Injury	90	117	16	7
PDO	358	411	64	32
Average ADT ^{1,2}	15,109	14,234	7,700	9,470
Average Accident Rate ^{1,2}	2,591.4	2,022.8	683.2	539.3
Average Statewide Accident Rate for Similar Roadway Type in Missouri ^{1,2}	268.9	268.8	171.3	171.3
Segment Rate to Statewide Rate Ratio	9.6	7.5	4.0	3.1

Source: MoDOT, 2005.

1. Data based on 5-years of complete data.

2. Number of crashes per hundred million vehicle miles traveled (HMVMT). For annual data, the Traffic Analysis Technical Report is available upon request.

2. ROADWAY CAPACITY

Currently there is substantial new residential and commercial growth along Flintlock Road north of NE 76th Street. This rapid growth in Kansas City, along with rapid growth in Liberty, will put additional traffic pressure on the M-152 and Pleasant Valley interchanges, causing the interchanges to experience capacity problems in the future. Additionally, the City of Liberty is constructing the South Liberty Parkway beginning at the Pleasant Valley interchange and continuing east two miles to Withers Road. South Liberty Parkway will provide access to land that is planned for new commercial, business and residential development. This increased traffic will cause additional capacity problems for the Pleasant Valley interchange in the future. Table I-4 lists existing and forecasted PM peak hour traffic in the study area for 2005 existing and 2030 No-Build conditions.

Table I-4: Two-Way Peak Hour Volume

Location	2005 Existing (PM Peak)	2030 No-Build (PM Peak)
M-152 East of I-35 Interchange	4,190	8,087
M-152 West of I-35 Interchange	4,103	6,952
South Liberty Parkway east of Pleasant Valley Interchange (I-35/US 69/Pleasant Valley Road)	1,632	6,228
Pleasant Valley Road west of Pleasant Valley Interchange	1,330	3,772

Source: Existing Counts and Liberty Travel Demand Model

Forecasted operations in the study area without the proposed Flintlock Road connection were assessed by utilizing the Level of Service (LOS) scale as outlined in the Highway Capacity Manual. The Highway Capacity Manual and the LOS scale were developed by the Transportation Research Board to characterize how motorists and passengers perceive operational conditions within a traffic stream. The descriptions of individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions and comfort and convenience. Six Levels of Service are defined for each type of facility as described below. Signalized and unsignalized intersections are also categorized by Level of Service classifications (A through F) based on the amount of delay experienced at the intersection. Level of Service A through D is considered acceptable. Level of Service E and F are considered unacceptable.

- **Level of Service A** – Uninterrupted traffic flow, lower volumes and higher travel speeds.
- **Level of Service B** – Stable traffic flow, increasing traffic and reduced travel speeds due to congestion.
- **Level of Service C** – Stable traffic flow, increasing traffic; travel speeds and maneuverability restricted by higher volumes.
- **Level of Service D** – Approaching unstable flow, tolerable travel speeds although considerably affected by changes in operating conditions. For the purposes of this study, LOS D or better is the goal for peak hour traffic conditions.
- **Level of Service E** – Unstable traffic flow, with possible stopped conditions, lower operating speeds than level of service D, volume approaching capacity of the roadway.
- **Level of Service F** – Unstable traffic flow, with speeds at low or stopped condition for varying times caused by congestion when downstream traffic volumes are at or over the roadway capacity.

Table I-5 shows the intersection level of service results for 2005 existing and 2030 No-Build conditions.

Table I-5: Intersection LOS (PM Peak Hour)

Roadway	Intersection Control	2005 Existing		2030 No-Build	
		LOS	Delay ¹	LOS	Delay ¹
M-152 / Barry Road / Kansas Avenue					
Conistor Road	Signal	C	31.2	F	104.5
NB I-35 Ramps	Signal	D	38.9	F	87.6
SB I-35 Ramps	Signal	D	40.0	E	69.0
Church Road	Signal	D	48.7	E	60.8
Flintlock Road	Signal	C	31.1	D	35.5
South Liberty Parkway					
Pleasant Valley Road	Signal	C	29.6	D	43.8
Stewart	Stop	C	22.8	-	-
Flintlock	Signal	C	31.1	D	52.8
US 69					
NB I-35 Off-Ramp	Signal	B	16.9	-	-
Flintlock Road					
NE 76th Street	Stop/Signal	B	11.2	B	17.4

¹ Average vehicle control delay (seconds per vehicle)

Source: HNTB Corporation, 2005. Level of service information based on *Highway Capacity Manual 2000*, Transportation Research Board.

3. INCREASED MOBILITY

In response to the rapid residential growth, the Liberty School District has completed construction of the South Valley Middle and Junior High Schools, located near South Liberty Parkway. These schools serve both the Shoal Creek Valley and south Liberty communities. At current capacity, these schools can accommodate over 1,500 students, faculty, and staff. Future expansion will allow for an additional 700 students. The location of these schools requires students from the Shoal Creek Valley area, located west of I-35 to travel south to the Pleasant Valley Road exit or north to the M-152 exit.

