

DRAFT

**TRANSPORTATION PLANNING
LOOP ROAD
FEASIBILITY STUDY**

FOR

**CITY OF TIFFIN
IN SENECA COUNTY, OHIO**

PREPARED FOR:

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Tiffin, Ohio 44883**

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Tiffin Loop Road Feasibility Study June 2002

1.0 INTRODUCTION

1.1 General

This study was conducted to evaluate a preferred corridor for a connecting loop road from SR53 to US224 for the west side of the City of Tiffin. Additionally, a preferred corridor for a connecting loop road from US224 to SR18 was also evaluated for the eastern side of Tiffin. Finally, analysis was conducted to determine alternatives for connecting the two loop roads via a new river crossing for long range planning. The study was requested by the Seneca Industrial & Economic Development Corporation (SIEDC).

The City of Tiffin essentially has half of an existing two-lane bypass with US224 and SR18 bypassing the City on the southern and western outlying areas. A loop road connecting US224 and SR53 on the west and northwest sides of the City would complete a western loop road bypass. This would provide access to the industrial/manufacturing areas and alleviate some truck traffic from the downtown and residential areas.

1.2 Study Purpose & Objective

The study involved two primary transportation issues. The first purpose of the study was to develop preferred loop road alternatives that would connect the major state and federal routes servicing the City of Tiffin. These loop roads would provide easier access to the industrial/manufacturing areas of the City for commercial traffic. The majority of industrial/manufacturing facilities are located in the northern and western peripheral areas, and the commercial traffic would not need to traverse the downtown area if loop roads were available. The second purpose of the loop roads will be to alleviate the need of through traffic on the state and federal routes from having to traverse through the downtown and residential areas. This will improve traffic flow and alleviate some of the congestion in the downtown area.

A transportation focus group and the consultant identified three loop road priorities:

Priority 1

Determine a preferred corridor for a loop road connecting SR53 on the north side of Tiffin to US224 located on the southwest side of the City. Two alternative corridors were evaluated, which consisted of a West Inner Corridor and a West Outer Corridor. Once evaluated, a preferred alternative will be chosen and become the Preferred West Corridor.

Priority 2

Determine a preferred corridor for a loop road connecting SR18 on the northeast side of Tiffin to US224 located on the southeast side of the City. Two alternative corridors were initially evaluated, which consisted of an East Inner Corridor and an East Outer Corridor. Once analyses began it was decided that a third option would be added for analysis. This third option involved utilizing part of the East Inner Corridor until it reached a diagonal abandoned railroad that ran southeast (from CR-13 to CR-15) to the East Outer Corridor. This option became known as the

East Connector Alternative Corridor. Once evaluated, a preferred alternative will be recommended and become the Preferred East Corridor.

Priority 3

The third priority was to develop alternatives that would connect the Preferred West Corridor that terminates at SR53 on the north side of Tiffin with the Preferred East Corridor, which terminates at SR18 on the northeast side of Tiffin. This loop road connector was considered a long range planning alternative since a new major river crossing of the Sandusky River on the northeast side of Tiffin would be required. This new crossing would entail significant cost. An intermediate option to a new river crossing would be the utilization of an existing river crossing located nearly two miles north of the River Crossing Corridor. This option was not analyzed as part of the study as it is beyond the scope of the project, however, in the future, once the western and eastern corridors are realized, more consideration of this alternative can be evaluated.

1.3 Study Methodology

The first step of the study was to collect existing traffic volumes from the Ohio Department of Transportation (ODOT) and the Seneca County Engineer's Office. The existing traffic did contain some truck volumes that were utilized to determine which state and federal routes were primarily carrying the commercial traffic. Once base traffic was developed a background traffic increase was applied to project traffic volumes to 2004 and 2024 for planning purposes. In addition to background traffic, future potential land uses based on existing developments, zoning, and correspondence with economic development officials were utilized to develop additional trip generation for areas prime for development. The trip generation was based on *ITE's Trip Generation Manual*. This document provides formulas for predicting traffic that may be generated if portions of land develop, and is based on the types of land uses. The study area involved looking at corridors within one to two miles outside the existing corporation limits. Corridors were developed based on the premise of keeping the proposed corridors on existing roadways and right-of-ways as much as possible. Corridors were evaluated on numerous criteria, below is a list of the more significant criteria which were used in the evaluations, these criteria are listed in no particular order of importance:

1. Impacts to three general land use categories:
(Residential, Farmland/Vacant, and Commercial/Industrial)
2. Costs associated with Preliminary Construction Cost Estimates
3. Costs associated with Preliminary Right-of-Way Cost Estimates
4. Potential wetland and flood plain involvement
5. Potential hazardous material sites
6. Recreational areas, parks, and cemeteries

Preferred Loop Road Corridors will be recommended from the preliminary corridors based on traffic analyses, the criteria listed above, and through discussions with the Transportation Focus Group. *Figure 1 – City of Tiffin Preliminary Loop Road Corridors Analyzed*, on the following page, displays all the preliminary corridors included as part of this study.

2.0 EXISTING ROADWAY NETWORK

2.1 General

Traffic was developed utilizing existing data from the Ohio Department of Transportation (ODOT) and the Seneca County Engineer's Office. Commercial truck traffic volumes were included with some of the data, which was applied to the preliminary corridors analyzed. Background traffic was developed and projected to the years 2004 and 2024. Traffic volumes on the state and federal routes are provided on the 2004 and 2024 existing roadway network figures, however, traffic volumes for these state and federal routes are not provided on the preliminary loop road corridors for the same years. The loop road corridor figures represent the anticipated traffic volumes that could be realized if the perspective corridor were constructed. This was based on review of an Origin-Destination Study (O&D Study) conducted by ODOT for a similar community and from review of traffic and truck volumes entering and exiting the City of Tiffin on the state and federal routes. Given that the diverted volumes are based on similar percentages found in secondary sources, the traffic volumes were not established on the existing state and federal routes. In order to develop adequate estimations of diverted traffic from existing routes onto the new corridors it would require a detailed O&D Study, which is costly and time consuming, and not within the scope of this planning study. It must be realized that in the future if state and federal agencies become involved and funding from these sources are sought, then a detailed O&D Study may be required.

2.2 Projected 2004 Traffic

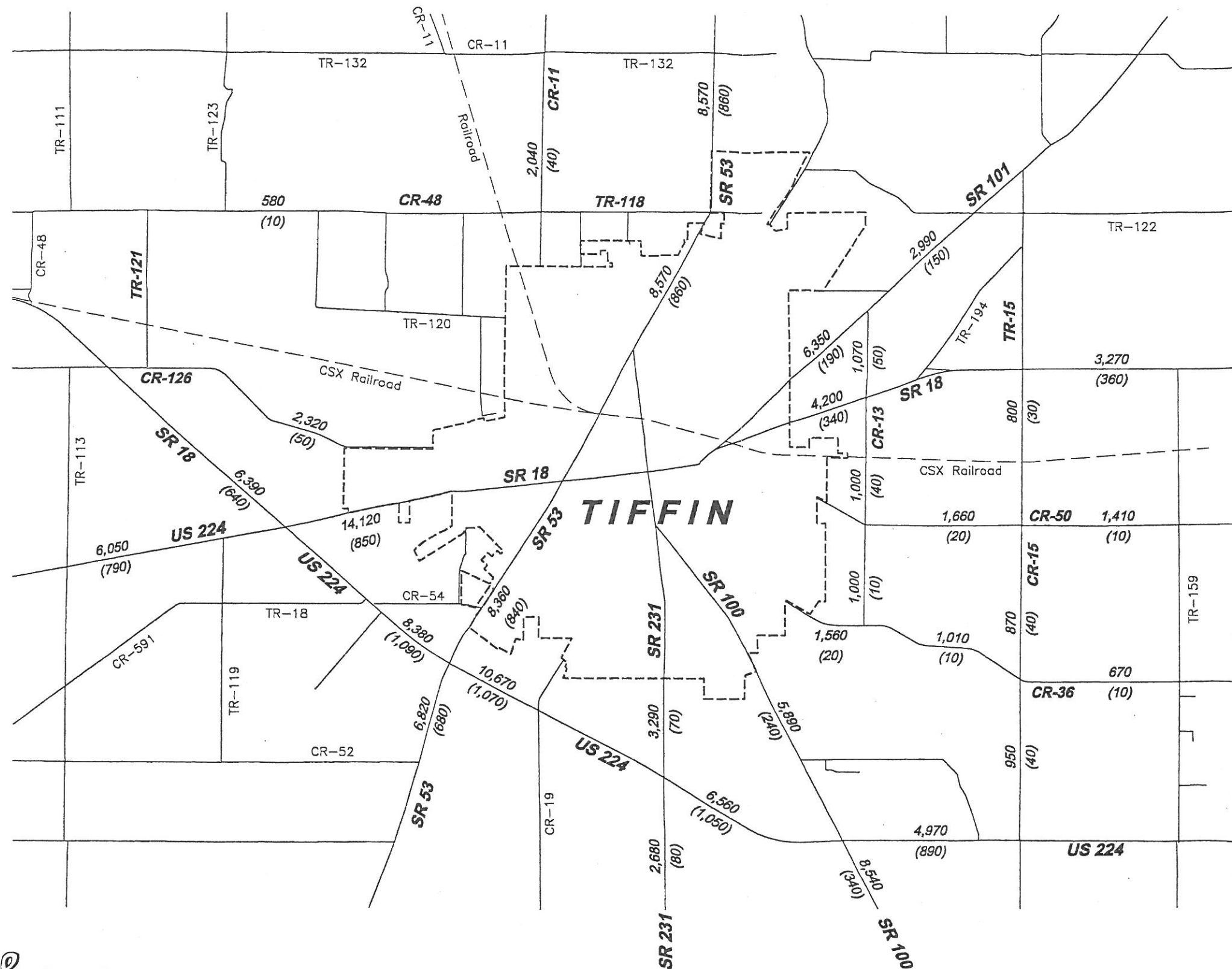
2.2.1 Existing Roadway Network

A blanket 1.5% growth rate was applied to all state, federal, and local roads to obtain 2004 ADT volumes on the existing roadway network. This growth rate is based on estimates developed by ODOT for similar roadway functional classifications. Traffic volumes for all county and township roads were not available and therefore only those obtained are shown on *Figure 2 – 2004 ADT Existing Network*.

