Landside Access Study

Van Buren Regional Intermodal Port Complex

Crawford and Sebastian Counties

August 2004

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Van Buren Regional Intermodal Port Complex

Van Buren, Arkansas
Crawford County
Sebastian County

August 2004

Prepared by:
Planning and Research Division
Arkansas State Highway and Transportation Department

In cooperation with:
Federal Highway Administration
City of Van Buren
Van Buren Public Facilities Board
Arkhoma Regional Planning Commission

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Executive Summary

Dependable freight transportation is important in retaining existing industries and in attracting new commercial activities. Potential impediments to the efficient movement of freight include congested local access roads between freight terminals and regional truck routes and inadequate rail service to other modes (i.e., from rail yard to riverport). Impediments can cause indirection of travel, delays, traffic conflicts, crashes, and higher transportation cost.

Study Authorization

Arkansas Highway Commission Minute Order 2001-105 authorized this study of landside access to the proposed Van Buren Regional Intermodal Port Complex. The complex, planned to open in the year 2009 in the Crawford County Industrial Park, will offer industries shipping options and support services.

Study Area

The study area is the City of Van Buren and Crawford and Sebastian Counties. Figure 1 shows this area.

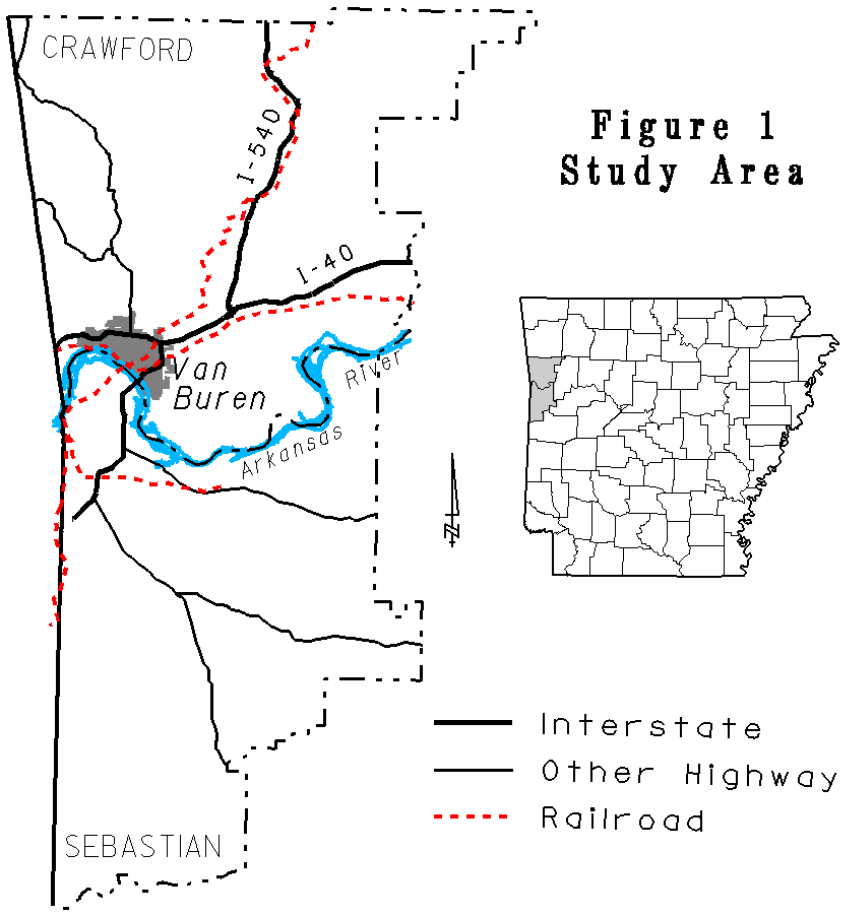

Figure 1
Study Area

Major Findings/Recommended Improvements

- The principal planned facilities are an intermodal terminal for the transfer of containers or trailers between truck and rail and a barge to rail transload site.
- At full-build completion, estimated in the year 2024, the intermodal terminal is anticipated to be able to handle approximately 150,000[1] lifts a year. A lift is a movement between rail and truck.
- The intermodal terminal could generate approximately 10,000 vehicle trips on a typical weekday.
- The chief roadway access issues are:
  - ✓ City streets that have inadequate lane or shoulder width
  - ✓ Truck traffic impediments that include:
    - ❖ Turning conflicts at the I-540/Highway 59 ramps
    - ❖ Travel delays at the railroad crossing on South 28th Street, north of I-540
  - ✓ Future level of service problems based on traffic growth
- The main railroad access issues are:
  - ✓ Poor condition of at-grade railroad crossings
  - ✓ Distressed rail line conditions that could affect service and safety
- Recommended landside access improvements are listed below and are shown on Figure 2.
  - ✓ Traffic signal at South 28th Street and Industrial Park Road (if warrants are met)
  - ✓ Roadway widening, reconstruction and new construction on South 28th Street, Industrial Park Road and River Road East
  - ✓ I-540/Highway 59 Interchange Modification and Frontage Roads (Job 040130) for improved traffic circulation:
    - ❖ Install traffic signals on Highway 59 at the on/off-ramps for I-540
    - ❖ Construct a frontage road on the north side of I-540 on new location between South 28th Street and the westbound on/off ramps for Highway 59. This frontage road should be extended from 28th Street to Highway 162, if feasible.
    - ❖ Provide access on the south side of I-540 between the eastbound on/off ramps and Twin Circle Drive. Twin Circle Drive, South 23rd Street and North Co-op Drive can then be used for alternative access to South 28th Street.
  - ✓ Rail line rehabilitation and new rail line construction to the proposed intermodal facility
  - ✓ Improved railroad crossing surfaces and protection

[1] A range of 110,000 to 250,000 lifts per year was cited in the *Van Buren Regional Intermodal Port Feasibility Study* conducted by Don Breazeale and Associates.

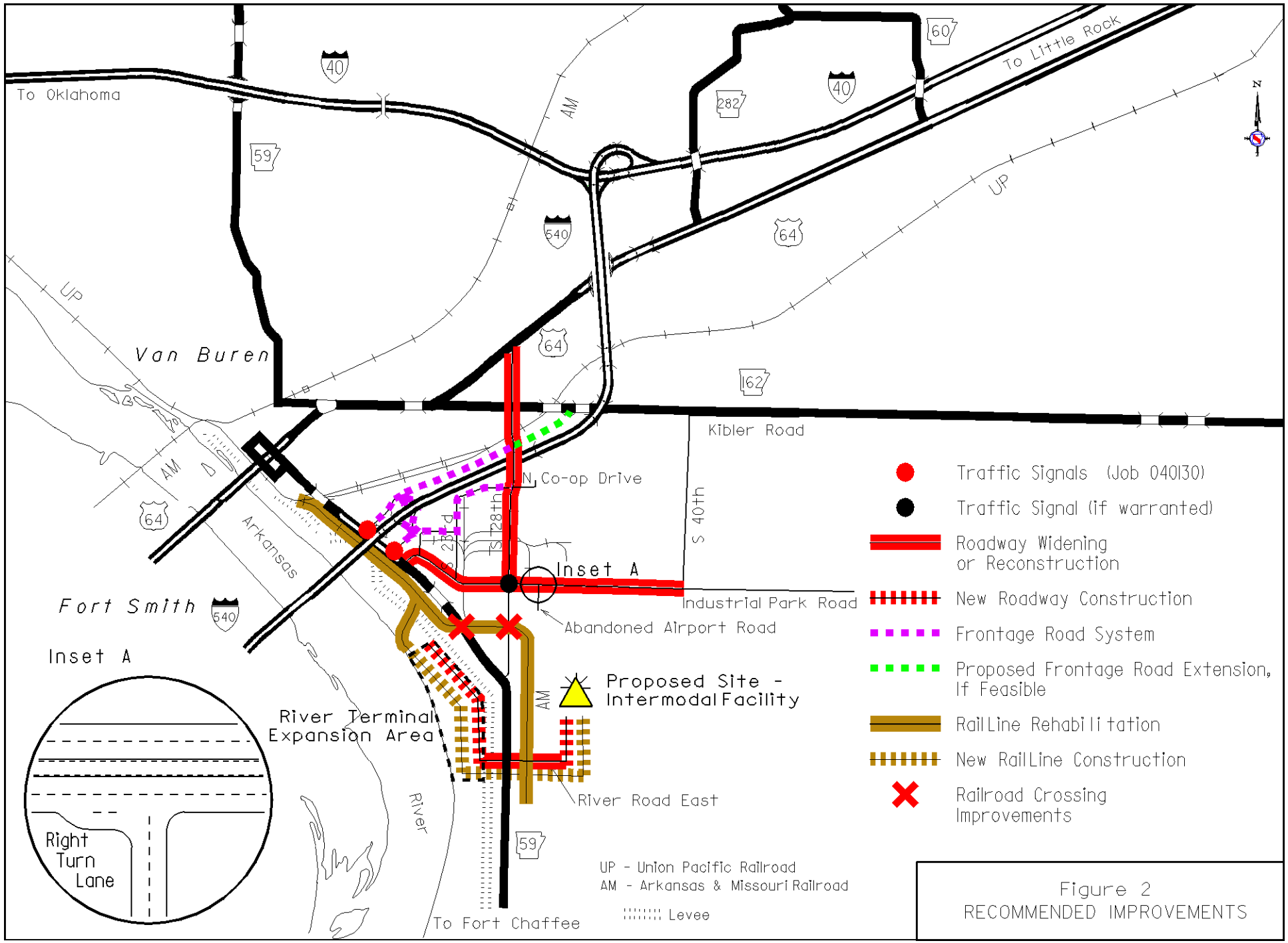

Figure 2
RECOMMENDED IMPROVEMENTS

Section I
Van Buren Regional
Intermodal Port Complex

Manufacturers rely on the roadway and railroad infrastructure to efficiently move raw materials to processing centers and to ship finished goods to market. Any disruption in the freight transportation cycle could result in higher production cost and lost sales. Likewise, distributors need reliable road and railroad access to rapidly move products in response to changing market demands and inventory levels.

