Environmental Management Study For:

S.R.200

From S.R.45 (U.S.41) to C.R.484

Citrus and Marion Counties

STATE PROJECT NO. WORK PROGRAM NO.

02040-1503; 36100-1524

7/19027 5111615; 5113521

FEDERAL AID PROJECT NO. SA332 - 1(14) and (15)

237849 1 31 01 SR 200 FROM SR 45 TO MARION CO. LINE (5111615);



PRELIMINARY ENGINEERING REPORT

SR 200 RECONSTRUCTION STUDY From SR 45 (US 41) To CR 484 Citrus/Marion Counties

State Project Numbers: 02040-1503; 36100-1524 Work Program Numbers: 5111615; 5113521 Federal Aid Project Numbers: SA-332-1(14); SA-332-1(15)

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Environmental Management Office

Date: November 8, 1996

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I.___ABSTRACT:

This report documents the information and identifies the results of the preliminary design concepts for the proposed 4-lane reconstruction of SR 200. The segment of under study is located in Citrus and Marion Counties (see Figure 1). The reason for proposing additional lanes is to meet the growing demand for increased highway capacity, improve safety and provide greater operational efficiency through the target design year 2020. This project has been adopted by the Marion County Metropolitan Planning Organization and is included in the Citrus County Comprehensive Plan.

The Florida Department of Transportation (FDOT) intends to use Federal aid funds authorized by the Federal Highway Administration (FHWA) in the development of the four laning of SR 200.

The project cost as follows in terms of 1995 dollars:

Estimated Costs (in millions)

Preliminary Engineering	0.7
Right of Way	14.3
Construction	15.0
Engineering & Inspection	 1.1_
	31.1

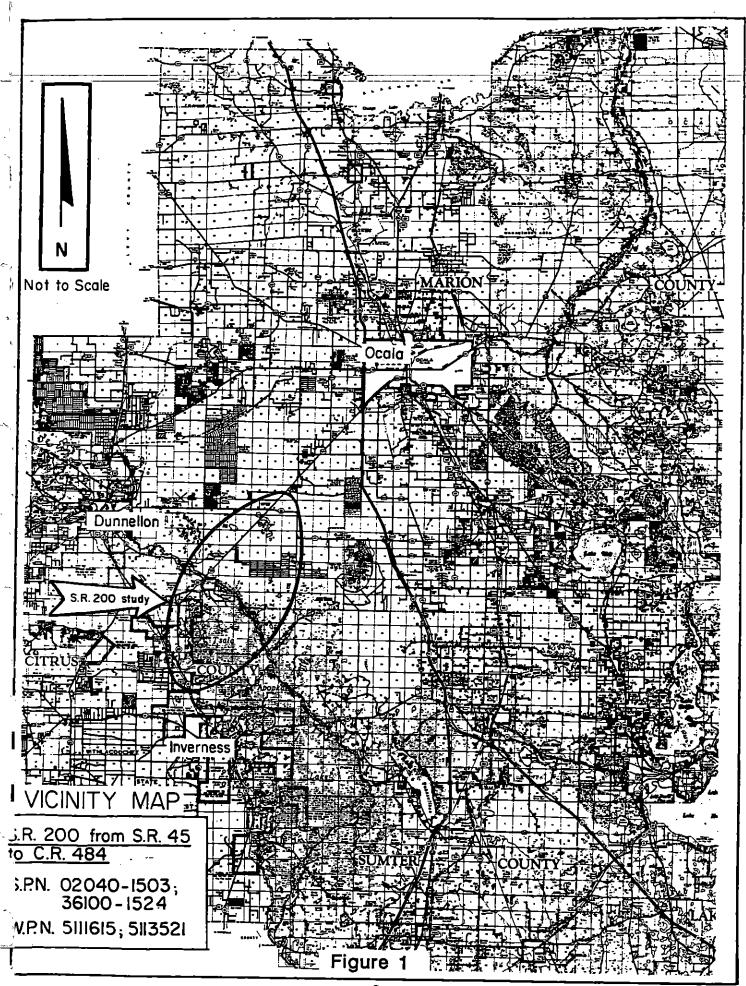
This total cost is less than that for any other project alternative considered.

