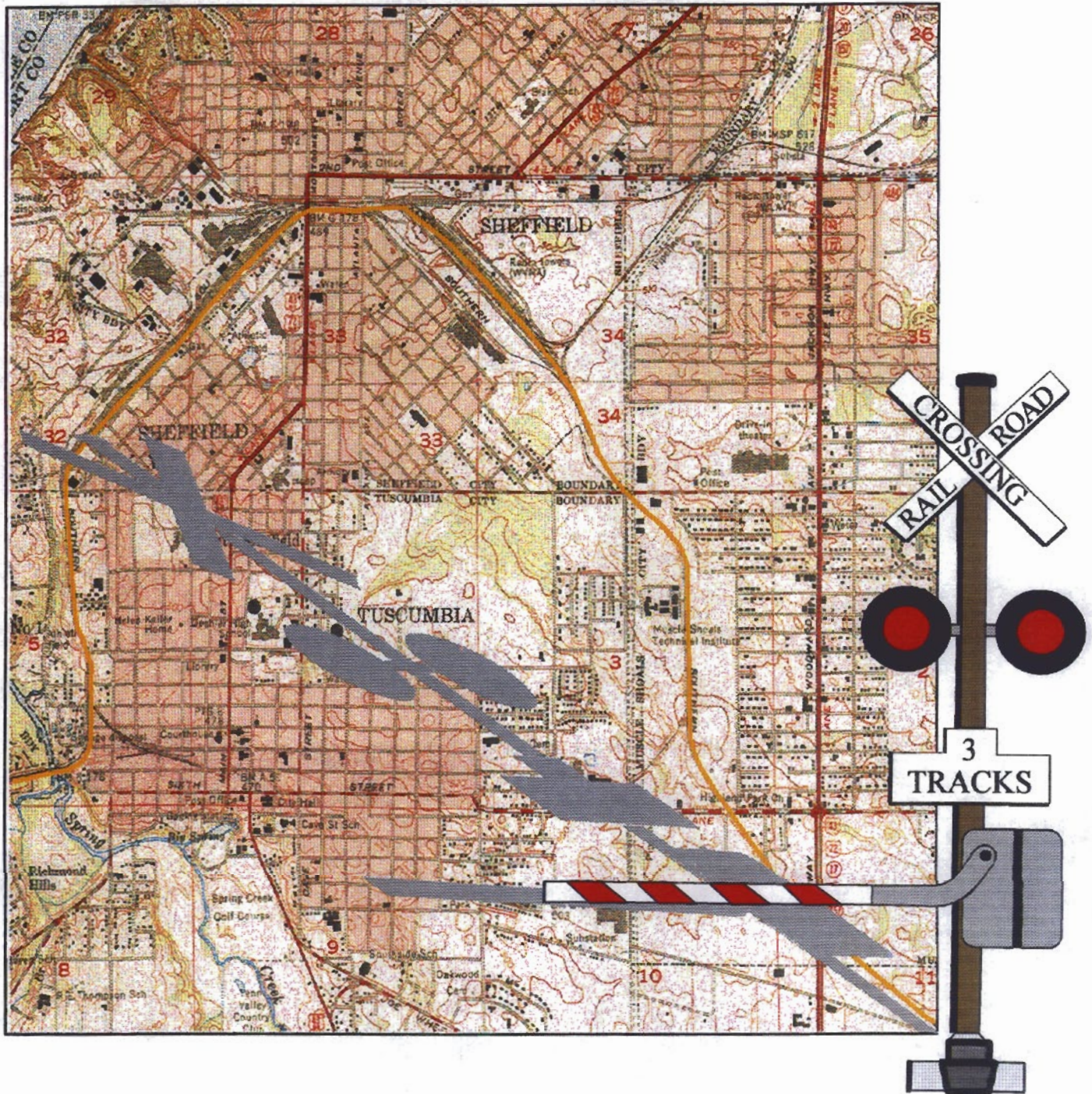


TRAFFIC IMPROVEMENT REPORT SHEFFIELD, ALABAMA



EVALUATION OF POSSIBLE ALTERNATIVES
FOR ALLEVIATING EXISTING RAIL AND STREET
TRAFFIC CONFLICTS
WITHIN THE SHEFFIELD, ALABAMA AREA

INTRODUCTION

The city of Sheffield, Colbert County, Alabama requested the services of the Tennessee Valley Authority to investigate possible alternatives for alleviating the existing conflict between the train/ automobile traffic within the downtown area. It is recognized that potential improvements in the traffic conditions will have a positive impact upon the economic development of the tri-cities area of Sheffield, Tuscumbia, and Muscle Shoals. General economic development should include the awareness and enhancement of the communities quality of life and as such must be responsive to the values and goals of the community. There has been a strong interest by the community to determine available possibilities for improving the traffic conditions.

With the presence of several at-grade crossings, the rail line's operation activities create a problem for motorists traveling in and around the tri-cities area. The present routing of the main line makes a distant loop through the downtown business districts, and as a result, crosses virtually every major roadway within the area. With 20 to 24 trains utilizing the tracks daily, significant delays for motorists throughout the tri-cities area are experienced. Additionally, potential delay of emergency vehicles is a major concern. Therefore, the main objective of the community is to enhance and improve the traffic access within the downtown area.

The existing tracks are the main line for Norfolk Southern Corporation's rail line that serves Iuka and Corinth Mississippi, and Memphis to the west and Decatur and Huntsville to the east. Also, rail service to the south to Birmingham is provided from the tri-cities area.

This report looks at two possible approaches to improving the train and automobile traffic situation. One possibility would be to provide grade separation structures at strategic intersections within the tri-cities area. This may include rerouting of some traffic, improving roads, and constructing new road sections. Another possibility would be to relocate the Norfolk Southern Corporation's main line railroad to another corridor outside the central business district. This preliminary report involves a map study and field investigation of the area. Also included are rough cost estimates of the activities that would be involved with the possible improvements.

General layout planning considerations include environmental and floodplain information. The approximate floodplain and floodway areas delineated on the layout drawing have been taken from the National Flood Insurance Programs' Flood Insurance Rate Maps (FIRM).

The Colbert County solid waste disposal site is located near the end of the proposed rail line segment. The proposed routing of the tracks has been to avoid any adverse impact from the landfill.

Though there appears to be limited adverse environmental issues to be addressed, further environmental impact studies will be required. This will include: historic properties, site geology, wetlands protection, noise and air pollution, water quality, farmland protection, wild and scenic streams, endangered animal or plant species, state, and local statues.

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EXECUTIVE SUMMARY

This report evaluates possible alternatives for alleviating the existing traffic conflict between train and highway vehicles within the downtown Sheffield, Alabama and tri-cities area. This report looks at two possible approaches to improving the train and automobile traffic situation. One possibility is to provide grade separation structures at strategic intersections within the tri-cities area. The other possibility is to relocate the Norfolk Southern Corporation's main line railroad to another corridor outside the central business district. Included are sketches and preliminary cost estimates of the proposed possible improvements.

A brief description of the existing traffic conditions, accidents, and projected traffic counts for the area is provided. Possible roadway improvements focus on road modifications and a bridge structure at Montgomery Avenue with an estimated cost of \$4,973,100. Also proposed is road modifications and a bridge at Avalon Avenue (Scheme 1 estimated cost \$3,806,900 and Scheme 2 estimated cost \$5,001,100).

Possible alternative layouts (or routings) for the relocation of a segment of Norfolk Southern Corporation's main line are presented. Layout "A" with a total of 5.73 miles of track is estimated to cost \$19,622,800. Layout "B" with a total of 5.87 miles of track is estimated to cost \$20,652,200. Layout "AA" (consisting of Layout "A" through station 200+00 with the remaining track following an alternative route) contains 6.04 miles of track with an estimated cost of \$20,037,800. A rough estimate is included of the potential net salvage value of the line segment and sidings that could possibly be removed if the main line is relocated. The "as is, where is" value is estimated to be around \$2,499,300. Also, it is estimated that there could be an annual savings of \$130,000 per year from reduced maintenance costs of the removed line segment. A discussion of other possible reductions in operating expenses, other considerations and potential benefits to both the Norfolk Southern Corporation and the local community indicates this relocation proposal is a viable possibility for improving the rail and street traffic conflicts for the Sheffield area.

There is potential for the community to implement a *combination* of the suggested improvements in order to address the rail and street traffic needs of the community.

It is hopeful that this preliminary report will help focus the community's scope of future planning and development efforts toward improved traffic condition in the tri-cities area. The community is encouraged to begin meaningful discussions with Norfolk Southern Corporation and the State of Alabama Highway Department to explore possible funding opportunities and related issues that could result in a mutually agreeable plan of action.

INTRODUCTION

The city of Sheffield, Colbert County, Alabama requested the services of the Tennessee Valley Authority to investigate possible alternatives for alleviating the existing conflict between the train/ automobile traffic within the downtown area. It is recognized that potential improvements in the traffic conditions will have a positive impact upon the economic development of the tri-cities area of Sheffield, Tuscumbia, and Muscle Shoals. General economic development should include the awareness and enhancement of the communities quality of life and as such must be responsive to the values and goals of the community. There has been a strong interest by the community to determine available possibilities for improving the traffic conditions.

With the presence of several at-grade crossings, the rail line's operation activities create a problem for motorists traveling in and around the tri-cities area. The present routing of the main line makes a distant loop through the downtown business districts, and as a result, crosses virtually every major roadway within the area. With 20 to 24 trains utilizing the tracks daily, significant delays for motorists throughout the tri-cities area are experienced. Additionally, potential delay of emergency vehicles is a major concern. Therefore, the main objective of the community is to enhance and improve the traffic access within the downtown area.