2.2.2 Loop Road Corridors Roadway Network

As discussed previously, no ADT volumes are shown for the state and federal routes since a detailed O&D Study would be required to adequately predict the diverted traffic on these routes. However, the Preliminary Loop Road Corridors were projected to 2004 using a 3% growth rate on the western half corridors. A higher growth rate was used to compensate for the commercial/industrial land uses and the anticipation that the western areas of Tiffin are the potential growth areas. A lesser 2% growth rate was applied to the Preliminary Loop Road Corridors on the eastern side of Tiffin. A lower rate was applied since the majority of development on the east side has been primarily residential developments. The *ITE Trip Generation Manual* was utilized to predict some additional trips using zoning acres and applying a partial percentage of development to these acres. Land use information and zoning was obtained from the Seneca Regional Planning Commission and the Seneca Industrial & Economic Development Corporation. Traffic volumes were only developed for the preliminary corridors. The volumes shown on the corridors are exclusive to that corridor, and would only occur if that particular corridor was the preferred corridor and fully constructed. The resulting volumes are shown on *Figure 3 – 2004 ADT Loop Road Corridors*.

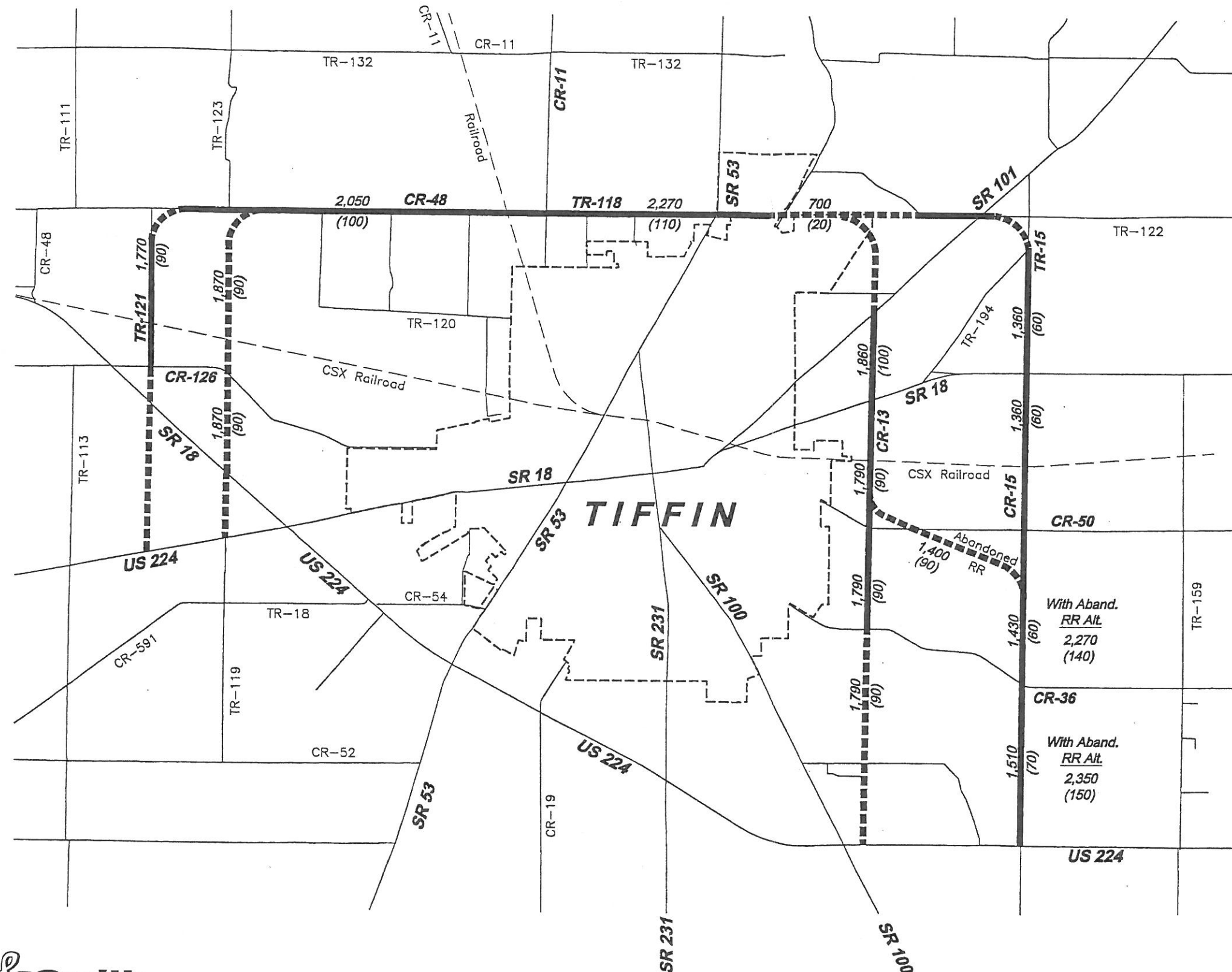
2004 AVERAGE DAILY TRAFFIC EXISTING NETWORK



LEGEND	
1,234	= 2004 Projected ADT
(1,234)	= 2004 Projected Truck ADT

Note:
Source Traffic Data obtained
from ODOT and the Seneca
County Engineer.

2004 AVERAGE DAILY TRAFFIC PRELIMINARY LOOP ROAD CORRIDORS



LEGEND	
1,234	= 2004 Predicted ADT
(1,234)	= 2004 Predicted Truck ADT
	= Loop Road Corridor on Existing Roadway
	= Loop Road Corridor on New Roadway



2.3 Projected 2024 Traffic

2.3.1 Existing Roadway Network

A blanket 1.5% growth rate was again applied to all state, federal, and local roads to obtain 2024 ADT volumes on the existing roadway network. Traffic volumes for all county and township roads were not available and therefore only those obtained are shown on *Figure 4 – 2024 ADT Existing Network*.

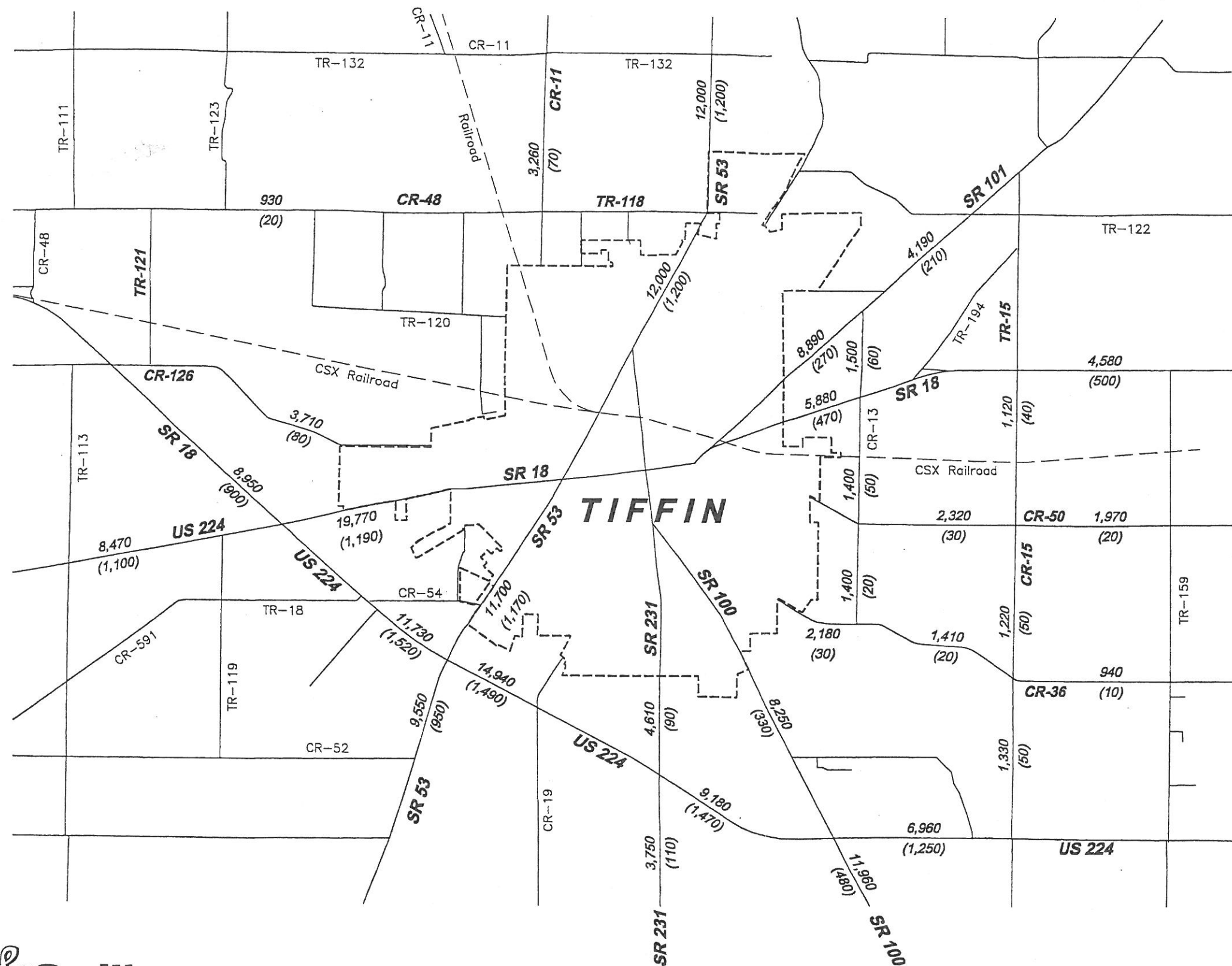
2.3.2 Loop Road Corridors Roadway Network