II. INTRODUCTION:

The purpose of this report is to ensure that the final design concept will reflect and be consistent with Federal, State and local goals and objectives.

The objectives of this report are as follows:

- A. To reach and analyze the various factors which will be instrumental in the formulation of a design concept for the proposed highway.
- B. To analyze alternate design concepts.
- C. To conduct a public involvement program.
- D. To document the recommendation of a specific design concept and specify why the recommended design concept was selected.



III. EXISTING FACILITY:

1. Function Classification:

SR 200 (from SR 45 [US 41] to CR 484) is functionally classified as a "Minor Rural Arterial".

2. Typical Section:

The typical section (Figure 2) was constructed in the mid 1930's. The construction plans, dated 1933 (Federal Aid Project Number NRH 84-A), show two 3.3 meter (11 ft.) paved lanes with 0.02 cross slope flanked by 2 meter (7 ft.) grassed shoulders with 0.08 cross slope. The width of the paved roadway varies at the approaches to many intersections to provide for auxiliary left and right hand turn lanes to serve ingress and egress at commercial and residential developments and adjacent properties.

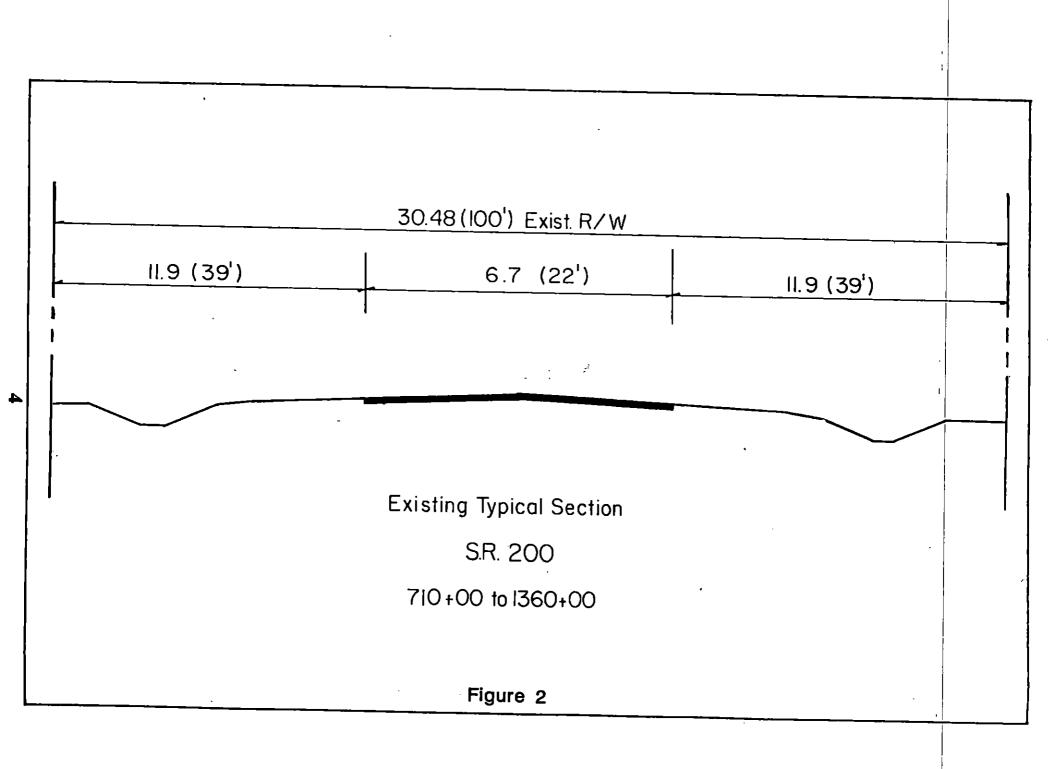
When this section of the road was built, there was little if any environmental requirements for water quality (pollution abatement) and quantity (pre/post staging). Therefore, the treatment of the cross-sectional elements beyond the shoulders were arbitrarily selected based primarily on the vertical alignment matching the existing natural ground. The foreslopes utilized to match the existing natural ground were constructed at 4:1 ratios draining away from the roadway. Drainage ditches were constructed with a minimum 1 meter (3 ft.) bottom at a depth of .75 meter (2.5 ft.) with 4:1 foreslopes and maximum 1½:1 backslopes. The system of drainage ditches is ill defined and most stormwater runoff drains on to surrounding properties following existing drainage patterns and watersheds.