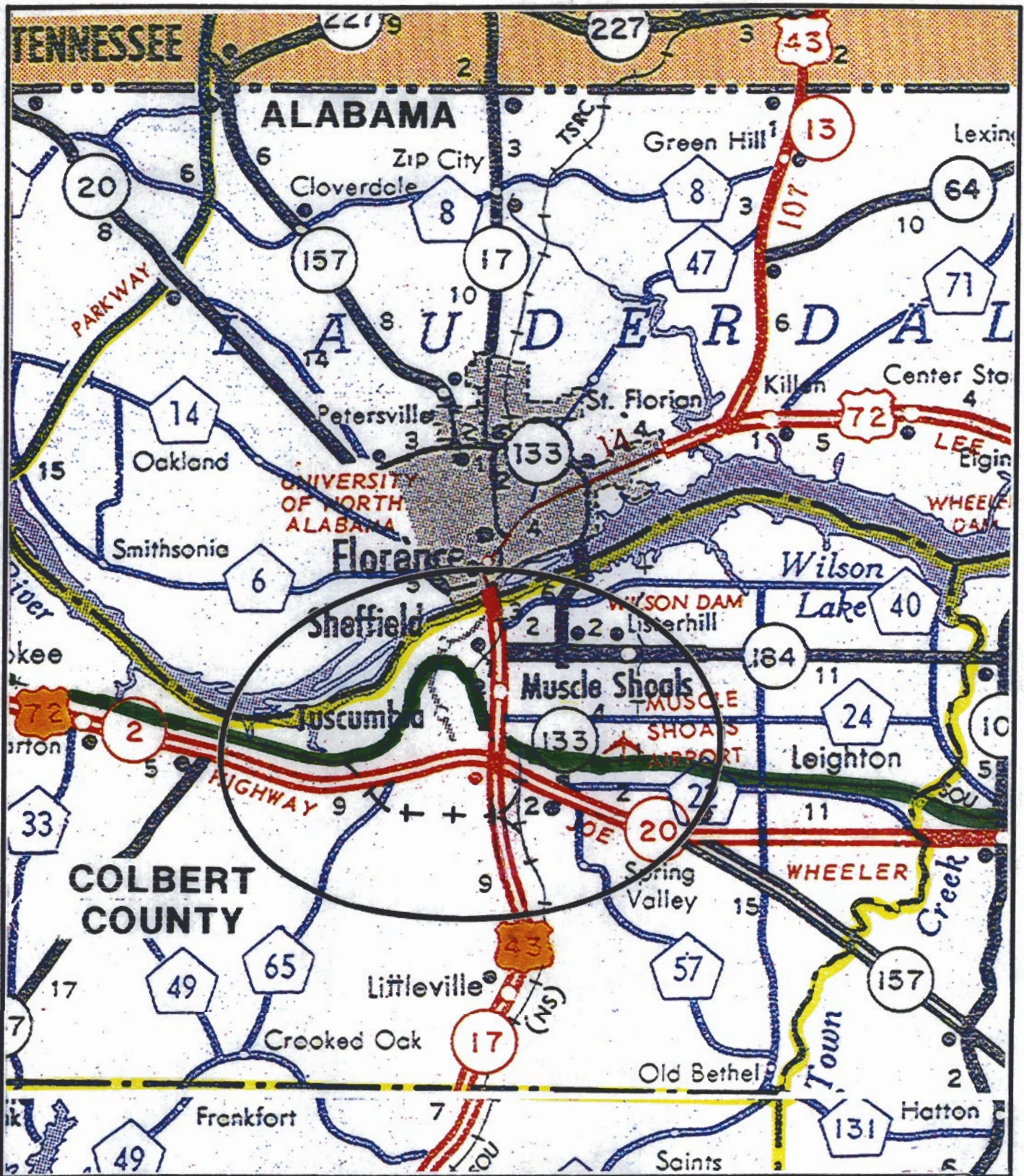
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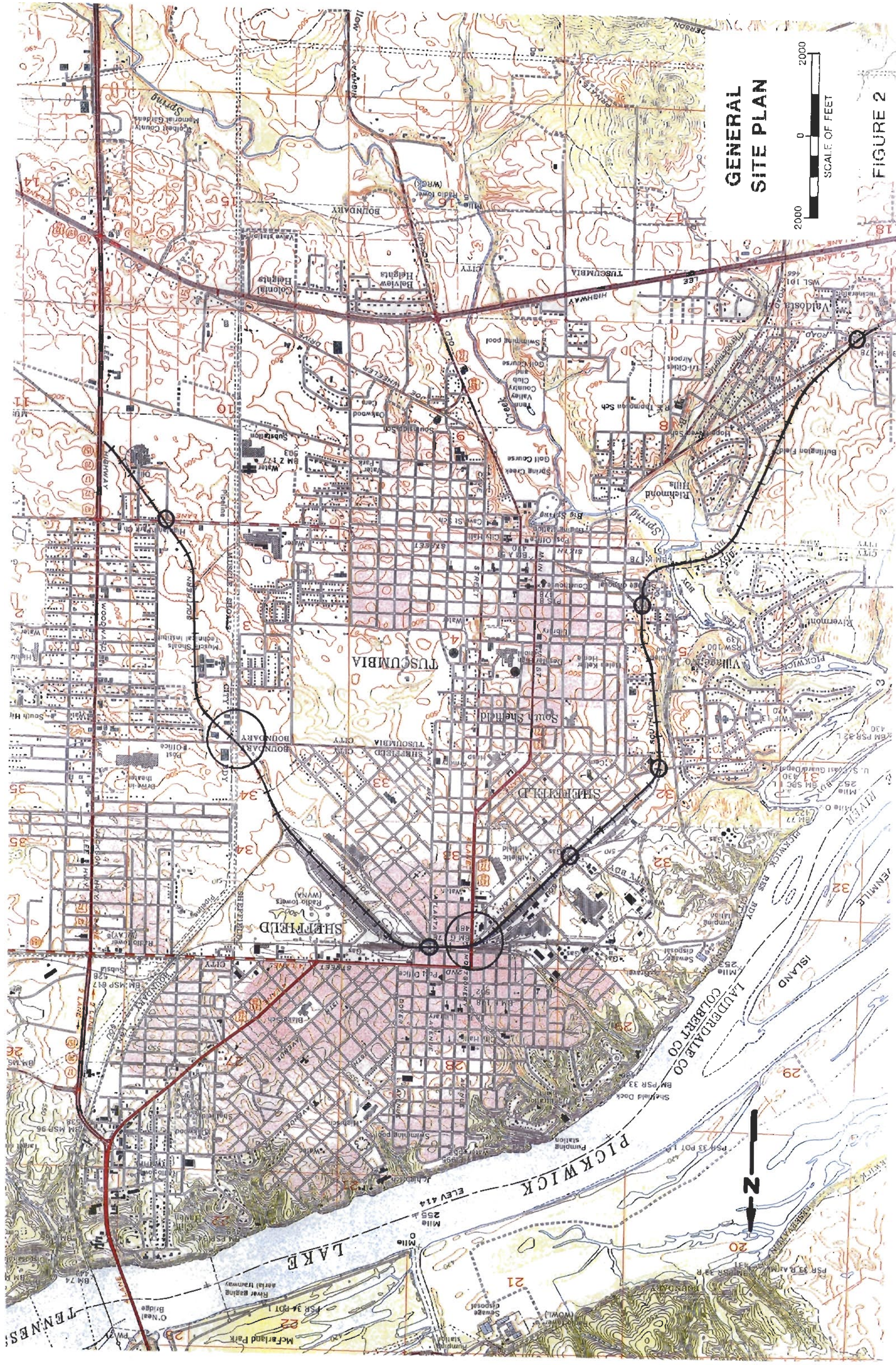
LOCATION MAP

**RAIL AND STREET TRAFFIC CONFLICT IMPROVEMENTS
SHEFFIELD, ALABAMA**



Approximate Scale in Miles

FIGURE 1



GENERAL SITE PLAN



FIGURE 2



BACKGROUND INFORMATION

EXISTING TRAFFIC INFORMATION

For discussion of existing conditions refer to the map, figure 2.

Most of the downtown traffic is concentrated on Montgomery Avenue which runs north/south through Sheffield, and on Avalon Avenue which runs east/west from Muscle Shoals to Tuscumbia. Avalon Avenue is the city boundary between Sheffield and Tuscumbia.

The Shoals Area (comprised of Florence in Lauderdale County and Sheffield, Tuscumbia and Muscle Shoals in Colbert County) established the Metropolitan Planning Organization (MPO). The MPO adopted a long range transportation plan (Reference: 2008 TRANSPORTATION PLAN, October 1989) to address the community's projected street and highway traffic needs. Present traffic counts expressed as the Average Annual Daily Traffic (AADT), are unavailable for the downtown area. The year 2008 traffic projections for those streets and highways within the vicinity of the railroad tracks are included within this study. Also, proposed future roadway improvements for the immediate area are included (see figure 3). Inclusion of any of the proposed improvements within this study into the community's future plans will impact traffic patterns and counts for area streets.