The following is an assessment of landside access (roadway and railroad) to the proposed Van Buren Regional Intermodal Port Complex. The analysis includes: (1) an overview of the complex, (2) evaluation of likely roadway and railroad access routes, (3) examination of traffic volumes and roadway features, (4) identification of truck traffic impediments, (5) preparation of a traffic impact study, (6) inventory of railroad operating service and track conditions, and (7) a roadway level of service analysis.

Overview of Proposed Complex

The proposed intermodal transportation center for the Van Buren area is in the advanced planning stage. The concept was designated as a High Priority Project in the Transportation Equity Act for the 21st Century (TEA-21). The complex, scheduled for full-build completion by 2024, is planned to feature: (1) an intermodal[2] facility; (2) a river terminal that provides a cross-deck operation for transloading bulk commodities between barge, rail, and truck; (3) an industrial team track[3]; (4) outside and inside storage for bulk materials; and (5) supporting office buildings.

The proposed location of the main complex is south of Industrial Park Road and east of Highway 59 (see Figure 1-1). This site has approximately 123 acres. The river terminal would be located south of the existing, privately owned and operated Port of Van Buren, between the Arkansas River and the levee. The size of the river terminal is yet to be determined. Primary road access to the main complex will use the abandoned airport road from Industrial Park Road. River Road East from Highway 59 can provide secondary access and will also provide access to the river terminal expansion area. Following is a description of the major planned facilities. A concept drawing of the complex is provided in Appendix A.

(1) Intermodal Facility

An intermodal facility is proposed for transferring containers or trailers between truck and rail. The feasibility study[4] conducted for the complex determined the potential

[2] Intermodal: movement of freight by more than one mode of transportation.
[3] Team track: track on which railcars are placed for use by the public in loading and unloading freight.
[4] Van Buren Regional Intermodal Port Feasibility Study.

for 110,000 to 250,000 lifts per year when the complex is fully completed. A lift is a movement between rail or truck. It was recommended that initially the intermodal facility be built to accommodate 150,000 lifts.

(2) Transload Facility

A barge to rail transloading facility is planned for shipments of scrap iron and other bulk materials.

(3) Team Track

The team track and supporting outside unloading area would serve at least two railcars.

(4) Storage Facility

Inside storage facilities for products like bagged cement, rolled paper, and steel bars would be built. Outside storage would be available for bulk commodities that need no protection from the weather (e.g., scrap material and stone products).

(5) Supporting Buildings

Possible buildings include an administration office, a training complex and a foreign trade sub-zone.

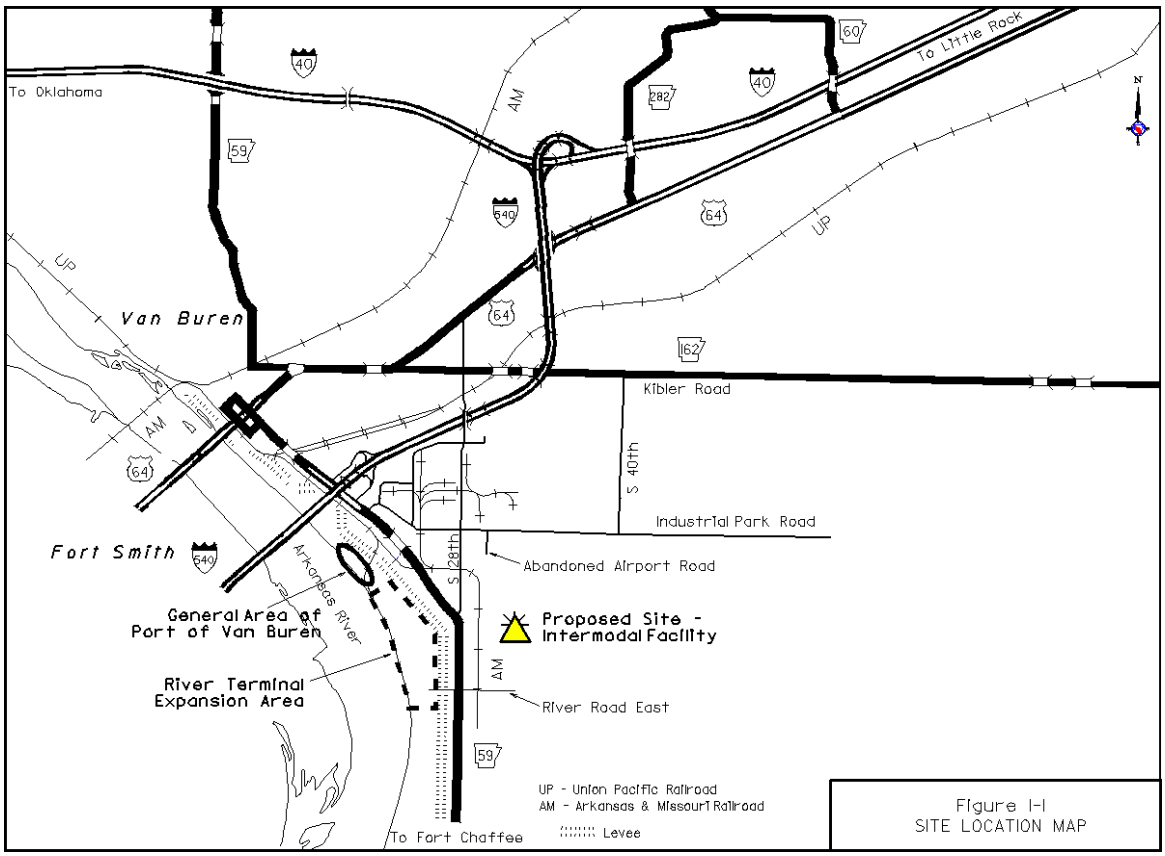

Figure I-1
SITE LOCATION MAP

Access Routes

The primary entrance to the intermodal facility will be the abandoned airport road off Industrial Park Road. River Road East from Highway 59 will provide secondary access to the facility and the river terminal expansion area. This road was chosen due to an existing cut in the levee.

Figure 1-2 shows the road and railroad routes that are anticipated to be used to access the intermodal complex. Table 1-1 lists these routes. The majority of the routes were identified in the concept plan prepared for the complex, with the remainder developed in conjunction with the Arkhoma Regional Planning Commission.

Table 1-1
Access Routes

Streets and Highways	**Railroads**
I-540	Arkansas and Missouri (AM) Railroad
Highway 59	Union Pacific (UP) Railroad
Highway 64	
Highway 162	
Industrial Park Road	
South 28th Street	