The original plans called for a rock base surface treated (RBST) pavement structure. The base course consisted of Ocala limerock sealed and surfaced with a bituminous surface treatment. A straight line diagram of SR 200 obtained from FDOT shows, as of 1985, the pavement structure consisted of 9 cm (3.5 in.) of asphaltic concrete placed on an 20 cm (8 in.) base of limerock.

The design speed for the project could not be determined from the construction plans. The posted speed limited varies from 60 km/h (40 mph) to 90 km/h (55 mph).

3. Horizontal Alignment:

The existing horizontal alignment for SR 200 traverses in a northeast direction essentially following a straight line course north of CR 491. Two curves of 1° or greater exists between SR 45 (US 41) and CR 491. The P.C. of a 2° curve is located at station 1133+90.



This curve is 640 meter (2100 ft.) long and has a superelevation of .04/ft. The second curve has a P.C. located at station 1317+23, a length of 450 meter (1475 ft.), and a superelevation of 0.03/ft.

4. <u>Vertical Alignment:</u>

The centerline elevations of the existing roadway vary from a low of 13.4 meter (44 ft.) above mean sea level (MSL) at station 1040+00 to a high of 23.8 meter (78 ft.) above mean sea level at station 710+00. The elevations were obtained from the United States Department of the Interior Geological Survey Maps. In applying the present day criteria to calculate the required vertical curves, it was determined that several vertical curves were deficient in length. A design speed of 100 km/h (60 mph) was used based upon adding 1.5 km/h (5 mph) to the posted speed of 90 km/h (55 mph). A total of nine crest and one sag vertical curves did not meet the requirements for stopping sight distance predicated on the desirable "K" values.

5. Traffic Signals and Lighting:

No signalized intersections exist between SR 45 (US 41) and CR 484 although there are 36 local streets that intersect with this section of SR 200. Many of these intersections have been upgraded by adjacent property developers by the addition of auxiliary lanes to facilitate right and left turn movements.

SR 200 through the length of the project has no street lighting.

6. Utilities:

The following have been identified as having utilities which may lie within the project area:

Mr. Mike Krashney Construction Coordinator Cablevision of Central Florida 2850 S. Lecanto Highway Lecanto, Florida 32661

Mr. Richard Noble
Manager of Acquisition
Florida Power Corporation
P.O. Box 14041 - Mail Code D2D
St. Petersburg, Florida 3373

Mr. Rudy Christian
Operations Manager
Southern Bell Telephone &
Telegraph Company
1065 US 41 South
Brooksville, Florida 34601

Mr. James Pinkerton
County Engineer
Citrus County
Department of Technical Services
P.O. Box 440
Lecanto, Florida 32661

Mr. James D. Williams
Division Manager
United Telephone System-Florida
P.O. Box 490048
Leesburg, Florida 32749-0048

Mr. Jim Duncan, Manager Sumter Electric Coop.,Inc. P.O. Box 301 Sumterville, Florida 33585

7. Traffic:

The "Design Traffic Report" for the SR 200 project currently describes the existing road as a Minor Rural Arterial between SR 45 (US 41) to CR 484. The roadway serves both through traffic and provides local access to commercial and residential developments, schools and churches within the study corridor. The character of the traffic using the roadway is not expected to change significantly in the foreseeable future. Levels of Service range from "A" to "E" where the letter "A" represents the most efficient movement of traffic that provides a condition of free flow, with low volumes and high operating speeds. The letter "E" represents operations with volumes at or near the capacity of the roadway characterized by extremely low operating speeds at times bordering on forced flow conditions. The current ADT/LOS from SR 45 (US 41) to CR 491 is 11,400/D. From CR 491 to CR 484 the current ADT/LOS is 9,300/C.