As discussed with the 2004 ADT volumes, no traffic volumes are shown for the state and federal routes since a detailed O&D Study would be required to adequately predict the diverted traffic on these routes. However, the Preliminary Loop Road Corridors were projected to 2024 using the same 3% growth rate on the western half corridors and a lesser 2% growth rate was applied to the Preliminary Loop Road Corridors on the eastern side of Tiffin. A lower rate was applied since the majority of development on the east side has been primarily residential. The *ITE Trip Generation Manual* was utilized to predict some additional trips using zoning acres and applying a partial percentage of development to these acres. The volumes shown on the corridors are exclusive to that corridor, and would only occur if that particular corridor was the preferred corridor and fully constructed. The resulting volumes are shown on *Figure 5 – 2024 ADT Loop Road Corridors*.

2.4 Preliminary Loop Road Corridor Volumes

The traffic volumes predicted for the Preliminary Loop Road Corridors as shown on *Figures 3 and 5* (2004 and 2024 respectively), indicate that all preliminary corridors are predicted to have anywhere from 1,300 to 1,900 ADT volumes in 2004 if the perspective corridor were completely constructed. The western corridors show slightly higher volumes than the eastern corridors and the inner corridors display slightly higher volumes than the outer corridors. The same trends occur for the 2024 ADT volumes, however the volumes range from 1,600 to 2,300. The North Common Corridor on the north side of Tiffin is predicted to have 2004 ADT volumes of 2,000-2,270 and volumes of 2,400-2,750 in 2024. These volumes are expected if peripheral areas around Tiffin develop. If less than expected growth occurs, then these volumes will be lower than anticipated in this analysis.

2024 AVERAGE DAILY TRAFFIC EXISTING NETWORK



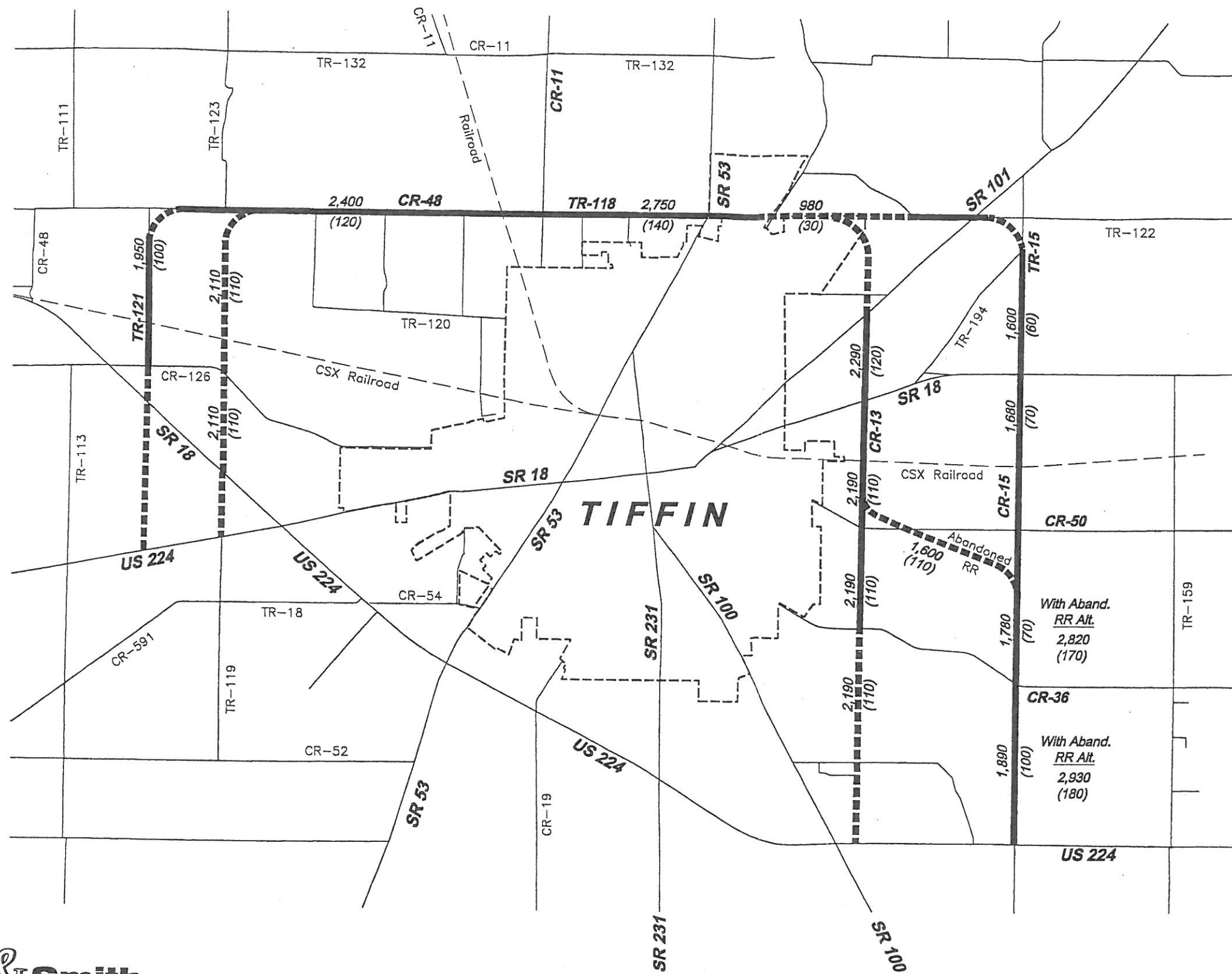
LEGEND		
1,234	=	2024 Projected ADT
(1,234)	=	2024 Projected Truck ADT

Note:
Source Traffic Data obtained
from ODOT and the Seneca
County Engineer.



FIGURE 4
2024 ADT
EXISTING NETWORK

**2024 AVERAGE DAILY TRAFFIC
PRELIMINARY LOOP ROAD CORRIDORS**



LEGEND

1,234 = 2024 Predicted ADT

(1,234) = 2024 Predicted Truck ADT

■ = Loop Road Corridor on Existing Roadway

■■■■ = Loop Road Corridor on New Roadway



FIGURE 5

2024 ADT
LOOP ROAD CORRIDORS

3.0 PRELIMINARY LOOP ROAD CORRIDOR ANALYSES

3.1 Preliminary Corridors Analyzed

The map shown on *Figure 1 – City of Tiffin Preliminary Loop Road Corridors Analyzed*, displays the loop road corridors that were analyzed as part of this planning study. The only portion of these loop roads currently programmed for improvement is the purple section shown on *Figure 1* that is located between CR11 and SR53. All other loop road corridors will be analyzed to determine the preferred loop road alternative on each side of Tiffin.

3.2 Design Criteria & Operations

3.2.1 Design Criteria

The roadway design criteria for the preferred loop road corridor shall be designed to the minimum standards in *Table 1 – Roadway Design Criteria*.

Table 1 Roadway Design Criteria		
Criteria Item	Within Urban Areas	Outside Urban Areas
Current ADT (2004)	2,500 ADT	2,500 ADT
Design ADT (2024)	3,000 ADT	3,000 ADT
DHV	400 DHV	400 DHV
Directional Distribution	55%/45%	55%/45%
Trucks (24-Hr B&C)	6%	6%
Design Speed	50 MPH	60 MPH
Legal Speed	45 MPH	55 MPH
Functional Classification	Urban Arterial	Rural Arterial
NHS Project	No	No
Lane Width	12 FT	12 FT
Shoulder Width		10 FT
Shoulder Type		Treated
Guardrail Offset		12 FT
Degree of Curvature - Maximum		4° to 45°
Grades - Preferred		3%
Grades - Maximum		5%
Vertical Clearance – Project Over Existing Roadway		16.5 – 17 FT
Vertical Clearance – Project Over Railway		23 FT
Vertical Clearance – Project Under Existing Roadway or Railway		16.5 – 17 FT
On Bridge Horizontal - Minimum		10 FT
On Bridge Horizontal - Preferred		12 FT

3.2.2 Lane Needs

Based on the traffic volumes predicted for the preliminary loop road corridors, a two-lane highway facility will adequately service the anticipated volumes through the design year of 2024. Results of the two-lane capacity analyses are discussed under *Section 3.2.4 – Capacity Operations*. The right-of-way for the preferred loop road corridor will include adequate right-of-way width to accommodate any additional lanes needed at intersections along the loop road once traffic volumes are realized and such volumes warrant additional turn lanes as outlined by ODOT guidelines.