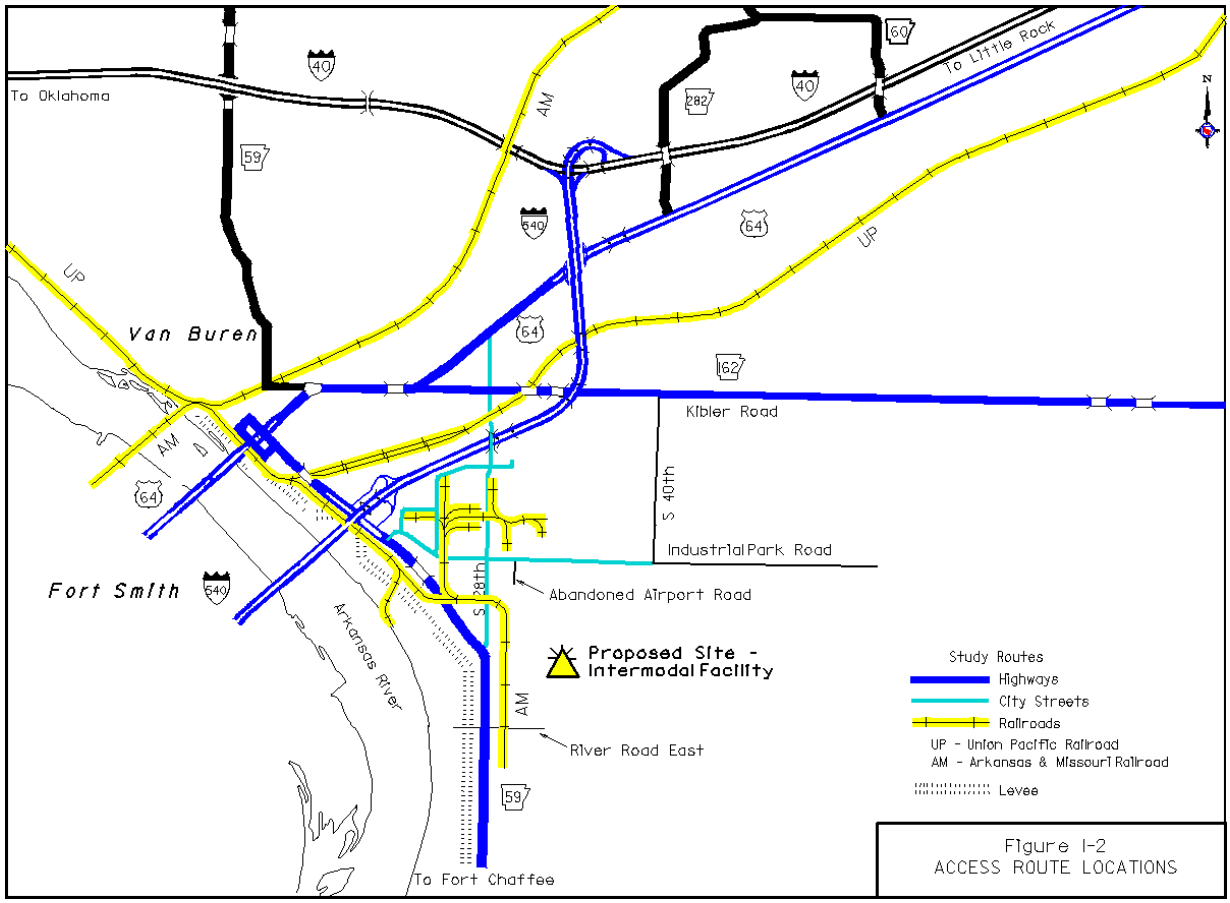

Figure 1-2
ACCESS ROUTE LOCATIONS

Roadway Access

Current Traffic

Traffic Volume

Figure 1-3 shows existing traffic volumes. The highest traffic occurs on I-540 and Highway 64. Traffic on I-540 ranges from 38,000 to 44,000 vehicles per day (vpd) between I-40 and the bridge crossing the Arkansas River to Fort Smith. Traffic volumes on Highway 64 are 20,000 vpd near the I-540 interchange and 23,000 vpd at the Arkansas River Bridge leading to Fort Smith. Over 15,000 vpd are on Highway 59 at the main entrance to the Crawford County Industrial Park (Industrial Park Road). Within the industrial park, the highest traffic count is on Industrial Park Road between Highway 59 and South 23rd Street with 8,400 vpd. Traffic volumes along South 28th Street range from 2,700 to 4,100 vehicles per day.

Traffic Mix

In addition to the volume of traffic, the type of vehicles present in a traffic flow is important. Currently, trucks ranging from 2-axle single-unit vehicles to semi-trailer configurations compose eight to nine percent of the traffic within the industrial park. The table below shows total traffic volumes and truck percentages in the park area.

Location	2004 ADT	Truck Percentage
Industrial Park Road		
• Between Highway 59 and South 28th Street	8,400	8%
South 28th Street		
• North of Industrial Park Road	4,100	9%
• South of Industrial Park Road	2,700	8%

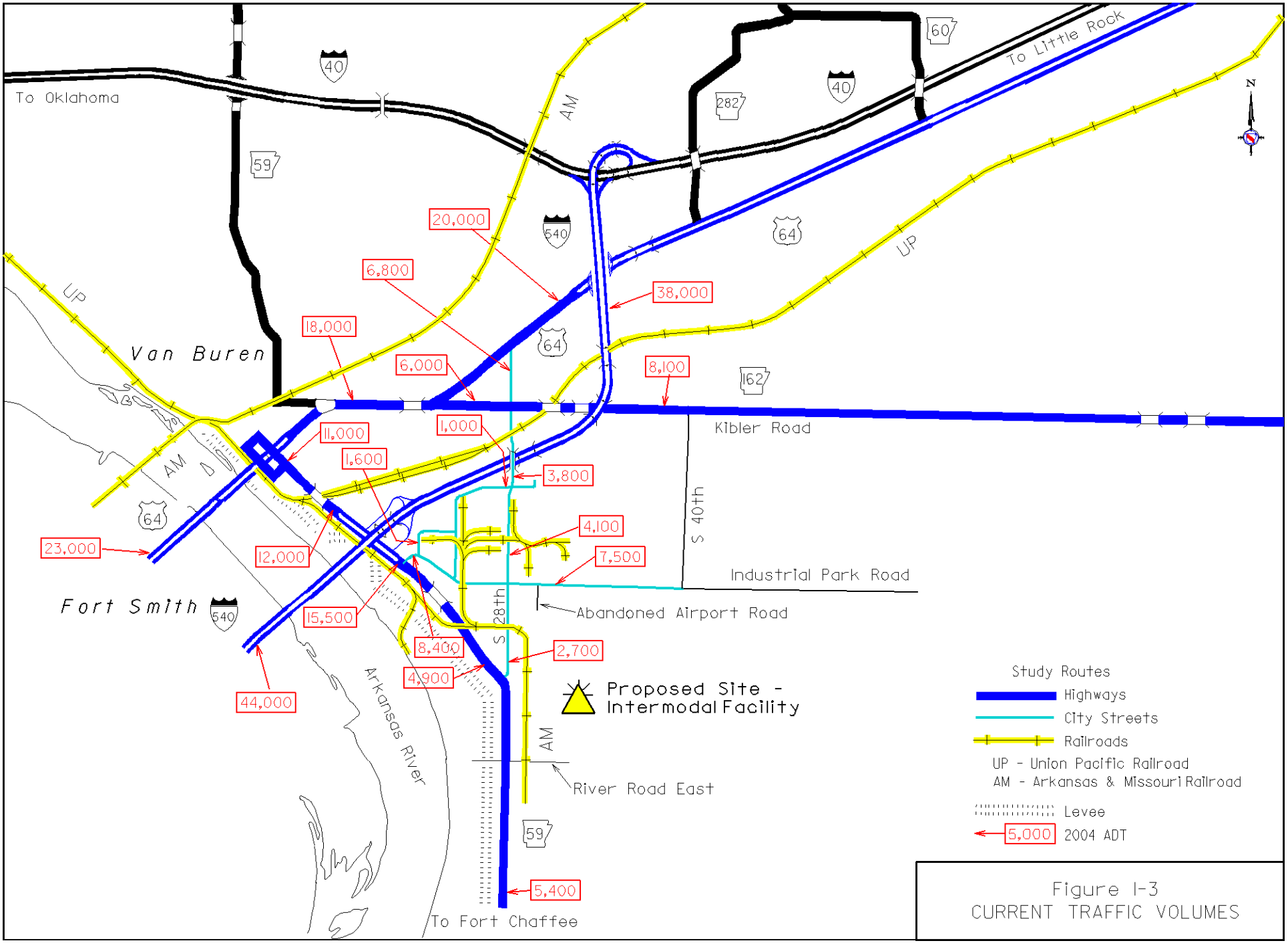

Figure 1-3
CURRENT TRAFFIC VOLUMES

Roadway Features

The number of traffic lanes, lane and shoulder widths, turn radii, and access to and from adjoining land, can affect the flow of traffic and vehicle operating safety. By increasing the number of lanes, based on traffic volumes, and the pavement width, many problem areas may be alleviated.

The American Association of State Highway and Transportation Officials (AASHTO) has guidelines for width of traffic lanes and shoulders. These guidelines are based on the functional classification system that takes into consideration travel patterns such as trip length and purpose, density of the roadway network and surrounding land use.

Shoulders should have an all-weather surface treatment for load support. Examples of all-weather surfaces are gravel, bituminous surface treatment and concrete pavement. In some instances, curbs are desirable, especially in developed areas. Curbs can contribute to pedestrian safety, support drainage control and require less right-of-way.

Existing roadway features for the study roadways are displayed in Figure 1-4. Some of the study roadway segments lack the recommended geometric characteristics.

Truck Traffic Impediments

Geometric design requirements for trucks[5] are more rigorous than for passenger vehicles. Trucks are wider and need more roadway space, have a longer wheelbase that requires a greater turning radius, and, in general, demand a longer stopping distance.

Figure 1-5 displays truck traffic impediments identified on the study roadway routes. An impediment is defined as any condition that significantly interrupts traffic flow.

The impediments, in regard to truck movement, are turning conflicts on the ramps at I-540 and Highway 59 and travel delays at the roadway/railroad crossing on South 28th Street north of I-540. Field observations reveal that trucks experience turning conflicts during peak traffic periods at both the on- and off-ramps. Present traffic volumes range from 12,000 to 15,500 vehicles per day with 10% trucks on Highway 59 in the vicinity of the ramps. The rail crossing on South 28th Street (north of I-540) is frequently blocked due to train operations (25 trains per day and other switching operations in the area).