8. Soils:

From the Soil Conservation Service (SCS) general soil map of Citrus and Marion Counties it can be noted that there are six major soil associations that SR 200 traverses on its easterly then northerly course beginning at SR 45 (US 41) and ending at CR 484.

For the 1.6 km (1 mi.), SR 200 traverses the Candler-Lake-Astatula - nearly level to moderately sloping excessively drained soils that are sandy throughout.

For the next 1.6 km (1 mile), SR 200 traverses the Tavares-Adamsville - nearly level to gently sloping, moderately well drained and somewhat poorly drained soils that are sandy throughout.

For approximately the next 6.4 km (4 mi.), SR 200 traverses the Basinger-Immokalee-EauGallie - nearly, poorly drained, sandy soils; some are sandy throughout, and some have a loamy subsoil at a depth of about 102 cm (40 in.) or more.

The 1.6 km (1 mi.) south of the Citrus/Marion County line, SR 200 traverses the Terra Ceia-Okeelanna - nearly level, very poorly drained, mucky soils.

The next 6.4 km (4 mi.), SR 200 traverses Spaer-Lochkoosa-Tavares association - nearly level to sloping, somewhat poorly drained and moderately well drained soils, some sandy to a depth of 51 cm (20 in.) to more than 102 cm (40 in.) and loamy below and others sandy throughout.

The last 9.6 km (6 mi.), SR 200 traverses Candler-Apopka association - nearly level to strongly sloping, excessively drained and well drained sandy soils, some with thin sandy loam lamellae at a depth of 152 cm (60 in.) To 204 cm (80 in.) and others loamy at depths of 103 cm (40 in.) to 204 cm (80 in.).

9. Accident Data:

The accident report summary was compiled from Florida Highway Patrol Accident Report from 1987 through 1991. Rear end accident 24% and left turn 24% account for the majority of accidents along SR 200. During the five year period, there were 50 fatalities and 34 injuries resulting in an economic loss of 8.0 million dollars. The accident ratio for this segment of SR 200 is less than the average.

10. <u>Drainage</u>:

The existing drainage system along SR 200 is open ditch and swales with numerous crossdrains. This area is under the jurisdiction of the Southwest Florida Water Management District.

The existing roadway does traverse 100 year floodplains for a length of approximately 2 km (1.3 mi.). Florida Department of Transportation Manual, Chapter 3, "Floodplain Encroachment, Paragraph 3.2.5 addresses the existing alignment as a "Category 6" which is "An existing alignment involving replacement of existing drainage structures with no record of drainage problems." There are 15 existing crossdrains of SR 200. The existing crossdrains range in size from 1.8 meter x 3.0 meter (6ft. X 10 ft.) to 0.6 meter x 0.6 meter (2 ft. X 2 ft.) concrete box culverts.

The range of soil classification vary from class "A" to "D" by the soil survey of Citrus/Marion County Manual. The manual indicates a water table that varies

from 0:to=>:than=1.8:meter (6:ft:):below-ground-surface. There-are-wetland-areas with the project limits.

11. Pedestrian and Bicycle Facilities:

SR 200 from SR 45 (US 41) to CR 484 has no sidewalks. There are no existing bicycle paths or crosswalks.

12. Right of Way:

The majority of SR 200 has 30.5 meters (100 ft.) of existing right of way from SR 45 (US 41) to CR 484.

13. Structures:

There are two structures along the SR 200 corridor. One of the structures crosses the Withlacoochee River. The other structure is a double 1.8 meter x 3 meter (6ft. x 10 ft.) Box culvert.

The bridge over the Withlacoochee River (station 1010+00) has structure number 020008. This bridge was built in 1935 and was last inspected in November 1992. At that time the bridge had a sufficiency rating of 66 and a status of "Functionally Obsolete".

The double box culvert (station 112+50) has structure number 02001. This structure was built in 1954 and was last inspected in November 1992. At that time the bridge had a sufficiency rating of 95.6 and a status of "No Significant Deficiency".

IV. EXISTING ENVIRONMENTAL INFORMATION

1. Land Use Data:

The existing land use along the SR 200 project varies based on location. From SR 45 (US 41) to CR 491 the land use is an even mix of commercial, residential, and vacant parcels. From CR 491 to CR 484 the land use is predominantly made up of large undeveloped parcels.

