

STATE ROAD NO. 574
between
S.R. 599 and C.R. 579

TECHNICAL MEMORANDUM

ENGINEERING ALTERNATIVES REPORT

STATE PROJECT NUMBERS : 10340-1501 & 10340-1502
FEDERAL AID PROJECT NUMBERS : M-1870-(2) & F-208-1(1)
BUDGET ITEM NUMBERS : 1113197 & 1113257

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
NO-PROJECT ALTERNATIVES	1
No Improvement Alternate	1
Postponing the Action	3
Upgrading the Existing Facility	3
Transit as an Alternative Mode	3
Alternate Corridors	4
PROJECT ALTERNATIVES	4
Alternate Designs	4
Alternate Alignments	6
Engineering and Planning Criteria	8
PLAUSIBLE ALTERNATIVES	9
40th Street to 50th Street	9
50th Street to Interstate 4	9
Interstate 4 to Orient Road	10
Orient Road to U.S. 301	10
U.S. 301 to Interstate 75	11
Interstate 75 to State Road 574	11
SCREENING AND EVALUATION OF ALTERNATIVES	12
Feasible Alternatives Based on Community Impact Considerations	12
Feasible Alternatives Based on Community and Cost Considerations ...	17
CONCLUSIONS AND RECOMMENDATIONS	17

LIST OF FIGURES

	<u>Page</u>
Figure 1. Project Location Map	2
Figure 2. Alternate Roadway Designs	5
Figure 3. Alternate Alignments	7
Figure 4. Screening and Evaluation of Alternatives	13
Figure 5. Comparative Evaluation of Alternatives - U.S. 301 and Buffalo Avenue	16

INTRODUCTION

This report presents the various build and no-build alternatives considered for State Road 574 (Buffalo Avenue) from the vicinity of 40th Street in Tampa to the vicinity of County Road 579 in Mango, Florida (Figure 1). The methodology used in analyzing the proposed alternatives is discussed along with the justification for the elimination of nonviable alternatives from further study. The purpose of this report is to serve as a supplement to the environmental report to fully document the major alternatives considered, but not addressed at the Public Hearing for the project.

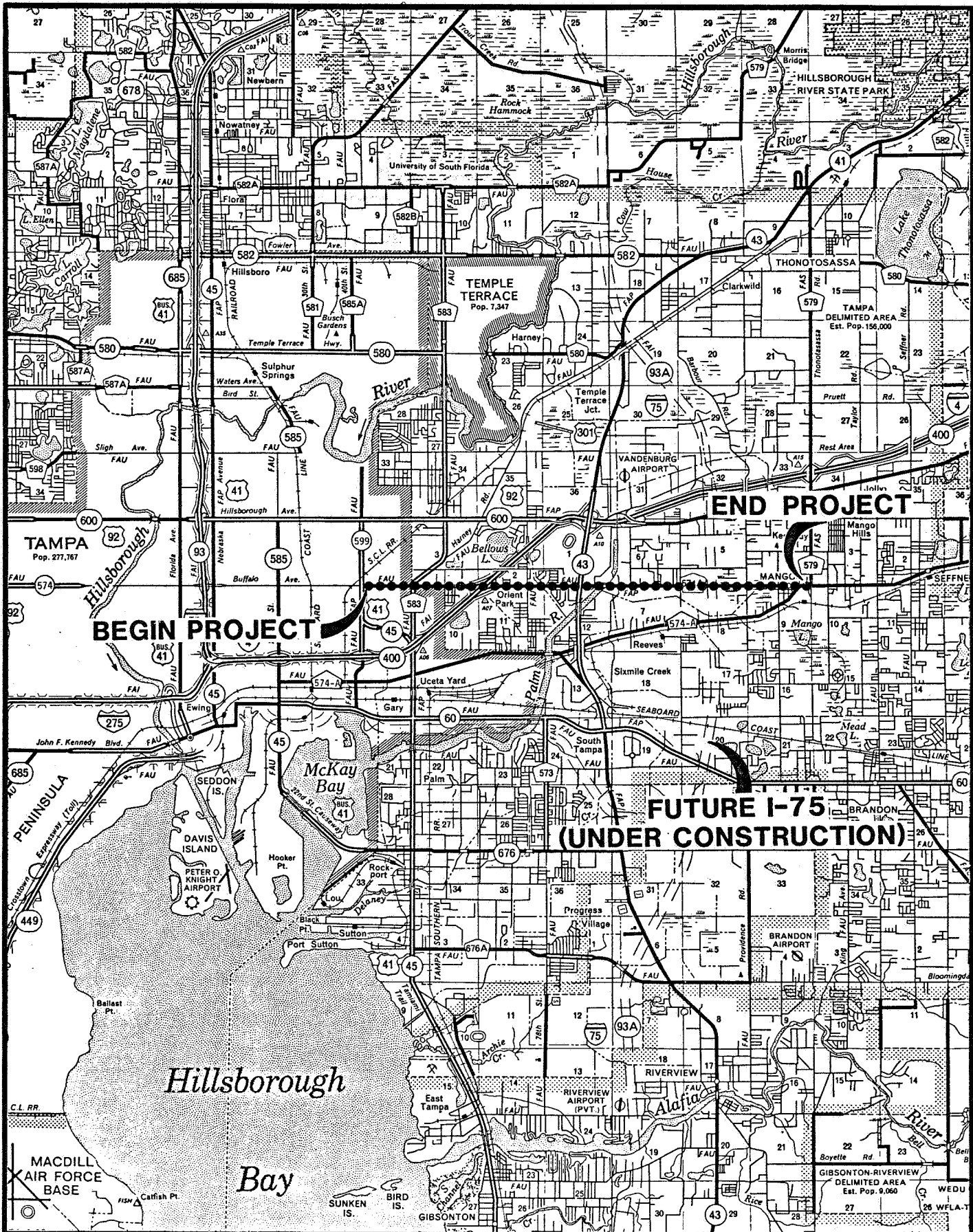
NO-PROJECT ALTERNATIVES

The following sections introduce the no-project alternatives, which include the no improvement alternate, postponing the action, upgrading the existing facility, transit as an alternative mode and upgrading facilities in other corridors.