The installation of traffic signals on Highway 59 at the on- and off-ramps for I-540 has been programmed (Job 040130). To further facilitate turning movements by trucks, the City of Van Buren plans to include a center turn lane on South 28th Street south of I-540.

[5] AASHTO Truck Definition - all buses, single-unit trucks and truck combinations, except light delivery trucks.

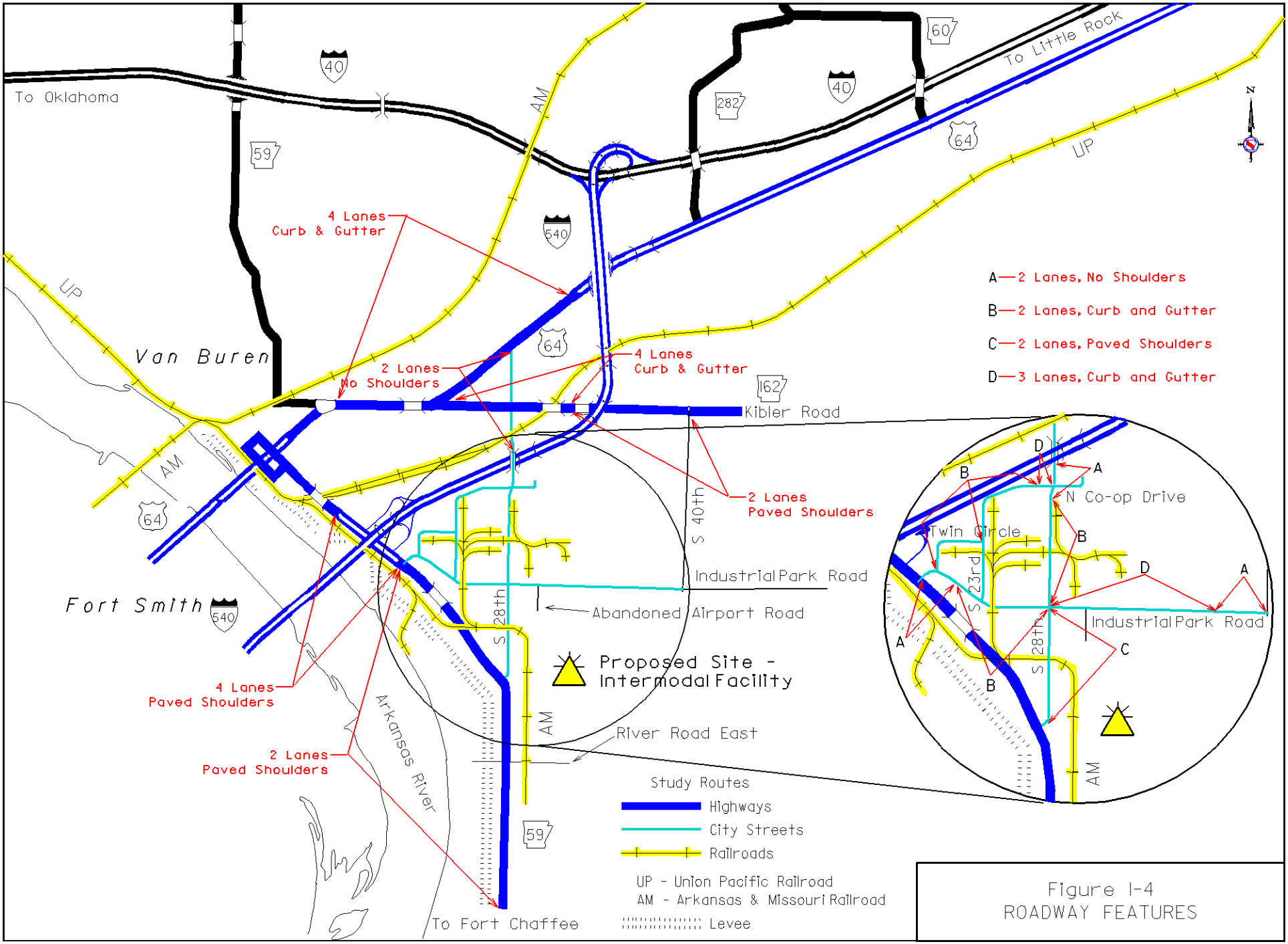

Figure I-4
ROADWAY FEATURES

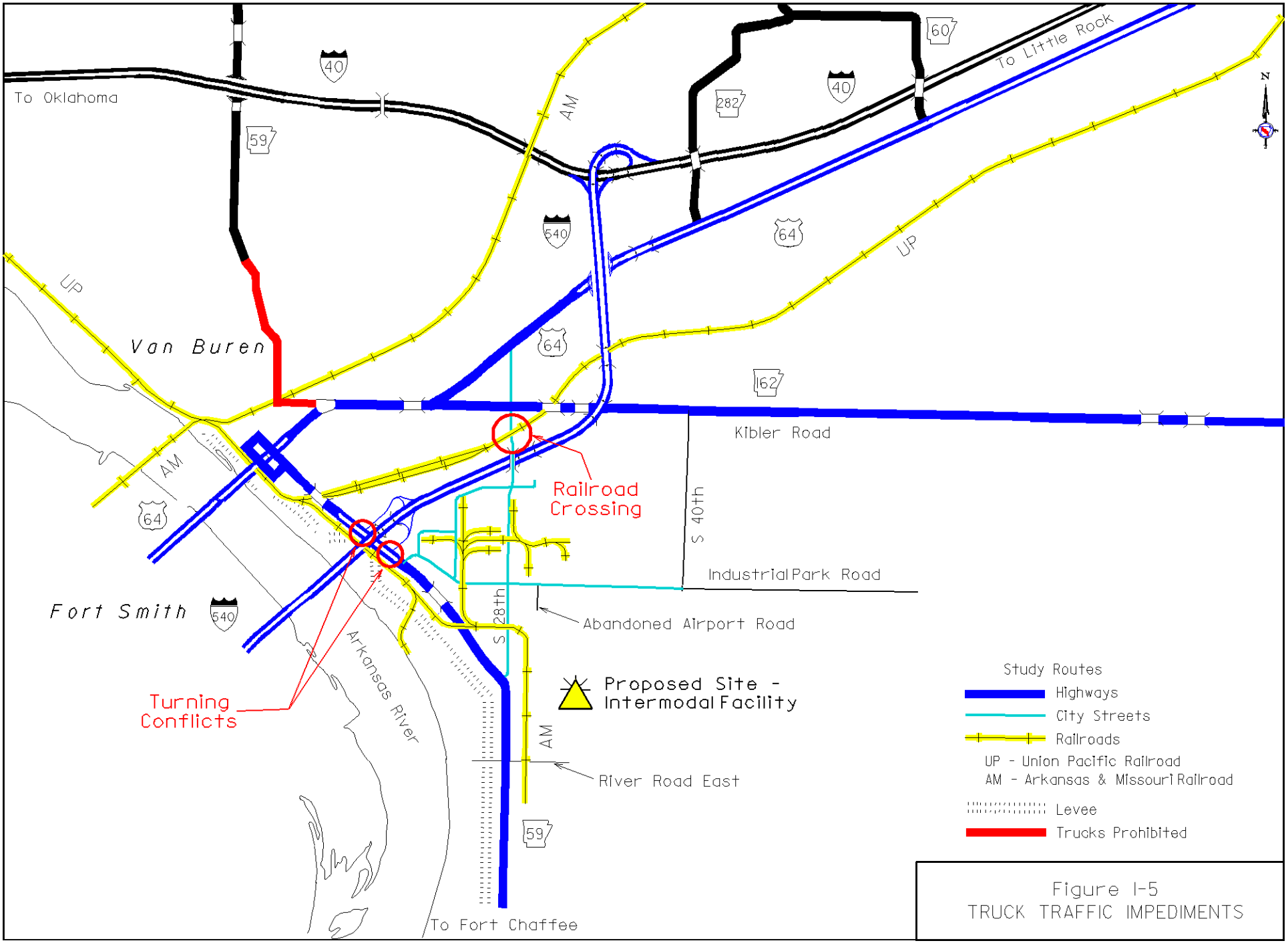

Figure I-5
TRUCK TRAFFIC IMPEDIMENTS

Railroad Access

Current Rail Service

The Union Pacific (UP) Railroad, a Class I railroad, has an east-west line located approximately one mile north of the Crawford County Industrial Park, and offers long haul rail service to major market areas like Dallas, Texas and Chicago, Illinois. Direct rail service to the industrial park is provided by the Arkansas and Missouri (AM) Railroad, a Class III railroad. AM services include switching and spotting of railcars and feeder railcar service to the UP and other Class I railroads. Annually, the AM handles over 2,000 rail carloads for five companies in the industrial park. Operating hours are Monday through Friday from 7:00 a.m. to 5:00 p.m., or as needed.

Track Conditions

The rail line in the industrial park and surrounding area is 90-pound rail; the industry minimum standard is 112-pound rail. Lightweight rail is susceptible to breakage and track buckling, both potential causes of derailment. Other common problems are crushed crossties, missing ballast, broken tie plates, and wide gauge. Specific problem areas are on the spur lines west of Highway 59 where drainage problems and decaying crossties exist and the area near River Road East. At the latter location, dirt has been placed on the rail bed to add stability to the rail line. The track that parallels and crosses Highway 59 has been well maintained.