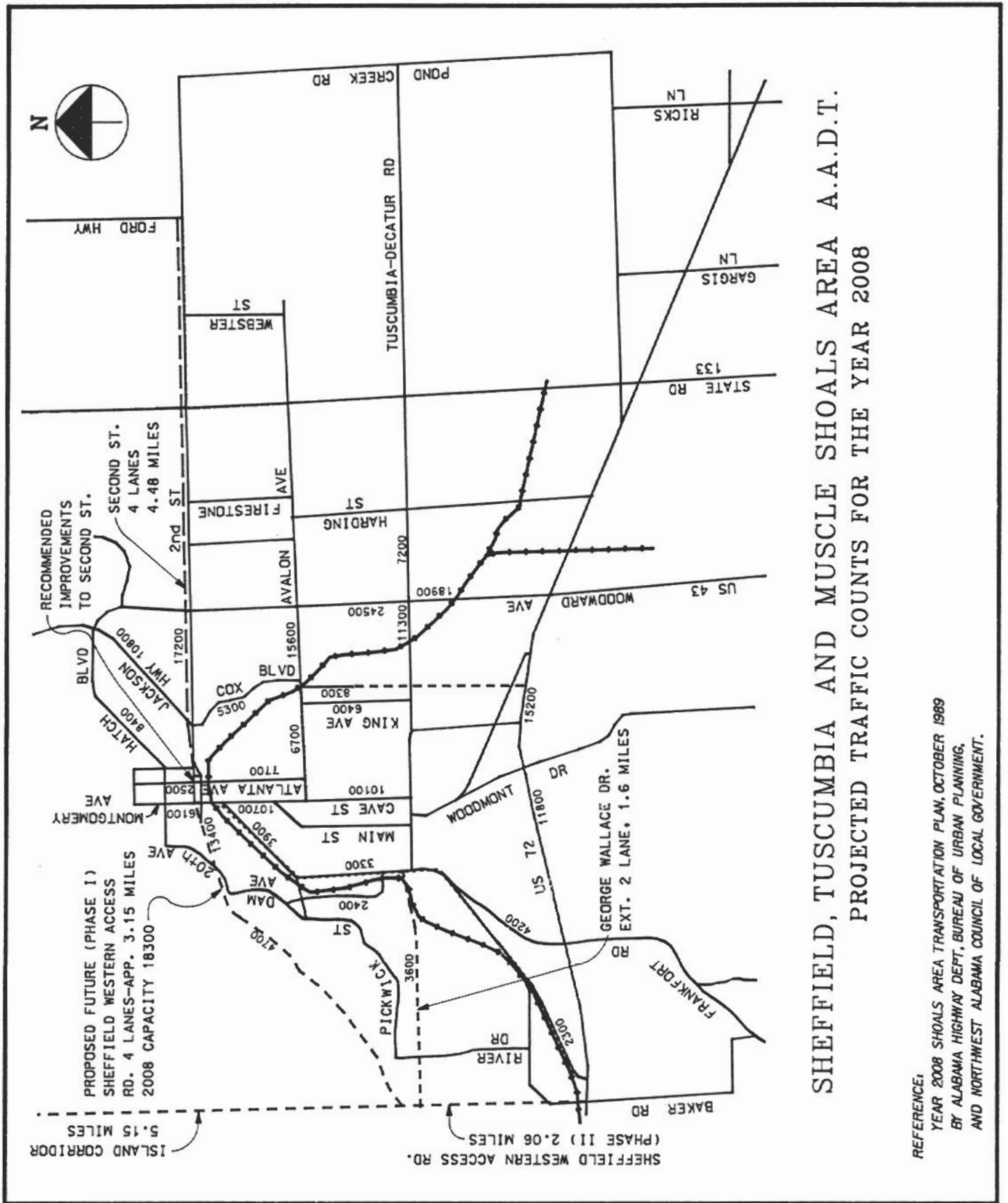
A list of the existing crossings are as follows:

MAIN LINE:

- Old Memphis Road (Tuscumbia)
- 2nd Street (Tuscumbia)
- Douglas Street (Sheffield)
- 12th Street (Sheffield)
- Montgomery Avenue (Sheffield) - multiple track crossing
- Atlanta Avenue (Sheffield) - multiple track crossing
- Avalon Avenue (Sheffield) - multiple track crossing
- 6th Street (Muscle Shoals) - 2 track crossing
- Mason Street (Muscle Shoals)

SPUR LINE:

- Frankfort Avenue (Sheffield)
- 20th Street (Sheffield)
- Cox Boulevard (Sheffield) - 2 separate crossings
- Union Avenue (Sheffield) - 2 track crossing
- 2nd Street (Hwy. 184) (Sheffield)
- Hwy. 43 (TVA Reservation)



SHEFFIELD, TUSCUMBIA AND MUSCLE SHOALS AREA A.A.D.T.
 PROJECTED TRAFFIC COUNTS FOR THE YEAR 2008

REFERENCE:
 YEAR 2008 SHOALS AREA TRANSPORTATION PLAN, OCTOBER 1989
 BY ALABAMA HIGHWAY DEPT, BUREAU OF URBAN PLANNING,
 AND NORTHWEST ALABAMA COUNCIL OF LOCAL GOVERNMENT.

FIGURE 3

ACCIDENTS

The following is a list of train related accidents at railroad crossings within the study area. This information was provided by the Design Bureau, Traffic Engineering Section of the State of Alabama Highway Department. The information covers a time period from January 1980 to December 1993.

<u>Location</u>	<u>Street</u>	<u>Type of Accident</u>	<u>Class of Accident</u>	<u>Date</u>
Tuscumbia	Old Memphis Rd	Property Damage Only	-----	Jan. 8, 1985
Tuscumbia	Old Memphis Rd	P.D.O.	-----	Aug. 18, 1988
Tuscumbia	Avalon St.	P.D.O.	-----	July 13, 1980
Tuscumbia	Avalon St.	P.D.O.	-----	Jan. 19, 1986
Tuscumbia	Avalon St.	P.D.O.	-----	Mar. 17, 1986
Tuscumbia	Old Memphis Rd	Injury	1 Serious Injury	Nov. 22, 1991
Sheffield	Douglas St.	P.D.O.	-----	Nov. 25, 1986
Sheffield	Douglas St.	P.D.O.	-----	May 15, 1989
Sheffield	Douglas St.	P.D.O.	-----	Dec. 9, 1991
Sheffield	Montgomery Ave.	P.D.O.	-----	Feb. 3, 1987
Sheffield	Montgomery Ave.	P.D.O.	-----	Dec. 13, 1990
Sheffield	Montgomery Ave.	Injury	1 Serious Injury	Sept. 17, 1992
Sheffield	Atlanta Ave.	P.D.O.	-----	Oct. 26, 1983
Sheffield	Atlanta Ave.	P.D.O.	-----	Jan. 7, 1988
Sheffield	Atlanta Ave.	P.D.O.	-----	Feb. 27, 1988
Sheffield	Atlanta Ave.	P.D.O.	-----	Feb. 6, 1989
Sheffield	Atlanta Ave.	Fatality	2 Killed, 1 Serious Injury	April 4, 1993
Muscle Shoals*	State Hwy. 20 (US 72)	Injury	1 Serious Injury	Mar. 19, 1989
Muscle Shoals*	State Hwy. 20 (US 72)	Injury	1 Less Serious Injury	May 18, 1990

*Construction of an overpass was completed in 1993 at this crossing. (State project no. RRS-105[15])

EXISTING AND FUTURE INDUSTRIES RAIL TRANSPORTATION USAGE

It is anticipated that a significant amount of the existing tracks within the downtown Sheffield area may be removed if there were a relocation of the main line outside Sheffield and Tuscumbia. However, it is recognized that some tracks would remain. It is advantageous for the community to promote continued rail service to the existing industries. Also, in order to promote future industrial growth, rail service should be maintained to the industrial parks.

Though present rail transportation use is light within Sheffield, there is enough to warrant continued service to the existing industries. The following is a list of the present and potential rail freight users in Sheffield:

Martin Industries 1604 17th Avenue	Reynolds Metal Can Plant 501 West 20th Avenue	McKinney Lumber Co. 755 West 20th Avenue
Tennessee Valley Recycling 700 West 20th Avenue	Alabama Oil Co. of Sheffield Inc. 1314 E. 21st Street	Paper & Chemical Supply 207 Frankfort Avenue
Southeastern Metal Co. Inc. 111 North Raleigh Avenue		

A general consensus of the potential future rail use needs of those industries interviewed was optimistic, however, no significant changes were anticipated within the near future. With improved rail and vehicular traffic conditions within the area, potential for attracting new industries would be enhanced.

The rail segment that continues through Sheffield to the TVA reservation, serves TVA's Environmental Research Center (ERC), Wilson Hydro Facility, and Power Service Shops. Tonnage shipped in 1993 was 6,294 tons. Tonnage anticipated to be shipped in 1994 is 6,508 tons. Projected *known* tonnage (does not include ERC) to be shipped by rail for 1995 and the future is 610 tons.

ROADWAY IMPROVEMENTS

POSSIBLE ROADWAY IMPROVEMENTS

One possible improvement to the traffic problem would be to provide a bridge structure at the intersection of Montgomery Avenue and 2nd Street (East -West Parkway). This could include separate structures that would not only span over the rail tracks, but provide a grade separation intersection for the two highways (refer to figure 4). As a part of the proposed changes for this area, Ashe Street just south of and parallel to the existing railroad tracks should be improved, and the crossing at Atlanta Avenue closed.