2. <u>Cultural Features and Community Service</u>:

The project was inventoried for the location and type of community oriented features and cultural facilities. The following sites are located along the roadway:

VFW Post 4252 Riverside Baptist Church

V. MULTI-MODAL TRANSPORTATION SYSTEM

1. Commercial:

Commercial mass transit does not occur on SR 200.

2. Schools:

There are no existing school crossings within the limits of the study corridor. SR 200 is utilized by school buses.

3. Railroad Crossing:

There are no existing railroad crossings within the limits of the study corridor.

4. Airports:

There are no existing airports adjacent to the study corridor.

VI. NEED FOR IMPROVEMENT

1. Capacity:

The existing roadway is presently operating at a decreasing level of service. However, the accident history indicates that significant and serious accidents are occurring throughout the study limits. Segments of the existing state road facility are presently operating at Level of Service "D". The design year 2020 traffic volumes dictate the implementation of a four-lane divided facility together with the implementation of major intersection improvements (see Table 1). The type of roadway typical section developed will provide a safe and continuous movement of traffic at an acceptable level of service through the study corridor.

TABLE 1
DESIGN TRAFFIC/LOS "BUILD/NO BUILD"

Segment	2000	2010	2020
SR 45 (US 41) to CR 491	15,500 A/E	23,400 B/E	31,200 B/E
CR 491 to CR 484	13,500 A/D	19,600 A/E	25,200 B/E

2. Safety:

The project study area accident data reports that approximately 29 traffic encounters occur on this roadway segment per year. Of the total annual accidents, approximately 48 percent were left turn and rear-end collisions. This type of accident would normally occur at intersections displaying inadequate turn storage or bad sight distances.

The proposed improvements will address the "high accident" areas and all major intersections from a safety standpoint and make recommendations that will improve the safety ratio for the corridor. Accidents involving bicyclists and pedestrians account for three percent of the total accidents and can be attributed to the lack of accommodating facilities.

3. Consistency with the Transportation Plan:

The proposed improvements to SR 200 are consistent with the State Transportation Plan. These proposals are also consistent with currently adopted local transportation, land-use and comprehensive plans.

VII CORRIDOR ANALYSIS

SR 200, a Principal Arterial, carries north-south oriented traffic. The corridor traverses unincorporated Citrus and Marion Counties as it approaches the City of Ocala. The corridor is located within an area which is currently undergoing growth which has been influenced by land development along the corridor.

Alternative corridors would have significant social and economic impacts to residential communities along the existing corridor. In addition, significant wetland impacts would also be associated with any corridors developed outside the existing corridor.

The consideration of any alternate corridor would not be consistent with the existing land use plans locale nor would it effectively serve existing jurisdictional transportation plans in the project area.

VIII. ALIGNMENT ANALYSIS

1. No Project Alternative:

Under the No Project alternative, no action will be taken to improve SR 200, except for routine maintenance. The most probable consequence of leaving the existing facility in its current condition will be the traffic congestion and other impacts associated with a facility operating above its capacity. These impacts will include extended traffic delays and the potential for higher accident rates.

Even though the No Project alternative has major deficiencies, it will remain a valid alternative throughout the study process and will be considered until after the public hearing, when a final recommendation will be made.

2. Transportation System Management (TSM) Alternative:

This alternative involves the existing facility by selectively making improvements, such as providing paved shoulders, adding acceleration/deceleration lanes, adding turn lanes and additional signalization. As the traffic demand increases, this alternative will initially provide improved service but will soon become obsolete.

3. Study Alternatives:

Since the No Project alternative and the Transportation Management System alternative do not satisfy the project needs, additional alternatives were developed. Study alternatives were developed by identifying the possible typical sections and alignments applicable to this type of facility.

The project corridor was divided into two segments, based on land use, existing roadway characteristics, and operational speed.

Segment 1 - From SR 45 (US 41) to Station 1300+00:

This segment is approximately 1829 meters (6,000 feet) long. The segment is moderately developed, with frontage consisting of residents, commercial properties, and undeveloped parcels. The operational (85th percentile) speed for the study segment is 70 km/h (45 mph).