Rail Service Constraints

The major constraint to reliable rail service for the proposed intermodal complex is the poor condition of the AM rail line, specifically, 90-pound weight rail. Rail weight relates to the ability to effectively handle loaded railcars. Railcars with loads of 286,000- and 315,000-pound loads are now moving through the national railroad system. Heavy railcars could present unique railroad operational problems at the proposed intermodal complex. Based on a study conducted for the American Shortline Railroad Association, railroads could experience problems in the following areas.

- Bridges with strength rating of 263,000 pounds or less
- Turnouts
- Track sections with 100-pound or less rail weight
- Rail joints

To adequately accommodate heavier railcars and the additional rail traffic that could be generated by the intermodal complex, rehabilitation of the current rail line and spur tracks will be required, with the possible construction of a new rail line. To better link the riverport area to the intermodal complex for rail service, a new rail line may be needed. The best location would be at River Road East because of the existing levee cut.

Federal Railroad Administration design guidelines for handling heavy axle loads include the use of 131-pound rail and track components and bridges constructed to a 315,000-pound rating. The higher specifications allow for:

- Greater load bearing capacity
- Higher train speeds
- Reduced wear on curved track
- Less rail failure such as compound fissures and fractures
- Less equipment damage
- Lower operating costs

Another potential rail service issue is the condition and safety at roadway/railroad crossings. A hazard rating is assigned to each crossing and represents the potential risk for motorists. Hazard ratings range from zero (0), indicating a low probability of train/vehicle collision, to 100, indicating that collisions are more likely to occur. Factors such as average daily traffic, the number of trains per day, the number of trucks present, and past collision occurrences are considered in developing the hazard rating. A review of crash data for the at-grade crossings in the industrial park revealed that, for the last 15 years, no collisions have been recorded. Table 1-2 lists characteristics for the crossings and Figure 1-6 shows the crossing locations.

Based on the relatively low hazard ratings, no major safety problems are apparent at any of the roadway/railroad crossings. Current warning devices at some locations may need to be upgraded, along with surface condition improvements, as train movements and vehicle trips increase following the completion of the intermodal complex.

Table 1-2
Roadway/Railroad Crossings

Railroad	Crossing Number	Location	Trains Per Day	Warning Devices	Surface Condition	Hazard Rating
UP	434432Y	28th Street	25	Flashing Lights/Gates	Good	11.64
AM	434453S	Industrial Park Road	2	Crossbucks	Fair	1.16
AM	434454Y	28th Street	2	Crossbucks	Fair	1.26
AM	431969B	28th Street	1	Crossbucks	Poor	0.70
AM	434452K	Highway 59	2	Flashing Lights	Poor	1.05
AM	431970V	River Road East	1	Crossbucks	Good	0.24

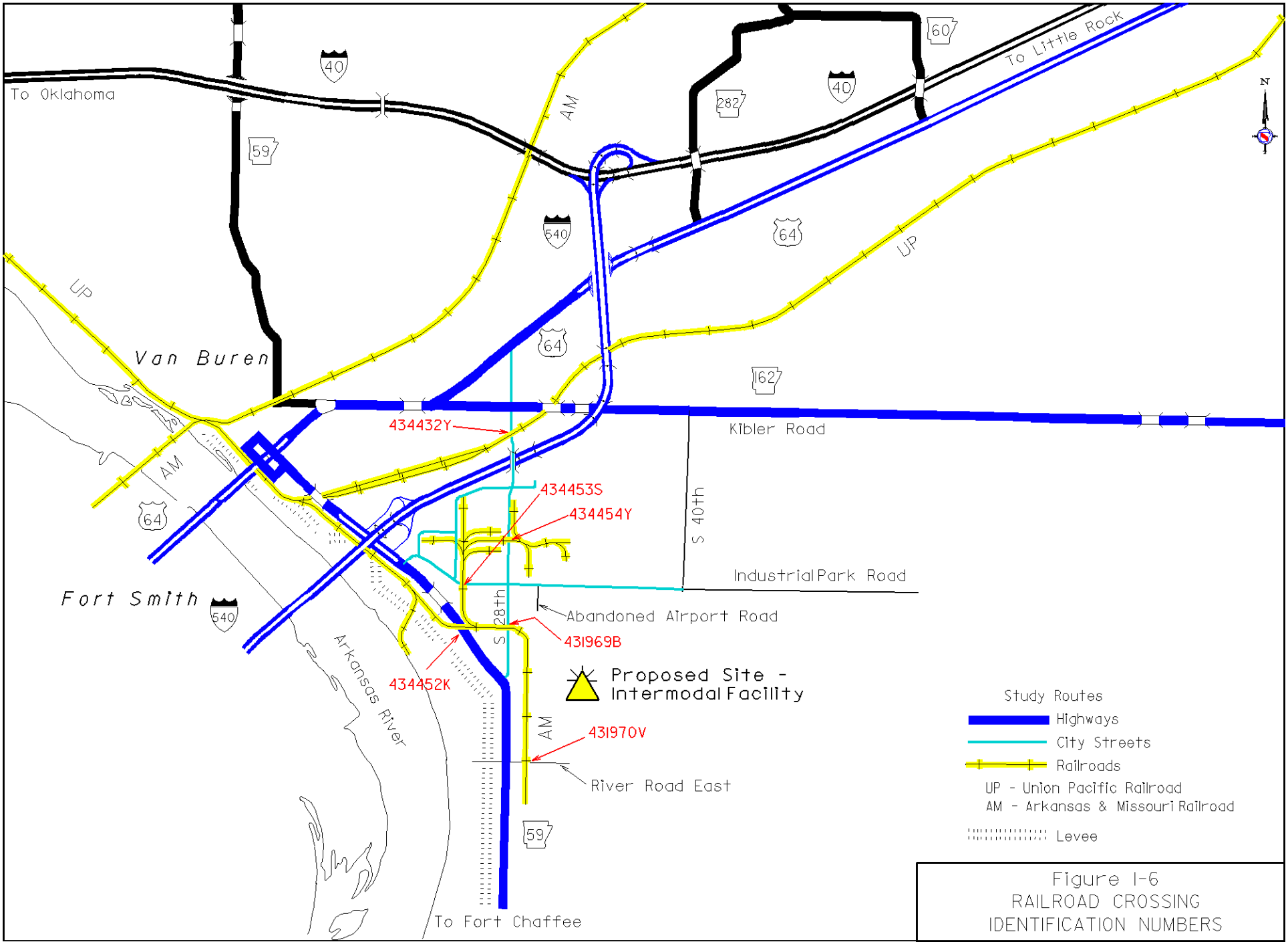

Figure 1-6
RAILROAD CROSSING
IDENTIFICATION NUMBERS

Traffic Impact Study

Traffic Volumes

A traffic impact study was prepared to assess the extent of traffic flow problems that may occur on roadway access routes from the development of the Intermodal Port Complex. To estimate the vehicle trips that could be generated by the Intermodal Port Complex, a trip rate from the ITE Trip Generation Handbook[6] was used. The traffic output was compared to actual traffic counts for the State's major existing intermodal freight complexes.[7] Generated traffic was combined with current traffic and forecast traffic to establish traffic assignments for the year 2024, expected full-build completion.

Average generated traffic:

81.8 vehicle trip ends/acre

Vehicle trip ends represent the total of all trips entering plus all trips leaving the complex. They include both truck and auto trips. Auto trips consist of employee and related trips, such as vendor and service maintenance trips.

The trip rate is for a fully developed intermodal rail/truck terminal with supporting warehouses, outside storage facilities, and related facilities on the proposed 123-acre site. Calculation of the number of trips expected to occur from full development of the Van Buren Regional Intermodal Port Complex is shown below.

Total Vehicle Trips
(Typical Weekday)

Estimated traffic:

81.8 trips/acre x 123 acres = 10,060 total vehicle trips
Inbound = 5,030
Outbound = 5,030

Following full-build completion in 2024, the Intermodal Port Complex could generate approximately 10,000 vehicle trips on a typical weekday. Forty percent of this volume would be truck trips. The truck percentage is based on present truck volumes in the study area and on vehicle classification studies conducted on the National Highway System freight intermodal connector routes that access the four rail/truck intermodal complexes used for comparison. Auto trips consisting of employee and related trips would account for 60 percent of the trips each day.

[6] Trip Generation – 4th Edition, 1987, Institute of Transportation Engineers
[7] Little Rock Port – Port of Pine Bluff/Union Pacific Railroad Complex – Union Pacific Railroad Ebony Terminal – Burlington Northern and Santa Fe Railway Harvard Yard

Trip Distribution:
Figure 1-7 exhibits the traffic assignment that combines traffic generated by the Intermodal Port Complex with anticipated traffic for 2024. The assessment considered the proposed frontage road system to be in place.