Another possible improvement would include major changes in the area of Avalon Avenue and the railroad crossing. As shown on the sketch, Scheme 1, figure 5, Michigan Street, north of Avalon could be four-laned from Jackson Highway to where the street presently ends. (Michigan Street is presently curbed for four lanes.) Then, the street could continue beneath the TVA transmission lines west southwest across Cox Blvd. and the railroad tracks and tie into Avalon Street just west of the Avalon Park site. A bridge could be built across the tracks at this point. With the proposed road and railroad crossing at approximately 90 degrees, the required bridge span would be shorter than that required for a structure at the present location of the grade crossing. Also, by moving the intersection to the northwest, adjustments of the power lines would not be necessary. (Refer to the preliminary costs estimates, page 9.)

It is suggested that Avalon Street tie directly into Cox Boulevard and the existing railroad crossing be eliminated. Traffic coming east on Avalon Street would either take the route over the proposed bridge or proceed on to George C. Wallace Boulevard which runs north-south, west of the railroad tracts. There are presently road improvements being made in this area.

In regard to the Avalon Street and railroad crossing, it is recognized that though feasible, a bridge crossing at the present location (scheme 2, figure 6) would cost more than one at the proposed relocated crossing. This increased cost would primarily be due to the property acquisition costs required for right-of-way for the construction of the improved intersection. Any proposed bridge crossing and road adjustment should attempt to minimize the purchase of developed commercial property. Also, existing transmission lines and towers would require significant adjustments within the immediate area.

COST ESTIMATE FOR POSSIBLE ROAD IMPROVEMENTS AND BRIDGE AT MONTGOMERY AVENUE

Proposed Bridge At Montgomery Avenue: Montgomery Ave. bridge is proposed to cross 1st Street and the existing railroad tracks. Also, it is proposed that 1st Street be made a one-way street for east-bound traffic and 2nd Street be made a one-way street for west-bound traffic. Refer to figure 4.

Right-of-way (app. 3.75 acres @ \$185,000/ac)	-----	\$ 693,800.00
Building Demolition (app. 480,000 cu. ft. @ \$0.22/cu.ft.)	-----	105,600.00
Site Preparation (app. 14,500 sq. yds. @ \$1.05/sq. yd.)	-----	15,200.00
Road work: Fill (borrow - app. 38,000 cu. yds. @ \$9.30/cu. yd.)	-----	353,400.00
Concrete Retaining walls (1600 ln. ft. @ \$248/ln. ft.)	-----	369,000.00
Paving: (including base material) 8,450 sq. yds. @ \$11.25/sq. yd.	-----	95,000.00
Bridges: Main structure - 500 ft. long by 60 ft. wide		
Ramps - 2 @ 360 ft. long by 20 ft wide		
(44,400 sq. ft. @ \$55/sq. ft.)	-----	2,442,000.00
Utilities Adjustments (lump sum)	-----	75,000.00
		\$ 4,149,000.00
15% Contingencies and Engineering	-----	622,400.00
	Subtotal	\$4,771,400.00

Removal of Road Section and Rail Crossing at Atlanta Avenue:

Pavement Removal: app. 1600 sq. yds. @ \$4.50/sq. yd.	-----	\$7,200.00
Removal of Signal (lump sum)	-----	2,500.00
		\$9,700.00
15% Contingencies and Engineering	-----	1,500.00
	Subtotal	\$11,200.00

Improvements to Ashe Street and Railroad (16th) Avenue:

Ashe Street: widening and resurfacing (assuming no additional Right-of-way required)		
1000 ln. ft. of road - (2670 sq. yds. @ \$8.25/sq. yd.)	-----	\$22,000.00
Railroad (16th) Avenue: New section of road		
300 ln. ft. of road - Right-of-way: (0.4 acre @ 185,000/acre)	-----	74,000.00
Clearing and Grading: (1,000 sq. yds. @ \$3.00/sq. yd.)	-----	3,000.00
Paving (including base material): (800 sq. yds. @ \$8.25/sq. yd.)	-----	6,600.00
Intersection traffic signal: (lump sum)	-----	60,000.00
		165,600.00
15% Contingencies and Engineering	-----	24,900.00
	Subtotal	\$190,500.00
	Total	\$4,973,100.00

COST ESTIMATE OF POSSIBLE ROAD MODIFICATIONS AND BRIDGE FOR THE RAIL CROSSING AT AVALON AVENUE

This estimate addresses the modifications as shown in Scheme 1, figure 5.

Right-of-way (app. 8 acres @ \$150,000/acre) -----	\$1,200,000.00
Building Demolition (app. 20,000 cu. ft. @ \$0.22/cu. ft.) -----	4,400.00
Site Preparation (app. 16,100 sq. yds. @ \$1.05/sq. yd.) -----	16,900.00
Road work: Bridge approach fill (borrow- app. 90,000 cu. yds. @ \$9.30/cu. yd.) --	837,000.00
Paving : (including base material) (16,000 sq. yds. @ \$11.25/sq. yd.) --	180,000.00
Bridge: 210 ft. long by 60 ft. wide	
12,600 sq. ft. @ \$55/sq. ft. -----	693,000.00
Utilities Adjustments (lump sum) -----	60,000.00
	<u>\$2,991,300.00</u>
15% Contingencies and Engineering -----	448,700.00
	<u>\$3,440,000.00</u>
	Subtotal

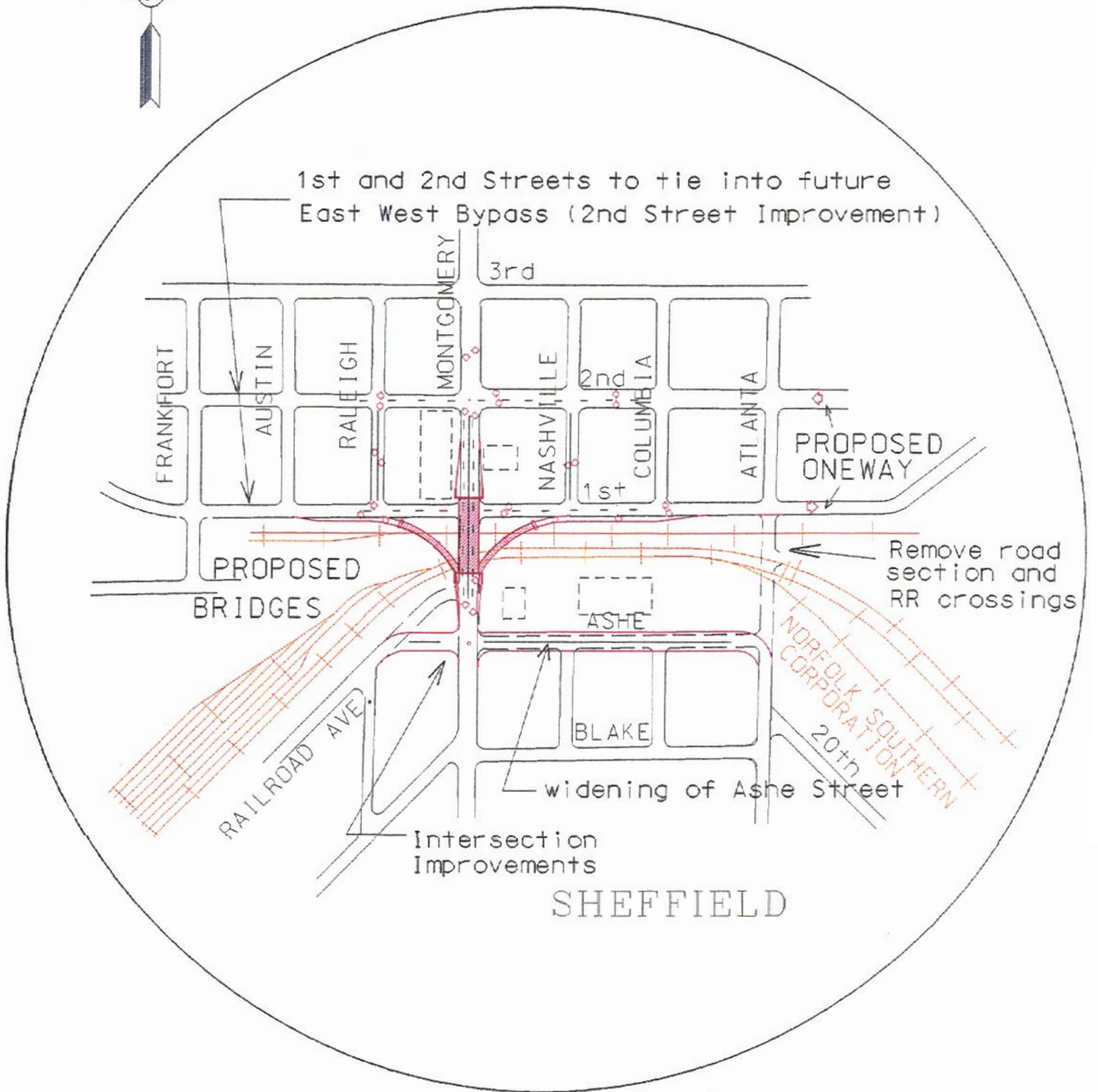
Additional work associated with this scheme:

Widening of Michigan Avenue: (Existing right-of-way is sufficient for four lane street.)	
3,500 ln.ft. of road - Grading (two outside lanes) (11,700 sq. yds. @ \$2.00/sq. yd.) ---	\$ 23,400.00
Paving (four lanes) (23,300 sq. yds. @ \$11.25/sq. yd.) ---	262,100.00
Adjustments to King Avenue: (app. 200 ln. ft. of new road section)	
Clearing and Grading: (700 sq. yds. @ \$3.00/sq. yd.) -----	2,100.00
Paving: (550 sq. yds. @ 11.25/sq. yd.) -----	6,200.00
Removal of a portion of Cox Blvd. (app. 1,200 ln. ft. of road)	
(4,000 sq. yds. @ \$4.50/sq. yd.) -----	18,000.00
Removal of a portion of 19th Street (app. 600 ln. ft.)	
(1,600 sq. yds. @ \$4.50/sq. yd.) -----	7,200.00
	<u>\$ 319,000.00</u>
15% Contingencies and Engineering -----	47,900.00
	<u>\$366,900.00</u>
	Subtotal
	Total
	<u>\$3,806,900.00</u>