No Improvement Alternate

A substantially large transportation demand along S.R. 574 in the study area can be currently observed and is projected to significantly increase over the next two decades. Traffic demands in the project corridor are estimated to be approximately 40,000 vehicles per day by 1997 and about 60,000 by the year 2007. Maximum capacity of an ideal two lane roadway would be approximately 20,000 vehicles per day. Therefore, approximately 40,000 vehicles per day would have to be diverted to unplanned parallel facilities. Moreover, at maximum capacity, Buffalo Avenue traffic would be operating at speeds equal to or less than 15 miles per hour. Congestion would increase travel times for motorists, resulting in increased fuel consumption, higher levels of air pollutants, and greater delays for emergency services.

Conversely, if the project is not constructed, there would be no displacement of families or businesses, no wetland impacts would occur, construction impacts would not occur, right-of-way would not have to be acquired, funds would not have to be expended, and the view of the road would remain constant. However, these seemingly beneficial attributes of not implementing the proposed action



BEGIN PROJECT

END PROJECT

**FUTURE I-75
(UNDER CONSTRUCTION)**

STATE ROAD NO. 574

**FIGURE I
LOCATION MAP**

would be only at the expense of increased adverse impacts resulting from compensating road improvements in other communities.

Postponing the Action

Postponing the upgrading of S.R. 574 would, depending on the length of postponement, have impacts similar to the no-improvement alternative. In addition, development could encroach on the project corridor, increasing problems for future right-of-way acquisition, construction staging, and public acceptance.

Postponing the action may also jeopardize the future economic feasibility of the project. Based on current escalation of construction costs, project costs would double within seven years of project delay.

Upgrading the Existing Facility

The existing two-lane, 24 foot wide roadway could be widened to a high type design with shoulder and drainage improvements and with geometric improvements at intersections. Capacity would be increased and increased traffic volumes could be handled on the roadway, but with average overall travel speeds of 15 miles per hour or less.

The advantages of upgrading the existing road include increasing traffic capacity, increasing the roadside recovery areas to conform to design standards and no significant visual changes. However, the traffic demand in the project corridor is projected to be almost 60,000 vehicles per day by 2007. This indicates that the upgraded system would not handle long range growth for the area. Moreover, with a significantly greater number of vehicles on an improved two-lane roadway, there would be a generally higher level of air and noise pollution than for the no-build alternate, with emergency response times during the peak hours being about the same.

Transit as an Alternative Mode

The Tampa Urban Area Transportation Study has identified that within a one-half mile service area of transit routes in Hillsborough County there will be a projected 4.2 percent of the person trips using mass transit by the year 2000. This indicates that transit usage would not be sufficient to serve as an alternative to upgrading and improving this section of S.R. 574.

Alternate Corridors

Corridors for Interstate Connectors were evaluated in the Design Engineering Report, I-75 from north of S.R. S-672 to south of S.R. 600 (U.S. 92). This report designated the S.R. 574 corridor, and an interchange at S.R. 574 is under construction. Therefore, alternate corridors would not serve as an interstate connector unless I-75 was redesigned.

PROJECT ALTERNATIVES

The alignment of the upgraded, six-lane roadway will generally follow the alignment of the existing S.R. 574. The specific alignment alternates, along with alternate designs, are discussed in the following sections and evaluated based on selected factors to identify feasible alternates for more detailed analysis.