3.2.3 Right-of-Way Needs

The present right-of-way widths for the existing roadway portions of the preliminary loop road corridors are shown in *Table 2 – Existing Roadway Pavement & R/W Widths*. The data was obtained from the Seneca County Engineer's Office.

Roadway	Section		Pavement Width	R/W Width	Date	Comments
	From	To				
CR-13	CR-36	SR 18	20 ft.	60 ft.	3-15-1828	Vol. 1 – Pg. 17
CR-13	SR 18	SR 101	25 ft.	80 ft.	July 1972	Construction Plans
CR-15	US 224	CR 50	20 ft.	60 ft.	1834	Vol. 1 – Pg. 21
CR-26	SR 18	Tiffin Corp.	21 ft.	60 ft.	March 1829	Vol. 1 – Pg. 119
CR-36	CR 13	CR 15	18 ft.	60 ft.	2-20-1824	Vol. 1 – Pg. 17
CR-48	TR 121	CR 11	18 ft.	60 ft.	6-26-1824	Vol. 1 – Pg. 1
TR-15	CR 50	TR 122	18 ft.	60 ft.	1834	Vol. 1 – Pg. 21
TR-118 (Fairmont Rd.)	CR 11	TR 141	18.5 ft.	60 ft.	6-26-1824	Vol. 1 – Pg. 1
TR-121	CR 26	CR 48	18 ft.	40 ft.	1933	No R/W records. R/W roadway graded out to 40-ft. width in County Plans dated 1933.
TR-122	TR 73	SR 101	18 ft.	60 ft.	4-29-1836	Vol. 2 – Pg. 52
TR-122	SR 101	TR 15	18 ft.	40 ft.	4-11-1871	Vol. 3 – Pg. 192

It is recommended that the preferred loop road corridors have a total Right-of-Way width of 100 feet. This is being recommended to allow for future growth. The upgrade of the preferred loop road corridors to a 100-foot Right-of-Way will allow for the addition of lanes in the future should traffic volumes warrant such improvements.

3.2.4 Capacity Operations

The minimum operational Level of Service (LOS) recommended by ODOT for an Urban Arterial is C, and for a Rural Arterial is B. These LOS must be maintained for any proposed roadway for the design year, which in this planning study is 2024.

3.3 Projected 2024 Loop Road Operations

The *Highway Capacity Software's (HCS-2000) Two-lane Highways Release 4.1b* was utilized to analyze the Preliminary Loop Road Corridors as two-lane highway facilities for the 2024 proposed conditions. The results of this analysis indicated that all Preliminary Loop Road Corridors would operate at satisfactory Level of Services (LOS) A or B with the proposed 2024 traffic conditions. These LOS satisfy the minimum LOS C for an Urban Arterial and a LOS B for a Rural Arterial. These results indicate that a two-lane loop road facility would be more than adequate to service the predicted traffic volumes for the design year.

A cursory review of major intersections was analyzed to determine if any intersections might warrant a signal in 2004 or 2024 based on the ADT volumes predicted. This was accomplished by using a default 55%/45% split of the ADT volumes and calculating a Design Hour Volume (DHV) using a standard PM Peak Hour k-factor of 0.10. This simply means that 10% of Average Daily Traffic during the entire day typically occurs in the PM peak hour (rush hour). The entering intersection volumes were then evaluated for peak hour signal warrants. This analysis revealed only one intersection warrants a signal in 2024, based on these preliminary volumes, which is the SR53 intersection with TR-118 on the north side of the City.

4.0 PRELIMINARY LOOP ROAD CORRIDOR ANALYSES

4.1 General

The preliminary loop road corridors were analyzed on a wide range of criteria, of which the main criteria involved the following:

Identification of Impacts

- Capacity analyses that determine the amount of lanes for the segments
- Identification of Design Criteria
 - Lane Widths
 - Shoulder Widths
- Preliminary Construction Costs
- Right-of-Way
 - Anticipated Impacts to three general categories of land uses

Environmental Overview

- Wetland & Ecological Review - Secondary Research
- Potential Hazardous Material Sites – Secondary Research

Once the impacts and environmental overview has been evaluated by project stakeholders for the preliminary loop road corridors, then a determination will be made as to which western loop road corridor and which eastern loop road corridor shall become the preferred corridors. The North Common Corridor's location is primarily set due to a programmed project for the section of TR-118 between CR-11 and SR53. In addition, the River Crossing Corridor is a long-range planning corridor and would likely only occur at the location designated on *Figure 1*, so as to access the North Common Corridor at the SR53 intersection with TR-118, which is programmed.

4.2 Identification of Impacts

4.2.1 Capacity Analyses

Two-lane capacity analyses were conducted on the design year 2024 loop road traffic to determine how many lanes would be required to meet the minimum Level of Service (LOS) criteria for the predicted functional classification of the roadway. The analysis revealed that a two-lane loop road facility would adequately service the predicted 2024 traffic volumes for any of the preliminary corridors. The analyses indicated that all segments would operate at either LOS A or B, which meets the minimum LOS requirement of LOS B and C for Rural Arterials and Urban Arterials respectively.

4.2.2 Identification of Design Criteria

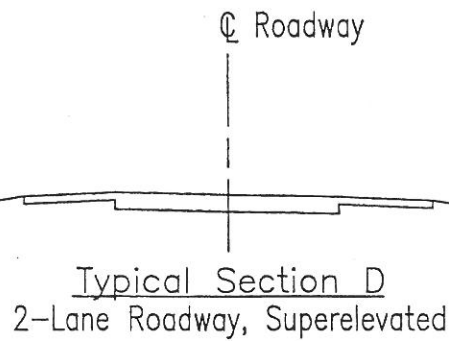
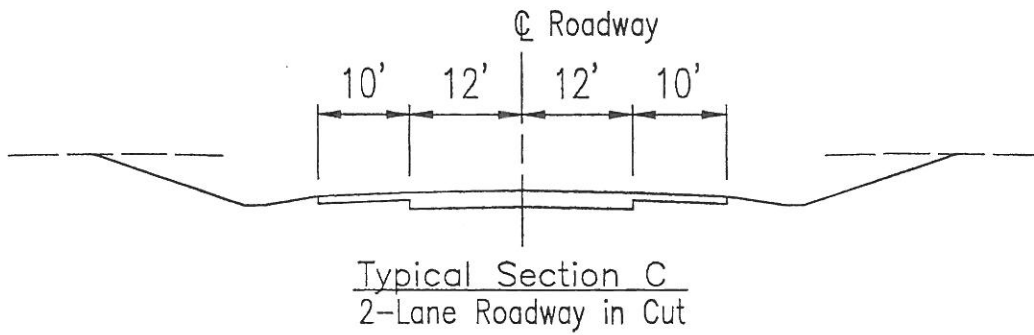
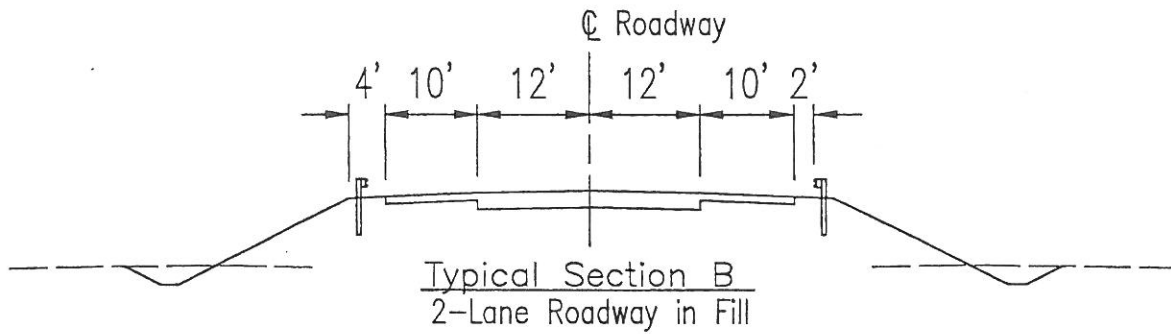
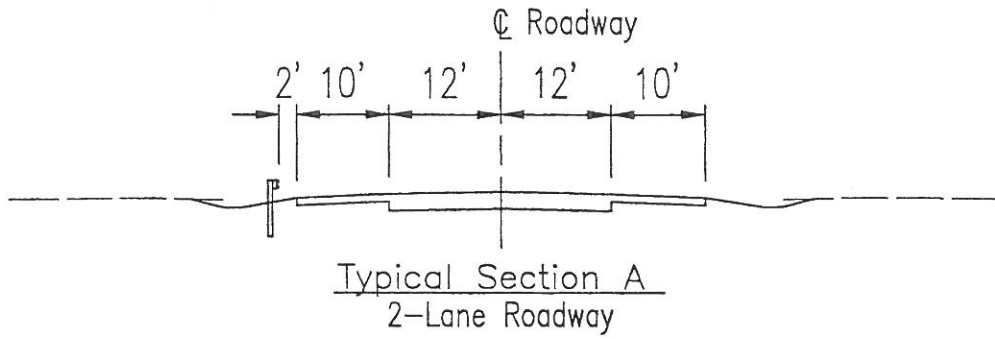
The criterion established in *Section 3.2.1 – Design Criteria*, indicates that the loop road shall be designed with 12-foot lanes and 10-foot shoulders. The capacity analysis results indicate that a two-lane facility will be adequate to service the predicted 2024 traffic on all loop road corridors. Based on the design criteria, typical sections were developed to indicate how the proposed roadway would be designed. These typical sections are displayed in *Figure 6 – Typical Sections*.