Capacity Analysis

To determine the possible need for roadway capacity improvements that will accommodate future traffic volumes, a level of service (LOS) investigation was conducted. Level of service is a qualitative measure applied in describing traffic operating conditions and the perception of motorists using the facility. Operating conditions are controlled by such factors as traffic volumes, the number of trucks present and roadway width. There are six levels ranging from "A" to "F," with "A" representing the best operating conditions and "F," the worst. LOS C is considered an acceptable level of congestion in rural areas although LOS D may be acceptable in developed metropolitan areas. A description of the various LOS for two-lane and multi-lane roadways is provided in Appendix B.

Figure 1-8 shows the results of the LOS analysis based on current traffic volumes (2004). Figure 1-9 shows the LOS for the year 2024 with the intermodal facility in place. The only roadway segment that is presently operating below LOS C is Industrial Park Road between Highway 59 and South 28th Street, which is rated "D." This segment is a two-lane facility with current traffic volumes ranging from 7,500 to 8,400 vehicles per day.

With the full development of the intermodal facility (estimated in 2024), Industrial Park Road from South 28th Street to South 40th Street and South 28th Street between Highway 64 and Industrial Park Road will both operate at LOS D. The segment of Industrial Park Road from Highway 59 to South 28th Street will remain at LOS D with the frontage road system in place. Capacity improvements may be needed on these road segments to alleviate potential traffic congestion. To relieve possible turning movement conflicts into the intermodal facility (at the abandoned airport road), a right turn lane may be necessary on Industrial Park Road.

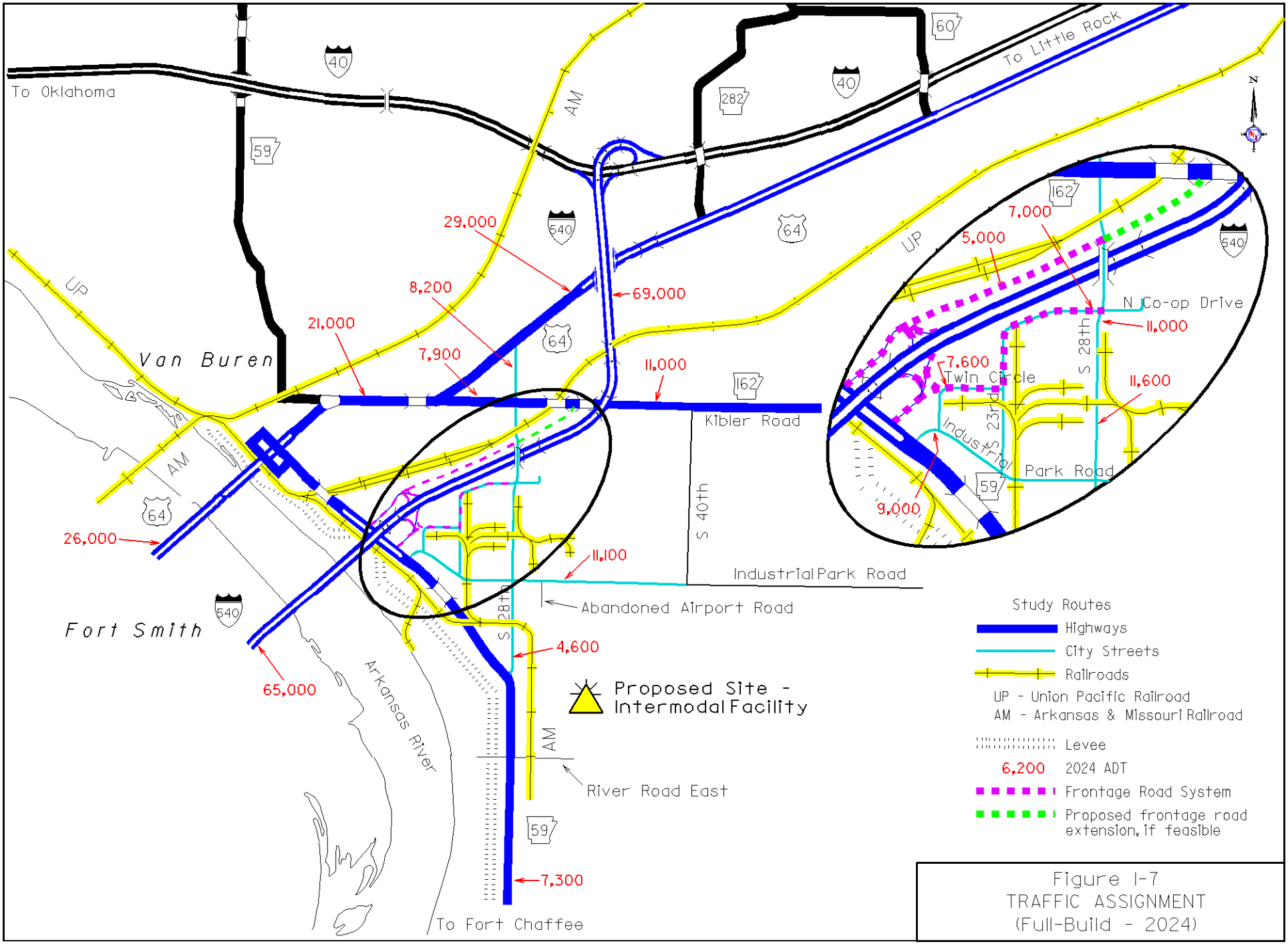

Figure 1-7
TRAFFIC ASSIGNMENT
(Full-Build - 2024)

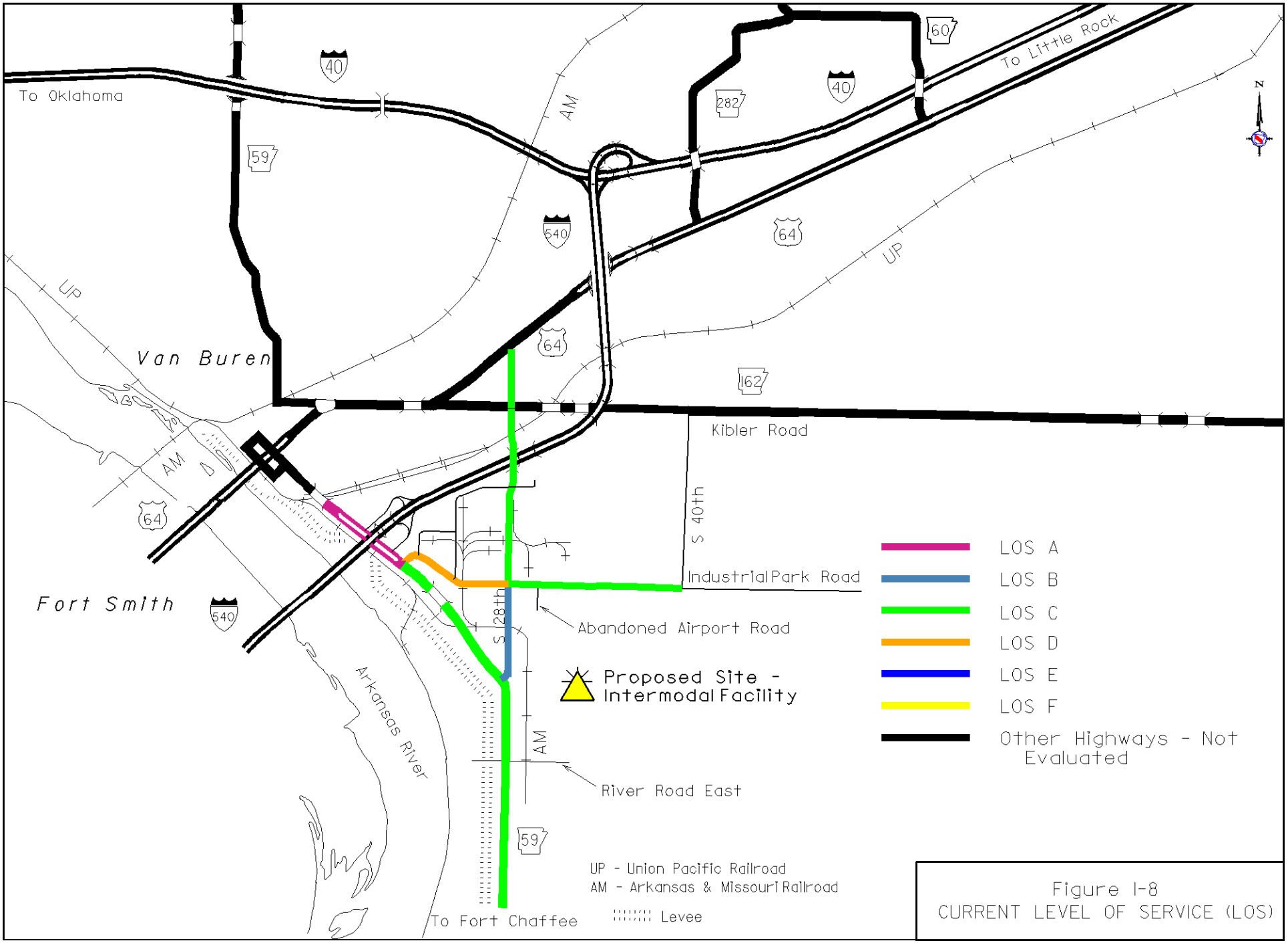

Figure I-8
CURRENT LEVEL OF SERVICE (LOS)