Alternate Designs

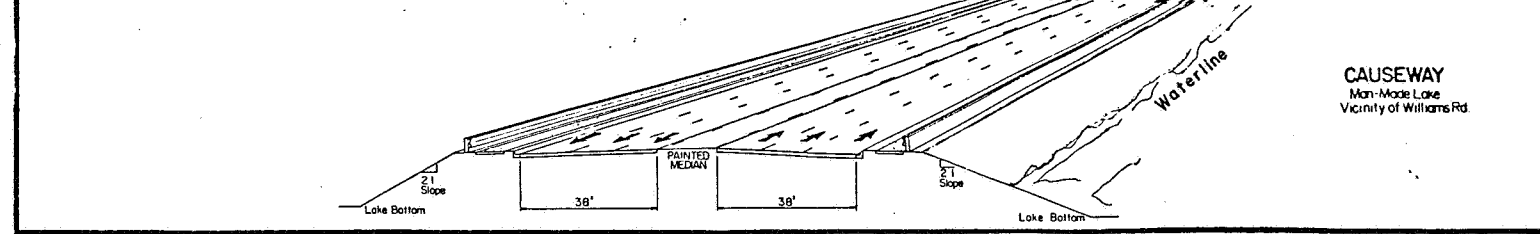
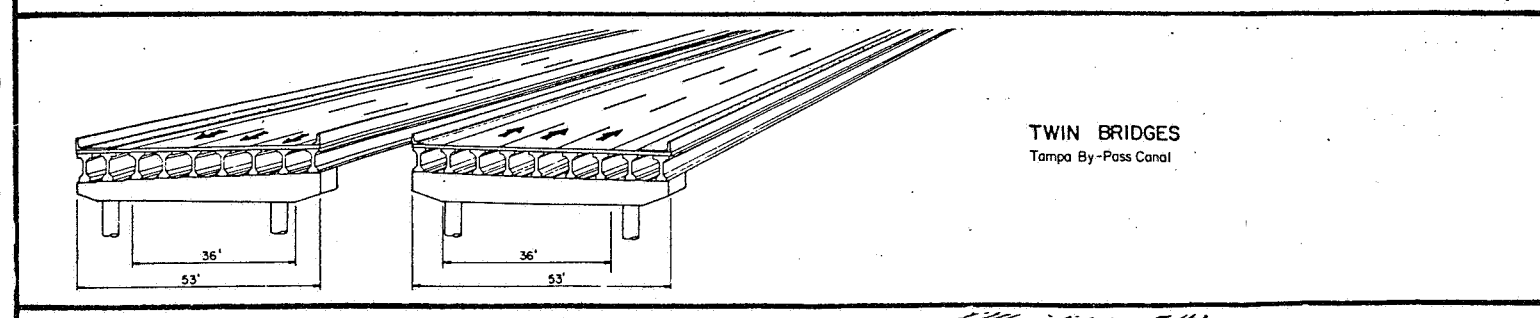
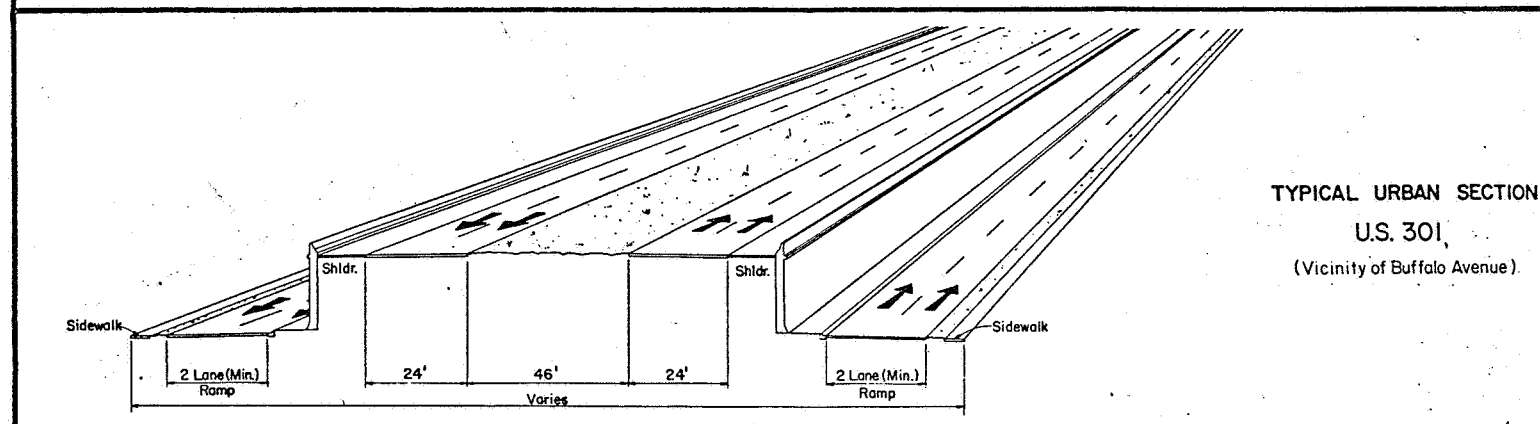
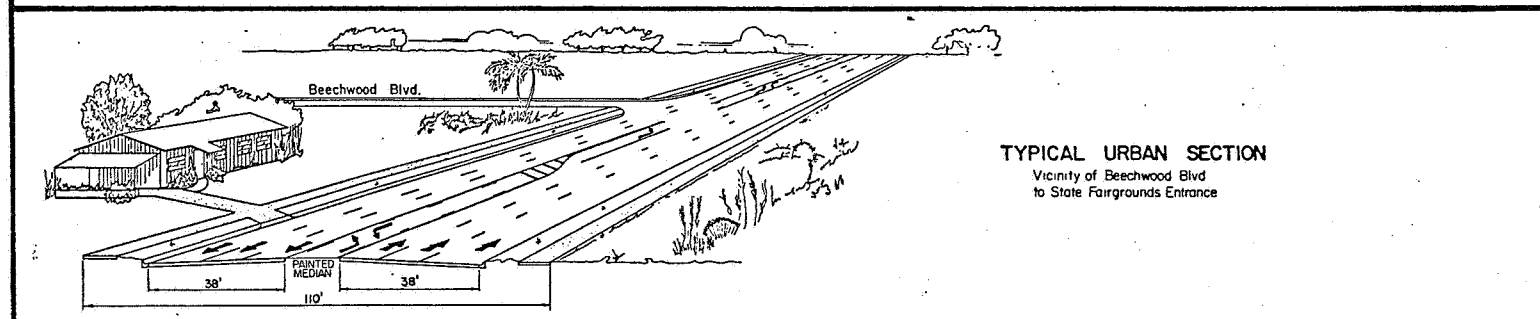
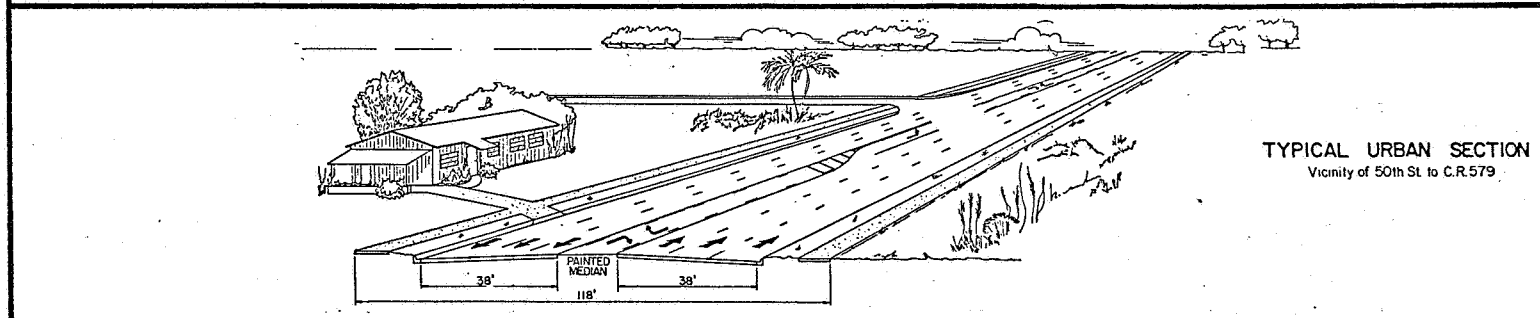
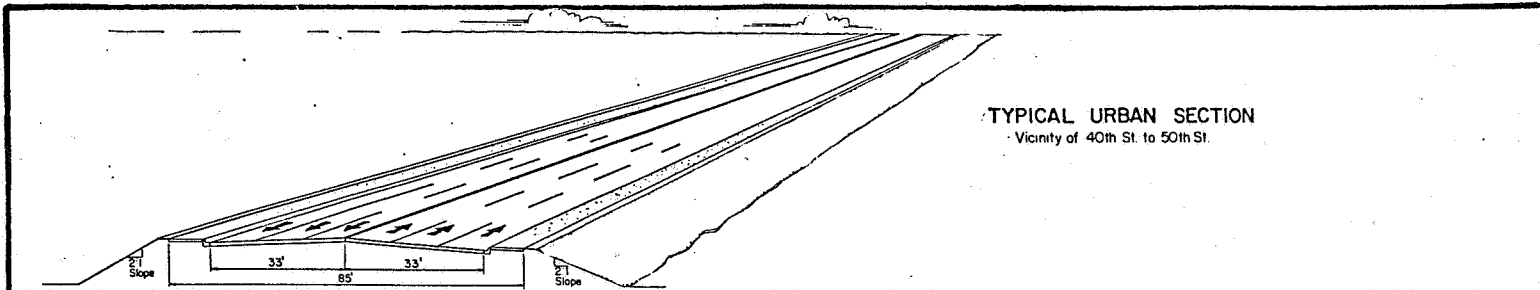
Alternative roadway designs considered for selected sections of S.R. 574 are shown in Figure 2.