4.2.3 Preliminary Construction Costs

Preliminary construction costs were developed for each corridor so as to help determine the preferred loop road corridor. The general unit costs utilized to determine the preliminary costs for each corridor are shown in *Table 3 – Cost Estimate Units*. These unit costs are very generalized and are for planning purposes only.

Table 3 Cost Estimate Units		
Item	Cost	Area Type
Roadway	\$700,000 per lane mile	Rural Area
Intersection – Without Signal	\$80,000 per intersection	Rural Area
Intersection – With Re-alignment Involved	\$125,000 per intersection	Rural Area
Intersection – With Signal	\$190,000 per intersection	Rural Area
Small Bridge (50'-100')	\$200,000 per location	Rural Area
Large Bridge (300'-500')	\$3,000,000 per location	Rural Area
Railroad Crossing At-Grade (with gates)	\$250,000 per crossing	Rural Area
Railroad Grade Separation	\$2,000,000	Rural Area

The preliminary construction costs developed for each corridor does not include any costs for the additional right-of-way required for expanding the loop road to a 100-foot right-of-way. Only preliminary right-of-way costs will be developed for the preferred corridors, and they will be based on a generalized land uses.



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Civil Engineering, Surveying and Environmental Consulting

FIGURE 6

TYPICAL
SECTIONS

(Continued from Section 4.2.3)

Preliminary cost estimates were developed for all preliminary loop road corridors utilizing the cost estimate units from *Table 3*. The resulting preliminary construction costs for each corridor is displayed in *Table 4 – Corridor Preliminary Cost Estimates*.

Table 4 Corridor Preliminary Cost Estimates	
Corridor	Estimated Preliminary Construction Costs
West Outer Corridor	
Corridor From CR48 to SR18	\$3,105,400
Corridor From CR48 to US224	\$4,723,800
Added Cost To Each Corridor Listed Above If Grade Separated RR Crossing Included	+ \$2,000,000
West Inner Corridor	
Corridor From CR48 to SR18	\$3,276,200
Corridor From CR48 to US224	\$3,930,200
Added Cost To Each Corridor Listed Above If Grade Separated RR Crossing Included	+ \$2,000,000
North Common Corridor	
At-grade RR Crossing (No Lights/Gates)	\$2,830,800
At-grade RR Crossing (With Lights/Gates)	\$3,080,800
River Crossing Corridor	
New River Crossing Corridor Ending At The East Inner Corridor	\$4,194,400
New River Crossing Corridor Ending At The East Outer Corridor (SR101)	\$5,440,400
East Inner Corridor	
Corridor From SR18 To US224	\$4,946,000
Corridor From River Crossing Corridor To US224	\$7,023,600
Added Cost To Corridor If Grade Separated RR Crossing Included	+ \$2,000,000
East Outer Corridor	
Corridor From SR18 To US224	\$4,986,800
Corridor From River Crossing Corridor To US224	\$7,071,800
Added Cost To Corridor If Grade Separated RR Crossing Included	+ \$2,000,000
East Corridor Alternative (Using Abandoned Railroad)	
Corridor From SR18 To US224	\$5,754,600
Corridor From River Crossing Corridor To US224	\$7,832,200
Added Cost To Corridor If Grade Separated RR Crossing Included	+ \$2,000,000

NOTE:

Cost estimates are preliminary and for planning purposes only and does not include right-of-way costs or unforeseen costs associated with environmental sensitive areas.

The results of the preliminary cost estimates reveal that the West Inner Corridor is nearly \$800,000 less costly to construct than the West Outer Corridor when constructing from CR-48 to US224. This makes the outer corridor less likely to be recommended as the preferred, unless environmental factors or other impacts affect the West Inner Corridor.

4.3 Environmental Overview

4.3.1 Wetland & Ecological Review – Secondary Research

Wetland Review

Secondary source literature research was conducted to determine if known wetlands existed on any of the preliminary loop road corridors. In addition, a drive-by of the corridors was conducted to note any potential wetland or floodplain areas not shown on the secondary literature review. The areas found within or near the corridors are shown on *Figure 7 – Preliminary Loop Road Corridors Environmental Concerns*. A summary of documented wetlands, potential wetland/floodplains, and rivers/streams/creeks is found in *Table 6*.

Corridor	Section	Documented Wetlands	Potential Wetland/Floodplain	Rivers, Streams, or Creeks
West Outer	TR-123 to SR18	0	0	0
	SR18 to US224	0	1	1
West Inner	CR-48 to SR18	0	0	1
	SR18 to US224	0	1	0
North Common	CR-11 to TR-123	1	2	2
River Crossing	SR53 to SR101	1	2	1
East Inner	River Corridor to US224	1	2	1
	SR18 to US224	1	2	2
East Outer	River Corridor to US224	0	1	2
	SR18 to US224	2	1	3
East Connector Alternative (Abandoned RR)	CR-13 to CR-15 (Abandoned RR)	0	0	0

The majority of documented wetlands within the corridors are small streams that cross the corridors. However, the Eastern Inner Corridor contains a large wooded wetland just north of SR101 that would require mitigation and increase costs significantly if this corridor were selected as the preferred corridor. In addition to this documented wetland, there are several other areas that may involve wetlands or floodplains. A large potential wetland/floodplain area just south of CR-36 appears to be a significant concern for the Eastern Inner Corridor. There are a couple of small potential wetlands along the Eastern Outer Corridor; however, these are primarily adjacent to the existing roadway and not directly within the corridor.

With regard to the Western Outer Corridor, a large potential wetland/floodplain area is located between US224 and SR18, and the proposed corridor would pass directly through this area of concern. The Western Inner Corridor contains a potential wetland/floodplain area just north of SR18, however, this area is located primarily adjacent to where the corridor would pass and much of the area could be avoided.

Regarding the eastern corridors, the East Inner and Outer have essentially the same costs when constructing from SR18 to US224. The East Corridor Alternative, which utilizes parts from both the east inner and outer corridors, as well as an abandoned railroad, is nearly \$800,000 more costly than the two other alternatives. This reduces the likelihood of this alternative being recommended as the preferred corridor, unless the other two eastern corridors have inhibiting factors such as environmental issues.

4.2.4 Right-of-Way

The estimated right-of-way required for each corridor was estimated based off of aerial photos from Seneca County's GIS. The proposed preliminary loop road corridors are recommended for 100-foot right-of-ways. On existing roadways the right-of-way was expanded based on centerline construction to improve to a 100-foot right-of-way. For example, if a roadway had a 60-foot right-of-way, then the proposed loop road would be a 100-foot right-of-way; therefore, an additional 40 feet of right-of-way would be required, which would involve 20 feet to be taken from each side of the roadway.

The land uses along the corridors were generalized into three categories. These include Commercial/Industrial, Residential, and Farmland/Undeveloped. Each corridor was inventoried for the amount of acres of each land use that would be required to expand to the 100-foot right-of-way. These values are displayed in *Table 5 – Estimated Right-of-Way Requirements*.

Preliminary Loop Road Corridor	Section	Estimated Additional Right-of-Way Required			Estimated Total Right-of-Way Required
		Commercial/Industrial	Resid.	Farmland/Undeveloped	
West Outer	TR-123 to SR18	N/A	0.51 ac	10.48 ac	10.99 ac
	SR18 to US224	N/A	N/A	11.36 ac	11.36 ac
West Inner	CR-48 to SR18	N/A	0.92 ac	20.78 ac	21.70 ac
	SR18 to US224	0.46 ac	0.46 ac	4.02 ac	4.94 ac
North Common	CR-11 to TR-123	N/A	1.65 ac	11.43 ac	13.08 ac
River Crossing	SR53 to SR101	1.76 ac	1.93 ac	12.80 ac	16.49 ac
East Inner	River Corridor to US224	N/A	1.20 ac	10.86 ac	12.06 ac
	SR18 to US224	4.89 ac	4.91 ac	17.29 ac	27.09 ac
East Outer	River Corridor to US224	N/A	3.58 ac	7.16 ac	10.74 ac
	SR18 to US224	N/A	2.68 ac	15.67 ac	18.35 ac
East Connector Alternative (Abandoned RR)	CR-13 to CR-15 (Along Abandoned RR)	2.87 ac	1.66 ac	10.27 ac	14.8 ac

The estimated right-of-way acres needed for each corridor demonstrates how those corridors on primarily existing roadways require less additional acres since there is an existing right-of-way to use. However, the corridors that involve sections of new roadway require more acres since these will develop sections of new roadway with 100-foot right-of-ways, which previously did not exist.

Ecological Review

Secondary source literature research was conducted to determine if any known ecological items were present within the corridors. The results revealed the following:

United States Fish and Wildlife Service

A letter dated April 3, 2002 from the United States Fish and Wildlife Service (USFWS) indicates the project area lies within the range of the federally endangered Indiana myotis (*Myotis sodalis*) (*Appendix A*). Although the breeding habitat requirements for the Indiana myotis are not well defined, the USFWS recommends not destroying potential roost habitat unless necessary and, if necessary, never between April 15 and September 15. Typically, potential roost trees for the Indiana myotis have a diameter at breast height (dbh) that is greater than 22 cm (9 inches) and has exfoliating bark and/or cavities, such as live shagbark hickories (Romme et al. 1995). Foraging sites for this species include stream corridors, riparian areas and upland woodlots. At a minimum, project evaluations should include the identification of potential roosting habitats.

