



Preliminary Engineering Report

for the

Interstate 4(SR 400)

**Project Development and Environmental Study
Section 2**

**Orange County, Florida
Seminole County, Florida
Volusia County, Florida**

**Project Number: 242486-1, 242592-1, 242703-1
Work Program Item Number: 5147257, 5148838, 5149520
Federal Aid Project Number: NH-4-2(186)79**

Prepared for:



**The Florida Department of Transportation
District Five**

Prepared by:

**URS
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August 2002

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a licensed Professional Engineer in the State of Florida practicing with URS Corporation Southern, a corporation, authorized to operate as an engineering business, EB-0000002, by the State of Florida, Department of Business and Professional Regulation, Board of Professional Engineers, and that I have reviewed or approved the evaluation, findings, opinions, conclusions or technical advice hereby reported for:

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This Preliminary Engineering Report includes a summary of data collection efforts and conceptual design analyses for the I-4 PD&E Study – Section 2. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgement and experience.

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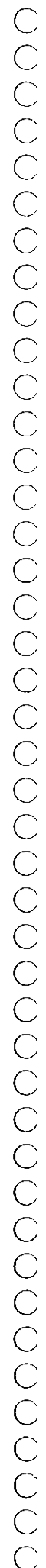


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Following is a summary of the Florida Department of Transportation's (FDOT) commitments to minimize impacts on the natural, physical and social environments as a result of the proposed action and describes the Preferred Alternative, which is being recommended for Location and Design Concept Acceptance (LDCA).

1.1 COMMITMENTS

To minimize the impacts of this project on the environment, FDOT is committed to the following measures mitigating for impacts resulting from the Preferred Alternative.

1.1.1 Land Use Impacts

The Preferred Alternative will require approximately 97 acres of right-of-way for public transportation use. Approximately 57 acres are required for roadway improvements and approximately 40 acres are required for stormwater retention areas.

The I-4/SR 408 (East/West Expressway) interchange modifications alter downtown Orlando access and require a number of residential and business relocations. Businesses located adjacent to existing interchanges may experience land use impacts due to the proposed improvements. These impacts will be significant due to the number of relocations, change in access, and Section 106 impacts as a result of the proposed improvements. Through these impacts, pressure for land use transitions may occur.

Mitigation measures for the land use impacts at the I-4/SR 408 (East/West Expressway) interchange will include several techniques. The relocations will be mitigated through the FDOT relocation program. A description of the relocation program is presented in Section 1.1.2.

To limit the impacts associated with change in access at the I-4/SR 408 (East/West Expressway), Alternative 2B1 was chosen as the Preferred Alternative. This alternative maintains a westbound on-ramp at Gore Street and provides an eastbound off-ramp and a westbound on-ramp at Amelia Street.

A Memorandum of Agreement (MOA) has been developed among the State Historic Preservation Officer (SHPO), Federal Highway Administration (FHWA), and FDOT regarding adverse effects to cultural resources and suitable mitigation measures for the Preferred Alternative. Mitigation measures for historical resource impacts have been coordinated according to the Section 106 process and the agreed upon commitments with SHPO and appropriate consulting parties as documented in the MOA. A copy of the MOA can be found in the project files.

1.1.2 Displacements and Relocations

The Preferred Alternative will result in right-of-way impacts to 362 parcels (approximately 97 acres). Most of these parcel impacts are related to roadway improvements, which impact 309 parcels (approximately 57 acres); whereas, stormwater retention areas impact 53 parcels (approximately 40 acres). The Preferred Alternative will result in 111 full acquisitions and 251 partial acquisitions. A majority of the impacted parcels are non-residential (244 parcels, mostly commercial businesses). The non-residential impacts involve the relocation of 63 businesses (this includes community facilities). Business relocations comprise approximately 90 percent of commercial facilities. The residential impacts involve the relocation of 195 residential units (118 parcels).

In addition, the Preferred Alternative will result in right-of-way impacts to an additional 45 parcels (including five relocations) due to limited access requirements.

To minimize the unavoidable effects of right-of-way acquisition and displacement of people, FDOT will carry out a right-of-way and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

FDOT provides advance notification of impending right-of-way acquisition. Before acquiring right-of-way, all properties are appraised on the basis of comparable sales and land use values in the area. Owners of property to be acquired will be offered and paid fair market value for their property.

It should be noted that FDOT has proceeded with advanced right-of-way acquisition for a number of the parcels affected by the Ultimate project. However, this advanced right-of-way acquisition has not affected the selection of the Preferred Alternative.

1.1.3 Community Facilities

The neighborhoods that have a significant direct use impact include Angebilt, Holden Heights, and Holden-Parramore including the Griffin Park Historic District.

Community facilities include schools; day care; places of worship; residential shelters and crisis centers; social service agencies; cultural centers; hospitals; senior citizen centers; public services; and fire, evacuation, and police stations. The Preferred Alternative will impact a total of 17 facilities and result in 9 relocations.

The community facilities impacted by the I-4 improvements provide important local and/or regional community services. Although the impacts to these facilities are not considered a significant regional impact to

community services, loss of these facilities reduces important neighborhood and regional services. Through the assessment efforts of these impacts, coordination has been undertaken with each facility.

As indicated in Section 1.1.2, displacements and relocations as a result of the Preferred Alternative will be mitigated through FDOT's relocation program. Before acquiring right-of-way, all properties are appraised on the basis of comparable sales and land use values in the area. Owners of property to be acquired will be offered and paid fair market value for their property.

To mitigate visual impacts associated with the Preferred Alternative, urban design amenities will be implemented along the I-4 corridor. A description of proposed urban design amenities is provided in Section 1.1.15. Detailed information of the urban design amenities proposed for the Preferred Alternative is provided in the *Urban Design Guidelines* (February 2000).

Noise walls have been determined to be reasonable and feasible in several of the neighborhoods with significant impacts. These include Holden Heights, Holden-Parramore, and College Park. The noise walls will mitigate noise impacts associated with the Preferred Alternative. The location of the reasonable and feasible noise walls is illustrated on Figure 9.14.5.2. Prior to implementing noise walls, a detailed noise evaluation, including the desires of the benefited receptors, will be completed.

1.1.4 Neighborhood and Community Cohesion

Neighborhood and community cohesion impacts are expected to be significant within Segment 2, especially in the vicinity of the I-4/SR 408 (East/West Expressway) interchange.

Adverse effects on neighborhood and community cohesion have been a principal concern of the project. FDOT and FHWA coordinated a public outreach effort to gain a clear understanding of potential mitigation options desired by the affected residents, businesses, and organizations in order to help strengthen the community. Extensive public involvement and creative community suggestions regarding design and mitigation measures have led to the protection of, and in many instances the enhancement of, community cohesion. FDOT has conducted over 400 meetings with jurisdictions, neighborhoods, agencies, and special interest groups during the PD&E phase to gather public input. As a result, proposed mitigation measures including noise walls, urban design guidelines, pedestrian enhancements, and relocation efforts will help minimize to residential and non-residential effects, and improve the quality of life in each affected neighborhood.

It is anticipated that the Interstate improvements, combined with the proposed mitigation plans and design amenities, will help stimulate the urban renewal process in some depressed areas along the I-4 corridor,

facilitating new development. The anticipated new development will be fueled, in part, by better neighborhood and community access, improved safety and mobility, provisions for maintaining public services, and enhancements to visual and audible environments. The proposed improvements in combination with the urban design amenities are intended to increase property values and improve the quality of life for area residents.

The Preferred Alternative was selected from the feasible alternatives evaluated to minimize impacts to neighborhoods and community cohesion. For example, the Kaley-Michigan Exfiltration Alternative was selected because it had the least number of impacts to residents and businesses.

The SR 408 (East/West Expressway) Interchange Alternative 2B1 was selected because it reconfigures the interchange to eliminate the physical barrier between the Griffin Park and Holden-Parramore neighborhoods and opens the area to redevelopment. In addition, Alternative 2B1 also provides a westbound Gore Street on-ramp for better access to I-4 from the neighborhoods and additional access to downtown Orlando via the Amelia Street ramps.

SR 50 Alternative 2 minimizes impacts to community facilities such as the Salvation Army Community Center and historic resources such as Colonial Garage.

Through College Park, the Preferred Alternative results in a limited number of neighborhood and community cohesion impacts. The Typical Section C Alternative with Exfiltration minimizes impacts to residents and businesses. In addition, the Preferred Alternative maintains access to Pinehurst Avenue. As a result, access to the Calvary Assembly of God is maintained.

To minimize neighborhood and community cohesion impacts and improve the quality of life adjacent to the Interstate, the use of urban design treatments, noise barrier walls, enhanced pedestrian access, and relocation efforts in the vicinity of the I-4/SR 408 (East/West Expressway) interchanges are proposed as part of the Preferred Alternative. These urban design treatments may include:

- ◆ Ensuring that bridge structures are architecturally compatible with the design and with all other design elements;
- ◆ Reducing visual effect of retaining walls and noise walls using landscaping, texture, color, or lighting;
- ◆ Providing landscaping where possible;
- ◆ Including aquatic plantings and fountains for stormwater treatment ponds;
- ◆ Painting the right-of-way fence to blend into the surrounding context;
- ◆ Incorporating public art into appropriate areas;

- ◆ Placing utilities underground, where feasible; and
- ◆ Ensuring that color and finish of sign columns compliment surrounding vertical structure elements.

Refer to the *Urban Design Guidelines* (February 2000) for a complete description of possible urban design amenities.

Noise walls are being proposed to mitigate noise impacts and soften visual impacts. The proposed locations of the reasonable and feasible noise walls are shown on Figure 9.14.5.2.

As indicated in Section 1.1.8 and 1.1.9, the Preferred Alternative includes a provision for future development of bikeway, trail, greenway, and pedestrian facilities on cross streets. Future road widening projects within the state have been recommended to include roadway facilities to accommodate bicycle and pedestrian traffic. All Interstate overpasses proposed for reconstruction as part of this project have been designed to ensure that all cross streets will have sufficient room to incorporate proposed bikeway, trail, greenway, and pedestrian facilities as part of future cross street improvement projects. In addition, cross street overpasses proposed for reconstruction will be designed to accommodate proposed bikeway, trail, greenway, and pedestrian facilities.

The pedestrian overpass located just north of the I-4/Kaley Street interchange will not be reconstructed to accommodate the wider Interstate facility. However, FDOT has committed to provide funding for sidewalk and pedestrian facilities that provide pedestrian access from the current overpass location to the Gore Street underpass. FDOT will coordinate with the City of Orlando during the design phase of this project to determine the location of the sidewalk and pedestrian facilities.

As indicated in Section 1.1.2, displacements and relocations as a result of the Preferred Alternative will be mitigated through FDOT's relocation program. Before acquiring right-of-way, all properties are appraised on the basis of comparable sales and land use values in the area. Owners of property to be acquired will be offered and paid fair market value for their property.

1.1.5 Environmental Justice

The Preferred Alternative will result in disproportionate environmental justice impacts primarily due to the large number of individuals impacted in Segment 2, a segment with relatively high numbers of minority and low-income residents. This preliminary determination of disproportionate impacts does not take into account any offsetting benefits.

The project impacts that could become an Environmental Justice concern are the neighborhood impacts in Angebilt (BG 144.00-3), Holden Heights (BG 115.00-1, BG 115.00-2), and Holden-Parramore (BG 104.00-1, BG 105.00-1, and BG 105.00-2). The removal of community services in these

neighborhoods would likely alter the existing character of the neighborhood. Measures will be undertaken to relocate noted community services within the general neighborhood area.

Those impacts that can and will be mitigated sufficiently would not translate into adverse and disproportionate Environmental Justice impacts. Applicable mitigation is discussed above in Section 1.1.4.

In addition to the mitigation measures discussed in Section 1.1.4, FDOT will continue the community outreach program during project design and construction to ensure community concerns continue to be addressed. Specifically, the following measures are recommended, particularly in the Environmental Justice target populations.

- ◆ Continue to provide a telephone hotline to receive and respond to neighborhood concerns. In particular, this service should be available during active construction periods so those residents have an opportunity to express concerns over any acute problems that may arise in their neighborhoods. At best, this hotline should be available 24 hours per day if construction is planned for evening and early morning hours. If project personnel are not available 24 hours per day, an answering service should be provided to ensure that residents' comments can be received;
- ◆ Set up an information booth in the construction vicinity to provide a communication line between construction management and residents. This booth could disseminate information regarding specific construction activities as well as provide residents with the opportunity to express their concerns about construction activity; and
- ◆ Provide for direct mailings or community postings of any construction activity that is anticipated to be a particular nuisance (e.g., to inform residents of the period of pile driving in their neighborhood).

The I-4 Project Team has made every effort to identify and address impacts to target populations. The project is expected to have an overall positive and beneficial effect on local and regional transportation needs of target populations by improving access to the surrounding community.

1.1.6 Historic Resources

The Preferred Alternative will adversely affect two historic resources: Griffin Park Historic District and College Park Historic District.

An MOA has been developed among SHPO, FHWA, and FDOT regarding adverse effects to cultural resources and suitable mitigation measures for the Preferred Alternative. Mitigation measures for historical resource impacts have been coordinated according to the Section 106 process and the agreed upon commitments with SHPO and appropriate consulting

parties as documented in the MOA. A copy of the MOA is included in the project files.

For contributing buildings within the Griffin Park Historic District, which are slated for demolition, FDOT will prepare the following documentation:

- ◆ Drawings.- Select existing drawings, where available, with large-format negatives or photographically reproduced on archival mylar.
- ◆ Photographs - Photographs with large-format negatives of exterior and interior views.
- ◆ Written Data - Architectural data form.

Within the boundaries of the Holden-Parramore neighborhood, qualified cultural resources consultants will conduct a survey of the historic resources (to include the preparation of Florida Master Site File forms). Any survey work will exclude the historic resources located within the historic district boundaries that were previously documented for the *Cultural Resources Assessment Survey* (July 1999) for this project.

Upon the completion of the survey work, a complete National Register of Historic Places nomination proposal for the Holden-Parramore neighborhood will be prepared according to National Register Bulletin 16A, "How to Complete the National Register Registration Form" (U.S. Department of the Interior, National Park Service, 1991) and will be submitted to the Florida SHPO.

Within the proposed boundaries of the College Park Historic District, which is eligible for inclusion in the National Register of Historic Places, qualified cultural resources consultants will conduct a survey of the historic resources (to include the preparation of Florida Master Site File forms). Any survey work will exclude the historic resources located within the historic district boundaries that were previously documented in the *Cultural Resources Assessment Survey* (July 1999) for this project.

Upon the completion of the survey work, a complete National Register of Historic Places nomination proposal for the College Park Historic District will be prepared according to National Register Bulletin 16A, "How to Complete the National Register Registration Form" (U.S. Department of the Interior, National Park Service, 1991) and will be submitted to the Florida SHPO.

In addition, FDOT is committed to provide a higher level of urban design treatment for publicly sensitive historic resources that have potential impacts due to the proposed improvements and a determination of no adverse effect. These publicly sensitive historic resources include Lake Cherokee Historic District, Peckham-Phillips House, Downtown Orlando Historic District, Woodford James Maxey House, Parramore Avenue and Conley Street Historic District, and the Eatonville Historic District. Higher levels of urban design treatments may include:

- ◆ Ensuring that bridge structures are architecturally compatible with the design and with all other design elements;
- ◆ Reducing visual effect of retaining walls and noise walls using landscaping, texture, color, or lighting;
- ◆ Providing landscaping where possible;
- ◆ Including aquatic plantings and fountains for stormwater treatment ponds;
- ◆ Painting the right-of-way fence to blend into the surrounding context;
- ◆ Incorporating public art into appropriate areas;
- ◆ Placing utilities underground, where feasible; and
- ◆ Ensuring that color and finish of sign columns compliment surrounding vertical structure elements.

During the design phase, FDOT will coordinate with the Urban Design Committee. The Urban Design Committee consists of representatives from each of the jurisdictions potentially impacted by the proposed improvements.

1.1.7 Section 4(f) Impacts

As indicated in Section 1.1.6, the Griffin Park Historic District and the College Park Historic District are adversely affected by the Preferred Alternative.

In addition, the Preferred Alternative has a direct use impact on Harry P. Leu, Inc., and the Downtown Orlando District.

The MOA documents the mitigation measures for the adversely affected historic resources and publicly sensitive historic resources.

Based on the Section 4(f) Evaluation, there is no feasible and prudent alternative to the use of land from the Griffin Park Historic District, Harry P. Leu, Inc., the Downtown Orlando Historic District, and the College Park Historic District. The Preferred Alternative includes all possible planning to minimize harm to these Section 4(f) resources resulting from such use. Refer to the *Final Section 4(f) Evaluation* (August 2002) for information on avoidance alternatives and measures to minimize harm for impacted resources.

1.1.8 Bicycle, Greenway, and Trail Facilities

The Preferred Alternative will impact 28 existing and proposed bicycle, greenway, and trail facilities.

The Preferred Alternative includes provisions for future development of

bikeway, trail, and greenway facilities on cross streets. Future road widening projects within the state have been recommended to include roadway facilities to accommodate bicycle and pedestrian traffic.

All Interstate overpasses proposed for reconstruction as part of this project have been designed to ensure that all cross streets will have sufficient room to incorporate proposed bikeway, trail, and greenway facilities during future cross street improvement projects. In addition, cross street overpasses proposed for reconstruction will be designed to accommodate proposed bikeway, trail, and greenway facilities.

Construction of the Preferred Alternative is not expected to have significant long-term impacts to any of the bikeway and trail facilities existing or proposed within the Preferred Alternative. FDOT has committed to installing a fence around the limited access right-of-way and stormwater ponds adjacent to the I-4 corridor for the protection of trail users. Any additional fencing requested will be coordinated with the local jurisdictions and FDOT during the design phase of the project. Impacts to any of these facilities will only be temporary during construction of the proposed improvements. Temporary re-routings may be required due to construction activities.

A public involvement program will be implemented and maintained during the design and construction phases to ensure information regarding construction issues reaches the public and to accommodate questions or concerns.

1.1.9 Pedestrian Facilities

The Preferred Alternative will impact 72 sidewalk facilities that cross or are adjacent to I-4. In addition, there is a pedestrian overpass which crosses I-4 and will be impacted by the Preferred Alternative. The pedestrian overpass is located approximately 2,150 feet north of the I-4/Kaley Street interchange. This pedestrian overpass (a 10-foot wide concrete structure) connects Indiana Street and Grand Avenue, which leads to the Grand Avenue Elementary School.

The Preferred Alternative includes provisions for future development of pedestrian facilities on cross streets. Future road widening projects within the state have been recommended to include roadway facilities to accommodate pedestrian traffic. All Interstate overpasses proposed for reconstruction as part of this project have been designed to ensure that all cross streets will have sufficient room to incorporate pedestrian facilities during future cross street improvement projects. In addition, cross street overpasses proposed for reconstruction will be designed to accommodate pedestrian facilities.

The pedestrian overpass located just north of the I-4/Kaley Street

interchange will be demolished under the Preferred Alternative. FDOT has committed to provide funding for sidewalk and pedestrian facilities that allow for pedestrian access from the current overpass location to Gore Street underpass. FDOT will coordinate with the City of Orlando during the design phase to determine the location of the sidewalk and pedestrian facilities.

Construction of the Preferred Alternative is not expected to have significant long-term impacts to any pedestrian facilities. FDOT has committed to installing a fence around the limited access right-of-way and stormwater retention areas adjacent to the I-4 corridor for the protection of pedestrian users. Any additional fencing requested will be coordinated with the local jurisdictions and FDOT during the design phase of the project. All negative impacts to any of the pedestrian facilities will only be temporary impacts during construction of the proposed improvements. Temporary re-routings may be required due to construction activities.

1.1.10 Groundwater

The effect of the Preferred Alternative on area groundwater resources will be minimal.

The Preferred Alternative will adhere to all state requirements for providing stormwater treatment and attenuation per Section 40C-4.302 F.A.C. or local agency regulations if more stringent. The proposed stormwater management systems will be maintained to remain in compliance with state and local agency permitting requirements.

Groundwater resources in the Preferred Alternative will be protected according to the requirements of Environmental Protection Agency (EPA) and the local and state agencies having jurisdiction. Surface runoff discharges to groundwater will be avoided, since stormwater management systems will be constructed to provide the required stormwater treatment and attenuation. Prior to design and construction activities, further coordination with FDEP will be initiated to develop action plans with respect to existing interceptor wells, bridge pilings, borings, stormwater ponds, and other related construction activities. FDOT is also committed to repairing and/or replacing any interceptor wells damaged and/or disturbed due to construction activities.

Management practices that describe spill response procedures and methods to minimize the potential for impacts due to spills will be developed during design and further finalized in construction in accordance with the requirements and regulations of EPA and the local and state agencies having jurisdiction. The EPA requires a National Pollutant Discharge Elimination System (NPDES) General Permit for construction activities that require more than five acres of land disturbance. The Preferred Alternative will adhere to these permit requirements by establishing Best Management Practices (BMPs) and implementing a stormwater management plan.

1.1.11 Surface Water

The water quality impacts in relation to surface waters will be temporary and associated with construction. The proposed improvements will not have any significant long-term effect on the quality of surface waters within the Preferred Alternative. BMPs will be maintained in accordance with Section 40C-4.301, 4.302, FAC, and will be used to minimize water quality impacts during construction and achieve a no-net effect on water quality in the system.

Avoidance, minimization, and compensation measures will be evaluated during the design phase of the project to avoid surface and groundwater quality impacts. A stormwater management plan will be established and implemented during construction in accordance with the EPA NPDES General Permit for construction projects with greater than five acres of land disturbance. As required by local and state agencies, stormwater management systems, such as stormwater ponds, are required to be constructed initially, and may serve as sedimentation basins during construction if necessary.

1.1.12 Water Quality

The Preferred Alternative will not have any significant long-term effect on the quality of surface waters and groundwater (Refer to Sections 1.1.10 and 1.1.11). Short-term, construction-related impacts will be minimized to the maximum extent possible through the use of BMPs, control of surface water runoff, and strict adherence to FDOT's *Standard Specifications for Road and Bridge Construction*.

1.1.13 Wetlands

Approximately 19 percent of the total wetland area (82 out of 437 acres) within the Preferred Alternative will be impacted. These impacts will be due to roadway construction or pond construction.

Wetland impacts that will result from the construction of the Preferred Alternative will be mitigated pursuant to Section 373.4137 F.S. to satisfy all mitigation requirements of Part VI, Chapter 373, F.S. and 33 U.S.C. Section 1344. The use of the Section 373.4137 F.S. for mitigation of wetland impacts associated with the Preferred Alternative has been coordinated with U.S. Army Corps. of Engineers (ACOE), St. Johns River Water Management District (SJRWMD), and South Florida Water Management District (SFWMD). Coordination efforts have included sit-down meetings and field reviews with these agencies. At the meetings, potential impacts, minimization techniques, and mitigation measures were discussed.

Application for the permits will occur during the design phase of the project. Impacts to wetlands will be minimized and avoided where possible based on safe and sound engineering and construction practices.

Coordination with the regulatory agencies will continue during the permitting phases of the project. Wetland mitigation concepts will be determined through pre-application meetings with USACE and the Water Management Districts. Typically, mitigation requirements are based on a compilation of wetland parameters including quality, type, function, and size. All of the wetlands impacted by the Preferred Alternative have been previously impacted by development. Some of the wetlands are man-made. Based on preliminary design, it is determined that there are no practicable alternatives to the proposed construction in these wetland areas, and that avoidance of wetlands has been maximized to the greatest extent possible at this time. Further impact minimization efforts will include detailed design considerations such as steep-ended side slopes or the use of retaining walls to reduce/prevent wetland encroachment. The use of silt screens, hay bales, and other discharge prevention measures during construction will minimize impacts to wetlands within the vicinity of the Preferred Alternative. In addition, during final design, minor alignment shifts will be examined to minimize impacts to wetlands.

1.1.14 Threatened and Endangered Species

No significant impacts to regional populations of protected plant and animal species are anticipated at this time as a result of the Preferred Alternative. Coordination with federal, state, and local agencies and mitigation planning will continue during the permitting phases of the project.

Prior to construction activities, FDOT will have a qualified biologist survey all the undeveloped lands within the Preferred Alternative footprint, with a focus on appropriate habitat, to determine the presence or absence of the flora species. If new or existing occupied plants are found, the locations of the individual plants will be marked in the field. FDOT will contact the U.S. Fish and Wildlife Service (USFWS) within three days to consult on the potential removal and relocation of the plants to a suitable habitat.

For the Preferred Alternative, survey and assessment efforts will be conducted on all undeveloped lands, with a focus on those habitats of high potential, such as two large parcels of vacant land located north of Kirkman Road that contain a diverse assemblage of upland and wetland ecosystems.

If protected species are identified, appropriate permits will be obtained. Prior to construction, the locations of the individual plants will be marked in the field so they can be protected until removed and relocated to a suitable habitat.

Discussions and coordination meetings have taken place with agencies and special interest groups including Orange County, FDOT, Habitat for

Bears Campaign, Florida Department of Environmental Protection (FDEP), Florida Fish and Wildlife Conservation Commission (FWC), Florida Natural Areas Inventory (FNAI), and USFWS. Where federally protected fauna species are determined to be present, the timing and location of construction activities will be in accordance with accepted regulatory guidelines where applicable, and as established with agencies during the permitting process.

1.1.15 Visual

Visual impacts will occur throughout the Preferred Alternative; however, the most significant visual impacts will occur from Kirkman Road to Lee Road.

Visual impacts to neighborhoods and commercial centers will occur at the I-4/Kirkman Road interchange. At this location, the interchange will be at a higher elevation than the existing interchange.

The area from John Young Parkway to Lee Road will experience the greatest visual impacts of all the segments within the Ultimate and Preferred Alternative study areas. Neighborhoods, historic resources, and commercial centers located adjacent to the I-4 corridor can expect an increase in the elevation of I-4 from Orange Blossom Trail to Lee Road, the replacement of vegetated sloped embankments with retaining walls, and the roadway closer to the right-of-way.

Options to mitigate the visual impacts of the Preferred Alternative are assessed in the *Urban Design Guidelines* (February 2000). The following is a list of mitigation options that may be used to reduce the visual impacts:

- ◆ Ensuring that bridge structures are architecturally compatible with the design and with all other design elements;
- ◆ Reducing perceived height of retaining walls using terracing, landscaping, texture, color, or lighting;
- ◆ Providing landscaping where possible;
- ◆ Including aquatic plantings and fountains for stormwater treatment ponds;
- ◆ Ensuring that placement of lighting reflects a relationship with other structural elements;
- ◆ Painting the right-of-way fence to blend into the surrounding communities;
- ◆ Incorporating public art into appropriate areas;
- ◆ Placing utilities underground, where feasible;
- ◆ Ensuring that color and finish of sign columns compliment

surrounding vertical structure elements; and

- ◆ Ensuring close coordination with the public for input.

1.1.16 Noise

A total of 1,494 noise sensitive sites are predicted to experience traffic noise impacts for the Preferred Alternative.

FDOT is committed to the construction of noise barriers at the following Noise Sensitive Areas (NSA) : NSA 2-E, 2-F, 2-H, 2-I, 2-J, 3-B, 3-C, 3-D, 3-E, and 3-F (refer to Figure 9.14.5.2). However, the implementation of reasonable and feasible noise abatement is contingent upon the Preferred Alternative meeting the following conditions during the final design phase of the project:

- ◆ Detailed noise analyses during the final design process support the need for abatement;
- ◆ Reasonable cost analyses indicate that the economic cost of the barriers will not exceed the guidelines;
- ◆ Community input regarding desires, types, heights, and locations of barriers has been solicited by FDOT;
- ◆ Preferences regarding compatibility with adjacent land uses, particularly as addressed by officials having jurisdiction over such land uses, has been noted;
- ◆ Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed; and
- ◆ Any mitigating circumstances found in Part 2; Chapter 17-4.6.1 of FDOT's *PD&E Manual* have been analyzed.

1.1.17 Contamination

The Preferred Alternative could require partial or total right-of-way acquisition of 21 Medium or High rated sites.

It is recommended that the data accumulated in the project files for all sites within the 600-foot corridor rated No or Low for potential contamination be revisited during final design, prior to project right-of-way acquisition and construction. This examination should include an updated review of agency files and the public record to determine if any significant change in status has occurred since the report was prepared.

In addition, a Phase II site assessment will be conducted during the design phase of the project for those sites identified as having a potential to affect the project. Select sampling of the soil and groundwater will be conducted at those sites to help determine the absence or presence of contamination. At a minimum, soil and groundwater investigations will be conducted at those sites affected by project right-of-way acquisition to determine if

additional, more in-depth testing is required to identify the actual extent of contamination. A preferred method of testing will be determined on a site-by-site basis during final design.

Resolution of problems associated with contamination will be coordinated with the appropriate regulatory agencies and, prior to right-of-way acquisition, appropriate action will be taken, where applicable.

1.1.17.1 Hazardous Materials/Petroleum Transport

State of Florida has no designated routes for hazardous materials transport; however, Interstate travel is considered to be the safest. Improvements to the Interstate will improve safety on the freeway and help to reduce the possibility of accidents and hazardous material spills. A Health and Safety Plan and a Hazardous Materials Management Plan, which describe the spill response procedures and minimize the potential for impacts due to spills, will be developed during the design phase of the project in accordance with the requirements and regulations of EPA and the local and state agencies having jurisdiction. In addition, FDOT is committed to obtaining the necessary permits for storage of hazardous wastes associated with the construction of the Preferred Alternative.

1.1.18 Floodplains

The Preferred Alternative will impact approximately 40 acre-feet of floodplains and one regulated floodway.

Impacts to floodplains may be mitigated using the following measures:

- ◆ Stormwater management ponds; and
- ◆ Excavating existing fill adjacent to the Interstate.

Potential impacts to the regulated floodway, Shingle Creek, will be mitigated during the design phase of the project. As part of the proposed improvements, a bridge will be constructed over Shingle Creek. The construction of the bridge will include the placement of bridge piles within the floodway to accommodate the roadway widening. The piles will be placed and oriented so that no impact to this floodway will occur. A hydraulic analysis will be conducted during final design to determine if there will be any encroachment into the floodway due to the bridge piers. Any impacts to the floodway will be permitted through Orange County and FEMA. A discussion of the permits required is included in Section 1.1.20.

1.1.19 Utilities

The Preferred Alternative will impact 113 existing utilities within the project corridor. Refer to Table 9.15.1 for information on the impacted existing utilities.

Most utility companies have technologies to alter facilities without inconveniences to the customers. However, to the extent feasible, mitigation measures for utility disruptions will include:

- ◆ Maintaining utility connections in temporary locations;
- ◆ Minimizing the time without service;
- ◆ Installing alternative service before disconnecting the existing service; and
- ◆ Allowing service disruption only during periods of non-usage or minimum usage.

1.1.20 Required Permits

FDOT is committed to obtaining required permits from federal and state regulatory agencies prior to the construction of the Preferred Alternative. Permits will be required for wetland impacts as well as stormwater discharge, treatment and attenuation.

FDOT has sovereign immunity from local permits within its jurisdiction; therefore, the Preferred Alternative will not require permits from Orange County. Complying with all federal and state regulations concerning impacts to wetlands and water resources will satisfy county ordinances

Table 1.1.20.1 - Potential Permit Requirements

| Potentially Required Permits | Issuing Agency | Review and Commenting Agencies | Jurisdiction |
|--|---------------------|--------------------------------|--------------|
| Federal Dredge and Fill Permit, filed jointly with the Environmental Resource Permit (ERP) | USACE | USFWS, EPA | Federal |
| NPDES General Permit | EPA | none | Federal |
| No-Rise Certification, or a Conditional Letter of Map Revision (CLOMR) | FEMA, Orange County | none | Federal |
| Protected Wildlife Take Permit (<i>not anticipated to be needed</i>) | USFWS | none | Federal |
| Protected Wildlife Take Permit (<i>not anticipated to be needed</i>) | FWC | none | State |
| ERP | SJRWMD, SFWMD | FDHR, FDEP | State |
| Water Use Permit (dewatering) | SJRWMD, SFWMD | none | State |

pertaining to such impacts.

A list of the potential permits required prior to commencement of construction for the Preferred Alternative can be found in Table 1.1.20.1.

1.1.21 Construction Impacts

The construction activities for the Preferred Alternative will result in temporary air, noise, water quality, traffic flow, and visual impacts for those residents, businesses, and travelers within the vicinity of the construction areas of the proposed improvements.

Construction impacts will be minimized to the maximum extent possible by adherence to all state and local regulations and the FDOT's *Standard Specifications for Road and Bridge Construction*.

1.1.22 Other Commitments

The following is a description of other measures FDOT is committed to as part of the Preferred Alternative.

1.1.22.1 Special Use Lanes

FDOT is committed to reassess and define the appropriate operational use for the special use lanes (SULs) based on technical, regulatory, and public input as implementation of the Ultimate improvements on I-4 progress. Such re-assessments will include transportation and mobility effects as well as any environmental impact changes.

1.1.22.2 Cogon Grass

Prior to construction, the Preferred Alternative project limits will be inspected for the presence of cogon grass (*Imperata cylindrica*). If infestations are found, they will be eradicated with the "Soil Sterilization Treatment" under the provisions of Section 579 of the FDOT's *Standard Specifications for Road and Bridge Construction*.

1.2 RECOMMENDATIONS

FDOT recommends the improvements to the 15.4-mile section of I-4 from just south of Kirkman Road (SR 435) to just north of Maitland Boulevard (SR 414) in Orange County. This recommendation is based on input from the community, coordination with local governments and other agencies, and engineering and environmental analyses conducted as part of the I-4 PD&E Study - Section 2. The proposed improvements are anticipated to provide additional mobility options, enhance traffic safety, and enhance general use lane operations.

At the initiation of the I-4 PD&E Study - Section 2, the Long Range Transportation Plans (LRTPs) for METROPLAN Orlando and the Volusia County Metropolitan Planning Organization (MPO) included the proposed improvements to I-4 from just west of the SR 528 (Bee Line Expressway) interchange in Orange County to just east of the SR 472 interchange in Volusia County. However, the 2020 LRTP Update and Refinement performed by METROPLAN Orlando and the Volusia County MPO, respectively, identified additional financial constraints, which dictated that the Ultimate improvements for I-4 not be included in the cost feasible plan for 2020. Therefore, METROPLAN Orlando reduced the limits of the Ultimate improvements on I-4 to include the segment extending from Kirkman Road to Maitland Boulevard in Orange County (identified as the Preferred Alternative).

1.2.1 Rationale for Selection of the Preferred Alternative

The basic improvements for the Preferred Alternative involve reconstruction of existing I-4 and implementation of the following:

- ◆ Six general use lanes, three in each direction;
- ◆ Two HOV lanes, one in each direction;
- ◆ Auxiliary lanes between interchanges as needed for traffic operations;
- ◆ Reconstruction of arterial interchanges along I-4 including:
 - Kirkman Road
 - Orange Blossom Trail (US 441)
 - Michigan Street
 - Kaley Street
 - Anderson Street
 - South Street
 - Robinson Street (SR 526)
 - Amelia Street
 - SR 50 (Colonial Drive)
 - Ivanhoe Boulevard
 - Princeton Street (SR 438)
 - Par Street
 - Fairbanks Avenue (SR 426)
 - Lee Road (SR 423)
 - Maitland Boulevard (SR 414)
- ◆ Construction of drainage and retention pond facilities; and
- ◆ Mitigation components identified to ameliorate significant impacts.

As part of the PD & E Study, viable Ultimate Build Alternatives were proposed within the Preferred Alternative limits. These viable Ultimate

Build Alternatives included:

- ◆ Kaley-Michigan Stormwater Treatment Alternatives
- ◆ I-4/SR 408 Interchange and Downtown Access Alternatives
- ◆ I-4/SR 50 (Colonial Drive) Alternatives
- ◆ College Park Typical Section and Stormwater Treatment Alternatives

The following discussions provide a recommendation along with the rationale for the recommendations related to the Preferred Alternative for each of the above locations.

1.2.1.1 Kaley-Michigan Stormwater Treatment Alternatives

Two alternatives were analyzed for this portion of the I-4 corridor:

- ◆ Kaley-Michigan Pond
- ◆ Kaley-Michigan Exfiltration

The assessment of these alternatives indicated that the Kaley-Michigan Pond alternative impacted more businesses (22 versus 9), more residential dwelling units (29 versus 21), more total parcels impacted (62 versus 44), and higher project costs than the Kaley-Michigan Exfiltration Alternative.

Given the lower impacts and costs for the Kaley-Michigan Exfiltration Alternative, this alternative was included as part of the Preferred Alternative.

1.2.1.2 I-4/SR 408 Interchange Alternatives

Five alternatives were analyzed for this interchange area:

- ◆ Alternative 1A1 - Ramp Tunnel with Amelia Street Access
- ◆ Alternative 1A2 - Ramp Tunnel without Amelia Street Access
- ◆ Alternative 2B1 - Ramp Flyover with Amelia Street Access
- ◆ Alternative 2B2 - Ramp Flyover without Amelia Street Access
- ◆ Alternative 4 - Griffin Park Avoidance Alternative

In general, Alternative 4 has the least impacts and Alternatives 2B1 and 2B2 have slightly greater impacts of the five alternatives evaluated. The primary impacts associated with the alternatives were related to historic resources, most notably the Griffin Park Historic District.

An extensive coordination effort was undertaken to identify potential solutions to the transportation needs in the downtown Orlando area. A technical group of primary stakeholders was assembled to assist in the development and assessment of alternatives for the I-4/SR 408 (East/West Expressway) interchange. Participating parties included representatives from FDOT, City of Orlando, Orange County, Orlando-Orange County

Expressway Authority, Orlando Housing Authority, Downtown Development Board, and Orlando Community Redevelopment Agency. Through these efforts, Alternatives 1A1, 1A2, 2B1, and 2B2 were developed.

In addition, significant community outreach was undertaken as a part of the alternatives development. As the technical group defined concepts and alternatives, coordination with neighborhoods, community agencies, and historic interests was accomplished, which resulted in further refinements of the alternatives. In general, the conclusions of the stakeholders group indicated the following:

- ◆ Alternative 4, although avoiding direct use impacts to the Griffin Park area, was not consistent or acceptable to the City of Orlando due to sustaining impacts to access and economic opportunity in this area of downtown. Furthermore, Alternative 4 was not consistent and did not support redevelopment plans of the City and the Orlando Housing Authority.
- ◆ Alternatives 1A1 and 1A2 involve the use of a short tunnel for one of the ramp movements. The Orlando-Orange County Expressway Authority did not support Alternatives 1A1 and 1A2 due to maintenance and operation concerns. These alternatives are also more costly than the Flyover Alternatives (Alternatives 2B1 and 2B2), given the construction requirements of the tunnel.
- ◆ The City of Orlando indicated a strong support for alternatives that include the I-4 access ramps at Amelia Street. Based on traffic circulation assessments, the City indicated that this access is essential for downtown traffic circulation.
- ◆ Furthermore, through deliberations after circulation of the Draft Environmental Impact Statement (DEIS), the City of Orlando and the Orlando Housing Authority have indicated their specific preference for the Flyover Alternatives, and most specifically with the City, Alternative 2B1.

Given the wide range of support for the Flyover Alternatives, the importance of the Amelia Street access, and the land use incompatibility of Alternative 4; Alternative 2B1 was included as part of the Preferred Alternative.

1.2.1.3 I-4/SR 50 (Colonial Drive) Alternatives

Two alternatives were analyzed for the SR 50 improvements:

- ◆ Alternative 1 - Judge Cheney Avoidance, improve SR 50 to south
- ◆ Alternative 2 - Colonial Garage Avoidance, improve SR 50 to the north

Alternative 1 had higher impacts compared to Alternative 2. Most notably, Alternative 1 resulted in an adverse effect to the Colonial Garage (eligible for listing on the National Register of Historic Places [NRHP]) and the alternative impacted two buildings within the Salvation Army campus west of I-4. Alternative 2 impacted several businesses and required right-of-way near the NRHP-eligible Judge Cheney house. However, coordination with SHPO indicated that Alternative 2 did not involve adverse effects to this resource. The City of Orlando indicated support for Alternative 2.

Given the lower impacts with Alternative 2 and the local government support for Alternative 2, this alternative was included as a part of the Preferred Alternative.

1.2.1.4 College Park Typical Section and Stormwater Treatment Alternatives

Four alternatives were analyzed for the College Park area improvements:

- ◆ Typical Section C Ponds
- ◆ Typical Section C Exfiltration
- ◆ Typical Section F' Ponds
- ◆ Typical Section F' Exfiltration

The Typical Section F' alternatives involved maintaining the existing centerline alignment of I-4, which impacts Matthews Park. The Typical Section F' alternatives also required more new right-of-way, impacted more parcels, relocated more businesses, and relocated more residential dwellings than the respective Typical Section C alternatives. In contrast, the Typical Section F' alternatives were less costly than the Typical Section C alternatives.

The impact comparisons of the Pond alternatives versus the Exfiltration alternatives indicated that the Pond alternatives have more impacts. Most notably, the Pond alternatives involved 79 to 97 more residential dwelling unit relocations than the Exfiltration alternatives. In addition, the Exfiltration alternatives were less costly.

Given the Section 4(f) impacts at Matthews Park associated with the Typical Section F' alternatives, these alternatives were eliminated as part of the Preferred Alternative. In consideration of the lower cost and fewer impacts of the Exfiltration alternatives, the Typical Section C Exfiltration Alternative was included as part of the Preferred Alternative.

1.2.2 Summary of Preferred Alternative

The preliminary concept plans submitted with this report illustrate the Preferred Alternative and Ultimate concept. The preliminary concept plans include proposed alternatives for the entire 43-mile project corridor.

However, this section only provides a summary of the proposed improvements within the limits of the Preferred Alternative.

The preliminary concept plans for the Preferred Alternative are composed of three main components, which consist of the I-4 mainline improvements (both General Use Lanes [GUL] and High Occupancy Vehicle [HOV] lanes), interchanges for the GUL system, and interchanges for the HOV system. In addition, the proposed improvements to the I-4/SR 408 (East/West Expressway) interchange will impact the SR 408 (East/West Expressway) mainline.

Typical Section C is being proposed for the entire length of the Preferred Alternative. Typical Section C provides three GULs in each direction, one barrier-separated 34-foot HOV facility in each direction, and a 44-foot rail corridor in portions of the Preferred Alternative project corridor. To satisfy operational requirements such as lane balance, additional auxiliary lanes are also proposed.

The proposed Preferred Alternative is summarized by segment in the following sections.

1.2.2.1 Segment 1

The limits of the Preferred Alternative begin within the Segment 1 limits and extend from just south of Kirkman Road to John Young Parkway. The following is a summary of the Preferred Alternative for Segment 1:

I-4 Mainline Improvements

Proposed improvements to the I-4 mainline include:

- ◆ Providing three GULs, one HOV lane, and one auxiliary lane in each direction;
- ◆ Providing a 44-foot rail corridor east of the Kirkman Road interchange to the end of the Segment 1 limits;
- ◆ Providing retention ponds to treat stormwater runoff; and
- ◆ Tying into the existing conditions at the Universal Boulevard interchange.

GUL Interchange Improvements

Improvements to the GUL interchanges within Segment 1 include:

- ◆ Kirkman Road - Replacing existing interchange with a partial access 4-level directional interchange with one loop ramp;
- ◆ Florida's Turnpike - Existing interchange configuration will remain the same; and
- ◆ Conroy Road - Existing interchange configuration will remain the

same.

HOV Interchange Improvements

The Preferred Alternative will provide HOV interchanges at the following locations:

- ◆ Kirkman Road - Providing HOV slip ramps south of the Kirkman Road interchange. These slip ramps start/end the HOV system;
- ◆ Kirkman Road - Providing full directional HOV direct access ramps at the Kirkman Road interchange; and
- ◆ Conroy Road - Providing full directional HOV slip ramps at the Conroy Road interchange.

1.2.2.2 Segment 2

The following is a summary of the Preferred Alternative for Segment 2:

I-4 Mainline Improvements

Proposed improvements to the I-4 mainline include:

- ◆ Providing three GULs, one HOV lane, and one auxiliary lane in each direction;
- ◆ One additional auxiliary lane will be provided in portions of Segment 2;
- ◆ Providing a 44-foot rail corridor to approximately 2,600 feet south of Rio Grande Avenue. The 44-foot rail corridor will then be closed for the remaining portion of Segment 2; and
- ◆ Providing a combination of retention ponds and exfiltration to treat stormwater runoff.

Proposed improvements in Segment 2 will also impact the SR 408 (East/West Expressway) mainline. These impacts affect interchanges along SR 408 (East/West Expressway) from Tampa Street to Bumby Avenue.

GUL Interchange Improvements

Improvements to the GUL interchanges within Segment 2 include:

- ◆ John Young Parkway - Maintaining the approved interchange concept;
- ◆ Orange Blossom Trail - Modifying the westbound left-side exit to a right-side exit. Maintaining all other movements;
- ◆ Michigan Street/Kaley Street - Combining Michigan Street and Kaley Street into a full access, inverted diamond interchange. Providing two-lane, one-way frontage road connections between

Kaley and Michigan with U-turns: Interchange modifications will require closure of Unitah Avenue at Michigan Street and Tallokas Avenue at Kaley Street. In addition, Avondale Avenue will be closed at Kaley Street and from Miller Street to Indiana Street;

- ◆ SR 408 (East/West Expressway) - Providing a full access directional four-level interchange with a loop ramp and flyover ramps;
- ◆ Gore Street - Eliminating I-4 westbound off-ramp. The I-4 westbound on-ramp will be provided. The westbound Gore Street on-ramp will result in the closure of Avondale Avenue from Columbia Street to Miller Street. Avondale Avenue will be opened at Gore Street;
- ◆ Hughey Avenue/Garland Avenue - Providing direct access ramp from eastbound I-4 to Garland Avenue and from Hughey Avenue to westbound I-4;
- ◆ Anderson Street - Modifying existing interchange to a partial access diamond interchange for westbound I-4 to Anderson Street and Anderson Street to eastbound I-4. Relocating Anderson Street and providing a two-way street from Orange Avenue to Division Avenue;
- ◆ Robinson Street - Eliminating eastbound I-4 off-ramp and westbound I-4 on-ramp;
- ◆ Amelia Street - Modifying existing interchange to a partial access diamond interchange for eastbound I-4 to Amelia Street and Amelia Street to westbound I-4; and
- ◆ SR 50 (Colonial Drive) - Replacing existing interchange with a full access single point interchange. Providing direct access to Hughey Avenue and Garland Avenue. Garland Avenue converted to one-way north of SR 50. Hughey Avenue will be realigned between Concord Street and SR 50. Interchange modifications will result in closure of Concord Street at Garland Avenue.

HOV Interchange Improvements

The Preferred Alternative will provide HOV interchanges at the following locations:

- ◆ Orange Blossom Trail - Providing HOV slip ramps to and from the HOV system at the Orange Blossom Trail interchange; and
- ◆ South Street - Modifying existing interchange to a full access diamond interchange for HOV access only. Providing a two-way street from Orange Avenue to Division Avenue.

1.2.2.3 Segment 3

The following is a summary of the Preferred Alternative for Segment 3:

I-4 Mainline Improvements

Proposed improvements to the I-4 mainline include:

- ◆ Providing three GULs, one HOV lane, and one auxiliary lane in each direction;
- ◆ Closing the 44-foot rail corridor throughout Segment 3; and
- ◆ Providing exfiltration to treat stormwater runoff with the exception of the Ivanhoe Boulevard interchange. At this interchange, a combination of exfiltration and retention ponds will treat stormwater.

GUL Interchange Improvements

Improvements to the GUL interchanges within Segment 3 include:

- ◆ Ivanhoe Boulevard - Modifying the existing interchange to a partial access directional interchange for westbound I-4 to Ivanhoe Boulevard and Ivanhoe Boulevard to eastbound I-4;
- ◆ Princeton Street - Existing interchange configuration will remain the same: Interchange modifications will acquire right-of-way on Cornell Avenue south of Princeton Street and Dade Avenue north of Princeton Street;
- ◆ Par Street - Existing interchange configuration will remain the same. Interchange modifications will close Cornell Avenue at Par Street; and
- ◆ Fairbanks Avenue - Existing interchange configuration will remain the same.

HOV Interchange Improvements

The Preferred Alternative will provide an HOV interchange at the following location:

- ◆ Ivanhoe Boulevard - Providing HOV direct access ramps to and from the east.

1.2.2.4 Segment 4

The limits of the Preferred Alternative end within the Segment 4 limits and extend from just south of Lee Road to just north of Maitland Boulevard. The following is a summary of the Preferred Alternative for Segment 4:

I-4 Mainline Improvements

Proposed improvements to the I-4 mainline include:

- ◆ Providing three GULs, one HOV lane, and one auxiliary lane in each direction;

- ◆ Closing 44-foot rail corridor within this portion of Segment 4;
- ◆ Providing retention ponds to treat stormwater runoff with the exception of south of Lee Road to the Lee Road interchange. At this location, exfiltration will treat stormwater runoff; and
- ◆ Tying into the existing facility north of Maitland Boulevard interchange.

GUL Interchange Improvements

Improvements to the GUL interchanges within Segment 4 include:

- ◆ Lee Road - Existing interchange configuration will remain the same; and
- ◆ Maitland Boulevard - Replacing existing interchange with loop ramps in northeast and southwest quadrants. Directional unsignalized left-turn ramps from Maitland Boulevard to westbound and eastbound I-4.

HOV Interchange Improvements

The Preferred Alternative will provide HOV interchanges at the following locations:

- ◆ Lee Road - Providing HOV slip ramps to and from the west north of the Lee Road interchange; and
- ◆ Maitland Boulevard - Providing HOV slip ramps north of the Maitland Boulevard interchange. These slip ramps signify the start/end of the HOV system.

to meet the purpose and need of the Ultimate project, for the portion contained in the adopted LRTP.

The purpose of the Ultimate project is to enhance mobility on the Interstate in the primary commuter-shed of the Orlando Metropolitan area. I-4 is considered an integral part of Central Florida's transportation system. The Interstate carries the greatest number of people and vehicles of any transportation facility in the region and serves many of the area's primary activity centers. I-4 was originally designed to serve long distance travelers; however, the highway has evolved to one that serves many shorter trips.

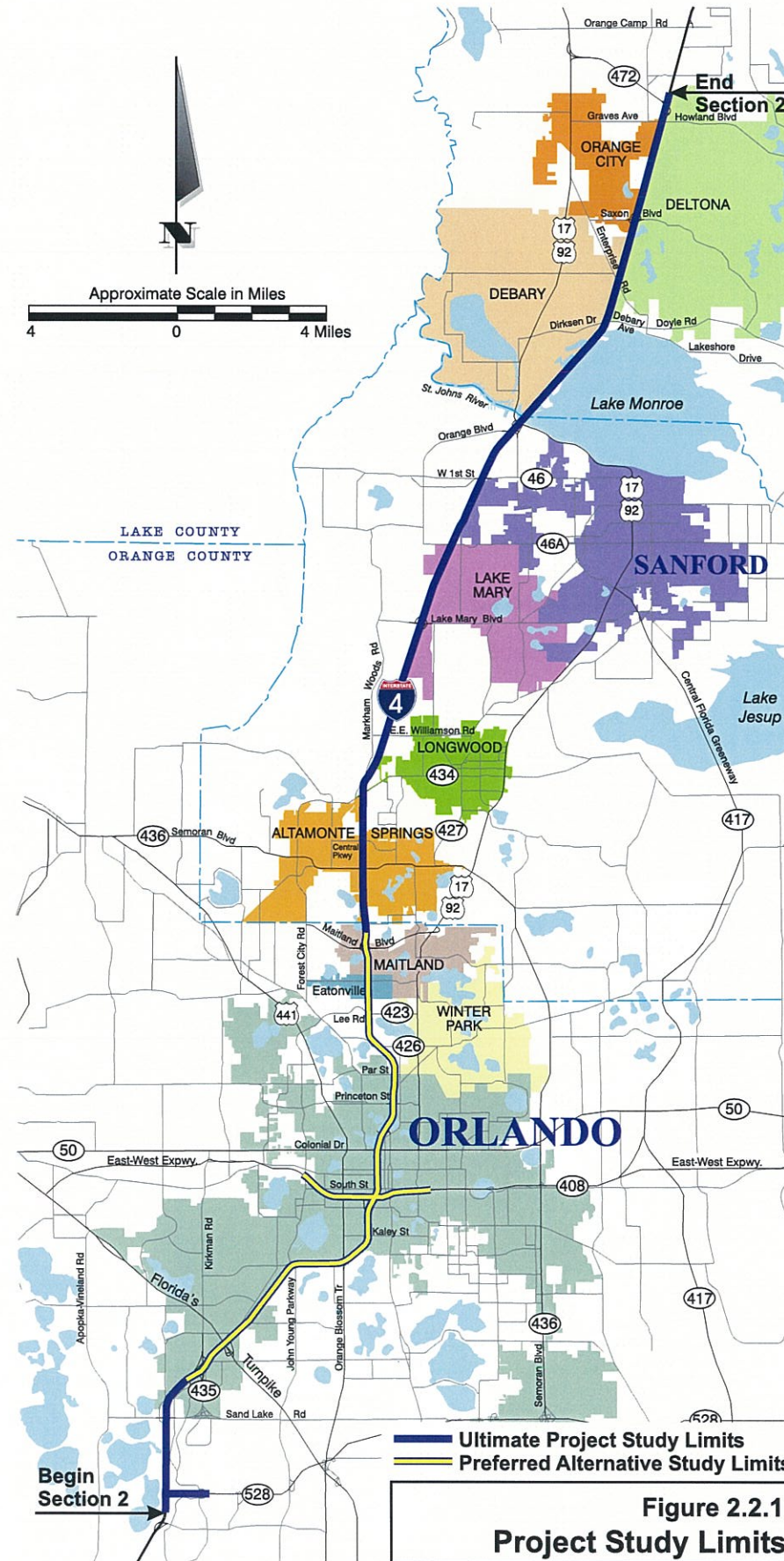
Central Florida has experienced tremendous growth during the past several decades. A significant amount of this growth is occurring within close proximity to I-4. In recent years, congestion on I-4 has extended well beyond normal peak hours and major accidents have closed I-4, subsequently resulting in traffic congestion throughout the metropolitan area. Congestion and delays on I-4 and the parallel arterial highways are now considered to be the major transportation problem facing the region. Travel conditions in Central Florida are expected to further deteriorate due to the continuing trend of increased growth in population and tourism.

The specific purpose of the Preferred Alternative is to improve mobility within the tourist related development in Orange County, Orlando Central Business District (CBD), and the commuter-shed of Orlando, Maitland, and Altamonte Springs. The project will also enhance the connectivity between I-4 and SR 408 (East/West Expressway). The project limits were identified based on the traffic influence area of the tourist-related development in Orange County, Orlando CBD, and commuters traveling to the Orlando metropolitan area.

This Preliminary Engineering Report is in accordance with the Florida Department of Transportation's (FDOT) *Project Development & Environment (PD&E) Manual*. This report presents information on project need, existing conditions and development and evaluation of alternatives, as well as engineering detail of the proposed improvements.

Several additional documents and studies were prepared as support documents to this Preliminary Engineering Report. These companion studies include:

- ◆ Typical Section and Concept Refinement Technical Memorandum (January 1999)
- ◆ Environmental Impact Statement (August 2002)
- ◆ Section 4(f) Evaluation (August 2002)
- ◆ Wetland Evaluation Report (May 2000)
- ◆ Endangered Species Biological Assessment (May 2000)



I-4 PD&E Study - Section 2

- ◆ Noise Impact Report (August 2002)
- ◆ Air Quality Report (April 2000)
- ◆ Systems Access Modification Report (April 2000) and SAMR Update (May 2002)
- ◆ Location Hydraulics Report (August 2000)
- ◆ Pond Siting Report (August 2000)
- ◆ Cultural Resource Assessment Study (July 1999)
- ◆ Contamination Screening Evaluation Report (May 1999)
- ◆ Utility Impact Report (September 1998)
- ◆ Water Quality Impact Evaluation (May 1999)
- ◆ Scoping Summary Report (September 1997)
- ◆ Alternatives Public Information Workshop Summary (August 1998)
- ◆ Socioeconomic and Environment Report (August 2000)
- ◆ Urban Design Guidelines (February 2000)
- ◆ Exfiltration Trench Report (August 2000)
- ◆ Conceptual Stage Relocation Plan (April 2001)
- ◆ Preliminary Roadway Soil Survey (June 2000)
- ◆ Intelligent Transportation Systems Plan (November 2000)
- ◆ Prototype Ramp Metering Feasibility Analysis (November 2000)
- ◆ Constructability Assessment (September 2000)
- ◆ Geotechnical Report (June 2000)
- ◆ Public Hearing Summary (July 2002)

2.2 PROJECT DESCRIPTION

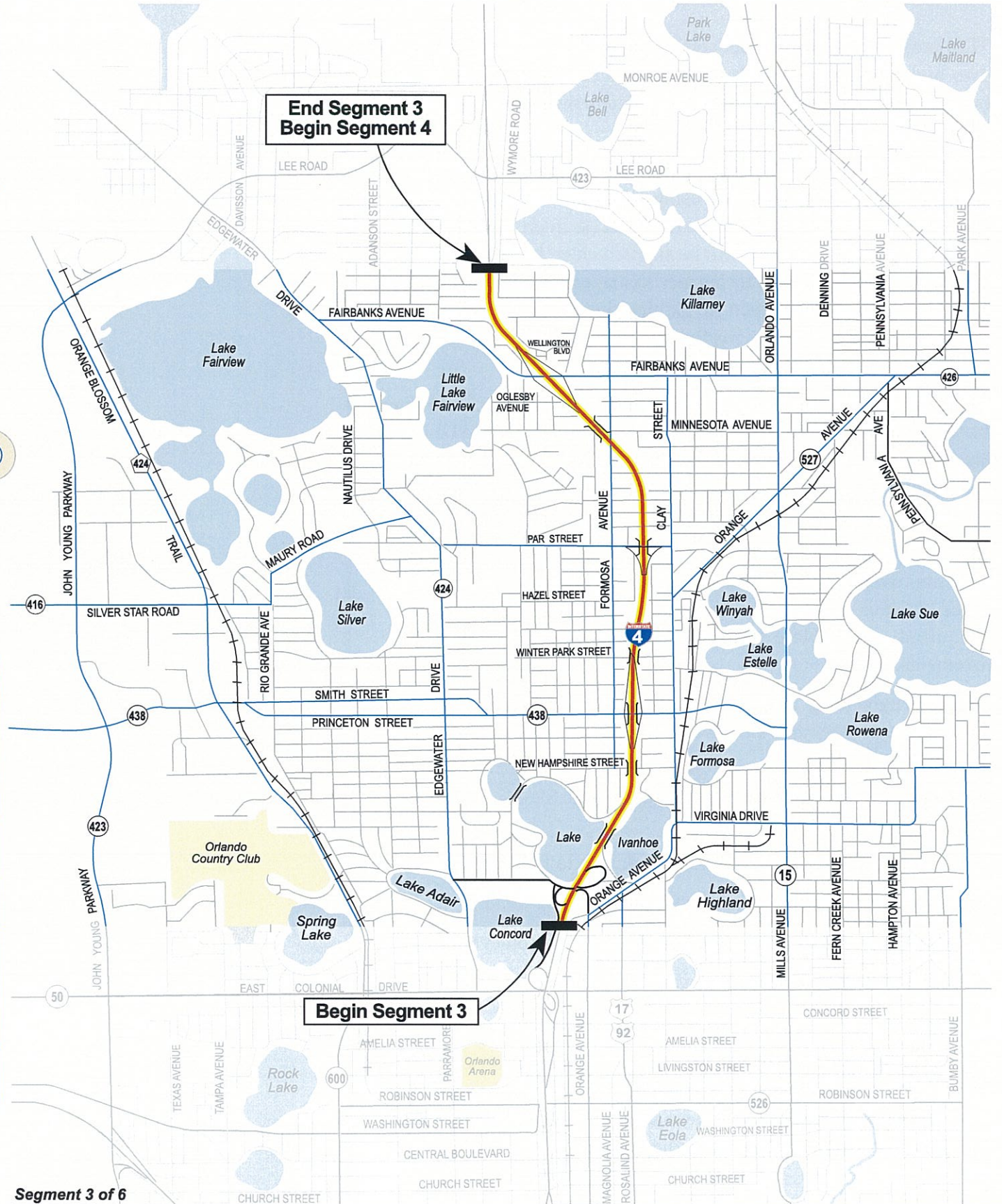
The Ultimate project limits for the I-4 PD&E Study – Section 2 are from just west of the SR 528 (Bee Line Expressway) interchange in Orange County to just east of the SR 472 interchange in Volusia County. This represents a distance of approximately 43 miles. The Preferred Alternative limits are from SR 435 (Kirkman Road) to SR 414 (Maitland Boulevard) in Orange County, a distance of 15.4 miles. In addition, the Ultimate project and Preferred Alternative includes improvements to portions of SR 408 (East/West Expressway). The Ultimate project also includes improvements to SR 528 (Bee Line Expressway). The study limits along SR 528 extend from the interchange with I-4 to approximately 3,200 feet east of the interchange with International Drive. The study limits along SR 408 extend from approximately Tampa Avenue to Bumby Avenue. Figure 2.2.1 presents the project study limits.



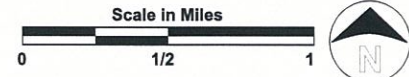
Segment 2 of 6



Preferred Alternative



Segment 3 of 6



Preferred Alternative

I-4 PD&E Study - Section 2

Figure 2.2.2 Project Segments

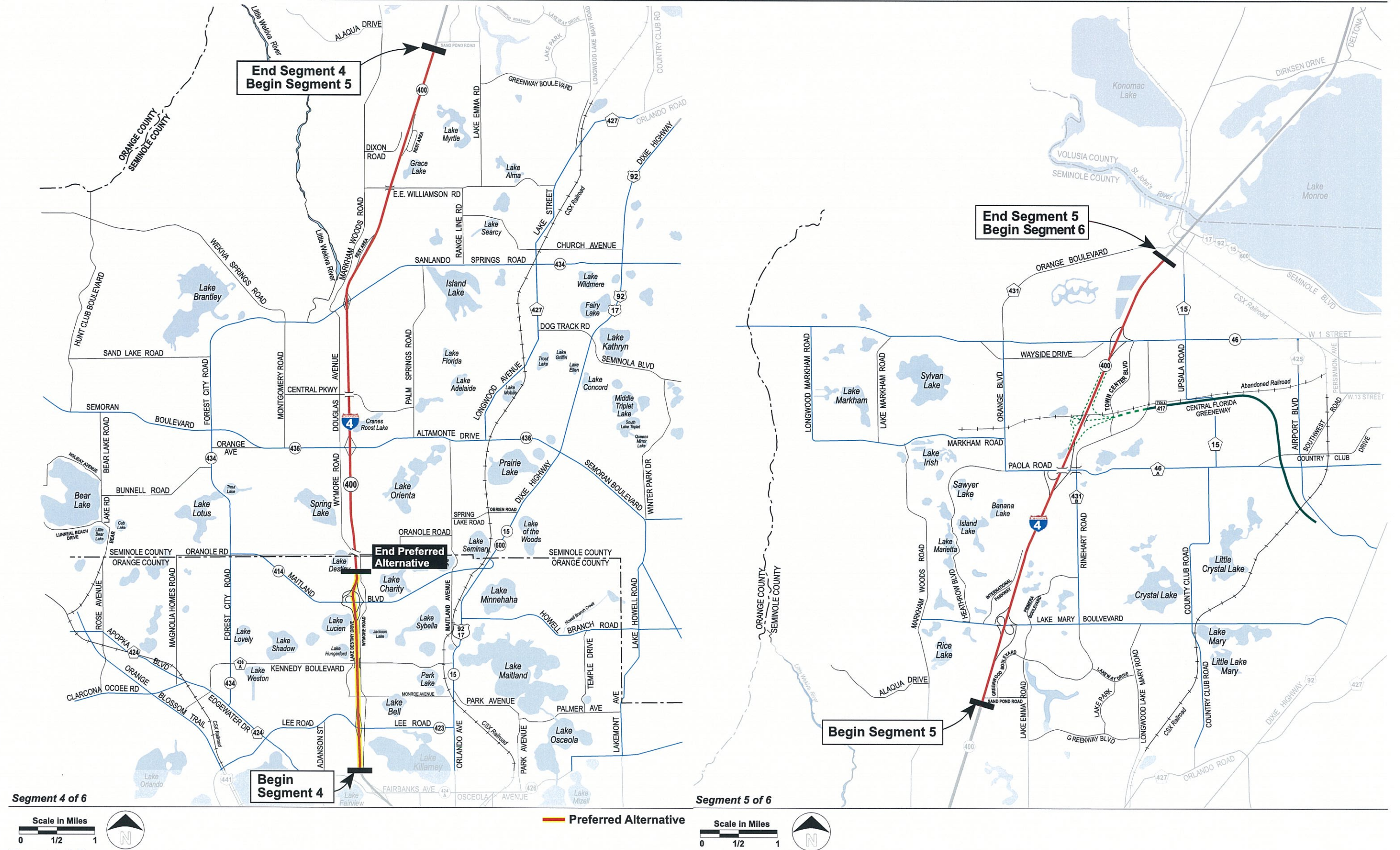
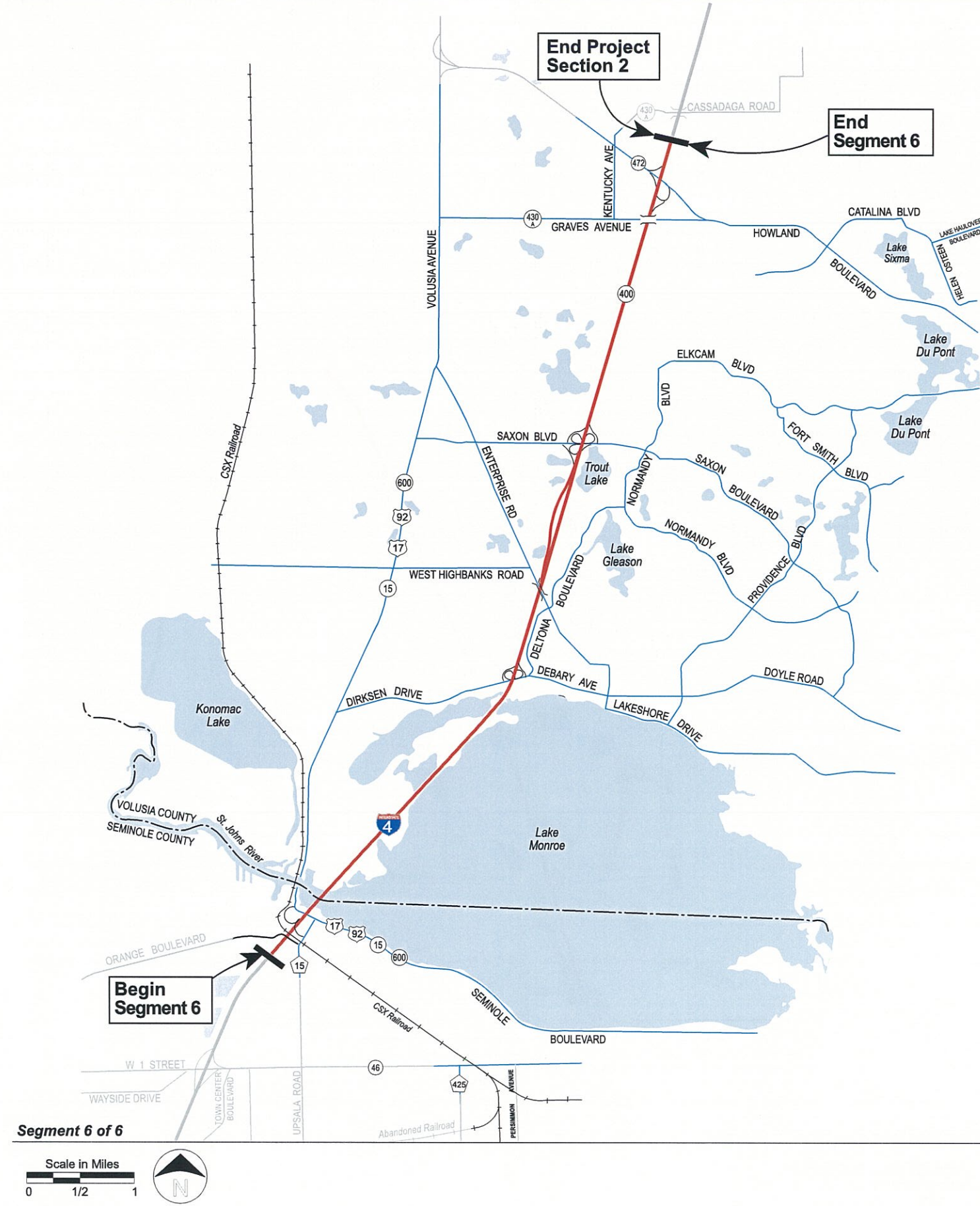


Figure 2.2.2
Project Segments

I-4 PD&E Study - Section 2



Segment 6 of 6

Scale in Miles
0 1/2 1

N

I-4 PD&E Study - Section 2

Figure 2.2.2
Project Segments

I-4 is an integral part of Central Florida's transportation system. The Interstate carries the greatest number of people and vehicles of any transportation facility in the region and serves many of the area's primary activity centers. When the Interstate opened in February 1965, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway has evolved to one that also serves many shorter trips. Today, the highway serves as the primary link between hotel/motel complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. In addition, since I-4 is the only north-south limited-access facility that is radially oriented between the predominant employment centers and the major suburbs, it has become the primary commuting corridor in the Orlando metropolitan area.