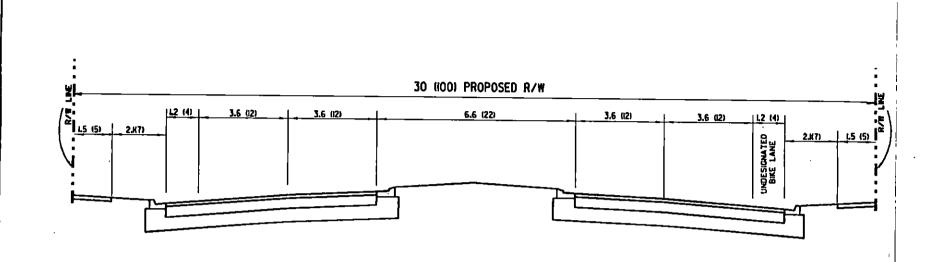
Segment 2 - Station 1300+00 to CR 484:

This segment is approximately 18,288 meters (60,000 feet) long. The segment is lightly developed, with frontage consisting of scattered commercial properties, residents, and large undeveloped parcels. The operation (85th percentile) speed of this study segment is 93 km/h (57 mph).

Two typical sections were selected to study along the length of the project. They were dependent on the width of the existing right of way and the operational speed of the roadway section. (See Figure 3 and 4.)

Study Segment 1 - Existing Alignment:

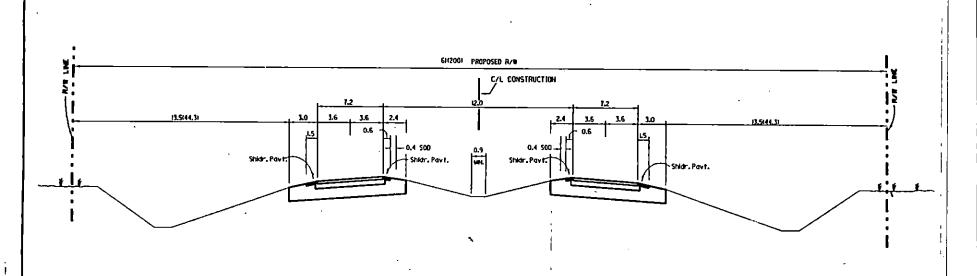
Since the four laning improvement can be accommodated within the existing right of way, only the existing alignment was analyzed.



PROPOSED TYPICAL SECTION S.R. 200

STUDY SEGMENT I
FROM STA 1360+00 TO STA 1300+00
DESIGN SPEED 70 KM/H

FIGURE 3



PROPOSED TYPICAL SECTION S.R. 200

STUDY SEGMENT 2
FROM STA 1300+00 TO STA 710+00
DESIGN SPEED 90 KM/H

FIGURE 4

Study Segment 2 - Alignment #1:

This alignment would widen the roadway by obtaining additional needed right of way (R/W) for the proposed roadway exclusively from the east side of the existing roadway while maintaining the western R/W line.

Study Segment 2 - Alignment #2:

This alignment would widen the roadway by obtaining additional needed R/W for the proposed roadway exclusively from the west side of the existing roadway while maintaining the eastern R/W line.

An alignment widening equally on both sides was considered but deleted due to the high number of parcels impacted.

Study Segment 2 - Alignment #3:

This alignment utilizes transitional curves to combine alignments 1 and 2.

Alignment 2	from station 1360+00	to	1060+00
Alignment 1	from station 1060+00	to	880+00
Alignment 2	from station 880+00	· · to	700+00

Table 2 shows the evaluation chart for the three alignments analyzed in Study Segment Two. Alignment #3 has the least overall impacts and total costs.

4. Recommended Alignment (see conceptual design at the rear of this report):

The recommended approach to improving SR 200 is Alignment #3.

Based on the preliminary conceptual engineering, preliminary environmental evaluation, and coordination meetings with local government and FHWA engineers, and a public meeting, Alignment #3 is the recommended alignment to provide the desire transportations need of SR 200.

The typical sections for the proposed roadway are depicted in Figures 3 and 4, Pages 12 and 13.