If desirable trees are present and if the must be removed between the April 15 and September 15 time restriction, mist net or other surveys should be conducted to determine if the Indiana myotis is present. The survey should be designed and conducted in coordination with the USFWS endangered species coordinator, in June or July since the bats would only be expected in the project area from approximately April 15 to September 15.

The USFWS also reported that the project lies within the range of the federally threatened bald eagle (*Haliaeetus leucocephalus*). Prior to selecting a corridor the Ohio Division of Wildlife will need to be contacted to determine if any eagle nests are located within 1/2 mile of the project area. If an eagle's nest is located within 1/2 mile of the project site, further coordination will be necessary with the USFWS. Potential nesting sites for the bald eagle are large trees able to support a platform nest 1.5 meters (5 feet) wide and 0.9 meter (3 feet) deep, found near water in relatively undisturbed areas (USFWS 1999).

The range of the federal candidate eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*) lies within the project area. This species is also currently listed as endangered by the State of Ohio. The eastern massasauga rattlesnake prefers wet areas, including wetlands, wet prairie, or nearby woodlands of shrub habitat. These areas can include goldenrod meadows, with a mosaic of early successional woody species such as dogwoods and multiflora rose. Wet habitat and nearby dry edge habitats may also be utilized during the summer, if available.

At a minimum, project evaluations should include identification if potential massasauga habitat occurs within project boundaries. Surveys for massasaugas may be necessary if this species is known to occur within the project area or if moderate to high potential habitat for this species is present.

If the massasauga will be affected, clearing and construction activities should occur during the summer when air and ground temperatures are above 65°F. Maintenance activities (mowing, cutting, burning, etc.) should be conducted during the winter (November 1 to March 15) when snakes are hibernating or during other specified seasonal temperature periods.

No Federal wilderness areas, wildlife refuges, or designated critical habitat are within the vicinity of the project.

ODNR Natural Heritage Data Search

In a letter dated April 1, 2002 DNAP identified the Sandusky River as a State Scenic River, the Izaak Walton Scenic River Site (ODNR, DNAP) and six state listed species, as existing within the vicinity of the project area.

The proposed project will cross the Sandusky River, identified as a State Scenic River from U.S. Route 30 in Upper Sandusky, Wyandot County, 70 miles downstream to the Roger Young Memorial Park in Fremont, Sandusky County. This database search also identified the Izaak Walton Scenic River Site as being located approximately 0.63 miles north of the project areas.

Based upon their review of their Natural History Database, six species were identified as existing within or nearby the project area. These species included the following:

Bigeye chub (*Notropis anblaps*) - a state special interest species of fish, identified as existing within one square mile of a point located approximately 1.64 miles downstream of the project area;

Greater redhorse (*Moxostoma valenciennesi*) - state threatened species of fish and the River redhorse (*Moxostoma carinatum*) - a state special interest species of fish, were both identified as existing approximately 0.63-mile downstream of the project area;

Sedge wren (*Cistothorus platensis*) - a state endangered species of bird, reportedly exists 0.05-mile downstream of the project area;

Crinkled pulp lichen (*Collema crispum*) - an extirpated species, was reported to have existed within one square mile of a point located approximately 0.03-mile upstream of the project area; and

Plains clubtail (*Gomphus externus*) - a state endangered dragonfly, identified as existing 0.15-mile upstream of the project area.

No records of existing or proposed state nature preserves, geologic features, breeding or non-breeding animal concentrations, champion trees, state parks, forests or wildlife areas in the vicinity of the proposed project (*Appendix A*).

4.3.2 Potential Hazardous Material Sites – Secondary Research

A literature search for Hazardous Material Sites (Hazmat Sites) was conducted for the corridors. The results of the search revealed a total of eight potential sites that may contain hazardous materials. These included the following sites as listed in *Table 7 – Potential Hazmat Sites*.

Table 7 Potential Hazmat Sites		
Site Map ID#	Site Name & Address	Sites of Possible Environmental Concern or Data Source
1	Tiffin Farmers Cooperative, Inc. 585 S. CR-13	RCRIS/FINDS
2	Tiffin Water Pollution Control Plant 961 N. Water St.	SWF/LF LUST (NFA)
3	Hayes Albion Corp. (a.k.a. – Harvard Industries) 745 S. CR-13	RCRIS/FINDS
4	Sonoco Products Co. 60 Heritage Dr.	FINDS
5	Arnold Machine Inc. NW Heritage & Fairmont Rd.	Drums Outside
6	Crown Enterprise Real Estate Dept. 3630 W. CR-26	LUST (NFA)
7	AEP Substation NW Corner of US224 & CR-15	Transformers
8	Residence 1458 CR-48	Drums & Debris

These sites are mapped on *Figure 7 – Preliminary Loop Road Corridors Environmental Concerns*. The only two sites that may directly affect a corridor are numbers one and three along the East Inner Corridor. These two sites involve a vacant industry and existing farmer cooperative, which are both adjacent to the corridor.

4.4 Selection of Preferred Loop Road Corridors

4.4.1 Preferred Western Loop Road Corridor

The West Inner Corridor is recommended as the preferred western loop road corridor. The primary factors for this recommendation include the following:

- The West Inner Corridor is nearly \$800,000 less expensive to provide a connection between CR-48 and US224.
- The West Inner Corridor reduces the amount of roadway that needs improved to CR-48 west of TR-123.
- There is Less involvement of potential wetland/floodplain areas.
- Provides a through route beyond US224 at the southern termini since the proposed corridor would align with existing TR-119. This corridor also provides for the opportunity to align with TR-123, which continues north from CR-48.

4.4.2 Preferred Eastern Loop Road Corridor

The East Outer Corridor is recommended as the preferred eastern loop road corridor. The primary factors for this recommendation include the following:

- The East Outer Corridor costs essentially the same as the East Inner Corridor, but the outer corridor allows for potential expansion of the urban area.
- There is significantly less involvement with documented wetland areas.
- There is significantly less involvement with potential wetland/floodplain areas.
- Two potential hazardous material sites are located along the East Inner Corridor.
- A large cemetery along CR-13 at CR-36 is adjacent to both sides of the roadway, thereby restricting the possibility of widening on the East Inner Corridor.

The recommended loop road corridors can be viewed on *Figure 8 – City of Tiffin Preferred Loop Road Corridors*. This figure also displays prioritized construction segments, which are discussed in *Section 4.5*.

4.5 Loop Road Constructable Segments & Costs

Constructable segments were developed for the preferred loop road corridors, except the already programmed section of TR-118 from CR-11 to SR53. Preliminary cost estimates for both construction and right-of-way (R/W) were developed to aid local agencies in planning for funding of the constructable segments. The preliminary construction costs were based on approximate lengths obtained from aerials and then the unit costs shown previously in *Table 3 – Cost Estimate Units* were applied. Categorizing land uses into three categories (commercial/industrial, residential, and farmland/undeveloped) and applying a very generalized cost per acre for each category developed the preliminary R/W cost estimates. These costs are based on the amount of additional acres of each land use category required to expand to the 100-foot R/W needed for the new loop road corridors. The R/W unit costs used for each land use category were:

1. \$30,000 per acre for commercial/industrial land uses
2. \$20,000 per acre for residential land uses
3. \$5,000 per acre for farmland/undeveloped land uses

It must be emphasized that these R/W unit costs were based on limited data available for the corridors and they are only being supplied for general planning purposes. Once a constructable segment progresses beyond the planning stages, a detailed construction cost estimate and R/W cost estimate will be required.

4.5.1 Western Loop Road Constructable Segments

Table 8 Western Loop Road Corridor Constructable Segments & Costs				
Segment Priority	Limits	Preliminary Construction Cost Estimate	Preliminary R/W Cost Estimate	Total Preliminary Cost Estimate
1	CR-48 to CR-126	\$1,979,400	\$70,600	\$2,050,000
2	CR-126 to SR18	\$1,296,800	\$51,700	\$1,348,500
3	SR18 to US224	\$654,000	\$43,100	\$697,100

Please Note:

The total cost for Priority Segment 1 does not include \$2,000,000 for a grade separation at the CSX-Railroad Crossing.

4.5.2 North Common Constructable Segments

Table 9 North Common Corridor Constructable Segments & Costs				
Segment Priority	Limits	Preliminary Construction Cost Estimate	Preliminary R/W Cost Estimate	Total Preliminary Cost Estimate
4	CR-11 to TR-123	\$2,830,800	\$90,150	\$2,920,950

Please Note:

The total cost for Priority Segment 4 does not include \$250,000 for the railroad crossing to have active lights and gates installed.

4.5.3 Eastern Loop Road Constructable Segments

Table 10 Eastern Loop Road Corridor Constructable Segments & Costs				
Segment Priority	Limits	Preliminary Construction Cost Estimate	Preliminary R/W Cost Estimate	Total Preliminary Cost Estimate
5	SR18 to CR-50	\$1,931,400	\$46,250	\$1,977,650
6	CR-50 to CR-36	\$1,540,400	\$37,750	\$1,578,150
7	CR-36 to US224	\$1,515,000	\$47,950	\$1,562,950
8	SR18 to SR101	\$2,085,000	\$107,400	\$2,192,400

Please Note:

The total cost for Priority Segment 5 does not include \$2,000,000 for a grade separation at the CSX-Railroad Crossing.