Tremendous growth in Central Florida for the past two decades has made it difficult for the transportation system to keep pace with travel demand. A significant amount of this growth is occurring within close proximity to I-4. In recent years, congestion on I-4 has extended well beyond normal peak hours and at times major crashes have closed I-4, resulting in traffic congestion throughout the project area. Congestion and delays on I-4 and the parallel arterial highways are now considered to be the major transportation problem facing the region. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

Projections of future population and employment in the region indicate that travel demand will continue to increase well into the 21st century. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time (up to four hours) in both the morning and evening peak periods. Due to these congested conditions, commuter travel times will continue to increase, the movement of goods through the urban area will be slower and the deliveries of goods within the urban area will be forced to other times during the day.

The need for improvements to I-4 is illustrated by the important transportation roles I-4 serves for the Orlando metropolitan area, the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors and employees can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.

3.1 CAPACITY DEFICIENCIES

The concept of level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and the perception by motorists and/or passengers. Six levels of service are defined for each type of facility for which analysis procedures are available. They are given letter designations, A to F, with LOS A representing the best operating conditions and LOS F the worst. In general, the various levels of service are defined as follows for uninterrupted flow freeways:

- ◆ LOS A represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high.
- ◆ LOS B is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A.
- ◆ LOS C is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- ◆ LOS D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience.
- ◆ LOS E represents operating conditions at or near capacity. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers.
- ◆ LOS F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point.

The following sections summarize existing capacity constraints and projected future capacity constraints in relation to the need for the proposed improvements. A detailed discussion of existing and future traffic conditions is provided in Section 6 of this report and the *I-4 System Access Modification Report (SAMR)* (April 2000) and the *I-4 SAMR Update* (May 2002). For the purposes of the *SAMR*, the limits of the three I-4 PD&E studies were combined to provide an in-depth understanding of the operation of the I-4 corridor from CR 532 in Osceola County to I-95 in Volusia County. However, only traffic analyses for the Ultimate study limits of the I-4 PD&E Study - Section 2 have been provided in this report.

3.1.1 EXISTING CONDITIONS (1996)

Freeway

The results of the freeway operational analyses indicate that sections of the freeway are operating near capacity and others are operating over capacity, resulting in excessive delays and congestion. As shown on Figure 3.1.1.1, I-4 is operating at LOS F from SR 528 (Bee Line Expressway) to SR 436, from SR 434 to Lake Mary Boulevard and from US 17-92 to Dirksen Drive/DeBary Avenue. LOS E conditions occur from SR 436 to SR 434 and from Lake Mary Boulevard to US 17-92. LOS D conditions occur from Dirksen Drive/DeBary Avenue to SR 472, the end of the project.

The results of the ramp junction analyses indicate that the majority of the ramps are operating over capacity, resulting in queues on the I-4 mainline and associated cross streets. Figure 3.1.1.1 shows the I-4 interchanges that operate over capacity. It should be noted that some of the failing ramp junctions for the interchanges shown on Figure 3.1.1.1 operate at LOS E or better. However, if a majority of ramp junctions at an interchange operate at LOS F, the interchange is considered over capacity.

Five weaving sections including Michigan Street to Kaley Avenue (eastbound and westbound), Kaley Avenue to SR 408 (East/West Expressway) (eastbound and westbound) and Anderson Street to Robinson Street (eastbound) were also analyzed. The results of the analyses indicate that the Michigan Street to Kaley Avenue weaves are operating at LOS F; the Kaley Avenue to East/West Expressway weaves are operating at LOS E; and the Anderson Street to Robinson Street weave is operating at LOS D.

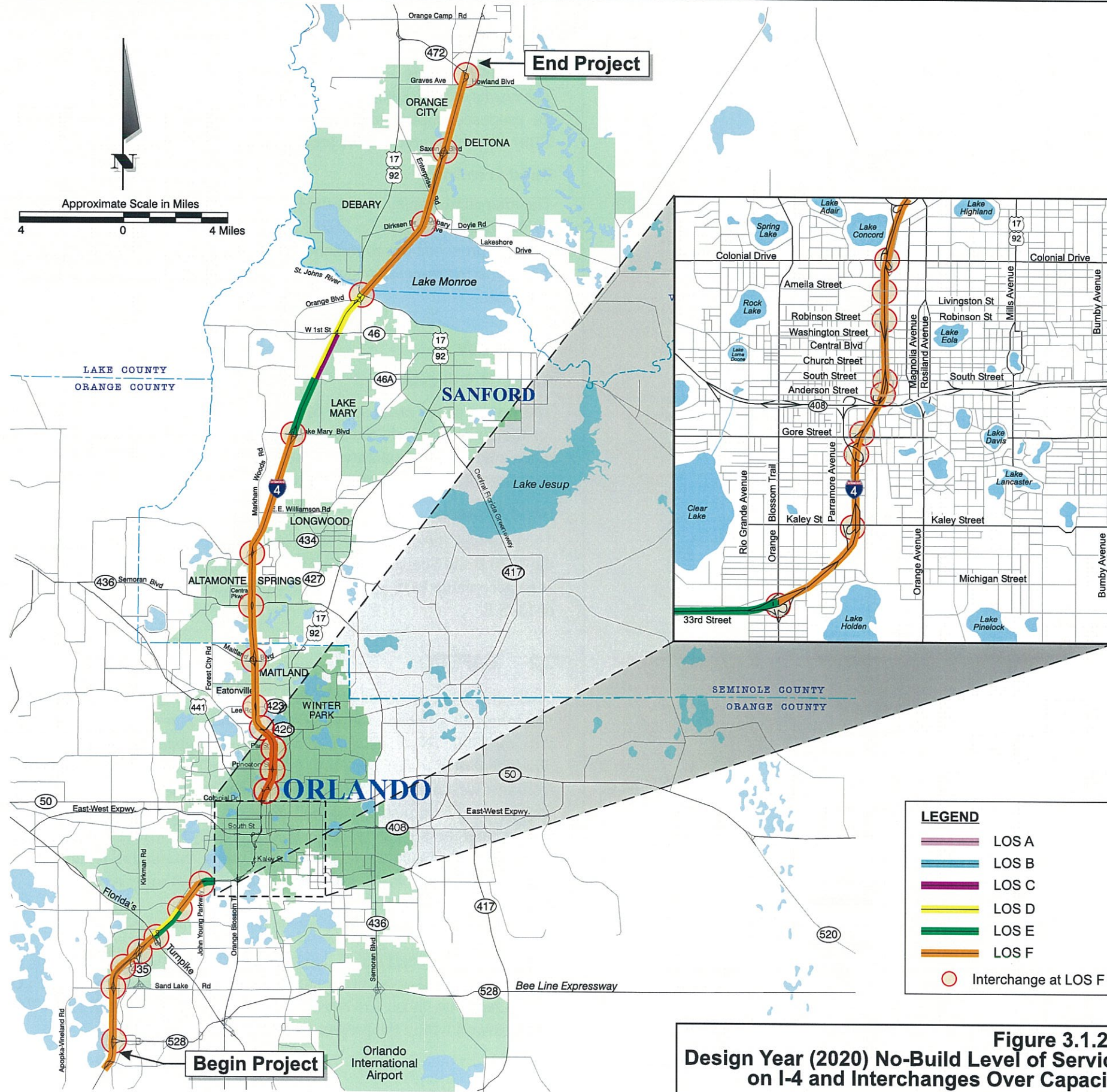
Intersections

The signalized intersection analyses for the AM and PM peak periods show the majority of the intersections operating with a stable flow (LOS D or better).

The unsignalized intersection analyses also determined that the majority of the intersections are operating with a stable flow for both the AM and the PM peak periods.

Crossroads

The existing cross street ramp analyses indicate that most of the ramps and weaving sections on the cross streets operate at an acceptable LOS. Of the 40 ramp junctions analyzed, 38 are operating at LOS D or better.



I-4 PD&E Study - Section 2

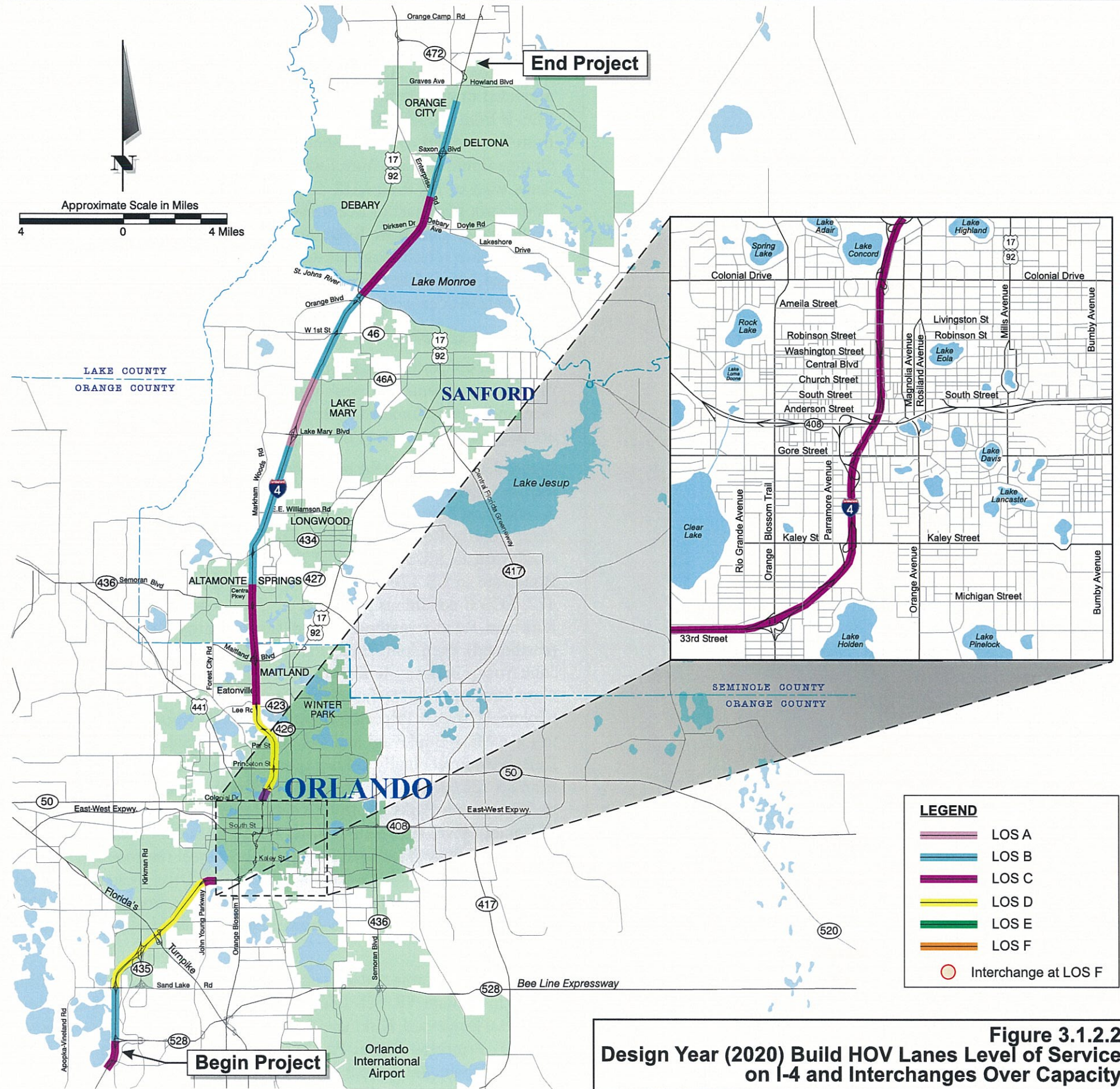
Figure 3.1.2.2 presents the generalized LOS for the HOV lanes along the project corridor for 2020. As shown in Figure 3.1.2.2, the HOV lanes are projected to operate at LOS A from Lake Mary Boulevard to CR 46A; LOS B from SR 528 (Bee Line Expressway) to west of Sand Lake Road, from Central Parkway to west of Lake Mary Boulevard, from CR 46A to Orange Boulevard and from Enterprise Road to the terminus of the HOV lanes west of SR 472; LOS C from John Young Parkway to Ivanhoe Boulevard, from east of Lee Road to Central Parkway and from Orange Boulevard to Enterprise Road; and finally at LOS D from west of Sand Lake Road to John Young Parkway and from Ivanhoe Boulevard to east of Lee Road. None of the HOV direct-access ramps or slip ramps are projected to operate over capacity in 2020.

General Use Lanes

The analyses performed for the basic freeway segments, ramp merge/diverge movements and weaving section operations for the general use lanes indicate that most of the basic freeway segments and ramp junctions are projected to operate at LOS E or better.

Figure 3.1.2.3 presents the projected LOS for the I-4 general use lanes and the interchanges operating over capacity for 2020 with the Build Scenario. As shown in Figure 3.1.2.3, I-4 is projected to operate at LOS D or better from Conroy Road to Florida's Turnpike (westbound), from Ivanhoe Boulevard to SR 50 (Colonial Drive) (westbound), from Lake Mary Boulevard to US 17-92 and from Dirksen Drive/DeBary Avenue to SR 472. LOS E conditions are projected for I-4 from Florida's Turnpike to Kirkman Road (westbound) and from Conroy Rd to Kirkman Rod (eastbound), from John Young Parkway to South Street (eastbound), from John Young Parkway to Kaley Street/Michigan Street (eastbound), from Gore Street to SR 408 (East/West Expressway) (eastbound), from SR 50 (Colonial Drive) to Princeton Street (eastbound), from Maitland Boulevard to Lake Mary Boulevard and from Orange Boulevard to Dirksen Drive/DeBary Avenue. Finally, I-4 is projected to operate over capacity (LOS F) from SR 528 (Bee Line Expressway) to Kirkman Road, from Conroy Road to John Young Parkway, from Kaley Street/Michigan Street to SR 50 (Colonial Drive) (eastbound), from SR 50 to South Street (westbound), from Kaley Street/Michigan Street to Gore Street (eastbound), from SR 408 (East/West Expressway) to SR 50 (Colonial Drive) (eastbound), from Princeton Street to Maitland Boulevard (eastbound), from Princeton Street to SR 426 (westbound) and from Lee Road to Maitland Boulevard (eastbound).

I-4 interchanges projected to operate over capacity in 2020 with the Build Scenario include SR 528 (Bee Line Expressway), Sand Lake Road, Universal Boulevard, Kirkman Road, Conroy Road, John Young Parkway, US 441, Princeton Street, Par Avenue, Fairbanks Avenue, Lee Road, Maitland Boulevard, and SR 434. Refer to Figure 3.1.2.3 for the locations of the interchanges operating over capacity.



Intersections

No-Build Scenario

The results of the 2020 No-Build Intersection analyses indicate that without the proposed improvements, the majority of the intersections along the Ultimate project corridor are projected operate below the LOS D standard.

Build Scenario

The intersection analyses for the Build Scenario yielded results similar to the No-Build Scenario for 2020. The results of the analyses indicate that with the proposed improvements, the majority of the intersections along the Ultimate project corridor are projected to operate below the LOS D standard.

Crossroads

No-Build Scenario

The results of the cross street ramp merge, diverge, and weave analyses for the 2020 No-Build Scenario indicate that approximately 40% of the ramp junctions will operate near or over capacity and 83% of the weave sections will operate near or over capacity.

Build Scenario

The results of the cross street ramp merge, diverge and weave analyses for the 2020 Build Scenario indicate that most the ramp junctions will operate at an acceptable LOS and all of the weave sections will operate at LOS E or LOS F.

3.2 SAFETY

Crash data were provided by FDOT for I-4 for a three-year period from 1997 through 1999 and for SR 408 (East/West Expressway) from 1997 through 1999. (Note: *This three year period summarizes the most recent crash data available.*) The crash data provided include the I-4 corridor from just west of the I-4/SR 528 (Bee Line Expressway) interchange in Orange County to just east of the I-4/SR 472 interchange in Volusia County, and the SR 408 (East/West Expressway) corridor from just west of the SR 408 (East/West Expressway)/Tampa Avenue interchange to just west of the SR 408 (East/West Expressway)/Bumby Avenue interchange.

Crash data were analyzed to determine high crash roadway sections, the types of crashes that occurred and the associated economic loss per year associated with those roadway sections on I-4 and SR 408 (East/West Expressway) within the project study area.

- ◆ Winter Park Comprehensive Plan 1990 (adopted August 1991; amended through May 1995)
- ◆ The Town of Eatonville Community Redevelopment Plan (adopted August 1997)
- ◆ City of Maitland Comprehensive Development Plan 2001 - 2020 (adopted 1985; amended through April 2002)
- ◆ Vision 2020 Comprehensive Plan, Seminole County Florida (adopted 1991; amended through February 2002)
- ◆ The City of Altamonte Springs City Plan 2005 (adopted April 1991; amended through February 1997)
- ◆ The City of Longwood, Florida - 1991 - 1996 Comprehensive Plan (adopted 1991; amended through February 1997)
- ◆ The City of Lake Mary Comprehensive Plan (adopted September 2000)
- ◆ The City of Sanford Comprehensive Plan (adopted December 2000)
- ◆ Volusia County Comprehensive Plan (adopted April 1990, amended through April 2000)
- ◆ The City of DeBary, Florida Comprehensive Plan (adopted July 1996; amended through August 2001)
- ◆ The City of Orange City, Florida Comprehensive Plan (adopted January 2002)

Overall, the regional and local government comprehensive plans were found to be consistent with the project goals and objectives. Each independent comprehensive plan has a common transportation goal to create an efficient multi-modal transportation system that will promote increased public safety and greater economic viability, in coordination with existing and future land use activities.

It should be noted that the regional and local government comprehensive plans have not been approved by FHWA and therefore do not constitute a Federal action or endorsement.

3.4 SOCIAL DEMANDS AND ECONOMIC DEVELOPMENT

This section provides an overview of population, economics and land use characteristics of the tri-county (i.e., Orange, Seminole and Volusia) area, which includes the Ultimate project and Preferred Alternative study areas. A detailed discussion of socioeconomic conditions within the tri-county area is presented in the *Final Environmental Impact Statement (FEIS)* (August 2002).

In general, the tri-county area population is growing rapidly and has a diverse ethnicity and age constituency. The regional growth is anticipated to be greater than any other area in Florida through 2020.

The rapidly expanding population has caused an increase in housing, commercial, employment and industrial growth and construction in recent years. The major developments and employment centers are summarized within this section.

3.4.1 Population and Employment

Growth in resident population, visitor population and employment, combined with the choice of where to live and where to work, are the primary factors contributing to increases in travel demand in the tri-county area. Projections of future population and employment in the region indicate that travel demand will continue to increase well into the 21st century.

Population

In 1996, the tri-county area had a population of approximately 1.5 million, representing approximately 11% of the State of Florida's total population. By 2020, the population of the tri-county area is expected to increase by 57% to approximately 2.4 million persons. Orange County has a higher, more densely structured resident population than Seminole and Volusia Counties. Between 1996 and 2020, a 24-year period, the population of Orange County is projected to increase 54%, from 777,556 to 1,197,964. Seminole County is expected to see a 72% increase from 329,031 to 565,712. Volusia County's population is projected to increase 51% to 613,973 in 2020, from 407,199 in 1996.

The tri-county area's visitor population is expected to increase significantly by 2020. Orange County's visitor population is projected to increase 84% to 324,277 in 2020 from 176,041 in 1996. Seminole County is expected to increase its visitor population by 97%, to 11,563 in 2020 from 5,882 in 1996. Volusia County's visitor population is projected to increase 8% from 16,260 in 1996 to 17,486 in 2020. The high percentage increase in visitor population to Orange and Seminole Counties can be largely attributed to a high concentration of tourist venues, hotel/motel units and expansions of the Orlando International Airport and the Orlando Sanford Airport.

Visitor population to Osceola County also affects traffic conditions within the project study area. In 1996, visitors to Osceola County were 53,329. Osceola County's visitor population is projected to increase 76% to 93,621 by 2020.

Employment

Employment within the tri-county area is expected to continue its strong rate of growth. This is partially attributed to the job opportunities created by the increase in the number of visitors to the area. From 1996 to 2020, employment in the tri-county area is expected to increase 68% from 928,468 in 1996 to 1,563,322 by 2020.

In 1996, employment in Orange County was approximately 596,709. This represents approximately 64% of the tri-county area total of 928,468. Through 2020, Orange County will account for almost two-thirds of the increase in the tri-county area employment growth, increasing by 71% to 1,022,401.

Although Orange County is the center for population and economic growth for the tri-county area, Seminole County has the highest percentage increase in employment. In Seminole County, employment is projected to increase 80% from 157,239 in 1996 to 283,080 in 2020. This represents approximately 20% of the total employment growth for tri-county area.

In 1996, employment in Volusia County was approximately 174,520. Through 2020, Volusia County employment is projected to increase by 48% to 257,841. This represents approximately 13% of the total employment growth for the tri-county area.

Employment Industry

Tourism is the leading industry in the tri-county area, evidenced by the fact that services and retail trade account for over half of the employment in the region. In 1990, the services and retail trade sectors accounted for 61% of all employment for Orange County. In Seminole and Volusia Counties, these sectors accounted for 59% of the employment. Manufacturing, the third largest employment sector, accounted for 10% of the employment for Orange County, 12% for Seminole County and 11% for Volusia County.

Most of the top ten non-government employers in the tri-county area are concentrated within or near the project area. In 1995, Orange County's top employer was Walt Disney World with 40,000 employees. By 1997, with the addition of Downtown Disney and Disney's Animal Kingdom, the number of employees increased to 51,000. Orlando Regional Healthcare System and Publix Supermarkets, Inc. rank second and third with 7,131 and 6,371 employees, respectively. In Seminole County, the major employer is Florida Hospital with 2,513 employees. Publix Supermarkets and Siemens Stromberg-Carlson follow closely with 2,079 and 1,570 employees, respectively. Volusia County's top employer is Halifax Community Health Systems with 3,097 employees. Halifax Community Health Systems is followed by Memorial Health Systems carrying 2,174 employees and Embry Riddle University with 960 employees.

3.4.2 Activity Centers

Activity centers are defined as high intensity developments representing residential, business and industrial land use. They are becoming one of the most dominant land use planning features for the Central Florida region. Activity centers are being used by local jurisdictions to help develop local comprehensive Growth Management Plans (GMPs). They are becoming the primary focus for promoting higher density development in the region.

The activity centers located within the project corridor include the International Drive Resort Area (IDRA), the Orlando Central Business District (CBD) and portions of the cities of Winter Park, Altamonte Springs/Maitland, Lake Mary/Sanford/Northwest Seminole and SR 472/Howland Boulevard. These centers are presented in Figure 3.4.2.1.

3.4.3 Development of Regional Impacts and Other Development Activity

Growth in resident population, visitor population and employment, combined with the choice of where to live and where to work, are the primary factors causing an increase in development activities throughout the project corridor.

A summary of development activity and development of regional impacts (DRIs) are described by project segment below. Figure 3.4.3.1 identifies the major developments and employment centers within the project corridor. Detailed information on these developments, employment centers and the DRIs is contained in the FEIS. The locations of the DRIs are shown in Figure 3.4.3.2.

3.4.3.1 Segment 1 - SR 528 to John Young Parkway

Segment 1 has primarily experienced commercial growth over the past few years. Much of this growth is concentrated along the tourist corridors of International Drive and Kirkman Road.

It is anticipated that Segment 1 will continue to expand commercially with the primary areas along International Drive, Kirkman Road, and Conroy Road. In 1999, Universal Studios Florida opened their newest theme park, Islands of Adventure, within this segment. Another major commercial center located near the I-4/Conroy Road interchange is the Millenia Mall. As of August 2002, the mall is under construction and is expected to open to the public by mid-2003.

3.4.3.2 Segment 2 - John Young Parkway to Ivanhoe Boulevard

Segment 2 includes downtown Orlando and portions of College Park, a major neighborhood in the city of Orlando. Downtown Orlando is currently the largest employment center in the region, with primary growth focusing on commercial development of office space.

It is anticipated that growth will continue within downtown Orlando. Plans call for the redevelopment of existing property including office space and high-rise residential properties.

3.4.3.3 Segment 3 - Ivanhoe Boulevard to Lee Road

The bulk of residential neighborhoods along the project corridor are located within this segment. Historic structures are located within College Park and the Town of Eatonville. In addition, the Orlando Science Center and the Historical Museum are located in this segment.

Land adjacent to the project corridor within this segment is extensively developed; however, plans call for the redevelopment of existing property.

3.4.3.4 Segment 4 - Lee Road to Lake Mary Boulevard

There are several residential communities, commercial sites and office complexes located within this segment. Major office centers include Maitland Center, Cranes Roost Office Park and Sanlando Springs Office Park. The large commercial centers are primarily located in the city of Altamonte Springs and include the Altamonte Mall and the Renaissance Center. Future development activity within the segment consists primarily of commercial centers and residential developments.

3.4.3.5 Segment 5 - Lake Mary Boulevard to US 17-92

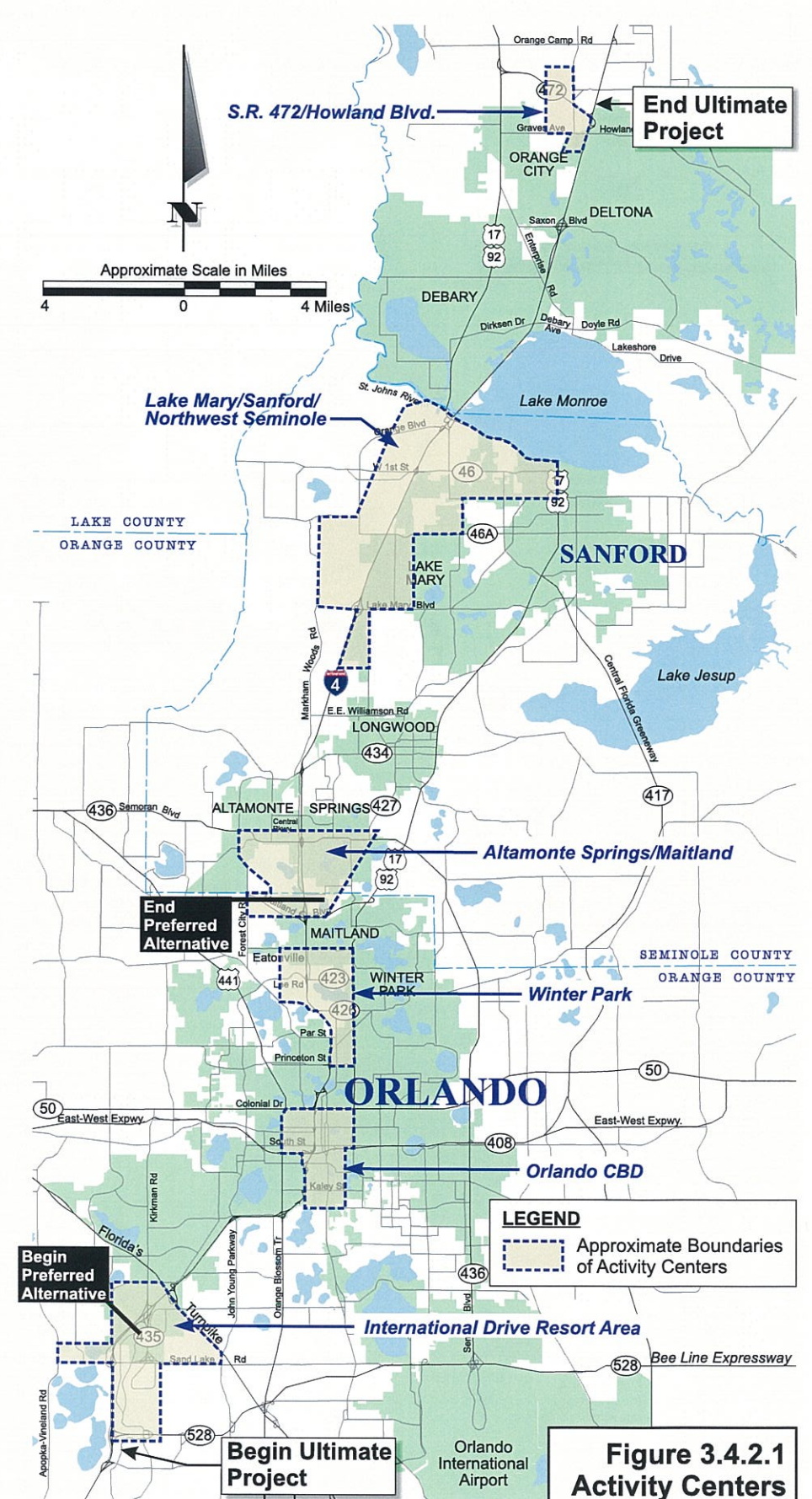
Developments within Segment 5 consist of large residential communities and recently constructed commercial and office centers. One of the largest residential areas located along the project corridor is Heathrow. Office centers include Primera, Heathrow Business Center, International Business Center and the Lake Mary Business Park. The Seminole Towne Center regional mall is also located within this segment.

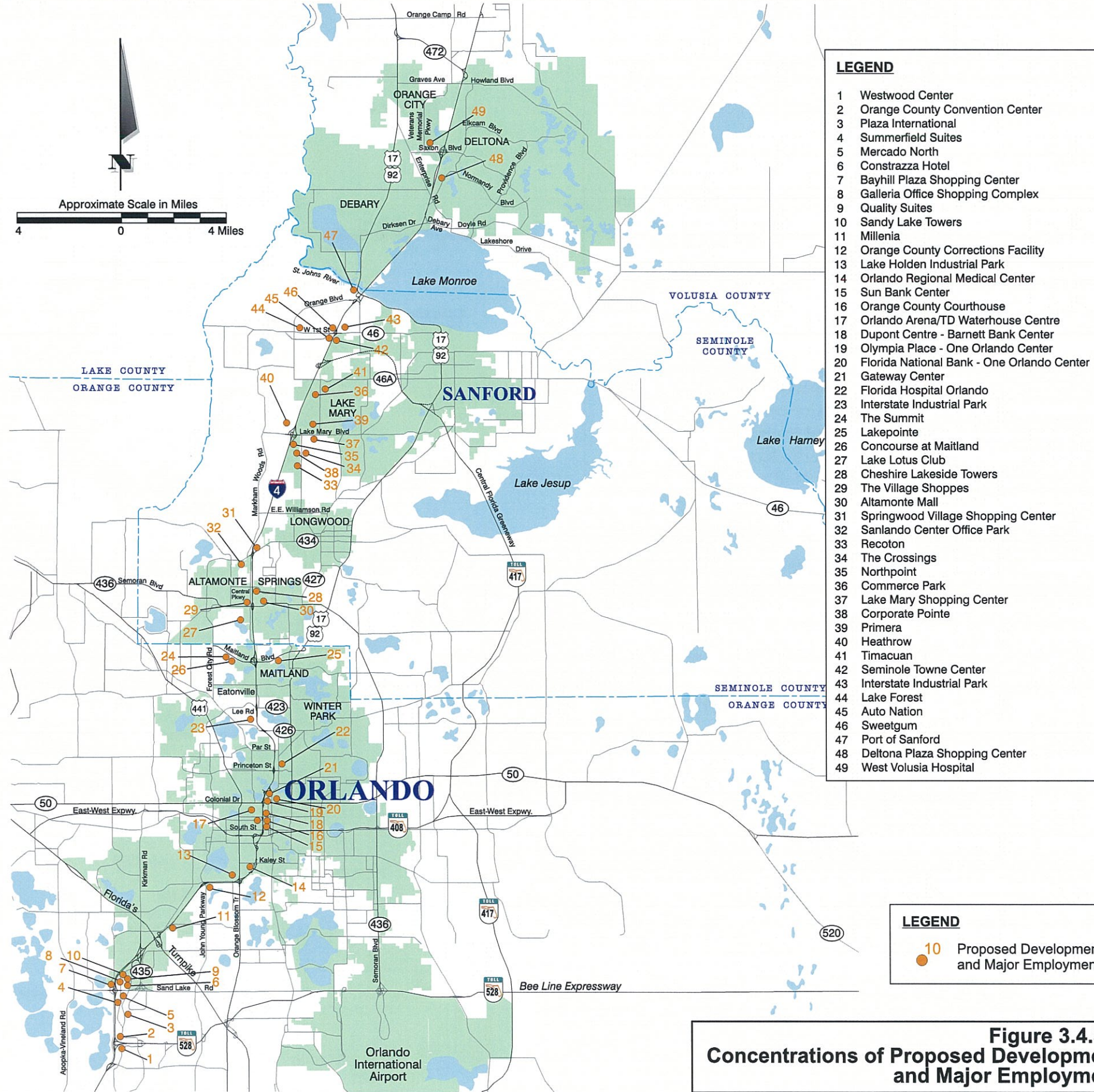
It is anticipated that this segment will experience the greatest changes in development activity. Several residential developments and commercial centers are proposed.

3.4.3.6 Segment 6 - US 17-92 to SR 472

This segment is comprised primarily of residential areas, undeveloped land and open space. The Summer Haven residential community is located directly adjacent to the project corridor in Orange City.

Residential and commercial developments are planned for this portion of the project corridor.





3.4.4 Travel Demand

Population and employment growth are important contributing factors to the decreasing mobility in the Central Florida region. The choice of where to live and where to work and the resulting increase in daily person-trips is one of the principal causes.

On a regional basis, the total number of daily person-trips made in 1990 was estimated at 3.18 million person-trips. The person-trips are projected to increase to approximately 5.50 million in 2010 and 6.47 million in 2020. This represents an increase in total daily person-trips by nearly 75 percent over the 20-year period and more than double in the 30-year period.

This projected increase in daily person-trips will further overburden the highway system and will cause increased delays due to congestion and increasing environmental impacts such as air quality.

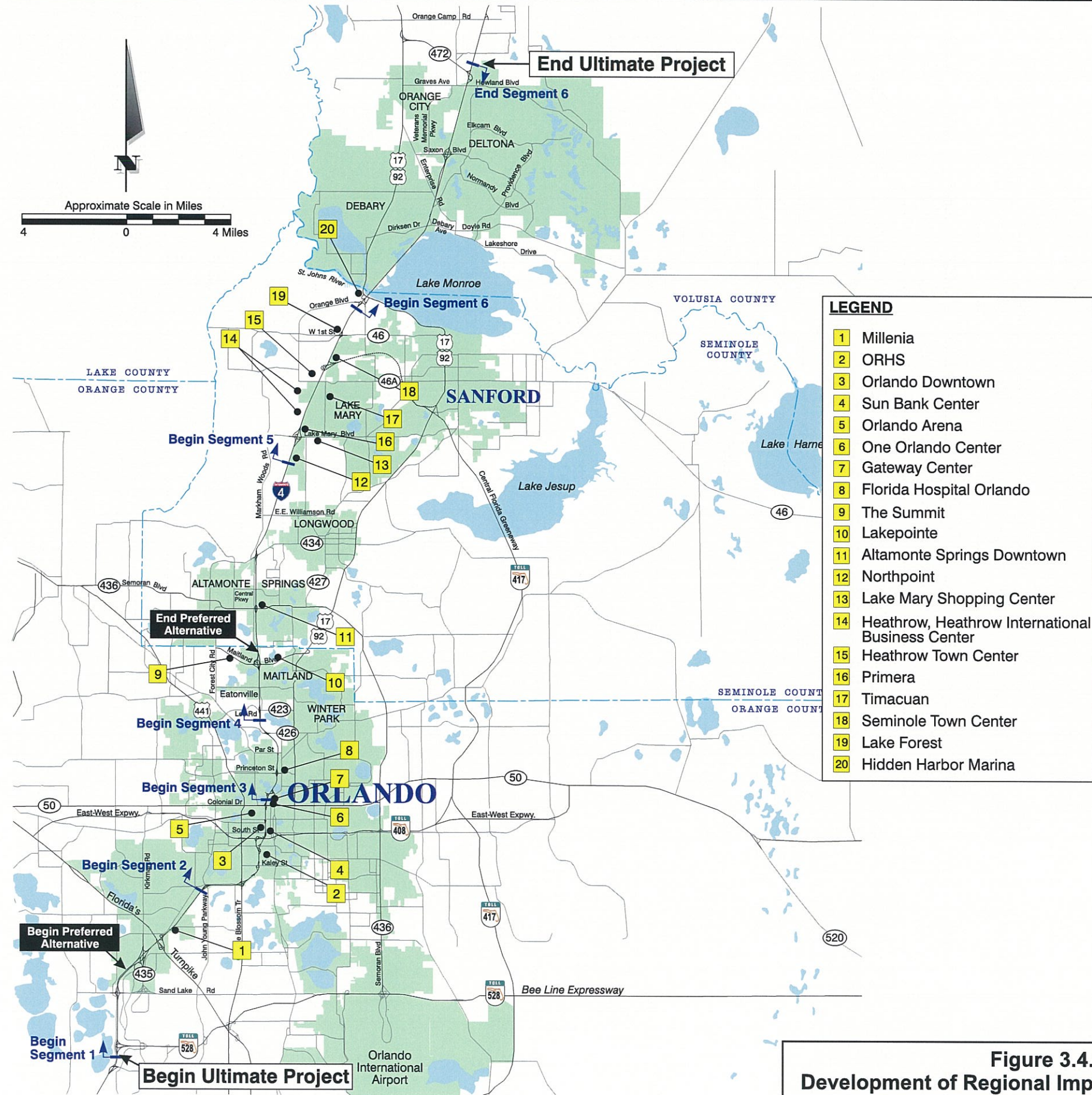


Figure 3.4.3.2
Development of Regional Impact

The existing conditions within the Ultimate study area have been evaluated by a review of as-built construction plans, study documents, coordination with advisory and regulatory agencies and field reconnaissance. The following sections provide discussions on the existing roadway and bridge characteristics, traffic and crash data and environmental characteristics within the project study limits.

4.1 EXISTING ROADWAY CHARACTERISTICS

The following sections discuss the existing roadway network within the Ultimate study area, which consists of local roads, urban collectors and arterials, tolled expressways and an Interstate facility.

4.1.1 Functional Classifications

The functional classifications contained within this report were obtained from the report "Federal Functional Classification - District Five," prepared by FDOT District Five Planning Office. This report is based on the 1990 census data.

4.1.1.1 Segment 1 - SR 528 to John Young Parkway

The functional classifications for the major roadway facilities located in Segment 1 of the Ultimate study area are presented in Table 4.1.1.1.1 below:

Table 4.1.1.1.1 Segment 1 - Functional Classifications

| Facility | Classification and Description |
|------------------------------|---|
| I-4 | Urban principal arterial - Interstate |
| SR 528 (Bee Line Expressway) | Urban principal arterial - Limited access toll facility |
| International Drive | Urban minor arterial |
| SR 482 (Sand Lake Road) | Urban principal arterial |
| Universal Boulevard | Urban minor arterial |
| SR 435 (Kirkman Road) | Urban principal arterial |
| Florida's Turnpike | Urban principal arterial - Limited access toll facility |
| Tropical Trail | Urban collector |
| Conroy Road | Urban minor arterial |

4.1.1.2 Segments 2 & 3 - John Young Parkway to Lee Road

The functional classifications for the major roadway facilities located in Segment 2 of the Ultimate study area are presented in Table 4.1.1.2.1 at right:

Table 4.1.1.2.1 Segment 2 - Functional Classifications

| Facility | Classification and Description |
|-------------------------------|---|
| I-4 | Urban principal arterial - Interstate |
| SR 423 (John Young Parkway) | Urban principal arterial |
| Rio Grande Avenue | Urban collector |
| US 441 (Orange Blossom Trail) | Urban principal arterial |
| Westmoreland Drive | Urban collector |
| Michigan Street | Urban collector |
| Kaley Street | Urban minor arterial |
| Gore Street | Urban collector |
| Division Avenue | Urban collector |
| SR 408 (East/West Expressway) | Urban principal arterial - Limited access toll facility |
| Tampa Avenue | Urban collector |
| Summerlin Avenue | Urban collector |
| Mills Avenue | Urban minor arterial |
| Anderson Street | Urban minor arterial |
| South Street | Urban minor arterial |
| Church Street | Urban collector |
| Central Boulevard | Urban collector |
| Washington Street | Urban minor arterial |
| SR 526 (Robinson Street) | Urban minor arterial |
| Livingston Street | Urban collector |
| Amelia Street | Urban collector |
| SR 50 (Colonial Drive) | Urban principal arterial |

The functional classifications for the major roadway facilities located in Segment 3 of the Ultimate study area are presented in Table 4.1.1.2.2 at below:

Table 4.1.1.2.2 Segment 3 - Functional Classifications

| Facility | Classification and Description |
|---------------------------|---------------------------------------|
| I-4 | Urban principal arterial - Interstate |
| Ivanhoe Boulevard | Urban collector |
| Legion Place | Urban collector |
| North Shore Terrace | Urban collector |
| New Hampshire Street | Urban collector |
| SR 438 (Princeton Street) | Urban minor arterial |
| Winter Park Street | Urban collector |
| Par Street | Urban collector |
| Formosa Avenue | Urban collector |
| Minnesota Avenue | Urban collector |
| SR 426 (Fairbanks Avenue) | Urban minor arterial |
| Wymore Road | Urban collector |

4.1.1.3 Segments 4 & 5 - Lee Road to US 17-92

The functional classifications for the major roadway facilities located in Segment 4 of the Ultimate study area are presented in Table 4.1.1.3.1 at right:

Table 4.1.1.3.1 Segment 4 - Functional Classifications

| Facility | Classification and Description |
|--------------------------------|---------------------------------------|
| I-4 | Urban principal arterial - Interstate |
| SR 423 (Lee Road) | Urban principal arterial |
| SR 438A (Kennedy Boulevard) | Urban minor arterial |
| SR 414 (Maitland Boulevard) | Urban minor arterial |
| Wymore Road | Urban collector |
| SR 436 | Urban principal arterial |
| Central Parkway | Urban collector |
| SR 434 (Sanlando Springs Road) | Urban principal arterial |
| E.E. Williamson Road | Urban collector |

The functional classifications for the major roadway facilities located in Segment 5 of the Ultimate study area are presented in Table 4.1.1.3.2 below:

Table 4.1.1.3.2 Segment 5 - Functional Classifications

| Facility | Classification and Description |
|------------------------------------|---|
| I-4 | Urban principal arterial - Interstate |
| Lake Mary Boulevard | Urban principal arterial |
| CR 46A (Paola Road) | Urban minor arterial |
| SR 417 (Central Florida GreeneWay) | Urban principal arterial - Limited access toll facility |
| SR 46 | Rural principal arterial |

4.1.1.4 Segment 6 - US 17-92 to SR 472

The functional classifications for the major roadway facilities located in Segment 6 of the Ultimate study area are presented in Table 4.1.1.4.1 below:

Table 4.1.1.4.1 Segment 6 - Functional Classifications

| Facility | Classification and Description |
|-----------------------------|---|
| I-4 | Urban and Rural principal arterial - Interstate |
| Orange Boulevard | Rural collector |
| US 17-92 | Rural principal arterial |
| Dirkson Drive/DeBary Avenue | Urban minor arterial |
| Enterprise Road | Minor arterial |
| Saxon Boulevard | Urban minor arterial |
| Rhode Island Avenue | Urban collector |
| Graves/Howland Avenue | Urban minor arterial |
| SR 472 | Rural principal arterial |

4.1.2 Typical Sections

Figure 4.1.2.1 shows the existing I-4 typical sections from SR 528 (Bee Line Expressway) to SR 472. Existing and proposed side street typical sections can be found in the Structures Plans, submitted with this report.

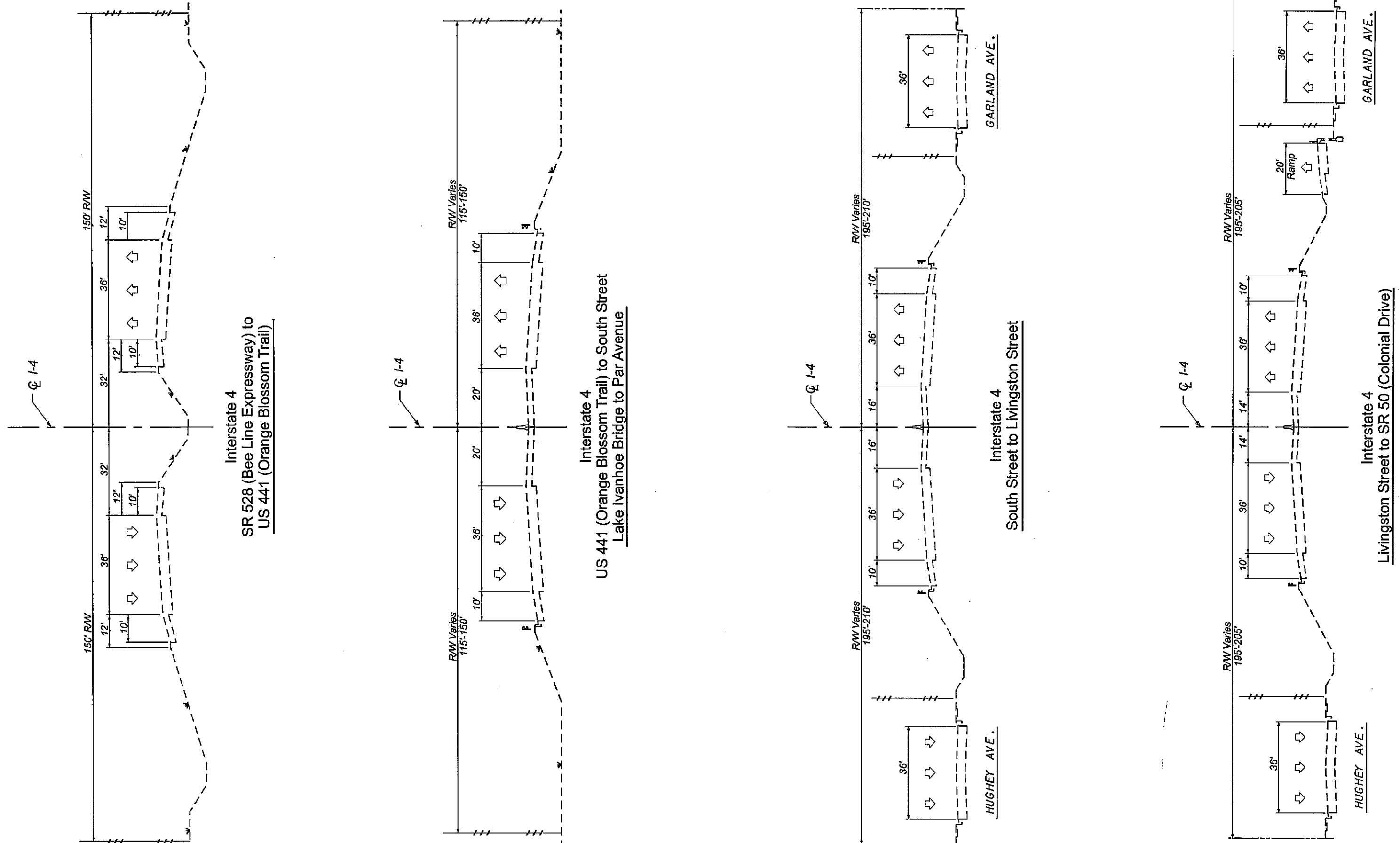
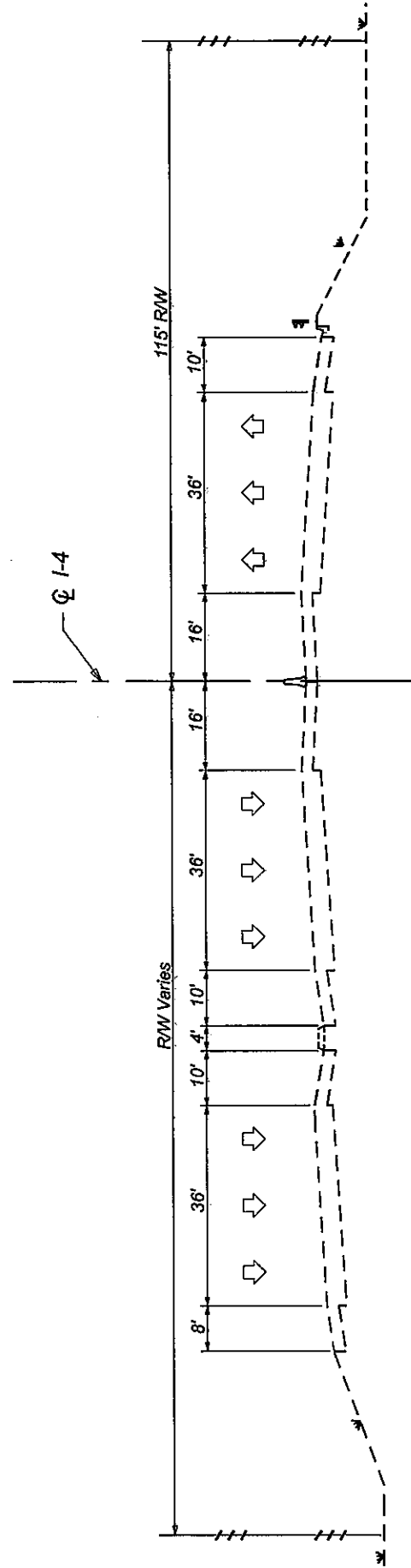
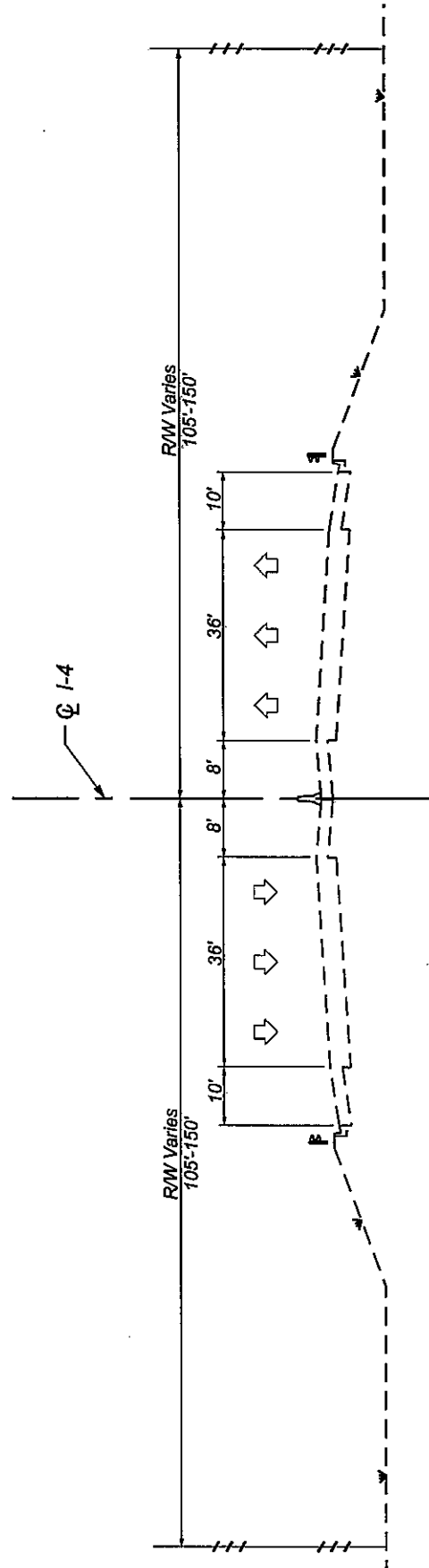


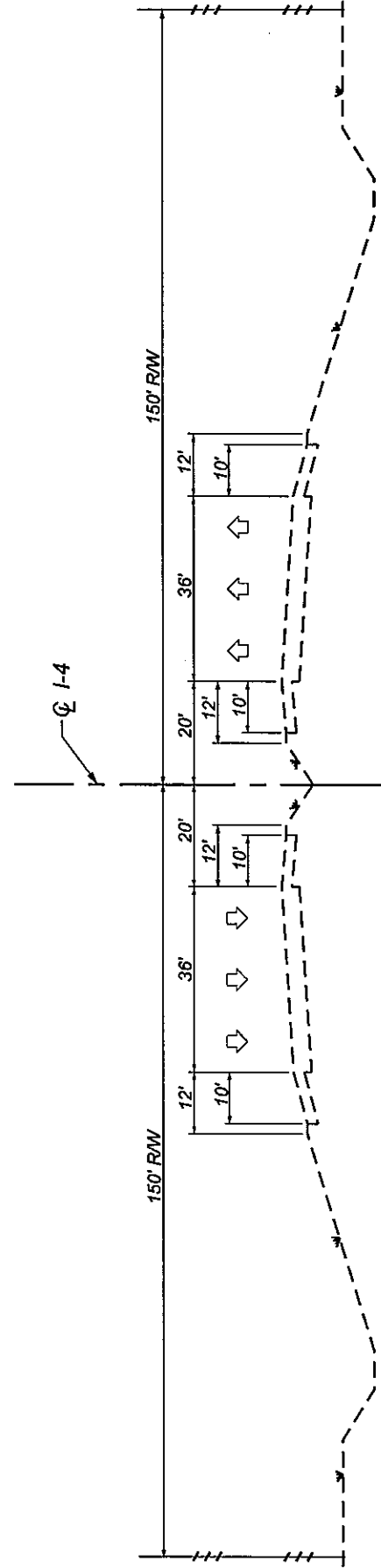
Figure 4.1.2.1 Existing Typical Sections



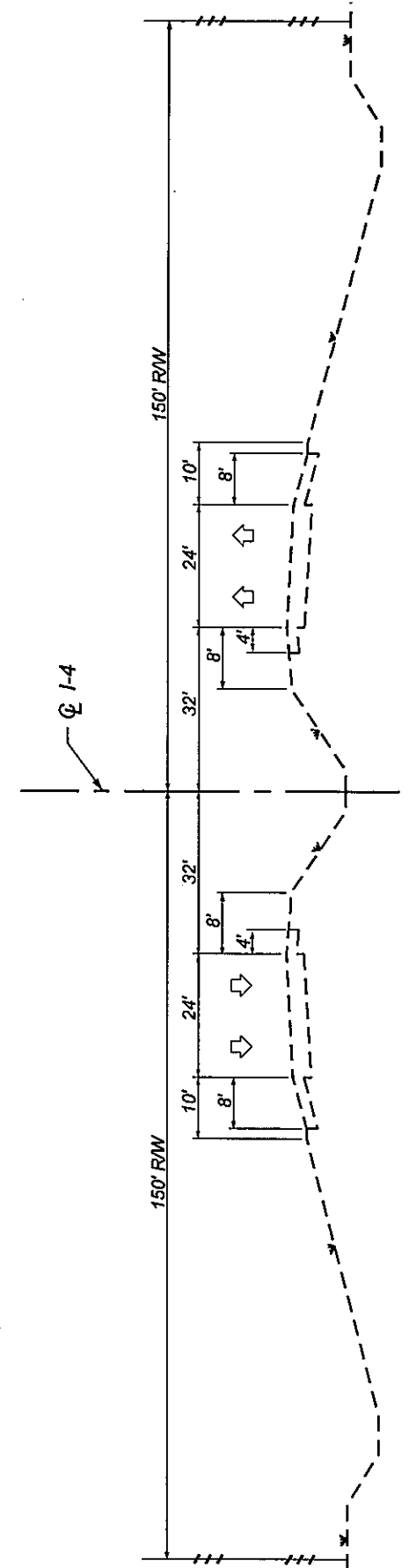
Interstate 4
SR 50 (Colonial Drive) to Lake Ivanhoe Bridge



Interstate 4
Par Avenue to SR 423 (Lee Road)



Interstate 4
SR 423 (Lee Road) to Lake Mary Boulevard



Interstate 4
Lake Mary Boulevard to SR 472

4.1.3 Bicycle, Trail and Greenway Facilities

According to Florida Statute, pedestrians and bicycles are prohibited on limited access Interstate and tolled facilities such as I-4 and SR 408 (East/West Expressway). The following is a discussion of bicycle facilities (bikeways, trails and greenways) within the Ultimate project study area.

Bikeway, trail and greenway facilities are located throughout the Ultimate project study area on crossroads and roadways adjacent to I-4. These facilities are categorized by use. Bikeway facilities include bike lanes, bike routes and/or paved shoulders. Trail facilities include paved multiple use trails for walking, bicycling and skating, and unpaved multiple use trails for hiking, horseback riding and off-road bicycling. Greenway facilities are corridors of protected open space that are managed for conservation and/or recreation. Figure 4.1.3.1 shows the location of 43 existing and proposed facilities that cross I-4 and/or are linked to facilities that cross I-4 within the Ultimate project study area. Following is a description of those facilities separated by segment.

4.1.3.1 Segment 1 - SR 528 to John Young Parkway

No existing bikeways, trails or greenway facilities are located within Segment 1 of the Ultimate study area. However, several proposed facilities are located within this segment. Three of the planned facilities are proposed to cross I-4. A bikeway is proposed over I-4 at SR 435 (Kirkman Road). No bikeways are located along the existing Kirkman Road overpass. The METROPLAN Orlando 2020 LRTP has identified the need for a bicycle facility at this location.

Another planned bikeway facility is proposed to cross under I-4 along Tropical Trail that connects Americana Boulevard to Orlando-Vineland Road. A third proposed facility to cross I-4 is a primary trail off-road network. This facility is proposed to travel under I-4 along the Shingle Creek canal and is classified as a greenway.

4.1.3.2 Segments 2 & 3 - John Young Parkway to Lee Road

There are 22 existing and proposed bikeways and trails located within Segments 2 and 3 of the Ultimate study area. The majority of the facilities located within these segments are concentrated within the downtown Orlando area. Three existing facilities cross I-4 and ten facilities are proposed to cross I-4. Existing bikeway facilities cross under I-4 at New Hampshire Street and Winter Park Street. In addition, an existing bikeway facility crosses under SR 408 (East/West Expressway) at Bumby Avenue.

There are two existing facilities on Hughey Avenue, from South Street to Livingston Street, and on North Shore Terrace near Lake Ivanhoe. Another existing bikeway facility is located adjacent to SR 408 (East/West Expressway) on Long Street and Carter Street, between Rio Grande Avenue and Westmoreland Drive.

Local Government Comprehensive Plans have identified several other proposed facilities located primarily in the downtown Orlando area. Ten proposed bikeway facilities will cross I-4 at the following locations:

- SR 423 (John Young Parkway) interchange
- Gore Street interchange
- Anderson Street interchange
- South Street interchange
- Washington Street
- Livingston Street
- Amelia Street interchange
- SR 438 (Princeton Street) interchange
- Par Street interchange
- Formosa Avenue

Within the Ultimate project study area, plans exist for proposed bikeway facilities to cross under SR 408 (East/West Expressway) at the Westmoreland Drive intersection and the Rosalind Avenue intersection. A bikeway facility adjacent to SR 408 (East/West Expressway) along Anderson Street from Westmoreland Drive to Rosalind Avenue is also proposed.

A multi-use trail facility is planned along the CSXT railroad and will cross under I-4 at the I-4/SR 408 (East/West Expressway) interchange. Another trail facility is proposed to travel under SR 408 (East/West Expressway) and extend along Rio Grande Avenue, between Orange Center Boulevard and Church Street. A third paved trail facility is proposed to run under I-4, along Ivanhoe Boulevard.

4.1.3.3 Segments 4 & 5 - Lee Road to US 17-92

There are two existing and ten proposed facilities located within Segments 4 and 5 of the Ultimate study area. The two existing facilities are bikeways that cross I-4 on SR 414 (Maitland Boulevard) and SR 46. Five bikeway facilities are proposed to cross I-4 at various locations. A bikeway is proposed to travel under I-4 at SR 438A (Kennedy Boulevard). Three planned bikeways are proposed to travel over I-4 on Wymore Road, SR 436 and Central Parkway. A planned bikeway along Lake Destiny Drive is proposed to connect with the existing bikeway facility on SR 414 (Maitland Boulevard).

Three paved trails are proposed to cross I-4 at various locations within Segments 4 and 5. The proposed E.E. Williamson Trail Trail (along E.E. Williamson Road) over I-4 is the preferred critical link between the Florida National Scenic Trail (FNST) and the Seminole-Wekiva Trail. The FNST is proposed to pass over I-4 south of CR 46A (Paola Road) to connect to

the Seminole-Wekiva Trail. The portion of the Seminole - Wekiva Trail over I-4 south of CR 46A that will connect to the Rinehart Road to Riverwalk Connector is under construction as of June 2002.

4.1.3.4 Segment 6 - US 17-92 to SR 472

Segment 6 of the Ultimate study area has one existing and six proposed facilities. The existing bikeway passes under I-4 at US 17-92. The Lake Monroe River Walk (a paved trail) and the Seminole County Greenway are proposed to pass under I-4 at US 17-92. Planned bikeways are proposed to cross I-4 at the Dirksen Drive/DeBary Avenue interchange, the Enterprise Road overpass, the Saxon Boulevard interchange, the proposed Rhode Island Avenue overpass and the SR 472 interchange. The South Volusia Trail/DeBary Greenway is proposed to pass under I-4 at the Dirksen Drive/DeBary Avenue interchange.

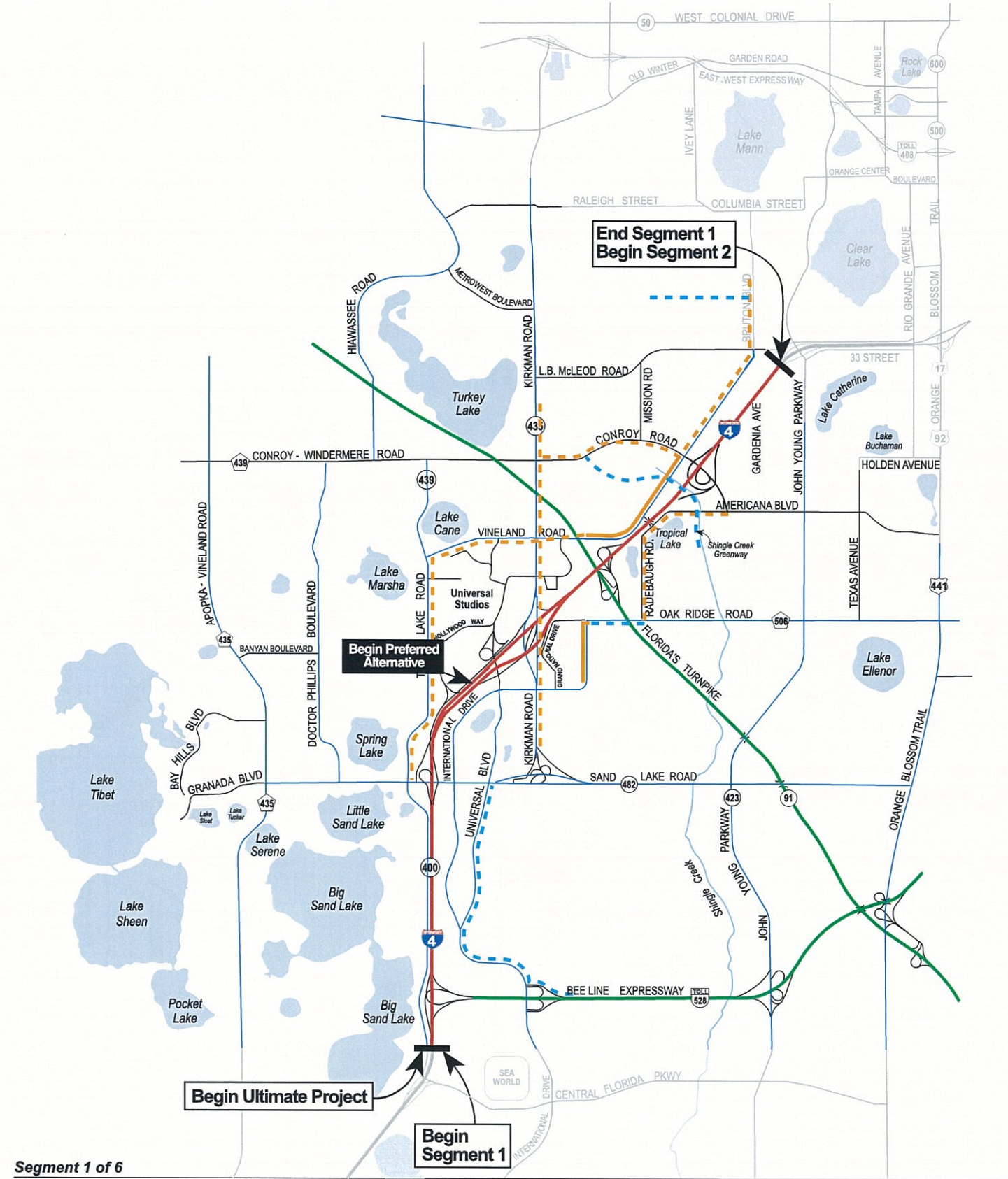
4.1.4 Pedestrian Facilities

A summary of information for sidewalks crossing I-4 and for sidewalks in areas adjacent to I-4 within the Ultimate study area is presented in Figure 4.1.4.1. The majority of the information was obtained from field surveys conducted in December 1996. In addition, the METROPLAN Orlando 2020 LRTP and the Volusia County MPO 2020 LRTP were reviewed for information regarding existing sidewalks within the vicinity of I-4.