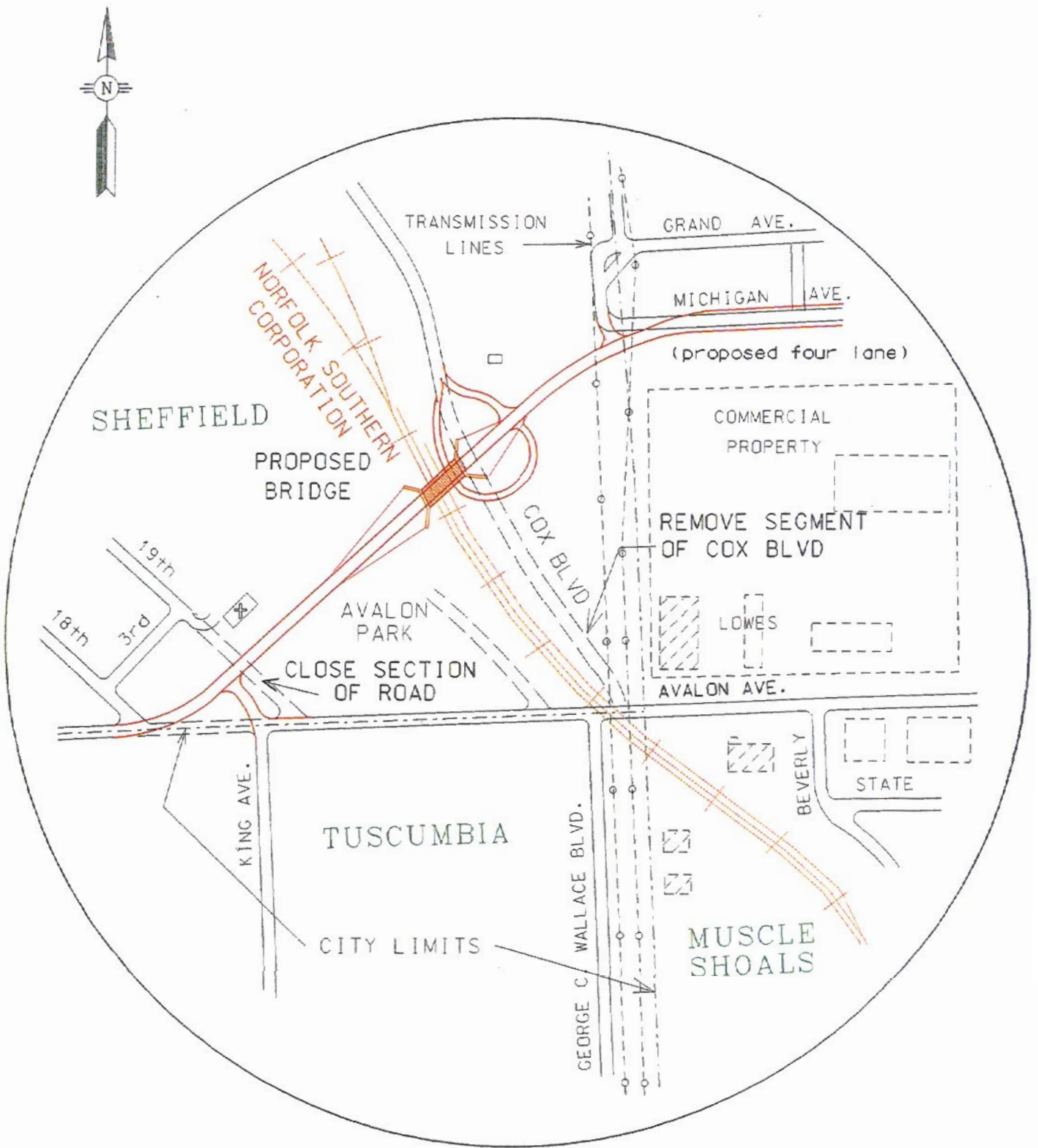
COST ESTIMATE OF POSSIBLE ROAD MODIFICATIONS AND BRIDGE FOR THE RAIL CROSSING AT AVALON AVENUE

This estimate addresses the modifications as shown in **Scheme 2**, figure 6.

Right-of-way (app. 10.5 acres @ \$185,000/acre) -----	\$1,942,500.00
Building Demolition (app. 1,300,000 cu. ft. @ \$0.22/cu. ft.) -----	286,000.00
Site Preparation (app. 33,300 sq. yds. @ \$1.05/sq. yd.) -----	35,000.00
Road work: Fill (bridge approaches) (borrow - app. 90,000 cu. yds. @ \$9.30/cu. yd.)	837,000.00
Paving (including base material): Avalon Avenue - 8,700 sq. yds.; side roads & ramps - 4,300 sq. yds.; George C. Wallace Blvd. - 2,400 sq. yds. 15,400 sq. yds. @ \$11.25/sq. yd. -----	173,300.00
Bridge: 250 ft. long by 60 ft. wide 15,000 sq. ft. @ \$55/sq. ft. -----	825,000.00
Utilities Adjustments (lump sum) ----- (Cost includes required adjustments to the high voltage transmission lines located within the area.)	<u>250,000.00</u>
	4,348,800.00
15% Contingencies and Engineering -----	<u>652,300.00</u>
Total	<u>\$5,001,100.00</u>