Six-Lane Divided Urban Roadway (118' R/W) - This design alternate consists of four twelve (12) foot and two fourteen (14) foot travel lanes within approximately 118 feet of right-of-way. Curbs and gutters would be provided along with a shared median for left turns and sidewalks on both sides of the roadway. The fourteen (14) foot lanes would be located adjacent to the curb and would jointly accommodate vehicular and bicycle traffic.

Six-Lane Divided Urban Roadway (110' R/W) - An urban six-lane alternate with four twelve (12) foot lanes and two fourteen (14) foot outside travel lanes can also be constructed within 110 feet of right-of-way. Curbs and gutters would be provided along with sidewalks. This reduced section should only be used when warranted by potential right-of-way acquisition impacts.

Six-Lane Undivided Urban Roadway (85' R/W) - For roadway sections where extreme limitations exist for right-of-way, an urban six-lane, undivided roadway with eleven (11) foot lanes can be constructed. Curbs, gutters and sidewalks would be provided, but no left turn lane would be provided. Bicyclists would be expected to utilize sidewalks adjacent to the roadway in this section.

Six-Lane Divided Rural Roadway (206' R/W) - A rural six-lane alternate design can be constructed within approximately 206 feet of right-of-way to accommodate vehicular and bicycle traffic. Shallow drainage swales, instead of curbs and



STATE ROAD 574

FIGURE 2
ROADWAY DESIGNS

gutters, would be provided for stormwater control. This alternate design includes large shoulders for safety, and large grassed medians with left turn lanes.

Major Intersections - At major roadway intersections along the project length, the S.R. 574 shared left-turn median will be widened to 28 feet to allow for dual left turn lanes in the future.

U.S. 301 Interchange - At the intersection of S.R. 574 an interchange will be provided. U.S. 301 would be a four-lane divided highway overpassing S.R. 574. The on and off ramps and partial frontage roads along U.S. 301 would provide access to adjacent land uses. Bicyclists would utilize paved shoulder areas adjacent to the through travel lanes in this section.

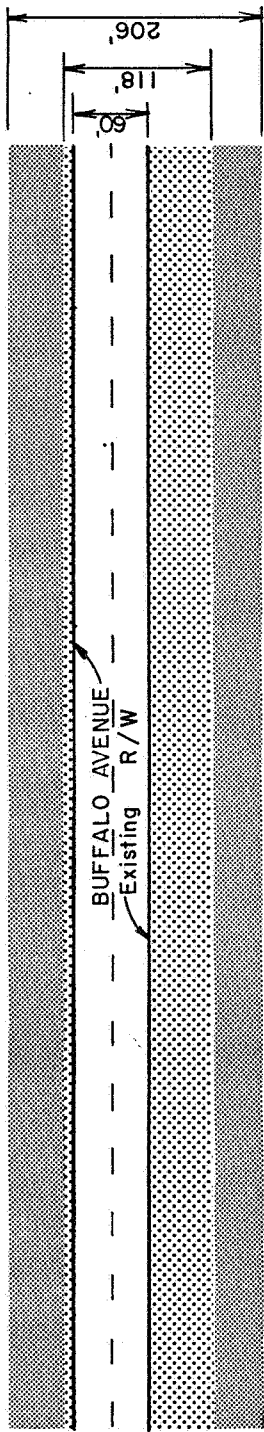
Alternate Alignments

To identify and evaluate the possibilities of minimizing costs and impacts to the adjacent communities, the design concepts previously presented can be aligned in several different locations with respect to the existing S.R. 574 right-of-way (Figure 3).