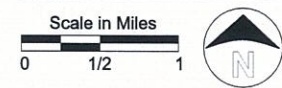
Two pedestrian overpasses cross I-4 within the project limits. The first pedestrian overpass is located south of the Orlando CBD approximately 2,150-feet north of the I-4/Kaley Avenue interchange. This pedestrian crosswalk connects Indiana Street and Grand Avenue, and leads to the Grand Avenue Elementary School. The second pedestrian overpass is located approximately 1,000-feet northwest of the I-4/SR 426 (Fairbanks Avenue) interchange. This pedestrian crossing is used primarily by students of the Killarney Elementary School (approximately 50 or more students per day) and local residents. Both pedestrian bridge crossings are approximately 10-foot wide concrete structures.

4.1.5 Right-of-Way

Typically, I-4 is centered within 300 feet of limited access right-of-way, with the exception of interchange areas, bifurcated areas and constrained areas north of downtown Orlando. The existing right-of-way along I-4 was obtained from FDOT construction plans and filed right-of-way maps. Right-of-way maps for proposed interchanges planned for construction prior to the I-4 PD&E proposed improvements were obtained and incorporated as existing right-of-way. The existing right-of-way is graphically depicted on the Preliminary Concept Plans submitted with this report. Following is a description of existing right-of-way by segment.



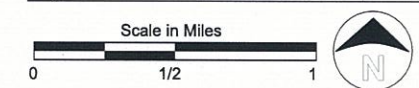
Segment 1 of 6



- Existing Bikeway Facility
- - - Proposed Bikeway Facility
- Existing Greenway Facility
- - - Proposed Greenway Facility
- Existing Multi-Use Trail Facility
- - - Proposed Multi-Use Trail Facility



Segment 2 of 6



- Existing Bikeway Facility
- - - Proposed Bikeway Facility
- Existing Greenway Facility
- - - Proposed Greenway Facility
- Existing Multi-Use Trail Facility
- - - Proposed Multi-Use Trail Facility

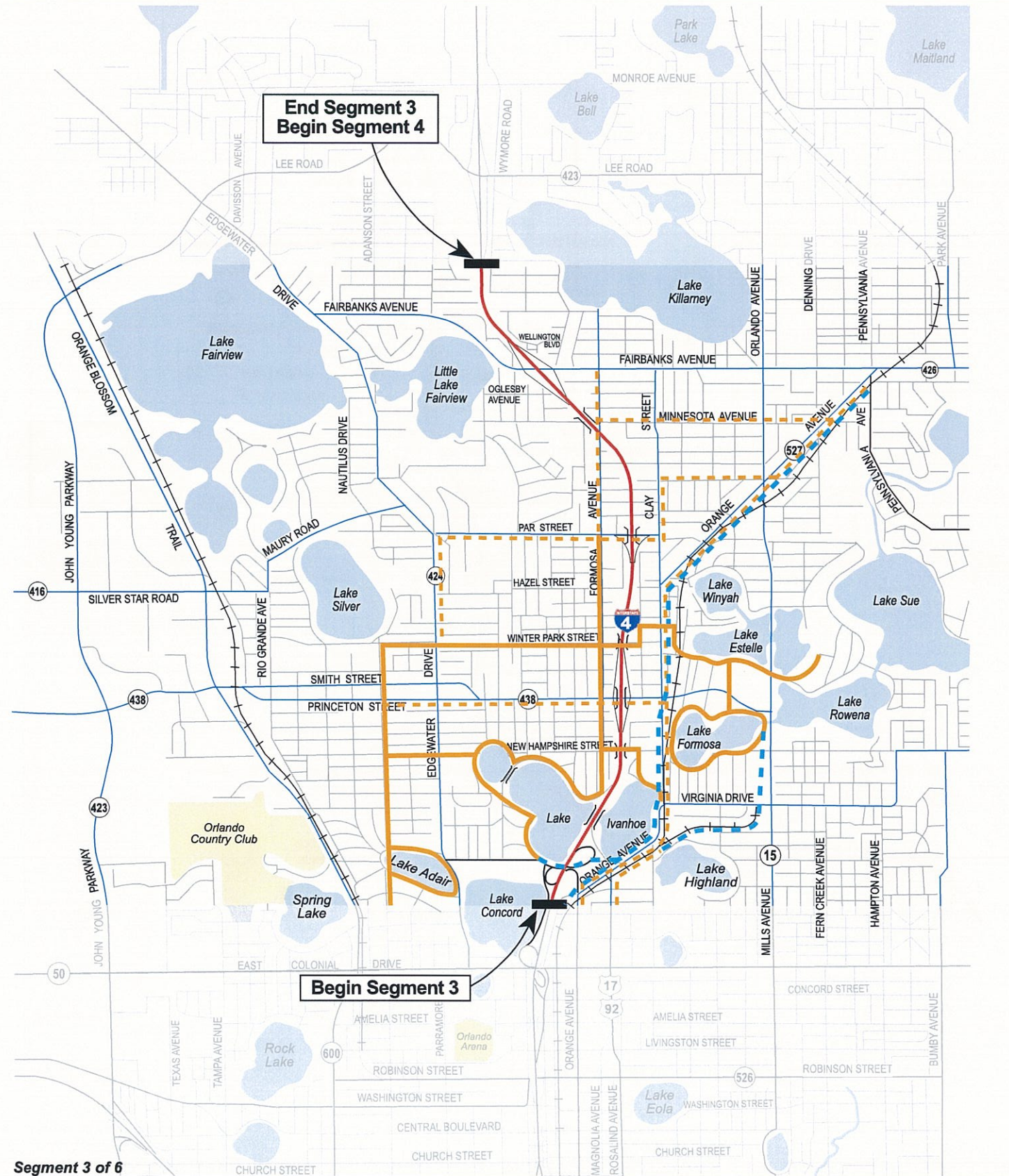
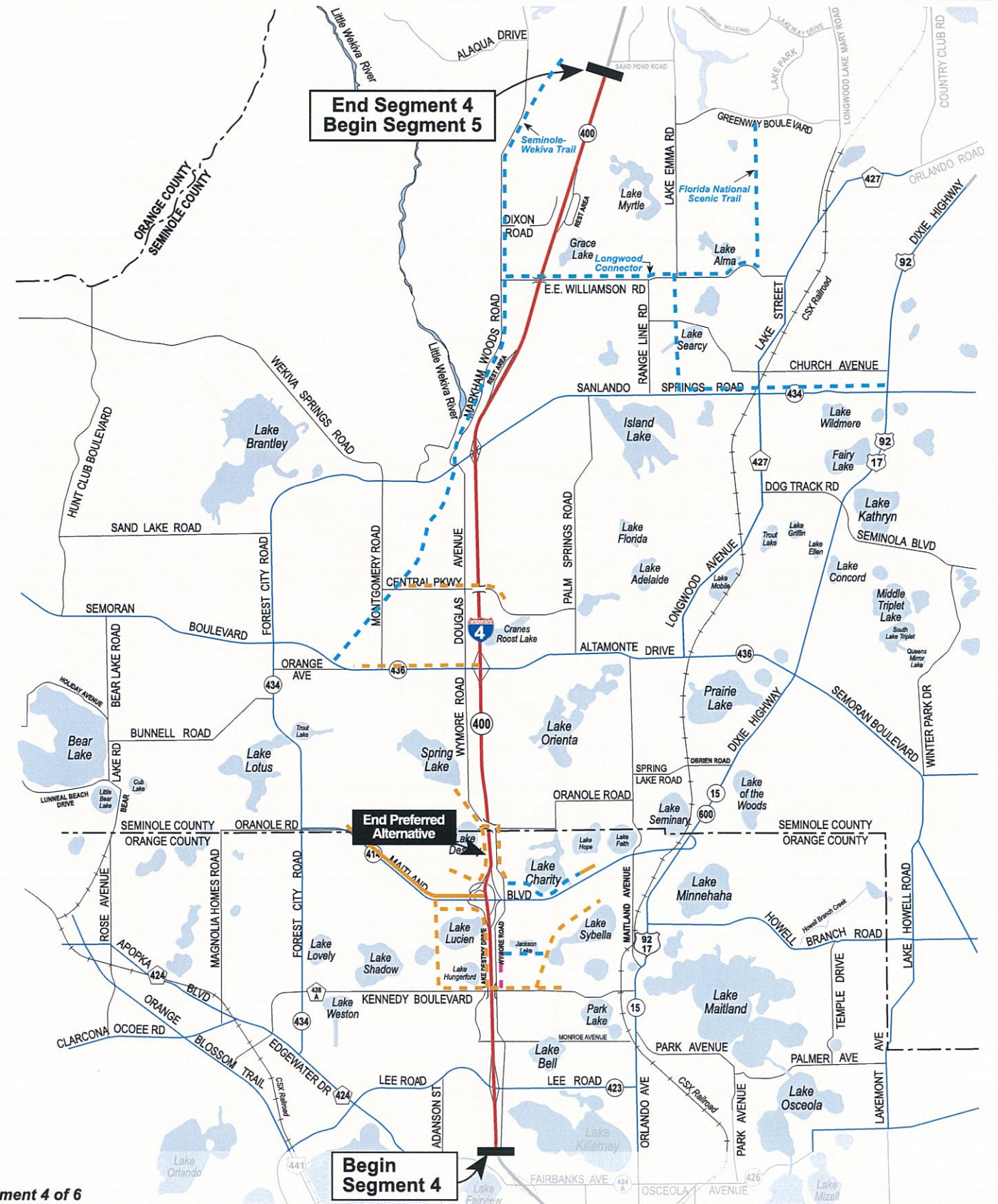
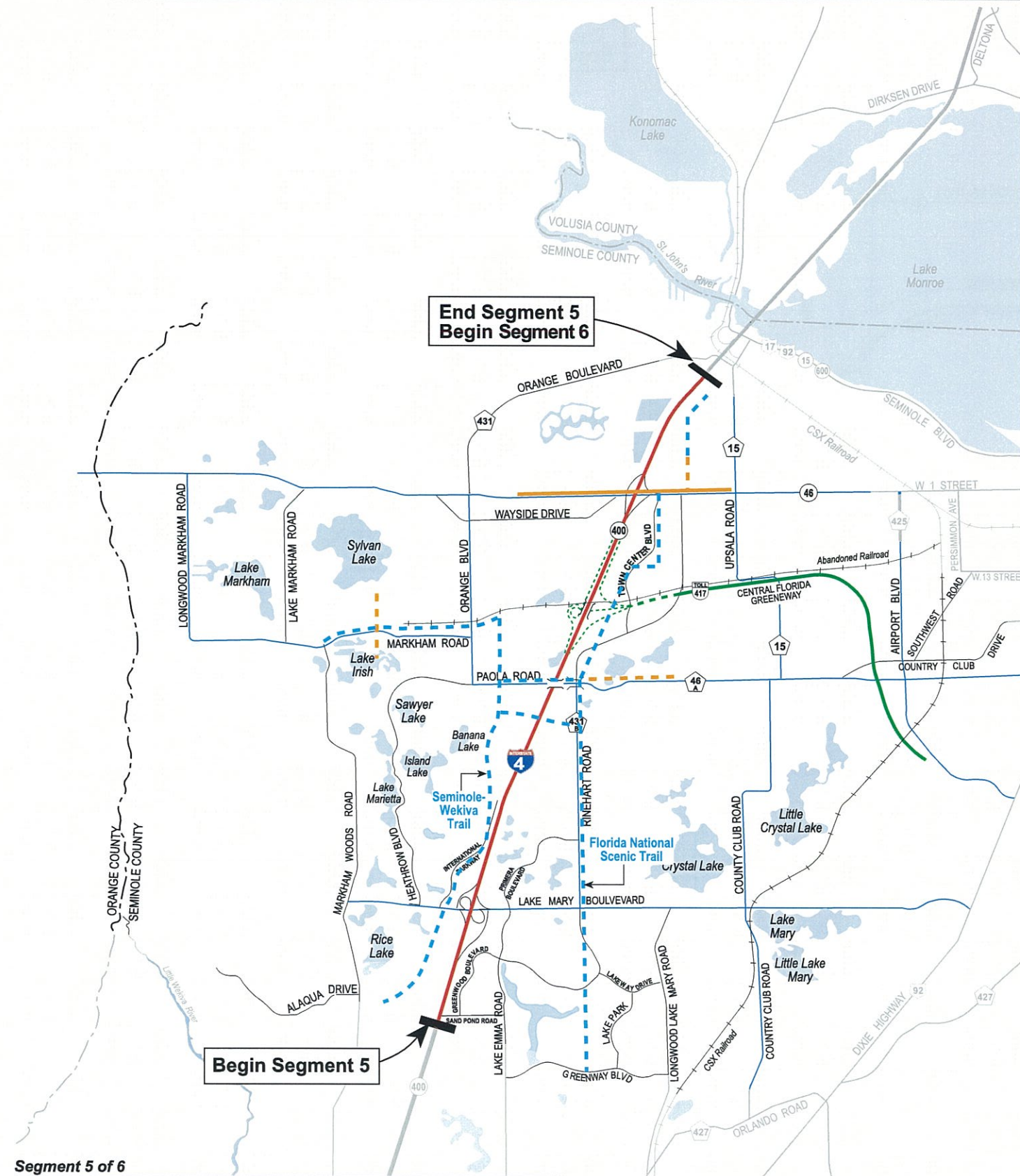


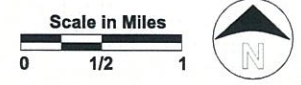
Figure 4.1.3.1
Bikeways, Trails & Greenways



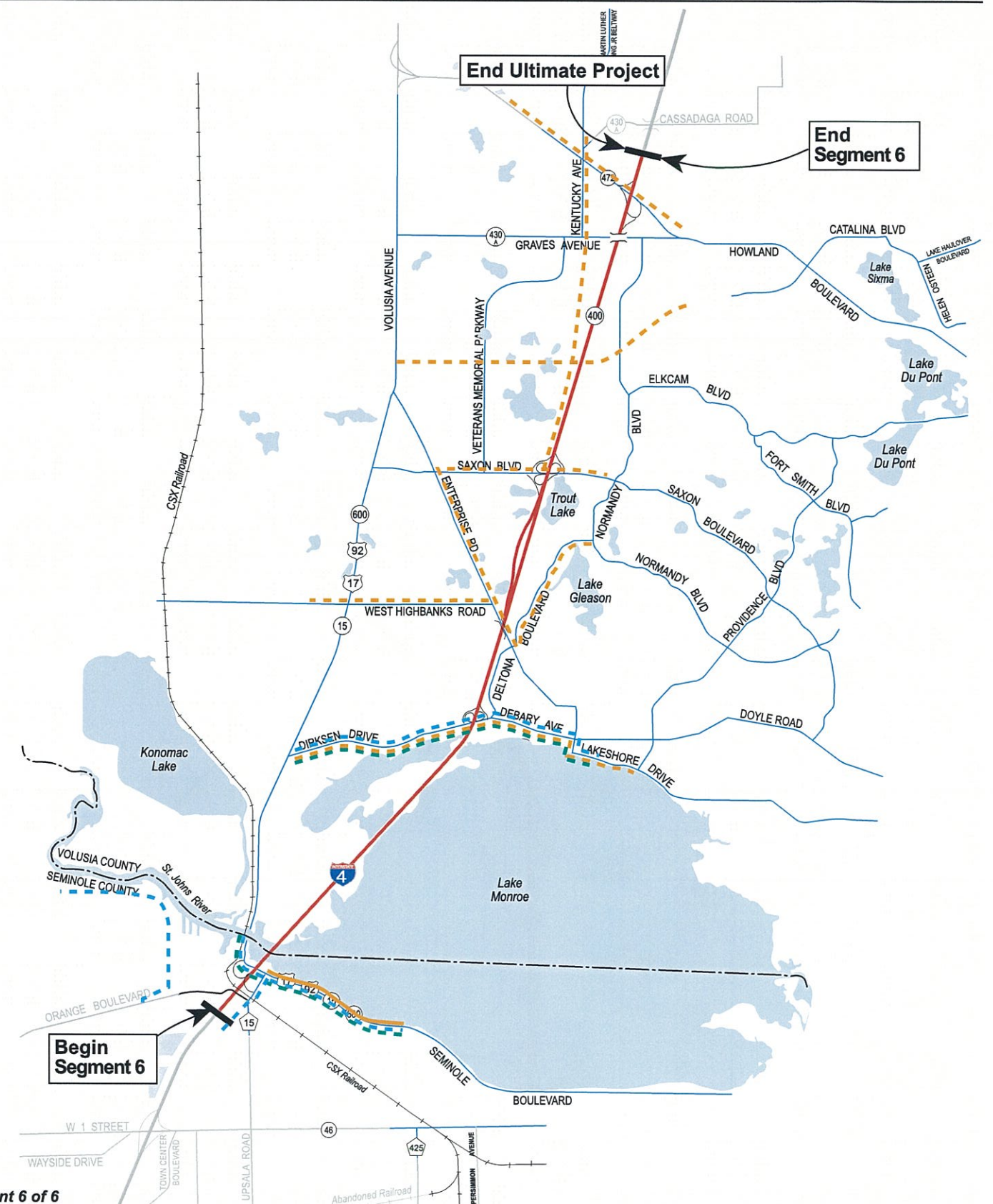
I-4 PD&E Study - Section 2



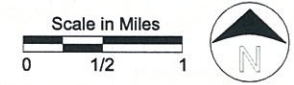
Segment 5 of 6



- Existing Bikeway Facility
- - - Proposed Bikeway Facility
- Existing Multi-Use Trail Facility
- - - Proposed Multi-Use Trail Facility
- Existing Greenway Facility
- - - Proposed Greenway Facility



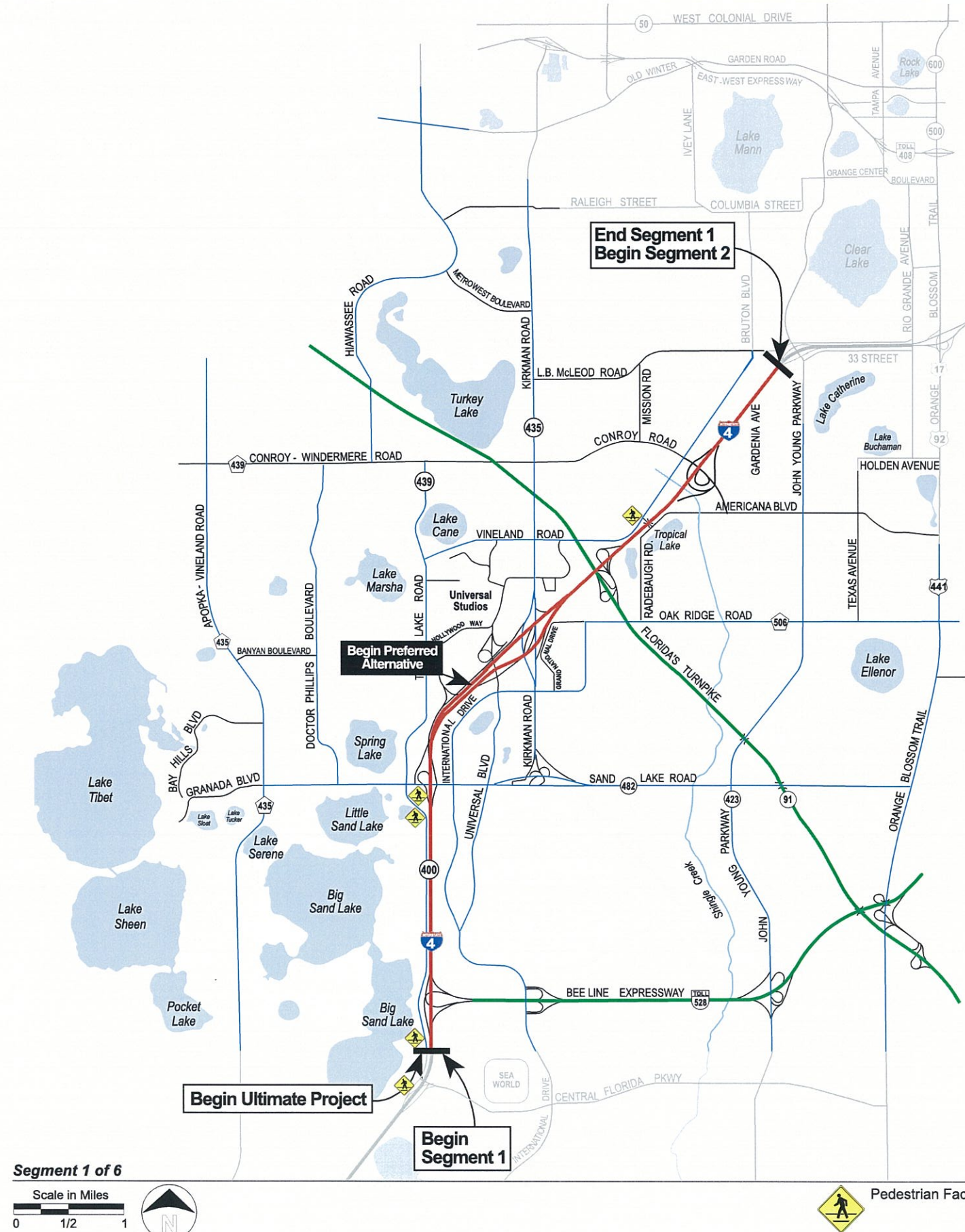
Segment 6 of 6



- Existing Bikeway Facility
- - - Proposed Bikeway Facility
- Existing Multi-Use Trail Facility
- - - Proposed Multi-Use Trail Facility
- Existing Greenway Facility
- - - Proposed Greenway Facility

I-4 PD&E Study - Section 2

Figure 4.1.3.1
Bikeways, Trails & Greenways

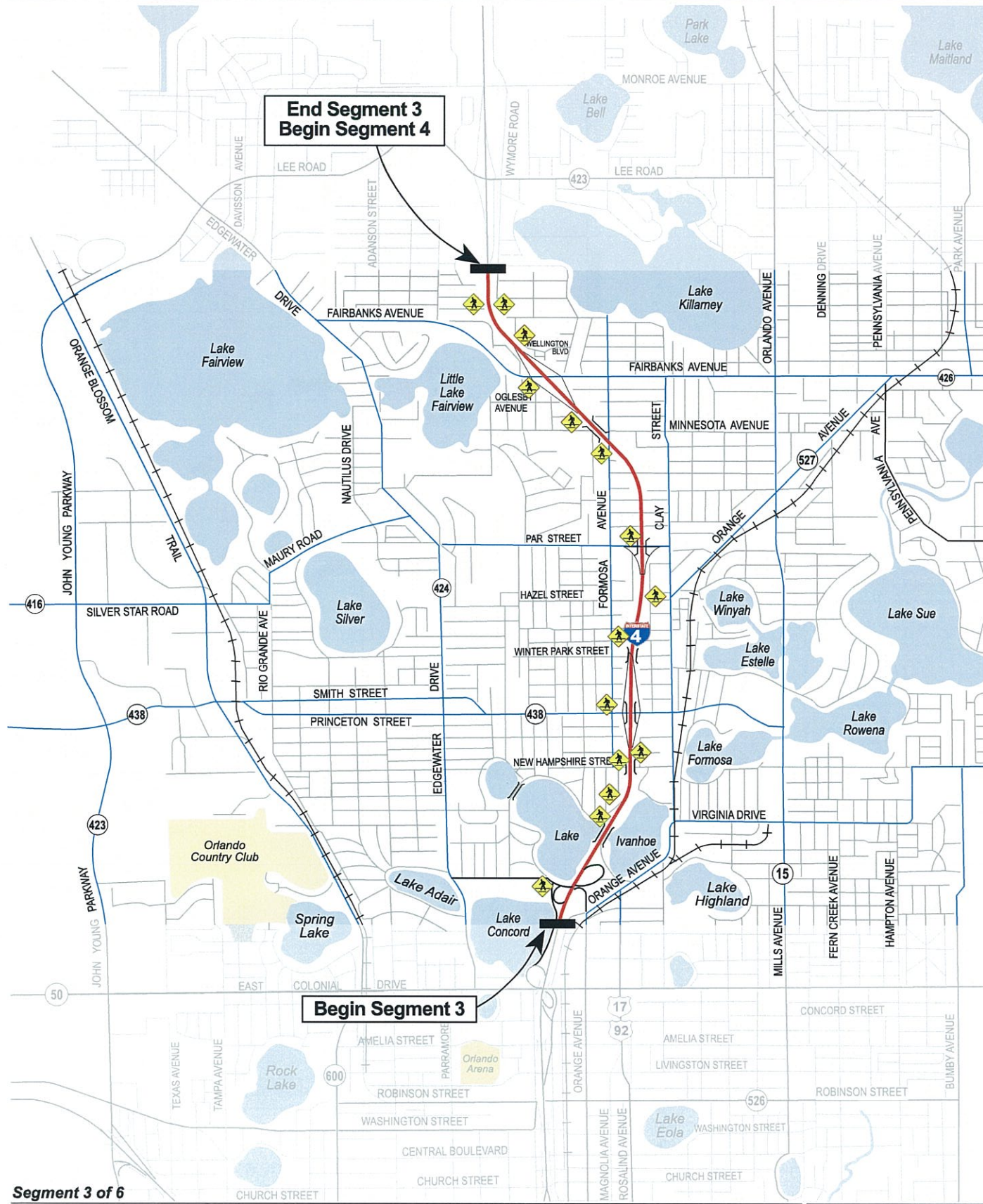


Segment 1 of 6
Scale in Miles
0 1/2 1

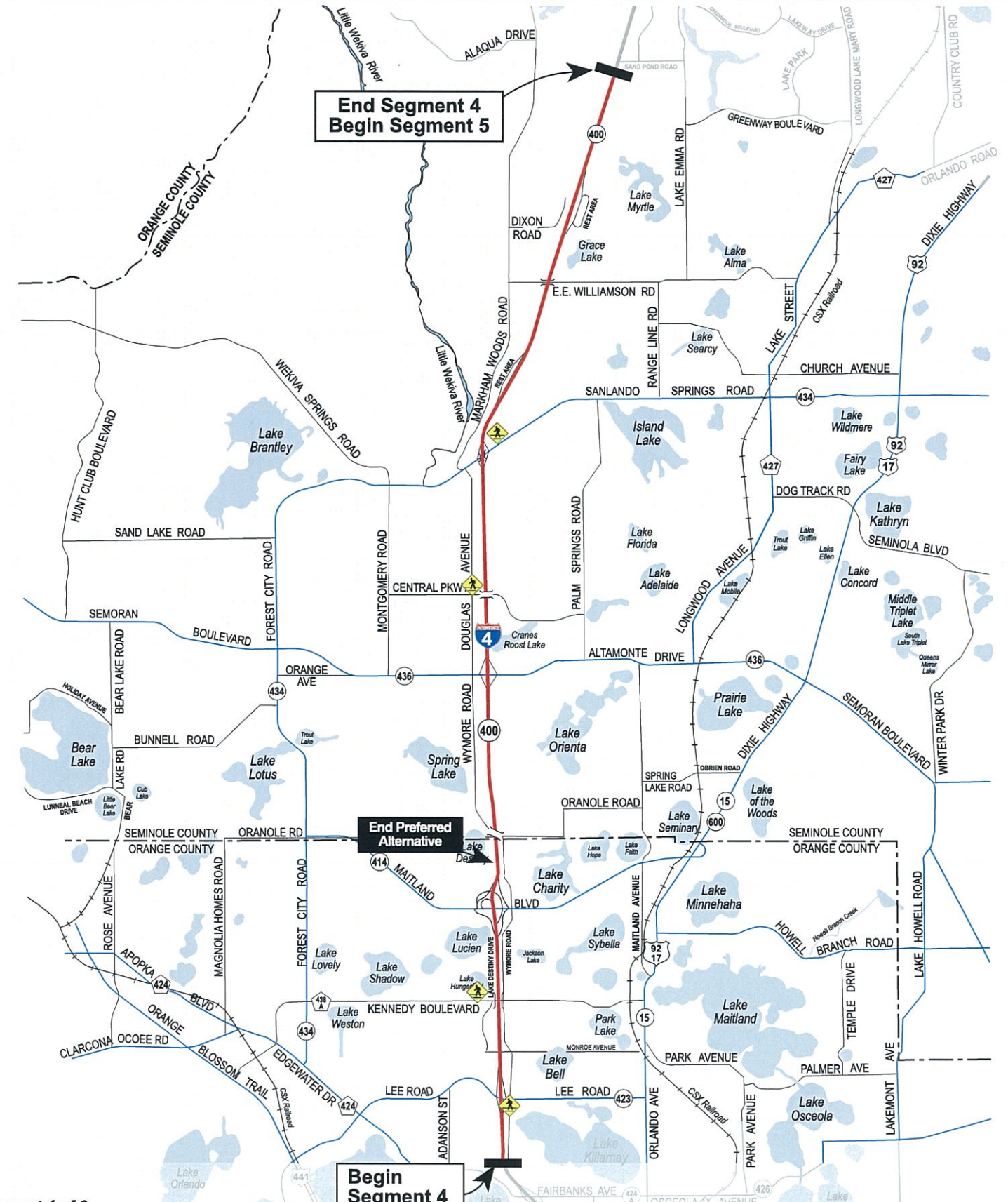
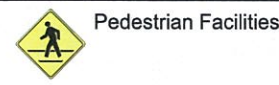
Segment 2 of 6
Scale in Miles
0 1/2 1

Figure 4.1.4.1
Pedestrian Facilities

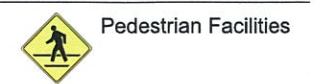
I-4 PD&E Study - Section 2



Segment 3 of 6

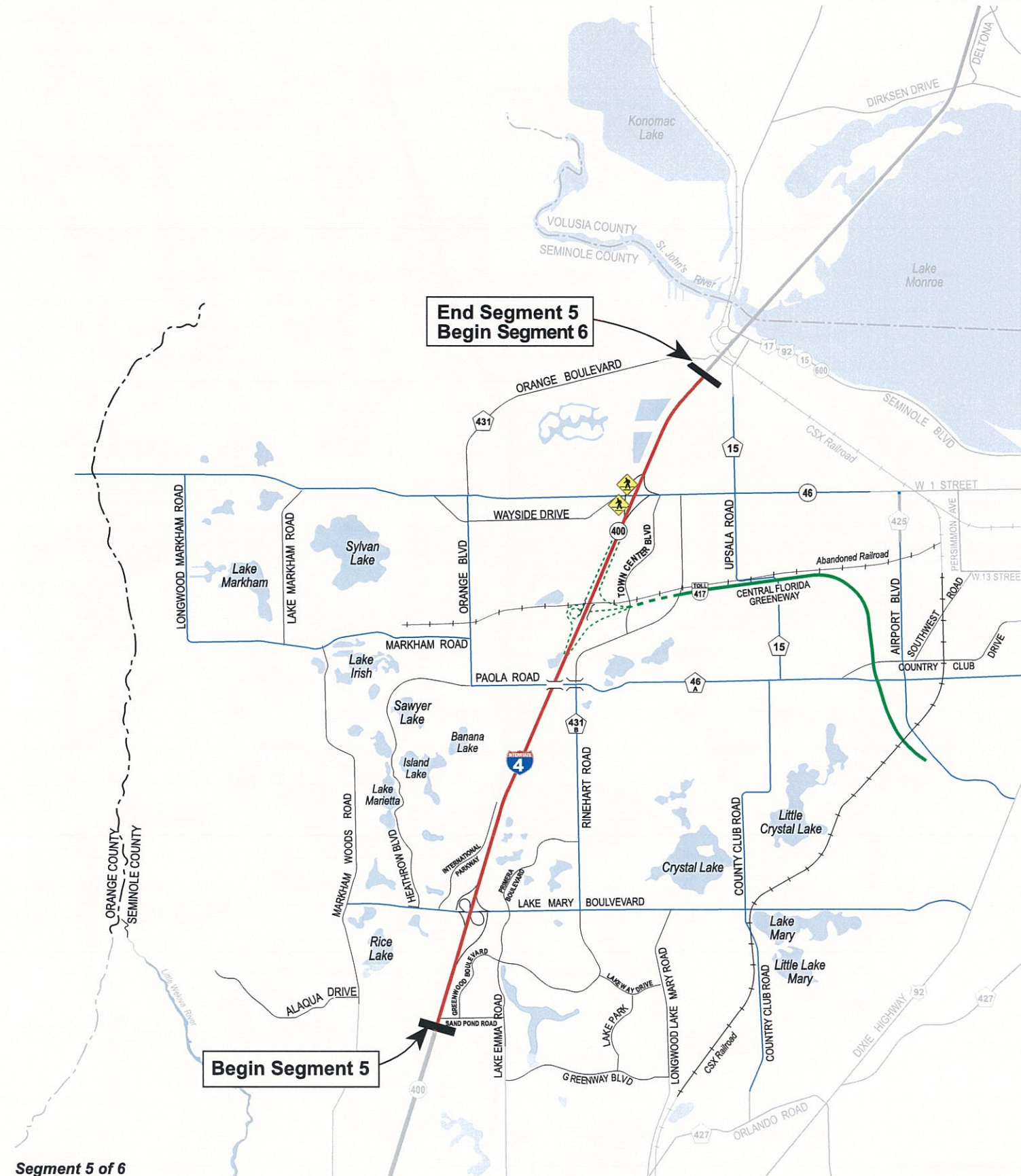


Segment 4 of 6



I-4 PD&E Study - Section 2

Figure 4.1.4.1
Pedestrian Facilities



Segment 5 of 6

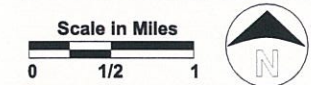
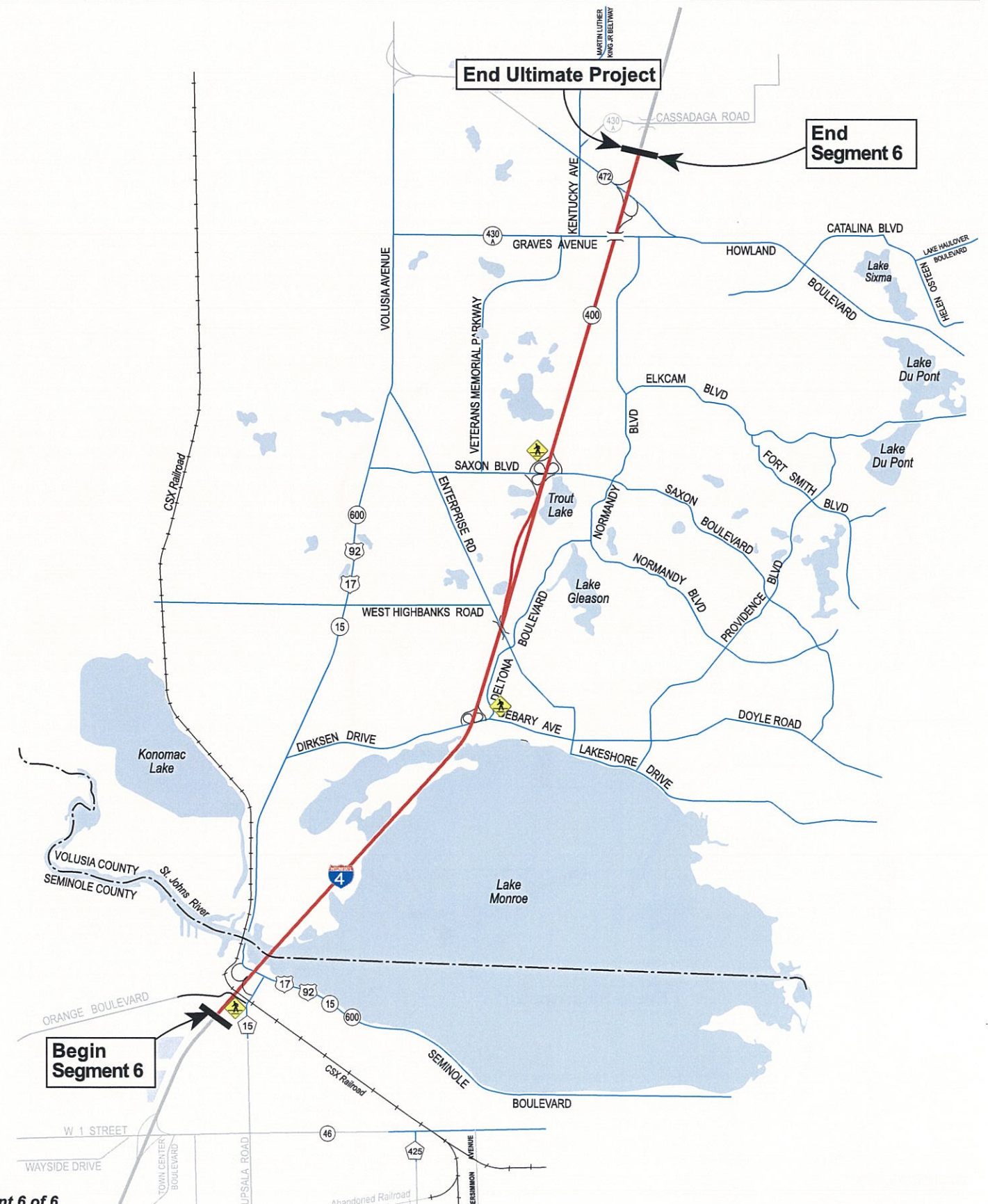
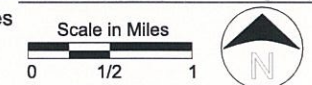


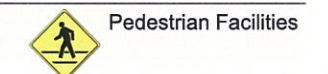
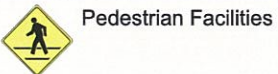
Figure 4.1.4.1
Pedestrian Facilities



Segment 6 of 6



I-4 PD&E Study - Section 2



4.1.5.1 Segment 1 - SR 528 to John Young Parkway

Within Segment 1 of the Ultimate study area, I-4 is generally centered within 300-feet of right-of-way. Additional right-of-way is also provided in the bifurcation area that begins approximately 1500 feet north of the SR 482 (Sand Lake Road) interchange.

4.1.5.2 Segments 2 & 3 - John Young Parkway to Lee Road

The portion of the Ultimate study area that extends from SR 423 (John Young Parkway) to Kaley Avenue exists within approximately 280 feet of right-of-way. From Kaley Avenue to Ivanhoe Boulevard, approximately 325 feet of right-of-way is provided between interchanges. A varying right-of-way width of 200 to 250 feet is provided from Ivanhoe Boulevard to SR 423 (Lee Road).

4.1.5.3 Segments 4 & 5 - Lee Road to US 17-92

The existing right-of-way width throughout Segments 4 and 5 of the Ultimate study area is approximately 300 feet.

4.1.5.4 Segment 6 - US 17-92 to SR 472

Throughout Segment 6, the existing right-of-way width is approximately 300 feet. Additional right-of-way is provided in the bifurcation area between Enterprise Road and Saxon Boulevard.

4.1.6 Horizontal Alignment

The alignment on I-4 is typical of most Interstate highways with long tangent sections connecting long, gradual curves and/or deflection angles not requiring horizontal curves. Table 4.1.6.1 lists the major horizontal curves throughout the Ultimate project limits and the design speed based on current design criteria.

Table 4.1.6.1 Existing I-4 Horizontal Alignment - All Segments

| Segment | Reference Location | Degree of Curvature (degree-min) | Curve Direction | Super-elevation (ft/ft) | Design Speed (MPH) |
|---------|--------------------------------|----------------------------------|-----------------|-------------------------|--------------------|
| 1 | SR 482 (Sand Lake Road) | 2°00' | RT | 0.05 | 55 |
| 2 | SR 423 (John Young Parkway) | 2°00' WB | RT | 0.058 | 60 |
| 2 | US 441 (Orange Blossom Trail) | 2°00' EB | LT | 0.036 | 45 |
| | | 3°00' WB | LT | 0.054 | 45 |
| | | 3°00' WB | RT | 0.054 | 45 |
| | | 3°00' WB | LT | 0.054 | 45 |
| 2 | Kaley Avenue | 2°30' | LT | 0.05 | 50 |
| 2 | Gore Street | 3°00' | RT | 0.05 | 45 |
| 2 | South Street | 1°00' | LT | 0.02 | 50 |
| | | 2°30' EB | LT | 0.045 | 45 |
| | | 0°30' EB | RT | NC | 55 |
| | | 2°00' WB | LT | 0.036 | 45 |
| | | 0°30' WB | LT | NC | 55 |
| 2 | SR 50 (Colonial Drive) | 2°00' | RT | 0.036 | 45 |
| 3 | Ivanhoe Boulevard | 2°30' | RT | 0.045 | 45 |
| 3 | New Hampshire Street | 2°30' | LT | 0.045 | 45 |
| 3 | Winter Park Street | 1°30' | RT | 0.027 | 45 |
| | | 1°30' | LT | 0.027 | 45 |
| 3 | SR 426 (Fairbanks Avenue) | 3°00' | LT | 0.054 | 45 |
| | | 3°00' | RT | 0.054 | 45 |
| 4 | SR 414 (Maitland Boulevard) | 1°00' WB | LT | 0.039 | 70 |
| | | 1°00' WB | LT | 0.049 | >70 |
| | | 2°30' WB&EB | RT | 0.074 | 65 |
| | | 1°00' WB | LT | 0.039 | 70 |
| | | 1°00' EB | LT | 0.049 | >70 |
| 4 | SR 434 (Sanlando Springs Road) | 2°00' | RT | 0.056 | 60 |
| | | 1°00' | LT | 0.028 | 55 |
| 5 | SR 46 | 1°00' | RT | 0.036 | 65 |
| 6 | Dirksen Drive/DeBary Avenue | 1°00' | RT | 0.028 | 55 |

4.1.7 Vertical Alignment

Tables 4.1.7.1 through 4.1.7.4 summarize the vertical alignment of I-4 along the Ultimate project limits and the design speed associated with each based on current design criteria. Reference Location Stationing is included on the Preliminary Concept Plans submitted with this report.

Table 4.1.7.1 Existing I-4 Vertical Alignment - Segment 1

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Length of Curve (ft) | Vertical Curve Type | K Value | PDOT Design Speed (MPH) |
|-------------------------------|--------------|---------------|----------------------|---------------------|---------|-------------------------|
| 707+00.000 | 2.563 | -1.804 | 1200 | Crest | 274.8 | 55 |
| 715+00.000 | -1.804 | 0.050 | 400 | Sag | 215.8 | 70 |
| 754+50.000 | 0.050 | 0.137 | 400 | Sag | 4612.4 | 70 |
| SR 528 (Bee Line Expressway) | | | | | | |
| 778+00.000 | 0.137 | -0.172 | 400 | Crest | 1294.5 | 70 |
| 807+00.000 | -0.172 | 0.765 | 400 | Sag | 426.8 | 70 |
| 824+00.000 | 0.765 | -0.380 | 400 | Crest | 349.4 | 60 |
| 831+00.000 | -0.380 | -0.343 | - | No VC | - | - |
| 839+75.000 | -0.343 | 3.000 | 800 | Sag | 239.3 | 70 |
| 853+25.000 | 3.000 | -2.333 | 1800 | Crest | 337.5 | 60 |
| SR 482 (Sand Lake Road) | | | | | | |
| 865+25.000 | -2.333 | 0.248 | 600 | Sag | 232.5 | 70 |
| 878+00.000 | 0.248 | -0.413 | 400 | Crest | 605.7 | 70 |
| 886+00.000 | -0.413 | -1.207 | 400 | Crest | 503.5 | 70 |
| 895+04.810 | -1.207 | -1.216 | - | Crest | - | - |
| 910+00.000 | -1.216 | -0.206 | 400 | Sag | 396.1 | 70 |
| 920+00.000 | -0.206 | -0.206 | - | No VC | - | - |
| Universal Boulevard | | | | | | |
| 935+00.000 | -0.206 | 0.071 | 400 | Sag | 1444.9 | 70 |
| 947+00.000 | 0.071 | -0.016 | 400 | Crest | 4621.7 | 70 |
| SR 435 (Kirkman Road) | | | | | | |
| 961+00.000 | -0.016 | -0.199 | 400 | Crest | 2187.5 | 70 |
| 975+00.000 | -0.199 | 0.087 | 400 | Sag | 1399.1 | 70 |
| 990+00.000 | 0.087 | -0.040 | 400 | Crest | 3141.4 | 70 |
| Florida's Turnpike | | | | | | |
| 1018+00.000 | -0.040 | 2.978 | 450 | Sag | 149.1 | 55 |
| 1028+00.000 | 2.978 | -3.063 | 1500 | Crest | 248.3 | 55 |
| Tropical Trail | | | | | | |
| 1038+50.000 | -3.063 | 0.499 | 500 | Sag | 140.4 | 55 |
| 1047+30.000 | 0.499 | -0.412 | 500 | Crest | 549.1 | 70 |
| Shingle Creek | | | | | | |
| 1055+00.000 | -0.412 | 0.004 | 400 | Sag | 961.9 | 70 |
| 1067+00.000 | 0.004 | 0.057 | 400 | Sag | 7547.2 | 70 |
| Conroy Road | | | | | | |
| 1085+00.000 | 0.057 | 0.009 | 400 | Crest | 8325.4 | 70 |
| 1121+60 | 0.009 | 0.000 | - | No VC | - | - |
| 1125+60.000 | 0.000 | 3.004 | 800 | Sag | 266.3 | 70 |

Table 4.1.7.2 Existing I-4 Vertical Alignment - Segments 2 & 3

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Length of Curve (ft) | Vertical Curve Type | K Value | FDOT Design Speed (MPH) ¹ |
|--|--------------|---------------|----------------------|---------------------|---------|--------------------------------------|
| 1139+00.000 SR 423 (John Young Pkwy) | 3.004 | -3 | 1800 | Crest | 299.8 | 60 |
| 1153+20.000 | -3 | 0 | 800 | Sag | 266.7 | 70 |
| 1182+00.000 = 2+91.280 | 0 | 0 | - | - | - | - |
| 9+32.670 | 0 | 3 | 300 | Sag | 100 | <55 |
| 16+75.000 Rio Grande Ave. | 3 | -2.126 | 600 | Crest | 117.1 | <55 |
| 21+75.000 | -2.126 | 3 | 400 | Sag | 78 | <55 |
| 29+25.000 US 441 (Orange Blossom Trail) | 3 | -3 | 500 | Crest | 83.3 | <55 |
| 39+25.000 | -3 | 3 | 450 | Sag | 75 | <55 |
| 47+90.000 Westmoreland | 3 | 0.2 | 500 | Crest | 178.6 | <55 |
| 56+00.190 | 0.2 | -0.22 | - | No VC | - | - |
| 59+50.000 | -0.22 | -3 | 300 | Crest | 107.9 | <55 |
| 67+00.000 | -3 | 0.6 | 400 | Sag | 111.1 | <55 |
| 74+10 | 0.600 | 3.0 | 300 | Sag | 125 | <55 |
| 82+75.000 Kaley St. | 3 | -3 | 950 | Crest | 158.3 | <55 |
| 92+75.000 | -3 | 0.21 | 400 | Sag | 124.6 | <55 |
| 116+75.000 | 0.21 | 3 | 300 | Sag | 107.5 | <55 |
| 123+50.000 Gore St. | 3 | -0.84 | 500 | Crest | 130.2 | <55 |
| 131+25.000 Division Ave. | -0.84 | -2.5 | 400 | Crest | 241 | 55 |
| 139+85.000 SR 408 (East West Expwy.) | -2.5 | 3 | 800 | Sag | 145.5 | 55 |
| 154+50.000 South St. | 3 | -3 | 550 | Crest | 91.7 | <55 |
| 161+00.000 | -3 | 0.24 | 400 | Sag | 123.4 | <55 |
| 169+49.090 Washington St. | 0.24 | -0.22 | - | No VC | - | - |
| 175+00.000 | -0.22 | 2.1 | 300 | Sag | 129.3 | <55 |
| 179+00.000 SR 526 (Robinson St.) | 2.1 | -1.48 | 500 | Crest | 139.7 | <55 |
| 189+00.000 | -1.48 | 1.4 | 300 | Sag | 104.2 | <55 |
| 193+00.000 Amelia St. | 1.4 | -3 | 500 | Crest | 113.6 | <55 |
| 199+80.000 | -3 | 3 | 540 | Sag | 90 | <55 |
| 205+50.000 SR 50 (Colonial Dr.) | 3 | -3 | 600 | Crest | 100 | <55 |
| 218+25.000 | -3 | 0.236 | 300 | Sag | 92.7 | <55 |
| 225+50.000 | 0.236 | 3 | 300 | Sag | 108.5 | <55 |
| 232+00.000 Ivanhoe Blvd. | 3 | -2.739 | 650 | Crest | 113.3 | <55 |

Table 4.1.7.2 Existing I-4 Vertical Alignment - Segments 2 & 3, Cont.

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Length of Curve (ft) | Vertical Curve Type | K Value | FDOT Design Speed (MPH) ¹ |
|--|--------------|---------------|----------------------|---------------------|---------|--------------------------------------|
| 241+50.000 | -2.739 | 2.003 | 900 | Sag | 189.8 | 65 |
| 249+00.000 Lake Ivanhoe | 2.003 | -1.56 | 600 | Crest | 168.4 | <55 |
| 254+25.000 | -1.56 | 3 | 450 | Sag | 98.7 | <55 |
| 263+50.000 New Hampshire St. | 3 | -2.68 | 600 | Crest | 105.6 | <55 |
| 269+00.000 | -2.68 | 3 | 500 | Sag | 88 | <55 |
| 276+75.000 SR 438 (Princeton St.) | 3 | -3 | 600 | Crest | 100 | <55 |
| 283+75.000 | -3 | 3 | 500 | Sag | 83.3 | <55 |
| 290+50.000 Winter Park St. | 3 | -3 | 650 | Crest | 108.3 | <55 |
| 299+00.000 | -3 | -0.21 | 400 | Sag | 143.4 | 55 |
| 309+50.000 | -0.21 | 3 | 400 | Sag | 124.6 | <55 |
| 317+00.000 Par St. | 3 | -3 | 600 | Crest | 100 | <55 |
| 322+75.000 | -3 | -0.3 | 550 | Sag | 203.7 | 70 |
| 336+25.000 | -0.3 | 3 | 400 | Sag | 121.2 | <55 |
| 344+75.000 Formosa Ave. and Minnesota Ave. | 3 | -3 | 600 | Crest | 100 | <55 |
| 354+25.000 | -3 | 3 | 500 | Sag | 83.3 | <55 |
| 365+00.000 SR 426 (Fairbanks Ave.) | 3 | -3 | 600 | Crest | 100 | <55 |
| 373+50.000 | -3 | 3 | 500 | Sag | 83.3 | <55 |
| 383+00.000 Wymore Rd. | 3 | -2.981 | 675 | Crest | 112.9 | <55 |
| 393+50.000 | -2.981 | 0.379 | 400 | Sag | 119 | <55 |

¹FDOT criteria not available for speeds less than 55 mph on interstate facilities

Table 4.1.7.3 Existing I-4 Vertical Alignment - Segments 4 & 5

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Length of Curve (ft) | Vertical Curve Type | K Value | FDOT Design Speed (MPH) ¹ |
|--|--------------|---------------|----------------------|---------------------|---------|--------------------------------------|
| 408+00.000 | 0.379 | 3 | 300 | Sag | 114.5 | <55 |
| 415+75.000 SR 423 (Lee Road) | 3 | -3 | 950 | Crest | 158.3 | <55 |
| 425+05.000 | -3 | 0 | 300 | Sag | 100 | <55 |
| 436+41.280 = 2118+58.050 | 0 | 0 | - | - | - | - |
| 2123+00.000 | 0 | 0.1 | - | No VC | - | - |
| 2133+88.000 | 0.1 | 3 | 400 | Sag | 137.9 | 55 |
| 2143+38.000 SR 438A (Kennedy Blvd.) | 3 | -3 | 1500 | Crest | 250 | 55 |

Table 4.1.7.3 Existing I-4 Vertical Alignment - Segments 4 & 5, Cont.

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Length of Curve (ft) | Vertical Curve Type | K Value | FDOT Design Speed (MPH) ¹ |
|--|--------------|---------------|----------------------|---------------------|---------|--------------------------------------|
| 2152+88.000 | -3 | -0.11 | 400 | Sag | 138.4 | 55 |
| 2184+00.000 | -0.11 | 0.141 | - | No VC | - | - |
| 2193+00.000 SR 414 (Maitland Blvd.) | 0.141 | -0.05 | - | No VC | - | - |
| 2209+00.000 | -0.05 | 0.9 | 400 | Sag | 421.1 | 70 |
| 2216+00.000 | 0.9 | 0.43 | 500 | Crest | 1063 | 70 |
| 2241+00.000 | 0.43 | -0.453 | 800 | Crest | 906.3 | 70 |
| 2250+50.000 | -0.453 | -3 | 1100 | Crest | 431.8 | 65 |
| 2264+50.000 | -3 | -0.085 | 400 | Sag | 137.2 | 55 |
| 2288+00.000 | -0.085 | 0.24 | 400 | Sag | 1230 | 70 |
| 2302+00.000 SR 436 | 0.24 | -0.2 | 500 | Crest | 1136 | 70 |
| 2321+00.000 | -0.2 | 1.667 | 400 | Sag | 214.3 | 70 |
| 2337+00.000 | 1.667 | -0.2 | 500 | Crest | 267.8 | 55 |
| 2363+50.000 | -0.2 | -1.641 | 500 | Crest | 347 | 60 |
| 2374+00.000 | -1.641 | 0.62 | 400 | Sag | 176.9 | 65 |
| 2384+00.000 | 0.62 | -1.398 | 600 | Crest | 297.3 | 55 |
| 2394+20.000 | -1.398 | 3 | 650 | Sag | 147.8 | 55 |
| 2406+31.000 SR 434 (Sanlando Springs Rd.) | 3 | -3 | 1500 | Crest | 250 | 55 |
| 2418+00.000 | -3 | 0.812 | 600 | Sag | 157.4 | 60 |
| 2432+00.000 | 0.812 | -1.404 | 600 | Crest | 270.7 | 55 |
| 2447+00.000 | -1.404 | 2.335 | 650 | Sag | 173.9 | 65 |
| 2458+00.000 | 2.335 | 0.344 | 500 | Crest | 251.2 | 55 |
| 2485+40.000 | 0.344 | -1.56 | 600 | Crest | 315.1 | 60 |
| 2497+50.000 EE Williamson Rd. | -1.56 | 0.1 | 400 | Sag | 240.9 | 70 |
| 2504+00.000 | 0.1 | 0.31 | - | No VC | - | - |
| 2516+00.000 | 0.31 | -0.8 | - | No VC | - | - |
| 2526+00.000 | -0.8 | -0.259 | 400 | Sag | 739.4 | 70 |
| 2546+00.000 | -0.259 | 2.52 | 600 | Sag | 215.9 | 70 |
| 2559+50.000 | 2.52 | -3.03 | 1350 | Crest | 243.2 | 55 |
| 2570+50.000 | -3.03 | 2.951 | 850 | Sag | 142.1 | 55 |
| 2580+00.000 | 2.951 | -1.42 | 1050 | Crest | 240.2 | 55 |
| 2591+00.000 | -1.42 | -0.1 | 400 | Sag | 303 | 70 |
| 2616+00.000 | -0.1 | -1.03 | 500 | Crest | 537.5 | 70 |
| 2635+89.000 | -1.03 | 0 | 400 | Sag | 388.3 | 70 |
| 2661+50.000 Lake Mary Blvd. | 0 | 1.419 | 400 | Sag | 281.8 | 70 |
| 2676+00.000 | 1.419 | -1.721 | 800 | Crest | 254.7 | 55 |
| 2683+00.000 | -1.721 | 0.12 | 600 | Sag | 325.8 | 70 |
| 2709+00.000 | 0.12 | 0.82 | 400 | Sag | 571.6 | 70 |
| 2731+94.440 | 0.82 | 0.1 | 400 | Crest | 555.9 | 70 |
| 2747+00.000 | 0.1 | -0.1 | 500 | Crest | 2496 | 70 |
| 2760+00.000 | -0.1 | -0.728 | 500 | Crest | 796.8 | 70 |

Table 4.1.7.3 Existing I-4 Vertical Alignment - Segments 4 & 5, Cont.

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Elevation Curve (ft) | Vertical Curve Type | IC Value | FDOT Design Speed (MPH) |
|--|--------------|---------------|----------------------|---------------------|----------|-------------------------|
| 2776+00.000 Paola Rd. | -0.728 | 0 | 400 | Sag | 549.8 | 70 |
| 2802+41.000 | 0 | 3 | 500 | Sag | 166.7 | 60 |
| 2816+00.000 SR 417 (Central Florida GreeneWay) | 3 | -3 | 150 | Crest | 250 | 55 |
| 2828+89.310 | -3 | -0.475 | 400 | Sag | 158.4 | 60 |
| 2849+00.000 | -0.475 | -2.558 | 600 | Crest | 288 | 55 |
| 2859+50.000 | -2.558 | 0 | 450 | Sag | 175.9 | 65 |
| 2867+05.790 | 0 | 3 | 420 | Sag | 140 | 55 |
| 2876+40.790 SR 46 | 3 | -3 | 1450 | Crest | 241.7 | 55 |
| 2886+92.130 | -3 | 0.143 | 450 | Sag | 157.5 | 60 |
| 2912+00.00 | 0.143 | -0.467 | 600 | Crest | 1853.8 | 70 |
| 2944+77.610 | -0.467 | 3 | 500 | Sag | 144.2 | 55 |

*FDOT criteria not available for speeds less than 55 mph on interstate facilities

Table 4.1.7.4 Existing I-4 Vertical Alignment - Segment 6

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Elevation Curve (ft) | Vertical Curve Type | IC Value | FDOT Design Speed (MPH) |
|--|--------------|---------------|----------------------|---------------------|----------|-------------------------|
| 2956+68.800 Orange Blvd. | 3 | -2.592 | 1350 | Crest | 241.4 | 55 |
| 2966+88.800 US 17-92 | -2.592 | 2.298 | 690 | Sag | 141.1 | 55 |
| 2985+23.710 Lake Monroe | 2.298 | -3 | 1500 | Crest | 283.1 | 55 |
| 3002+46.270 | -3 | 0 | 450 | Sag | 150 | 60 |
| 3140+16.750 Padgett Creek | 0 | 3 | 500 | Sag | 166.7 | 60 |
| 3155+93.420 Dirksen Drive/ DeBary Avenue | 3 | -3 | 1500 | Crest | 250 | 55 |
| 3167+00.000 | -3 | 0 | 500 | Sag | 166.7 | 60 |
| 3179+00.000 | 0 | 0.61 | 400 | Sag | 655.7 | 70 |
| 3214+00.000 Enterprise Rd. | 0.61 | -0.059 | 400 | Crest | 598.1 | 70 |
| 3231+00.000 | -0.059 | 0.056 | 400 | Sag | 3497.1 | 70 |
| 3249+00.000 | 0.056 | -0.233 | 400 | Crest | 1384.6 | 70 |
| 3279+00.000 | -0.233 | -1 | 400 | Crest | 521.7 | 70 |
| 3296+00.000 | -1 | 0.765 | 400 | Sag | 226.6 | 70 |
| 3316+00.000 | 0.765 | -0.371 | 400 | Crest | 352.2 | 60 |
| 3333+00.000 | -0.371 | 0.294 | 400 | Sag | 601.8 | 70 |
| 3350+00.000 | 0.294 | -0.441 | 400 | Crest | 544 | 70 |
| 3367+00.000 | -0.441 | 0.786 | 400 | Sag | 326 | 70 |
| 3388+00.000 | 0.786 | 0.153 | 400 | Crest | 632.5 | 70 |

Table 4.1.7.4 Existing I-4 Vertical Alignment - Segment 6, Cont.

| Reference Location Stationing | Grade In (%) | Grade Out (%) | Elevation Curve (ft) | Vertical Curve Type | IC Value | FDOT Design Speed (MPH) |
|--|--------------|---------------|----------------------|---------------------|----------|-------------------------|
| 3403+00.000 | 0.153 | 1.882 | 400 | Sag | 231.4 | 70 |
| 3425+00.000 | 1.882 | -1.155 | 1000 | Crest | 329.3 | 60 |
| 3447+00.000 Graves Ave / Howland Blvd. | -1.155 | 0.268 | 400 | Sag | 281.2 | 70 |
| 3472+00.000 SR 472 | 0.268 | -0.583 | 600 | Crest | 705.3 | 70 |
| 3501+00.000 | -0.583 | -0.238 | 400 | Sag | 1161.8 | 70 |
| 3514+00.000 | -0.238 | 0.187 | 400 | Sag | 939.5 | 70 |

4.1.8 Drainage

The existing drainage characteristics for the proposed project were determined by reviewing the FDOT construction plans for I-4 and South Florida Water Management District (SFWMD) and St. Johns River Water Management District (SJRWMD) contour aeriels. Field investigations were also performed to verify the drainage features presented in the construction plans, as well as to update any changes in drainage conditions due to developments and improvements within the corridor. The existing drainage characteristics are depicted on Figure 4.1.8.1. The numbers correspond to the existing drainage structures listed in Table 4.1.8.1.

Table 4.1.8.1 Summary of Existing Structures

| Structure Number | Description | Elevation (NGVD) | IC Value | Notes |
|------------------|-----------------|------------------|----------|-------|
| 1 | 42" RCP | 11.38 | 111.01 | A |
| 2 | 36" RCP | 118.37 | 117.84 | A |
| 3 | 24" RCP | 131.72 | 131.10 | A |
| 4 | 24" RCP | 95.1 | 94.98 | A |
| 5 | 24" RCP | 96.5 | 96.37 | A |
| 6 | 48" RCP | 92.09 | 91.94 | A |
| 7 | 6' X 5' RCBC | 91.69 | 91.26 | A |
| 8 | 30" RCP | 94.07 | 93.67 | B |
| 9 | 9' X 5' RCBC | 89.67 | 89.57 | B |
| 10 | 24" RCP | 109.1 | 109.00 | C |
| 10A | 24" RCP | 101.3 | 101.10 | C |
| 10B | 6' X 3' RCBC | 93.05 | 93.00 | C |
| 11 | 24" RCP | 94 | 93.10 | D |
| 12 | 36" RCP | 93 | 92.30 | D |
| 13 | 2-10' X 3' RCBC | 91.5 | 90.90 | D |
| 14 | 24" RCP | 94 | 93.40 | D |
| 15 | 7' X 12' RCBC | 87.4 | 87.30 | D |
| 16 | 2-42" RCP | 92.2 | 91.00 | D |
| 17 | 3' X 3' RCBC | 50.5 | 50.40 | D |
| 18 | OMITTED | OMITTED | | |
| 19 | 18" RCP | 64.6 | 64.30 | D |
| 20 | 4' X 4' RCBC | 48 | 44.50 | D,E |

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Table 4.1.8.1 Summary of Existing Structures, Cont.