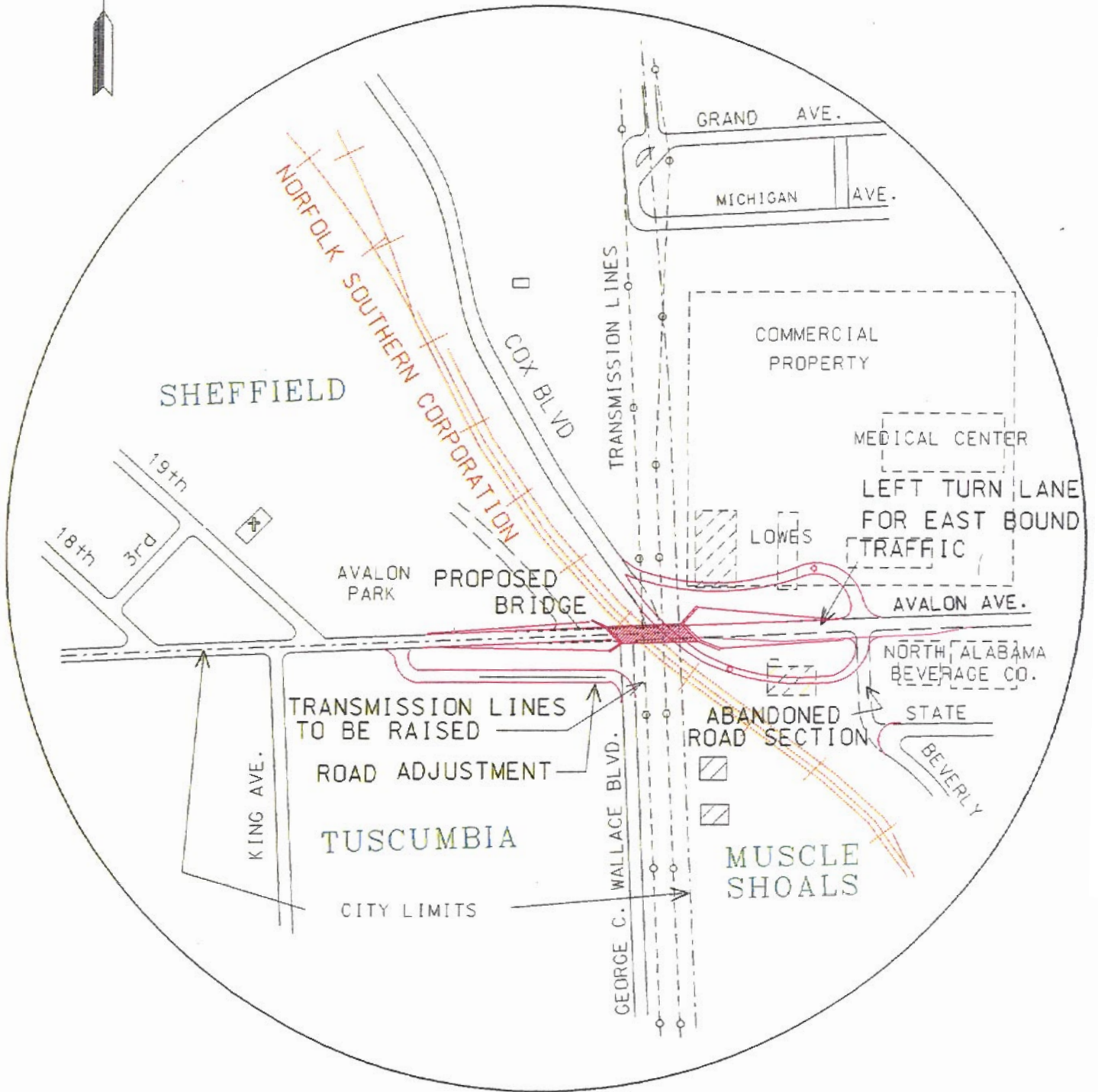


POSSIBLE INTERSECTION AND RAILROAD CROSSING
ADJUSTMENTS AT MONTGOMERY AVENUE



POSSIBLE ROAD MODIFICATIONS AND BRIDGE
FOR THE RAIL CROSSING AT AVALON AVENUE

SCHEME 1



POSSIBLE ROAD MODIFICATIONS AND BRIDGE
FOR THE RAIL CROSSING AT AVALON AVENUE

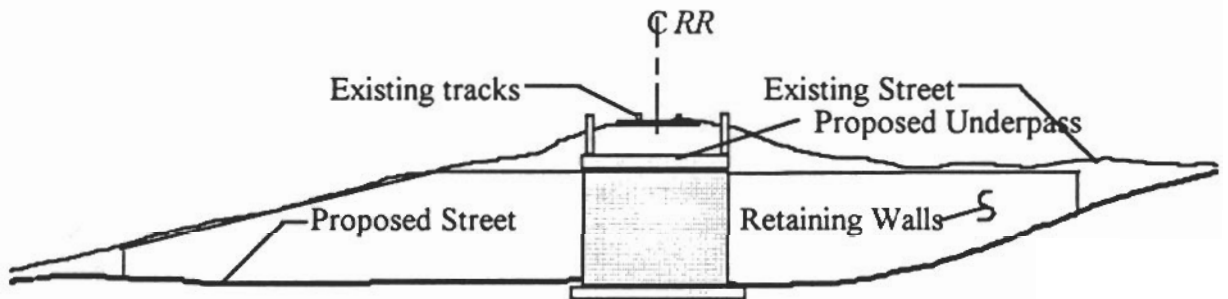
SCHEME 2

POSSIBLE ROAD MODIFICATIONS FOR SECOND STREET IN TUSCUMBIA

Road access to the residential area west of Sheffield and Tuscumbia is another area where traffic conditions can be improved. An underpass at Second Street in Tuscumbia could be constructed, providing a safer and delay-free railroad crossing.

The terrain within the area and the existing grade of Second Street makes the possibility of an underpass feasible. This would require a concrete structure that would span approximately 28 feet (allowing for two 12 ft. lanes). The length, from side to side of the existing tracks, would be about 14 feet. Retaining walls would extend from each side of the underpass as required. The cost would be around \$110,000, as shown below. This would include required road work as well as construction of the concrete structures. This also assumes that all construction activities would occur within the existing city and railroad right-of-way.

Existing Paving Removal and Clearing -----	\$2,500.00
Excavation and Grading -----	5,500.00
Road Base and Paving -----	3,000.00
Concrete Underpass (28'x14') @ \$85/SF -----	33,300.00
Retaining Walls -----	41,000.00
Cost associated with special construction to maintain rail traffic -----	10,000.00
	<u>\$95,300.00</u>
15% Contingencies and Engineering -----	14,300.00
Total	<u>\$109,600.00</u>



Section at Second Street
(Tuscumbia)

SUMMARY OF ROADWAY IMPROVEMENT COSTS

Though the proposed improvements are considered as individual potential projects, the following combinations of proposals reflect the estimated overall road improvement costs addressed in this report.

	<u>Option 1</u>
Montgomery Ave.	\$4,978,100.00
Avalon Ave. (Scheme 1)	\$3,806,900.00
Second Street in Tuscumbia	<u>\$ 109,600.00</u>
Option 1 Total Roadway Improvements	\$8,889,600.00

	<u>Option 2</u>
Montgomery Ave.	\$ 4,978,100.00
Avalon Ave. (Scheme 2)	\$ 5,001,100.00
Second Street in Tuscumbia	<u>\$ 109,600.00</u>
Option 2 Total Roadway Improvements	\$10,083,800.00

RAIL LINE SEGMENT RELOCATION

RELOCATION OF NORFOLK SOUTHERN CORPORATION'S RAIL LINE SEGMENT

Relocating Norfolk Southern Corporation's main line segment that runs through Sheffield, has been discussed for many years as a solution to the existing train/automobile traffic problems. This is a viable alternative that has potential benefits to both Norfolk Southern Corporation and the local community. The accompanying drawings illustrate possible layouts (or routings) that may be considered for the location of the proposed relocated track segment. Also included are rough cost estimates for the alternative layouts.

Layout "A" represents the most probable direct route from the existing tracks west of Tuscombina to the existing tracks east of US Hwy. 43. Layout "A" appears to have the least potential for impacting wetlands, residential and significant commercial areas. As shown by the profile drawing, the required grades for the main track could reasonably be constructed along this layout.

Layout "AA" is an alternative segment for the east end of Layout "A" from approximate station 200+00 to the end of the project. The primary benefit of this routing is to allow the intersection of the new line segment and the existing track to be placed south of the commercial property and the Colbert County landfill site. Though additional track will be required for this segment, total construction costs will not be significantly different than for Layout "A".

Layout "B" would potentially have the greatest impact on the floodplain/floodway area and potential wetlands. Also, this route skirts the Colbert County Memorial Gardens and an established residential area. From US Hwy. 43 to the Y-intersection, the route follows an existing rail spur track east, through significant industrial properties. (An existing industrial building located at the end of the existing spur track will require removal.)

As the drawings indicate, bridge crossings are proposed at US Hwy. 72, Frankfort Road, Old Jackson Hwy., Spring Creek, and US Hwy. 43.

Though not included within this report, the potential future rail alignment improvement shown on the Layout drawing (northeast of the highway intersection of US Highways 43 and 72) would probably be a consideration of Norfolk Southern as part of the overall main line improvements for the Sheffield and tri-cities area. Also, rail sidings or "meeting" tracks along the relocated line may be proposed for the final project design.

Other areas of consideration:

Potential reduction in railroad operating expenses:

- Fuel savings from the reduced number of miles trains are required to travel
- Reduced number of rail crossings: Savings on accident liability; crossing maintenance and signalization
- Reduced maintenance cost as a result of less track to maintain (see estimate for potential annual savings)

Improved operations of rail traffic within the area (trains able to maintain a more constant speed)

Improved customer satisfaction by reducing transportation time

Improved local community relationships

Opportunity to perform significant upgrading of rail facilities within the area

Relocation of Norfolk Southern's main line from the downtown area would result in significant benefits to the local community, such as:

- Improved traffic conditions (less delays, less potential for accidents, etc.)
- Improved emergency vehicle access throughout the area
- Reduced fuel consumption by vehicles traveling within the area
- Reduction in noise and air pollution
- Enhancement of community and railroad company relationship
- Opportunity to upgrade and improve streets and intersections at old railroad crossings
- Potential for developing previously less accessible property
- Improve opportunity to attract businesses and commercial developers to downtown area
- Improved access to and from downtown for the surrounding residences

Preliminary planning by the State of Alabama Highway Department has included the possibility of a new interstate highway from Memphis to Atlanta passing through the Colbert County area. There has been speculation that the limited access highway may provide an opportunity to obtain additional right-of-way that would allow the construction of a railroad adjacent to the highway. Though feasible, it does not appear that this would be totally desirable. The grade requirements are significantly different for the highway and railroad, with the railroad requiring flatter grades. This may create construction difficulties in rough terrain if the rail line and highway are very close. Also, there needs to be a substantial separation of the rail line and highway interchanges in order to reduce potential rail and highway traffic conflicts. Where the terrain would permit and no intersections are present, a railroad could be constructed to parallel an interstate class highway, assuming the routing of the proposed highway is such that the relocated rail line segment could follow the same route. The impact on the development of the adjacent and surrounding properties is uncertain. Other considerations should be investigated to fully evaluate this possibility.

COST ESTIMATE FOR CONSTRUCTION OF PROPOSED RELOCATED RAILROAD SEGMENT

The following estimates are based upon a single main line track that extends from the west of Tuscumbia at approximately mile post 409.15 of the existing Norfolk Southern Corporation rail line approximately 5.5 miles to the north-south Norfolk Southern rail line east of US Highway 43. Possible alternative layouts and profiles for the routing of the rail line segment are shown on the accompanying drawings (figures 7 and 8). (Refer to layout drawings for stationing reference.)

PROPOSED LAYOUT "A"

Right-of-way Acquisition: Estimate is based upon a right-of-way width of 100 feet. Recognizing the potential land cost differences along the proposed layout, a conservative average acquisition cost of \$320,000 per mile of track has been used for the rural areas. An average cost of \$800,000 per mile has been used for the commercial areas.

Station 0+00 to 247+00 or 4.67 miles @ \$320,000/mile	\$1,494,400.00
Station 247+00 to 283+00 of 0.68 mile plus Y-intersection track of 2,000 ln. ft. or 0.38 mile	
1.06 miles @ \$800,000/mile	<u>\$848,000.00</u>
Subtotal	\$2,342,400.00

Railroad Bed Preparation: Clearing & Grubbing, Grading- excavation and fill (borrow), Seeding and Mulching, etc. - 5.73 miles @ \$750,000/mile

	\$4,297,500.00
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Trackwork: Ballast, Treated Timber Ties, Spikes and Plates and 132 Lb. Rail

5.73 miles or 30,255 feet @ \$97.25/ln. ft.	\$2,942,300.00
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Bridges:

Highway bridge at approximate Station 22+00 (US Hwy. 72)

Construction Activities and Controls	\$250,000.00
Site Preparation (including demolition of existing roadway)	\$ 38,000.00
Roadwork (construction of approaches)	\$837,000.00
Paving of new road	\$286,000.00
Slope Paving at Abutments	\$ 43,700.00
Guardrail	\$ 49,300.00
Topsoil Placement, Seeding and Mulching	\$ 24,900.00
Bridge Structures (2) 40 ft. wide by 150 ft long @ \$55/sq. ft.	\$660,000.00

(It is assumed that the bridges will be built to accommodate two parallel tracks @ 14 feet apart, although only one track would initially be constructed.)