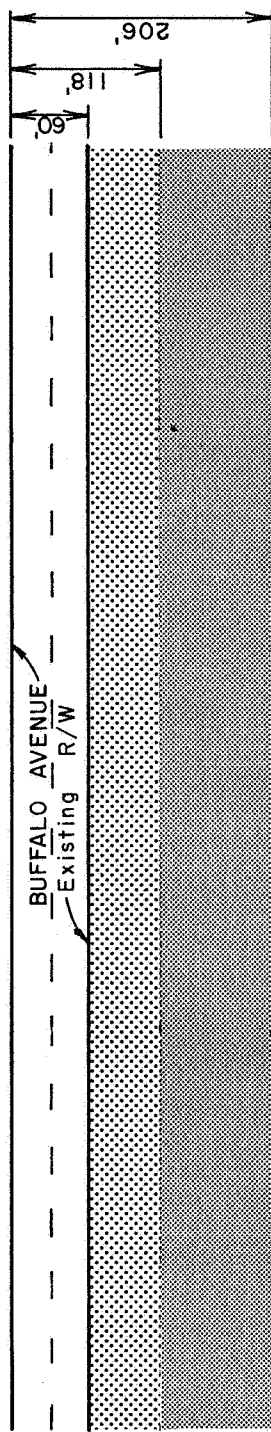
Predominantly North or South - The existing two lane rural roadway can be used as two eastbound or westbound lanes. However, proper drainage for the proposed interstate connector requires the right-of-way line to be approximately 56 feet from the edge of pavement for a rural roadway design. This would result in right-of-way being taken from both sides of the roadway which could have significant economic and displacement problems.

Entirely North or South - Right-of-way for the proposed upgrading could be taken entirely from north or south of the existing right-of-way for either the urban or rural design. This alignment could potentially minimize community impacts by taking right-of-way solely on one side. However, the existing two-lane roadway would normally not be used as part of the new six lanes because its closeness to the right-of-way does not allow proper drainage swales for a rural roadway. In addition it does not normally provide adequate street drainage if converted to an urban roadway.

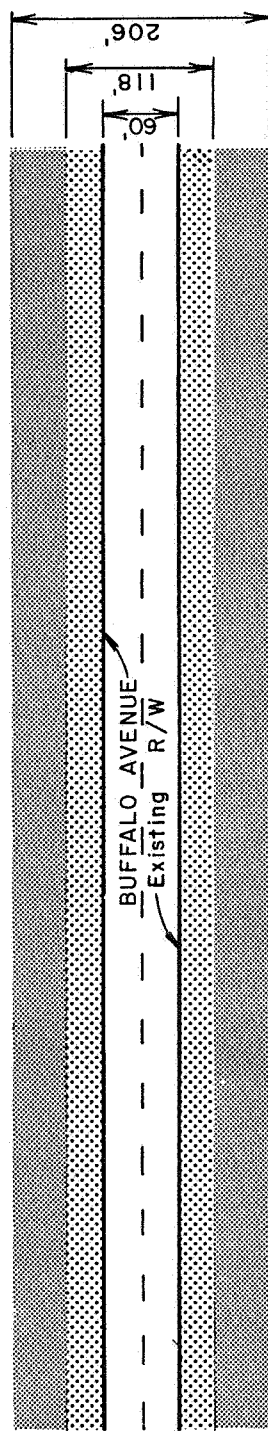
Centered - Additional right-of-way for roadway widening can be taken equally from both sides of the existing right-of-way. This alignment alternative minimizes the opportunity for construction staging and creates impacts on both sides of the existing roadway. The existing road would normally be removed during the first stage of construction, requiring temporary detour roads to be constructed.



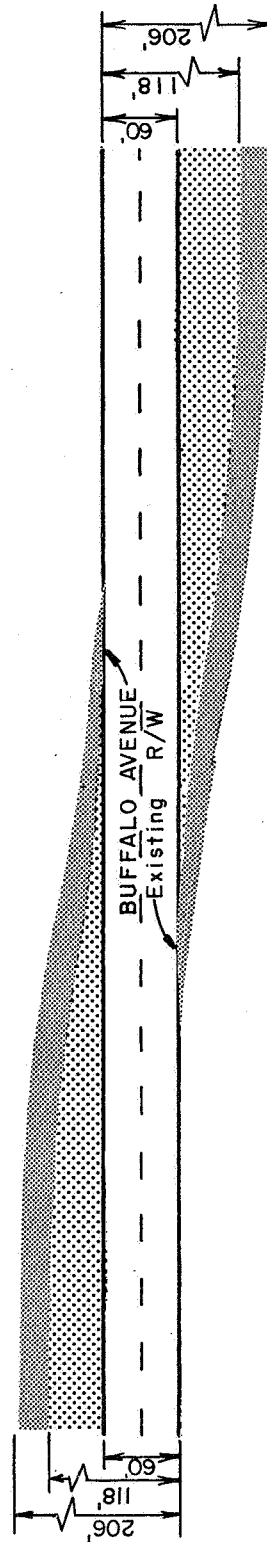
PREDOMINANTLY
North or South



ENTIRELY
North or South



CENTERED



COMBINATION

FIGURE 3
ALTERNATE ALIGNMENTS

STATE ROAD NO. 574

Combination - For any particular roadway, a combination of the above alignments can be utilized transitioning from one to another to minimize community and environmental impacts.

Engineering and Planning Criteria

To develop an improved roadway facility that is in the best overall public interest, certain engineering factors and urban development conditions must be taken into consideration. These criteria have direct bearing on the selection of the preferred roadway design and alignment for each roadway section.

Traffic Demand - The improved roadway facility should be designed to safely and efficiently accommodate bicycle traffic, as well as projected future year vehicular traffic.

Land Use - To minimize community impacts it is desirable that additional right-of-way taking minimize impacts on certain land uses. Adjacent to S.R. 574 are located several cemeteries, churches and schools which restrict the taking of additional right-of-way to the north or south in particular locations. Roadway alignment and design must also be selected based on the impact on residences and businesses.

Environment - Design and alignment of an improved roadway must consider sensitive environmental conditions and areas. In accordance with Executive Order 11990, wetland impacts must be avoided where practical.

Construction Staging - Roadway alignment, particularly at bridge sections, should be placed so as to maximize the possibilities for construction staging.