TABLE 2
STUDY SEGMENT 2 - ALTERNATIVE EVALUATION MATRIX

EVALUATION FACTOR	NO.PROJ.	1	2	3
Number of Parcels	0	138	130	140
Number of Relocations				
Business	0	17	10	9
Residence	0	36	38	35
Wetland (Ac)	,	5.3	4.0	3.7
Business Damage (Parking)	0	117	10	10
Church Property (Ac)	0	1.50	0	0
Right of Way Cost (\$ Millions)				
Roadway	0	15.1	12.8	12.6

X. CONCEPTUAL DESIGN ANALYSIS

1. <u>Design Traffic Volumes</u>:

The design year 2020 traffic volumes were established by a report entitled "Design Traffic Memorandum", dated November 1992, which was prepared by Greiner, Inc. for the Department of Transportation.

This report substantiates the need for improving the facility from a two-lane divided to a four-lane divided roadway. Manual and machine counts were performed at the major intersections to identify operational and geometric deficiencies.

2. Typical Sections

The traffic data and adjacent land usage were the key elements in selecting the typical sections for this project. The traffic analysis indicated a need for a four-lane facility. An urban typical section was chosen for study segment 1 because of the commercial and residential land uses adjacent to the roadway. A rural typical was chosen for study section 2 because the operational (85th percentile) speed of the section excluded the use of the urban section. See figures 3 and 4, Pages 12 and 13.

3. Alignment and Right of Way Needs:

Section VIII-4 discusses the recommended approach to improving SR 200. The location of the new right of way including water retention areas is delineated in the blueprint at the rear of this report.

-----Horizontal-Alignment

The proposed horizontal alignment will remain generally that of the existing alignment.

Vertical Alignment

Existing vertical curves meet the current "K" values for the associated design speeds.

4. Highway Lighting:

Highway lighting will not be provided within the limits of the projects.

5. Relocation:

There are 9 business and 35 residential relocations associated with this project.

6. Right of Way Cost:

Right of way acquisition for the recommended alignment is estimated to be as follows:

	Hectares/Acres	<u>Cost</u>
Roadway	57.0/140.0	12.6 million (1995)
Water retention areas	<u>13.3/33.0</u>	<u>1.7 million (1995)</u>
Total	70.3/173.0	14.3 million (1995)

7. <u>Construction Costs:</u>

The cost for construction for the recommended alignment is estimated to be (1995 dollars) 15.0 million.

8. Preliminary Engineering Costs (PE):

The total PE costs to including project development and design phases are estimated to be 1.8 million.

9. Recycling of Salvageable Materials:

The proposed project will utilize existing pavement for resurfacing through milling operations.

10. User Benefits:

Implementation of the proposed four-lane typical sections would create benefits for all users of the roadway, including business owners, residents, emergency vehicles, school busses, and commercial truck traffic.

The proposed cross-sections would allow motorists easier ingress and egress under safer conditions due to the proposed addition of the two lanes for through traffic, plus deceleration lanes with accompanying left turn and right turn storage lanes. Travel time will be reduced due to the increased capacity of the roadway. The proposed improvement provides user benefits to the extent that it reduces user costs as compared to the No Project concept which will operate at an unacceptable Level of Service.

11. Pedestrian and Bicycle Facilities:

It is the Department's policy to give special emphasis to the needs of pedestrians and bicyclists in and within one mile of urban areas. Therefore, 1.5m (5 ft.) concrete sidewalks will be provided for pedestrians, and 1.2m (4 ft.) paved bike paths will be provided for bicycles from station 136+00 to 1300+00. In addition, a 1.5 m (5 ft.) paved shoulder will be provided for bicyclists from station 1300+00 to 700+00.

12. Safety:

The proposed improvements to SR 200 will improve the overall safety of the area. A significant reduction in the number of rear-end collisions should be experienced due to the addition of acceleration/deceleration lanes and left turn storage.

13. Access Management:

The access class for SR 200 through the project limits is a Class 3. Class 3 is characterized by restrictive median with 400 m (13200 ft.) directional and 800 m (2640 ft.) full crossover spacing.

14. Economic and Community Development:

Marion and Citrus Counties are experiencing steady growth throughout the area. Undeveloped areas are steadily being converted to residential and commercial uses.