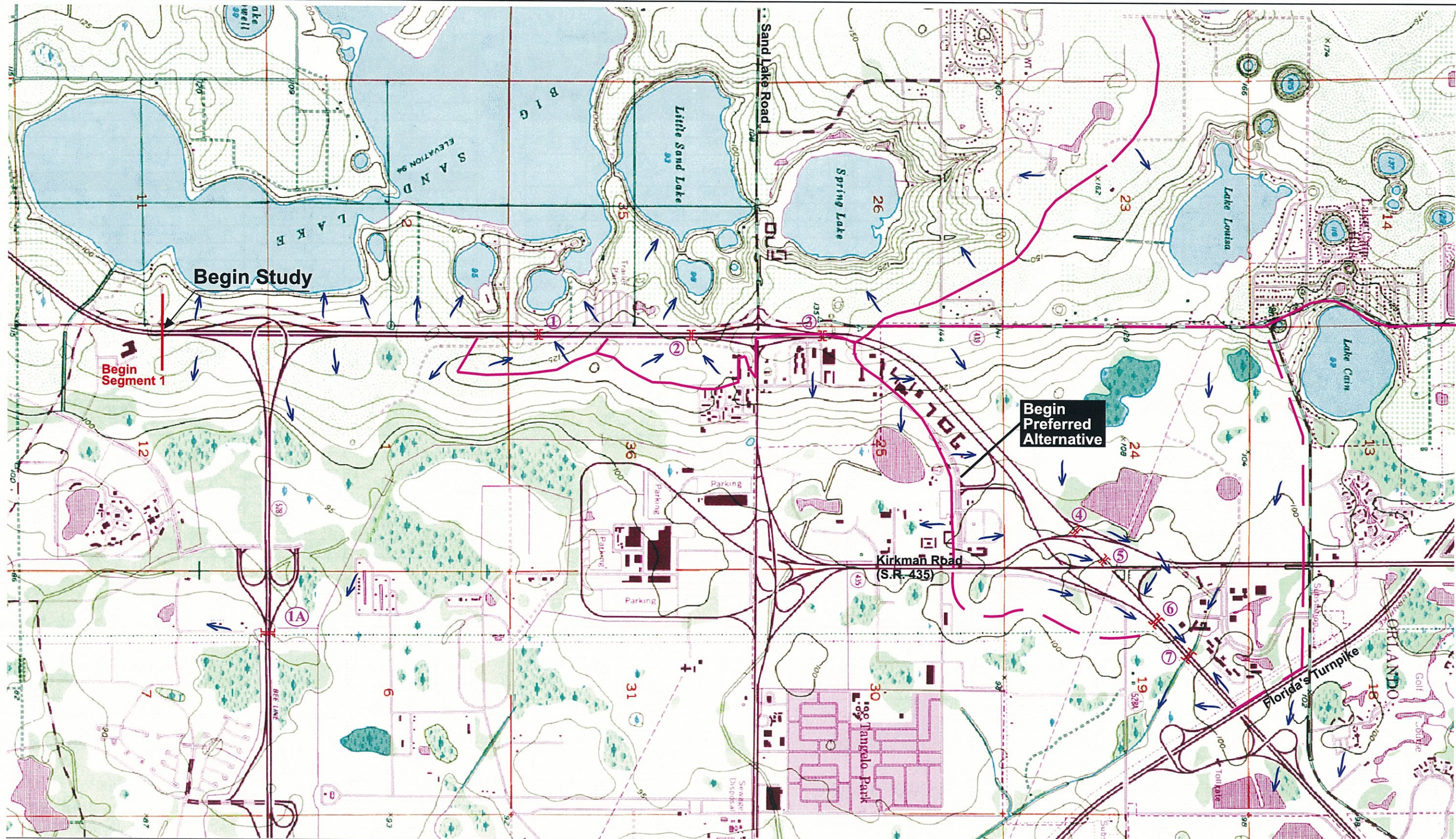
| Structure Number | Description | Elevation (NGVD) | IC Value | Notes |
|------------------|---------------|------------------|----------|-------|
| 21 | 24" RCP | 85.8 | 85.40 | E |
| 22 | 30" RCP | 63 | 57.50 | E |
| 23 | 24" RCP | 60.3 | 48.50 | E |
| 24 | 54" RCP | 54 | 53.00 | E |
| 25 | 36" RCP | 52.30 | 51.00 | E |
| 26 | 48" RCP | 46.50 | 42.60 | F |
| 27 | 24" RCP | 52.10 | 48.50 | F |
| 28 | 30" RCP | 53.30 | 49.40 | F |
| 29 | 24" RCP | 76.60 | 76.20 | F |
| 30 | 30" RCP | 77.80 | 77.40 | F |
| 31 | 24" RCP | 77.60 | 77.20 | F |
| 32 | 30" RCP | 57.10 | 57.00 | F |
| 33 | 18" RCP | 28.00 | 27.90 | F |
| 34 | 10' X 8' RCBC | 17.20 | 17.10 | F |
| 35 | 18" RCP | 12.00 | 11.90 | F, G |
| 36 | 24" RCP | 20.40 | 20.13 | G |
| 37 | 30" RCP | 35.20 | 33.60 | G, H |
| 38A | 36" RCP | 36.00 | 27.60 | G, H |
| 38B | 36" RCP | 42.98 | 36.12 | G, H |
| 39A | 24" RCP | 50.00 | 49.80 | H |
| 39B | 24" RCP | 49.70 | 49.60 | H |
| 40 | 36" RCP | 19.85 | 19.27 | H |
| 41 | 24" RCP | 30.43 | 28.72 | H |
| 42 | 30" RCP | 35.00 | 20.20 | H |
| 43 | 24" RCP | 59.43 | 58.30 | H |

RCP - Reinforced Concrete Pipe
RCBC - Reinforced Concrete Box Culvert

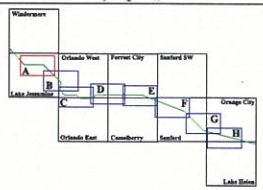
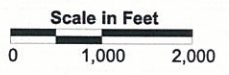
Figure 4.1.8.2 shows the existing surface waters and drainage basins throughout the Ultimate study area. All the surface waters within the Ultimate project area are classified as Class III water bodies per the State of Florida December 1996 FAC Chapter 62-302.400. A Class III surface water for the State of Florida is designated by the Florida Department of Environmental Protection (FDEP) for the following uses: recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

4.1.8.1 Segment 1 - SR 528 to John Young Parkway

Existing drainage characteristics associated with this segment include both median and roadside ditches to convey runoff (both on-site and off-site) to existing ditch bottom inlets or end treatments. Both the on-site and off-site flow is routed under the Interstate via existing cross culverts. These culverts discharge offsite. The following statements define the general pattern of runoff flow from and through existing I-4 right-of-way:



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford



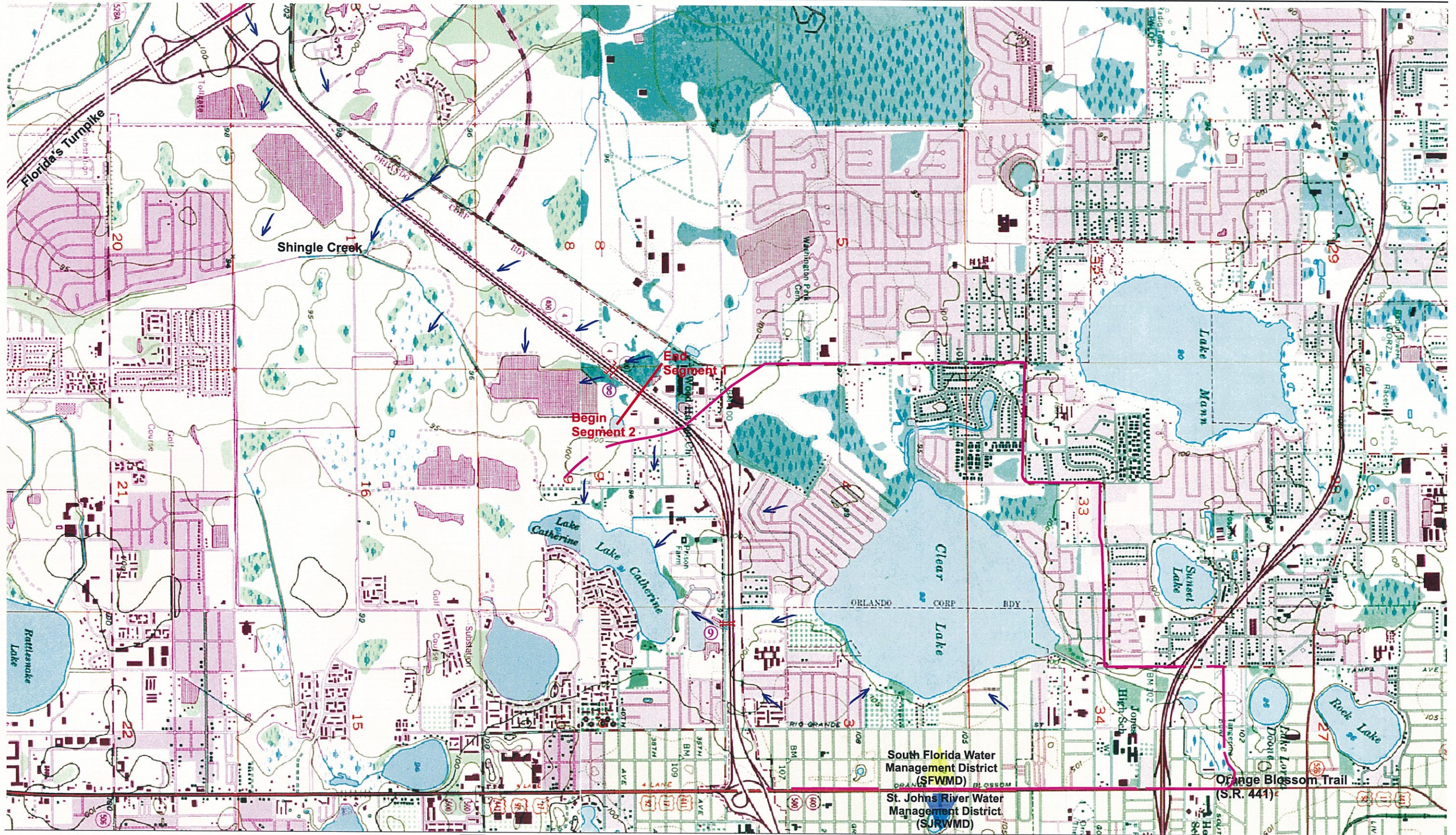
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line
- Existing Culvert
- Drainage Boundary
- Flow Direction
- Culvert Designation

Map A
 Segment 1

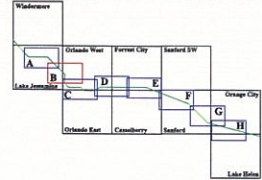
Figure 4.1.8.1
 Existing Drainage Characteristics - Map A

I-4 PD&E Study - Section 2



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford

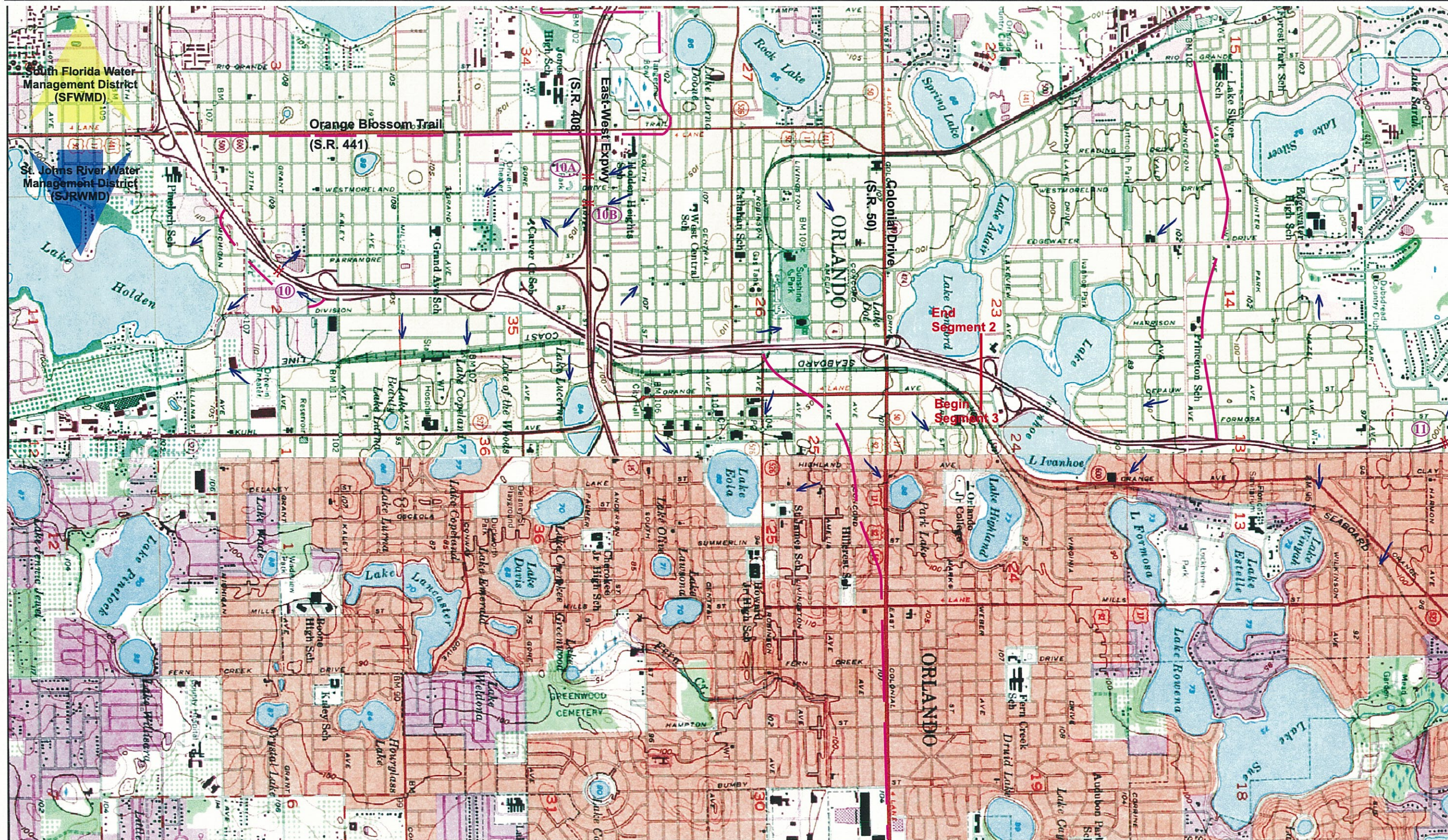
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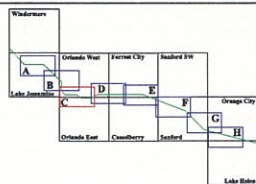
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line
- Existing Culvert
- Drainage Boundary
- Flow Direction
- Culvert Designation

Map B
 Segments 1 and 2



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford



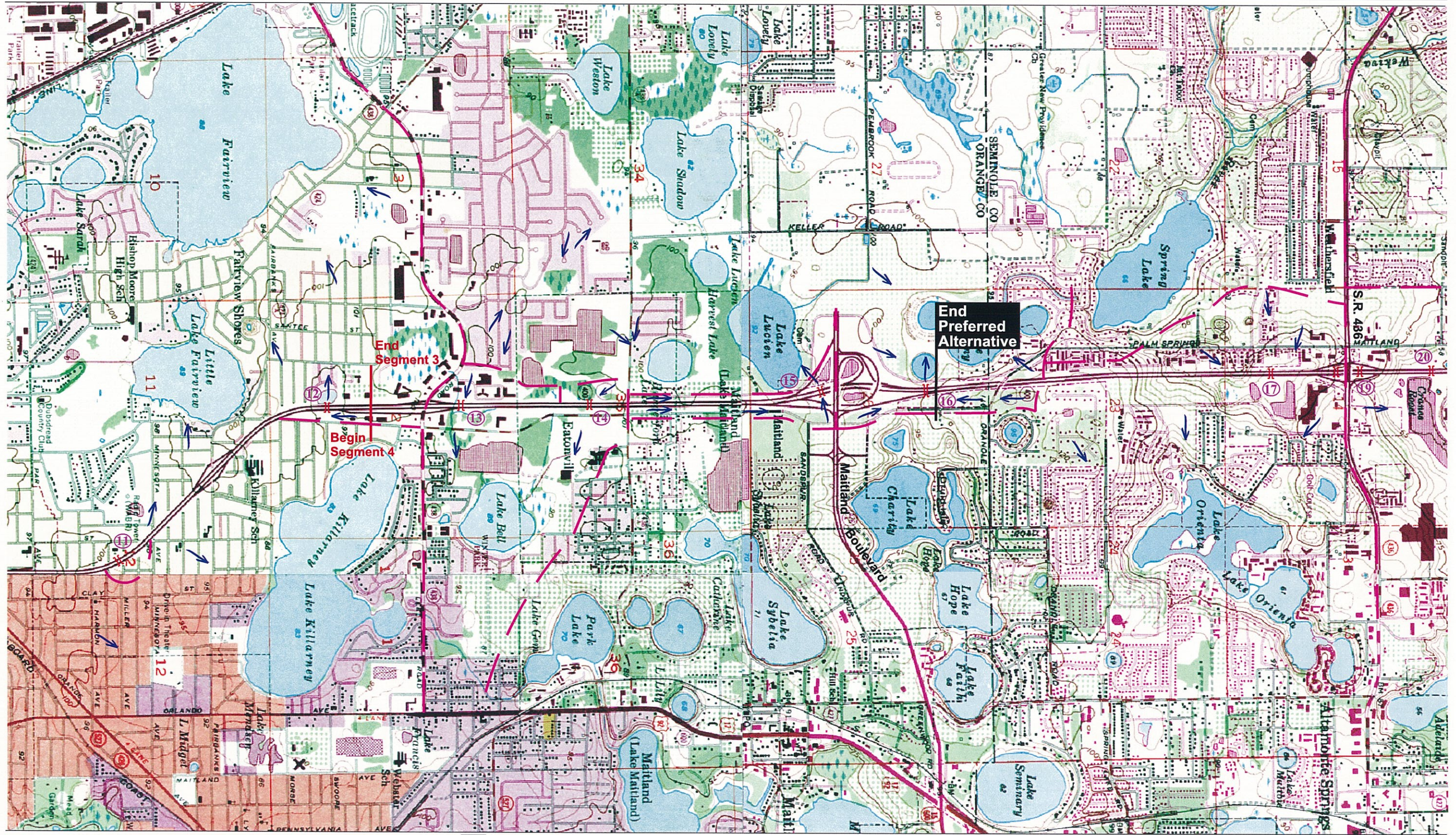
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line
- Existing Culvert
- Drainage Boundary
- Flow Direction
- Culvert Designation

Map C
 Segments 2 and 3

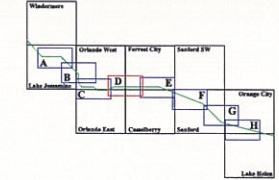
Figure 4.1.8.1
 Existing Drainage Characteristics - Map C

I-4 PD&E Study - Section 2



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford

Scale in Feet
 0 1,000 2,000



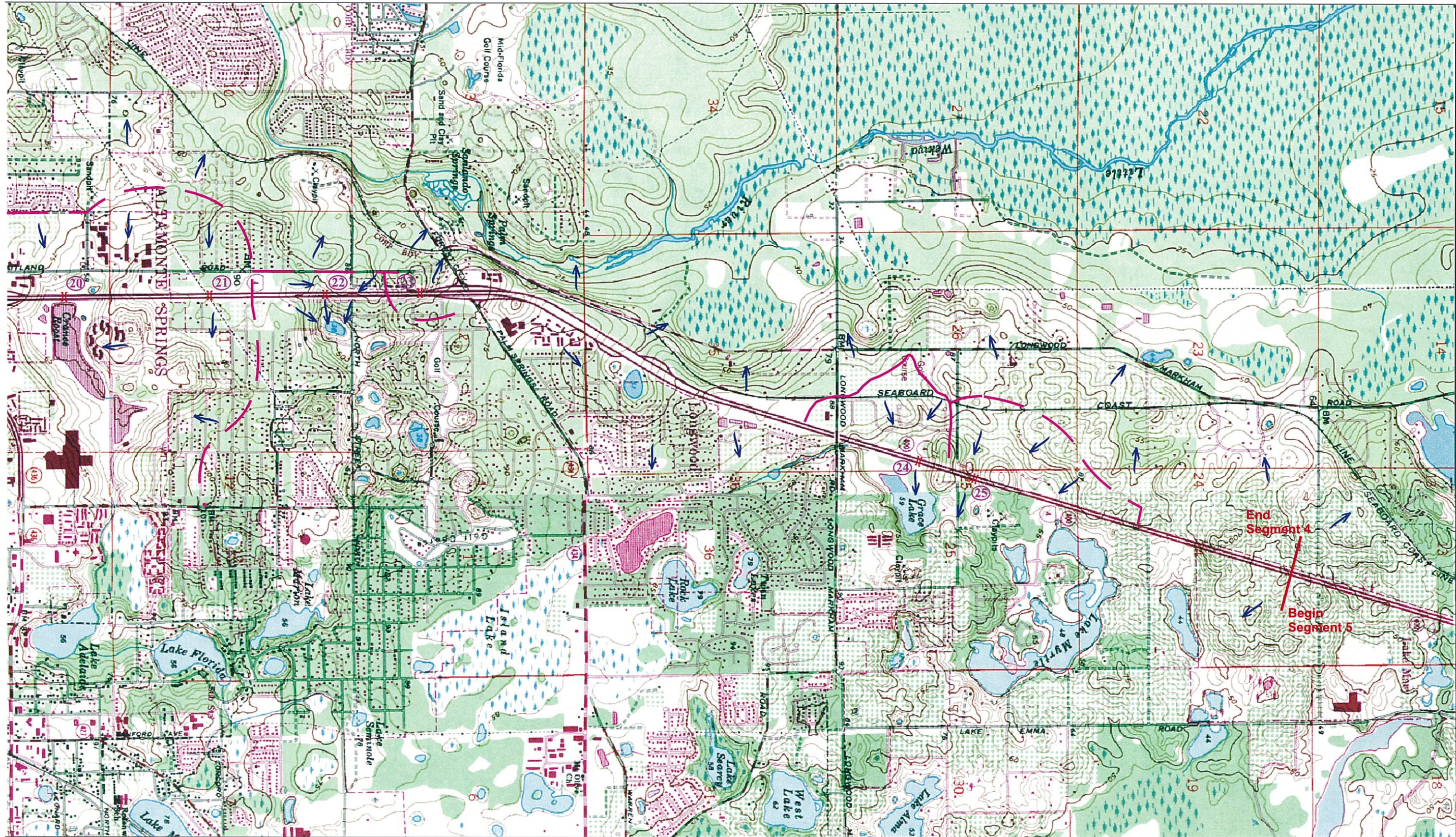
LEGEND

| | | |
|--------------------|-------------------|---------------------|
| Interstate Highway | Railroads | Flow Direction |
| Federal Highway | County Line | Culvert Designation |
| State Roads | Existing Culvert | |
| County Roads | Drainage Boundary | |

Map D
 Segments 3 and 4

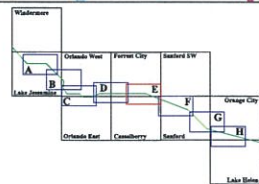
I-4 PD&E Study - Section 2

Figure 4.1.8.1
 Existing Drainage Characteristics - Map D



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford

Scale in Feet
 0 1,000 2,000



LEGEND

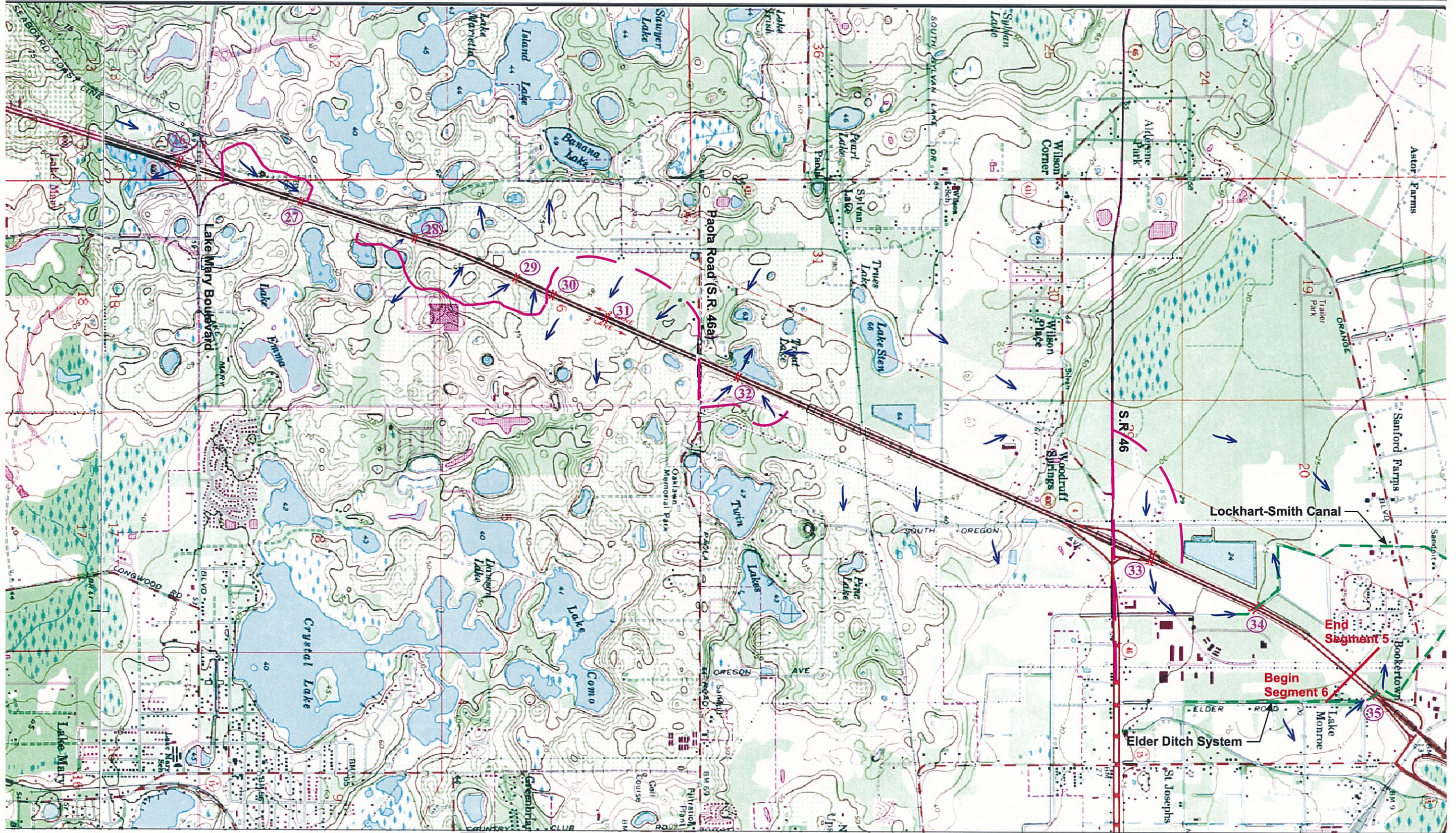
- | | | |
|--------------------|-------------------|---------------------|
| Interstate Highway | Railroads | Flow Direction |
| 92 Federal Highway | County Line | Culvert Designation |
| 50 State Roads | Existing Culvert | |
| 435 County Roads | Drainage Boundary | |

Map E

Segments 4 and 5

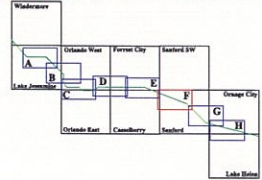
Figure 4.1.8.1
 Existing Drainage Characteristics - Map E

I-4 PD&E Study - Section 2



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 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford

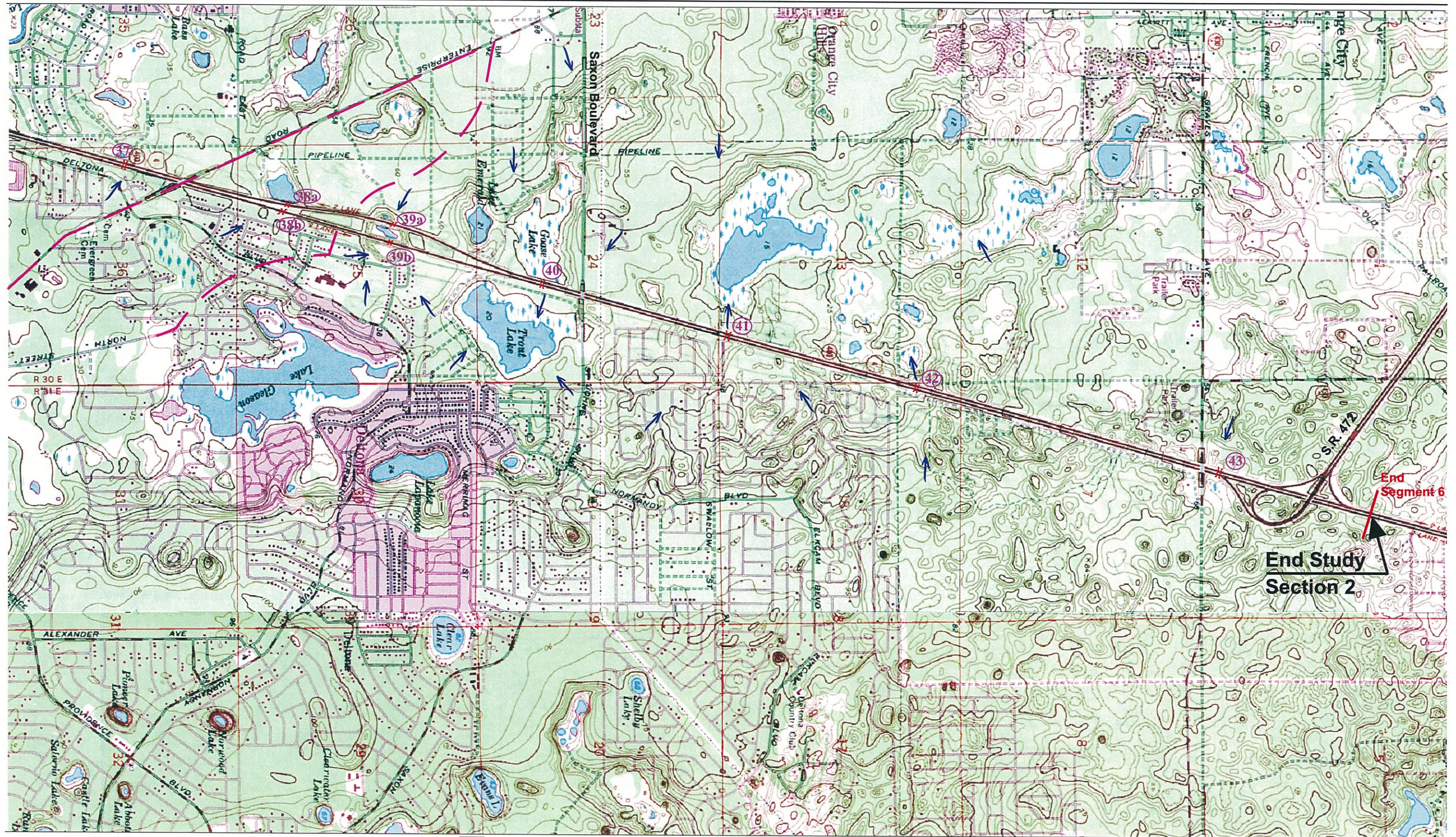
Scale in Feet
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LEGEND

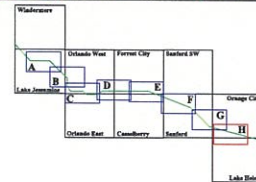
- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line
- Existing Culvert
- Drainage Boundary
- Flow Direction
- Culvert Designation

Map F
 Segment 5



Prepared From USGS Quadrangle Maps:
 Windermere Forrest City Orange City
 Lake Jessamine Casselberry Lake Helen
 Orlando West Sanford SW
 Orlando East Sanford

Scale in Feet
 0 1,000 2,000



LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line
- Existing Culvert
- Drainage Boundary
- Flow Direction
- Culvert Designation

Map H
 Segment 6

I-4 PD&E Study - Section 2

Figure 4.1.8.1
 Existing Drainage Characteristics - Map H

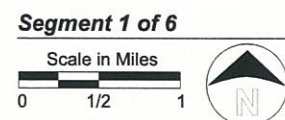
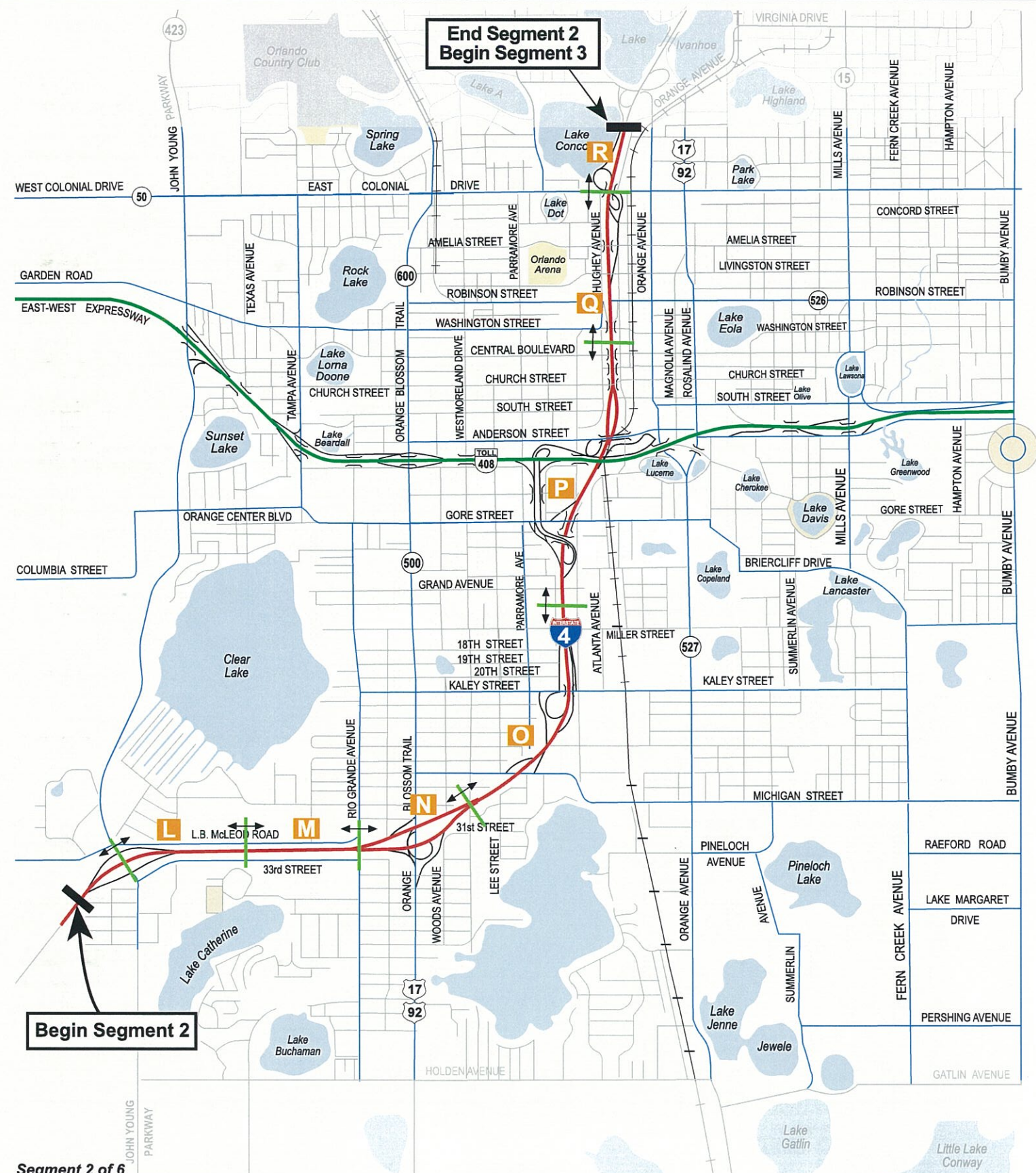
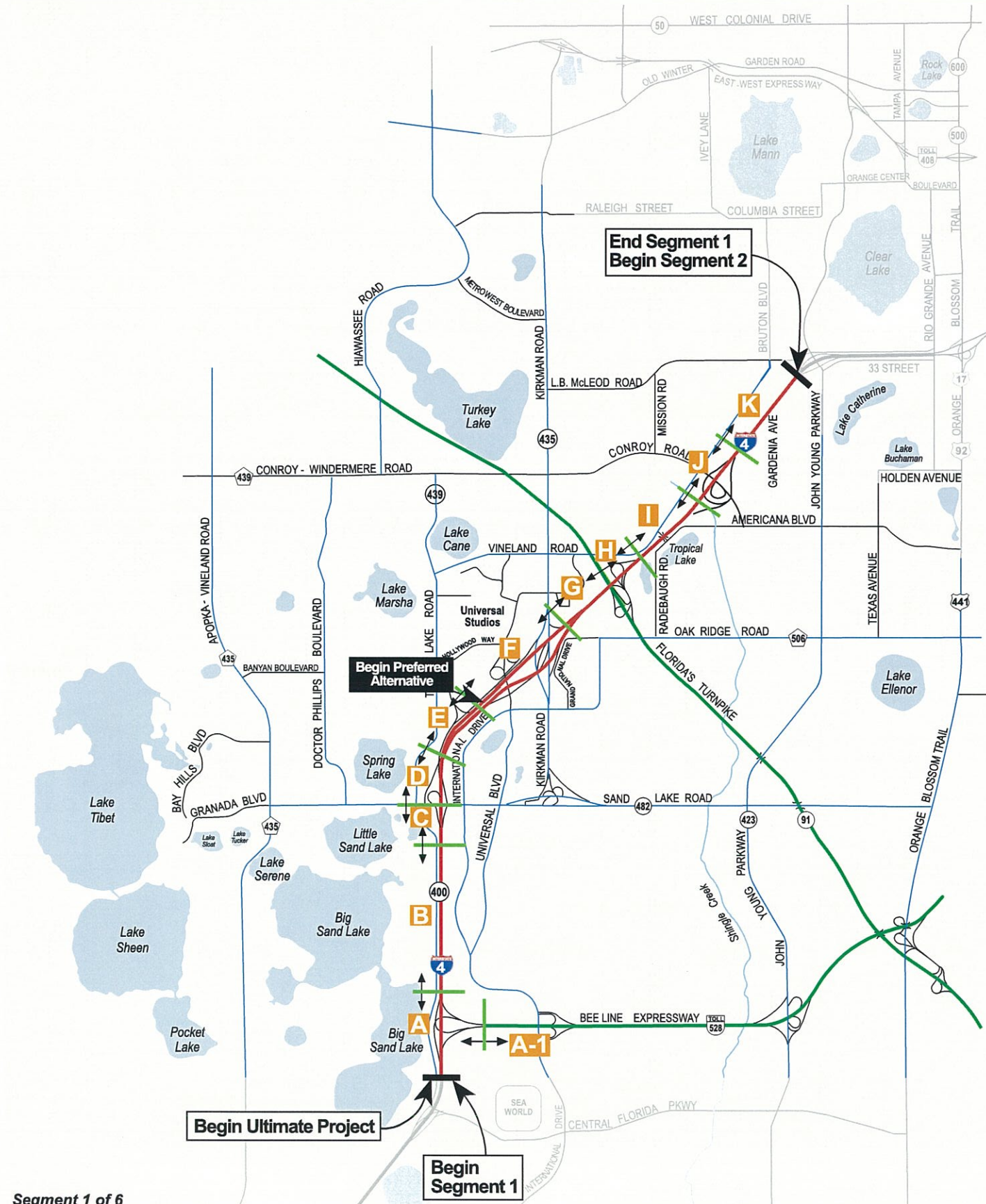
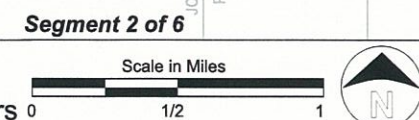
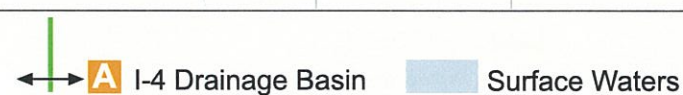
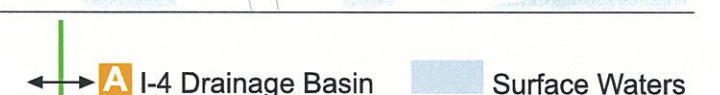
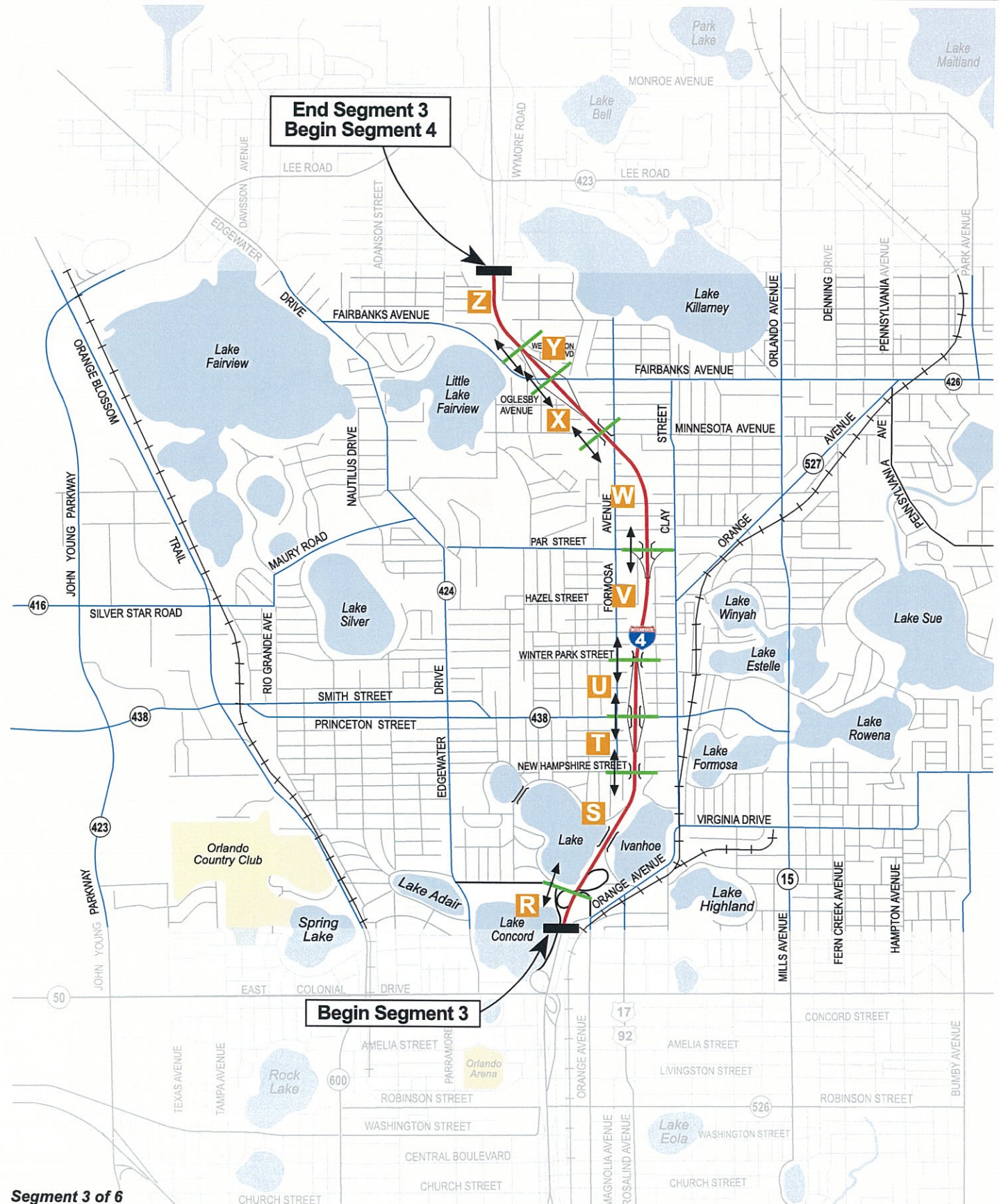


Figure 4.1.8.2
Surface Waters

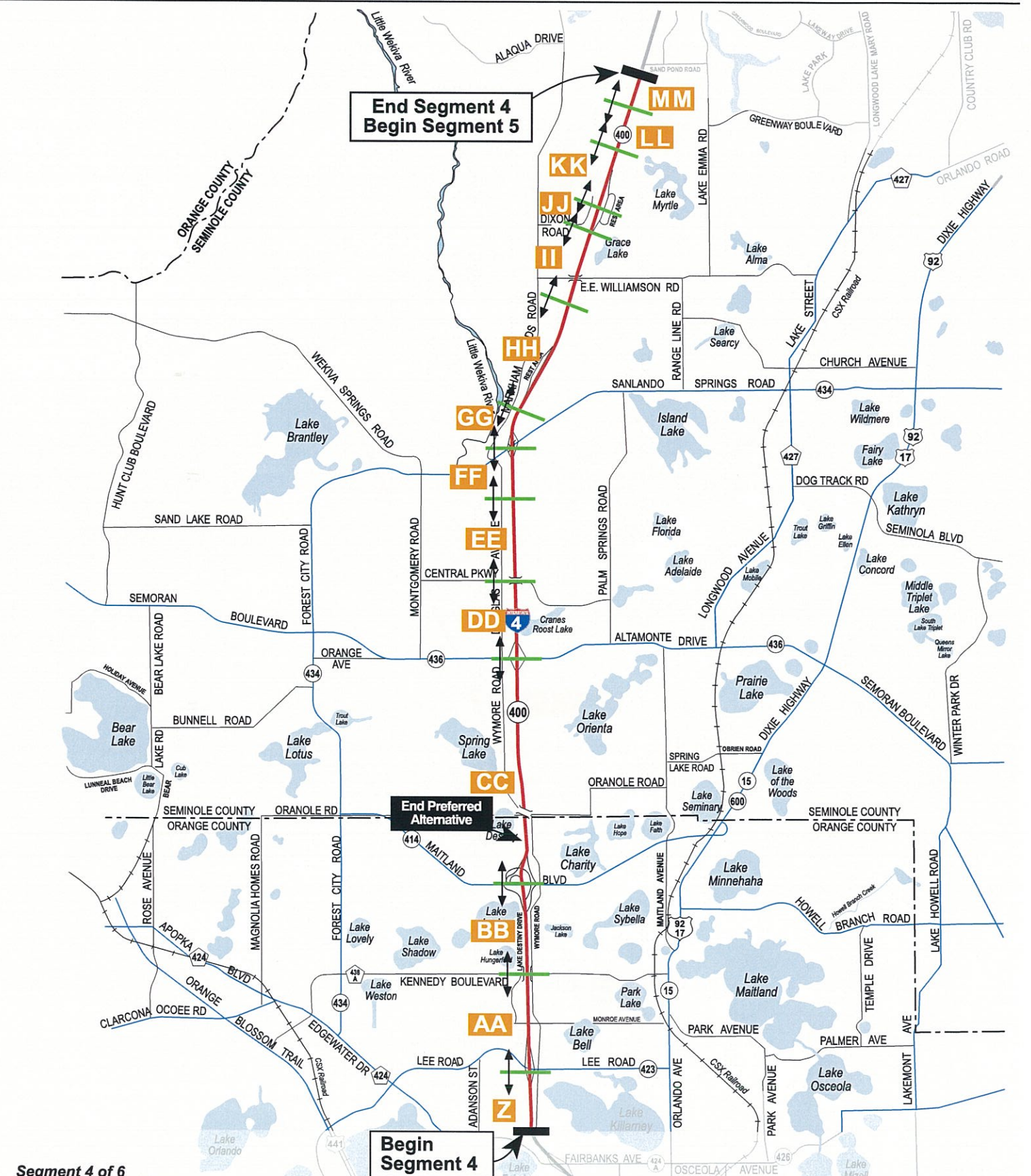
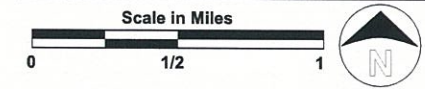


I-4 PD&E Study - Section 2

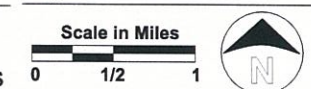




Segment 3 of 6



Segment 4 of 6

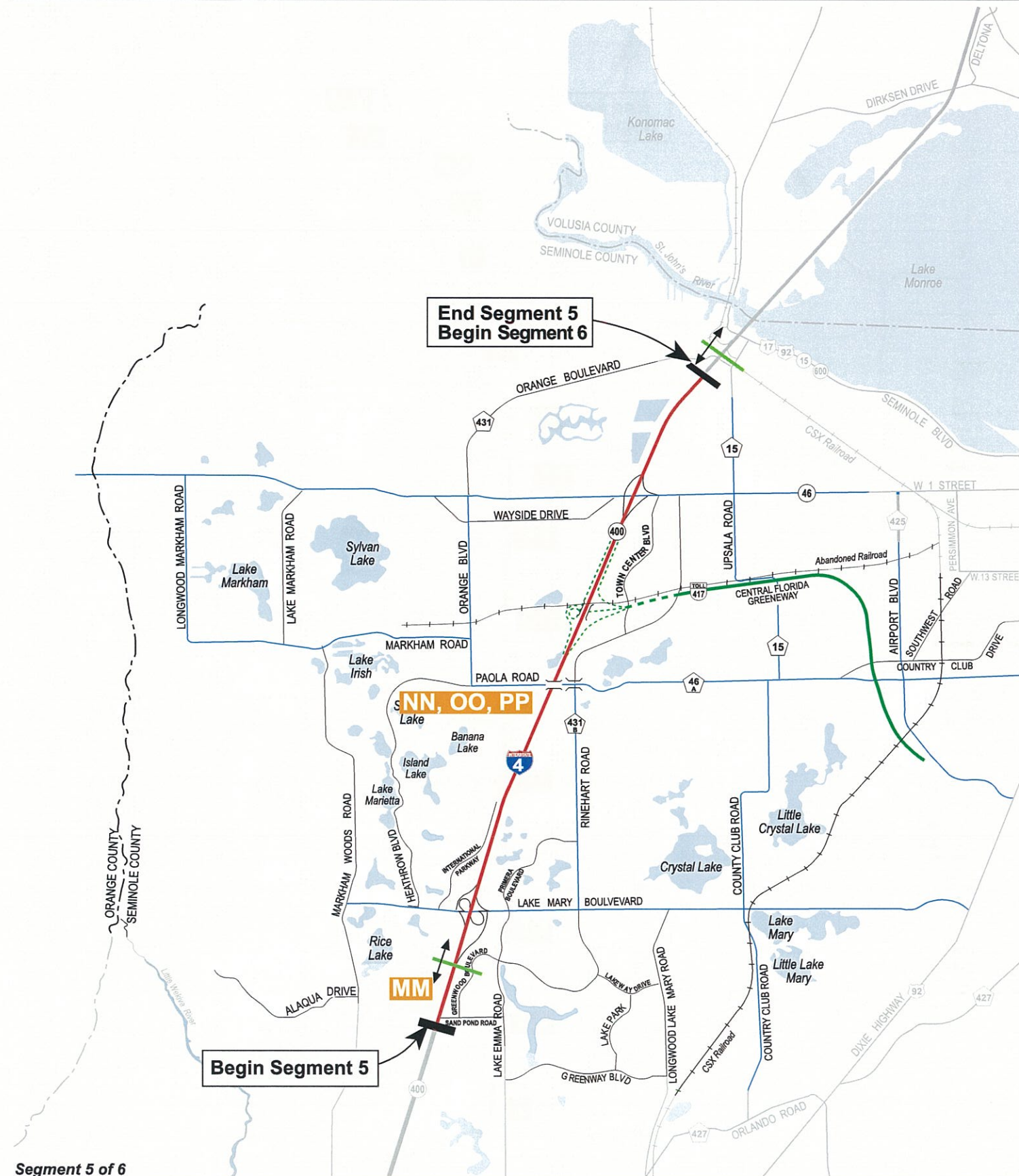


←→ **A** I-4 Drainage Basin
 Surface Waters

←→ **A** I-4 Drainage Basin
 Surface Waters

I-4 PD&E Study - Section 2

**Figure 4.1.8.2
Surface Waters**



Segment 5 of 6

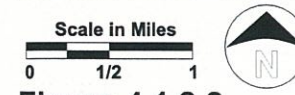
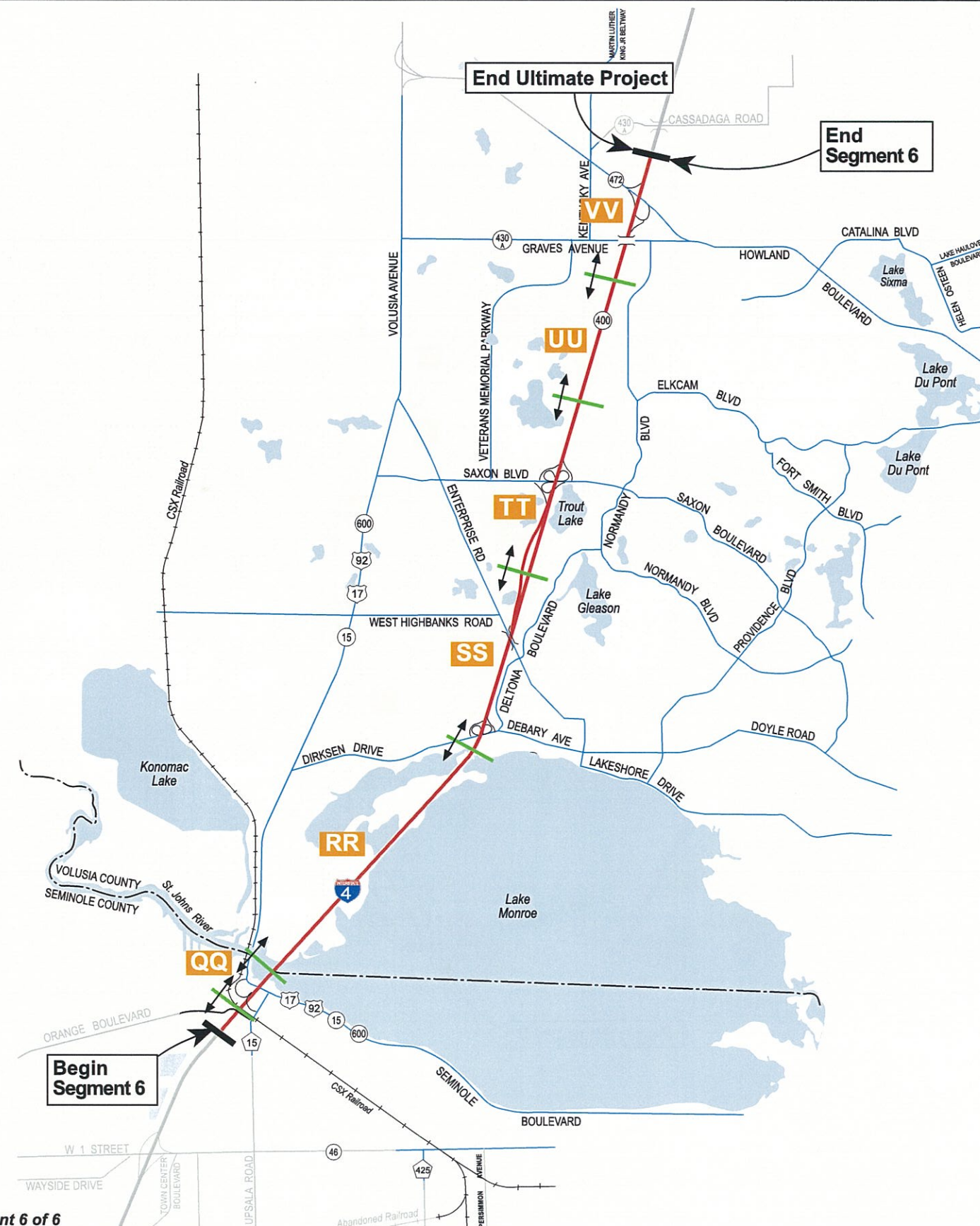
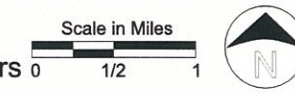


Figure 4.1.8.2
Surface Waters



Segment 6 of 6



I-4 PD&E Study - Section 2

↔ **A** I-4 Drainage Basin
 Surface Waters

- ◆ Between SR 528 (Bee Line Expressway) and just north of SR 482 (Sand Lake Road) (Basins A through D), the runoff from the I-4 right-of-way discharges to Big Sand Lake, Little Sand Lake and Spring Lake.
- ◆ Between just north of SR 482 (Sand Lake Road) and Florida's Turnpike (Basins E through G), the runoff from the I-4 right-of-way discharges to Shingle Creek via a series of existing canals.
- ◆ From Florida's Turnpike to SR 423 (John Young Parkway) (Basins H through K), the runoff from I-4 right-of-way discharges to the Shingle Creek system.
- ◆ From SR 423 (John Young Parkway) to the end of Segment 1 (Basin L), the runoff from I-4 right-of-way discharges to Lake Catherine, a land-locked system.

4.1.8.2 Segments 2 & 3 - John Young Parkway to Lee Road

The existing drainage characteristics associated with these segments include the conveyance of runoff via roadside ditches, median ditches and stormsewers to existing ditch bottom inlets and/or nearby lakes. The following summarizes the general pattern of runoff flow from and through the existing I-4 right-of-way:

- ◆ Between SR 423 (John Young Parkway) and US 441 (Orange Blossom Trail) (Basins L, M and N) the runoff from the right-of-way discharges to Lake Catherine, a land-locked system.
- ◆ From US 441 to south of SR 408 (Basins N and O) runoff from the right-of-way discharges to Lake Holden and Clear Lake, both are considered land-locked systems.
- ◆ At SR 408, runoff from the right-of-way discharges to Clear Lake on the west side of the interchange and Lake Lucerne on the east side of the interchange (Basin P).
- ◆ Between SR 408 and Colonial Drive (Basin Q), the runoff from the right-of-way discharges to closed downtown drainage well systems, which are considered closed basins.
- ◆ From Colonial Drive to Winter Park Street (Basins R through U) runoff discharges to the Lake Concord/Lake Ivanhoe/Lake Formosa system, which ultimately discharges to the Howell Creek system and Lake Jesup.
- ◆ From Winter Park Street to Par Avenue (Basin V) runoff discharges to the Lake Winyah/Lake Estelle system.
- ◆ From Par Avenue to Lee Road (Basins W through Z) runoff discharges to the Little Lake Fairview/Lake Fairview system, which ultimately discharges to the Little Wekiva River.

4.1.8.3 Segments 4 & 5 - Lee Road To US 17-92

Existing drainage characteristics associated with these segments include both median and roadside ditches to convey runoff (both on-site and off-site) to existing ditch bottom inlets or end treatments. Both the on-site and off-site flow is routed under the Interstate via existing cross culverts. These culverts discharge offsite. The following statements define the general pattern of runoff flow from and through existing I-4 right-of-way:

- ◆ Between SR 423 (Lee Road) and SR 438A (Kennedy Boulevard) (Basin AA) the runoff from the I-4 right-of-way discharges via a borrow pit to Lake Bell and ultimately Lake Killarney.
- ◆ From SR 438A (Kennedy Boulevard) to just north of SR 414 (Maitland Boulevard) (Basin BB) the runoff from the I-4 right-of-way discharges to Lake Lucien.
- ◆ Between SR 414 (Maitland Boulevard) and SR 436 (Basin CC) the runoff from the I-4 right-of-way discharges to North Lake, a land-locked basin.
- ◆ Between SR 436 and south of Central Parkway (Basin DD) the runoff from the I-4 right-of-way discharges to Cranes Roost Lake. Cranes Roost Lake is treated as a land-locked basin since it discharges to Little Wekiva via a hydraulic pump at only high water levels.
- ◆ Between south of Central Parkway and SR 434 (Sanlando Springs Road) (Basins EE and FF) the runoff from the I-4 right-of-way discharges to an unnamed lake, east of I-4, which is a land-locked basin.
- ◆ Between SR 434 (Sanlando Springs Road) and Longwood-Markham Woods Road (Basins GG and HH) the runoff from the I-4 right-of-way flows overland to the Little Wekiva River, which is classified as an Outstanding Florida Water (OFW).
- ◆ Between Longwood-Markham Woods Road and Dixon Road (Basins II and JJ) the runoff from the I-4 right-of-way discharges to Grace Lake, which is a land-locked basin.
- ◆ Between Dixon Road and 7000 feet north of Longwood-Markham Woods Road (Basin KK) the runoff from the I-4 right-of-way discharges to Lake Myrtle, which is a land-locked basin.
- ◆ Between 7000 feet north of Longwood-Markham Woods Road and Lake Mary Boulevard (Basins LL and MM) the runoff from the I-4 right-of-way discharges to a series of unnamed land-locked depressions.
- ◆ Between Lake Mary Boulevard and Orange Boulevard (Basins NN, OO and PP) the runoff from the I-4 right-of-way discharges to Lake Monroe via the Lockhart - Smith Canal or the Elder ditch system.
- ◆ Between Orange Boulevard and the high point of the bridge over the St. Johns River (Basin QQ) the runoff from the I-4 right-of-way discharges to Lake Monroe.

4.1.8.4 Segment 6 - US 17-92 to SR 472

Existing drainage characteristics associated with this segment includes both median and roadside ditches conveying on-site and off-site runoff off-site. The following statements define general pattern of runoff flow from and through the existing I-4 right-of-way:

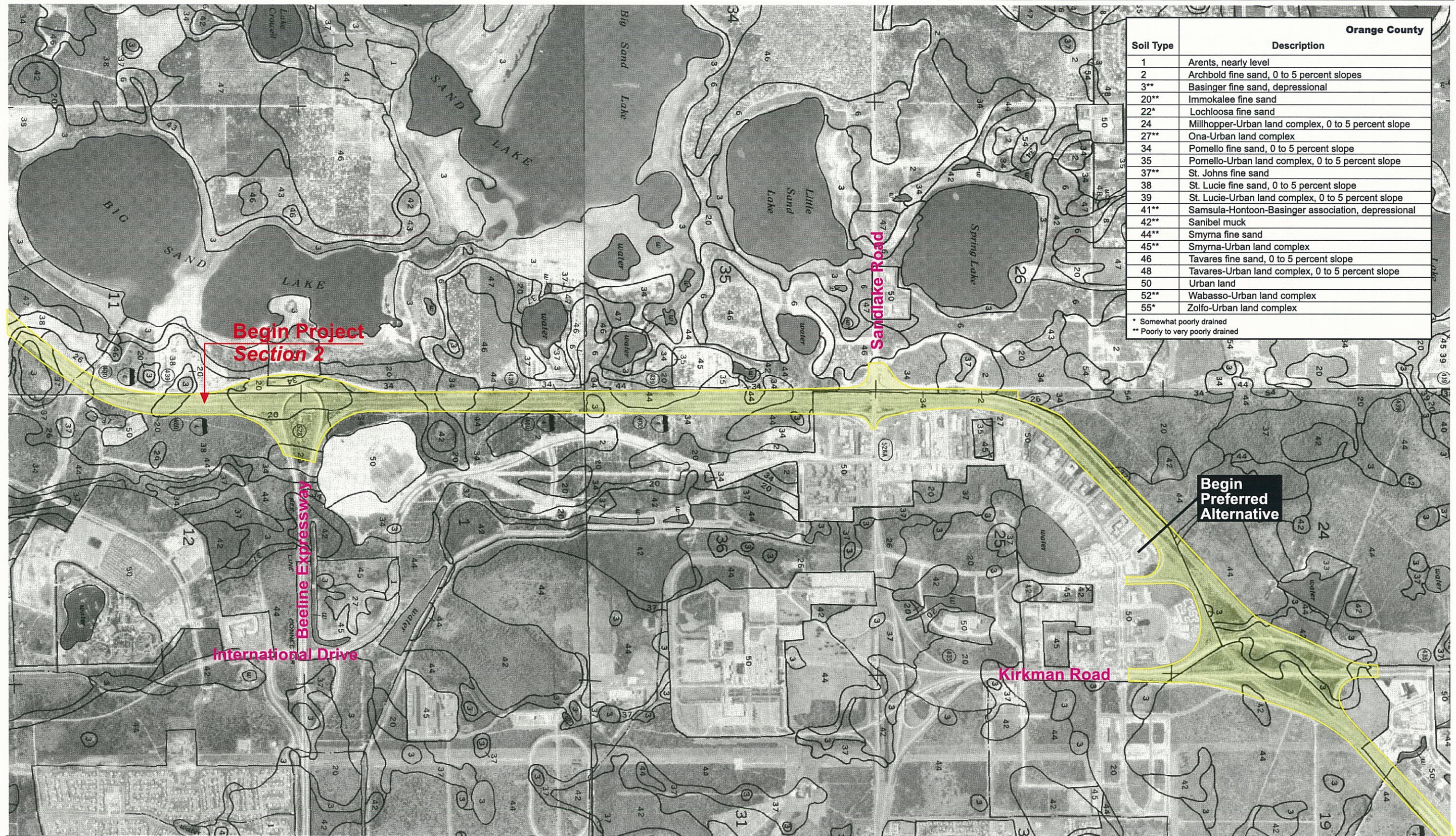
- ◆ Between US 17-92 and 3500 feet north of Enterprise Road (Basins RR and SS) the runoff from the I-4 right-of-way discharges to Lake Monroe.
- ◆ From 3500 feet north of Enterprise Road to Saxon Boulevard (Basin TT) the runoff from the I-4 right-of-way discharges to either Goose or Trout Lake, both of which are land-locked.
- ◆ Between Saxon Boulevard and 4700 feet south of SR 472 (Basin UU) the runoff from the I-4 right-of-way discharges to Lake Mallard and a series of depressional areas, all of which are land-locked.
- ◆ Between 4700 feet south of SR 472 and the end of the project (Basin VV) runoff from the I-4 right-of-way discharges to unnamed depressional areas adjacent to the interstate, which are considered land-locked.

4.1.9 Geotechnical Data

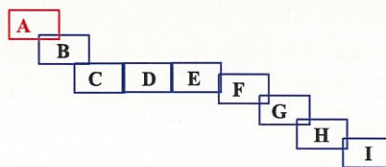
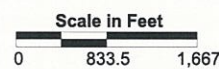
A preliminary geotechnical investigation was performed to conceptually evaluate roadway, stormwater management and structure improvement constraints. Specifically, the purpose of this preliminary geotechnical investigation was to review readily available published information regarding anticipated geotechnical conditions within the Ultimate study area as well as specific soil borings and permeability tests to evaluate groundwater conditions at potential pond and exfiltration locations. The information reviewed for this study included the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Survey for Orange, Seminole and Volusia Counties, Florida, the United States Geological Survey (USGS) Quadrangle maps for this area and available topographic maps from: Orange County, Seminole County, SJRWMD and SFWMD. Figure 4.1.9.1 (Maps A through I) displays the NRCS Soil Survey Maps of the study corridor. Additionally, the *Roadway Soil Survey* (June 2000) was prepared under separate cover and includes results of field tests performed in conjunction with proposed pond locations for this project.

4.1.10 Crash Data

Crash data were provided by FDOT for I-4 and for SR 408 (East/West Expressway) for a three-year period from 1997 through 1999. Crash data were analyzed to determine roadway sections with high crash rates, types of crashes that occurred and the associated economic loss per year. A summary of crash types on I-4 is presented in Table 4.1.10.1. Tables 4.1.10.2 through 4.1.10.5 summarize crash data by segment and include information on location, number of fatalities/injuries, crash rates, safety



Prepared From SCS Soil Survey of:
Orange County, Fla.
Seminole County, Fla.
Volusia County, Fla.