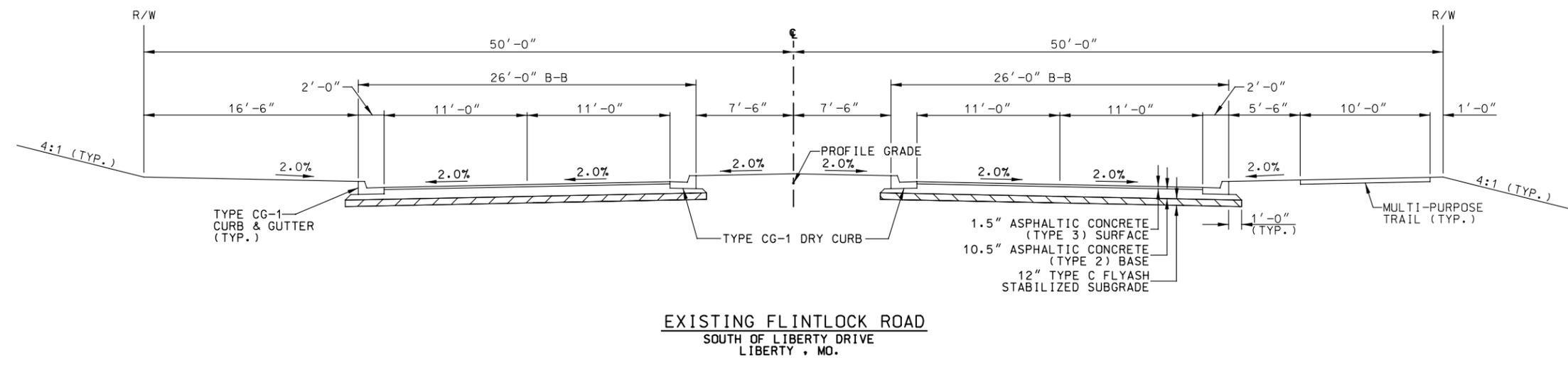
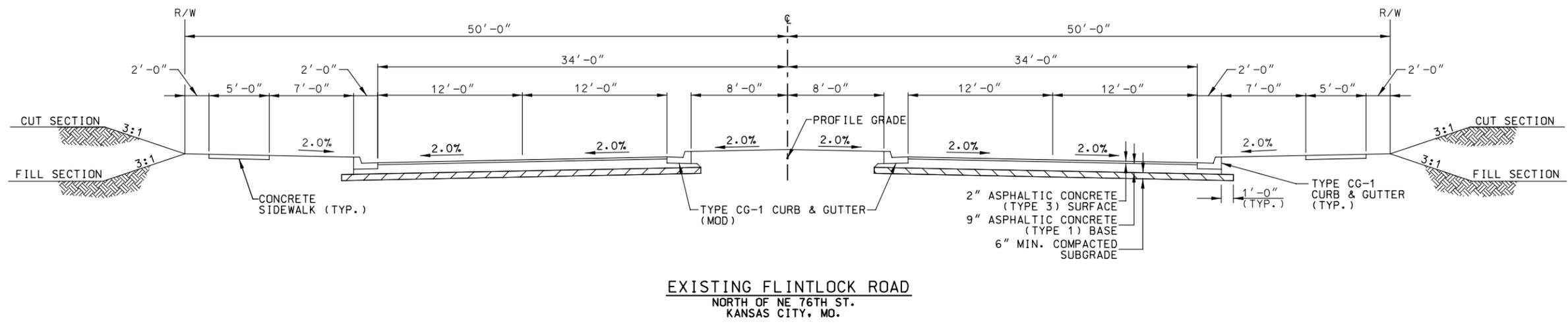
According to the Liberty School District, approximately 25 percent of the students within the Liberty School District reside west of I-35. Based upon residential building permits for the last couple of years, residential growth west of I-35 is increasing at approximately four times the rate of growth east of I-35. Based on this trend, the Liberty School District expects the student population west of I-35 to increase at a rate much faster than the student population east of I-35. The Flintlock Road Overpass will provide a more direct route over I-35, decreasing transportation costs and travel time, and increasing safety for school buses and for parents wishing to transport their children to and from school. It will also provide students and faculty living on the west side of I-35 a bicycle and pedestrian route over the interstate to the South Valley Schools.

4. INCREASED ECONOMIC DEVELOPMENT OPPORTUNITIES

To promote and retain economic growth, Liberty is improving and developing strong arterial networks, such as the South Liberty Parkway network. An I-35 overpass would expand the South Liberty Parkway network and provide a direct connection between two growing communities divided by the interstate.

In Kansas City, Missouri, rapid growth is occurring along Flintlock Road between NE 76th Street and M-152. Near M-152 the growth is primarily commercial, south of M-152 along Flintlock the growth is more residential. Liberty residents south of I-35 that wish to utilize the commercial developments in Kansas City must utilize the M-152 or Pleasant Valley interchanges with I-35.

In Liberty, Missouri, the area along South Liberty Parkway east of the Flintlock tie-in is planned for regional commercial, mixed use, and multi-family development. With the construction of South Liberty Parkway, this area has seen a significant increase in plat applications. As this commercial area develops, residents north of I-35 will also have to use the M-152 or Pleasant Valley interchanges with I-35. The Flintlock Road Overpass will provide a more direct connection for residents both north and south of I-35 to access these rapidly growing commercial areas, increasing the economic vitality of the region.



FLINTLOCK OVERPASS
Existing Typical Sections

Exhibit I - 1