SR 200 serves as the major north-south link between the Ocala urban area and Citrus County.

15. Environmental Impacts:

The environmental impacts of the proposed improvements will be documented in detail in a separately published environmental report.

16. <u>Drainage</u>:

Fifteen retention ponds are proposed for this project. All ponds are outlined on the conceptual designs at the rear of this report.

The project will be designed and constructed so that it is consistent with all regulatory floodway requirements. All modifications to the drainage structures must result in an insignificant change in their capacity to carry floodwater. This change shall result in minimal increases to the flood heights and flood limits. These minimal increases will not result in any significant adverse impacts to the natural and beneficial floodplain values or any significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. The implementation of the above measures will ensure that the floodplain encroachments are not significant.

A complete location hydraulic report is on file at the District Office.

17. Utility Impacts:

As described in Section III-6 there are numerous utilities which operate in the project area. The extent of utility relocations will be addressed in future phases of preliminary engineering. The final design of SR 200 will be coordinated with utility owners in such a manner as to minimize relocation adjustments and disruption of service to the public.

18. <u>Value Engineering:</u>

A Value Engineering (V.E.) Study was performed for the SR 200 widening study. The V.E. Study indicated that several ponds could be relocated or adjusted to reduce right of way impacts. The adjustments to the ponds were incorporated into the final report.

19. Maintenance of Traffic:

Throughout the entire length of the project, a four-lane divided facility is being proposed to adequately handle future traffic requirements. Maintenance of traffic will be accomplished by allowing traffic to remain on the existing roadway while construction of a portion of the new adjacent roadway is completed. Upon completion of a portion, the traffic can be placed on the new roadway, and the four-

lane divided facility can be completed. Two thru-lanes will be provided and access to all businesses, residences and streets will be maintained at all times.

20. Structures:

The two structures mentioned in this report (Section II, 12.) will both need improvements.

The double box culvert (structure #020021) will be extended. The bridge over the Withlacoochee River (structure #020008) will be replaced with two new bridges. The new bridges will provide a minimum of 3.4 meters (11.0 ft.) of vertical clearance at Mean High Water (MHW) and 9.4 meters (30 ft.) horizontal clearance. The typical section across the bridges will match the roadway with two 3.6 meter (12 ft.) travel lanes and a 3.0 meter (10 ft.) shoulder (see Figure 5).

22. Results of Public Meeting and Advance Notification Responses:

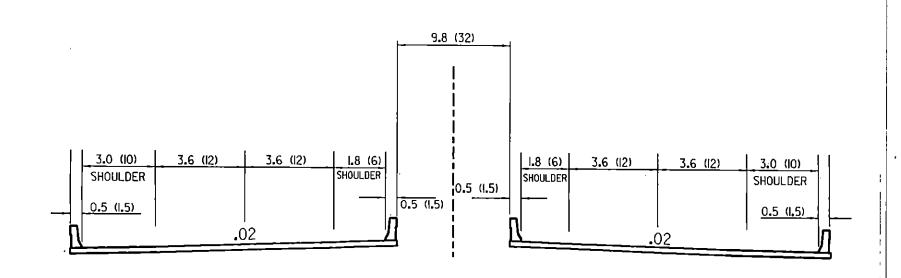
A Public Involvement Plan, complying with the 1978 Florida Department of Transportation Action Plan for transportation planning and development, serves as the guideline for all public meeting and advance notification responses pertaining to this project.

- Advance Notification was mailed February 17, 1993 to approximately 25 persons. Responses will be addressed in the Categorical Exclusion.
- An informational meeting was held on December 13, 1993.
- A formal public hearing was held on October 18, 1994. District files contain transcript copies of the hearing.

XI. COORDINATION DOCUMENTATION

The District files contain copies of actual correspondence relative to this project, which was generated throughout the study area. It includes interoffice memorandums, intergovernmental correspondence of Federal, State and county levels.

Summaries of meetings, public hearings, and coordination with permitting agencies will be filed at the District Office.



S.R. 200

STA 1008+50 TO STA 1011+50 DESIGN SPEED 90 KM/H

FIGURE 5

APPENDIX A

Aerials and Conceptual Drawings