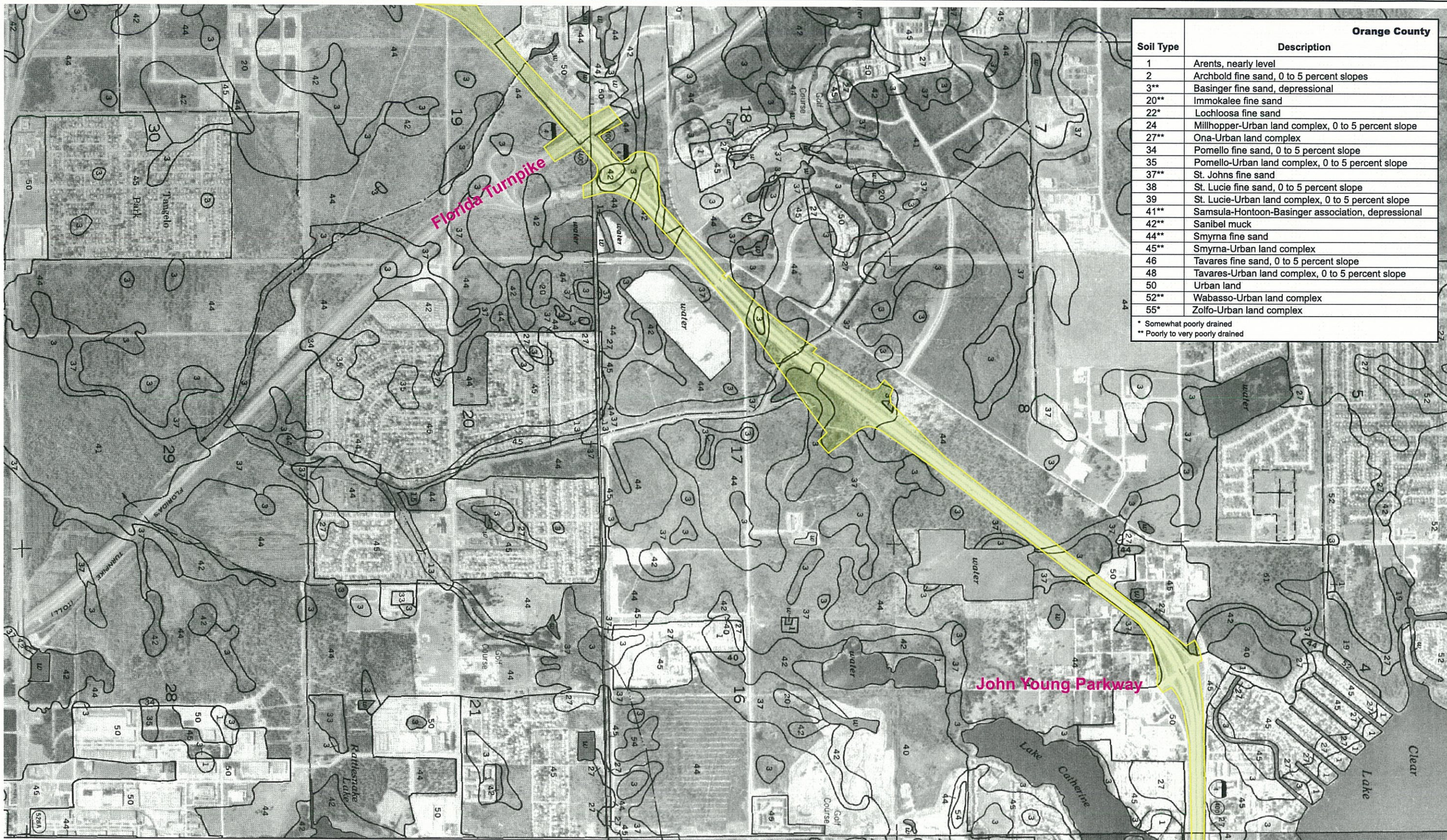
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line

Map A

Figure 4.1.9.1
Soil Survey Maps - Map A

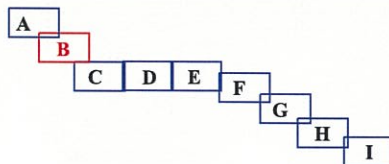
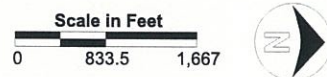
I-4 PD&E Study - Section 2



| Orange County | |
|---------------|---|
| Soil Type | Description |
| 1 | Arents, nearly level |
| 2 | Archbold fine sand, 0 to 5 percent slopes |
| 3** | Basinger fine sand, depressional |
| 20** | Immokalee fine sand |
| 22* | Lochloosa fine sand |
| 24 | Millhopper-Urban land complex, 0 to 5 percent slope |
| 27** | Ona-Urban land complex |
| 34 | Pomello fine sand, 0 to 5 percent slope |
| 35 | Pomello-Urban land complex, 0 to 5 percent slope |
| 37** | St. Johns fine sand |
| 38 | St. Lucie fine sand, 0 to 5 percent slope |
| 39 | St. Lucie-Urban land complex, 0 to 5 percent slope |
| 41** | Samsula-Hontoon-Basinger association, depressional |
| 42** | Sanibel muck |
| 44** | Smyrna fine sand |
| 45** | Smyrna-Urban land complex |
| 46 | Tavares fine sand, 0 to 5 percent slope |
| 48 | Tavares-Urban land complex, 0 to 5 percent slope |
| 50 | Urban land |
| 52** | Wabasso-Urban land complex |
| 55* | Zolfo-Urban land complex |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.



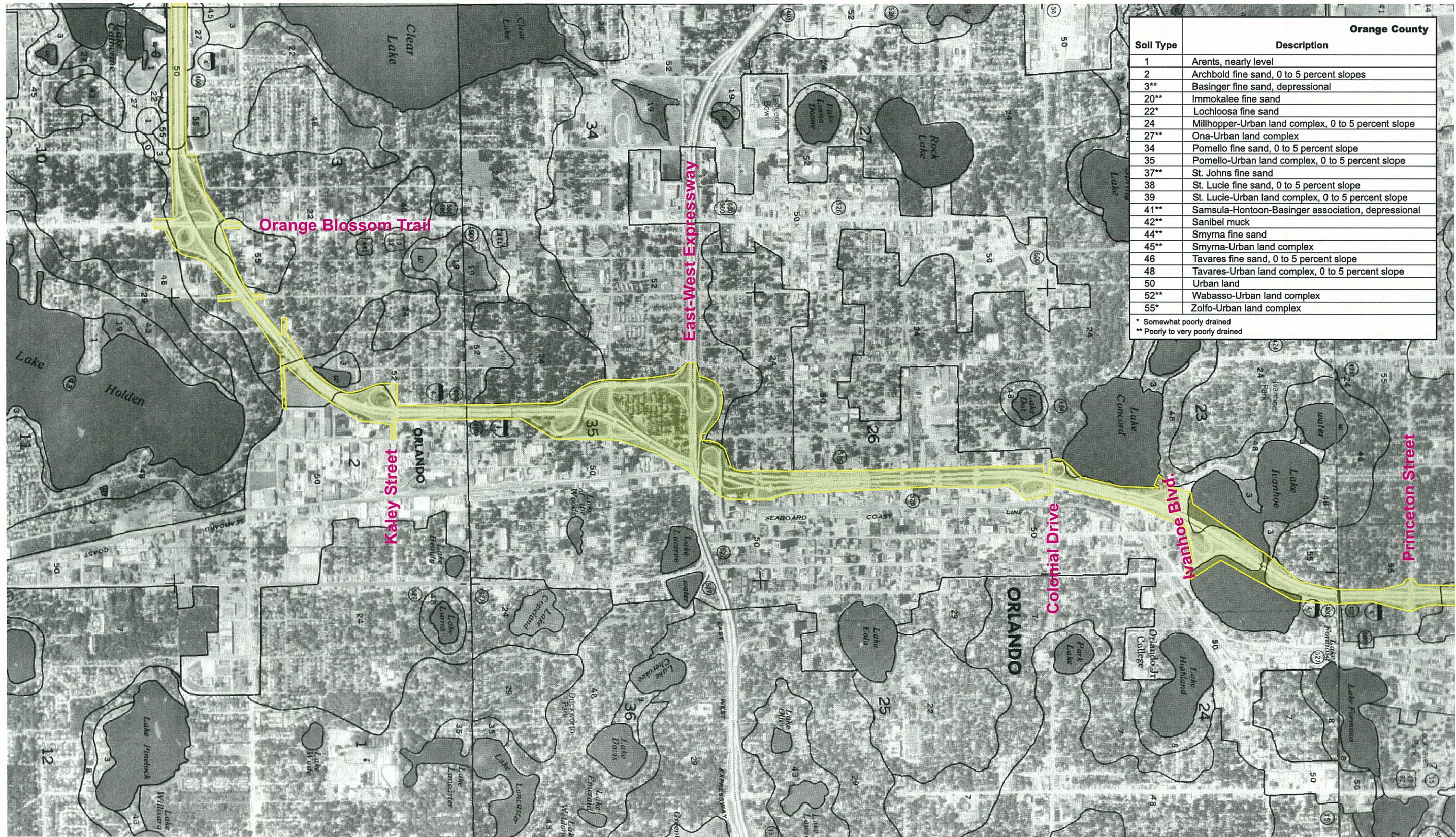
LEGEND

| | |
|--------------------|-------------|
| Interstate Highway | Railroads |
| Federal Highway | County Line |
| State Roads | |
| County Roads | |

Map B

I-4 PD&E Study - Section 2

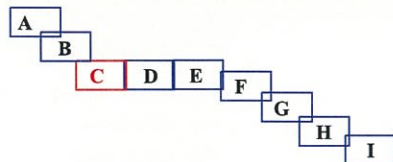
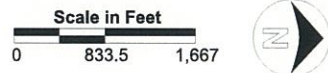
**Figure 4.1.9.1
 Soil Survey Maps - Map B**



| Soil Type | Description | Orange County |
|-----------|---|---------------|
| 1 | Arents, nearly level | |
| 2 | Archbold fine sand, 0 to 5 percent slopes | |
| 3** | Basinger fine sand, depressional | |
| 20** | Immokalee fine sand | |
| 22* | Lochloosa fine sand | |
| 24 | Millhopper-Urban land complex, 0 to 5 percent slope | |
| 27** | Ona-Urban land complex | |
| 34 | Pomello fine sand, 0 to 5 percent slope | |
| 35 | Pomello-Urban land complex, 0 to 5 percent slope | |
| 37** | St. Johns fine sand | |
| 38 | St. Lucie fine sand, 0 to 5 percent slope | |
| 39 | St. Lucie-Urban land complex, 0 to 5 percent slope | |
| 41** | Samsula-Hontoon-Basinger association, depressional | |
| 42** | Sanibel muck | |
| 44** | Smyrna fine sand | |
| 45** | Smyrna-Urban land complex | |
| 46 | Tavares fine sand, 0 to 5 percent slope | |
| 48 | Tavares-Urban land complex, 0 to 5 percent slope | |
| 50 | Urban land | |
| 52** | Wabasso-Urban land complex | |
| 55* | Zolfo-Urban land complex | |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.

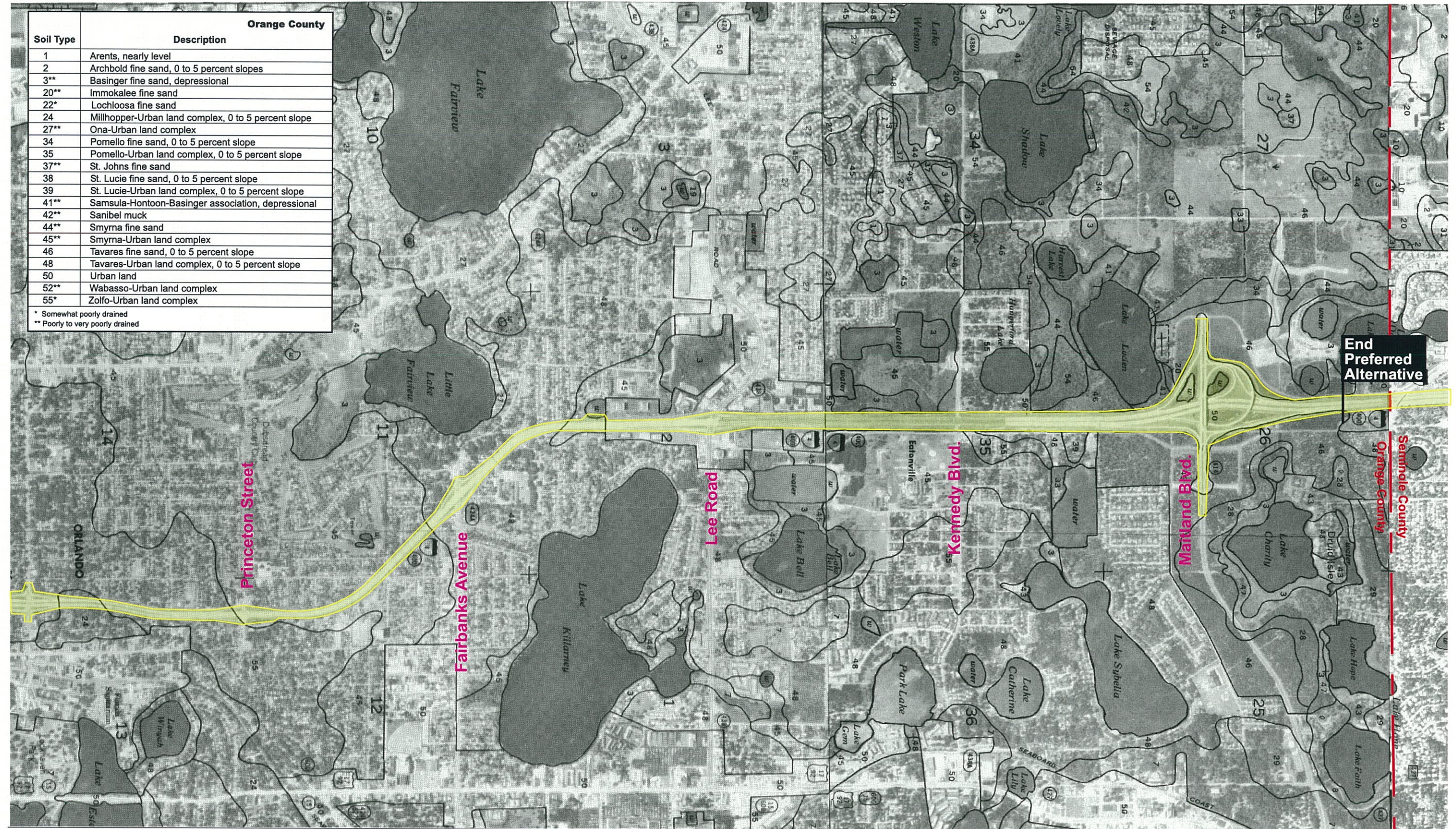


- LEGEND**
- Interstate Highway
 - Federal Highway
 - State Roads
 - County Roads
 - Railroads
 - County Line

Map C

Figure 4.1.9.1
 Soil Survey Maps - Map C

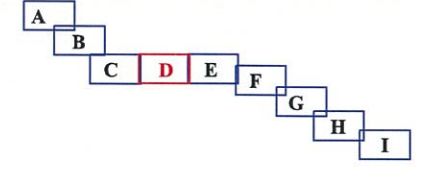
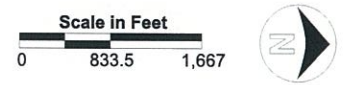
I-4 PD&E Study - Section 2



| Orange County | |
|---------------|---|
| Soil Type | Description |
| 1 | Arents, nearly level |
| 2 | Archbold fine sand, 0 to 5 percent slopes |
| 3** | Basinger fine sand, depressional |
| 20** | Immokalee fine sand |
| 22* | Lochloosa fine sand |
| 24 | Millhopper-Urban land complex, 0 to 5 percent slope |
| 27** | Ona-Urban land complex |
| 34 | Pomello fine sand, 0 to 5 percent slope |
| 35 | Pomello-Urban land complex, 0 to 5 percent slope |
| 37** | St. Johns fine sand |
| 38 | St. Lucie fine sand, 0 to 5 percent slope |
| 39 | St. Lucie-Urban land complex, 0 to 5 percent slope |
| 41** | Samsula-Hontoon-Basinger association, depressional |
| 42** | Sanibel muck |
| 44** | Smyrna fine sand |
| 45** | Smyrna-Urban land complex |
| 46 | Tavares fine sand, 0 to 5 percent slope |
| 48 | Tavares-Urban land complex, 0 to 5 percent slope |
| 50 | Urban land |
| 52** | Wabasso-Urban land complex |
| 55* | Zolfo-Urban land complex |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.



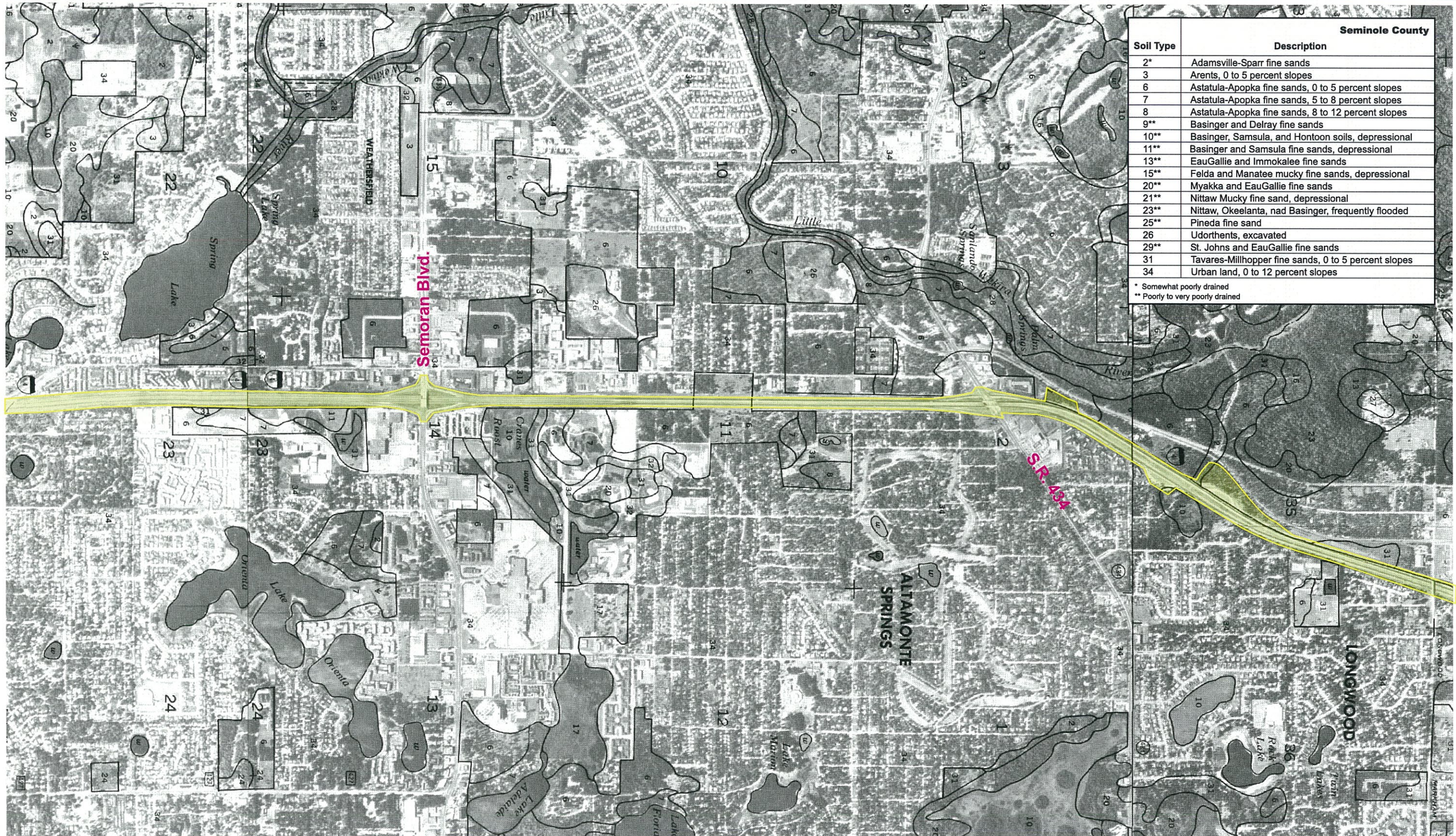
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line

Map D

I-4 PD&E Study - Section 2

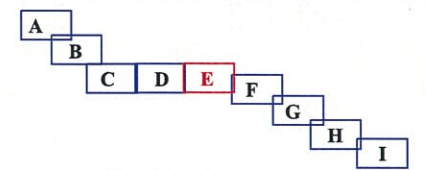
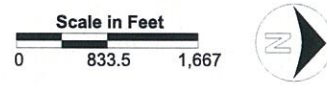
**Figure 4.1.9.1
 Soil Survey Maps - Map D**



| Seminole County | |
|-----------------|--|
| Soil Type | Description |
| 2* | Adamsville-Sparr fine sands |
| 3 | Arents, 0 to 5 percent slopes |
| 6 | Astatula-Apopka fine sands, 0 to 5 percent slopes |
| 7 | Astatula-Apopka fine sands, 5 to 8 percent slopes |
| 8 | Astatula-Apopka fine sands, 8 to 12 percent slopes |
| 9** | Basinger and Delray fine sands |
| 10** | Basinger, Samsula, and Hontoon soils, depressional |
| 11** | Basinger and Samsula fine sands, depressional |
| 13** | EauGallie and Immokalee fine sands |
| 15** | Felda and Manatee mucky fine sands, depressional |
| 20** | Myakka and EauGallie fine sands |
| 21** | Nittaw Mucky fine sand, depressional |
| 23** | Nittaw, Okeelanta, nad Basinger, frequently flooded |
| 25** | Pineda fine sand |
| 26 | Udorthents, excavated |
| 29** | St. Johns and EauGallie fine sands |
| 31 | Tavares-Millhopper fine sands, 0 to 5 percent slopes |
| 34 | Urban land, 0 to 12 percent slopes |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.

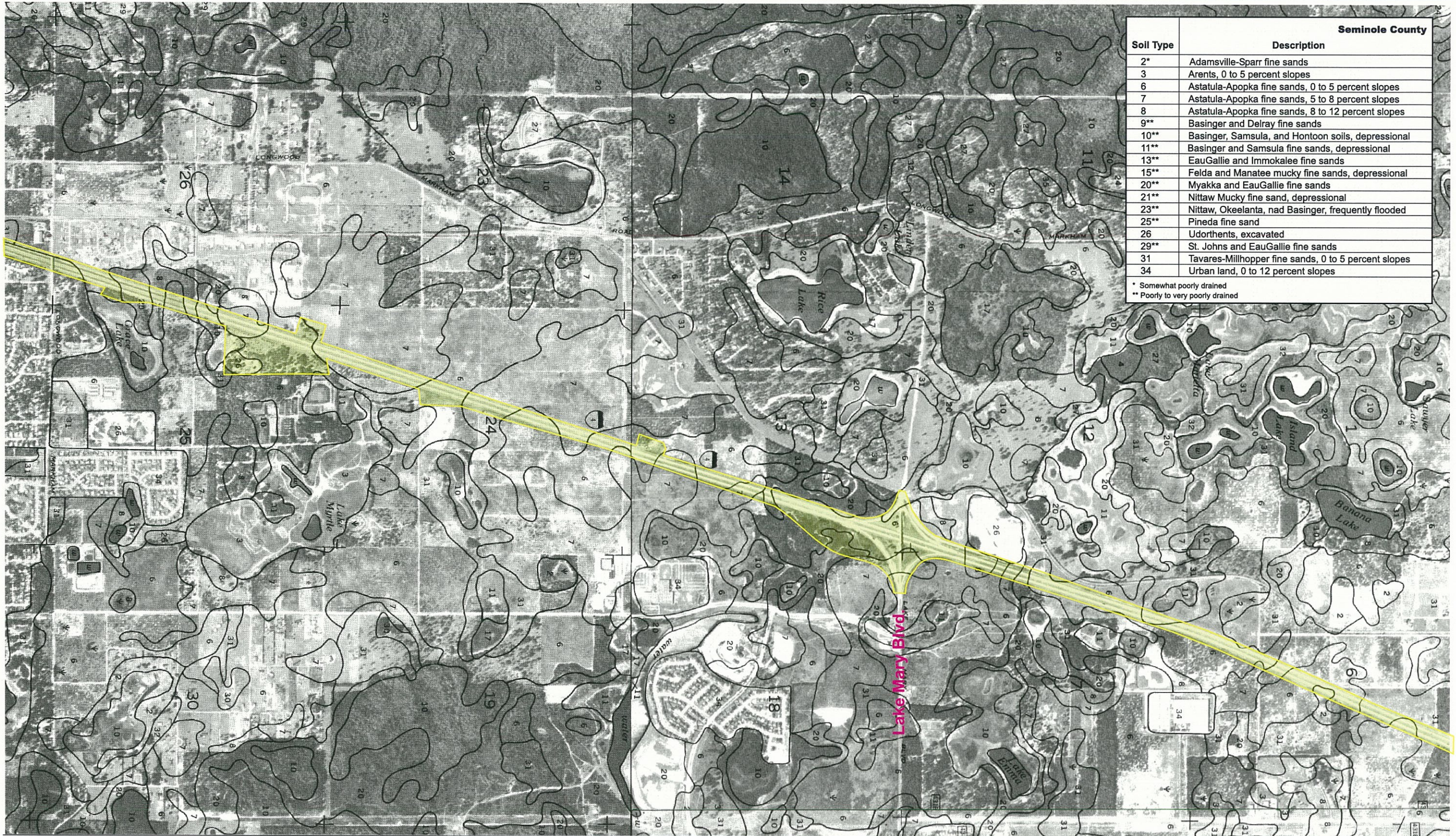


- LEGEND**
- Interstate Highway
 - Federal Highway
 - State Roads
 - County Roads
 - Railroads
 - County Line

Map E

Figure 4.1.9.1
 Soil Survey Maps - Map E

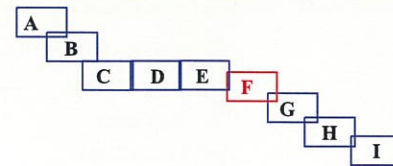
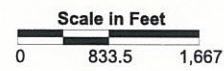
I-4 PD&E Study - Section 2



| Seminole County | |
|-----------------|--|
| Soil Type | Description |
| 2* | Adamsville-Sparr fine sands |
| 3 | Arents, 0 to 5 percent slopes |
| 6 | Astatula-Apopka fine sands, 0 to 5 percent slopes |
| 7 | Astatula-Apopka fine sands, 5 to 8 percent slopes |
| 8 | Astatula-Apopka fine sands, 8 to 12 percent slopes |
| 9** | Basinger and Delray fine sands |
| 10** | Basinger, Samsula, and Hontoon soils, depressional |
| 11** | Basinger and Samsula fine sands, depressional |
| 13** | EauGallie and Immokalee fine sands |
| 15** | Felda and Manatee mucky fine sands, depressional |
| 20** | Myakka and EauGallie fine sands |
| 21** | Nittaw Mucky fine sand, depressional |
| 23** | Nittaw, Okeelanta, nad Basinger, frequently flooded |
| 25** | Pineda fine sand |
| 26 | Udorthents, excavated |
| 29** | St. Johns and EauGallie fine sands |
| 31 | Tavares-Millhopper fine sands, 0 to 5 percent slopes |
| 34 | Urban land, 0 to 12 percent slopes |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.



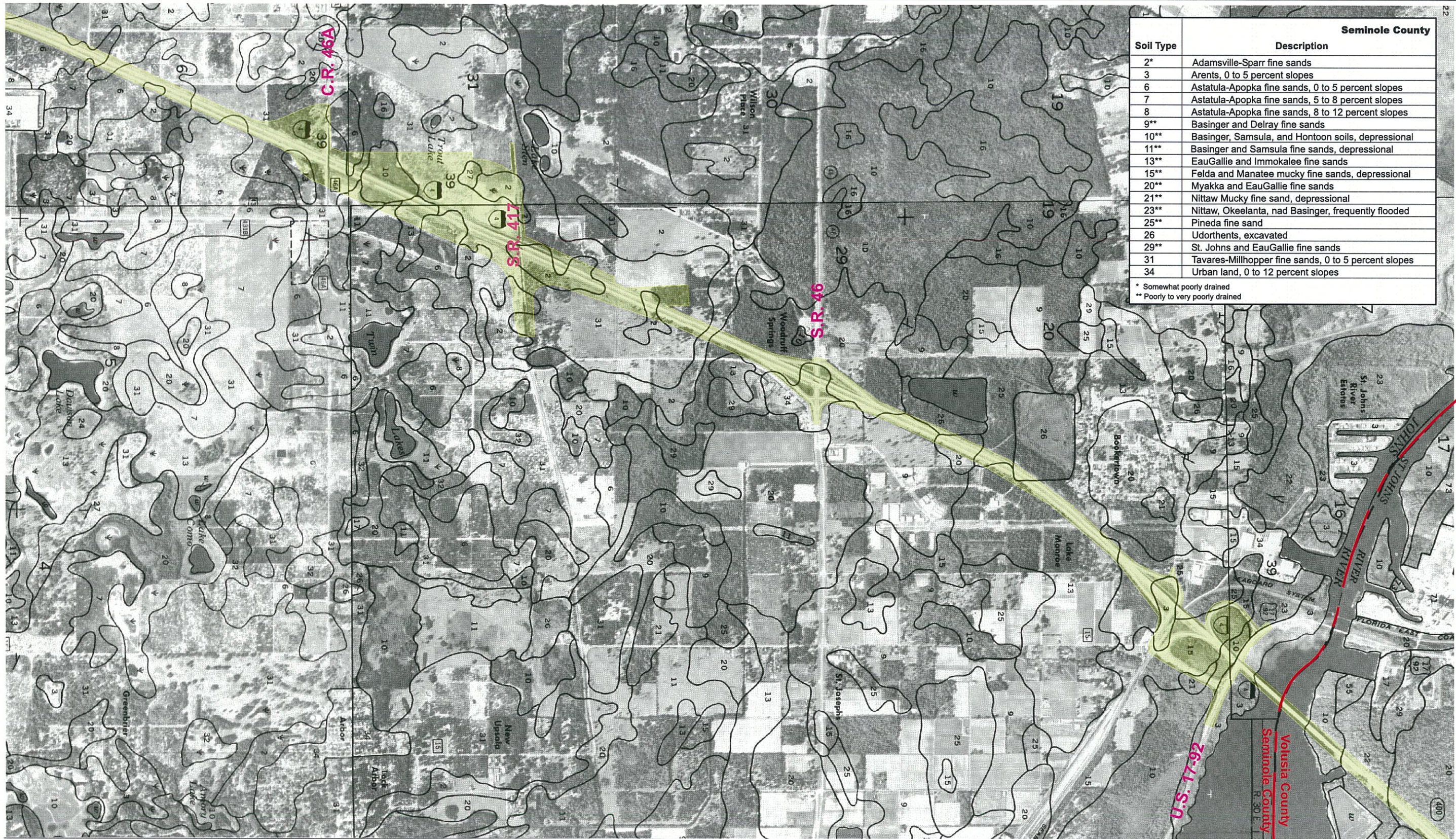
LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line

Map F

I-4 PD&E Study - Section 2

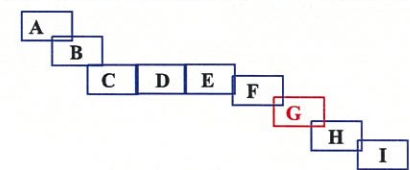
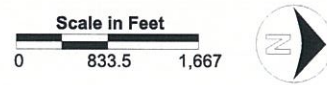
Figure 4.1.9.1
 Soil Survey Maps - Map F



| Seminole County | |
|-----------------|--|
| Soil Type | Description |
| 2* | Adamsville-Sparr fine sands |
| 3 | Arents, 0 to 5 percent slopes |
| 6 | Astatula-Apopka fine sands, 0 to 5 percent slopes |
| 7 | Astatula-Apopka fine sands, 5 to 8 percent slopes |
| 8 | Astatula-Apopka fine sands, 8 to 12 percent slopes |
| 9** | Basinger and Delray fine sands |
| 10** | Basinger, Samsula, and Hontoon soils, depressional |
| 11** | Basinger and Samsula fine sands, depressional |
| 13** | EauGallie and Immokalee fine sands |
| 15** | Felda and Manatee mucky fine sands, depressional |
| 20** | Myakka and EauGallie fine sands |
| 21** | Nittaw Mucky fine sand, depressional |
| 23** | Nittaw, Okeelanta, nad Basinger, frequently flooded |
| 25** | Pineda fine sand |
| 26 | Udorthents, excavated |
| 29** | St. Johns and EauGallie fine sands |
| 31 | Tavares-Millhopper fine sands, 0 to 5 percent slopes |
| 34 | Urban land, 0 to 12 percent slopes |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.

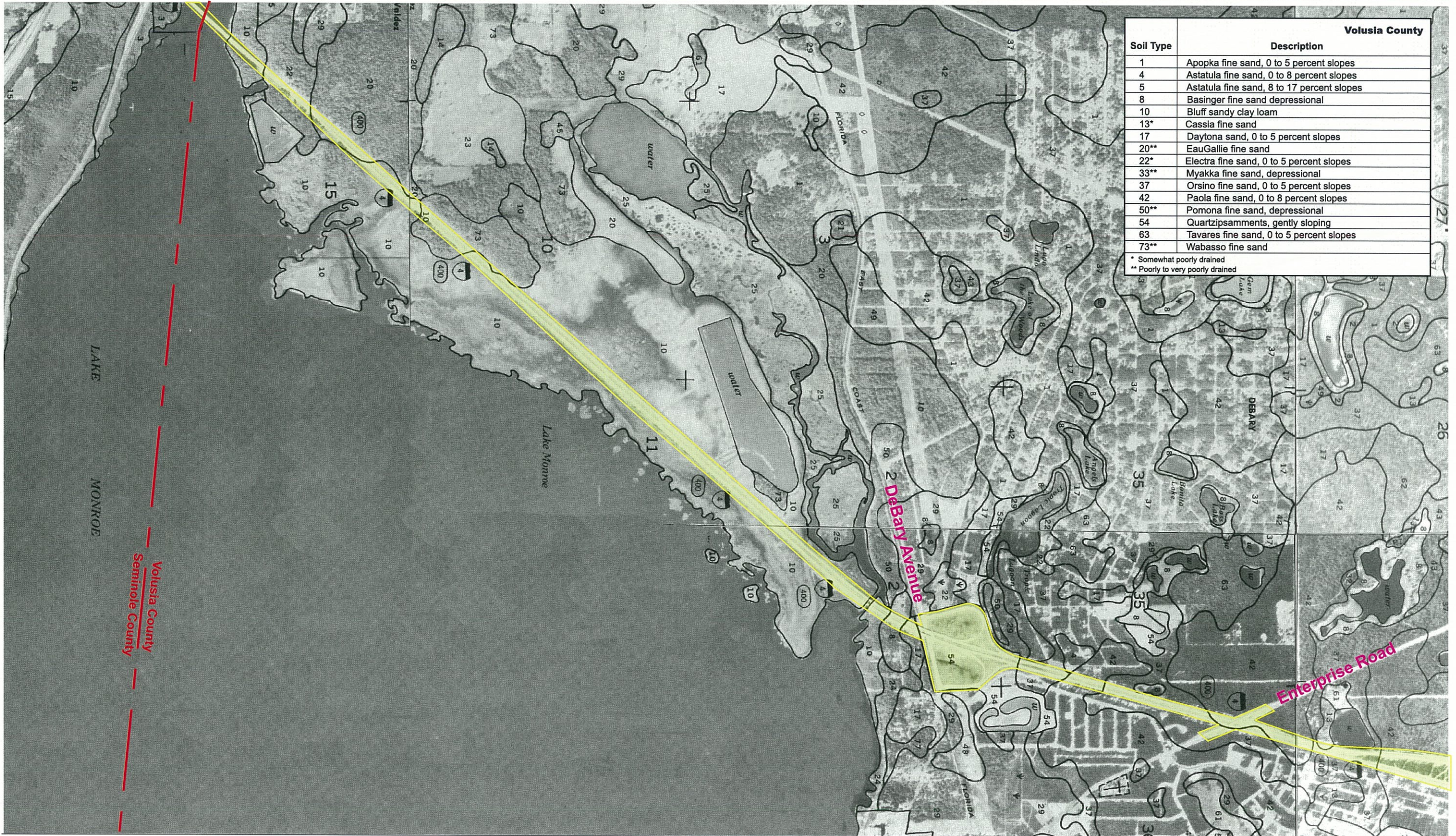


- LEGEND**
- Interstate Highway
 - Federal Highway
 - State Roads
 - County Roads
 - Railroads
 - County Line

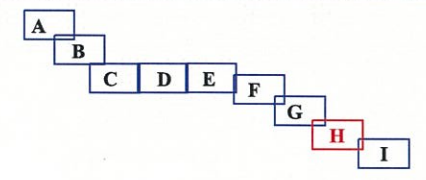
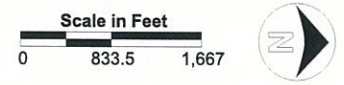
Map G

Figure 4.1.9.1
 Soil Survey Maps - Map G

I-4 PD&E Study - Section 2



Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.

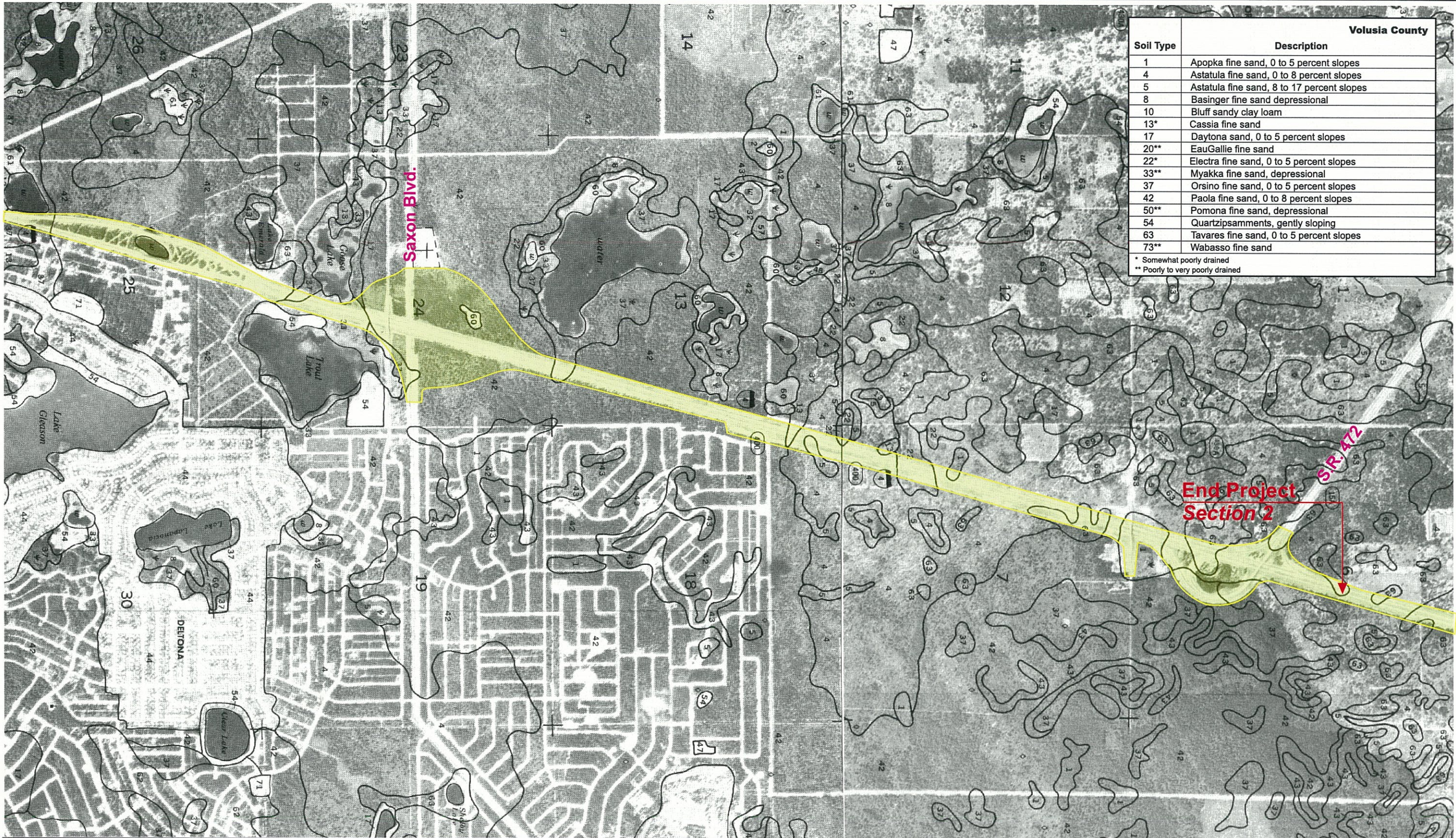


LEGEND

- Interstate Highway
- Federal Highway
- State Roads
- County Roads
- Railroads
- County Line

I-4 PD&E Study - Section 2

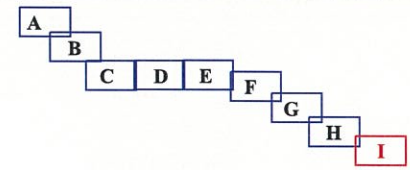
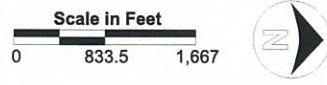
Figure 4.1.9.1
 Soil Survey Maps - Map H



| Volusia County | |
|----------------|--|
| Soil Type | Description |
| 1 | Apopka fine sand, 0 to 5 percent slopes |
| 4 | Astatula fine sand, 0 to 8 percent slopes |
| 5 | Astatula fine sand, 8 to 17 percent slopes |
| 8 | Basinger fine sand depressional |
| 10 | Bluff sandy clay loam |
| 13* | Cassia fine sand |
| 17 | Daytona sand, 0 to 5 percent slopes |
| 20** | EauGalle fine sand |
| 22* | Electra fine sand, 0 to 5 percent slopes |
| 33** | Myakka fine sand, depressional |
| 37 | Orsino fine sand, 0 to 5 percent slopes |
| 42 | Paola fine sand, 0 to 8 percent slopes |
| 50** | Pomona fine sand, depressional |
| 54 | Quartzipsamments, gently sloping |
| 63 | Tavares fine sand, 0 to 5 percent slopes |
| 73** | Wabasso fine sand |

* Somewhat poorly drained
 ** Poorly to very poorly drained

Prepared From SCS Soil Survey of:
 Orange County, Fla.
 Seminole County, Fla.
 Volusia County, Fla.



- LEGEND**
- Interstate Highway
 - Federal Highway
 - State Roads
 - County Roads
 - Railroads
 - County Line

Map I

Figure 4.1.9.1
 Soil Survey Maps - Map I

I-4 PD&E Study - Section 2

Table 4.1.10.1 - Project Area Overall Crash Type Summary

| Type of Crash | 1997 | | | 1998 | | | 1999 | | | Total | Percent |
|---|---------------|-----------------|----------------|---------------|-----------------|----------------|---------------|-----------------|----------------|-------------|----------------|
| | Orange County | Seminole County | Volusia County | Orange County | Seminole County | Volusia County | Orange County | Seminole County | Volusia County | | |
| Collision Rear End | 595 | 272 | 45 | 570 | 177 | 74 | 540 | 160 | 57 | 2490 | 52.00% |
| Collision Head On | 6 | 3 | 0 | 3 | 2 | 1 | 9 | 2 | 1 | 27 | 0.60% |
| Collision Angle | 68 | 26 | 14 | 77 | 23 | 14 | 99 | 29 | 14 | 364 | 7.60% |
| Collision Left Turn | 13 | 2 | 4 | 7 | 2 | 1 | 11 | 2 | 3 | 45 | 0.90% |
| Collision Right Turn | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 3 | 0.10% |
| Collision Sideswipe | 94 | 38 | 12 | 78 | 37 | 11 | 86 | 41 | 17 | 414 | 8.60% |
| Collision Backed Into | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 7 | 0.10% |
| Collision Parked Car | 5 | 1 | 0 | 4 | 3 | 0 | 6 | 1 | 0 | 20 | 0.40% |
| Collision w/MV on Other Road | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 6 | 0.10% |
| Collision w/Pedestrian | 5 | 3 | 1 | 4 | 3 | 0 | 2 | 2 | 1 | 21 | 0.40% |
| Collision w/Bike | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| Collision w/Bike (Bike Lane) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| Collision w/Moped | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| Collision w/Train | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| Collision w/Animal | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.00% |
| MV H/Sign/Sign Post | 5 | 1 | 2 | 8 | 1 | 5 | 10 | 3 | 3 | 38 | 0.80% |
| MV H/Utility Pole/Light Pole | 11 | 0 | 0 | 1 | 0 | 3 | 17 | 0 | 2 | 34 | 0.70% |
| MV H/Guardrail | 58 | 25 | 5 | 62 | 17 | 13 | 66 | 15 | 9 | 270 | 5.60% |
| MV H/Fence | 5 | 1 | 3 | 8 | 0 | 4 | 2 | 1 | 4 | 28 | 0.60% |
| MV H/Concrete Barrier Wall | 49 | 2 | 1 | 68 | 4 | 6 | 47 | 4 | 7 | 188 | 3.90% |
| MV H/Bridge/Pier/Abutment | 1 | 2 | 3 | 1 | 1 | 0 | 1 | 0 | 2 | 11 | 0.20% |
| MV H/Tree/Shrub | 12 | 3 | 7 | 9 | 3 | 7 | 6 | 3 | 6 | 56 | 1.20% |
| Collision w/Construction Barricade/Sign | 2 | 4 | 1 | 2 | 1 | 0 | 4 | 2 | 0 | 16 | 0.30% |
| Collision w/Traffic Gate | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| Collision w/Crash Attenuators | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0.00% |
| Collision w/Fixed Object Above Road | 0 | 0 | 3 | 3 | 3 | 0 | 1 | 0 | 0 | 10 | 0.20% |
| MV H/Other Fixed Object | 1 | 0 | 0 | 5 | 2 | 0 | 7 | 1 | 1 | 17 | 0.40% |
| Collision w/Moveable Object on Road | 9 | 7 | 0 | 9 | 9 | 3 | 8 | 2 | 4 | 51 | 1.10% |
| MV Ran Into Ditch/Culvert | 13 | 10 | 3 | 20 | 14 | 5 | 12 | 11 | 9 | 97 | 2.00% |
| Ran Off Road Into Water | 3 | 0 | 2 | 3 | 0 | 2 | 1 | 2 | 5 | 18 | 0.40% |
| Overtuned | 33 | 23 | 14 | 36 | 23 | 22 | 31 | 37 | 23 | 242 | 5.10% |
| Occupant Fell From Vehicle | 2 | 2 | 1 | 0 | 0 | 0 | 3 | 3 | 2 | 13 | 0.30% |
| Tractor/Trailer Jackknifed | 3 | 2 | 2 | 3 | 3 | 2 | 1 | 3 | 6 | 25 | 0.50% |
| Fire | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 0.10% |
| Explosion | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% |
| All Other | 69 | 22 | 11 | 38 | 23 | 14 | 56 | 28 | 10 | 271 | 5.70% |
| Sub Total: | 1067 | 450 | 135 | 1025 | 352 | 188 | 1030 | 356 | 186 | 4789 | 100.00% |
| Year End Total: | 1652 | | | 1565 | | | 1572 | | | 4789 | |

Note: The most recent accident data available were for the three-year period of 1997 through 1999.
 Most common type of crash: 1st - rear end; 2nd - sideswipe; 3rd - angle

Table 4.1.10.2 - Segment 1 Crash Data

| Description | Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (M/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|---|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| | | | | | | | | | | | | | | | | |
| SR 528 (Bee Line Expwy) Interchange | 5.971 | 6.014 | 0.043 | 7 | U | Y | 155,000 | 6 | 0 | 5 | 2.467 | 3.661 | 0.673 | 2 | N/A | \$501,600 |
| SR 528 Interchange to approx. 1 mile west of Sand Lake Rd Interchange | 6.014 | 7.376 | 1.376 | 6 | U | Y | 133,685 | 26 | 0 | 29 | 0.391 | 1.852 | 0.211 | 7 | \$5,400 | \$2,173,600 |
| Approx. 1 mile west of SR 482 interchange to Sand Lake Rd Interchange | 7.376 | 8.413 | 1.037 | 7 | U | Y | 124,357 | 38 | 1 | 45 | 0.807 | 1.938 | 0.416 | 16 | N/A | \$3,176,800 |
| Sand Lake Rd Interchange | 8.413 | 8.444 | 0.031 | 14 | U | Y | 125,000 | 2 | 0 | 0 | 1.414 | 4.287 | 0.329 | 2 | N/A | \$167,200 |
| Sand Lake Rd Interchange to approx. 0.60 miles west of International Dr Interchange | 8.444 | 9.042 | 0.598 | 7 | U | Y | 125,000 | 7 | 0 | 4 | 0.256 | 2.107 | 0.121 | 4 | N/A | \$585,200 |
| Approx. 0.60 miles west of International Dr Interchange to International Dr Interchange | 9.042 | 9.592 | 0.55 | 6 | U | Y | 125,000 | 14 | 1 | 14 | 0.557 | 2.137 | 0.26 | 5 | \$3,000 | \$1,170,400 |
| International Dr Interchange | 9.592 | 9.659 | 0.067 | 10 | U | Y | 125,000 | 1 | 0 | 1 | 0.327 | 3.436 | 0.095 | 0 | \$0 | \$83,600 |
| Kirkman Rd Interchange | 9.659 | 9.939 | 0.28 | 7 | U | Y | 125,000 | 15 | 0 | 6 | 1.174 | 2.429 | 0.483 | 10 | \$500 | \$1,254,000 |
| Kirkman Rd Interchange | 9.939 | 9.948 | 0.009 | 10 | U | Y | 125,000 | 6 | 0 | 4 | 14.634 | 6.209 | 2.356 | 2 | N/A | \$501,600 |
| Kirkman Rd Interchange | 9.948 | 10.153 | 0.205 | 6 | U | Y | 115,813 | 8 | 0 | 5 | 0.923 | 2.642 | 0.349 | 5 | N/A | \$668,800 |
| Kirkman Rd Interchange | 10.153 | 10.192 | 0.039 | 10 | U | Y | 114,500 | 1 | 0 | 1 | 0.613 | 4.111 | 0.149 | 0 | \$0 | \$83,600 |
| Kirkman Rd Interchange to Florida Turnpike Interchange | 10.192 | 10.711 | 0.519 | 7 | U | Y | 114,500 | 8 | 0 | 5 | 0.368 | 2.193 | 0.167 | 4 | N/A | \$668,800 |
| Florida Turnpike Interchange to approx. 0.50 miles west of Orange Blossom Tr Interchange | 10.711 | 14.571 | 3.86 | 6 | U | Y | 127,386 | 88 | 0 | 108 | 0.49 | 1.671 | 0.293 | 32 | \$11,140 | \$7,356,800 |
| Approx. 0.50 miles west of Orange Blossom Tr Interchange to Orange Blossom Tr Interchange | 14.571 | 14.96 | 0.389 | 7 | U | Y | 141,500 | 27 | 0 | 24 | 1.343 | 2.223 | 0.604 | 12 | \$2,000 | \$2,257,200 |
| 1998 | | | | | | | | | | | | | | | | |
| SR 528 (Bee Line Expwy) Interchange | 5.971 | 6.008 | 0.037 | 7 | U | Y | 161,200 | 4 | 0 | 1 | 1.837 | 3.891 | 0.472 | 3 | N/A | \$334,400 |
| SR 528 Interchange to approx. 2.5 miles west of Sand Lake Rd Interchange | 6.008 | 6.063 | 0.055 | 10 | U | Y | 161,200 | 2 | 0 | 2 | 0.618 | 3.484 | 0.177 | 0 | \$0 | \$167,200 |
| Approx. 2.5 miles west of Sand Lake Rd interchange to Sand Lake Rd Interchange | 6.063 | 7.548 | 1.485 | 6 | U | Y | 138,536 | 21 | 0 | 16 | 0.279 | 1.891 | 0.147 | 11 | \$11,600 | \$1,755,600 |
| Sand Lake Rd Interchange | 7.548 | 8.347 | 0.799 | 7 | U | Y | 131,453 | 16 | 0 | 22 | 0.417 | 2.067 | 0.201 | 3 | N/A | \$1,337,600 |
| Sand Lake Rd Interchange | 8.347 | 8.444 | 0.097 | 14 | U | Y | 130,800 | 4 | 0 | 0 | 0.863 | 3.17 | 0.272 | 4 | N/A | \$334,400 |
| Sand Lake Rd Interchange to approx. 0.60 miles west of International Dr Interchange | 8.444 | 8.979 | 0.535 | 7 | U | Y | 130,800 | 9 | 0 | 11 | 0.352 | 2.204 | 0.159 | 2 | \$32,500 | \$752,400 |
| Approx. 0.60 miles west of International Dr Interchange to International Dr Interchange | 8.979 | 9.589 | 0.61 | 6 | U | Y | 130,800 | 11 | 0 | 16 | 0.377 | 2.157 | 0.174 | 2 | N/A | \$919,600 |
| International Dr Interchange to Kirkman Rd Interchange | 9.589 | 9.94 | 0.351 | 7 | U | Y | 130,800 | 15 | 0 | 11 | 0.895 | 2.377 | 0.376 | 7 | N/A | \$1,254,000 |
| Kirkman Rd Interchange | 9.94 | 9.949 | 0.009 | 10 | U | Y | 130,800 | 2 | 0 | 0 | 4.662 | 6.307 | 0.739 | 2 | N/A | \$167,200 |
| Kirkman Rd Interchange | 9.949 | 10.162 | 0.213 | 6 | U | Y | 119,900 | 12 | 0 | 13 | 1.287 | 2.683 | 0.479 | 5 | N/A | \$1,003,200 |
| Kirkman Rd Interchange | 10.162 | 10.186 | 0.24 | 10 | U | Y | 119,900 | 4 | 0 | 4 | 3.809 | 4.822 | 0.789 | 1 | N/A | \$334,400 |
| Kirkman Rd Interchange to Florida Turnpike Interchange | 10.186 | 10.754 | 0.568 | 7 | U | Y | 119,900 | 13 | 0 | 11 | 0.522 | 2.214 | 0.235 | 4 | \$1,500 | \$1,086,800 |
| Florida Turnpike Interchange to Orange Blossom Tr Interchange | 10.754 | 14.679 | 3.925 | 6 | U | Y | 127,400 | 89 | 0 | 84 | 0.487 | 1.732 | 0.281 | 30 | \$7,900 | \$7,440,400 |
| Orange Blossom Tr Interchange | 14.679 | 14.941 | 0.262 | 7 | U | Y | 148,700 | 14 | 0 | 14 | 0.984 | 2.455 | 0.4 | 4 | \$750 | \$1,170,400 |
| Orange Blossom Tr Interchange | 14.941 | 14.97 | 0.029 | 14 | U | Y | 148,700 | 5 | 0 | 2 | 3.178 | 4.274 | 0.743 | 3 | \$1,200 | \$418,000 |
| 1999 | | | | | | | | | | | | | | | | |
| SR 528 (Bee Line Expwy) Interchange | 5.971 | 6.015 | 0.044 | 7 | U | Y | 137,000 | 1 | 0 | 0 | 0.454 | 3.743 | 0.121 | 1 | N/A | \$83,600 |
| SR 528 Interchange to approx. 0.5 miles west of Sand Lake Rd Interchange | 6.015 | 7.548 | 1.533 | 6 | U | Y | 137,141 | 26 | 0 | 34 | 0.338 | 1.805 | 0.187 | 8 | N/A | \$2,173,600 |
| Approx. 0.5 miles west of Sand Lake Rd interchange to Sand Lake Rd Interchange | 7.548 | 8.425 | 0.877 | 7 | U | Y | 137,080 | 21 | 1 | 15 | 0.478 | 1.942 | 0.246 | 9 | \$300 | \$1,755,600 |
| Sand Lake Rd Interchange | 8.425 | 8.444 | 0.019 | 14 | U | Y | 136,500 | 1 | 0 | 0 | 1.057 | 4.805 | 0.219 | 1 | \$1,500 | \$83,600 |
| Sand Lake Rd Interchange to approx. 0.5 miles west of International Dr Interchange | 8.444 | 9.056 | 0.612 | 7 | U | Y | 136,500 | 7 | 1 | 8 | 0.229 | 2.054 | 0.111 | 3 | \$5,000 | \$585,200 |
| Approx. 0.5 miles west of International Dr Interchange to International Dr Interchange | 9.056 | 9.573 | 0.517 | 6 | U | Y | 136,500 | 25 | 0 | 34 | 0.97 | 2.112 | 0.459 | 8 | N/A | \$2,090,000 |
| International Dr Interchange | 9.573 | 9.645 | 0.072 | 10 | U | Y | 136,500 | 1 | 0 | 0 | 0.278 | 3.268 | 0.085 | 1 | N/A | \$83,600 |
| International Dr Interchange to Kirkman Rd Interchange | 9.645 | 9.922 | 0.277 | 7 | U | Y | 136,500 | 9 | 0 | 11 | 0.652 | 2.373 | 0.274 | 1 | \$2,500 | \$752,400 |
| Kirkman Rd Interchange | 9.922 | 9.948 | 0.026 | 10 | U | Y | 136,500 | 2 | 0 | 3 | 1.544 | 4.373 | 0.353 | N/A | \$1,000 | \$167,200 |
| Kirkman Rd Interchange | 9.948 | 10.167 | 0.219 | 6 | U | Y | 132,692 | 13 | 2 | 13 | 1.225 | 2.508 | 0.488 | 3 | \$6,950 | \$1,086,800 |
| Kirkman Rd Interchange | 10.167 | 10.216 | 0.049 | 10 | U | Y | 132,000 | 2 | 0 | 2 | 0.847 | 3.669 | 0.23 | 1 | N/A | \$167,200 |
| Kirkman Rd Interchange to Florida Turnpike Interchange | 10.216 | 10.741 | 0.525 | 7 | U | Y | 132,000 | 12 | 0 | 8 | 0.474 | 2.119 | 0.223 | 5 | \$650 | \$1,003,200 |
| Florida Turnpike Interchange to Orange Blossom Tr Interchange | 10.741 | 14.646 | 3.905 | 6 | U | Y | 139,904 | 125 | 2 | 108 | 0.626 | 1.642 | 0.381 | 53 | \$6,880 | \$10,450,000 |
| Orange Blossom Tr Interchange | 14.646 | 14.96 | 0.314 | 7 | U | Y | 145,000 | 30 | 1 | 30 | 1.805 | 2.287 | 0.789 | 9 | \$200 | \$2,508,000 |

Table 4.1.10.3 - Segments 2 & 3 Crash Data

| Description | Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (Y/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|--|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| 1997 | | | | | | | | | | | | | | | | |
| Orange Blossom Tr Interchange | 14.96 | 15.004 | 0.044 | 14 | U | Y | 141,500 | 5 | 0 | 3 | 2.2 | 3.733 | 0.589 | 2 | \$900 | \$418,000 |
| Orange Blossom Tr Interchange to Michigan St Interchange | 15.004 | 15.51 | 0.506 | 7 | U | Y | 153,000 | 22 | 0 | 22 | 0.778 | 2.095 | 0.371 | 7 | \$800 | \$1,839,200 |
| Michigan St Interchange | 15.51 | 15.533 | 0.023 | 10 | U | Y | 169,500 | 1 | 0 | 2 | 0.703 | 4.279 | 0.164 | 0 | \$0 | \$83,600 |
| Michigan St Interchange to Kaley Ave Interchange | 15.533 | 16.174 | 0.641 | 6 | U | Y | 169,500 | 43 | 0 | 40 | 1.084 | 1.987 | 0.545 | 15 | \$700 | \$3,594,800 |
| Kaley Ave Interchange to SR 408 Interchange | 16.174 | 16.544 | 0.37 | 8 | U | Y | 169,500 | 39 | 0 | 48 | 1.703 | 2.172 | 0.784 | 10 | \$3,900 | \$3,260,400 |
| SR 408 Interchange to Anderson St Interchange | 16.544 | 17.163 | 0.619 | 6 | U | Y | 164,053 | 43 | 0 | 34 | 1.16 | 2.007 | 0.577 | 22 | \$500 | \$3,594,800 |
| Anderson St Interchange to South St Interchange | 17.163 | 17.414 | 0.251 | 7 | U | Y | 165,117 | 26 | 0 | 15 | 1.718 | 2.347 | 0.731 | 15 | \$900 | \$2,173,600 |
| South St Interchange | 17.414 | 17.451 | 0.037 | 10 | U | Y | 152,000 | 1 | 0 | 1 | 0.487 | 3.843 | 0.126 | 0 | \$0 | \$83,600 |
| South St Interchange to Robinson St Interchange | 17.451 | 17.663 | 0.212 | 6 | U | Y | 152,000 | 6 | 0 | 6 | 0.51 | 2.471 | 0.206 | 2 | \$100 | \$501,600 |
| Robinson St Interchange to Ivanhoe Blvd Interchange | 17.663 | 19.264 | 1.601 | 7 | U | Y | 160,429 | 91 | 1 | 80 | 0.97 | 1.779 | 0.545 | 34 | \$1,801 | \$7,607,600 |
| Ivanhoe Blvd Interchange to Lee Rd Interchange | 19.264 | 22.587 | 3.323 | 6 | U | Y | 160,762 | 185 | 0 | 162 | 0.948 | 1.659 | 0.571 | 71 | \$10,350 | \$15,466,000 |
| 1998 | | | | | | | | | | | | | | | | |
| Orange Blossom Tr Interchange to Michigan St Interchange | 14.97 | 15.524 | 0.554 | 7 | U | Y | 158,973 | 22 | 0 | 22 | 0.684 | 2.123 | 0.322 | 7 | \$750 | \$1,839,200 |
| Michigan St Interchange | 15.524 | 15.54 | 0.016 | 10 | U | Y | 177,300 | 1 | 0 | 1 | 0.966 | 4.843 | 0.199 | 0 | \$0 | \$83,600 |
| Michigan St Interchange to Kaley Ave Interchange | 15.54 | 16.184 | 0.644 | 6 | U | Y | 177,300 | 39 | 0 | 27 | 0.935 | 2.042 | 0.457 | 16 | \$1,900 | \$3,260,400 |
| Kaley Ave Interchange to SR 408 Interchange | 16.184 | 16.556 | 0.372 | 8 | U | Y | 177,300 | 30 | 0 | 30 | 1.246 | 2.227 | 0.559 | 8 | N/A | \$2,508,000 |
| SR 408 Interchange to Anderson St Interchange | 16.556 | 17.143 | 0.587 | 6 | U | Y | 173,802 | 42 | 0 | 39 | 1.127 | 2.076 | 0.542 | 10 | \$1,500 | \$3,511,200 |
| Anderson St Interchange to South St Interchange | 17.143 | 17.167 | 0.024 | 10 | U | Y | 166,000 | 1 | 0 | 1 | 0.687 | 4.375 | 0.157 | 0 | \$0 | \$83,600 |
| South St Interchange | 17.167 | 17.42 | 0.253 | 7 | U | Y | 166,000 | 18 | 0 | 14 | 1.174 | 2.419 | 0.485 | 9 | N/A | \$1,504,800 |
| South St Interchange to Robinson St Interchange | 17.42 | 17.671 | 0.251 | 6 | U | Y | 154,400 | 6 | 0 | 5 | 0.424 | 2.457 | 0.172 | 1 | N/A | \$501,600 |
| Robinson St Interchange to Ivanhoe Blvd Interchange | 17.671 | 19.178 | 1.507 | 7 | U | Y | 156,443 | 91 | 3 | 102 | 1.057 | 1.862 | 0.567 | 29 | \$3,550 | \$7,607,600 |
| Ivanhoe Blvd Interchange to Lee Rd Interchange | 19.178 | 22.587 | 3.409 | 6 | U | Y | 165,658 | 193 | 1 | 210 | 0.936 | 1.715 | 0.545 | 46 | \$5,475 | \$16,134,800 |
| 1999 | | | | | | | | | | | | | | | | |
| Orange Blossom Tr Interchange | 14.96 | 14.967 | 0.007 | 14 | U | Y | 145,000 | 3 | 0 | 3 | 8.108 | 6.355 | 1.275 | 1 | N/A | \$250,800 |
| Orange Blossom Tr Interchange to Michigan St Interchange | 14.967 | 15.51 | 0.543 | 7 | U | Y | 164,130 | 23 | 0 | 20 | 0.707 | 2.032 | 0.347 | 6 | \$1,600 | \$1,922,800 |
| Michigan St Interchange | 15.51 | 15.57 | 0.06 | 10 | U | Y | 185,000 | 1 | 0 | 1 | 0.246 | 3.163 | 0.077 | 0 | \$0 | \$83,600 |
| Michigan St Interchange to Kaley Ave Interchange | 15.57 | 16.174 | 0.604 | 6 | U | Y | 185,000 | 31 | 1 | 22 | 0.76 | 1.963 | 0.387 | 12 | N/A | \$2,591,600 |
| Kaley Ave Interchange to SR 408 Interchange | 16.174 | 16.553 | 0.379 | 8 | U | Y | 185,000 | 36 | 0 | 24 | 1.406 | 2.114 | 0.665 | 13 | \$425 | \$3,009,600 |
| SR 408 Interchange to Anderson St Interchange | 16.553 | 17.153 | 0.6 | 6 | U | Y | 181,308 | 39 | 0 | 29 | 0.982 | 1.971 | 0.498 | 14 | \$1,950 | \$3,260,400 |
| Anderson St Interchange to South St Interchange | 17.153 | 17.162 | 0.009 | 10 | U | Y | 173,000 | 1 | 0 | 2 | 1.76 | 5.605 | 0.314 | 0 | \$0 | \$83,600 |
| South St Interchange | 17.162 | 17.418 | 0.256 | 7 | U | Y | 173,247 | 17 | 0 | 11 | 1.05 | 2.299 | 0.456 | 6 | N/A | \$1,421,200 |
| South St Interchange to Robinson St Interchange | 17.418 | 17.672 | 0.254 | 6 | U | Y | 161,100 | 14 | 0 | 9 | 0.937 | 2.336 | 0.401 | 5 | \$80 | \$1,170,400 |
| Robinson St Interchange | 17.672 | 17.675 | 0.003 | 10 | U | Y | 161,100 | 1 | 0 | 0 | 5.681 | 7.715 | 0.736 | 1 | N/A | \$83,600 |
| Robinson St Interchange to Ivanhoe Blvd Interchange | 17.675 | 19.163 | 1.488 | 7 | U | Y | 165,168 | 88 | 0 | 78 | 0.98 | 1.773 | 0.552 | 33 | \$10,010 | \$7,356,800 |
| Ivanhoe Blvd Interchange to Lee Rd Interchange | 19.163 | 22.587 | 3.424 | 6 | U | Y | 173,035 | 142 | 0 | 130 | 0.656 | 1.632 | 0.401 | 54 | \$3,725 | \$11,871,200 |