4.5.4 River Crossing Constructable Segments

Table 11 River Crossing Corridor Constructable Segments & Costs				
Segment Priority	Limits	Preliminary Construction Cost Estimate	Preliminary R/W Cost Estimate	Total Preliminary Cost Estimate
9	SR101 to TR-73	\$1,761,200	\$71,700	\$1,832,900
10	SR53 to N. Water St.	\$455,000	\$83,700	\$538,700
11	New Bridge over Sandusky River	\$3,000,000	N/A	\$3,000,000

The number in the first column of *Tables 8 through 11* is the Segment Priority Number. This is the priority in which the segments are recommended for construction. However, should a large development decide to locate along any of these corridors then that constructable segment might become a higher priority since more than likely private funds could be sought from the development, thereby reducing some of the costs to local or state funding agencies. Constructable Segments 8 through 11 are considered long-range projects. These segments would provide a complete loop road around the City of Tiffin by connecting the western and eastern loop roads. However, the significant costs associated with the construction of a new major river crossing over the Sandusky River (a designated State Scenic River) would make this goal difficult to obtain in the foreseeable future.

5.0 SUMMARY & RECOMMENDATIONS

5.1 Study Purpose

This study was conducted to evaluate a preferred corridor for a connecting loop road from SR53 to US224 for the west side of the City of Tiffin. Additionally, a preferred corridor for a connecting loop road from US224 to SR18 was evaluated. Analysis was also performed to evaluate alternatives for connecting the two loop roads via a new river crossing for long range planning. The study was requested by the Seneca Industrial & Economic Development Corporation (SIEDC).

The study involved two primary transportation issues. This included developing preferred loop road alternatives that would connect the major state and federal routes servicing the City of Tiffin. These loop roads would allow commercial traffic easier access to the industrial/manufacturing areas of the City, which are primarily located in the peripheral areas of the City. The second purpose of the loop roads will be to alleviate a portion of the commercial traffic and through traffic from the downtown and residential areas of Tiffin in which the existing state and federal routes pass through.

The transportation focus group for the study and the consultant developed three Priorities:

Priority 1

Determine a preferred corridor for a loop road connecting SR53 on the north side of Tiffin to US224 located on the southwest side of the City. Two alternative corridors were evaluated, which consisted of a West Inner Corridor and a West Outer Corridor.

Priority 2

Determine a preferred corridor for a loop road connecting SR18 on the northeast side of Tiffin to US224 located on the southeast side of the City. Two alternative corridors were initially evaluated, which consisted of an East Inner Corridor and an East Outer Corridor. Once analyses began it was decided that a third option would be added. This third option involved utilizing part of the East Inner Corridor until it reached a diagonal abandoned railroad that ran southeast over to the East Outer Corridor. This option became known as the East Connector Alternative Corridor.

Priority 3

The third priority was to develop alternatives that would connect the preferred west and east corridors once they were determined. This loop road connector was considered to be a long range planning alternative for the fact that this corridor will involve a new major river crossing of the Sandusky River on the northeast side of Tiffin. This will involve a significant amount of costs and the Sandusky River is designated as a State Scenic River, which carries additional criteria and guidelines that must be followed to construct a river crossing.

A figure showing the corridors analyzed for the study is shown on *Figure 1 – City of Tiffin Preliminary Loop Road Corridors Analyzed*.

5.2 Summary & Recommendations

Based on the analyses conducted for this planning study, the West Inner Corridor and the East Outer Corridor were chosen as the preferred western and eastern corridors. These corridors were decided upon based on the following issues:

West Inner Corridor:

- The West Inner Corridor is nearly \$800,000 less expensive to provide a connection between CR-48 and US224.
- The West Inner Corridor reduces the amount of roadway that needs improved to CR-48 west of TR-123.
- There is Less involvement of potential wetland/floodplain areas.
- Provides a through route beyond US224 at the southern termini since the proposed corridor will align with existing TR-119. This corridor also provides for the opportunity to align with TR-123, which continues north from CR-48.

East Outer Corridor:

- The East Outer Corridor costs essentially the same as the East Inner Corridor, but the outer corridor allows for potential expansion of the urban area.
- There is significantly less involvement with documented wetland areas.
- There is significantly less involvement with potential wetland/floodplain areas.
- Two potential hazardous material sites are located along the East Inner Corridor.
- A large cemetery along CR-13 at CR-36 is adjacent to both sides of the roadway, thereby restricting the possibility of widening on the East Inner Corridor.

A break down of preliminary estimated costs and prioritized construction segments can be viewed in *Tables 8 through 11*. In addition, *Figure 8* displays the Preferred Loop Road Corridors and the prioritized constructable segments.

5.3 Potential Funding Sources

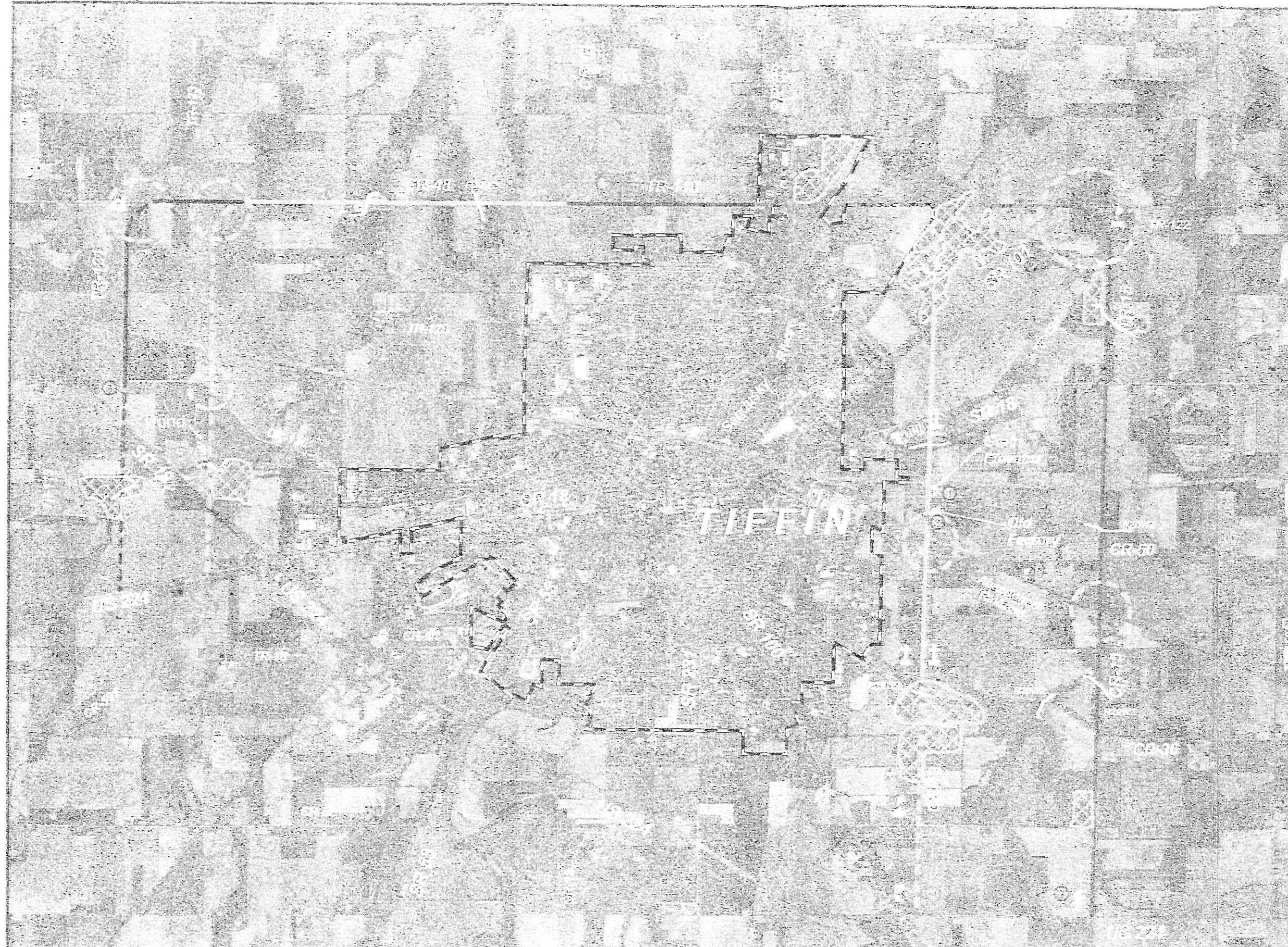
Because the proposed loop road is not directly tied to a substantial economic development project or is needed to mitigate a serious safety problem, the availability of state and federal funding will be very restrictive for this project. However, there are potential sources that can be investigated. Listed below, not in any particular priority, is a number of funding avenues to consider.