15% Miscellaneous	<u>\$328,300.00</u>
Subtotal	\$2,517,200.00

Layout "A" (cont.)

Bridges: (cont.)

Highway bridge at approximate station 82+00 (Frankfort Road)

Construction Activities and Controls	\$100,000.00
Site Preparation	\$15,000.00
Roadwork	\$416,000.00
Paving of new road	\$143,000.00
Slop paving at abutments	\$21,800.00
Guardrail	\$24,600.00
Topsoil placement, Seeding and Mulching	\$12,000.00
Bridge Structure: 32 ft. wide by 150 ft. long @ \$55/sq. ft.	\$264,000.00
15% Miscellaneous	<u>\$149,500.00</u>
Subtotal	\$1,145,900.00

Railroad bridge at approximate station 188+00 (Old Jackson Hwy.)

(Construction of approaches is considered to be a part of the railroad bed construction)

Construction Activities and Controls	\$150,000.00
Site Preparation	\$15,000.00
Bridge Structure: 84 linear feet @ \$3,500/ln. ft.	\$294,000.00
15% Miscellaneous	<u>\$68,900.00</u>
Subtotal	\$527,900.00

Railroad bridge at approximate station 242+00 (Spring Creek)

(Height of bridge app. 40 feet, span 100 feet)

Site Preparation	\$15,000.00
Bridge Structure: 100 linear feet @ \$3,900/ln. ft.	\$390,000.00
15% Miscellaneous	<u>\$60,800.00</u>
Subtotal	\$465,800.00

Highway bridge at approximate station 252+00 (US Highway 43)

(Four lane highway intersection site conditions similar to required bridge at station 22+00)

Subtotal	\$2,517,200.00
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Drainage Structures:

There will be numerous culverts required for drainage along the project layout. Generally the cost associated with the smaller pipes will be covered in the railroad bed preparation costs. Those more significant structures are listed below.

<u>Approximate Station Location</u>	<u>App. Size</u>	<u>Length</u>	<u>Cost/ln. ft.</u>	<u>Cost</u>
38+00	30" dia.	40'	\$33.00	\$ 1,300.00
54+50	48" dia.	40'	\$71.50	\$ 2,900.00
59+00	78" dia.	40'	\$182.00	\$ 7,300.00
92+00 (Throckmorton Br.)	8'x8' box culvert	36'	\$315.00	\$ 11,300.00
130+00	60"	40'	\$104.00	\$ 4,200.00
159+00	8'x6' box culvert	68'	\$285.00	\$ 19,400.00
188+00	12'x8' box culvert	76'	\$415.00	<u>\$ 31,500.00</u>
Subtotal				\$ 77,900.00

Layout "A"(cont.)

Utilities Adjustments: For preliminary estimate an average cost of \$40,000 per mile is used.

5.73 miles @ \$40,000	\$229,200.00
Subtotal cost for Layout "A"	\$17,063,300.00
15% Contingencies and Engineering	<u>\$2,559,500.00</u>
Total estimated cost for Layout "A"	<u>\$19,622,800.00</u>

PROPOSED LAYOUT "B"

Right-of-way Acquisition:

Station 0+00 to Station 105+00 or 2.00 miles @ \$320,000/mile	\$640,000.00
Station 105+00 to Station 120+00 or 0.28 mile @ \$800,000/mile	\$224,000.00
Station 120+00 to Station 245+00 or 2.37 miles @ \$320,000/mile	\$758,400.00
Station 245+00 to Station 288+00 or 0.81 mile @ \$800,000/mile	\$648,000.00
Y-intersection track of 2,000 ln. ft. or 0.38 mile @ \$800,000/mile	<u>\$304,000.00</u>
Subtotal	\$2,574,400.00

Railroad Bed Preparation:

5.87 miles @ \$750,000/mile	\$4,402,500.00
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Trackwork:

5.87 miles or 30,994 feet @ \$97.25/ln. ft.	\$3,014,200.00
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Bridges:

Highway bridge at approximate Station 22+00 (US Hwy. 72) (See Layout "A" for estimate breakdown)	\$2,517,200.00
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Highway bridge at approximate Station 74+00 (Frankfort Road) (Site conditions similar to proposed two lane bridge at Station 82+00 of Layout "A")	\$1,145,900.00
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Highway bridge at approximate Station 194+00 (Old Jackson Hwy.) (Site conditions indicate that the bridge approaches may require less fill than for similar bridge construction at Station 82+00 of Layout "A". Therefore, assume roadwork cost will be reduced by approximately \$100,000.) (15% Miscellaneous would be app. \$134,500)	\$1,030,900.00
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Railroad bridge at approximate Station 237+00 (Spring Creek) (Height of bridge app. 30 feet, Span app. 100 feet)	
Site Preparation	\$ 15,000.00
Bridge Structure: 100 linear feet @3,700/ln. ft.	\$ 370,000.00
15% Miscellaneous	<u>\$ 57,800.00</u>
Subtotal	\$ 442,800.00

Highway bridge at approximate Station 256+00 (US Hwy. 43) (Site conditions similar to that at Station 22+00)	\$2,517,200.00
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Proposed Layout "B" (cont.)

Drainage Structures:

<u>Approximate Station Location</u>	<u>App. Size</u>	<u>Length</u>	<u>Cost/ln. ft</u>	<u>Cost</u>
40+00	30" dia	30'	\$ 33.00/ft.	\$ 1,000.00
62+00	8'x6' box culvert	36'	\$285.00/ft.	\$10,300.00
71+00 (Throckmorton Br.)	10'x8' box culvert	32'	\$385.00/ft.	\$12,300.00
89+00	48" dia.	30'	\$ 71.00/ft.	\$ 2,100.00
102+00	54" dia.	32'	\$ 88.00/ft.	\$ 2,800.00
150+00	8'x6' box culvert	50'	\$285.00/ft.	\$14,300.00
163+50	8'x8' box culvert	56'	\$315.00/ft.	\$17,600.00
119+5	12'x10' box culvert	42'	\$470.00/ft.	<u>\$19,700.00</u>
			Subtotal	\$80,100.00

Utilities Adjustments:

5.83 miles @ \$40,000	\$233,200.00
Subtotal cost for Layout "B"	\$17,958,400.00
15% Contingencies and Engineering	<u>\$2,693,800.00</u>
Total estimated cost for Layout "B"	<u>\$20,652,200.00</u>

PROPOSED LAYOUT "AA"

Layout "AA" consist of Layout "A" through approximate Station 200+00 with the remaining route following Layout "AA" as shown on the drawings.

Right-of-way Acquisition:

Station 0+00 to 200+00 or 3.79 miles @ \$320,000	\$1,241,600.00
Station 200+00 to 299+00 or 1.87 miles plus Y-intersection track of 2,000 Ln. ft. or 0.38 mile. 2.25 miles @ \$230,000	\$ 720,000.00
Subtotal	\$1,961,600.00

Railroad Bed Preparation:

6.04 miles @ \$750,000/mile	\$4,530,000.00
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Trackwork:

6.04 miles or 31,890 feet @ \$97.25/ln. ft.	\$3,101,300.00
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Bridges:

Bridges through Station 200+00: (see Layout "A")	\$4,694,000.00
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Highway bridge at approximate Station 272+50 (US Hwy. 43)

Site conditions indicate that the bridge construction may require less work than similar bridge at Station 22+00 of Layout "A". Therefore, an assumed 10% reduction in the overall cost is applied to the estimate for the bridge at Station 22+00. (\$2,517,200 - \$251,700)

	\$2,265,500.00
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Railroad bridge at approximate Station 292+00 (Spring Creek)
(Height of bridge app. 56 feet, span app. 130 feet)

Site Preparation	\$ 15,000.00
Bridge Structure: 130 linear feet @ \$4,100/ln. ft.	\$533,000.00
15 % Miscellaneous	\$ 82,200.00
Subtotal	\$630,200.00

Drainage Structures:

<u>Approximate Station Location</u>	<u>App. Size</u>	<u>Length</u>	<u>Cost/ln. ft.</u>	<u>Cost</u>
Culverts for portion of layout through Station 200+00 (see Layout "A")				\$77,900.00
237+00	10'x8' box culvert	66'	\$385.00/ft.	\$25,400.00
282+00 (Thornton Br.)	12'x8' box culvert	100'	\$415.00/ft.	\$41,500.00
Subtotal				\$144,800.00

Utilities Adjustments:

6.04 miles @ \$40,000/mile	\$241,600.00
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Subtotal cost for Layout "AA"	\$17,424,200.00
15% Contingencies and Engineering	\$2,613,600.00
Total estimated cost for Layout "AA"	\$20,037,800.00

SUMMARY OF ESTIMATED COST OF ALTERNATIVE LAYOUTS
FOR PROPOSED RELOCATED RAILROAD SEGMENT

<u>Layouts</u>	<u>Miles of Track</u>	<u>No. Bridges</u>	<u>*No. Drainage Structures</u>	<u>Cost</u>
"A"	5.73	5	7	\$19,622,800.00
"B"	5.87	5	8	\$20,652,200.00
"AA"	6.04	5	9	\$20,037,800.00

* These are the more significant drainage structures, generally the cost associated with the smaller pipes will be covered in the railroad bed preparation costs.