Table 4.1.10.4 - Segments 4 & 5 Crash Data

| Description | Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (Y/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|--|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| 1997 | | | | | | | | | | | | | | | | |
| Lee Rd Interchange | 22.587 | 22.612 | 0.025 | 10 | U | Y | 159,500 | 6 | 0 | 4 | 4.123 | 4.25 | 0.97 | 3 | N/A | \$501,600 |
| Lee Rd Interchange to approx. 0.5 miles west of Maitland Blvd Interchange | 22.612 | 23.159 | 0.547 | 7 | U | Y | 159,500 | 6 | 0 | 4 | 0.188 | 2.055 | 0.091 | 3 | \$800 | \$501,600 |
| Approx. 0.5 miles west of Maitland Blvd Interchange | 23.159 | 23.222 | 0.063 | 11 | U | Y | 159,500 | 2 | 0 | 1 | 0.545 | 3.27 | 0.166 | 1 | N/A | \$167,200 |
| Approx. 0.5 miles west of Maitland Blvd Interchange to Maitland Blvd Interchange | 23.222 | 23.916 | 0.694 | 8 | U | Y | 159,500 | 14 | 0 | 10 | 0.346 | 1.981 | 0.174 | 6 | \$2,100 | \$1,170,400 |
| Maitland Blvd Interchange | 23.916 | 24.066 | 0.15 | 7 | U | Y | 136,833 | 3 | 0 | 2 | 0.4 | 2.732 | 0.146 | 2 | N/A | \$250,800 |
| Maitland Blvd Interchange | 24.066 | 24.673 | 0.607 | 6 | U | Y | 125,500 | 4 | 0 | 1 | 0.143 | 2.101 | 0.068 | 3 | \$500 | \$334,400 |
| Seminole County Line to approx. 0.7 miles west of SR 436 Interchange | 0 | 0.662 | 0.662 | 6 | U | Y | 125,500 | 5 | 0 | 2 | 0.164 | 2.071 | 0.079 | 4 | N/A | \$418,000 |
| Approx. 0.7 miles west of SR 436 Interchange to SR 436 Interchange | 0.662 | 1.341 | 0.679 | 8 | U | Y | 125,500 | 11 | 0 | 12 | 0.353 | 2.063 | 0.171 | 3 | \$2,000 | \$919,600 |
| SR 436 Interchange to SR 434 Interchange | 1.341 | 3.261 | 1.92 | 6 | U | Y | 125,500 | 35 | 0 | 24 | 0.397 | 1.792 | 0.221 | 15 | \$300 | \$2,926,000 |
| SR 434 Interchange to approx. 0.5 miles west of Lake Mary Blvd Interchange | 3.261 | 7.38 | 4.119 | 4 | U | Y | 103,349 | 73 | 3 | 64 | 0.469 | 1.692 | 0.277 | 27 | \$3,800 | \$6,102,800 |
| Approx. 0.5 miles west of Lake Mary Blvd Interchange to Lake Mary Blvd Interchange | 7.38 | 7.772 | 0.392 | 6 | U | Y | 101,000 | 5 | 0 | 4 | 0.345 | 2.368 | 0.145 | 3 | N/A | \$418,000 |
| Lake Mary Blvd Interchange | 7.772 | 7.897 | 0.125 | 8 | U | Y | 101,000 | 56 | 0 | 22 | 12.152 | 3.08 | 3.945 | 39 | N/A | \$4,681,600 |
| Lake Mary Blvd Interchange | 7.897 | 8.328 | 0.431 | 5 | U | Y | 93,300 | 30 | 0 | 8 | 2.044 | 2.361 | 0.865 | 22 | \$165 | \$2,508,000 |
| Lake Mary Blvd Interchange | 8.328 | 8.337 | 0.009 | 7 | U | Y | 80,000 | 2 | 0 | 2 | 7.633 | 7.035 | 1.085 | 1 | N/A | \$167,200 |
| Lake Mary Blvd Interchange to Volusia County Line | 8.337 | 14.135 | 5.798 | 4 | U | Y | 77,722 | 162 | 3 | 132 | 0.984 | 1.683 | 0.584 | 91 | \$1,500 | \$13,543,200 |
| 1998 | | | | | | | | | | | | | | | | |
| Lee Rd Interchange | 22.587 | 22.604 | 0.017 | 10 | U | Y | 166,200 | 4 | 0 | 3 | 3.879 | 4.849 | 0.799 | 2 | N/A | \$334,400 |
| Lee Rd Interchange to approx. 0.6 miles west of Maitland Blvd Interchange | 22.604 | 23.152 | 0.548 | 7 | U | Y | 166,200 | 6 | 0 | 9 | 0.18 | 2.112 | 0.085 | 1 | \$500 | \$501,600 |
| Approx. 0.6 miles west of Maitland Blvd Interchange to Maitland Blvd Interchange | 23.152 | 23.918 | 0.766 | 8 | U | Y | 166,200 | 16 | 2 | 9 | 0.344 | 2.011 | 0.171 | 7 | \$2,700 | \$1,337,600 |
| Maitland Blvd Interchange | 23.918 | 24.051 | 0.133 | 7 | U | Y | 159,550 | 4 | 0 | 7 | 0.516 | 2.797 | 0.184 | 1 | \$900 | \$334,400 |
| Maitland Blvd Interchange | 24.051 | 24.153 | 0.102 | 10 | U | Y | 139,600 | 1 | 0 | 0 | 0.192 | 3.079 | 0.062 | 1 | N/A | \$83,600 |
| Maitland Blvd Interchange | 24.153 | 24.673 | 0.52 | 6 | U | Y | 139,600 | 8 | 0 | 8 | 0.301 | 2.191 | 0.137 | 3 | \$500 | \$668,800 |
| Seminole County Line to approx. 0.6 miles west of SR 436 Interchange | 0 | 0.763 | 0.763 | 6 | U | Y | 139,600 | 7 | 0 | 2 | 0.18 | 2.063 | 0.087 | 5 | N/A | \$585,200 |
| Approx. 0.6 miles west of SR 436 Interchange to SR 436 Interchange | 0.763 | 1.301 | 0.538 | 8 | U | Y | 139,600 | 3 | 0 | 2 | 0.109 | 2.178 | 0.05 | 1 | \$500 | \$250,800 |
| SR 436 Interchange to Lake Mary Blvd Interchange | 1.301 | 7.772 | 6.471 | 6 | U | Y | 111,122 | 81 | 2 | 75 | 0.308 | 1.684 | 0.182 | 32 | \$14,125 | \$6,771,600 |
| Lake Mary Blvd Interchange | 7.772 | 7.822 | 0.05 | 8 | U | Y | 105,700 | 51 | 0 | 21 | 26.438 | 4.028 | 6.563 | 34 | N/A | \$4,263,600 |
| Lake Mary Blvd Interchange | 7.822 | 8.328 | 0.506 | 5 | U | Y | 100,830 | 23 | 0 | 7 | 1.235 | 2.331 | 0.529 | 17 | \$500 | \$1,922,800 |
| Lake Mary Blvd Interchange | 8.328 | 8.334 | 0.006 | 7 | U | Y | 83,300 | 3 | 0 | 2 | 16.483 | 7.954 | 2.072 | 2 | N/A | \$250,800 |
| Lake Mary Blvd Interchange to Volusia County Line | 8.334 | 14.135 | 5.801 | 4 | U | Y | 79,921 | 121 | 0 | 151 | 0.715 | 1.743 | 0.41 | 52 | \$1,100 | \$10,115,600 |
| 1999 | | | | | | | | | | | | | | | | |
| Lee Rd Interchange | 22.587 | 22.712 | 0.125 | 10 | U | Y | 158,500 | 2 | 0 | 2 | 0.276 | 2.736 | 0.1 | 1 | N/A | \$167,200 |
| Lee Rd Interchange to approx. 0.5 miles west of Maitland Blvd Interchange | 22.712 | 23.206 | 0.494 | 7 | U | Y | 158,500 | 8 | 0 | 4 | 0.279 | 2.075 | 0.134 | 4 | \$200 | \$668,800 |
| Approx. 0.5 miles west of Maitland Blvd Interchange to Maitland Blvd Interchange | 23.206 | 23.897 | 0.691 | 8 | U | Y | 158,500 | 9 | 0 | 9 | 0.225 | 1.969 | 0.114 | 3 | \$4,000 | \$752,400 |
| Maitland Blvd Interchange | 23.897 | 24.117 | 0.22 | 7 | U | Y | 158,500 | 4 | 0 | 0 | 0.314 | 2.413 | 0.13 | 4 | N/A | \$334,400 |
| Maitland Blvd Interchange | 24.117 | 24.673 | 0.556 | 6 | U | Y | 129,500 | 8 | 0 | 6 | 0.304 | 2.105 | 0.144 | 3 | \$1,150 | \$668,800 |
| Seminole County Line to approx. 0.9 miles west of SR 436 Interchange | 0 | 0.499 | 0.499 | 6 | U | Y | 129,500 | 3 | 0 | 2 | 0.127 | 2.144 | 0.059 | 2 | N/A | \$250,800 |
| Approx. 0.9 miles west of SR 436 Interchange to SR 436 Interchange | 0.499 | 1.377 | 0.878 | 8 | U | Y | 129,500 | 9 | 0 | 8 | 0.216 | 1.958 | 0.11 | 5 | N/A | \$752,400 |
| SR 436 Interchange to Lake Mary Blvd Interchange | 1.377 | 7.783 | 6.406 | 6 | U | Y | 109,459 | 90 | 2 | 63 | 0.351 | 1.611 | 0.217 | 42 | \$18,700 | \$7,524,000 |
| Lake Mary Blvd Interchange | 7.783 | 7.897 | 0.114 | 8 | U | Y | 105,793 | 25 | 0 | 13 | 5.679 | 3.095 | 1.834 | 19 | \$100 | \$2,090,000 |
| Lake Mary Blvd Interchange | 7.897 | 8.328 | 0.431 | 5 | U | Y | 103,339 | 29 | 0 | 21 | 1.783 | 2.297 | 0.776 | 15 | \$1,500 | \$2,424,400 |
| Lake Mary Blvd Interchange | 8.328 | 8.337 | 0.009 | 7 | U | Y | 88,000 | 2 | 1 | 2 | 6.92 | 6.811 | 1.016 | 1 | N/A | \$167,200 |
| Lake Mary Blvd Interchange to Volusia County Line | 8.337 | 14.135 | 5.798 | 4 | U | Y | 85,467 | 120 | 2 | 106 | 0.663 | 1.656 | 0.4 | 56 | \$5,800 | \$10,032,000 |

Table 4.1.10.5 - Segment 6 Crash Data

| Description | Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (Y/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|--|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| 1997 | | | | | | | | | | | | | | | | |
| Seminole County Line to Dirksen Dr Interchange | 0 | 3.415 | 3.415 | 4 | R | Y | 70,500 | 29 | 1 | 45 | 0.33 | 0.435 | 0.758 | 6 | \$3,050 | \$5,675,300 |
| Dirksen Dr Interchange to SR 472 Interchange | 3.415 | 9.035 | 5.62 | 4 | R | Y | 62,993 | 67 | 1 | 101 | 0.518 | 1.721 | 0.3 | 15 | \$2,600 | \$5,601,200 |
| SR 472 Interchange | 9.035 | 9.648 | 0.613 | 4 | R | Y | 53,700 | 5 | 0 | 3 | 0.416 | 0.573 | 0.726 | 2 | \$201,400 | \$978,500 |
| 1998 | | | | | | | | | | | | | | | | |
| Seminole County Line to Dirksen Dr Interchange | 0 | 3.451 | 3.451 | 4 | R | Y | 74,800 | 46 | 0 | 41 | 0.488 | 0.436 | 1.119 | 22 | \$900 | \$9,002,200 |
| Dirksen Dr Interchange to approx. 0.5 miles west of SR 472 Interchange | 3.451 | 8.764 | 5.313 | 4 | U | Y | 65,388 | 88 | 0 | 83 | 0.693 | 1.789 | 0.387 | 46 | \$18,200 | \$7,356,800 |
| Approx. 0.5 miles west of SR 472 Interchange to SR 472 Interchange | 8.764 | 9.648 | 0.884 | 4 | R | Y | 56,777 | 13 | 1 | 16 | 0.709 | 0.539 | 1.315 | 4 | N/A | \$2,544,100 |
| 1999 | | | | | | | | | | | | | | | | |
| Seminole County Line to Dirksen Dr Interchange | 0 | 3.536 | 3.536 | 4 | R | Y | 86,000 | 51 | 1 | 64 | 0.459 | 0.421 | 1.09 | 16 | \$4,075 | \$9,980,700 |
| Dirksen Dr Interchange to SR 472 Interchange | 3.536 | 9.06 | 5.524 | 4 | U | Y | 68,051 | 69 | 2 | 76 | 0.502 | 1.697 | 0.295 | 27 | \$13,600 | \$5,768,400 |
| SR 472 Interchange | 9.06 | 9.648 | 0.588 | 4 | R | Y | 60,667 | 9 | 0 | 6 | 0.691 | 0.561 | 1.231 | 3 | N/A | \$1,761,300 |

Table 4.1.10.6 - Crash Breakdown on SR 408 (East/West Expressway)

| Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (Y/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| 1997 | | | | | | | | | | | | | | | |
| 3.9 | 5.095 | 1.195 | 4 | U | Y | 49,045 | 11 | 0 | 12 | 0.514 | 3.239 | 0.158 | 3 | N/A | \$819,500 |
| 5.095 | 6.969 | 1.874 | 6 | U | Y | 83,550 | 50 | 0 | 45 | 0.874 | 4.61 | 0.189 | 14 | \$8,600 | \$3,165,000 |
| 1998 | | | | | | | | | | | | | | | |
| 3.9 | 5.1 | 1.2 | 4 | U | Y | 54,088 | 17 | 0 | 12 | 0.717 | 3.247 | 0.22 | 7 | \$4,035 | \$1,266,500 |
| 5.1 | 6.969 | 1.869 | 6 | U | Y | 83,333 | 54 | 0 | 47 | 0.949 | 4.484 | 0.211 | 19 | \$5,850 | \$3,418,200 |
| 1999 | | | | | | | | | | | | | | | |
| 3.9 | 5.132 | 1.232 | 4 | U | Y | 64,263 | 19 | 0 | 10 | 0.657 | 2.952 | 0.222 | 9 | \$25,850 | \$1,415,500 |
| 5.132 | 6.969 | 1.837 | 6 | U | Y | 83,959 | 61 | 1 | 50 | 1.083 | 4.181 | 0.259 | 24 | \$7,500 | \$3,861,300 |

Table 4.1.10.7 - Safety Ratio Greater Than 1

| I-4 Interchange Description | Year | County | Begin MP | End MP | Length (miles) | No. of Lanes | Type (Urban/Rural) | Divided (Y/N) | Average Daily Traffic | No. of Crashes | No. of Fatalities | No. of Injuries | Actual Crash Rate | Critical Crash Rate | Safety Ratio | Property | Property Damage | Economic Loss |
|------------------------------------|------|----------|----------|--------|----------------|--------------|--------------------|---------------|-----------------------|----------------|-------------------|-----------------|-------------------|---------------------|--------------|----------|-----------------|---------------|
| Segment 1 | | | | | | | | | | | | | | | | | | |
| Kirkman Rd | 1997 | Orange | 9.939 | 9.948 | 0.009 | 10 | U | Y | 125,000 | 6 | 0 | 4 | 14.634 | 6.209 | 2.356 | 2 | N/A | \$501,600 |
| Segments 2 and 3 | | | | | | | | | | | | | | | | | | |
| Orange Blossom Tr | 1999 | Orange | 14.96 | 14.967 | 0.007 | 14 | U | Y | 145,000 | 3 | 0 | 3 | 8.108 | 6.355 | 1.275 | 1 | N/A | \$250,800 |
| Segments 4 and 5 | | | | | | | | | | | | | | | | | | |
| Lake Mary Blvd | 1997 | Seminole | 7.772 | 7.897 | 0.125 | 8 | U | Y | 101,000 | 56 | 0 | 22 | 12.152 | 3.08 | 3.945 | 39 | N/A | \$4,681,600 |
| Lake Mary Blvd | 1997 | Seminole | 8.328 | 8.337 | 0.009 | 7 | U | Y | 80,000 | 2 | 0 | 2 | 7.633 | 7.035 | 1.085 | 1 | N/A | \$167,200 |
| Lake Mary Blvd | 1998 | Seminole | 7.772 | 7.822 | 0.05 | 8 | U | Y | 105,700 | 51 | 0 | 21 | 26.438 | 4.028 | 6.563 | 34 | N/A | \$4,263,600 |
| Lake Mary Blvd | 1998 | Seminole | 8.328 | 8.334 | 0.006 | 7 | U | Y | 83,300 | 3 | 0 | 2 | 16.483 | 7.954 | 2.072 | 2 | N/A | \$250,800 |
| Lake Mary Blvd | 1999 | Seminole | 7.783 | 7.897 | 0.114 | 8 | U | Y | 105,793 | 25 | 0 | 13 | 5.679 | 3.095 | 1.834 | 19 | \$100 | \$2,090,000 |
| Lake Mary Blvd | 1999 | Seminole | 8.328 | 8.337 | 0.009 | 7 | U | Y | 88,000 | 2 | 1 | 2 | 6.92 | 6.811 | 1.016 | 1 | N/A | \$167,200 |
| Segment 6 | | | | | | | | | | | | | | | | | | |
| Seminole County line to Dirksen Dr | 1998 | Seminole | 0 | 3.451 | 3.451 | 4 | R | Y | 74,800 | 46 | 0 | 41 | 0.488 | 0.436 | 1.119 | 22 | \$900 | \$9,002,200 |
| Seminole County line to Dirksen Dr | 1998 | Seminole | 8.764 | 9.648 | 0.884 | 4 | R | Y | 56,777 | 13 | 1 | 16 | 0.709 | 0.539 | 1.315 | 4 | N/A | \$2,544,100 |
| Seminole County line to Dirksen Dr | 1999 | Seminole | 0 | 3.536 | 3.536 | 4 | R | Y | 86,000 | 51 | 1 | 64 | 0.459 | 0.421 | 1.09 | 16 | \$4,075 | \$9,980,700 |
| Seminole County line to Dirksen Dr | 1999 | Seminole | 9.06 | 9.648 | 0.588 | 4 | R | Y | 60,667 | 9 | 0 | 6 | 0.691 | 0.551 | 1.231 | 3 | N/A | \$1,761,300 |

I-4 PD&E Study - Section 2

ratios and economic loss. SR 408 (East/West Expressway) crash data includes similar information, which is summarized in Table 4.1.10.6.

The safety ratio is defined as the ratio of the actual crash rate to the critical crash rate. The actual crash rate is a function of the roadway section length multiplied by the annual number of vehicles in relation to the number of crashes. The critical crash rate is a function of the roadway section length, the traffic volume and the statewide average crash rate for similar roadway facilities. A safety ratio equal to or greater than one (1.00) indicates that the facility is experiencing more crashes that would be typically anticipated on a similar facility and that the roadway section is considered a high hazard location. The higher the safety ratio, the greater the hazard. The areas within the project area that experience a safety ratio greater than 1.00 are presented in Table 4.1.10.7. Seven of the eight segments experiencing safety ratios of 1.00 or more were 250 feet or less in length. Using such short segment lengths yield disproportionately high crash rates since the segment length is in the denominator of the formula. However, the number of crashers in these areas has been noted and improvements will be considered.

As shown in Table 4.1.10.1, the most common type of crash on I-4 through this three-year period was rear-end collisions. A total of 2,490 rear-end collisions, 52% of the total number of crashes, occurred within the project area between 1997 and 1999. The second most frequent crash type in the project area for the same three-year period was vehicle sideswipes for a total of 414 or 8.6% of the total number of crashes.

Overall, the Ultimate project study area demonstrates a gradual increase in traffic crashes in urban areas over the past few years corresponding to annual increases in daily traffic volumes and area growth. The proposed improvements will involve the reconstruction of I-4 to current design standards to improve driver safety. The following sections discuss the crash data analyses by segment.

4.1.10.1 Segment 1 - SR 528 to John Young Parkway

As seen in Table 4.1.10.2, the safety ratios for I-4 in Segment 1 range from 0.085 to 2.356. One interchange recorded a safety ratio greater than 1.00. The SR 435 (Kirkman Road) interchange had a high safety ratio of 2.356 in 1997 for a roadway section of approximately 0.009 miles (48 feet).

The high safety ratios for this roadway section is because of the short segment length. Roadway segment lengths less than one mile result in artificially high safety ratios. Six crashes were recorded at the SR 435 (Kirkman Road) interchange in 1997.

Another area with a high number of crashes is the section of I-4 between the interchanges of Florida's Turnpike and US 441 (Orange Blossom Trail), a roadway length of approximately 3.9 miles. Although this section of roadway has a safety ratio less than 0.40, the number of crashes were 88, 89 and 125 in 1997, 1998 and 1999, respectively.

4.1.10.2 Segments 2 & 3 - John Young Parkway to Lee Road

Table 4.1.10.3 shows safety ratios for I-4 within Segments 2 and 3 ranging from 0.077 to 1.275. One section had a safety ratio greater than 1.00. The US 441 (Orange Blossom Trail) interchange had a safety ratio of 1.275 in 1999 for a short roadway section approximately 0.007 miles (37 feet) in length. This section only experienced three crashes in 1997. The high safety ratio for this roadway section is because of the short segment length. Roadway segment lengths less than one mile result in artificially high safety ratios. Another high crash area within Segments 2 and 3 is along I-4 from SR 526 (Robinson Street) to SR 423 (Lee Road). Although the safety ratios in this area are less than 0.6, the number of crashes that occurred annually exceeds 131. This high number of crashes may be due to the less than desirable vertical and horizontal curves along I-4 within this area.

Crash data for SR 408 (East/West Expressway) is presented in Table 4.1.10.6. The safety ratios for this facility were well below 1.00 for the same three year period from 1997 through 1999, ranging from 0.158 to 0.259 for a roadway section of 3.1 miles. However, the number of crashes on SR 408 (East/West Expressway) within the Ultimate study area have increased approximately 20% between 1997 and 1999.

4.1.10.3 Segments 4 & 5 - Lee Road to US 17-92

Safety ratios for sections on I-4 located in Segments 4 and 5 are presented in Table 4.1.10.4. The safety ratios fall within the range of 0.050 to 6.563. The Lake Mary Boulevard interchange had a safety ratio greater than 1.00 in a three-year period. The high safety ratio for this interchange area is because of the short segment length. Roadway segment lengths less than one mile result in artificially high safety ratios.

A high number of crashes were also identified within the section of I-4 between Lake Mary Boulevard and the Seminole/Volusia County line, a total length of approximately 5.8 miles. Although this section of roadway had a safety ratio less than 0.600, the number of crashes were high totaling 162, 121, and 120 in 1997, 1998, and 1999, respectively.

4.1.10.4 Segment 6 - US 17-92 to SR 472

As shown in Table 4.1.10.5, safety ratios along I-4 within Segment 6 ranged from 0.295 to 1.315. Two sections of the roadway experienced safety ratios higher than 1.00. The section of I-4 from the Seminole/Volusia county line to Dirksen Drive resulted in high safety ratios of 1.119 to 1.090 in 1998 and 1999, respectively. The section of I-4 from approximately 0.50 miles west of SR 472 to the SR 472 interchange also resulted in high safety ratios of 1.315 and 1.231 in 1998 and 1999, respectively.

A high number of crashes were also identified within the section of I-4 between Dirksen Drive and SR 472, a total length of approximately 5.5 miles. Although this section of roadway had a safety ratio less than 0.400, the number of crashes were high totaling 67, 88, and 69 in 1997, 1998, and 1999, respectively.

4.1.11 Intersections and Signalization

Table 4.1.11.1 summarizes the results of the intersection analyses for the existing conditions. A review of the table shows that 40 of the 91 ramp termini and adjacent intersections along the corridor are operating below LOS D during at least one of the peak periods.

Table 4.1.11.1 - Existing Conditions - Intersection/Signalization

| Segment | Reference Location | Intersection | Signal | LOS | LOS |
|---------|-------------------------------|---------------------|--------|------|------|
| | | | | (AM) | (PM) |
| 1 | SR 482 (Sand Lake Road) | Turkey Lake Road | Y | F | F |
| | | Northside I-4 Ramps | Y | B | B |
| | | Southside I-4 Ramps | Y | C | C |
| | | International Drive | Y | F | F |
| 1 | Universal Boulevard | International Drive | Y | C | C |
| 1 | SR 435 (Kirkman Road) | Major Boulevard | Y | F | F |
| | | International Drive | Y | E | F |
| 2 | SR 423 (John Young Parkway) | Clear Way | Y | B | B |
| | | LB McLeod Way | Y | F | F |
| | | Northside I-4 Ramps | Y | F | F |
| | | Southside I-4 Ramps | Y | F | F |
| 2 | US 441 (Orange Blossom Trail) | 33rd Street | Y | D | F |
| | | Michigan Street | Y | F | F |
| | | Northside I-4 Ramps | N | A | A |
| | | 39th Street | Y | B | B |
| 2 | Michigan Street | Northside I-4 Ramps | Y | C | C |
| | | Southside I-4 Ramps | N | A | A |
| 2 | Kaley Avenue | Parramore Avenue | Y | B | B |
| | | Northside I-4 Ramps | N | B | A |
| | | Southside I-4 Ramps | N | F | F |
| | | Division Avenue | Y | C | C |
| 2 | Gore Street | Parramore Avenue | Y | B | C |
| | | Northside I-4 Ramps | Y | B | B |
| | | Division Avenue | Y | C | C |
| 2 | Anderson Street | Parramore Avenue | Y | B | B |
| | | Division Street | Y | C | C |
| | | Boone Avenue | Y | C | C |
| 2 | South Street | Hughey Avenue | N | A | A |
| | | Garland Avenue | N | F | F |
| 2 | SR 526 (Robinson Street) | Parramore Avenue | Y | B | C |
| | | Hughey Avenue | Y | C | C |
| | | Garland Avenue | Y | D | F |
| 2 | Amelia Street | Parramore Avenue | Y | B | B |
| | | Hughey Avenue | Y | B | B |
| | | Garland Avenue | Y | C | D |
| 2 | SR 50 (Colonial Drive) | Parramore Avenue | Y | C | C |
| | | Edgewater Drive | Y | D | F |
| | | Hughey Avenue | Y | F | C |
| | | Garland Avenue | Y | F | C |
| | | Orange Avenue | Y | C | C |
| 3 | Ivanhoe Boulevard | Northside I-4 Ramps | N | A | F |
| | | Orange Avenue | Y | C | D |

Table 4.1.11.1 - Existing Conditions - Intersection/Signalization, Cont.

| Segment | Reference Location | Intersection | Signal | LOS (AM) | LOS (PM) |
|---------|---------------------------------|-----------------------|--------|----------|----------|
| 3 | Magnolia Avenue | Orange Avenue | Y | B | D |
| 3 | SR 438 (Princeton Street) | Formosa Avenue | Y | B | B |
| | | Northside I-4 Ramps | Y | C | C |
| | | Southside I-4 Ramps | Y | B | C |
| 3 | Par Avenue | Orange Avenue | Y | F | F |
| | | Formosa Avenue | Y | B | C |
| | | Northside I-4 Ramps | N | B | B |
| | | Southside I-4 Ramps | N | C | B |
| 3 | SR 426 (Fairbanks Avenue) | Clay Street | Y | C | C |
| | | Wymore Road | Y | B | C |
| | | Northside I-4 Ramps | Y | F | C |
| | | Southside I-4 Ramps | Y | D | F |
| 4 | SR 423 (Lee Road) | Formosa Avenue | Y | F | D |
| | | Clay Street | Y | F | D |
| | | Northside I-4 Ramps | Y | F | C |
| | | Southside I-4 Ramps | Y | F | F |
| 4 | SR 414 (Maitland Boulevard) | Wymore Road | Y | F | F |
| | | Lake Destiny Road | Y | F | F |
| | | Northside I-4 Ramps | Y | D | D |
| | | Southside I-4 Ramps | Y | C | D |
| 4 | SR 436 | Westmonte Drive | Y | F | F |
| | | Douglas Avenue | Y | F | F |
| | | Northside I-4 Ramps | Y | F | D |
| | | Southside I-4 Ramps | Y | F | F |
| | | North Lake Boulevard | Y | F | F |
| | | Hattaway Drive | Y | F | D |
| 4 | SR 434 (Sandlando Springs Road) | Douglas Avenue | Y | F | F |
| | | Northside I-4 Ramps | Y | D | D |
| | | Southside I-4 Ramps | Y | F | F |
| | | Raymond Avenue | Y | F | F |
| 5 | Lake Mary Boulevard | International Parkway | Y | B | B |
| | | Northside I-4 Ramps | Y | B | B |
| | | Southside I-4 Ramps | Y | C | D |
| | | Lake Emma Road | Y | F | F |
| 5 | SR 46 | Wayside Drive | N | D | F |
| | | Northside I-4 Ramps | Y | F | F |
| | | Southside I-4 Ramps | Y | B | C |
| | | Town Center Boulevard | Y | C | C |
| 6 | Orange Boulevard | Northside I-4 Ramps | N | A | A |
| | | Southside I-4 Ramps | N | A | A |
| 6 | US 17-92 | Northside I-4 Ramps | N | A | A |
| | | Upsala Road | Y | B | B |
| 6 | Upsala Road | Orange Boulevard | N | F | F |
| | | Southside I-4 Ramps | N | A | A |
| 6 | Dirksen Drive | Sunrise Boulevard | N | A | A |
| | | Northside I-4 Ramps | N | B | A |
| | | Southside I-4 Ramps | Y | D | D |
| | | Deltona Boulevard | Y | F | F |
| 6 | Saxon Boulevard | Southside I-4 Ramps | N | B | E |

4.1.12 Lighting

Table 4.1.12.1 lists the locations and types of lighting found along I-4 from SR 528 (Bee Line Expressway) to SR 472.

Table 4.1.12.1 - Existing Conditions - Lighting Survey

| Segment | Location | Hi-Mast Lights | Edge Lights | Two-Arm Median Lights |
|---------|--|----------------|-------------|-----------------------|
| 1 | SR 528 Interchange | X | | |
| 1 | Sand Lake Road (SR 482) Interchange | | X | |
| 1 | Kirkman Road (SR 435) Interchange | X | | |
| 1 | Turnpike Interchange | | X | |
| 2 | US 441(OBT) Interchange | X | | |
| 2 | US 441 (OBT) to Michigan Street | | X | |
| 2 | Michigan Street to Robinson Street | | X | |
| 2 | Robinson Street to Lake Ivanhoe Bridge | | | X |
| 3 | Lake Ivanhoe Bridge to Par Avenue | | X | |
| 3 | Par Avenue to Lee Road | | | X |
| 4 | Lee Road to Maitland Boulevard | | X | |
| 4 | Maitland Boulevard Interchange | | X | |
| 4 | Rest Areas | | X | |
| 5 | Lake Mary Boulevard Interchange | X | | |
| 6 | Saxon Boulevard | | X | |

4.1.13 Utilities and Railroads

Detailed information on existing utilities are provided in the *Utility Impact Report* (September 1998). The document lists the utility companies, respective contact at the utility company and descriptions of utilities. A graphical representation of the utilities on plan sheets has been submitted with this report. The existing railroad network throughout the project area can be seen on Figure 4.1.13.1.

The following sections include summary descriptions of the major utilities and railroads within each segment.

4.1.13.1 Segment 1 - SR 528 to John Young Parkway

Electrical Lines

The Orlando Utilities Commission (OUC) and Florida Power Corporation (FPC) both maintain aerial and underground electrical lines and substations within this Ultimate study area. Many aerial and buried lines within Segment 1 run parallel to cross and side streets. There are also various aerial and underground lines, which span I-4 within Segment 1.



Figure 4.1.13.1 Existing Railroad Network

Gas Lines

Gas lines located within Segment 1 are maintained by either Florida Gas Transmission or People's Gas Company and range in size from two to 26 inches in diameter. People's Gas Company maintains the majority of the gas lines within Segment 1.

Water Lines

Water lines and water mains located within Segment 1 provide water to a variety of residential, commercial and government facilities and range in diameter from six to 30 inches. OUC and Orange County Public Works maintain the water lines within Segment 1. The majority of the lines are maintained by OUC.

Sanitary Sewer

Sanitary sewer and force main lines located within Segment 1 provide services to a variety of residential, commercial and government facilities. The City of Orlando Bureau of Wastewater and Orange County Public Works maintain the sanitary lines that range in size from eight to 24 inches.

Cable Television Lines

Cable television lines throughout Segment 1 include both fiber optic and coaxial lines, which are maintained by either Cablevision Industries or Time-Warner Communications.

Telecommunication and Data Lines

A variety of telecommunications and data lines exists within this portion of the Ultimate project study area. These lines are maintained by either BellSouth or Time-Warner Communications and include both fiber optic and coaxial cables.

Railroads

There are no existing railway lines located within Segment 1.

Florida Department of Transportation Surveillance and Motorist Information Systems (SMIS)

FDOT SMIS includes information signs, cameras and local hubs. These devices are located at various locations throughout Segment 1. An *Intelligent Transportation Systems Plan* (March 2000) was prepared for this project under separate cover that inventories the existing SMIS for I-4. See section 9.28 of this report for information regarding the I-4 ITS plan.

4.1.13.2 Segments 2 & 3 - John Young Parkway to Lee Road**Electrical Lines**

OUC and FPC maintain aerial and underground electrical lines and substations within this portion of the Ultimate study area. Many aerial and underground lines run parallel to the cross and side streets adjacent to I-4. Various aerial and underground lines run adjacent to I-4 within Segments 2 and 3. In addition, FDOT also maintains low voltage electrical lines, which provide electrical power to SMIS.

There are two electrical substations within this portion of the Ultimate study area. The first of these substations is located east of I-4 south of SR 408. The second substation is also east of I-4 near SR 526 (Robinson Street).

Gas Lines

Gas lines located within Segments 2 and 3 are maintained by either Florida Gas Transmission or People's Gas Company and range in size from two to 12 inches in diameter. People's Gas Company maintains the majority of the gas lines within this segment.

Water Lines

Water lines and water mains located within Segments 2 and 3 provide water to a variety of residential, commercial and government facilities. The pipes range in diameter from two to 20 inches. OUC and the City of Winter Park maintain the water lines within this portion of the project.

Sanitary Sewer

Sanitary sewer and force main lines located within Segments 2 and 3 range in diameter from two to 26 inches. The City of Orlando Bureau of Wastewater and Orange County Public Works maintain the sanitary lines, which provide services to numerous residential, commercial and governmental facilities.

Cable Television Lines

Fiber optic and coaxial cable television lines are located throughout Segments 2 and 3. The lines are maintained by Time-Warner Communications.

Telecommunication and Data Lines

Varieties of telecommunications and data lines exist within this portion of the Ultimate study area. The fiber optic and coaxial cable lines are maintained by BellSouth, AT&T, MCI, World Communication, LDDS and Time-Warner Communications.

Railroads

There are two railroad systems located within the downtown Orlando area. Florida Central Railway and CSX Transportation (CSXT) maintain these two lines. The CSXT railway runs parallel to I-4 and crosses under SR 408 (East/West Expressway). The Florida Central Railway branches off the CSXT railroad alignment and crosses under I-4 near SR 526 (Robinson Street).

Florida Department of Transportation Surveillance and Motorist Information Systems (SMIS)

FDOT SMIS includes information signs, cameras and local hubs. These devices are located at various locations throughout Segments 2 and 3. An *Intelligent Transportation Systems Plan* (March 2000) was prepared for this project under separate cover that inventories the existing SMIS for I-4. See section 9.28 of this report for information regarding the I-4 ITS plan.

4.1.13.3 Segments 4 & 5 - Lee Road to US 17-92**Electrical Lines**

FPC maintains aerial and underground electrical lines and substations within Segments 4 and 5. These lines run parallel to the cross and side streets adjacent to I-4. In addition, several lines run adjacent to I-4. There is one substation located east of I-4 on Wymore Road, south of SR 414 (Maitland Boulevard).

Gas Lines

Florida Gas Transmission, People's Gas Company and Florida Public Utilities maintain gas lines located within Segments 4 and 5. The gas lines range in size from two to 12 inches in diameter.

Water Lines

The water lines within this portion of the study area range in diameter from four to 30 inches. There are two water treatment plants located within this area. The first is located east of I-4 approximately 6500 feet north of SR 434 (Sanlando Springs Road). The second is located west of I-4 approximately 2800 feet north of Lake Mary Boulevard. Neither of these treatment plants is within the proposed right-of-way.

Water lines and water mains located within Segments 4 and 5 are maintained by the governmental agencies listed on the following page:

- ◆ City of Altamonte Springs
- ◆ City of Maitland
- ◆ Town of Eatonville
- ◆ Southern States Utilities
- ◆ City of Lake Mary
- ◆ City of Winter Park
- ◆ Seminole County
- ◆ Sanlando Utilities

Sanitary Sewer

Sanitary sewer and force main lines located within Segments 4 and 5 are maintained by the City of Maitland, Town of Eatonville, City of Winter Park, City of Altamonte Springs, Sanlando Utilities and Seminole County. The lines range in diameter from six to 30 inches and provide services to numerous residential, commercial and government facilities. There is a wastewater treatment plant located just west of I-4 approximately 2900 feet north of Lake Mary Boulevard.

Cable Television Lines

Fiber optic and coaxial cable television lines within Segments 4 and 5 lines are maintained by either TCI or Time-Warner Communications.

Telecommunication and Data Lines

The telecommunications and data lines within this portion of the Ultimate study area are maintained by either BellSouth or Time-Warner Communications. The lines include both fiber optic and coaxial cables.

Railroads

There are no existing railways located within Segment 4 and 5.

Florida Department of Transportation Surveillance and Motorist Information Systems (SMIS)

The FDOT SMIS includes information signs, cameras and local hubs. These devices are located at various locations throughout Segments 4 and 5. FDOT SMIS includes information signs, cameras and local hubs. These devices are located at various locations throughout Segments 4 and 5. An *Intelligent Transportation Systems Plan* (March 2000) was prepared for this project under separate cover that inventories the existing SMIS for I-4. See section 9.28 of this report for information regarding the I-4 ITS plan.

4.1.13.4 Segment 6 - US 17-92 to SR 472

Electrical Lines

FPC and Florida Power and Light (FPL) Corporation maintain aerial and underground electrical lines and substations within Segment 6. These lines run parallel to the cross and side streets adjacent to I-4. In addition, several lines run adjacent to the I-4 roadway.

Gas Lines

Florida Gas Transmission maintains the gas lines located within Segment 6. The gas lines range in size from two to eight inches in diameter.

Water Lines

Water lines and water mains located within this portion of the project are maintained by the City of Sanford, Seminole County and Volusia County. The lines range in diameter from 12 to 28 inches.

Sanitary Sewer

Sanitary sewer and force main lines located within Segment 6 are maintained by either Seminole County or Volusia County. The sanitary lines range in size from eight to 28 inches in diameter and provide services to numerous residential, commercial and governmental facilities.

Cable Television Lines

Cable television lines throughout Segment 6 are coaxial lines and are maintained by Cablevision Industries.

Telecommunication and Data Lines

The telecommunication lines within Segment 6 are maintained by either BellSouth or AT&T and are coaxial and fiber optic cables.

Railroads

There is one railroad (CSXT) located within Segment 6. The railway runs under I-4 near Orange Boulevard, just west of the US 17-92 interchange.

Florida Department of Transportation Surveillance and Motorist Information Systems (SMIS)

The FDOT SMIS is currently being extended into Segment 6 as part of the on-going I-4/St. Johns River Bridge Replacement and Six Laning project. This design/build project extends the system to the Saxon Boulevard interchange. An *Intelligent Transportation Systems Plan* (March 2000) was prepared for this project under separate cover that inventories the existing SMIS for I-4. See section 9.28 of this report for information regarding the I-4 ITS plan.

4.1.14 Pavement Conditions

Pavement condition surveys for the I-4 Ultimate study area are conducted by FDOT and are rated on a zero to 10 scale, with a rating of six or less considered critical. The pavement surface and base conditions on I-4 throughout the Ultimate study area were rated as "very good" to "excellent" based on high pavement survey ratings between 7.9 and 10. Table 4.1.14.1 inventories existing pavement conditions throughout the project limits.

Table 4.1.14.1 - Pavement Conditions

| SEGMENT | COUNTY | SECTION | SUBSECTION | SIDE | LANES | RCH Begin MP | RCH End MP | INT Begin MP | INT End MP | NET LENGTH (MI) | TYPE | CRK RTIC | RDR RTIC | RUI RTIC |
|---------|----------|---------|------------|------|-------|--------------|------------|--------------|------------|-----------------|------|----------|----------|----------|
| 1 | Orange | 280 | 0 | R | 4 | 0 | 2.13 | 65.5 | 67.6 | 2.13 | 1 | 8 | 7.8 | 9 |
| 1 | Orange | 280 | 0 | L | 4 | 0 | 2.13 | 65.5 | 67.6 | 2.13 | 1 | 9 | 7.7 | 8 |
| 1 | Orange | 280 | 0 | R | 3 | 2.13 | 3.347 | 67.6 | 68.8 | 1.217 | 1 | 10 | 8.9 | 9 |
| 1 | Orange | 280 | 0 | L | 3 | 2.13 | 3.347 | 67.6 | 68.8 | 1.217 | 1 | 10 | 8.8 | 9 |
| 1 | Orange | 280 | 0 | R | 3 | 3.347 | 7.698 | 68.8 | 73.2 | 4.351 | 1 | 9 | 8.1 | 9 |
| 1 | Orange | 280 | 0 | L | 3 | 3.347 | 7.698 | 68.8 | 73.2 | 4.351 | 1 | 8 | 8.4 | 9 |
| 1 | Orange | 280 | 0 | R | 3 | 7.698 | 8.747 | 73.2 | 74.2 | 1.049 | 1 | 10 | 8.4 | 10 |
| 1 | Orange | 280 | 0 | L | 4 | 7.698 | 8.747 | 73.2 | 74.2 | 1.049 | 1 | 9 | 8.5 | 9 |
| 2 | Orange | 280 | 0 | R | 3 | 8.747 | 14.825 | 74.2 | 80.3 | 6.078 | 1 | 9 | 8.1 | 10 |
| 2 | Orange | 280 | 0 | L | 3 | 8.747 | 14.825 | 74.2 | 80.3 | 6.078 | 1 | 9 | 8.5 | 9 |
| 2 | Orange | 280 | 0 | R | 3 | 14.825 | 18.955 | 80.3 | 84.4 | 4.13 | 4 | 8.4 | 9.2 | - |
| 2 | Orange | 280 | 0 | L | 3 | 14.825 | 18.955 | 80.3 | 84.4 | 4.13 | 4 | 8.8 | 9.2 | - |
| 3 | Orange | 280 | 0 | R | 3 | 18.955 | 19.46 | 84.4 | 84.9 | 0.505 | 7 | 10 | 8.8 | 10 |
| 3 | Orange | 280 | 0 | L | 4 | 18.955 | 19.46 | 84.4 | 84.9 | 0.505 | 7 | 10 | 8.5 | 10 |
| 3 | Orange | 280 | 0 | R | 3 | 19.46 | 22.365 | 84.9 | 87.8 | 2.905 | 4 | 8.4 | 9.4 | - |
| 3 | Orange | 280 | 0 | L | 3 | 19.46 | 22.365 | 84.9 | 87.8 | 2.905 | 4 | 8.4 | 9.2 | - |
| 4 | Orange | 280 | 0 | R | 3 | 22.365 | 24.673 | 87.8 | 90.1 | 2.308 | 1 | 7 | 8.2 | 9 |
| 4 | Orange | 280 | 0 | L | 4 | 22.365 | 24.673 | 87.8 | 90.1 | 2.308 | 1 | 7 | 8.2 | 9 |
| 4 | Seminole | 160 | 0 | R | 3 | 0 | 2.859 | 90.1 | 93 | 2.859 | 1 | 7.5 | 7.9 | 10 |
| 4 | Seminole | 160 | 0 | L | 3 | 0 | 2.859 | 90.1 | 93 | 2.859 | 1 | 7.5 | 8.5 | 10 |
| 4 | Seminole | 160 | 0 | R | 2 | 2.859 | 7.726 | 93 | 97.9 | 4.867 | 8 | 6 | 7.8 | 9 |
| 4 | Seminole | 160 | 0 | L | 2 | 2.859 | 7.726 | 93 | 97.9 | 4.867 | 8 | 7 | 7.8 | 9 |
| 4 | Seminole | 160 | 0 | R | 2 | 7.726 | 8.9 | 97.9 | 99 | 1.174 | 1 | 9.5 | 8.9 | 10 |
| 4 | Seminole | 160 | 0 | L | 2 | 7.726 | 8.9 | 97.9 | 99 | 1.174 | 1 | 9.5 | 9.1 | 9.5 |
| 5 | Seminole | 160 | 0 | R | 2 | 8.9 | 14.135 | 99 | 104.3 | 5.235 | 1 | 5.5 | 9 | 9 |
| 5 | Seminole | 160 | 0 | L | 2 | 8.9 | 14.135 | 99 | 104.3 | 5.235 | 1 | 5.5 | 8.8 | 9 |
| 6 | Volusia | 110 | 0 | R | 2 | 0 | 0.503 | 104.6 | 105.1 | 0.503 | 1 | 10 | 7.8 | 10 |
| 6 | Volusia | 110 | 0 | L | 2 | 0 | 0.503 | 104.6 | 105.1 | 0.503 | 1 | 7 | 7.8 | 9 |
| 6 | Volusia | 110 | 0 | R | 2 | 0.503 | 14.668 | 105.1 | 119.2 | 14.165 | 1 | 4.5 | 7.9 | 9 |
| 6 | Volusia | 110 | 0 | L | 2 | 0.503 | 14.668 | 105.1 | 119.2 | 14.165 | 1 | 6.5 | 7.9 | 9 |

4.2 EXISTING BRIDGES

The bridge number, type of structure, horizontal and vertical clearances and span arrangements for each of the existing bridge structures within the project limits are shown in Tables 4.2.1 through 4.2.4.

The information in this section was obtained from the Bridge Management Inventory Systems (BMIS) Reports provided by FDOT, review of the original I-4 construction drawings, review of the I-4 MMMP and site reconnaissance.

4.2.1 Types of Structures

The types of bridge structures associated with the proposed improvements are also shown in Tables 4.2.1 through 4.2.4. As shown in the tables, the types of bridge structures include Type III AASHTO beam, steel beam, steel continuous beam, concrete box, concrete continuous box and concrete slab.

4.2.2 Current Condition and Year of Construction

The current condition of a bridge can be determined from the biannual inspection reports and rating system. The sufficiency rating for a structure ranges from 0 to 100 and reflects the evaluation of the structure for three main categories: structural adequacy and safety, serviceability and functional obsolescence and essentiality for public use. Ratings below 75 indicate the structure has a potential for needing major maintenance and repairs. A rating below 50 places the structure within the federal guidelines for replacement.

The 100 point sufficiency rating scale replaced the 10 point scale that was used to evaluate the bridges along the project limits. Using the old scale, a rating of 10 represents an entirely sufficient bridge and a rating of zero represents an entirely deficient bridge. The FDOT standards indicate structures with a sufficiency rating of eight or less require some rehabilitation and those with ratings less than six require replacement. A rating below six is considered critical. The following sections describe by segment the current structure condition and year of construction.

4.2.2.1 Segment 1 - SR 528 to John Young Parkway

Table 4.2.2.1.1 summarizes the bridge data for the 15 bridges in Segment 1. Using the 10 point sufficiency rating scale, all the bridges in Segment 1 require rehabilitation.

Table 4.2.2.1.1 - Current Structure Condition and Year of Construction - Segment 1

| Bridge No. | Description | Year of Construction | Structural Evaluation |
|------------|---------------------------|----------------------|-----------------------|
| 750180 | SR 528 (WB) over I-4 | 1973 | 7 |
| 750087 | SR 528 (EB) over I-4 | 1973 | 7 |
| 750335 | I-4 (WB) over SR 482 | 1991 | 7 |
| 750336 | I-4 (EB) over SR 482 | 1991 | 8 |
| 750941 | SR 435 (SB) over I-4 (EB) | 1960 | 7 |
| 750042 | SR 435 (SB) over I-4 (WB) | 1960 | 7 |
| 750174 | SR 435 (NB) over I-4 (EB) | 1960 | 7 |

Table 4.2.2.1.1 - Current Structure Condition and Year of Construction - Segment 1, Cont.

| Bridge No. | Description | Year of Construction | Structural Evaluation |
|------------|-----------------------------|----------------------|-----------------------|
| 750175 | SR 435 (NB) over I-4 (WB) | 1960 | 7 |
| 750187 | Turnpike (SB) over I-4 | 1963 | 7 |
| 750268 | Turnpike (NB) over I-4 | 1963 | 6 |
| 750284 | Turnpike Ramp over I-4 | 1963 | 7 |
| 750151 | I-4 (WB) over Tropical Dr. | 1960 | 7 |
| 750154 | I-4 (EB) over Tropical Dr. | 1960 | 7 |
| 750005 | I-4 (WB) over Shingle Creek | 1960 | 7 |
| 750155 | I-4 (EB) over Shingle Creek | 1960 | 7 |

4.2.2.2 Segments 2 & 3 - John Young Parkway to Lee Road

Table 4.2.2.2.1 summarizes the data for the 52 bridges in Segments 2 and 3. Using the 10 point sufficiency rating scale, all but one bridge (the pedestrian overpass south of SR 408) in Segments 2 & 3 require rehabilitation.

Table 4.2.2.2.1 - Current Structure Condition and Year of Construction - Segments 2 & 3

| Bridge No. | Description | Year of Construction | Structural Evaluation |
|------------|--|----------------------|-----------------------|
| 750156 | I-4(WB) over JYP/33rd St. | 1960 | 7 |
| 750202 | I-4 (EB) over JYP/33rd St. | 1960 | 7 |
| 750157 | I-4 (WB) over Rio Grande Ave. | 1960 | 7 |
| 750203 | I-4 (EB) over Rio Grande Ave. | 1960 | 7 |
| 750158 | I-4 (WB) over US 441 | 1960 | 7 |
| 750204 | I-4 (EB) over US 441 | 1960 | 7 |
| 750159 | I-4 (WB) over Westmoreland Drive | 1960 | 8 |
| 750205 | I-4 (EB) over Westmoreland Drive | 1960 | 8 |
| 750160 | I-4 (WB) over Michigan St. | 1959 | 7 |
| 750206 | I-4 (EB) over Michigan St. | 1959 | 7 |
| 750161 | I-4 (WB) over Kaley Ave. | 1959 | 7 |
| 750207 | I-4 (EB) over Kaley Ave. | 1959 | 7 |
| 759001 | Pedestrian Walkway over I-4 | 1974 | 9 |
| 750130 | SR 408 Ramp over I-4 | 1973 | 7 |
| 750162 | I-4 (WB) over Gore St. | 1959 | 7 |
| 750208 | I-4 (EB) over Gore St. | 1959 | 7 |
| 750014 | I-4 (WB) over Division St. | 1959 | 7 |
| 750038 | I-4 (EB) over Division St. | 1959 | 7 |
| 750183 | SR 408 (EB) over I-4 | 1973 | 7 |
| 750114 | SR 408 (WB) over I-4 | 1973 | 7 |
| 750259 | Anderson St. over I-4 | 1961 | 7 |
| 750050 | I-4 (WB) over South St. | 1961 | 6 |
| 750062 | I-4 (EB) over South St. | 1961 | 7 |
| 750064 | I-4 over Church St. to Washington St. | 1961 | 7 |
| 750163 | I-4 to SR 50 exit ramp | 1963 | 7 |
| 750164 | SR 50 entrance ramp | 1963 | 7 |
| 750066 | I-4 (WB) over SR 526 | 1963 | 7 |
| 750260 | I-4 (EB) over SR 526 | 1963 | 7 |
| 750067 | I-4 (WB) over Livingston St. | 1963 | 7 |
| 750068 | I-4 (EB) over Livingston St. | 1963 | 8 |
| 750299 | I-4 (EB) exit ramp over Livingston St. | 1963 | 7 |
| 750069 | I-4 (WB) over Amelia St. | 1963 | 7 |
| 750070 | I-4 (EB) over Amelia St. | 1963 | 7 |
| 750072 | I-4 (WB) over SR 50 | 1963 | 7 |

Table 4.2.2.2.1 - Current Structure Condition and Year of Construction - Segments 2 & 3, Cont.

| Bridge No. | Description | Year of Construction | Structural Evaluation |
|------------|---|----------------------|-----------------------|
| 750189 | I-4 (EB) over SR 50 | 1963 | 6 |
| 750165 | I-4 over Lake Ivanhoe Utility Outfall | 1964 | 7 |
| 750074 | I-4 (WB) over Lake Ivanhoe Blvd. | 1964 | 7 |
| 750190 | I-4 (EB) over Lake Ivanhoe Blvd. | 1964 | 6 |
| 750076 | I-4 (WB) over Lake Ivanhoe Boat Pass | 1964 | 8 |
| 750191 | I-4 (EB) over Lake Ivanhoe Boat Pass | 1964 | 8 |
| 750079 | I-4 (WB) over New Hampshire St. | 1964 | 7 |
| 750192 | I-4 (EB) over New Hampshire St. | 1964 | 7 |
| 750080 | I-4 (WB) over SR 438 | 1964 | 7 |
| 750193 | I-4 (EB) over SR 438 | 1964 | 7 |
| 750081 | I-4 (WB) over Winter Park St. | 1964 | 7 |
| 750194 | I-4 (EB) over Winter Park St. | 1964 | 7 |
| 750082 | I-4 (WB) over Par Ave. | 1964 | 7 |
| 750195 | I-4 (EB) over Par Ave. | 1964 | 8 |
| 750084 | I-4 (WB) over Formosa Ave. & Minnesota Ave. | 1964 | 7 |
| 750196 | I-4 (EB) over Formosa Ave. & Minnesota Ave. | 1964 | 7 |
| 750256 | I-4 (WB) over SR 426 | 1964 | 7 |
| 750261 | I-4 (EB) over SR 426 | 1964 | 7 |

4.2.2.3 Segments 4 & 5 - Lee Road to US 17-92

Table 4.2.2.3.1 summarizes the data for the 23 bridges in Segments 4 and 5. Using the 10 point sufficiency rating scale, all the bridges in Segments 4 & 5 require rehabilitation and one (eastbound I-4 over SR 46) qualifies for replacement.

Table 4.2.2.3.1 - Current Structure Condition and Year of Construction - Segments 4 & 5

| Bridge No. | Description | Year of Construction | Structural Evaluation |
|---------------|--|----------------------|-----------------------|
| 759002 | Pedestrian Walkway over I-4 | 1964 | 6 |
| 750029 | I-4 (WB) over Wymore Rd. | 1964 | 7 |
| 750127 | I-4 (EB) over Wymore Rd. | 1964 | 6 |
| 750139 | I-4 (WB) over SR 423 | 1964 | 7 |
| 750197 | I-4 (EB) over SR 423 | 1964 | 7 |
| 750198 | I-4 over SR 438A | 1964 | 7 |
| 750290/750289 | SR 414 (EB) over I-4 | 1975 | 8 |
| 750287 | SR 414 (WB) over I-4 | 1975 | 7 |
| 750286 | SR 414 ramp over I-4 | 1975 | 7 |
| 770023 | Wymore Rd. over I-4 | 1963 | 8 |
| 770006 | SR 436 over I-4 | 1963 | 7 |
| 770038 | Central Parkway over I-4 | 1991 | 8 |
| 770021 | I-4 (WB) over SR 434 | 1963 | 7 |
| 770022 | I-4 (EB) over SR 434 | 1963 | 6 |
| 770018 | EE Williamson Rd. over I-4 | 1963 | 7 |
| 770040 | Lake Mary Blvd (EB) over I-4 | 1992 | 8 |
| 770039 | Lake Mary Blvd. (WB) over I-4 | 1992 | 8 |
| 770012 | CR 46A over I-4 | 1963 | 7 |
| 770008 | I-4 (WB) over SCL Railroad (abandoned) | 1963 | 7 |
| 770910 | I-4 (EB) over SCL Railroad (abandoned) | 1963 | 7 |
| 770025 | I-4 (WB) over SR 46 | 1959 | 6 |
| 770026 | I-4 (EB) over SR 46 | 1959 | 5 |
| 770029 | I-4 over Box Culvert | 1959 | 7 |

Table 4.2.1 - Bridge Structure Inventory - Segment 1

| Bridge No. | Description | Type | Vertical Clearance (ft) | Horizontal Clearance (ft) | Skew Angle | No. Of Spans | Max. Span Length (ft) | Overall Length (ft) | Deck Width (ft) |
|------------|------------------------------|----------------------|-------------------------|---------------------------|------------|--------------|-----------------------|---------------------|-----------------|
| 750180 | SR 528 (WB) over I-4 | Type III AASHTO Beam | 16.35 | 27 | Varies | 4 | 107.2 | 307.9 | 30.3 |
| 750087 | SR 528 (EB) over I-4 | Type III AASHTO Beam | 16.45 | 39.8 | Varies | 8 | 100.3 | 623.7 | 43.1 |
| 750335 | I-4 (WB) over SR 482 | Steel Beam | 16.78 | 81.9 | 1 | 1 | 165.5 | 165.5 | 84.9 |
| 750336 | I-4 (EB) over SR 482 | Steel Beam | 16.78 | 55.9 | 1 | 1 | 165.5 | 165.5 | 58.9 |
| 750941 | SR 435 (SB) over I-4 (EB) | Type III AASHTO Beam | 15.36 | 52 | Varies | 3 | 61.2 | 158.6 | 57.9 |
| 750042 | SR 435 (SB) over I-4 (WB) | Type III AASHTO Beam | 15.43 | 28 | 46 | 3 | 83.2 | 192.4 | 33.9 |
| 750174 | SR 435 (NB) over I-4 (EB) | Type III AASHTO Beam | 15.26 | 28 | 48 | 3 | 86.2 | 197.4 | 33.9 |
| 750175 | SR 435 (NB) over I-4 (WB) | Steel Cont. Beam | 15.43 | 39.8 | 43 | 3 | 94.4 | 202.6 | 46.1 |
| 750187 | Turnpike (SB) over I-4 | Type III AASHTO Beam | 16.35 | 77.3 | 10 | 4 | 81.3 | 239.5 | 80.6 |
| 750268 | Turnpike (NB) over I-4 | Type III AASHTO Beam | 16.45 | 43.8 | 10 | 4 | 81.3 | 239.5 | 48.4 |
| 750284 | Turnpike Ramp over I-4 | Type III AASHTO Beam | 16.51 | 16.4 | 0 | 4 | 92.1 | 244.7 | 44.1 |
| 750151 | I-4 (WB) over Tropical Drive | Type III AASHTO Beam | 15.79 | 50 | 0 | 1 | 87.2 | 87.2 | 54.9 |
| 750154 | I-4 (EB) over Tropical Drive | Type III AASHTO Beam | 14.61 | 55.9 | 0 | 1 | 87.2 | 87.2 | 58.9 |
| 750005 | I-4 (WB) over Shingle Creek | Type III AASHTO Beam | N/A | 55.9 | 18 | 3 | 52 | 157.6 | 58.9 |
| 750155 | I-4 (EB) over Shingle Creek | Type III AASHTO Beam | N/A | 55.9 | 18 | 3 | 53.3 | 157.6 | 58.9 |

Table 4.2.2 - Bridge Structure Inventory - Segments 2 & 3

| Bridge No. | Description | Type | Vertical Clearance (ft) | Horizontal Clearance (ft) | Skew Angle | No. Of Spans | Max. Span Length (ft) | Overall Length (ft) | Deck Width (ft) |
|------------|--------------------------------------|----------------------|-------------------------|---------------------------|------------|--------------|-----------------------|---------------------|-----------------|
| 750156 | I-4(WB) over JYP/33rd St. | Type III AASHTO Beam | 14.44 | 55.9 | 13 | 2 | 76.3 | 151.3 | 58.9 |
| 750202 | I-4 (EB) over JYP/33rd St. | Type III AASHTO Beam | 14.44 | 55.9 | 13 | 2 | 75.3 | 151.3 | 59.5 |
| 750157 | I-4 (WB) over Rio Grande Ave. | Type III AASHTO Beam | 14.93 | 68.1 | 11 | 4 | 41.1 | 161.5 | 70.7 |
| 750203 | I-4 (EB) over Rio Grande Ave. | Type III AASHTO Beam | 14.93 | 64.1 | 0 | 4 | 40.1 | 155.3 | 66.8 |
| 750158 | I-4 (WB) over US 441 (OBT) | Type III AASHTO Beam | 15.36 | 71.1 | 20 | 4 | 60.2 | 214.5 | 71.1 |
| 750204 | I-4 (EB) over US 441 (OBT) | Type III AASHTO Beam | 15.2 | 64.1 | Varies | 7 | 66.1 | 404.9 | 66.8 |
| 750159 | I-4 (WB) over Westmoreland Drive | Type III AASHTO Beam | 14.01 | 68.8 | 37 | 4 | 50 | 188.5 | 71.4 |
| 750205 | I-4 (EB) over Westmoreland Drive | Type III AASHTO Beam | 14.01 | 68.8 | 37 | 4 | 50 | 189.5 | 71.4 |
| 750160 | I-4 (WB) over Michigan St. | Type III AASHTO Beam | 14.18 | 55.9 | 53 | 4 | 64.1 | 239.5 | 58.9 |
| 750206 | I-4 (EB) over Michigan St. | Type III AASHTO Beam | 14.18 | 55.9 | 53 | 4 | 64.1 | 239.5 | 58.9 |
| 750161 | I-4 (WB) over Kaley Ave. | Type III AASHTO Beam | 15.26 | 68.1 | 3 | 3 | 78.3 | 166.4 | 71.1 |
| 750207 | I-4 (EB) over Kaley Ave. | Type III AASHTO Beam | 15.26 | 55.9 | 3 | 3 | 78.3 | 166.4 | 58.9 |
| 759001 | Pedestrian Walkway over I-4 | Type III AASHTO Beam | 16.28 | 7.6 | N/A | 2 | 89.1 | 353 | N/A |
| 750130 | SR 408 Ramp over I-4 | Type III AASHTO Beam | 17.53 | 25.7 | 11 | 4 | 90.1 | 276.6 | 57.2 |
| 750162 | I-4 (WB) over Gore St. | Type III AASHTO Beam | 15.1 | 68.1 | 23 | 4 | 56.3 | 199.7 | 71.1 |
| 750208 | I-4 (EB) over Gore St. | Type III AASHTO Beam | 15.26 | 68.1 | 23 | 4 | 56.3 | 199.7 | 71.1 |
| 750014 | I-4 (WB) over Division St. | Type III AASHTO Beam | 14.87 | 64.1 | 58 | 4 | 82.2 | 306.9 | 66.8 |
| 750038 | I-4 (EB) over Division St. | Type III AASHTO Beam | 14.87 | 55.9 | 58 | 4 | 82.2 | 306.9 | 58.9 |
| 750183 | SR 408 (EB) over I-4 | Type III AASHTO Beam | 18.29 | 52.3 | Varies | 40 | 104.3 | 3492 | 55.3 |
| 750114 | SR 408 (WB) over I-4 | Type III AASHTO Beam | 17.2 | 52.3 | 30 | 39 | 109.2 | 3384 | 55.3 |
| 750259 | Anderson St. over I-4 | Steel Beam | 16.18 | 52 | 19 | 4 | 100.3 | 245.7 | 61.2 |
| 750050 | I-4 (WB) over South St. | Steel Beam | 16.35 | 55.9 | 0 | 3 | 100.3 | 168.4 | 58.9 |
| 750062 | I-4 (EB) over South St. | Steel Beam | 30.49 | 37.8 | 5 | 5 | 108.2 | 411.2 | 69.1 |
| 750064 | I-4 over Church St. to Washington St | Type III AASHTO Beam | 14.51 | 56.3 | 0 | 66 | 78.3 | 1501 | 159.5 |
| 750163 | I-4 to SR 50 exit ramp | Type III AASHTO Beam | N/A | 28 | Varies | 7 | 83.2 | 509.2 | 33.9 |

Table 4.2.2 - Bridge Structure Inventory - Segments 2 & 3 , Cont.

| Bridge No. | Description | Type | Vertical Clearance (ft) | Horizontal Clearance (ft) | Skew Angle | No. Of Spans | Max. Span Length (ft) | Overall Length (ft) | Deck Width (ft) |
|------------|---|----------------------|-------------------------|---------------------------|------------|--------------|-----------------------|---------------------|-----------------|
| 750164 | SR 50 entrance ramp | Type III AASHTO Beam | N/A | 24 | Varies | 6 | 47 | 282.9 | 29.9 |
| 750066 | I-4 (WB) over Robinson St. | Type III AASHTO Beam | 22.63 | 66.8 | 2 | 5 | 59.2 | 278.6 | 69.4 |
| 750260 | I-4 (EB) over Robinson St. | Type III AASHTO Beam | 22.63 | 58.6 | 2 | 5 | 59.2 | 278.6 | 61.5 |
| 750067 | I-4 (WB) over Livingston St. | Type III AASHTO Beam | 14.77 | 66.8 | 2 | 3 | 74.3 | 153.3 | 69.4 |
| 750068 | I-4 (EB) over Livingston St. | Type III AASHTO Beam | 14.77 | 58.6 | 2 | 3 | 74.3 | 153.3 | 61.5 |
| 750299 | I-4 (EB) exit ramp over Livingston St. | Type III AASHTO Beam | 14.77 | 19.7 | 6 | 3 | 74.3 | 143.4 | 26 |
| 750069 | I-4 (WB) over Amelia St. | Type III AASHTO Beam | 14.77 | 78.6 | 2 | 3 | 78.3 | 157.6 | 81.3 |
| 750070 | I-4 (EB) over Amelia St. | Type III AASHTO Beam | 14.77 | 58.6 | 2 | 3 | 78.3 | 157.6 | 61.5 |
| 750072 | I-4 (WB) over SR 50 | Type III AASHTO Beam | 16.28 | 80.6 | 16 | 4 | 77.3 | 243.8 | 83.6 |
| 750189 | I-4 (EB) over SR 50 | Type III AASHTO Beam | 16.94 | 79.6 | 16 | 4 | 77.3 | 243.8 | 79.6 |
| 750165 | I-4 over Lake Ivanhoe Utility Outfall | Type III AASHTO Beam | N/A | 55.6 | 0 | 1 | 54.3 | 54.3 | 58.2 |
| 750074 | I-4 (WB) over Lake Ivanhoe Blvd. | Type III AASHTO Beam | 14.44 | 48.7 | 31 | 9 | 89.1 | 615.5 | 89.5 |
| 750190 | I-4 (EB) over Lake Ivanhoe Blvd. | Type III AASHTO Beam | 14.44 | 70.7 | 31 | 8 | 90.1 | 615.5 | 73.4 |
| 750076 | I-4 (WB) over Lake Ivanhoe Boat Pass | Type III AASHTO Beam | N/A | 70.7 | 30 | 3 | 73.4 | 218.4 | 73.7 |
| 750191 | I-4 (EB) over Lake Ivanhoe Boat Pass | Type III AASHTO Beam | N/A | 66.8 | 30 | 3 | 73.4 | 218.4 | 69.4 |
| 750079 | I-4 (WB) over New Hampshire St. | Type III AASHTO Beam | 14.44 | 75.7 | 3 | 3 | 63.2 | 145.4 | 75.3 |
| 750192 | I-4 (EB) over New Hampshire St. | Type III AASHTO Beam | 14.44 | 64.8 | 3 | 3 | 63.2 | 145.4 | 67.4 |
| 750080 | I-4 (WB) over Princeton St. | Type III AASHTO Beam | 14.34 | 64.8 | 0 | 4 | 52 | 178.6 | 67.4 |
| 750193 | I-4 (EB) over Princeton St. | Type III AASHTO Beam | 14.34 | 64.8 | 0 | 4 | 52 | 178.6 | 67.4 |
| 750081 | I-4 (WB) over Winter Park St. | Type III AASHTO Beam | 13.95 | 64.8 | 5 | 3 | 63.2 | 138.5 | 67.4 |
| 750194 | I-4 (EB) over Winter Park St. | Type III AASHTO Beam | 13.95 | 72.7 | 5 | 3 | 63.2 | 138.5 | 75.3 |
| 750082 | I-4 (WB) over Par Ave. | Type III AASHTO Beam | 14.11 | 52.6 | 0 | 3 | 75.3 | 150.3 | 55.3 |
| 750195 | I-4 (EB) over Par Ave. | Type III AASHTO Beam | 14.11 | 52.6 | 0 | 3 | 75.3 | 150.3 | 55.3 |
| 750084 | I-4 (WB) over Formosa Ave. & Minnesota Ave. | Type III AASHTO Beam | 13.36 | 52.6 | 45 | 8 | 90.1 | 502.3 | 55.3 |
| 750196 | I-4 (EB) over Formosa Ave. & Minnesota Ave. | Type III AASHTO Beam | 13.36 | 52.6 | 45 | 6 | 90.1 | 394.1 | 55.3 |
| 750256 | I-4 (WB) over SR 426 | Type III AASHTO Beam | 15.1 | 53.9 | 45 | 4 | 74.3 | 255.6 | 55.3 |
| 750261 | I-4 (EB) over SR 426 | Type III AASHTO Beam | 15.1 | 53.9 | 45 | 4 | 74.3 | 255.6 | 55.3 |

Table 4.2.3 - Bridge Structure Inventory - Segments 4 & 5

| Bridge No. | Description | Type | Vertical Clearance (ft) | Horizontal Clearance (ft) | Skew Angle | No. Of Spans | Max. Span Length (ft) | Overall Length (ft) | Deck Width (ft) |
|---------------|-------------------------------|----------------------|-------------------------|---------------------------|------------|--------------|-----------------------|---------------------|-----------------|
| 759002 | Pedestrian Walkway over I-4 | Concrete Box | 16.28 | 7.6 | N/A | 2 | 71.1 | 540.5 | N/A |
| 750029 | I-4 (WB) over Wymore Rd. | Concrete Cont. Box | 14.18 | 55.9 | Varies | 4 | 105.3 | 347 | 58.9 |
| 750127 | I-4 (EB) over Wymore Rd. | Concrete Cont. Box | 14.18 | 55.9 | Varies | 4 | 109.2 | 387.2 | 55.9 |
| 750139 | I-4 (WB) over Lee Rd. | Type III AASHTO Beam | 15.03 | 53.3 | 22 | 4 | 57.2 | 196.4 | 55.6 |
| 750197 | I-4 (EB) over Lee Rd. | Type III AASHTO Beam | 15.03 | 53.6 | 18 | 4 | 55.3 | 191.4 | 55.3 |
| 750198 | I-4 over Kennedy Blvd. | Concrete Slab | 15.26 | N/A | 2 | 3 | 44.1 | 118.4 | 136.2 |
| 750290/750289 | Maitland Blvd. (EB) over I-4 | Type III AASHTO Beam | 16.51 | 52 | Varies | 7 | 115.5 | 535.5 | 54.9 |
| 750287 | Maitland Blvd. (WB) over I-4 | Type III AASHTO Beam | 16.88 | 48 | Varies | 7 | 117.4 | 553.3 | 51 |
| 750286 | Maitland Blvd ramp over I-4 | Type III AASHTO Beam | 16.28 | 27 | Varies | 5 | 101.3 | 366.1 | 29.9 |
| 770023 | Wymore Rd. over I-4 | Type III AASHTO Beam | 16.02 | 28 | 44 | 4 | 102.3 | 347 | 34.2 |
| 770006 | SR 436 over I-4 | Type III AASHTO Beam | 15.95 | 13.2 | 0 | 4 | 69.1 | 270.7 | 100.9 |
| 770038 | Central Parkway over I-4 | Type III AASHTO Beam | 16.78 | 78.9 | 0 | 2 | 100.3 | 200.7 | 93.8 |
| 770021 | I-4 (WB) over SR 434 | Type III AASHTO Beam | 15.1 | 28 | 33 | 4 | 61.2 | 244.7 | 34.2 |
| 770022 | I-4 (EB) over SR 434 | Type III AASHTO Beam | 15.1 | 28 | 33 | 4 | 61.2 | 244.7 | 34.2 |
| 770018 | EE Williamson Rd. over I-4 | Type III AASHTO Beam | 16.35 | 24 | 17 | 4 | 72 | 286.8 | 34.2 |
| 770040 | Lake Mary Blvd (EB) over I-4 | Type III AASHTO Beam | 16.51 | 67.1 | 18 | 2 | 120.4 | 227.6 | 68.4 |
| 770039 | Lake Mary Blvd. (WB) over I-4 | Type III AASHTO Beam | 16.51 | N/A | 18 | 2 | 120.4 | 227.6 | 104.6 |
| 770012 | Paola Rd. over I-4 | Type III AASHTO Beam | 16.35 | 28 | 24 | 4 | 76.3 | 268.8 | 34.2 |
| 770008 | I-4 (WB) over CSX Railroad | Type III AASHTO Beam | N/A | 37.8 | 28 | 3 | 53.3 | 146.4 | 44.1 |
| 770910 | I-4 (EB) over CSX Railroad | Type III AASHTO Beam | N/A | 37.8 | 28 | 3 | 53.3 | 146.4 | 44.1 |
| 770025 | I-4 (WB) over SR 46 | Type III AASHTO Beam | 15.2 | 28 | 24 | 3 | 81.3 | 154.3 | 33.9 |
| 770026 | I-4 (EB) over SR 46 | Type III AASHTO Beam | 15.2 | 28 | 24 | 6 | 81.3 | 154.3 | 33.9 |
| 770029 | I-4 over Box Culvert | Concrete Culvert | N/A | N/A | 30 | 2 | 9.9 | 23 | N/A |

Table 4.2.4 - Bridge Structure Inventory - Segment 6

| Bridge No. | Description | Type | Vertical Clearance (ft) | Horizontal Clearance (ft) | Skew Angle | No. Of Spans | Max. Span Length (ft) | Overall Length (ft) | Deck Width (ft) |
|------------|-------------------------------------|----------------------|-------------------------|---------------------------|------------|--------------|-----------------------|---------------------|-----------------|
| 770024 | I-4 over Orange Blvd / CSX | Type III AASHTO Beam | 21.55 | 26 | 0 | 5 | 79.3 | 319.7 | 61.8 |
| 790940 | I-4 over St. Johns River | Steel Cont. Beam | 14.61 | 26 | 0 | 34 | 130.3 | 1661 | 61.8 |
| 790941 | I-4 over Padgett Creek | Type III AASHTO Beam | N/A | 28 | 0 | 3 | 57.2 | 152.3 | 33.9 |
| 790099 | I-4 over Padgett Creek | Type III AASHTO Beam | N/A | 28 | 0 | 3 | 57.2 | 152.3 | 33.9 |
| 790042 | I-4 (WB) over DeBary Ave. | Type III AASHTO Beam | 22.14 | 48 | 37 | 5 | 74.3 | 328.9 | 50.7 |
| 790100 | I-4 (EB) over DeBary Ave. | Type III AASHTO Beam | 22.14 | 39.8 | 37 | 5 | 74.3 | 328.9 | 42.8 |
| 790101 | Enterprise Rd. over I-4 | Type III AASHTO Beam | 15.59 | 28 | 50 | 5 | 84.2 | 334.9 | 33.9 |
| 790167 | Saxon Blvd. over I-4 | Type III AASHTO Beam | 17.2 | 58.9 | 16 | 3 | 100.3 | 258.6 | 66.4 |
| 790166 | Saxon Blvd. over I-4 | Type III AASHTO Beam | 17.2 | 59.2 | 16 | 3 | 100.3 | 258.6 | 66.4 |
| 790044 | Graves Ave. / Howland Ave. over I-4 | Type III AASHTO Beam | 15.43 | 24 | 16 | 4 | 71.1 | 215.5 | 29.9 |
| 790053 | SR 472 over I-4 | Type III AASHTO Beam | 15.36 | 18.4 | 20 | 4 | 72 | 218.4 | 46.1 |

4.2.2.4 Segment 6 - US 17-92 to SR 472

Table 4.2.2.4.1 summarizes the data for the 11 bridges in Segment 6. Using the 10 point sufficiency rating scale, all the bridges in Segment 6 require rehabilitation and one (I-4 over the St. Johns River) qualifies for replacement.