Interchange Design - S.R. 574 has an approved design through the I-75 interchange, to which the upgraded roadway must connect. Consequently, the I-75 interchange dictates the future S.R. 574 alignment in its immediate vicinity. Similarly, the existing I-4 design controls the future S.R. 574 alignment in its vicinity.

The proposed interchange at S.R. 574 and U.S. 301 should be designed to minimize community and environmental impacts.

Safety - The engineering design characteristics must meet applicable safety standards.

PLAUSIBLE ALTERNATIVES

The previously presented alternate roadway designs and alignments have been applied to S.R. 574 to determine the plausible alternatives for each section of the roadway. The following sections discuss this analysis, taking into consideration relevant engineering and planning criteria in order to eliminate non-viable alternates from further consideration.

40th Street to 50th Street

This section of S.R. 574, located within fifty (50) feet of right-of-way, is bordered for most of its length by the Myrtle Hill Cemetery on the north, and the Garden of Memories Cemetery on the south. In addition to the existing right-of-way, limited additional vacant land could be obtained from building setback lines and undeveloped sections of both cemeteries. Right-of-way that can be obtained without grave relocation varies from approximately 85 feet at a short section east of the Shalom Memorial Gardens entrance to a desirable 118 feet for the unoccupied portions of the cemeteries. However, the occupied areas have predominant setback lines limiting acquisition to approximately 100 feet of right-of-way.

Consequently, construction of the 206 foot rural or the 118 foot urban roadway design would severely impact occupied portions of the cemeteries. Implementation of the 110 foot urban roadway would minimize grave relocation and could be widened to a 118 foot roadway section at the approaches to 40th and 50th Street intersections. To avoid grave relocation, an 85 foot urban roadway design could be constructed without displacing any grave sites and could widen to a 110 foot or a 118 foot roadway section at the approaches to the 40th and 50th Street intersections to accommodate needed turning lanes.

50th Street to Interstate 4

The application of the various roadway designs and alignments along this section of S.R. 574 is controlled by the existing land uses. Adjacent to the existing 60 foot right-of-way to the south, S.R. 574 is bordered by single family residences and scattered small businesses. Along the north side of the existing right-of-way are located, from 50th Street eastward; a large vacant tract, a cemetery, a church, several single family residences and an outlet mall. Consequently, construction of the 206 foot, 118 foot or 110 foot alternates, with the additional required right-of-way acquired solely from the north or south of the existing right-of-way, would displace either numerous graves or numerous homes and businesses. As such, the most plausible alternative would utilize either the 118 foot or the 110 foot urban roadway design with a 118 foot design at the approach to the 50th Street intersection to allow for the double left-turn lanes. The alignment of either typical section should utilize the vacant

tract of land to the northeast of 50th Street and S.R. 574 as much as possible, but should avoid grave relocation at the cemetery.

Interstate 4 to Orient Road

Along this one-half mile section of S.R. 574, land uses to the north of the existing 60 foot right-of-way consist of (west to east) two large trucking firms, a single family neighborhood, a church, and scattered commercial usage. To the south of S.R. 574, land uses consist of office buildings, which recently have been constructed several hundred feet from the roadway, several residences and commercial establishments.

To avoid impacting the established neighborhood and church along the north side of S.R. 574, design alternatives for this roadway section should be aligned to the south utilizing the available vacant land.

Orient Road to U.S. 301

The existing predominantly 60 foot wide right-of-way of this three-quarter mile section of S.R. 574 traverses three areas. The western quarter mile section includes vacant land to the north and south of the existing right-of-way. The north tract is undeveloped rangeland, while the southern tract is primarily freshwater swamp. The central quarter mile area consists of single family residences to the north and south. To the north the homes are located adjacent to, but facing away from the roadway right-of-way, while a frontage road runs along the south side of S.R. 574 increasing the total existing right-of-way in this residential area to approximately 110 feet. The eastern area of this section includes a large vacant tract to the north which includes a four-lane entrance/exit of the Florida State Fairgrounds. To the south is the Good Shepherd Baptist Church and School, and several small commercial establishments.

The selection of a roadway design and alignment from Orient Road to U.S. 301 must consider: environmentally sensitive areas, minimizing residential impacts, avoiding church/school impacts, maintenance of State Fairgrounds access and the proposed interchange at U.S. 301 and S.R. 574. As the most plausible roadway alignment from Interstate 4 to Orient Road is a southern alignment, and as the central area of this section has increased available right-of-way to the south, the roadway design for the western section should utilize a southern alignment. The eastern roadway section, however, should avoid impacting the church/school to the south as well as provide a viable alignment for a future interchange at U.S. 301. In addition, roadway alignment in the vicinity of the State Fair-

grounds entrance must consider potential Section 4 (f) involvement which is being coordinated with the Federal Highway Administration. As a result, the central quarter mile segment of this section (Beechwood Boulevard to the Florida State Fairgrounds Entrance) should be designed within a 110 foot right-of-way, to minimize potential adverse community impacts and minimize right-of-way acquisition.*

U.S. 301 to Interstate 75

Existing land uses along this 1.5 mile section of S.R. 574 strongly control the development of plausible roadway alignments. Several scattered commercial uses are located north and south of the existing 60 foot right-of-way from U.S. 301 to the Tampa Bypass Canal. In addition, this section is crosscut north/ south by a 200 foot Florida Power and Light right-of-way. East of the Tampa Bypass Canal, the existing S.R. 574 is largely developed along its north side with single family residences and several large and small commercial uses. The majority of land bordering the south side of the existing roadway is presently being developed as part of an industrial park complex. Throughout this area approximately 100 feet of additional right-of-way is currently available to the south of the existing roadway for use in improving S.R. 574.

Northern alignment alternatives would impact residential and commercial structures, as well as potentially impact Section 4(f) lands. Consequently, plausible roadway alignment alternates along this section of roadway should utilize available land to the south of the existing roadway. From the Tampa Bypass Canal eastward to I-75 neither a southern aligned urban nor a rural roadway design would displace any residents. Roadway design and alignment from U.S. 301 across the Tampa Bypass Canal must consider a future interchange at U.S. 301 and the possibilities of construction staging and traffic maintenance across the Tampa Bypass Canal. Additionally, roadway design and alignment in the vicinity of Interstate 75 is dictated by the approved Interstate 75 interchange design, which aligns the S.R. 574 widening to the south.