1. State of Ohio Issue 2
2. Ohio Department of Transportation (will need to have loop designated as a state highway or apply for funds set aside for county roadway projects)
3. Ohio Department of Development (e.g. TIF or CRA as development occurs along preferred corridors)

4. State of Ohio Brownfield Redevelopment Program (need to tie to a brownfield redevelopment project)
5. Formation of Transportation Improvement District (self-financing system)
6. State of Ohio Infrastructure Bank (administered by ODOT)
7. ODOT's Grade Separation Program (should any grade separations be proposed)

APPENDIX A

Environmental Data



Legend

- Existing Roadway Utilized for perspective Corridor
- New Roadway Required for Perspective Corridor
- City Corporation Line
- East Connector Alternative Corridor
- East Inner Corridor
- East Outer Corridor
- North Common Corridor
- West Inner Corridor
- West Outer Corridor
- Programmed Project
- River Crossing Corridor
- CSX Railroad
- Stream
- Potential Grade Separation
- River Crossing Required
- Potential Floodplain/ Wetland Area
- Wetland
- Re-alignment of Intersection(s) Required
- Cemetery
- Church
- School
- Power Substation
- Potential Hazmat Site

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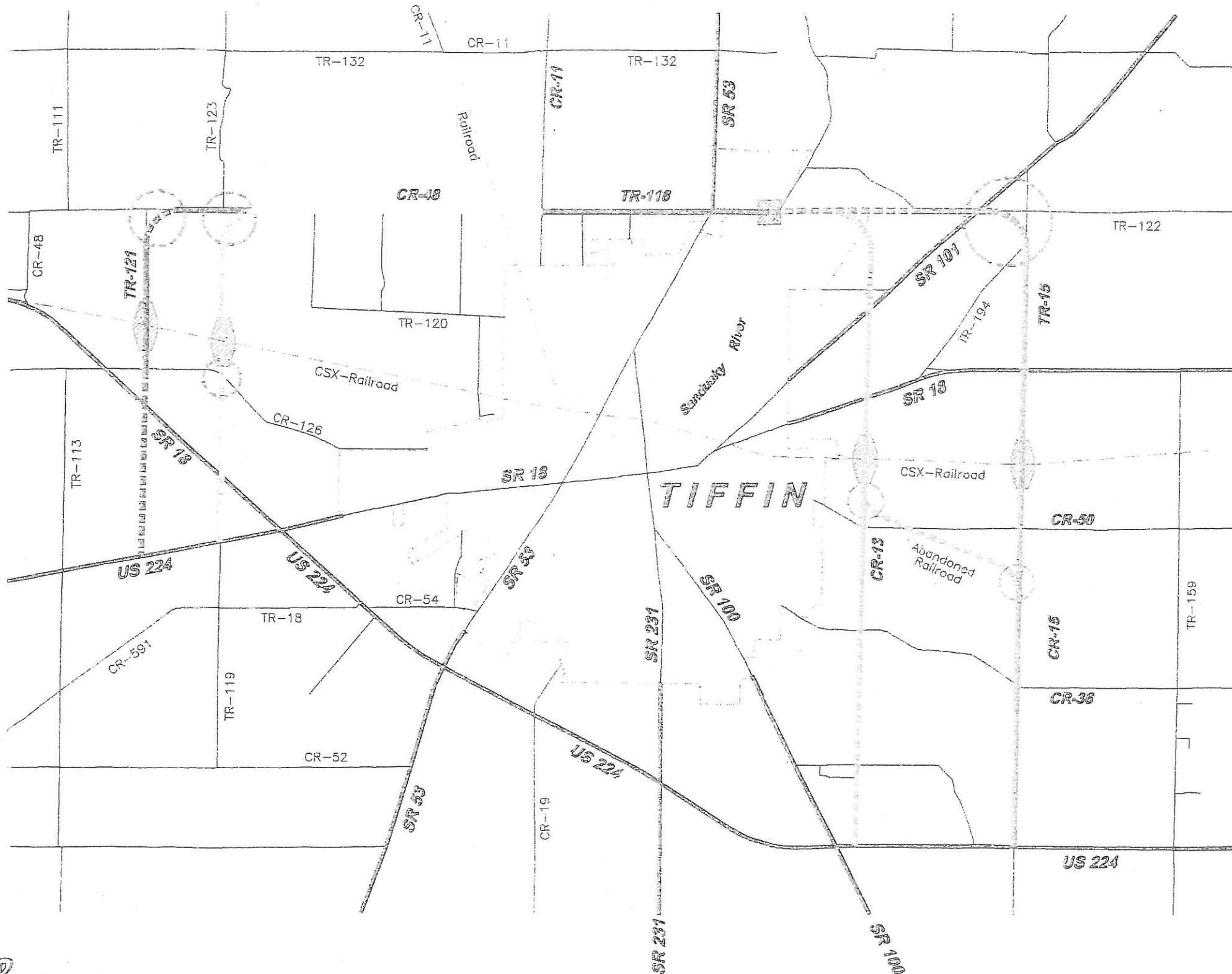
Figure 7
Preliminary Loop Road Corridors
& Environmental Concerns

Notes
 The photography, dated March 2000, is provided by the Seneca Regional Planning Commission.

N

 1" = 3,000'

CITY OF TIFFIN PRELIMINARY LOOP ROAD CORRIDORS ANALYZED

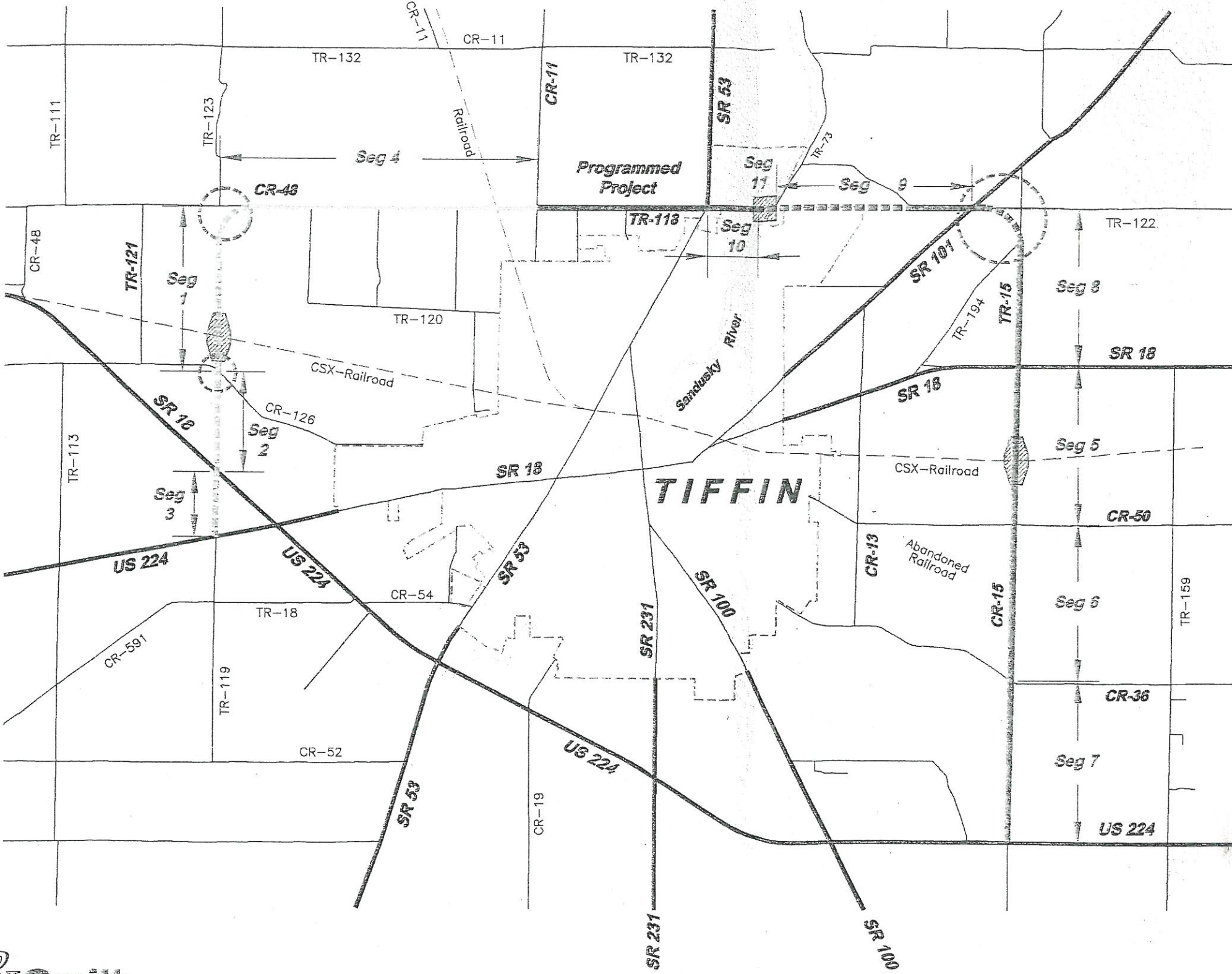


LEGEND

- | | | |
|---|---|--|
|  | = | Existing Roadway Utilized for Perspective Corridor |
|  | = | New Roadway Required for Perspective Corridor |
|  | = | North Common Corridor |
|  | = | West Outer Corridor |
|  | = | West Inner Corridor |
|  | = | East Inner Corridor |
|  | = | East Outer Corridor |
|  | = | East Connector Alternative Corridor |
|  | = | Programmed Project |
|  | = | River Crossing Corridor |
|  | = | River Crossing Required |
|  | = | Potential Grade Separation |
|  | = | Re-alignment of Intersection(s) Required |

Note:
The corridors shown are to be used for planning purposes only. They are not based on actual survey.

CITY OF TIFFIN PREFERRED LOOP ROAD CORRIDORS



LEGEND

- = Existing Roadway Utilized for Perspective Corridor
- = New Roadway Required for Perspective Corridor
- = Preferred West Corridor
- = North Common Corridor
- = Programmed Project
- = River Crossing Corridor
- = Preferred East Corridor
- = River Crossing Required
- = Potential Grade Separation
- = Re-alignment of Intersection(s) Required
- = Priority of Constructable Segment

Note:
The corridors shown are to be used for planning purposes only. They are not based on actual survey.



FIGURE 8
CITY OF TIFFIN PREFERRED LOOP ROAD CORRIDORS