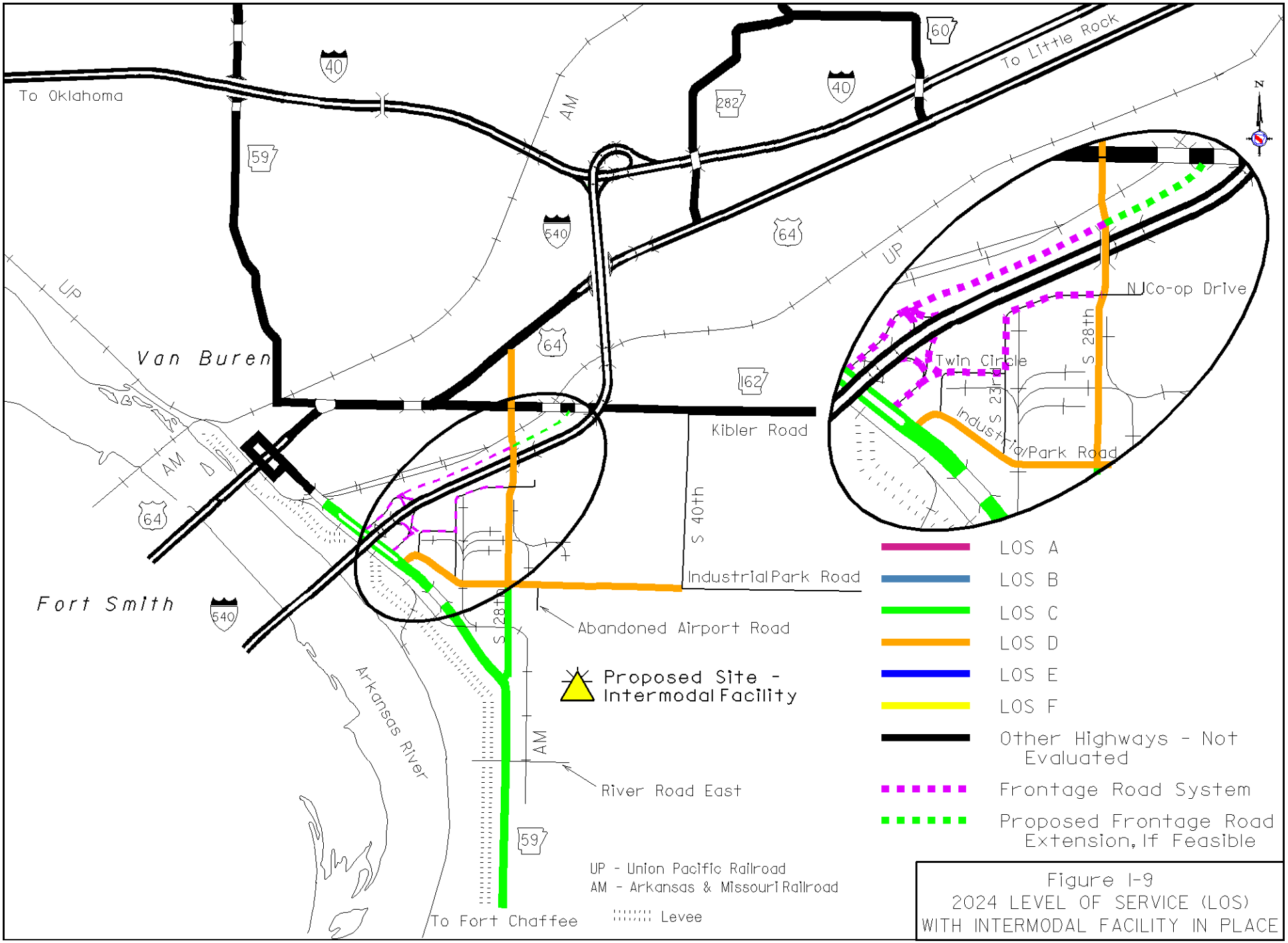

Figure I-9
2024 LEVEL OF SERVICE (LOS)
WITH INTERMODAL FACILITY IN PLACE

Estimated Costs

- The estimated construction cost for all recommended facilities and infrastructure improvements for the Van Buren Intermodal Port Complex is $37,245,000. It is anticipated that the project will be financed as a public/private capital venture.
- The City of Van Buren will be responsible for roadway improvements in the Crawford County Industrial Park and for improvements to the River Road East. Construction costs for proposed roadway access improvements are not currently available.
- The Arkansas and Missouri Railroad will be responsible for track improvements; however, the State may participate in at-grade crossing safety improvements. The estimated cost for materials (i.e., ballast, crossties and rail) to improve one mile of track is $280,000. The cost for building one mile of new rail line can be as high as $1 million depending on the number of crossings and other costs such as right of way acquisition and labor. The cost for crossing improvements varies depending on the improvements that are made. Estimated costs are listed below.

Item	Cost
✓ Crossbucks	$700 per crossing
✓ Flashing lights (including gates)	$150,000
✓ Cantilevers	$175,000
✓ Crossing surfacing	$1,000 per linear foot

- Job 040130 (I-540/Highway 59 Interchange Modifications and Frontage Roads) is a State project. Estimated cost is about $3.1 million.

Section II
Summary and Recommendations

This study is an evaluation of possible landside access (roadway and railroad) problems from the development of the Van Buren Intermodal Port Complex. The investigation included:

- A review of the planned facilities at the complex
- Identification of the likely road and railroad access routes
- Examination of current traffic volumes and roadway features
- Determination of truck traffic impediments
- Evaluation of current rail service, track conditions and rail service constraints
- Preparation of a traffic impact study that included trip generation and trip distribution
- A level of service analysis

The investigation revealed the potential for roadway and railroad access problems. Proposed improvements are shown on Figure 2-1.

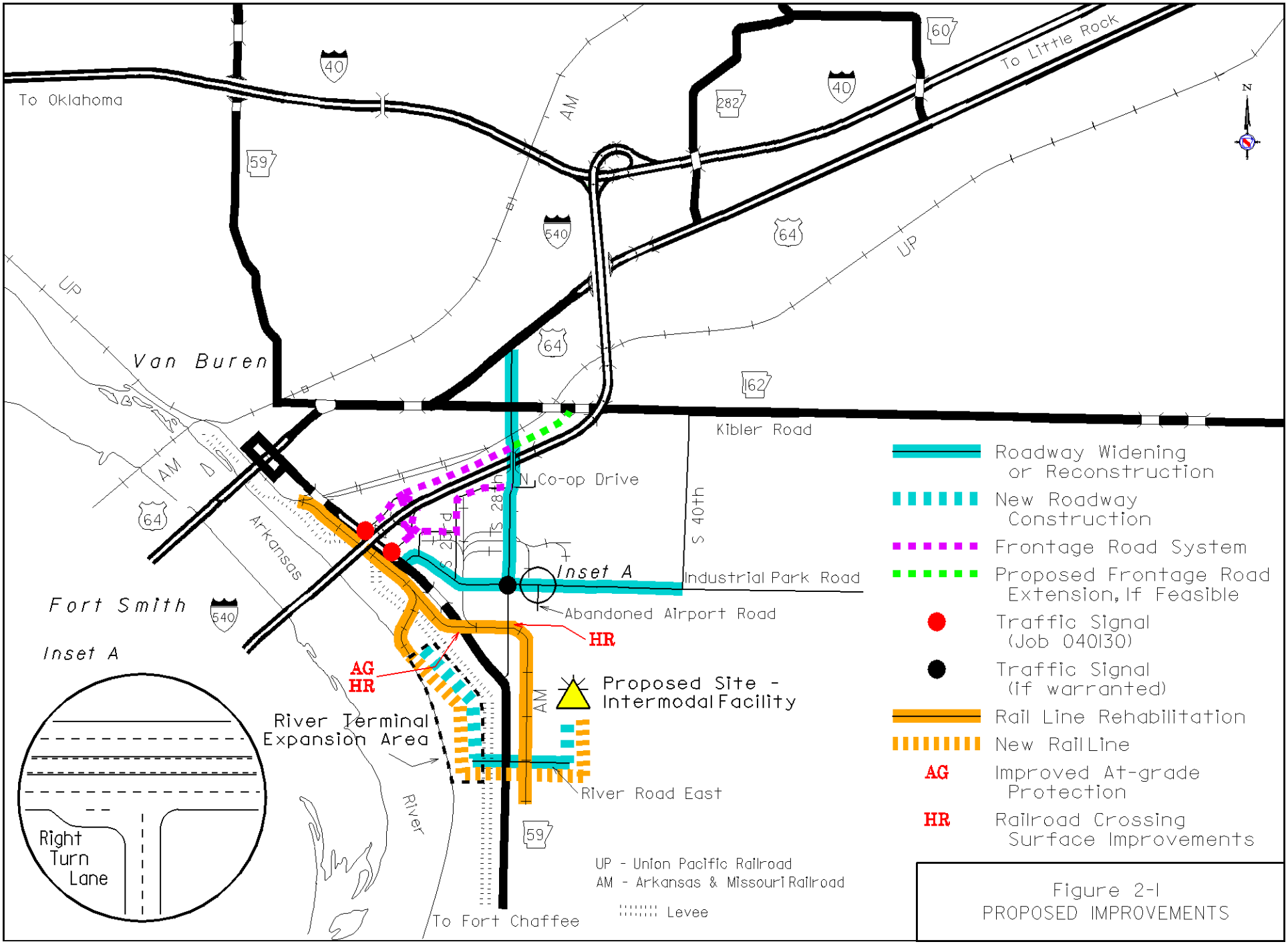

Figure 2-1
PROPOSED IMPROVEMENTS

Appendix A
Concept Drawing

Concept Map

Appendix B
Level of Service (LOS)

DESCRIPTIONS OF LEVEL OF SERVICE (LOS)

Two-Lane Roadway

LOS A - LOS A represents traffic flow where motorists are able to travel at their desired speed. Passing is rarely affected and drivers are delayed no more than 35% of the time by slower drivers.