Interstate 75 to County Road 579

The development of plausible roadway designs and alignments along this 1.5 mile section of S.R. 574 should consider the following factors: the existing approved I-75 design and alignment, construction staging across the lake immediately east of I-75, minimizing community impacts from the lake to C.R. 574-A, and minimizing the impacts to Mango Elementary School and Mango Baptist Church School between C.R. 574-A and C.R. 579. Adjacent land uses from the lake to C.R. 574-A include residential development with scattered, small commercial establishments along the south side of the existing right-of-way, and scattered vacant land with several homes and a few commercial establishments along the north side. As such, an alignment with additional right-of-way taken entirely from the north in this area appears to be a viable alternate as it would minimize community impacts.

*Utilization of a 110 foot urban roadway design in this area will permit the same number of through lanes and widths as previously identified for the 118 foot urban roadway design. A rural roadway design will require additional right-of-way in this area.

From C.R. 574-A to C.R. 579, roadway design and alignment should avoid impacting the Mango Elementary School to the north and the Mango Baptist Church/School to the south. As the Mango Elementary School Building is setback approximately 220 feet from the existing right-of-way line and the Mango Baptist Church/School is setback only 70 feet, a plausible alignment in this area is a northern alignment. A 206 foot rural design would eliminate the Mango Elementary School parking lot, while a 118 foot urban design would not. However, discussion with school officials has indicated that additional property to the rear of the school is available to develop as parking.

SCREENING AND EVALUATION OF ALTERNATIVES

Based on the foregoing discussion of plausible alternatives, this section further refines the range of alternatives through a two phase screening process. The purpose of this section is to eliminate nonviable alternatives from further consideration and not carry them forward to the Environmental Assessment and Public Hearing for the project.

The first phase of the screening process involves elimination of nonviable alternatives based on land use and community development impacts (Figure 4).

Feasible Alternatives Based on Community Impact Considerations (Phase I)

40th Street to 50th Street - As previously discussed, the only viable alignment for this section of S.R. 574 is one that uses existing right-of-way and undeveloped sections of the cemeteries to the north and south. Due to the massive grave relocations required for the construction of either the 206 foot rural or the 118 foot urban roadway designs, both are considered nonviable alternatives eliminated from further consideration. Analysis of the cemetery impacts of the 110 foot and 85 foot urban roadways indicates that the 110 foot design will require approximately 600 graves to be relocated, while no grave relocations would be required for an urban roadway with 11 foot travel lanes and no median. This design could utilize the existing right-of-way and land available from building setback lines which confine the available right-of-way to 85 feet at the narrowest point.* Because this constrained design is the only design which will avoid impacting grave sites, it is recommended as the feasible alternative to be presented in the Environmental Assessment.

50th Street to Interstate 4 - The plausible alternatives for this roadway section include the 110 foot and the 118 foot urban designs. As indicated in Figure 4, a northern or centered alignment of either design would have a significant impact on the cemetery located along this roadway section. Alternatively, a southern alignment of either design would displace approximately 14 homes and businesses. Therefore, a combination alignment, which minimizes community impact is considered the most viable alignment. Comparative evaluation

* This is the only section of S.R. 574 for which a constrained urban roadway, without a median area, was evaluated. At all other locations the existing land use development permits higher type design with the provision of a shared median.

PHASE I

PHASE II

FEASIBLE ALTERNATIVE

Location	40th Street to 50th Street		50th Street to I-4							
	85' R/W	110' R/W	110' R/W		118' R/W		118' R/W			
Typical Section	N	C	S	Cb	N	C	S	Cb		
Structures Displaced	0	1	7	14	8	1	7	14	8	
Graves Displaced	0	600	436	123	0	0	666	197	0	
Right-of-Way (Acres)	2.9	5	5.6						5.7	

Location	I-4 to US 301				US 301 to CR 579							
	118' R/W*		206' New 6 Lane		206' Add 4 Lanes		206' New 6 Lane		206' Add 4 Lanes			
Typical Section	N	C	S	Cb	N	C	S	Cb	N	C	S	Cb
Displacements (Structures)	17	3	4	2	36	35	20	1	29	21	1	19
Right-of-Way (Acres)	6.2				17				15			

Location	I-4 to US 301		US 301 to CR 579	
	118' Cb	206' Cb	118' Cb	206' Cb
Construction Cost	\$4,125,000	\$3,125,000	\$9,959,000	\$8,509,000
R/W Cost	\$ 467,000	\$2,040,000	\$1,934,000	\$3,921,000
Total Cost	\$4,592,000	\$5,165,000	\$11,893,000	\$12,403,000

Location	40th Street to 50th Street	50th Street to I-4	I-4 to US 301	US 301 to CR 579
Viable Alternative	85' R/W Urban Combination Alignment	118' R/W Urban Combination Alignment	118' R/W* Urban Combination Alignment	118' R/W Urban Combination Alignment

Legend
 N = North
 C = Centered
 S = South
 Cb = Combination

Note
 * 110' R/W from Beechwood Blvd. to Fairgrounds Entrance

STATE ROAD NO. 574

FIGURE 4
 SCREENING AND EVALUATION OF ALTERNATIVES

of the 110 foot and 118 foot designs indicate no significant difference in terms of community impact. Consequently, since the 118 foot design provides a higher type design, it is recommended as the viable alternative for this section of S.R. 574. The curves required to obtain this combination alignment are not considered to adversely affect driver comfort and safety.