Table 4.2.2.4.1 - Current Structure Condition and Year of Construction - Segment 6

| Bridge No. | Route | Year of Construction | Structural Sufficiency Rating |
|------------|-------------------------------------|----------------------|-------------------------------|
| 770024 | I-4 over Orange Blvd / CSX | 1959 | 7 |
| 790940 | I-4 over St. Johns River | 1960 | 5 |
| 790941 | I-4 over Padgett Creek | 1959 | 7 |
| 790099 | I-4 over Padgett Creek | 1959 | 7 |
| 790042 | I-4 (WB) over DeBary Ave. | 1959 | 7 |
| 790100 | I-4 (EB) over DeBary Ave. | 1959 | 7 |
| 790101 | Enterprise Rd. over I-4 | 1959 | 7 |
| 790167 | Saxon Blvd. over I-4 | 1959 | 8 |
| 790166 | Saxon Blvd. over I-4 | 1959 | 8 |
| 790044 | Graves Ave. / Howland Ave. over I-4 | 1959 | 7 |
| 790053 | SR 472 over I-4 | 1959 | 7 |

4.2.3 Horizontal and Vertical Alignments

The existing structure horizontal skew angles and horizontal and vertical clearances for the bridge structures within the project are shown on Tables 4.2.1 through 4.2.4, previously presented. Existing clearances less than 16.5 feet over the Interstate are undesirable. All but 20 of the bridges within the project limits have less than desirable vertical clearances.

4.2.4 Span Arrangement

The existing span arrangements (number and length of spans) of the bridges within the project limits are listed in Tables 4.2.1 through 4.2.4, previously presented.

4.2.5 Channel Data

I-4 Bridge Nos. 750191 (EB) and 750076 (WB) span the Lake Ivanhoe boat pass at approximately Station 248+50. The boat pass is used solely by personal watercraft; therefore, the Coast Guard has not set specific horizontal and vertical clearance standards for the channel.

I-4 Bridge No. 790940 crosses the St. Johns River at the Seminole/Volusia County line near the east end of the project. The river channel is 100-foot wide and is skewed at an angle of 75°50'47.0" from the roadway. There is a 90-foot horizontal clearance and a 45-foot vertical clearance (from normal high water) underneath the bridge. As of 1996, horizontal clearance standards have increased from 90 feet to 100 feet while vertical clearance standards have remained at 45 feet for this section of the river. This bridge is being replaced as part of the I-4 Six Laning & St. Johns River Bridge Design/Build Project.

Bridge No.'s 790099 (EB) and 790941 (WB) cross Padgett Creek at approximately Station 3145+00. The channel is 52 feet wide and is perpendicular to the roadway. There is a 19.4-foot vertical clearance (from

normal high water) underneath the bridge. The creek is used solely by pleasure craft; therefore, the Coast Guard has not set specific horizontal and vertical clearance standards for the channel.

4.2.6 Ship Impact Data

There have been no significant ship impacts to Bridge No. 790940 (I-4 over the St. Johns River) since its construction.

4.3 ENVIRONMENTAL CHARACTERISTICS

4.3.1 Land Use Data

4.3.1.1 Existing Land Use

Diverse land use patterns, including densely developed areas and vacant tracts of land, are characteristic along the I-4 project limits. Figure 4.3.1.1.1 illustrates the various land uses adjacent to the I-4 project. The following paragraphs present a more detailed description of the land uses within the I-4 Ultimate project study area.

4.3.1.1.1 Segment 1 - SR 528 to John Young Parkway

Varieties of land uses are located within Segment 1 and include areas in unincorporated Orange County and the City of Orlando. The southern portion is characterized by tourist attractions, hotels, resorts, restaurants and other tourist-related activities. Residential developments are located outside the immediate I-4 Ultimate study area. The remaining portions within Segment 1 consist of predominantly industrial and commercial land uses.

4.3.1.1.2 Segment 2 - John Young Parkway to Ivanhoe Boulevard

Within Segment 2, the land uses adjacent to I-4 are primarily commercial, residential, industrial and institutional through the City of Orlando and areas of unincorporated Orange County. The residential areas include some minority and low income census tracts. The commercial land uses are mostly found at interchanges and within the downtown Orlando CBD. The neighborhoods adjacent to I-4 and SR 408 (East/West Expressway) within the Ultimate study area have some historical significance and were previously split and isolated due to the original roadway construction.

4.3.1.1.3 Segment 3 - Ivanhoe Boulevard to Lee Road

The City of Winter Park is located just east of I-4. Segment 3 is mostly commercial and institutional east of I-4 and west of Orange Avenue. Florida Hospital is located at the intersection of Orange Avenue and Rollins Street just east of I-4. Matthews Park is located adjacent to I-4 north of Princeton Street. The remaining portion of Segment 3 is primarily residential. The adjacent neighborhoods have some historic significance and were previously divided by the original I-4 construction.

4.3.1.1.4 Segment 4 - Lee Road to Lake Mary Boulevard

Segment 4 land use designations are primarily residential, with designated areas of commercial use and recreational and institutional facilities. Segment 4 transverses the jurisdictions of Eatonville, Maitland, Altamonte Springs, Longwood and Lake Mary. Commercial use in this segment is primarily focused in office centers, including the Maitland Center and Cranes Roost, and in retail centers including the Altamonte Mall on SR 436. The nearest major medical center to the project corridor in this segment is Florida Hospital Altamonte, located on SR 436 east of the Altamonte Mall.

4.3.1.1.5 Segment 5 - Lake Mary Boulevard to US 17-92

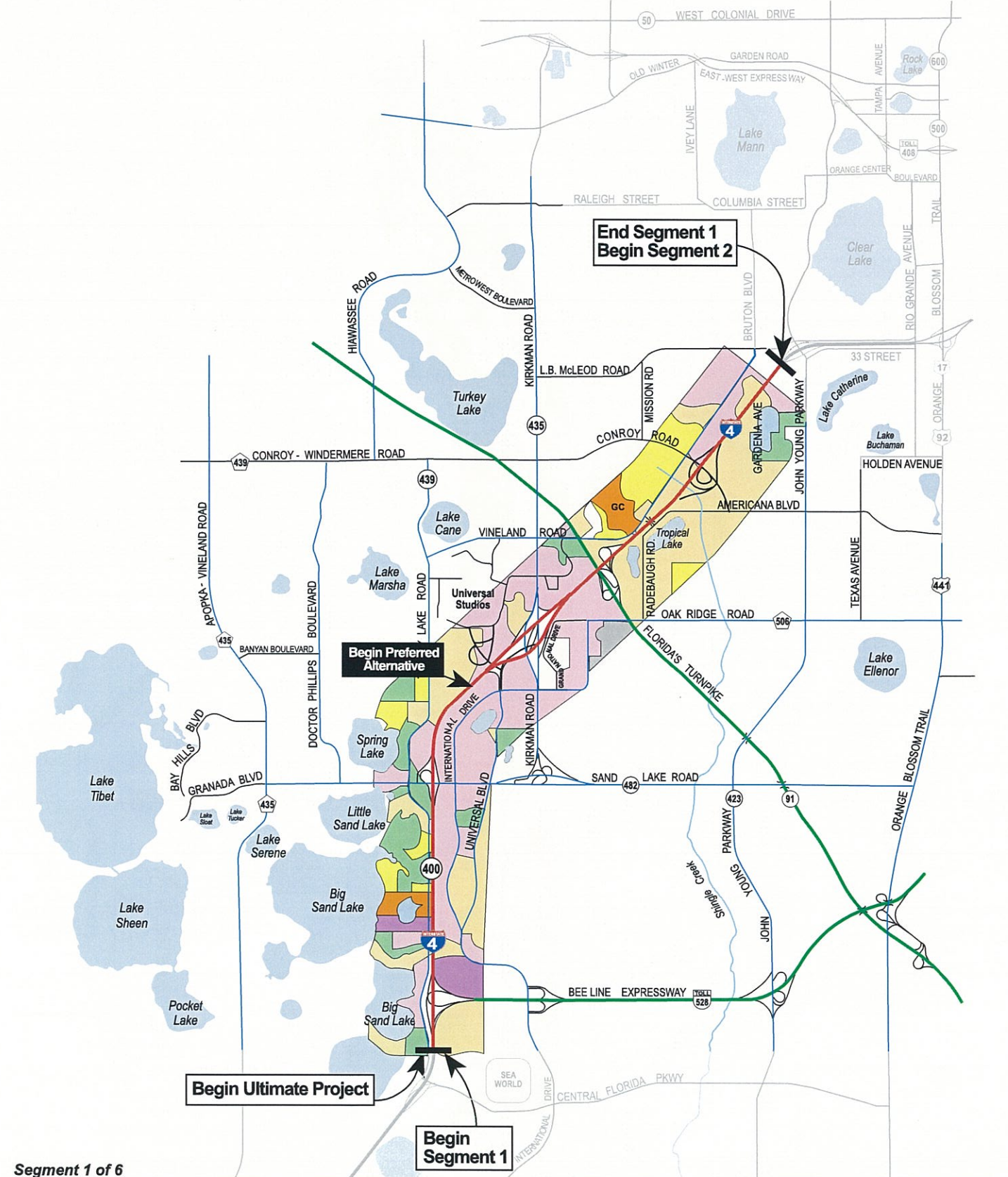
Segment 5 is located in Seminole County within the jurisdictions of Lake Mary and Sanford. The land uses adjacent to I-4 are mostly vacant agricultural and residential with areas zoned commercial, industrial and recreational. The commercial use is primarily focused in office centers, including the Heathrow International Business Center on Lake Mary Boulevard, and in retail centers including the Seminole Towne Center on SR 46. Major employers along the corridor include the American Automobile Association near Lake Mary Boulevard, the Recoton Corporation on Lake Emma Road and Siemens Telecom Networks and the U.S. Postal Processing Plant located on Rinehart Road. Recreational land uses in the area include the Heathrow Country Club.

4.3.1.1.6 Segment 6 - US 17-92 to SR 472

Segment 6 is located in Seminole and Volusia Counties within the jurisdictions of Sanford, DeBary, Deltona and Orange City. Land uses adjacent to I-4 are primarily vacant agricultural, residential and commercial with areas zoned industrial, institutional and recreational. Most of the residential areas are located along Deltona Boulevard, Enterprise Road, Saxon Boulevard and Graves Avenue and consist mostly of single-family units. The Country Village mobile home park retirement community is located near Graves Avenue. Commercial developments located on US 17-92, Deltona Boulevard, Enterprise Road and Saxon Boulevard consist mostly of offices and retail facilities including Uncle Bob's Self Storage adjacent to I-4 on Enterprise Road. Industrial land uses include the Sanford Port Authority on Orange Boulevard, a major employer in Sanford and areas on Graves Boulevard. Institutional uses include churches, cemeteries and the sheriff's office. Recreational uses include Lake Monroe Wayside Park and other areas on Lake Monroe.

4.3.1.2 Future Land Use

Future land use data were collected from local jurisdictions along the I-4 corridor. As shown in Figure 4.3.1.2.1, the I-4 Ultimate study area will be characterized by diverse land use patterns, including areas targeted for activity centers and areas of conservation. In general, most of the vacant land along the I-4 corridor (with the exception of areas set aside for conservation and recreation) is targeted for activity centers, mixed use and

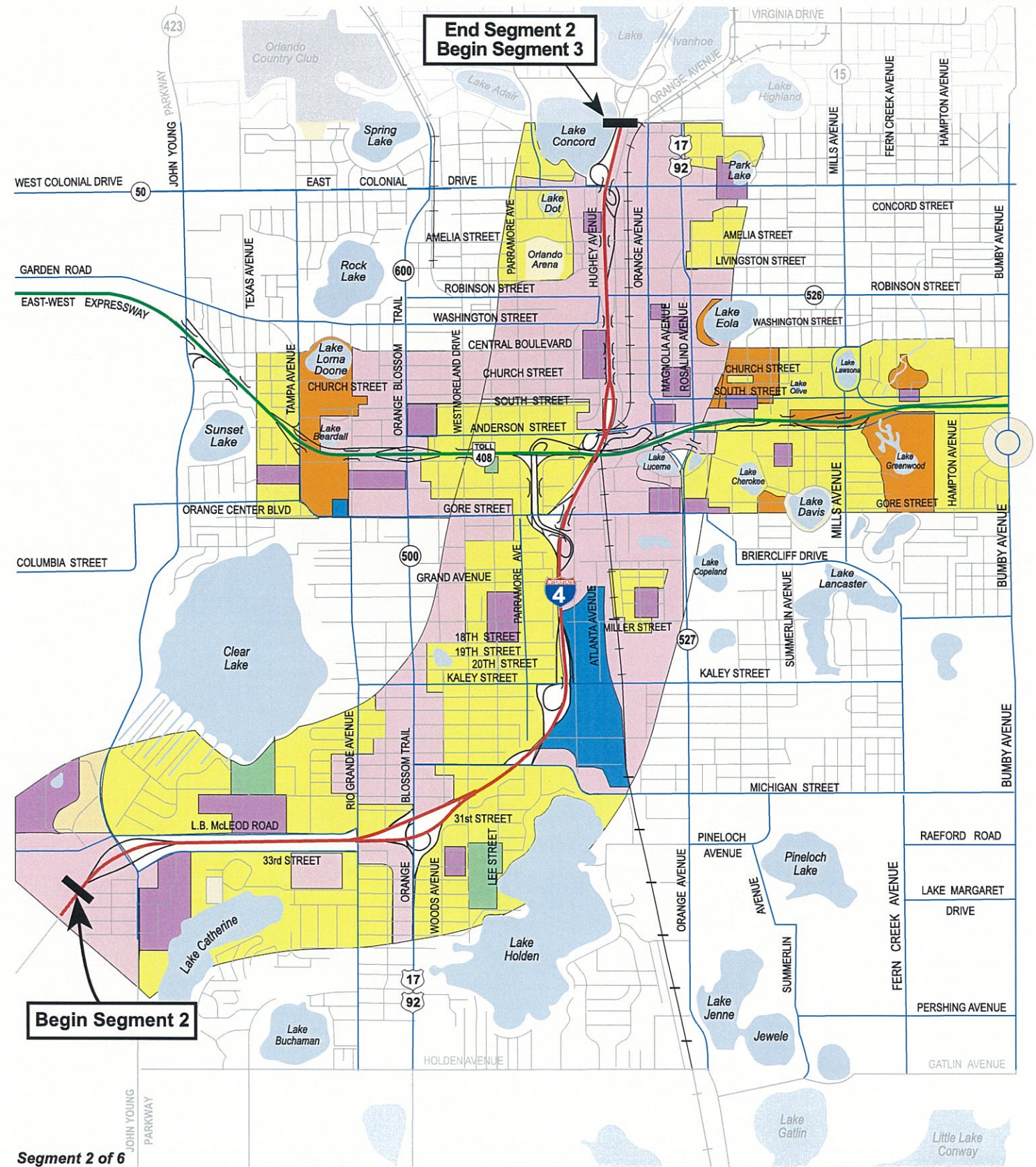


Segment 1 of 6



- | | | |
|----------------------|--|------------------------|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Agricultural/Pasture | Undeveloped |
| Institutional/Public | Recreational Facility/Golf Course/Park | Water |
| Industrial | | |

GC - Golf Course
 RF - Recreational Facility
 Source: Orange Co. Future Land Use Map Series, 05196 14A, 13B, 6B, 6A
 City of Orlando, Future Land Use Concept, Maps 12, 17, 11



Segment 2 of 6

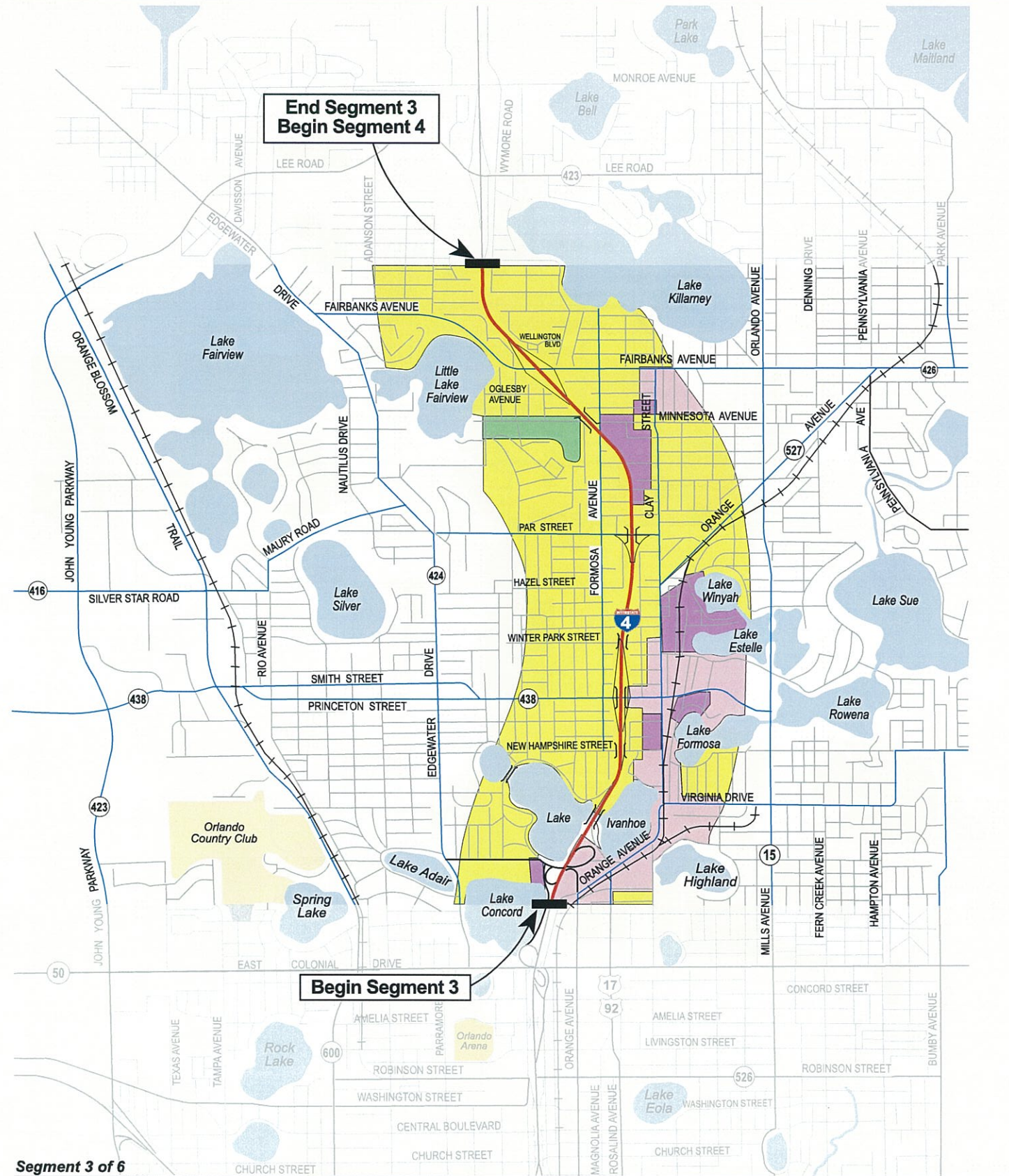


- | | | |
|----------------------|--|------------------------|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Agricultural/Pasture | Undeveloped |
| Institutional/Public | Recreational Facility/Golf Course/Park | Water |
| Industrial | | |

Source: 1996 Aerials; Orange Co. 1987 Future Land Use Map Series 05/96, 6A, 3A
 City of WinterPark Comprehensive Plan Future Land Use Map, Maps 12, 8, 13, 2
 City of Eaton Future Land Use and Existing Zoning

I-4 PD&E Study - Section 2

Figure 4.3.1.1.1
 Generalized Existing Land Use

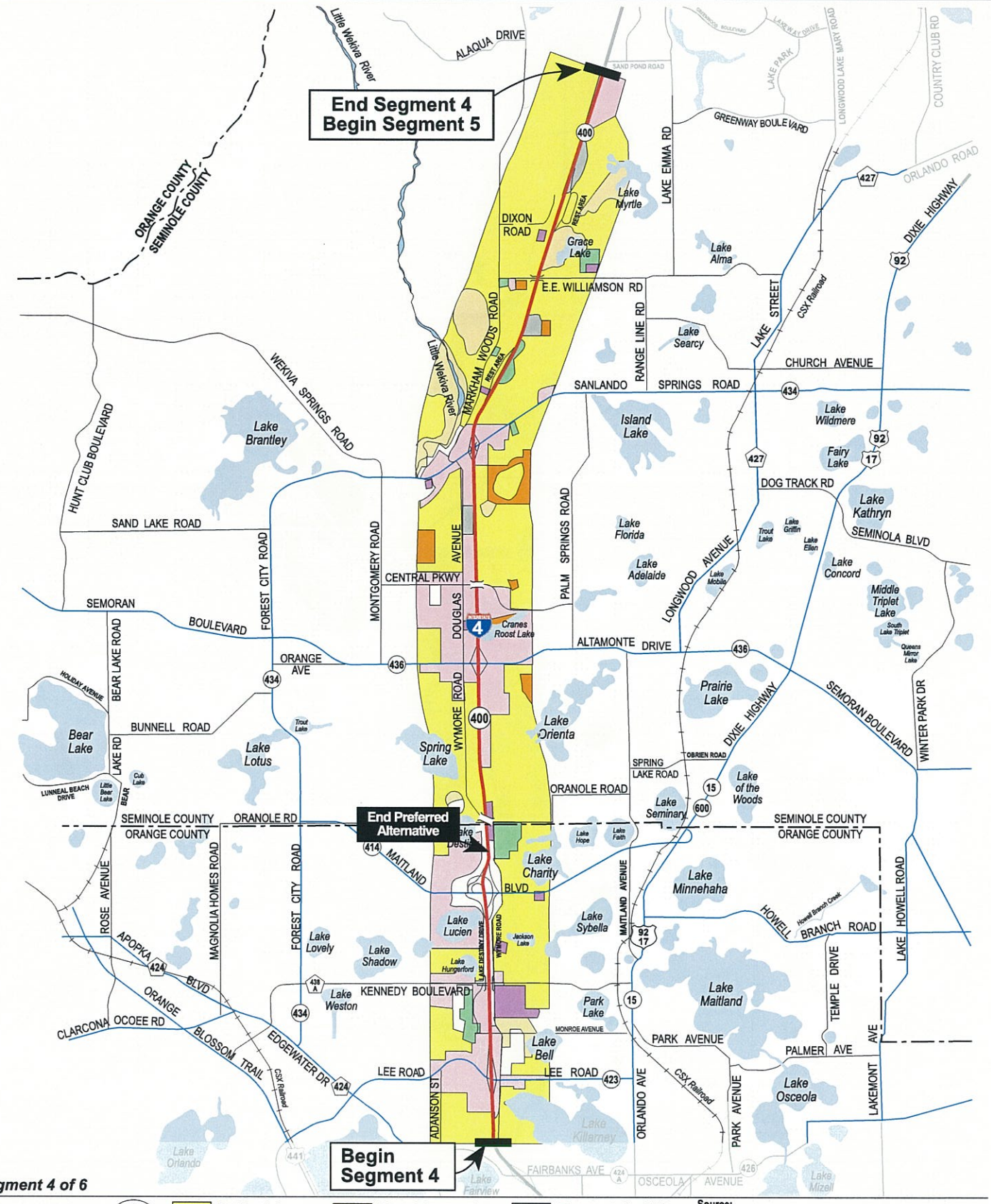


Segment 3 of 6

Scale in Miles: 0, 1/2, 1

| | | |
|----------------------|----------------------|--|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Undeveloped | Water |
| Institutional/Public | Agricultural/Pasture | Recreational Facility/Golf Course/Park |
| Industrial | GC - Golf Course | RF - Recreational Facility |

Source:
 1996 Aerials;
 Orange Co. 1987 Future Land Use Map Series 05/96, 6A, 3A
 City of Winter Park Comprehensive Plan Future Land Use Map, Maps 12, 8, 13, 2
 City of Eaton Future Land Use and Existing Zoning



Segment 4 of 6

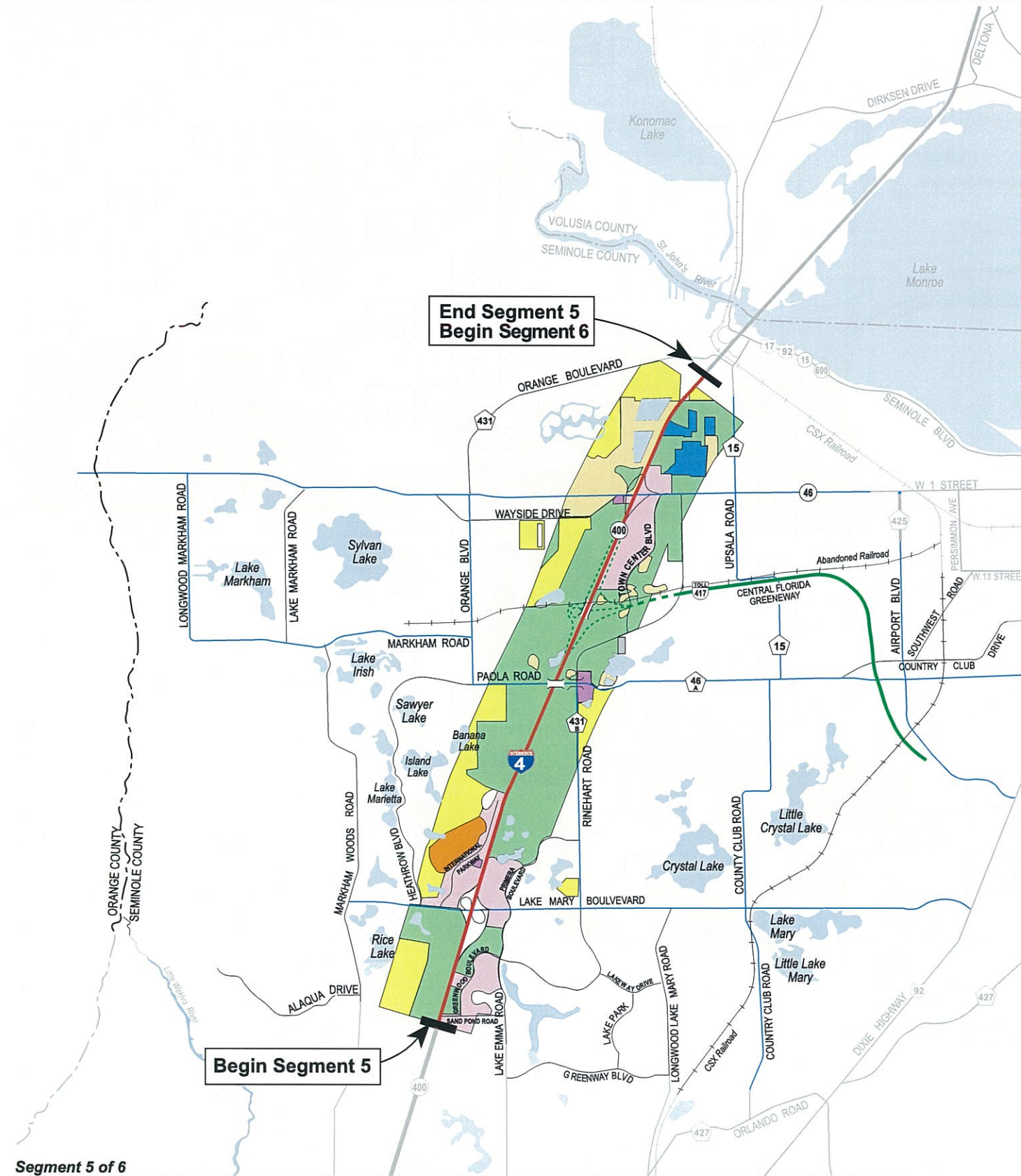
Scale in Miles: 0, 1/2, 1

| | | |
|----------------------|----------------------|--|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Undeveloped | Water |
| Institutional/Public | Agricultural/Pasture | Recreational Facility/Golf Course/Park |
| Industrial | GC - Golf Course | RF - Recreational Facility |

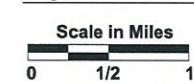
Source:
 • Figure 2.0.1 Seminole Co. 1991 Comp. Plan Update Jan. 1996
 • City of Lake Mary, Future Land Use 2010
 • City of Longwood, Future Land Use Map Year 2005, 09/91
 • City of Altamonte Springs Comprehensive Plan, April 1991, Future Land Use Map 1991 - 1996 & 1996 - 2005 Figure 3.2a
 • City of Maitland, Future Land Use Map Series (Maps 1&2)
 • City of Eatonville
 • Orange County Future Land Use Map Series, 05/96, Map 2, p22

Figure 4.3.1.1.1 Generalized Existing Land Use

I-4 PD&E Study - Section 2

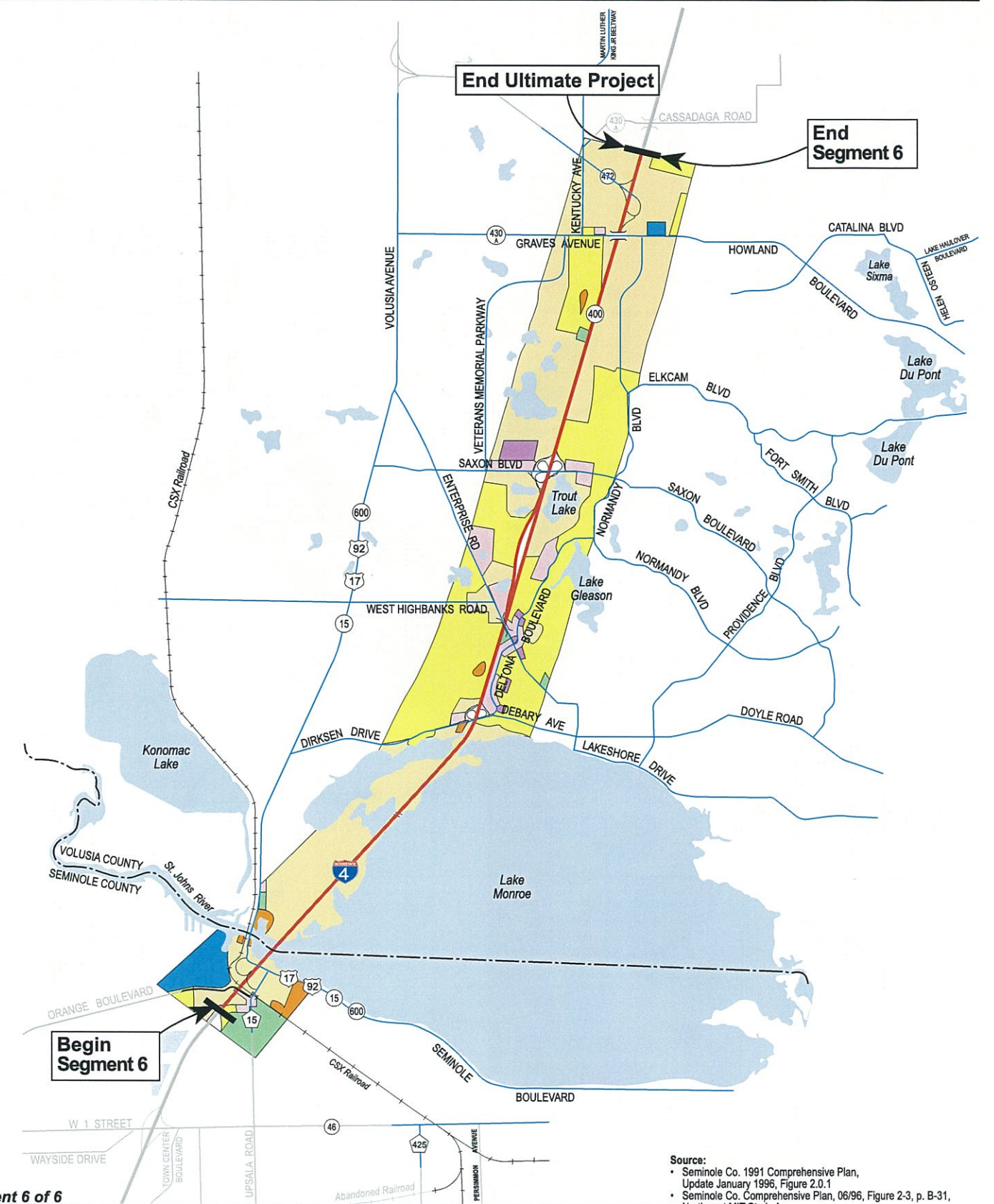


Segment 5 of 6

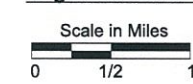


| | | |
|----------------------|--|----------------------------|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Agricultural/Pasture | Industrial |
| Institutional/Public | Recreational Facility/ Golf Course/Park | Undeveloped |
| Industrial | | Water |
| | | GC - Golf Course |
| | | RF - Recreational Facility |

Source:
 • Seminole Co. 1991 Comprehensive Plan, Update January 1996, Figure 2.0.1
 • Seminole Co. Comprehensive Plan, 06/96, Figure 2-3, p. B-31, Northwest HIP Study Area
 • City of Sanford, Future Land Use Plan, 04/95
 • City of Lake Mary, Future Land Use, 2010



Segment 6 of 6

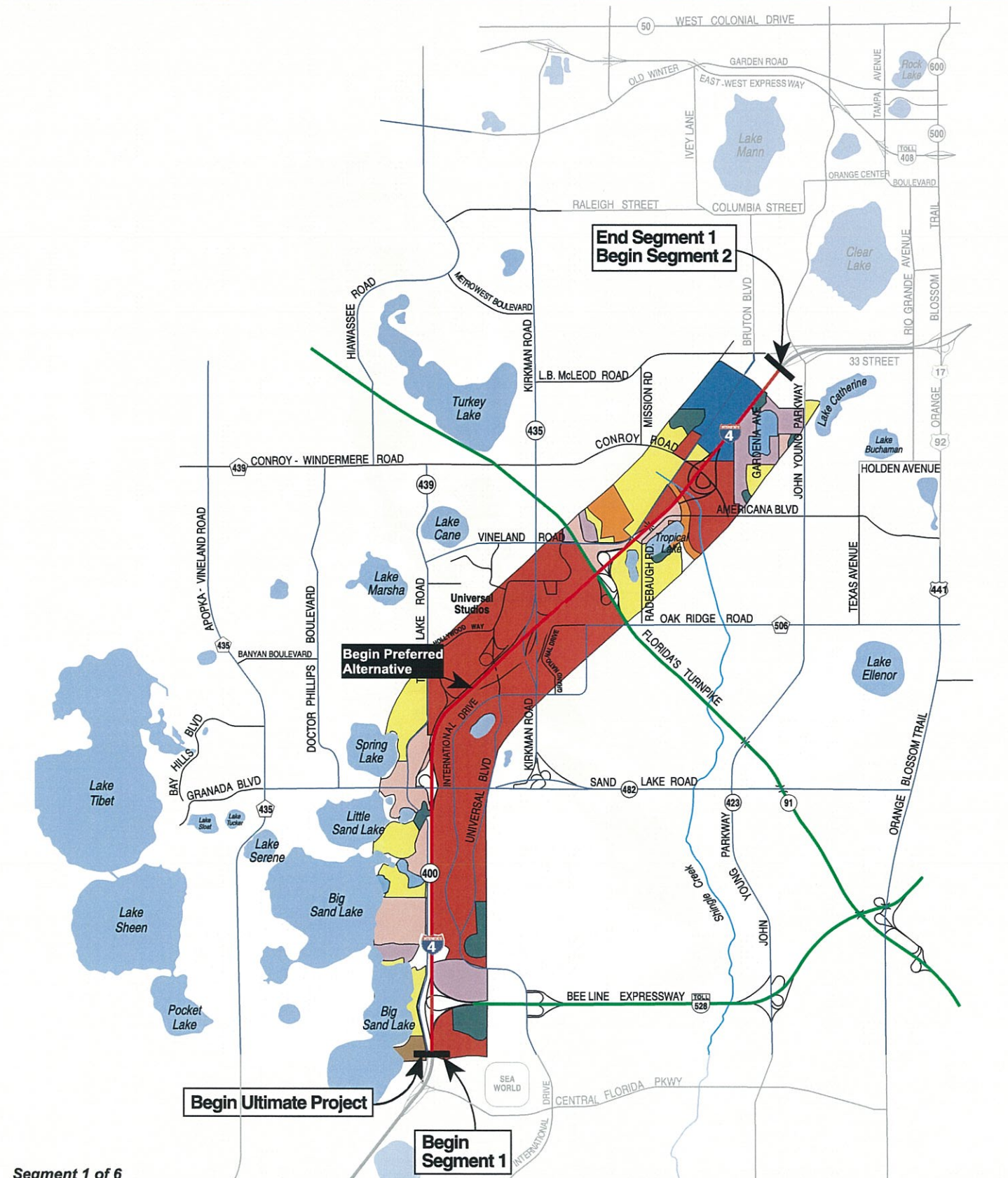


| | | |
|----------------------|--|----------------------------|
| Residential | Natural Community | Transportation/Utility |
| Commercial/Office | Agricultural/Pasture | Industrial |
| Institutional/Public | Recreational Facility/ Golf Course/Park | Undeveloped |
| Industrial | | Water |
| | | GC - Golf Course |
| | | RF - Recreational Facility |

Source:
 • Seminole Co. 1991 Comprehensive Plan, Update January 1996, Figure 2.0.1
 • Seminole Co. Comprehensive Plan, 06/96, Figure 2-3, p. B-31, Northwest MIT Study Area
 • City of DeBary, Figure 12.1, Future Land Use Map, 08/96
 • City of DeBary Comprehensive Plan, Vol II, Draft
 • Orange City Future Land Use Map, 2010, Comprehensive Plan, Amendment 94-01, 10/94 and Memo, Orange City, Future Land Use; Volusia Co. Growth Management Dept., 09/96
 • Volusia Co. Figure 1-11, Generalized Future Land Use
 • Volusia Co. Southwest Activity Center, Figure 1-15, Volusia Co. Comprehensive Plan, Ord. 95-33

I-4 PD&E Study - Section 2

Figure 4.3.1.1.1
Generalized Existing Land Use

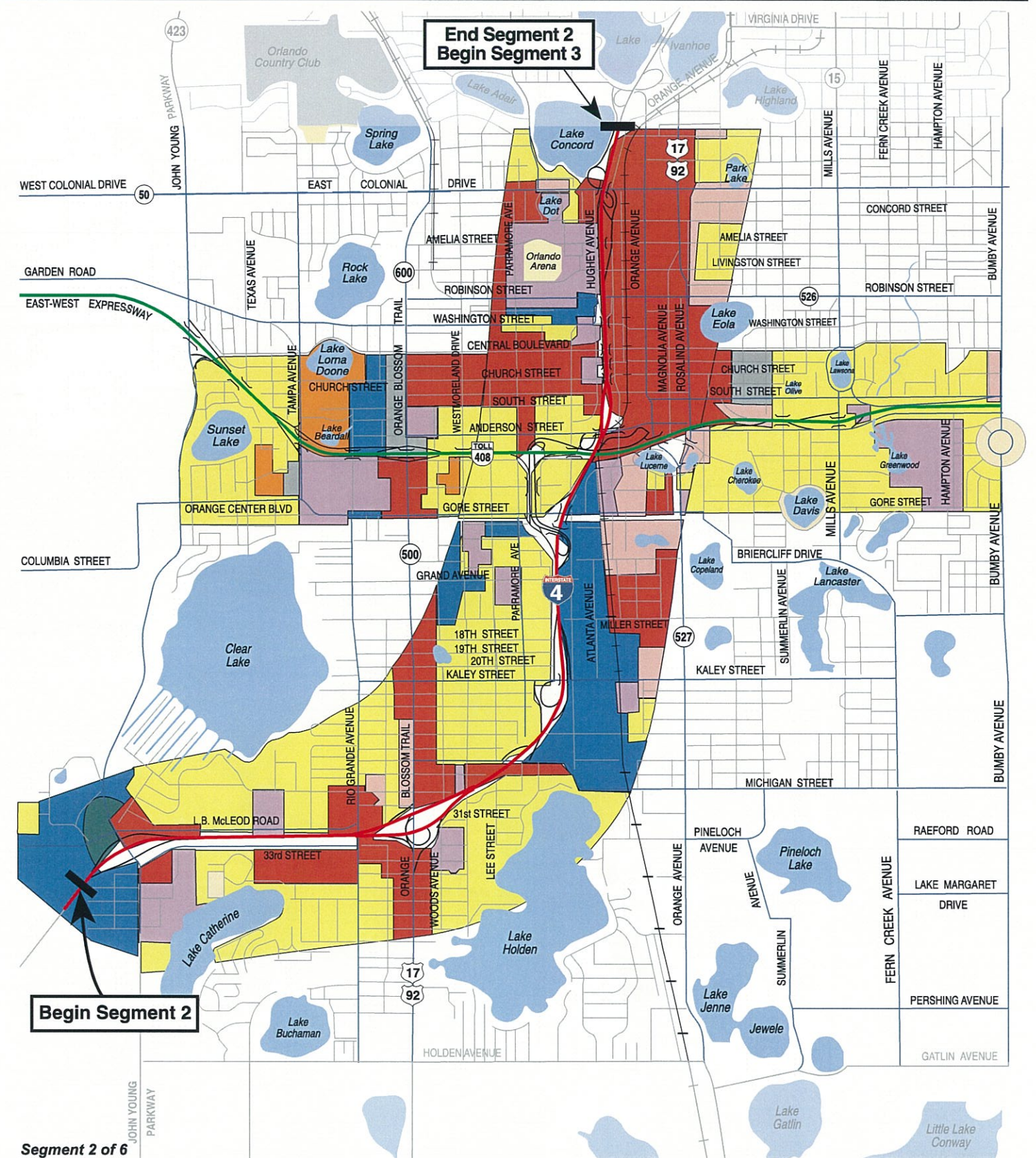


Segment 1 of 6

Scale in Miles: 0, 1/2, 1

| | | |
|---|----------------------|--|
| Mixed Use/PUD (Residential, Commercial, Office) | Institutional/Public | Recreational Facility/ Golf Course/Park |
| Activity Center/Target Area (Commercial, Office, Industrial) | Industrial | Transportation/Utility |
| Residential | Natural Community | Undeveloped |
| Commercial/Office | Conservation | Water |
| | Agricultural/Pasture | |

Source:
 • Orange Co. Future Land Use Map Series, 05196 14A, 13B, 6B, 6A
 • City of Orlando, Future Land Use Concept, Maps 12, 17, 11



Segment 2 of 6

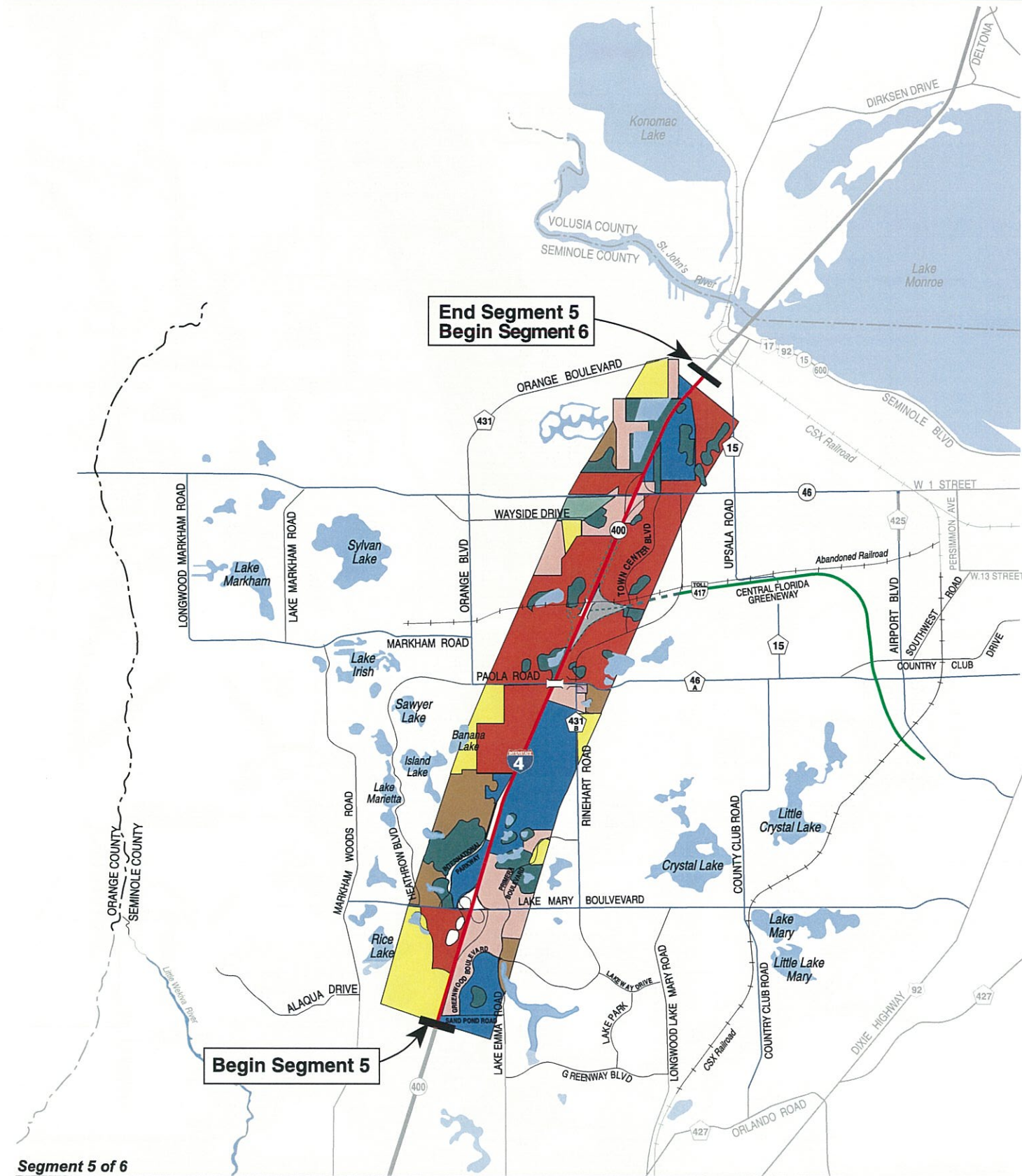
Scale in Miles: 0, 1/2, 1

| | | |
|---|----------------------|--|
| Mixed Use/PUD (Residential, Commercial, Office) | Institutional/Public | Recreational Facility/ Golf Course/Park |
| Activity Center/Target Area (Commercial, Office, Industrial) | Industrial | Transportation/Utility |
| Residential | Natural Community | Undeveloped |
| Commercial/Office | Conservation | Water |
| | Agricultural/Pasture | |

Source:
 • 1996 CH2M Hill Aerials
 • Orange Co. 1987 Future Land Use Map Series 05/96, 6A, 3A
 • City of Winter Park Comprehensive Plan Future Land Use Map; Maps 12, 8, 13, 2
 • City of Eaton Future Land Use and Existing Zoning

Figure 4.3.1.2.1
Generalized Future Land Use

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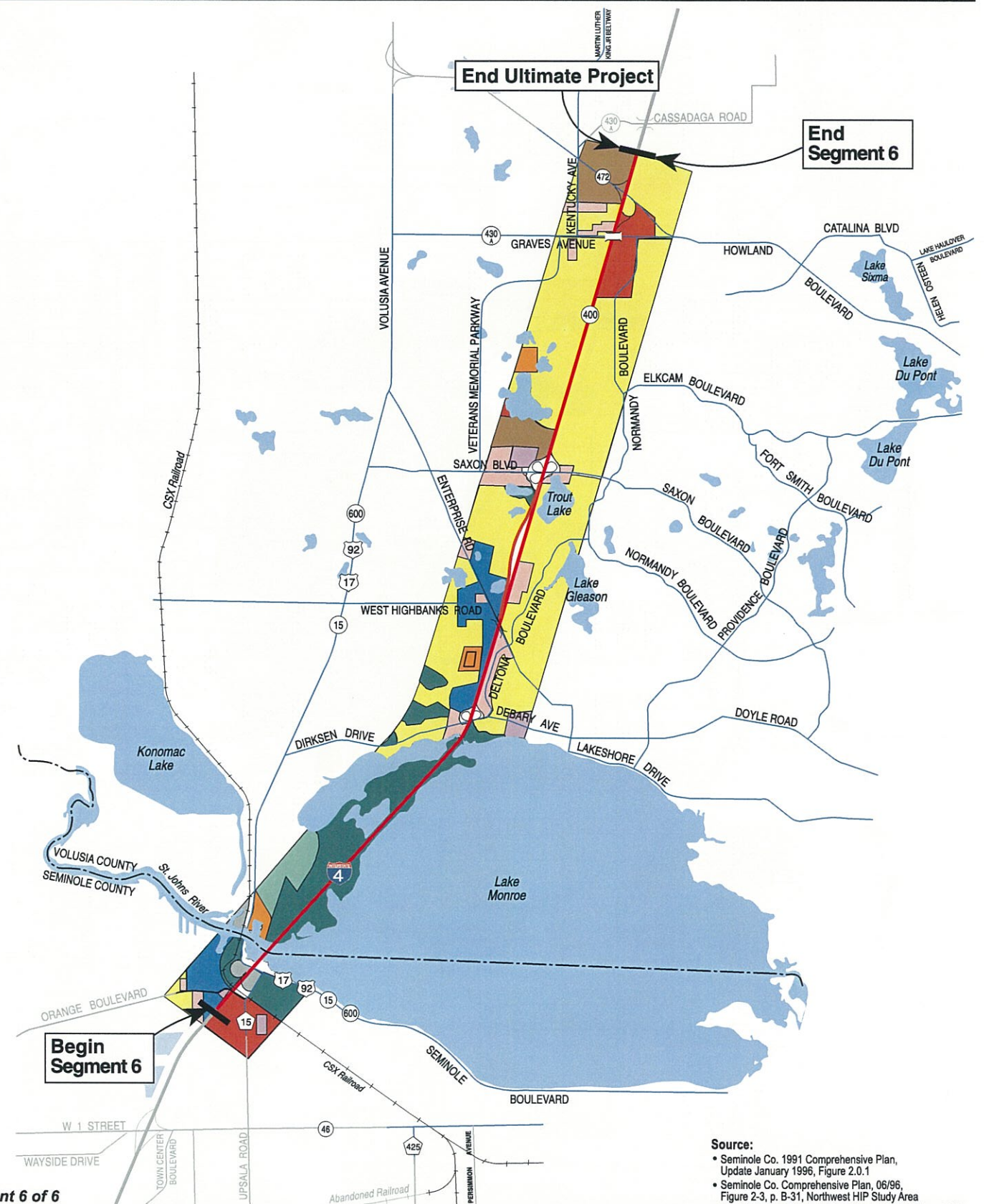
Segment 5 of 6



| | | |
|---|----------------------|--|
| Mixed Use/PUD (Residential, Commercial, Office) | Institutional/Public | Recreational Facility/ Golf Course/Park |
| Activity Center/Target Area (Commercial, Office, Industrial) | Industrial | Transportation/Utility |
| Residential | Natural Community | Undeveloped |
| Commercial/Office | Conservation | Water |
| | Agricultural/Pasture | |

Source:
 • Seminole Co. 1991 Comprehensive Plan, Update January 1996, Figure 2.0.1
 • Seminole Co. Comprehensive Plan, 06/96, Figure 2-3, p. B-31, Northwest HIP Study Area
 • City of Sanford Future Land Use Plan, 04/95
 • City of Lake Mary Future Land Use, 2010

Figure 4.3.1.2.1
Generalized Future Land Use



Segment 6 of 6



| | | |
|---|----------------------|--|
| Mixed Use/PUD (Residential, Commercial, Office) | Institutional/Public | Recreational Facility/ Golf Course/Park |
| Activity Center/Target Area (Commercial, Office, Industrial) | Industrial | Transportation/Utility |
| Residential | Natural Community | Undeveloped |
| Commercial/Office | Conservation | Water |
| | Agricultural/Pasture | |

Source:
 • Seminole Co. 1991 Comprehensive Plan, Update January 1996, Figure 2.0.1
 • Seminole Co. Comprehensive Plan, 06/96, Figure 2-3, p. B-31, Northwest HIP Study Area
 • City of DeBary, Figure 12.1, Future Land Use Map, 08/96
 • City of DeBary Comprehensive Plan, Vol II, Draft
 • Orange City Future Land Use Map, 2010, Comprehensive Plan, Amendment 94-01, 10/94 and Memo
 • Orange City Future Land Use; Volusia Co. Growth Management Dept., 09/96
 • Volusia Co. Figure 1-11, Generalized Future Land Use
 • Volusia Co. Southwest Activity Center, Figure 1-15
 • Volusia Co. Comprehensive Plan, Ord. 95-33

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planned unit developments (PUD), which include residential, commercial, office and industrial land uses. The location of the proposed developments are greatly determined by access to existing and proposed I-4 interchanges. In areas where vacant land is limited, such as in Segments 2, 3 and 4, land use patterns have already been established and changes in land use designation are less significant. The following paragraphs discuss the changes proposed in the future land use plans of the adjacent local jurisdictions.

4.3.1.2.1 Segment 1 - SR 528 to John Young Parkway

Significant land use changes are proposed along I-4 in Segment 1. Much of the area designated as natural community and agricultural will be re-classified to include a greater commercial and residential area, public institution and additional industrial and mixed land uses. The majority of the area east of I-4 and south of Florida's Turnpike, and west of I-4 between Turkey Lake Road and Florida's Turnpike is designated as an Activity Center/Target Area, which includes a mix of commercial, office and industrial sites.

Future land use changes expand the existing International Drive activity area south of SR 528 (Bee Line Expressway). Universal Studios will expand to the area south of its existing site to Turkey Lake Road. Most of the agricultural areas west of Turkey Lake Road are proposed for residential and commercial developments. With the proposed improvement at Central Florida Parkway and Turkey Lake Road, there is one area designated as a Mixed Use/PUD just south of SR 528 (Bee Line Expressway), a mixture of residential, commercial and office uses. Another major target area for future development is in the area of the Conroy Road/I-4 interchange. This development includes commercial, industrial, residential and recreational areas.

4.3.1.2.2 Segments 2 and 3 - John Young Parkway to Lee Road

As only a minimal amount of vacant land exists within Segments 2 and 3, most of the land use patterns have already been established. Therefore, land use changes are less significant within Segments 2 and 3. Additional land will be zoned for industrial uses. Land use changes involve an increase of commercial developments along 33rd Street, Rio Grande Avenue and US 441 (Orange Blossom Trail).

4.3.1.2.3 Segments 4 and 5 - Lee Road to US 17-92

Although no significant land use changes are proposed for Segment 4, significant changes in land use designation are proposed for Segment 5. Segment 4 will see a slight increase in commercially zoned areas, the removal of agriculture zoning along the corridor and the increase of mixed use zoning and institutional/public facilities. Areas of conservation will remain primarily along the Little Wekiva River.

Within Segment 5, land use changes involve the redesignation of existing agricultural areas to industrial, commercial and mixed uses (Activity

Centers/Target Areas and Mixed Use/PUD). Most of the proposed developments are located in the areas along Rinehart Road and near the I-4 interchange with SR 417 (Central Florida GreeneWay) and CR 46A (Paola Road). Smaller areas of conservation will remain scattered along the corridor.

4.3.1.2.4 Segment 6 - US 17-92 to SR 472

The majority of the land uses within Segment 6 will remain residential. Large areas of land, mostly wetlands, along the Lake Monroe/St. Johns River will remain as conservation areas. Future land uses within Segment 6 will retain and expand areas located near the I-4 interchanges of US 17-92, Dirksen Drive/DeBary Avenue, Enterprise Road, Saxon Boulevard and SR 472 that are zoned for industrial, commercial, agricultural, recreational facilities and public/institutional uses. Areas near the I-4 interchanges of US 17-92, Saxon Boulevard, and SR 472 will be zoned as Activity Centers/Target Areas and Mixed Use/PUD.

4.3.2 Cultural Features and Community Services

4.3.2.1 Cultural Features

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended), as implemented by 36 CFR 800 *Protection of Historic Properties*, protects those properties that are listed or determined eligible for inclusion in the National Register of Historic Places (NRHP). In addition, Section 4(f) of the Department of Transportation Act of 1966, as amended (49 U.S.C. 303) protects historic and/or cultural resources of national, state, or local significance and other natural public features from conversion to highway use unless there is no prudent or feasible alternative.

A Cultural Resource Assessment and Research Design was prepared in accordance with Section 106, Section 4(f), Chapter 267 of the Florida Historical Resources Act, and Part 2, Chapter 12 (*Archaeological and Historic Resources*) of FDOT's *PD&E Manual* (revised). A reconnaissance survey was conducted for the purpose of providing information to assist in the avoidance of NRHP-listed or potentially eligible properties or National Register Landmark properties. The reconnaissance included all significant historic, architectural, archaeological and cultural resources within the defined Area of Potential Effects (APE) for the project. Previous cultural resource assessment (CRA) studies have shown that potential visual effects are the most far reaching. Accordingly, the APE for this project was defined as the area within which potential visual effects of the I-4 PD&E Study - Section 2 proposed improvements may be observed. In addition, the APE was expanded to include areas around interchanges and potential stormwater management facilities, as necessary.