OTHER COSTS CONSIDERATIONS FOR RELOCATION OF RAILROAD SEGMENT

With the closing of the coal transfer facility at Pride Landing scheduled for mid-1994, Norfolk Southern has indicated that the *refueling station* in Sheffield will be closed. Therefore, the cost of relocating the station would not be a consideration for the proposed railroad relocation.

With the relocation of the main line outside downtown Sheffield and Tuscumbia, it is anticipated that a significant amount of the existing track within the downtown area can be removed. Some of the previously unused tracks have been removed from the downtown areas of Sheffield and Tuscumbia. Those segments of tracks that would be anticipated to be removed as a result of the main line relocation, are primarily along the west side of Tuscumbia and Sheffield and within the Sheffield switchyard (see figure 2). Though demolition costs would be involved in the removal of the tracks, there will be some offsetting salvage value for the removed materials. A breakdown of the costs and salvage values are presented on the following pages. Track removal would enable rail and street crossings to be obliterated where possible and normal rail maintenance of the unused tracks would be eliminated. There are operational logistics and needs that will determine those tracks that will be abandoned and those needed for continued operations. These decisions can only be made by Norfolk Southern Corporation. The assumptions made in this report reflect possible scenarios that might occur if the main line were relocated.

This report does not address the disposal of any railroad properties. However, the potential transferable railroad properties within the area would improve other opportunities for land use and development. The transferred properties would open up access for other properties that could become more usable and marketable.

There are no anticipated costs to the railroad company in association with their operations during the actual construction of a relocated track segment. Some interruption of rail traffic may occur during the time the new rail segment is connected to the existing tracks.

POTENTIAL SALVAGE VALUE

The following is a rough estimate of the net salvage value of the line segment and sidings that could possibly be removed if the main line is relocated. Due to limited information regarding actual number and lengths of siding tracks and spurs, the following estimates are approximate only.

The "as is, where is" value is based upon the following assumption:

1. All materials are to be removed from the railroad right-of-way.
2. All road crossings are to be resurfaced once the tracks are removed.
3. The bridge at Spring Creek is to be removed and the approaches barricaded.

Costs associated with salvaging materials:

a. Removing (take up) all steel and load for transportation.	
Track	\$12,000.00/mile
Turnouts	550.00/each
b. Freight	\$ 30.00/net ton
	35.00/gross ton
c. Handling ties: picking, sorting, bundling, stacking, loading.....	\$2.30 each
d. Average freight per tie	\$1.55 each
e. Disposing of scrap ties and timber	\$1.50/ piece
f. restoration of road crossings	\$25.00/foot

Value of salvage material (value less freight):

a. 110 to 115-pound relay rail (\$325.00 - \$30.00)	\$295.00/net ton
132-pound relay rail (\$550.00 - \$30.00)	\$520.00/net ton
b. Relay turnouts	\$3,800.00 each
c. Relay plates	\$0.90 each
d. Scrap rail and other steel material (\$110.00 - \$35.00)	\$75.00/gross ton
e. Ties: (less handling and freight)	
Relay quality (\$10.30 - \$2.30 - \$1.55)	\$6.45/tie
Landscape and retaining wall construction quality (\$7.80 - \$2.30 - \$1.55)	\$3.95/tie
Rough quality (\$4.95 - \$2.30 - \$1.55)	\$1.10/tie

POTENTIAL SALVAGE VALUE
(Continued)

Salvage quantities and values:

The following are approximate quantities based upon an estimated 30,700 ln. ft. (5.82 miles) of main line track and 90,300 ln. ft. (17.10 miles) of siding, passing or meeting track. The main track is 132-pound rail and a large portion of the remaining track is also 132-pound rail (assumed around 55% or 50,000 ln. ft.).

1. Rail (relay quality)	
$2(90,300' - 50,000')/3'/yd$ (112#/2,000#/ton) = 1,505 tons @ \$295.00/ton = \$ 444,000.00	
$2(30,700' + 50,000')/3'/yd$ (132#/2,000#/ton) = 3,555 tons @ \$520.00/ton = \$1,849,000.00	
2. Turnouts: Assuming 60% of the approximately 56 turnouts are relay quality.	
33 @ \$3,500 each	\$ 115,500.00
3. Tie plates: Assuming 75% of the plates are relay quality	
5760 plates per mile (22.92 miles) (.60) = 79,212 ties @ \$0.90 each	\$ 71,300.00
4. Scrap rail and miscellaneous steel: There are approximately 5 gross tons of miscellaneous steel (spikes and bolts, etc.) per mile of track. Those sidings and turnouts that are not relay quality are considered scrap (assumed 112- pound rail). (5 tons/mile x 22.92 miles = 115 tons misc. steel) plus $2(40,300') / 3'/yd$ (112#/2,000#/ton) = 1505 tons.	
1620 tons @ \$75/ton	\$ 121,500.00
4. Ties: (tie spacing @ 22 " o.c.) Assuming ninety percent of all ties are salvageable, of those ties thirty percent are relay quality, fifty percent are landscape quality, and the remaining twenty percent are rough quality.	
Relay quality - 17,800 ties @ \$6.45/tie	\$ 114,800.00
Landscape quality - 29,700 ties @ \$3.95/tie	\$ 117,300.00
Rough quality - 11,900 ties @ \$1.10/tie	<u>\$13,100.00</u>
Total salvage value	\$2,846,500.00

There may also be potential salvage value for some of the ballast (market value \$8.25/ton, removal and hauling \$6.30/ton)

POTENTIAL SALVAGE VALUE

(continued)

Costs associated with takeup:

1.	5.82 + 17.10 or 22.92 miles of track @ \$12,000/mile	\$275,000.00
2.	56 turnouts @ \$550 each	\$30,800.00
3.	Dispose of 6,600 scrap ties @ \$1.50/tie	\$9,900.00
4.	Restoration of road crossings:	
	Removal of signals (lump sum)	\$2,500.00
	260 feet of asphalt crossing @ \$25/ft.	\$6,500.00
5.	Bridge demolition: The 200 foot bridge at Spring Creek may, in the event that the rail line is relocated, offer other potential uses. Continued maintenance would be required. For estimation purposes it is assumed that the structure would be removed. Any salvage value of materials is considered to help offset removal costs.	
	200 ft. @ \$105/ft.	\$21,000.00
	Barricade bridge approaches (lump sum)	<u>\$1,500.00</u>
	Total takeup costs	\$347,200.00
	 NET SALVAGE VALUE ("AS IS, WHERE IS")	 <u>\$2,499,300.00</u>

MAINTENANCE

In order to evaluate the overall costs associated with the possible rail relocation, consideration should be given to the potential savings in the elimination of a major portion of the maintenance of the existing rail segment through Sheffield. Though some maintenance of the new line segment would be required, it is anticipated that due to the age of the existing line and the amount of trackage involved there would be a significant difference in maintenance costs. Maintenance programs provide necessary inspections, routine and emergency maintenance, and make improvements to maintain a quality track.

The following represent estimated potential maintenance costs associated with the roughly 23 miles of trackage (main line and sidings in the Sheffield area) for one year.

LABOR: 23 miles @ \$2500/mile/yr. \$57,500.00/yr.

EQUIPMENT: @ \$1200/mile/yr. \$27,500.00/yr.

MATERIALS: Rail, Ties, Spikes, Anchors, Ballast, ... \$45,000.00/yr.
Vegetation Control

Total Potential Annual Maintenance Savings **\$130,000.00/yr.**

Other potential expenses may involve maintenance of storage buildings and other rail facilities, legal expenses, and operations overhead.

SUMMARY

There are primarily two possible alternatives for alleviating the existing traffic conflicts between the train and highway vehicles within the downtown area of Sheffield. One possibility is to provide grade separation structures at strategic intersections within the tri-cities area. The other is to relocate a segment of Norfolk Southern Corporation's main line outside the central business district. Also, a combination of the suggested improvements may be considered.

A proposed bridge and roadway improvements for Montgomery Avenue are estimated to cost \$4,973,100. There are two possible intersection modifications for Avalon Avenue: Scheme 1 is estimated to cost \$3,806,900, Scheme 2 is estimated to cost \$5,001,100. Another intersection for modification consideration is Second Street in Tuscumbia. A proposed underpass at this location is estimated to cost \$109,600.

There are three possible routes proposed for the relocation of a segment of Norfolk Southern Corporation's main line. Layout "A" with a total of 5.73 miles of track is estimated to cost \$19,622,800. Layout "B" with a total of 5.87 miles of track is estimated to cost \$20,654,200. Layout "AA" (consisting of Layout "A" through station 200+00 with the remaining track following an alternative route) contains 6.04 miles of track with an estimated cost of \$20,499,300. Portions of the existing line and sidings could be removed as a result of the relocation of the line segment. An estimate of the net salvage value of the removed materials is \$2,499,300. Also, an estimated \$130,000 per year could be saved from reduced maintenance costs of the removed line segment.

There are numerous potential benefits to both the community and Norfolk Southern Corporation to pursue a cooperative effort to improve the rail and street traffic conditions within the Sheffield area. It is hopeful that this preliminary report will help focus the community's scope of future planning efforts toward improving the train and automobile traffic problems. The community is encouraged to initiate formal discussions with Norfolk Southern Corporation and the State of Alabama Highway Department to explore possible funding opportunities and related issues that could result in a mutually agreeable plan of action.



MONTGOMERY AVENUE CROSSING
(LOOKING EAST-NORTHEAST)



U.S. HWY 43 NEAR SPRING CREEK CROSSING
(LOOKING SOUTH)



AVALON AVENUE CROSSING
(LOOKING EAST)