Interstate 4 to U.S. 301 - The plausible alternatives for this roadway section include north, central and south alignments, or a combination thereof, for either the 118 foot urban or 206 foot rural roadway design. As indicated in Figure 4, the combination alignment for the 118 foot design minimizes community impacts along this section of roadway, therefore it is considered one viable alternate for further consideration.

Three sets of analyses were performed for the 206 foot rural roadway: a north, central and south alignment of a new six lane roadway; adding four new lanes to the north or south of the existing two lanes; and a combination alignment to minimize community impacts. The north and central alignment of the new six lane roadway would have significant community impacts, while the southern alignment would displace numerous structures, including a church. The north alignment of the 206 foot roadway with four new lanes also has a significant community impact, and the southern alignment would again displace a church.

While the combination 206 foot design would displace more structures than a combination 118 foot design due to right-of-way requirements, both designs were evaluated in more detail in the Phase II screening process due to anticipated cost difference and drainage problems.

U.S. 301 to County Road 579 - The plausible alternatives for this roadway section are the same as those for the I-4 to U.S. 301 section, and the impacts are similar. Review of the plausible 118 foot design alternates indicates that the combination alignment minimizes community impact and, therefore, is considered a viable alternate for additional consideration.

As shown in Figure 4, a new six lane, 206 foot rural design would have a significant community impact along a northern, centered or southern alignment. The 206 foot design with four lanes added to the existing two lanes would also cause adverse community impacts to the north or south. A combination 206 foot design would minimize displacements for a rural roadway. However, the number of displacements would be greater than would result with an urban roadway. Although more displacements would occur with the rural roadway design, additional comparison to the urban roadway design is warranted due to cost and drainage considerations.

U.S. 301 Interchange - Alternative interchange configurations for the Buffalo Avenue/U.S. 301 intersection were evaluated to select the appropriate transportation improvement for this location. These alternatives included diamond, partial cloverleaf, and urban interchange configurations, which are evaluated and compared to a base condition of an upgraded intersection as shown in Figure 5.

Estimation of the additional right-of-way required for each alternative indicates that a partial cloverleaf configuration would require the maximum acreage, while an upgraded intersection would not require additional right-of-way. Minimal additional right-of-way would be required for an urban interchange with U.S. 301 overpassing Buffalo Avenue. This alternative maximizes the use of the existing 200 foot right-of-way along U.S. 301 for structures and ramps, whereas only 60 feet of right-of-way currently exists along Buffalo Avenue.

Evaluation of the community impacts of each alternative reflects the effects of the required right-of-way takings. The upgraded intersection would not displace any homes or businesses, while the urban interchange with U.S. 301 overpassing Buffalo Avenue would displace only one business.

Each alternative was reviewed for potential Section 4(f) involvement. Both the diamond and urban interchanges with Buffalo Avenue overpassing U.S. 301 could involve impacts on Section 4(f) lands (Florida State Fairgrounds). These impacts could result from direct property takings and/or indirect traffic access impacts.

The level of service provided by each of the facilities was calculated for the design year 2007. As shown in Figure 5, the partial cloverleaf would provide the best level of service (LOS B - stable flow). The diamond interchange with U.S. 301 overpassing Buffalo Avenue, and both urban interchange configurations would provide level of service C (stable flow, acceptable delays), while the other diamond interchange would function at level of service D (approaching unstable flow). An upgraded intersection would result in level of service E (unstable flow, at capacity).

Evaluation indicates that the urban interchange with U.S. 301 overpassing Buffalo Avenue is the alternative that it is in the best overall public interest. This alternative minimizes needed additional right-of-way and community impacts, avoids Section 4(f) involvement, and provides an acceptable level of traffic service for the future traffic volumes projected for this location.

FIGURE 5 - COMPARATIVE EVALUATION OF ALTERNATIVES
U.S. 301 and BUFFALO AVENUE

DESIGN	R/W REQUIRED	ESTIMATED DISPLACEMENTS	POTENTIAL 4(f)	VOLUME TO CAPACITY RATIO YEAR 2007
UPGRADED INTERSECTION	0 Acres	0 Homes 0 Businesses	No	1.03 LOS 'E'
PARTIAL CLOVERLEAF INTERCHANGE	35 Acres	6 Homes 4 Businesses	No	0.67 LOS 'B'
DIAMOND INTERCHANGE (Buffalo over U.S. 301)	20 Acres	2 Homes 6 Businesses	Yes	0.85 LOS 'D'
DIAMOND INTERCHANGE (U.S. 301 over Buffalo)	15.6 Acres	0 Homes 7 Businesses	No	0.77 LOS 'C'
URBAN INTERCHANGE (Buffalo over U.S. 301)	11.3 Acres	2 Homes 1 Business	Yes	0.79 LOS 'C'
URBAN INTERCHANGE (U.S. 301 over Buffalo)	1.3 Acre	0 Homes 1 Business	No	0.79 LOS 'C'

Feasible Alternatives Based on Community and Cost Considerations (Phase II)

When considering community impacts, both a rural or urban roadway could be acceptable between Interstate 4 and C.R. 579. Therefore, additional analysis is required to evaluate costs and drainage considerations for this project section. Comparative cost analysis of alternates indicates that construction costs for the 118 foot design are greater than the 206 foot design due to the drainage structures required. However, right-of-way costs for the 206 foot design are significantly greater than the 118 foot design. Therefore, total estimated costs indicate that the combination urban 118 foot design is less expensive than the combination rural 206 foot design and is recommended as the viable design for Buffalo Avenue from Interstate 4 to C.R. 579.

CONCLUSIONS AND RECOMMENDATIONS

Analysis of all plausible roadway design concepts and alignments has resulted in the determinations that:

- 1) Urban roadway design concepts will minimize right-of-way acquisition and community impacts. The cost of an urban roadway is similar to a rural roadway due to the savings in right-of-way and displacements.
- 2) The alignment of an improved S.R. 574 must transition north and south along the length of the project to avoid adverse community impacts.

The above determinations will result in the development of an upgraded S.R. 574 that is in the best overall public interest.