LOS B - Traffic speeds in LOS B drop and drivers are delayed up to 50% of the time by other drivers.

LOS C - At LOS C, speeds are slower than at LOS B. Although traffic flow is stable, it is susceptible to congestion due to turning traffic and slow-moving vehicles. Drivers may be delayed up to 65% of the time by slower drivers.

LOS D - LOS D describes unstable flow and passing becomes extremely difficult. Motorists are delayed nearly 80% of the time by slower drivers.

LOS E - At LOS E passing becomes nearly impossible and speeds can drop dramatically.

LOS F - LOS F represents heavily congested flow where traffic demand exceeds capacity and speeds are highly variable.

Multi-Lane Roadway

LOS A - LOS A represents free flow conditions where individual users are unaffected by the presence of others in the traffic stream.

LOS B - Traffic flow in LOS B is stable, but other users in the traffic stream are noticeable.

LOS C - At LOS C, maneuverability begins to be significantly affected by other vehicles.

LOS D - LOS D represents dense but stable flow where speed and maneuverability are severely restricted.

LOS E - Traffic volumes approach peak capacity for given operating conditions at LOS E; speeds are low and operation at this level is unstable.

LOS F - Minor interruptions in the traffic stream will cause breakdown in the flow and deterioration to LOS F, which is characterized by forced flow operation at low speeds and an unstable stop-and-go traffic stream.

Appendix C
Intermodal Terms and Definitions

Intermodal Terms and Definitions

AAR – The Association of American Railroads

AASHTO – American Association of State Highway and Transportation Officials

abandonment – decision of a carrier to discontinue service over a route (Surface Transportation Board permission is required).

accessorial service – service rendered by a carrier, other than a transportation service, such as warehousing service

ADT – Average Daily Traffic

air cargo – Freight, mail, and express packages transported by air

AMTRAK – the nation's rail passenger service

back haul – to bring a shipment back over part of the route it has already traveled or the return movement of a vehicle from its destination to its origin

barges – four types

- open hopper – a barge with an open cargo area used to carry materials like coal, crushed rock, scrap metal or any material that does not need to be protected from the weather
- covered hopper – a barge like an open hopper except with a watertight cover to protect the cargo in the hold from the weather, commonly used to carry commodities such as grains and dry chemicals
- deck – a barge with no cargo hold, but with a heavily plated, well supported deck to which cargo is tied, commonly used to move machinery, construction materials, or heavy equipment
- tank – a barge used to transport liquids like petroleum products and liquid chemicals

barge fleeting area – temporary mooring area used to make up multi-barge tows

benefit/cost ratio – an analytical tool used to establish the ration of total measurable benefits to capital cost

bill of lading – a contract document between carrier and shipper

blocking – the grouping of railcars for movement to another location

broker – an intermediary between the shipper and the carrier

breakbulk – the separation of a bulk load into smaller shipments

cargo – four types
- bulk cargo – basic commodities in an unpacked condition (grains, coals, or other materials that are voluminous and loose)
- general cargo – consists of large units of semi- or manufactured commodities which are packaged (boxes, drums) or self packaged
- neo-bulk cargo – consists of a limited number of commodities such as scrap metal, lumber, automobiles, or paper
- outside cargo – general cargo that is so heavy or large it cannot be accommodated or handled by normal means, and requires use of special loading and/or transportation equipment

cargo movements – three types
- online movements – cargo is transported by a single carrier
- single mode movements – cargo is transported by one or more carriers of a single mode
- intermodal movements – cargo is transported by two or more modes, involving the transfer of cargo between modes

circuitous route – indirect freight route

CL – carload or container load

Class of Railroads – three types based on annual operating revenue
- ***Class I*** – carriers generating $261.9 million or more in revenue
- ***Class II*** – carriers with at least $21 million but less than $261.9 million in revenue (none in Arkansas)
- ***Class III*** – carriers with less than $21 million in revenue. Commonly referred to as a short-line railroad

COFC - container on (rail) flatcar

consignee – party to whom articles are shipped

common carrier – for-hire carrier that serves the general public

consignor – party by whom articles are shipped

container terminal – area designated for storage of containerized freight

contract carrier – for-hire carrier that serves shippers through contract arrangements

Customs duty – amount payable to the government on goods imported or exported

dead head – one leg of a freight movement on which the trailer or container is empty

distribution warehouse – a warehouse used to store finished goods and to assemble customer orders

double stack – stacking containers, frequently of differing lengths, on top of each other on a rail car

drayage – freight hauled by a motor carrier

exclusive use – carrier vehicles assigned to a specific shipper for its sole use

FHWA – Federal Highway Administration

Foreign Trade Zone (FTZ) – a designated area where imported goods can be stored, displayed, sold, and/or manufactured without being subject to certain quota restrictions and some Customs formalities; for exports, an FTZ provides accelerated status for purposes of excise tax rebates and Customs drawbacks

FRA – Federal Railroad Administration

freight forwarder – a person engaged in consolidating small shipments of goods for transport as a single shipment

gateway – point where freight moving between territories is interchanged

interchange – transfer of cargo between carriers

interchange track – section of track where rail cars are exchanged between two or more railroads

intermediate haulage – a short train movement, usually between a rail marshalling yard and a local industry

intermodal transportation facility – freight exchange terminal that also provides warehousing and transfer loading

intermodal transfer – transfer of commodities between two modes

JIT (just-in-time) – inventory system used by manufacturers and distributors to minimize levels of inventories, for which reliable transportation is essential

LCL – shipments of less than rail carload volume

lead time – total time that elapses from placement of an order until goods are received

line haul – movement of freight from one point to another

logistics channel – network of intermediaries engaged in transfer, storage, handling, and communication functions that contribute to the efficient flow of goods

LTL – less than truckload (shipment)

marshalling yard – a series of parallel rail tracks where railcars are stored and grouped for distribution

multimodal – moving cargo from origin to destination by more than one freight transportation mode

outsourcing – contracting with an outside firm for services (e.g., shipping, packaging, storage, billing and/or inventory control)

piggyback – shipment of truck trailers and containers on railroad flatcars; also called TOFC (trailer on flat car)

railcars – seven types:

- box car – closed car used for hauling freight
- compartmentizer car – box car equipped with movable bulkheads which can be used to divide the car into separate compartments
- compartment tank car – tank car which has compartments or separate tanks in which different kinds or grades of liquids may be transported
- flat car – car without sides, top or ends, used for machinery, stone, etc.
- gondola – open top car having sides and ends
- hopper car – car with floor sloping to one or more hoppers through which contents may be unloaded by gravity
- tank car –car used for transporting bulk liquids

rail weight – the weight of rail measured in pounds per yard

relay terminal – motor carrier terminal where a fresh driver is substituted for a driver who has driven the maximum hours permitted

seamless service – level of cooperation among intermodal carriers that makes the modal transfer smooth and effortless with no shipment delay

side tracks – rail tracks used for storage, loading or unloading which connect with other railroad tracks

spur tracks – rail tracks extending from and connected at only one end with another track

stevedore – a person or company employed to load or unload waterborne cargo

team track – rail tracks on which rail cars are placed for common public use in loading and unloading freight

TEU – Twenty Foot Equivalent Unit. A TEU is equivalent to a 20-foot container

through movement – shipment of a container inspected and sealed by Customs at the factory site and then transported without the need of further inspection until arrival at the destination

TL – truckload (shipment)

tramp loading site – loading site for transfers of bulk commodities between trucks, trains and/or containers

TOFC – trailer on flatcar (also called piggyback service)

tow – barges and a towboat tied together, acting as a single vessel with the towboat as the power unit

transit time – total time that elapses from pickup to delivery of a shipment

transload site – a location where products are temporarily stored and then loaded into a railcar, truck or container

truck cross-dock terminal – a location where cargo is transferred between long haul trucks and small delivery trucks, as part of a freight consolidation service

unit trains – large shipments treated as a single unit (e.g., a multi-car train where all cars carry wood chips to a paper mill).

Landside Access Study
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Prepared by
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