4.3.2.1.1 Archaeological Resources

The Florida Site File (FSF) search and literature review identified 35 archaeological sites within the general project vicinity. However, only

nine of these sites were located within or immediately adjacent to the APE. Nonetheless, the results of the background research suggest that numerous archaeological and historical sites may be encountered within the project corridor. This is based on a review of the locations of known archaeological and historical sites distributed throughout the general project area, as well as information regarding the early settlement of the region. Based on this research, a systematic archaeological survey was conducted for this project. Figure 4.3.2.1.1 shows the locations of the cultural and historic resources along the project limits. Detailed descriptions of each archaeological resource can be found in the FEIS prepared for this project.

Segment 1 - SR 528 to John Young Parkway

There are no archaeological sites recorded within this segment.

Segments 2 and 3 - John Young Parkway to Lee Road

There are no archaeological sites recorded within this segment.

Segments 4 and 5 - Lee Road to US 17-92

Four archaeological sites were recorded in Segment 4 during a 1991 survey in Seminole County. These sites are best described as sparse lithic and artifact scatters. Due to the limited and mundane nature of the artifacts and lack of features, none of these sites are considered eligible for listing in the NRHP.

There are no archaeological sites recorded within Segment 5.

Segment 6 - US 17-92 to SR 472

The Lake Monroe Outlet Midden is a shell midden located in Segment 6. This multi-component site is situated in Volusia County on the north bank of Lake Monroe. Information within the FMSF indicates that the site may extend northward from the north shore of Lake Monroe at the St. Johns River Bridge. Based on the available knowledge of this resource, this site may provide information significant to the study of the prehistory of the area. This site was determined eligible for listing on the NRHP in 1999.

4.3.2.1.2 Historic Resources

Twenty historic sites along the I-4 Ultimate project limits are listed or determined eligible for listing in the NRHP. In addition, most are also designated as local historic landmarks. Two other resources, the Lake Cherokee Historic District and the Downtown Orlando Historic District are specially certified by the National Park Service and are therefore considered NRHP eligible. Most of the sites are located in Segment 2, where major development occurred early in the history of this region. Figure 4.3.2.1.1, previously presented, shows the locations of the resources that

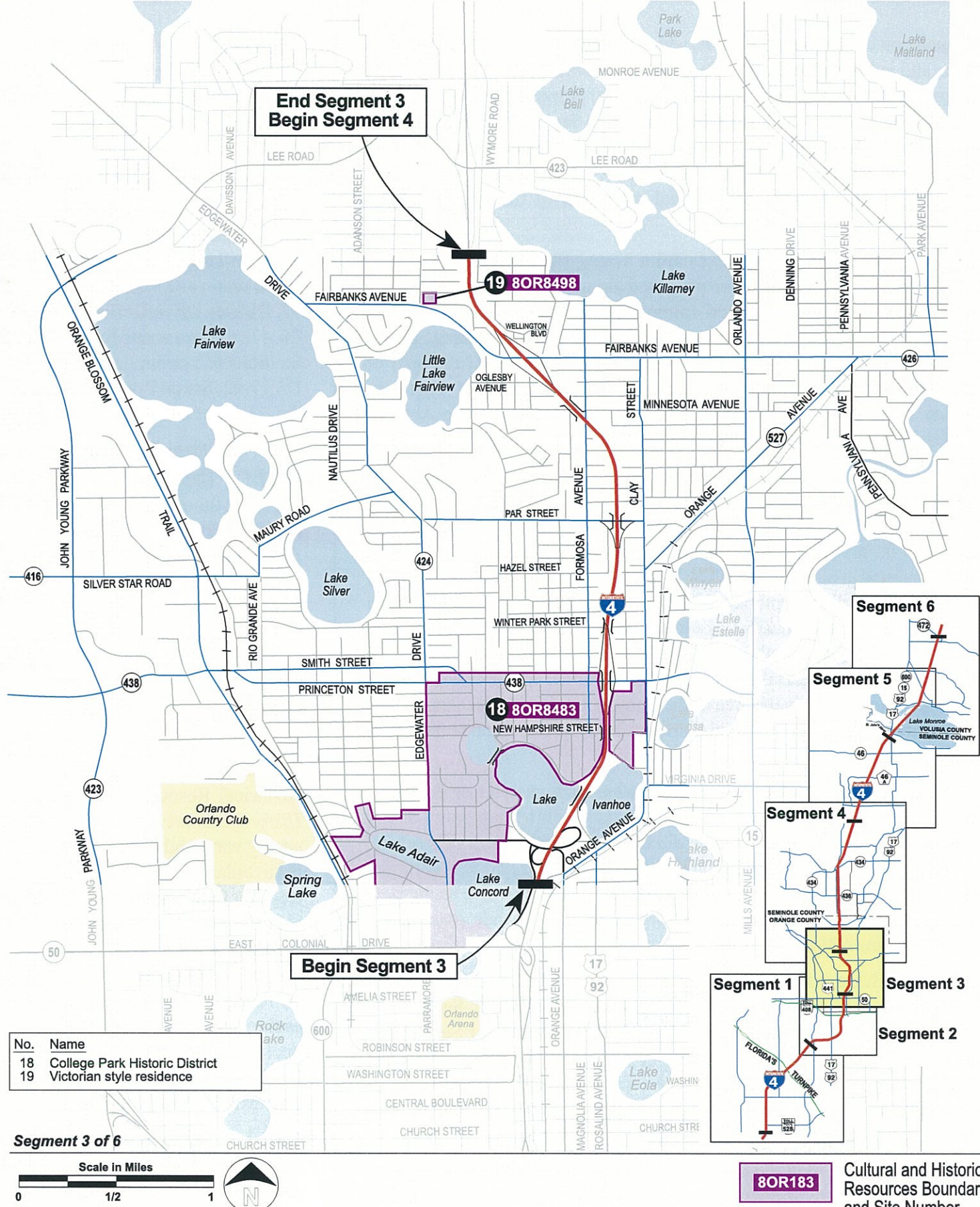
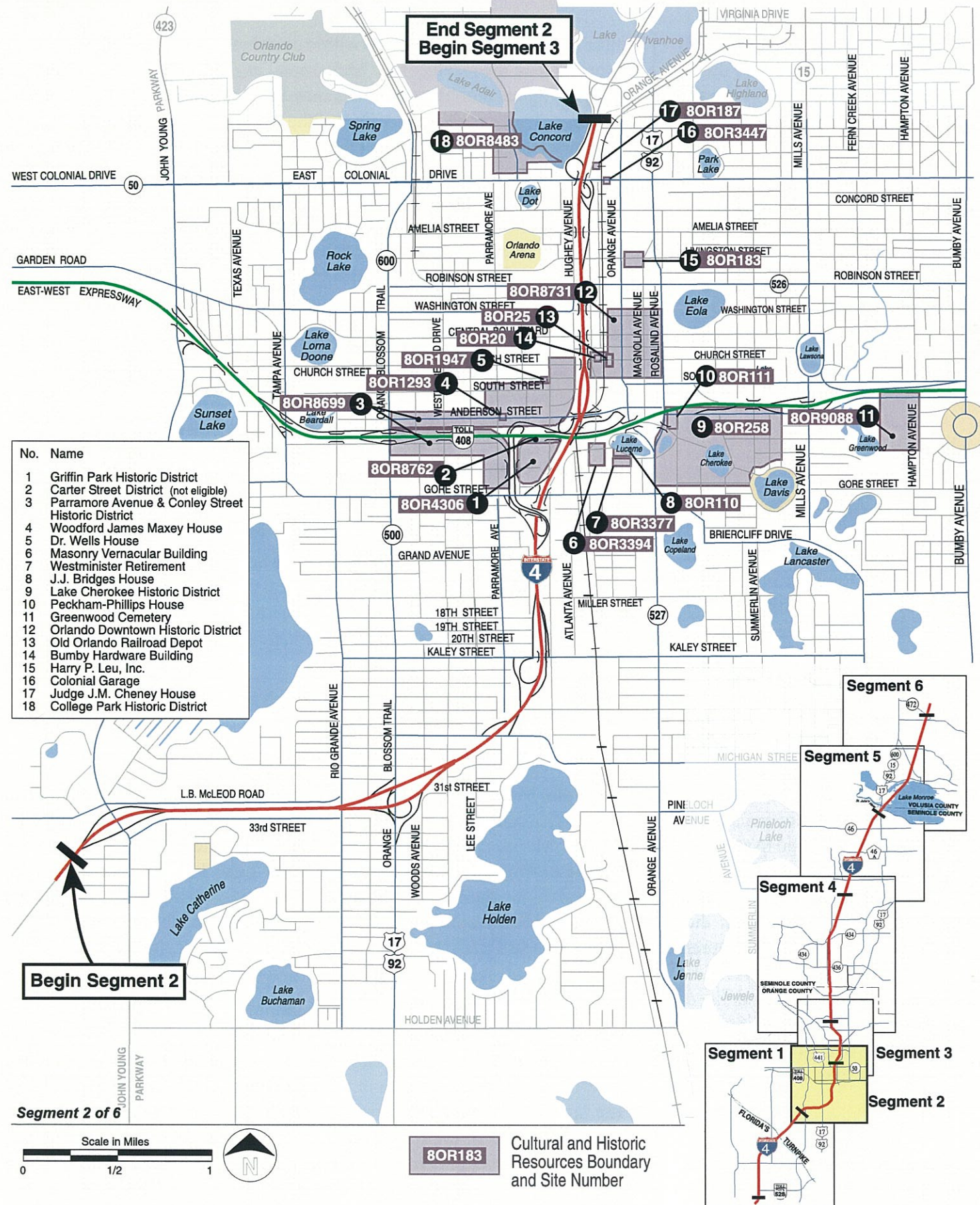
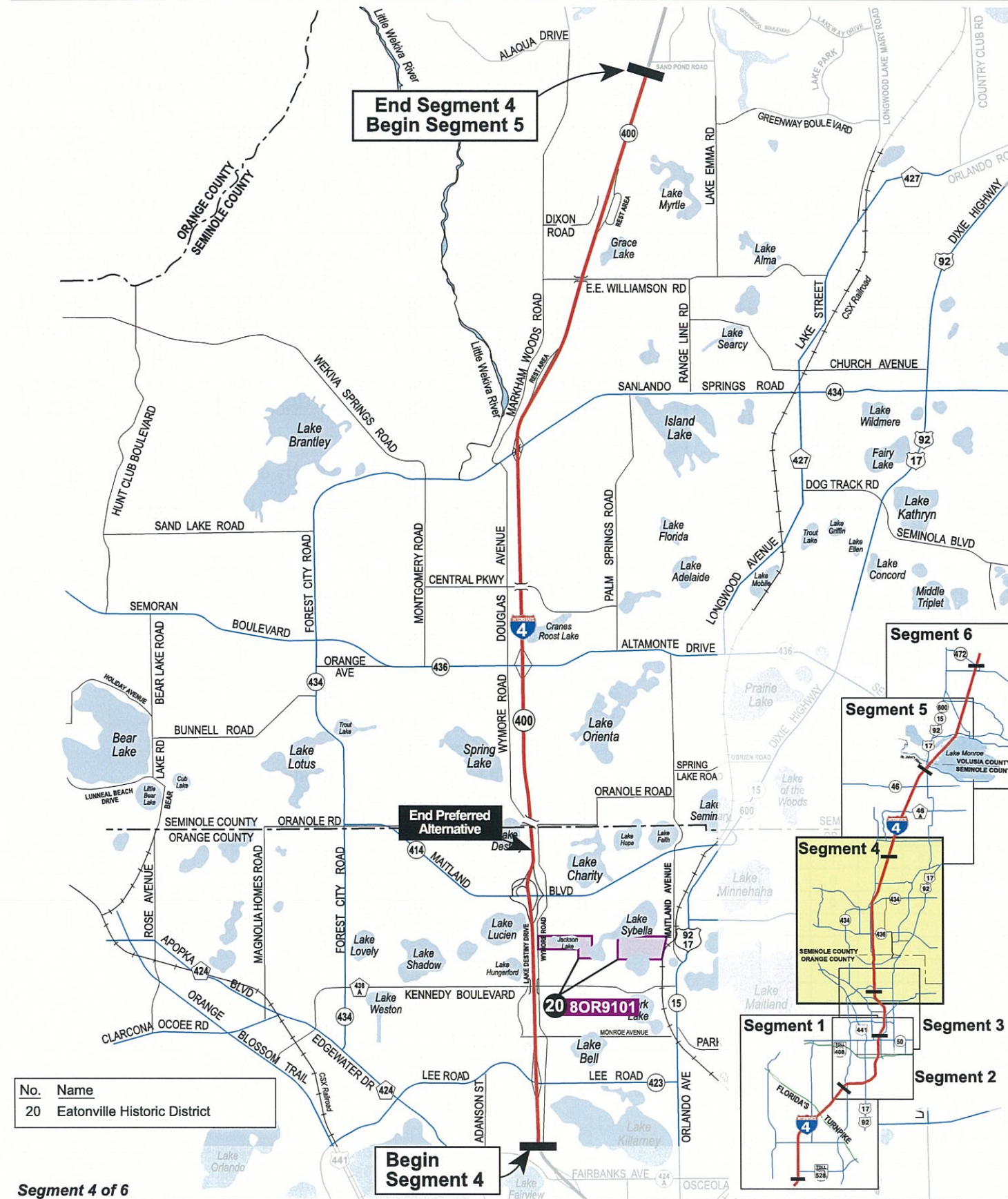
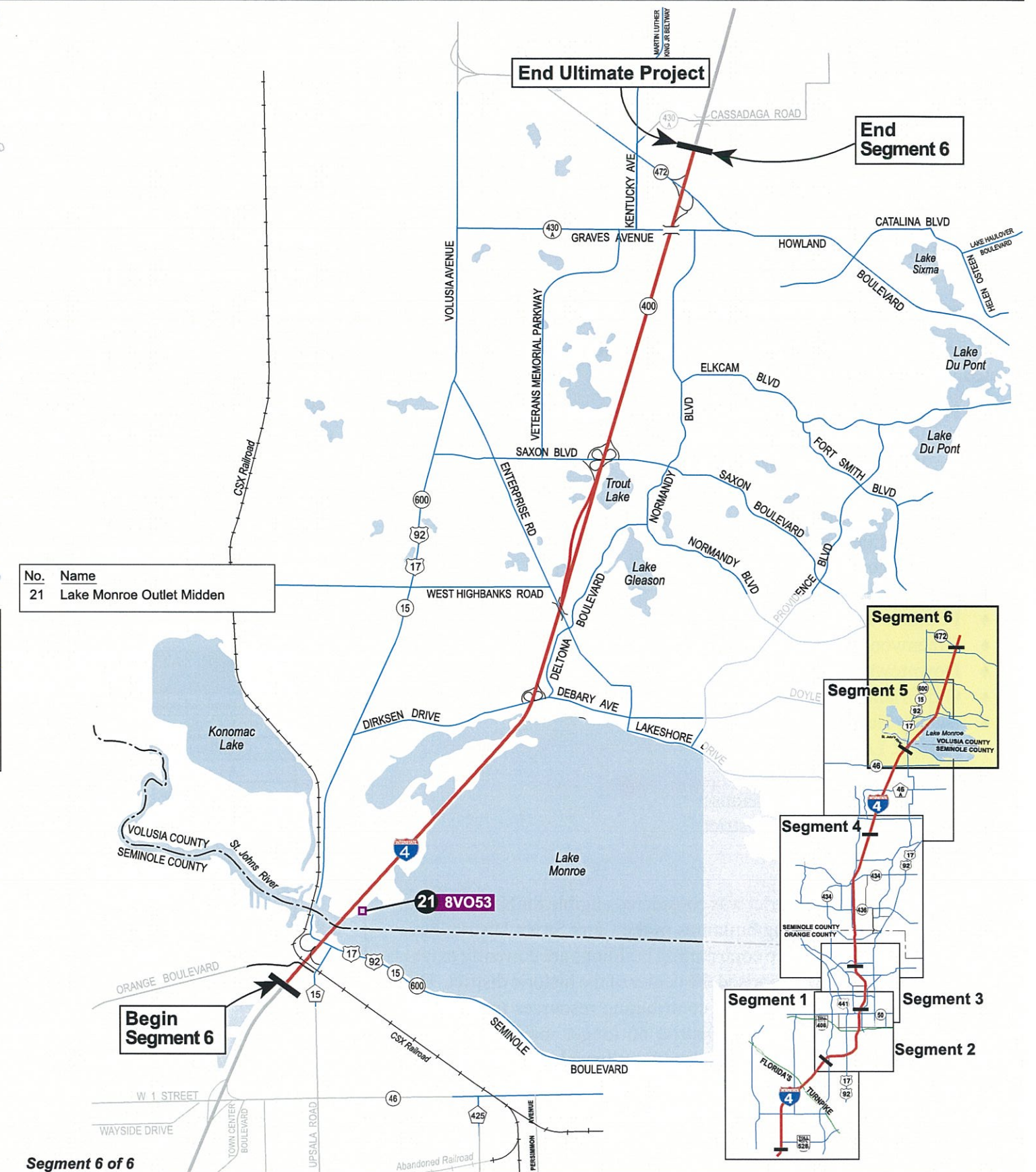
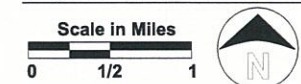


Figure 4.3.2.1.1
Cultural & Historic Resources

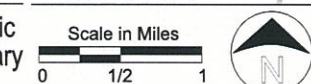
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Segment 4 of 6



Segment 6 of 6



8OR183 Cultural and Historic Resources Boundary and Site Number

8OR183 Cultural and Historic Resources Boundary and Site Number

I-4 PD&E Study - Section 2

Figure 4.3.2.1.1 Cultural & Historic Resources

are listed or determined eligible for listing in the NRHP. Following are lists of historic resources within the project area, by segment. Detailed descriptions of each historic resource can be found in the FEIS prepared for this project.

Segment 1 - SR 528 to John Young Parkway

There are no NRHP listed, eligible or potentially eligible historic resources located within this segment.

Segments 2 & 3 - John Young Parkway to Lee Road

There are 18 NRHP listed, eligible or potentially eligible historic resources located within Segments 2 and 3. These include:

- ◆ Parramore Avenue and Conley Street Historic District
- ◆ Woodford James Maxey House
- ◆ Dr. William Monroe Wells House
- ◆ Griffin Park Historic District
- ◆ 116 America Street
- ◆ 84 West Lucerne Circle
- ◆ J.J. Bridges House
- ◆ Lake Cherokee Historic District
- ◆ Peckham-Phillips House
- ◆ Greenwood Cemetery
- ◆ Downtown Orlando Historic District
- ◆ Old Orlando Railroad Depot
- ◆ Bumby Hardware
- ◆ Harry P. Leu, Inc.
- ◆ Colonial Garage
- ◆ Judge John M. Cheney House
- ◆ College Park Historic District
- 2739 Riddle Drive

Initially, the Carter Street District was considered eligible for NRHP listing. Since 1999, eight contributing buildings in the Carter Street District have been demolished and only five contributing buildings are currently extant. These buildings formerly comprised the center of the historic district. Due to the loss of more than half of the contributing resources in this small historic district, the Carter Street District no longer maintains historic integrity. Additionally, because eight buildings have been destroyed, the district can no longer convey its architectural and historical significance. Consequently, this historic district is no longer considered eligible for inclusion in the NRHP. A meeting was held with SHPO on April 23, 2002 to discuss the Carter Street District no longer being eligible for inclusion in the NRHP. A field review was conducted by SHPO in May 2002. Based on the meeting and field review SHPO concurred that the Carter Street Historic District is not NHRP eligible.

Segments 4 & 5 - Lee Road to US 17-92

The Eatonville Historic District is the only NRHP listed, eligible or potentially eligible historic resource located in Segments 4 and 5.

Segment 6 - US 17-92 to SR 472

There are no NRHP listed, eligible or potentially eligible historic resources located within this segment.

4.3.2.2 Community Services

Community services help provide the social service needs of the community and include educational facilities, recreational areas, churches and cemeteries, social service agencies, medical facilities, community centers, public service facilities and police/fire protection. Community services were identified through field surveys, local government comprehensive plans and coordination with state and local governments/agencies with jurisdiction over, or interest in, the Ultimate project study area.

Such facilities are generally important in shaping a community's identity and sense of togetherness. There are 635 community services located within the Ultimate project corridor. These services are summarized in Table 4.3.2.2.1. A full list of the community services in the Ultimate project area can be found in the FEIS prepared for this project.

Table 4.3.2.2.1 - Summary of Corridor Community Facilities

| Community Facilities | Segments | | | | | | Total |
|------------------------------|-----------|------------|-----------|------------|-----------|-----------|------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | |
| Total Schools K-12 | 10 | 32 | 31 | 39 | 6 | 10 | 128 |
| Higher Education Centers | 3 | 10 | 1 | 8 | 0 | 1 | 23 |
| Child Day Care Centers | 0 | 17 | 4 | 2 | 1 | 3 | 27 |
| Adult Care Centers | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| Churches | 3 | 67 | 15 | 20 | 1 | 4 | 110 |
| Cemeteries / Funeral Homes | 1 | 2 | 1 | 2 | 1 | 3 | 10 |
| Social Service Agencies | 0 | 78 | 14 | 16 | 1 | 1 | 112 |
| Community Centers | 1 | 9 | 2 | 5 | 0 | 0 | 17 |
| Commercial Community Centers | 1 | 4 | 4 | 0 | 0 | 0 | 9 |
| Government Facilities | 4 | 61 | 1 | 6 | 3 | 2 | 77 |
| Medical Facilities | 5 | 31 | 7 | 10 | 2 | 3 | 58 |
| Police / Sheriff Facilities | 5 | 17 | 0 | 3 | 2 | 1 | 28 |
| Fire Facilities | 1 | 5 | 3 | 3 | 2 | 0 | 14 |
| Evacuation Sites | 3 | 5 | 2 | 1 | 1 | 10 | 22 |
| Total | 37 | 339 | 85 | 115 | 20 | 39 | 635 |

4.3.2.3 Parks and Recreation

Preliminary data collection activities identified 47 publicly owned parks and recreational facilities within ½ mile of I-4 along the Ultimate project limits. Of the 47 sites, six are considered potential Section 4(f) properties. These are Lake Lucerne Park, Beth Johnson Park, Lake Ivanhoe Park, Gaston Edwards Park, Matthews Park and Crane's Roost Park. The location of each park is shown on Figure 4.3.2.3.1.

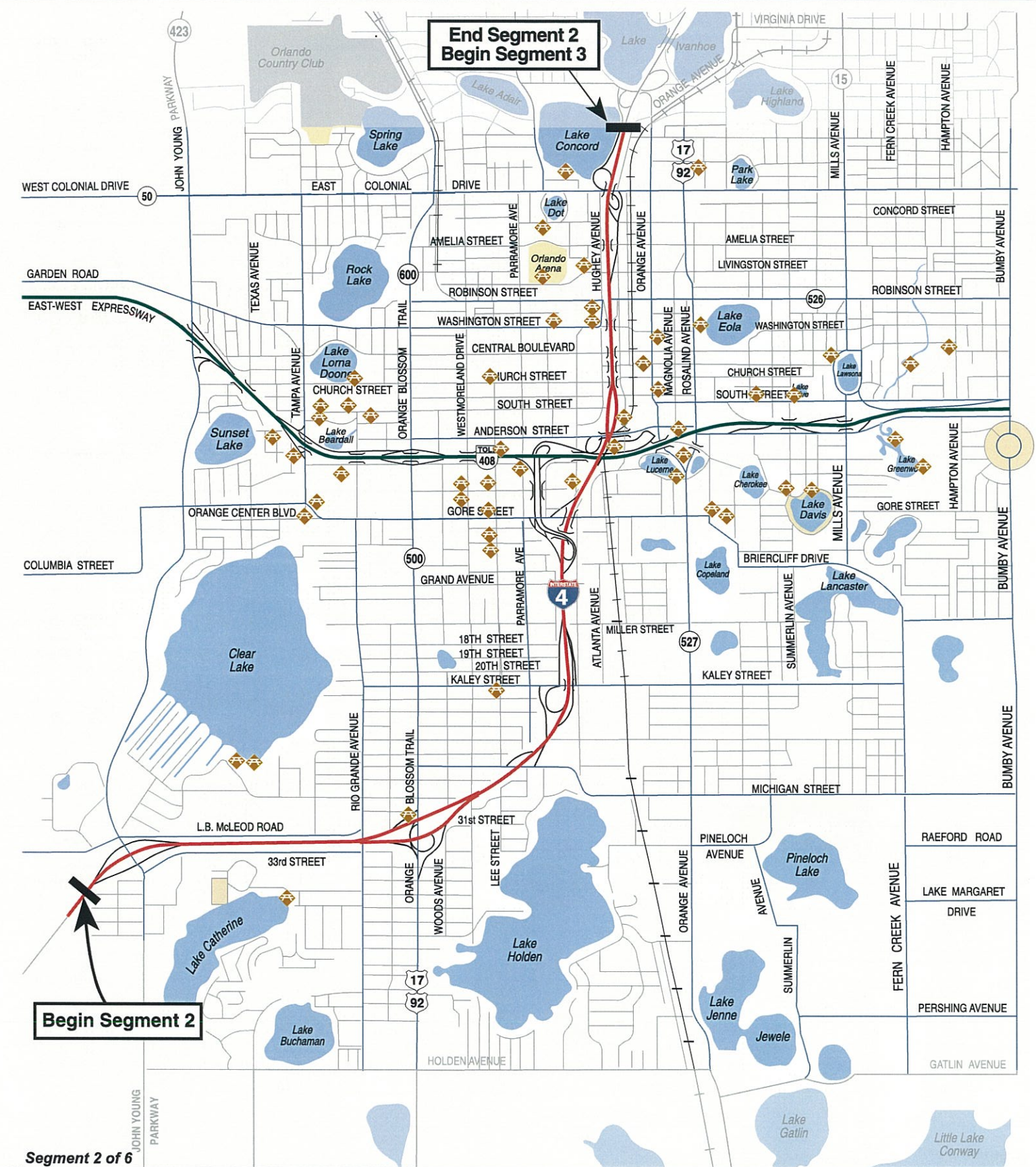
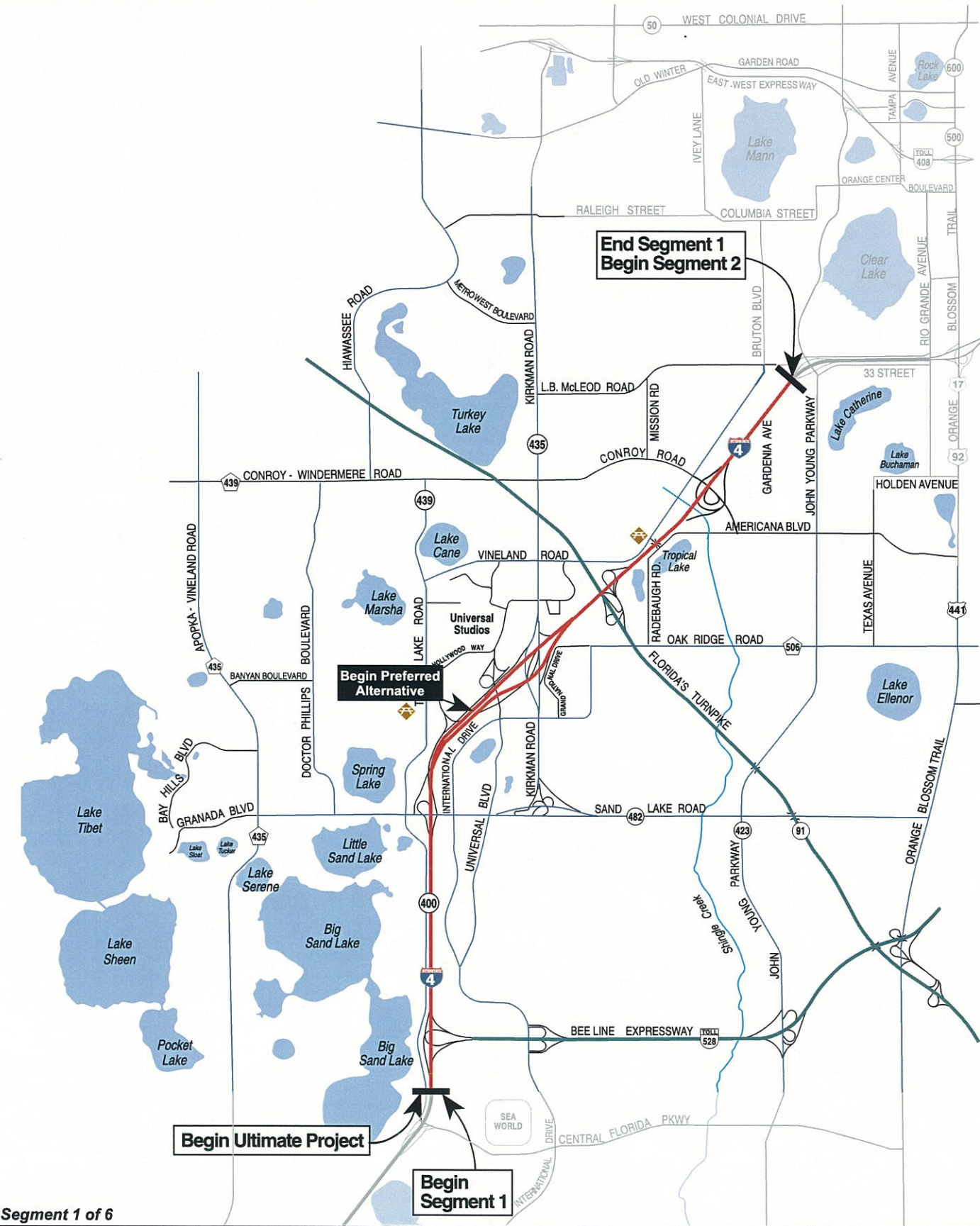
Potential Section 4(f) resources include parklands, public recreation areas, wildlife refuges and historic/archaeological sites of significance. For Section 4(f) to be applicable, the property must be used as a designated Section 4(f) resource and the project must entail a use of the land from that property. The determination of the applicability of Section 4(f) to any particular property is determined by FHWA.

In addition to the 19 NRHP listed or eligible sites identified along the project corridor, which are by definition Section 4(f) applicable, Matthews Park in Segment 3 (see Figure 4.3.2.3.1) of the project also meets the criteria for Section 4(f) applicability. Owned and maintained by the City of Orlando Parks Bureau, Matthews Park is a 4.2 acre neighborhood park immediately west of I-4. Facilities at Matthews Park include playground equipment, picnic areas, basketball courts, one softball field and open space. Matthews Park is designated as a neighborhood park in the City of Orlando's Comprehensive Plan.

The 19 NRHP listed, eligible or potentially eligible sites are listed below.

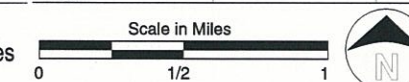
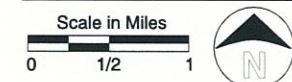
- ◆ Parramore Avenue and Conley Street Historic District
- ◆ Woodford James Maxey House
- ◆ Dr. William Monroe Wells House
- ◆ Griffin Park Historic District
- ◆ 116 America Street
- ◆ 84 West Lucerne Circle
- ◆ J.J. Bridges House
- ◆ Lake Cherokee Historic District
- ◆ Peckham-Phillips House
- ◆ Greenwood Cemetery
- ◆ Downtown Orlando Historic District
- ◆ Old Orlando Railroad Depot
- ◆ Bumby Hardware
- ◆ Harry P. Leu, Inc.
- ◆ Colonial Garage
- ◆ Judge John M. Cheney House
- ◆ College Park Historic District
- ◆ 2739 Riddle Drive
- ◆ Eatonville Historic District

The sites' locations are provided in Figure 4.3.2.1.1, previously presented.



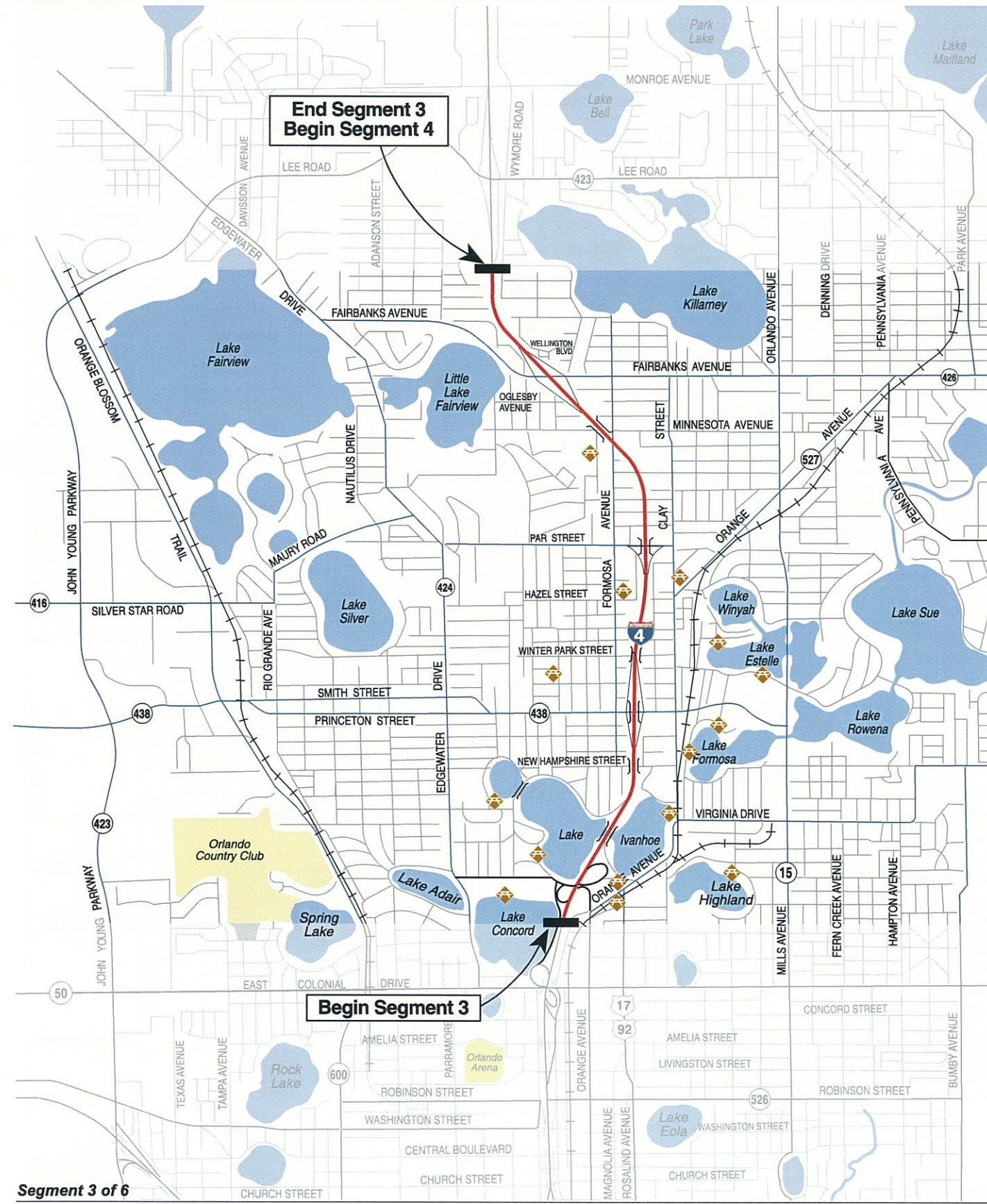
Segment 1 of 6

Segment 2 of 6

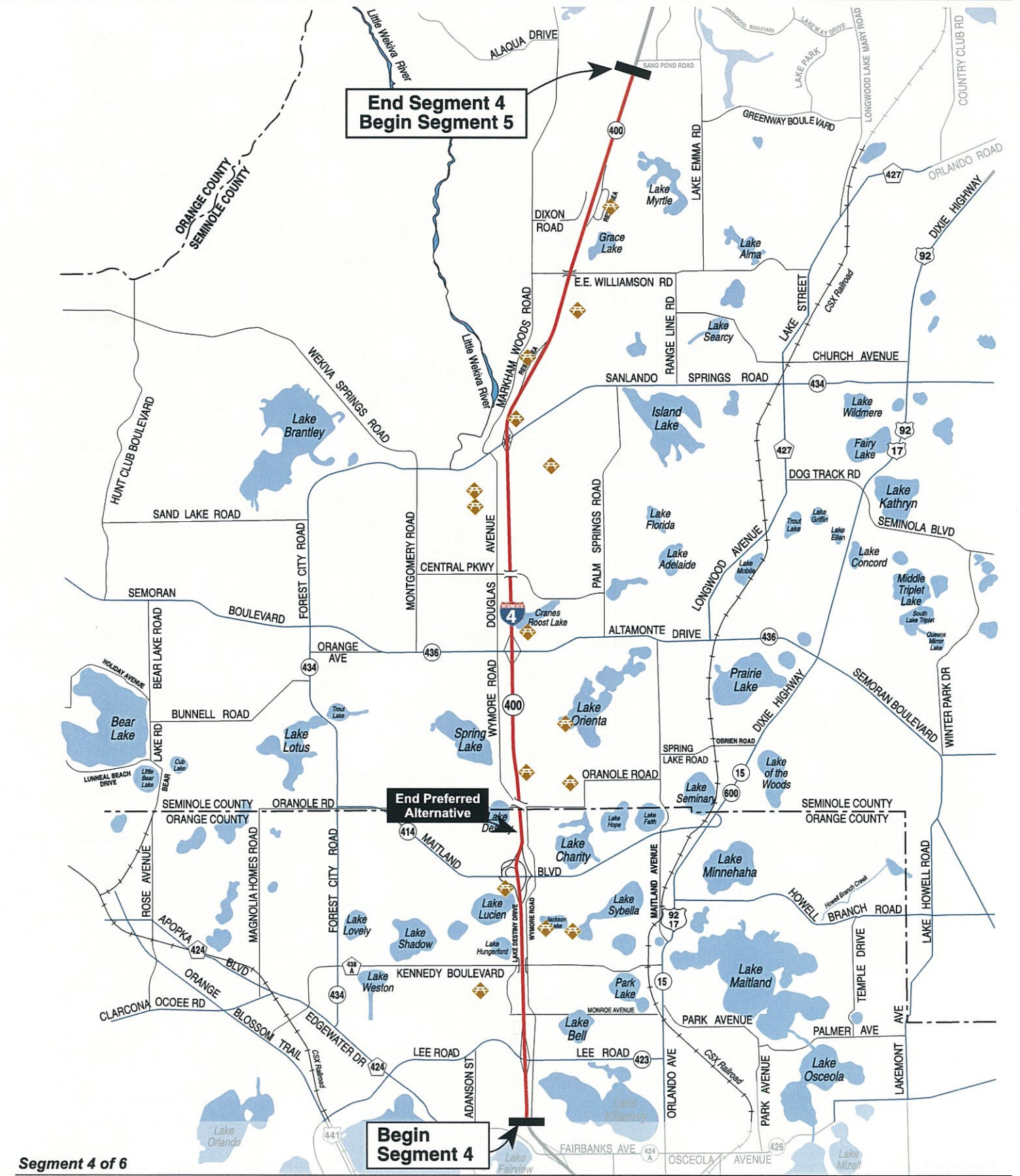
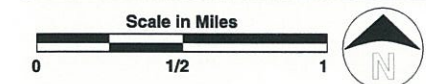


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Figure 4.3.2.3.1
Parks & Recreational Facilities



Segment 3 of 6



Segment 4 of 6



Figure 4.3.2.3.1
Parks & Recreational Facilities

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4.3.3 Natural and Biological Features

4.3.3.1 Floodplains and Floodways

The Ultimate project corridor contains two distinct varieties of base floodplain involvement: the 100-year floodplain associated with lake basins and cross culverts. Information on the floodplains associated with lake basins was determined using Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Orange, Seminole and Volusia Counties, the Orange County Lake Index and available basin and watershed studies. The base flood for cross culverts was determined by utilizing FDOT construction plans, available basin and watershed studies and an analysis of each culvert in its existing condition. The analysis of each of these existing floodplain types can be found in the *Location Hydraulics Report* (August 2000).

Floodplains are sparsely present along the majority of the I-4 corridor and heavily present near the St. Johns River and Lake Monroe. There are two regulated floodways along the Ultimate project study corridor, Shingle Creek and the St. Johns River. The floodplain involvement for this study is presented below by segment; floodplains that are impacted with the proposed improvements are identified with an "Area" designation. Each discussion will identify floodplain and floodway areas near the I-4 corridor as well as any historical flooding issues. Figure 4.3.3.1.1 depicts the 100-year floodplain areas.

4.3.3.1.1 Segment 1 - SR 528 to John Young Parkway

The majority of Segment 1 is situated above the 100-year base floodplain; however, there are two floodplains and one floodway adjacent to the Ultimate project corridor in this Segment.

- ◆ Area A - This Zone "A" floodplain is located at the I-4/SR 435 (Kirkman Road) interchange and is an isolated floodplain area not associated with any water body. There are two existing cross culverts north of the interchange, which have exhibited minor flooding.
- ◆ Area B - This Zone "A" floodplain is located north of the I-4/SR 435 (Kirkman Road) interchange and is associated with one of the culverts described above.
- Area C - This Zone "A2" floodplain is located at Shingle Creek, which is a FEMA regulated floodway.

4.3.3.1.2 Segments 2 & 3 - John Young Parkway to Lee Road

Segments 2 and 3 are located above the 100-year base floodplain except for the floodplains designated as D and E in Figure 4.3.3.1.1. No history of flooding is recorded for these floodplains.

- ◆ The Clear Lake and Lake Catherine floodplains are located at the I-4/SR 423 (John Young Parkway) interchange near the I-4 corridor and will not be impacted in the proposed condition.

- ◆ Area D - This Zone "A3" floodplain is associated with Lake Concord.
- ◆ Area E - This Zone "A3" floodplain is associated with Lake Ivanhoe.
- ◆ The Lake Fairview floodplain is located at the I-4/SR 426 (Fairbanks Avenue) interchange and will not be impacted in the future condition.

4.3.3.1.3 Segments 4 & 5 - Lee Road to US 17-92

The majority of Segments 4 and 5 is located above the 100-year base floodplain except for the areas delineated on Figure 4.3.3.1.1. There have been historical cyclic flooding problems associated with Cranes Roost and Grace Lake, which is discussed below:

- ◆ The Lake Killarney, Lake Bell and the unnamed depressional area floodplains located at the I-4/SR 423 (Lee Road) interchange will not be impacted in the future condition.
- ◆ The Hungerford Lake, Lake Lucien and Lake Destiny floodplains located south of the I-4/SR 414 (Maitland Boulevard) interchange will not be impacted by the proposed improvements.
- ◆ The Lake Destiny floodplain located north of the I-4/SR 414 (Maitland Boulevard) interchange will not be impacted in the future condition.
- ◆ Area F - This Zone "A6" floodplain is associated with Cranes Roost. There is a history of flooding problems associated with Cranes Roost, which are directly related to the fact that the flood stages are controlled via a pumping station. The water from the pumping station discharges to the Little Wekiva River and is subject to stringent pumping constraints to maintain a minimum pollution loading at its outfall. Therefore, when any permitted pumping, stage or turbidity threshold is met, the pumping operation must cease, which increases the surface elevation in Cranes Roost and causes the flooding problems.
- ◆ Area G - This Zone "A3" floodplain is associated with Grace Lake. During the original construction of I-4, Grace Lake was bisected by the interstate and hydraulically connected by a cross culvert. During higher stages, the lake fills to its original bank line by backing into the cross culvert and flooding the lake remnant west of I-4. This flooding was part of the original design for I-4 and does not affect the Interstate during these high stage events.
- ◆ Areas H, I, J, K, L and M - These designations are not used.
- ◆ The Trout Lake floodplain north of the I-4/CR 46A (Paola Road) interchange will not be impacted in the proposed condition.
- ◆ Area N - This Zone "A" floodplain is located north of the I-4/SR 46 interchange and is associated with the Lockhart-Smith Canal.

4.3.3.1.4 Segment 6 - US 17-92 to SR 472

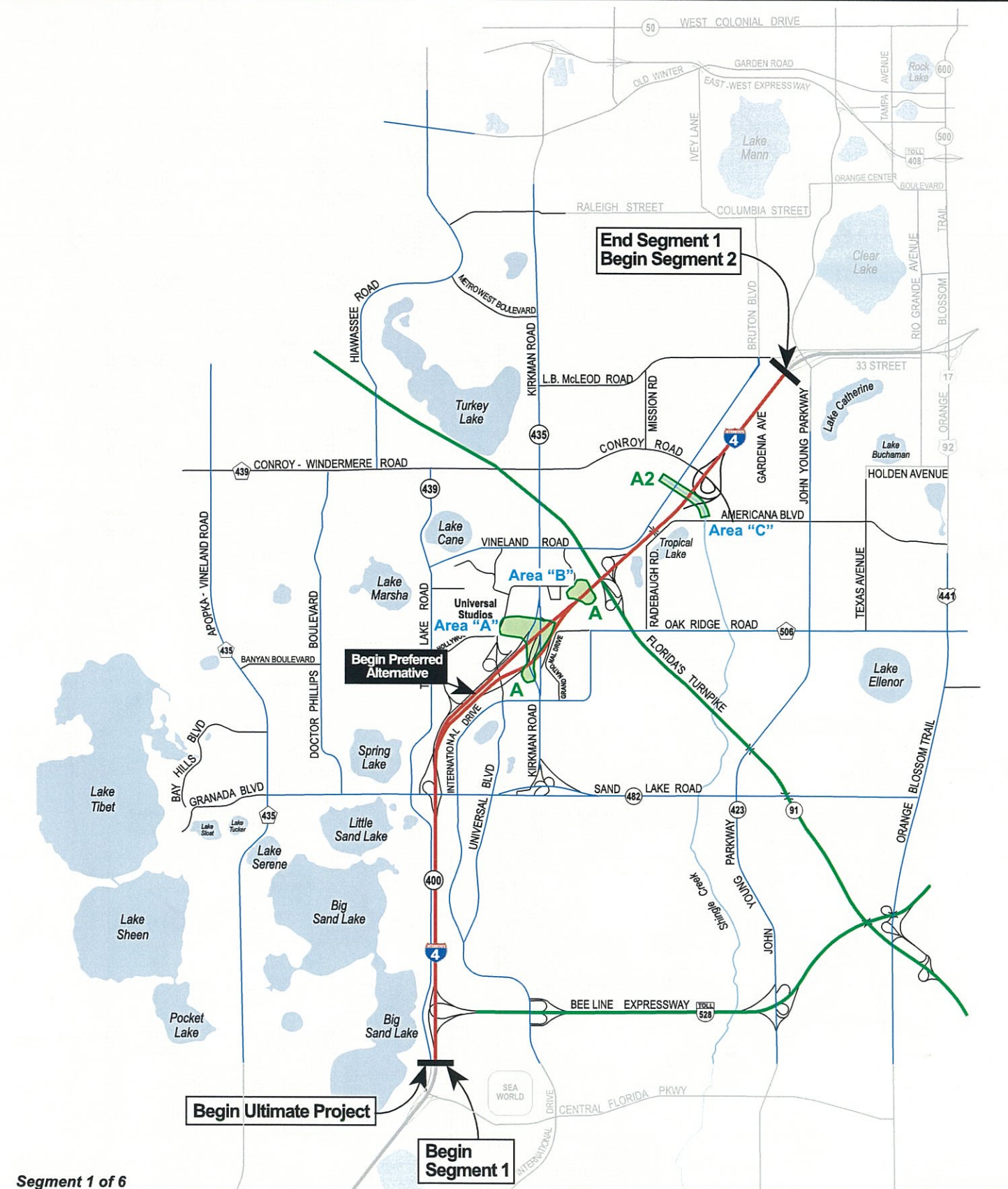
The majority of Segment 6 is located above the 100-year base floodplain except for the areas delineated on Figure 4.3.3.1.1. There have been historical cyclic flooding problems at Saxon Boulevard, which will be discussed in the following treatment on the floodplain areas:

- ◆ Area O - This Zone "C" floodplain is located at the I-4/US 17-92 interchange and is associated with the Lake Monroe floodplain.
- ◆ Areas P, Q, R and S - These Zone "A" floodplains are located at the I-4/US 17-92 interchange and are associated with the Lake Monroe floodplain.
- ◆ The St. Johns River is considered a FEMA regulated floodway.
- ◆ Area T - This Zone "A" floodplain is located through the Lake Monroe "flats" between US 17-92 and Dirksen Drive/DeBary Avenue. The original construction of I-4 bisected this existing floodplain. No flooding of I-4 has been recorded through this area; however, areas along the Lake Monroe perimeter have experienced higher flood stages due to increased development within the historic 100-year floodplain.
- ◆ Area U - This Zone "A" floodplain is located at the I-4/Saxon Boulevard interchange and is associated with Trout Lake. There is a history of flooding problems at this interchange that are not directly related to the floodplain or the existing cross culvert, which hydraulically connects Goose and Trout Lakes. The recorded flooding took place during 1994/1995 in which a combination of events occurred that affected the interchange and the surrounding areas. During that time, above average rainfall and an increase in the potentiometric surface elevation of the Floridan aquifer reduced the recharge rate to the aquifer from Goose and Trout Lakes. Consequently, the static water surface elevation in both of these lakes increased with each rainfall event and portions of the interchange ramps were encroached; the I-4 mainline remained flood free. This is a cyclic event and during normal conditions, recharge to the aquifer provides adequate recovery for these lakes.
- ◆ The Mallard Lake floodplain located north of the I-4/Saxon Boulevard interchange will not be impacted by the proposed improvements.

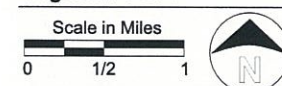
4.3.3.2 Wetland Systems

In compliance with Presidential Executive Order 11990, and the FHWA Technical Advisory T6640.8A, Title 23, Code of Federal regulations, Part 777, and Part Two, Chapter 18 of the FDOT *PD&E Manual*, extensive assessments of wetland and natural resources within the Ultimate project corridor have been conducted.

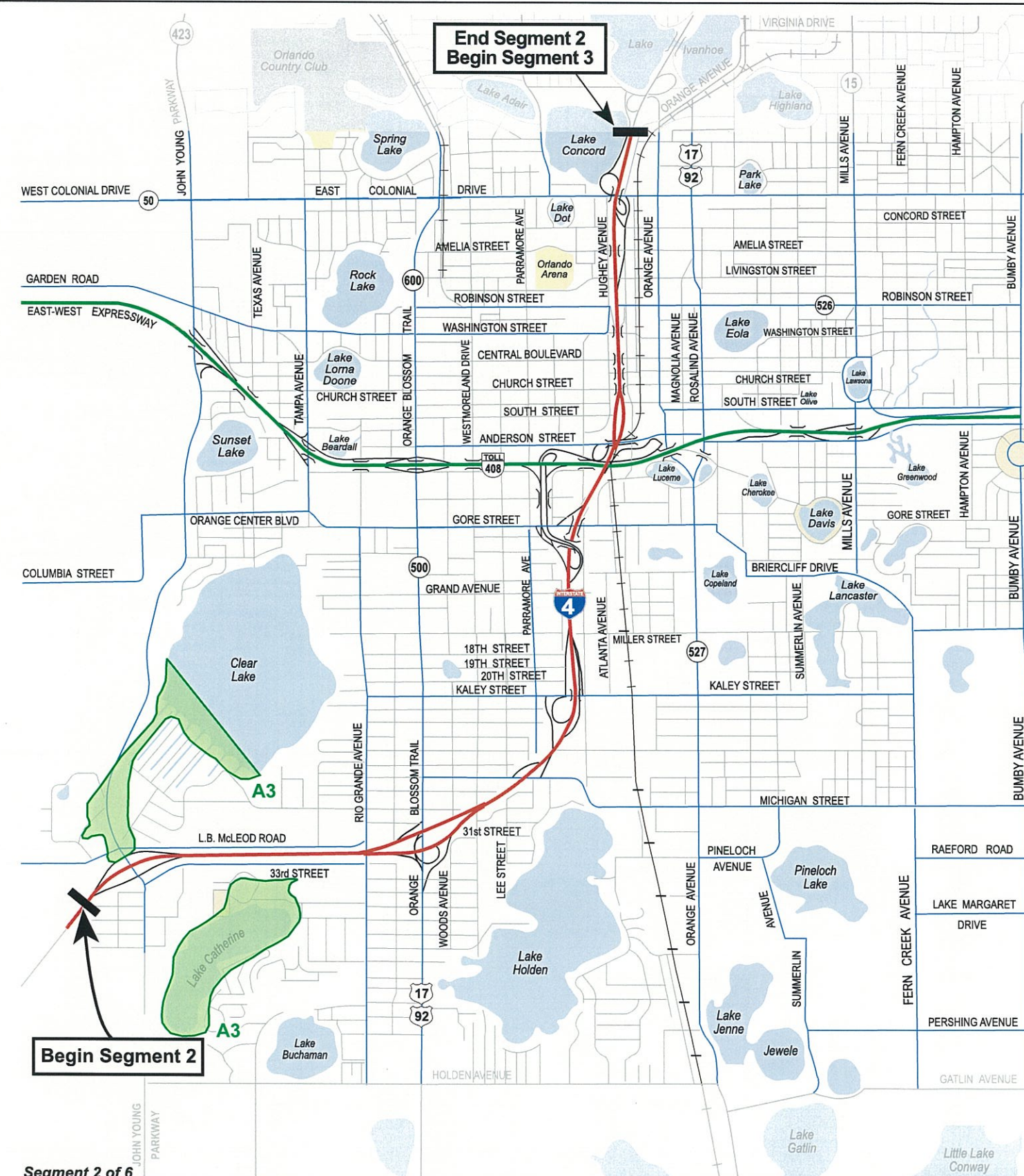
Project ecologists identified and delineated all uplands, wetlands and surface water features located within the Ultimate project study area during



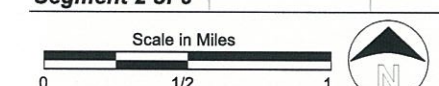
Segment 1 of 6



A Floodplain and Zone Designation
Area "X" Designation for floodplains proposed to be impacted by future improvements



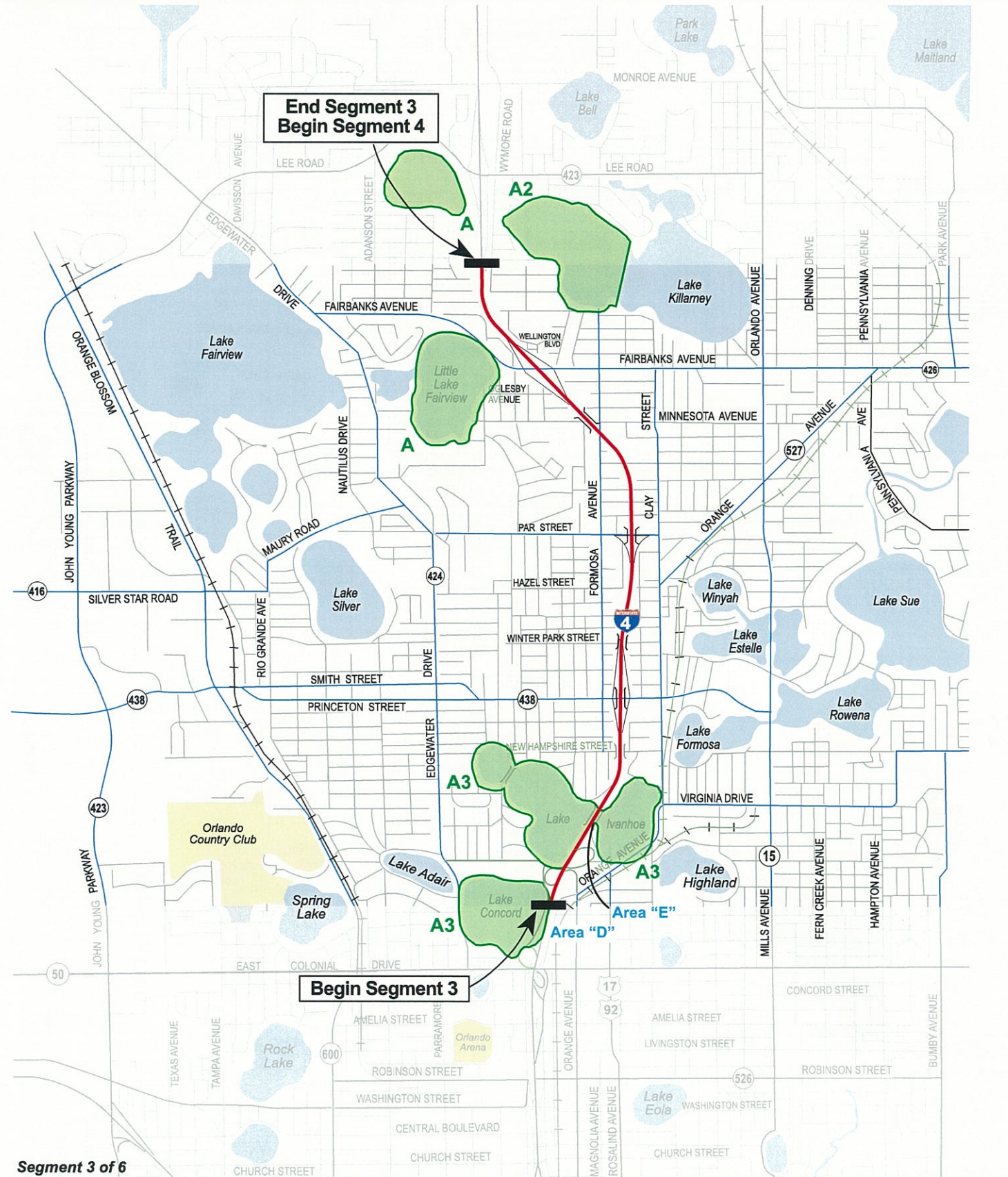
Segment 2 of 6



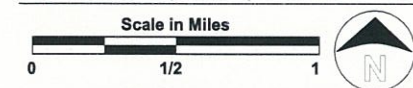
A Floodplain and Zone Designation
Area "X" Designation for floodplains proposed to be impacted by future improvements

I-4 PD&E Study - Section 2

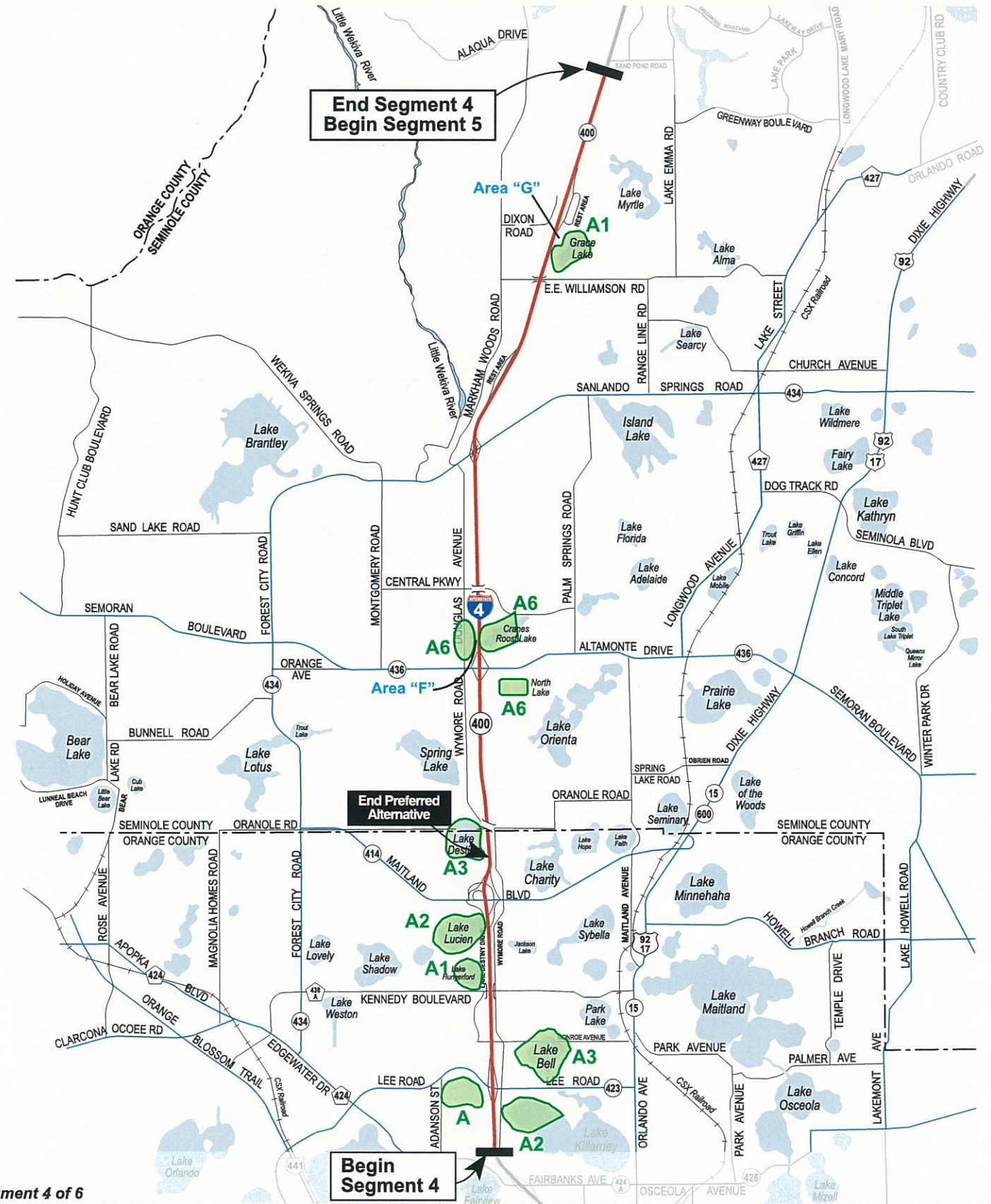
Figure 4.3.3.1.1
 Floodplains & Floodways



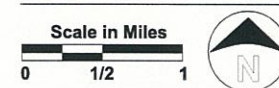
Segment 3 of 6



A Floodplain and Zone Designation
Area "X" Designation for floodplains proposed to be impacted by future improvements

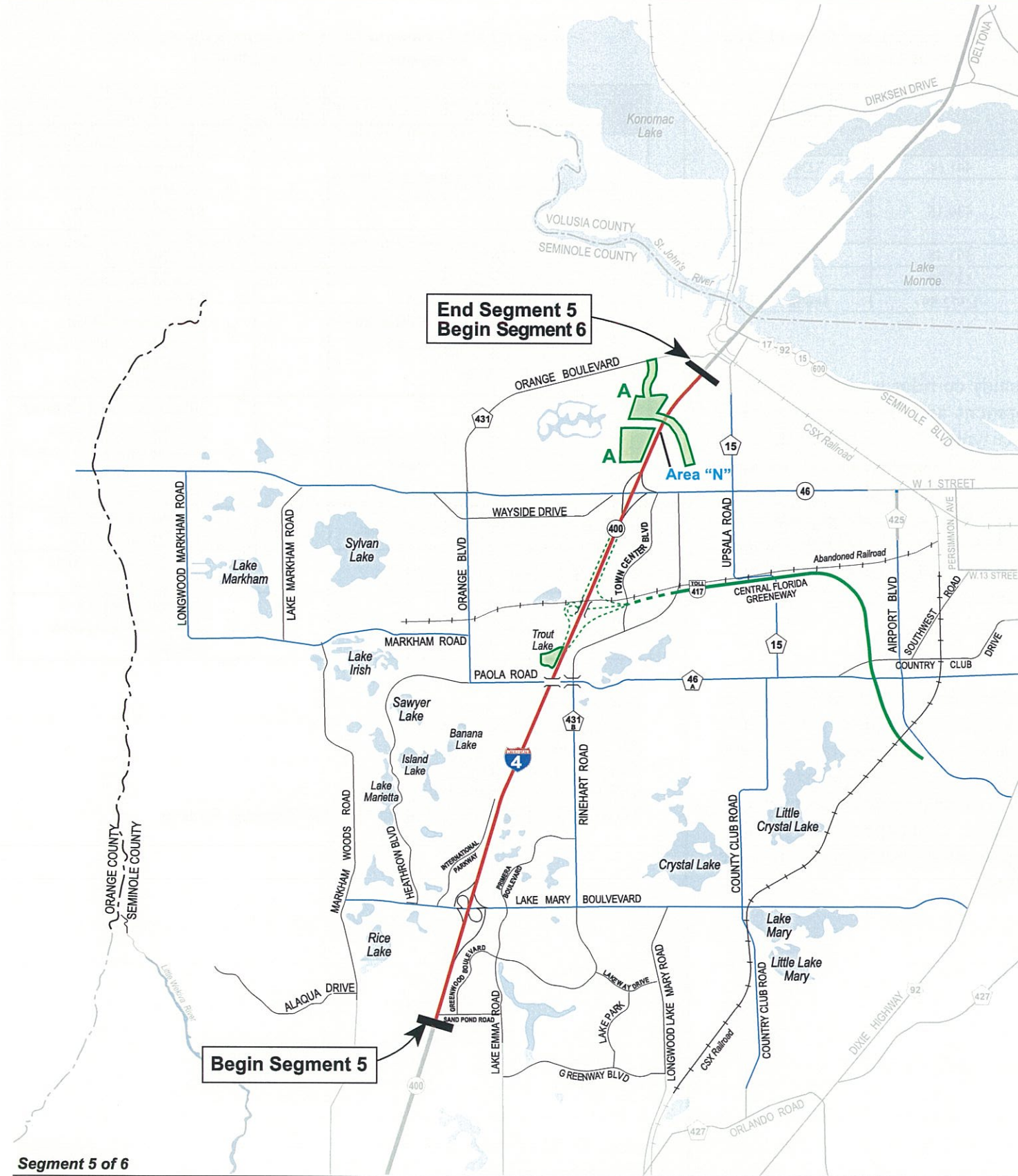


Segment 4 of 6

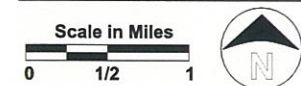


A Floodplain and Zone Designation
Area "X" Designation for floodplains proposed to be impacted by future improvements

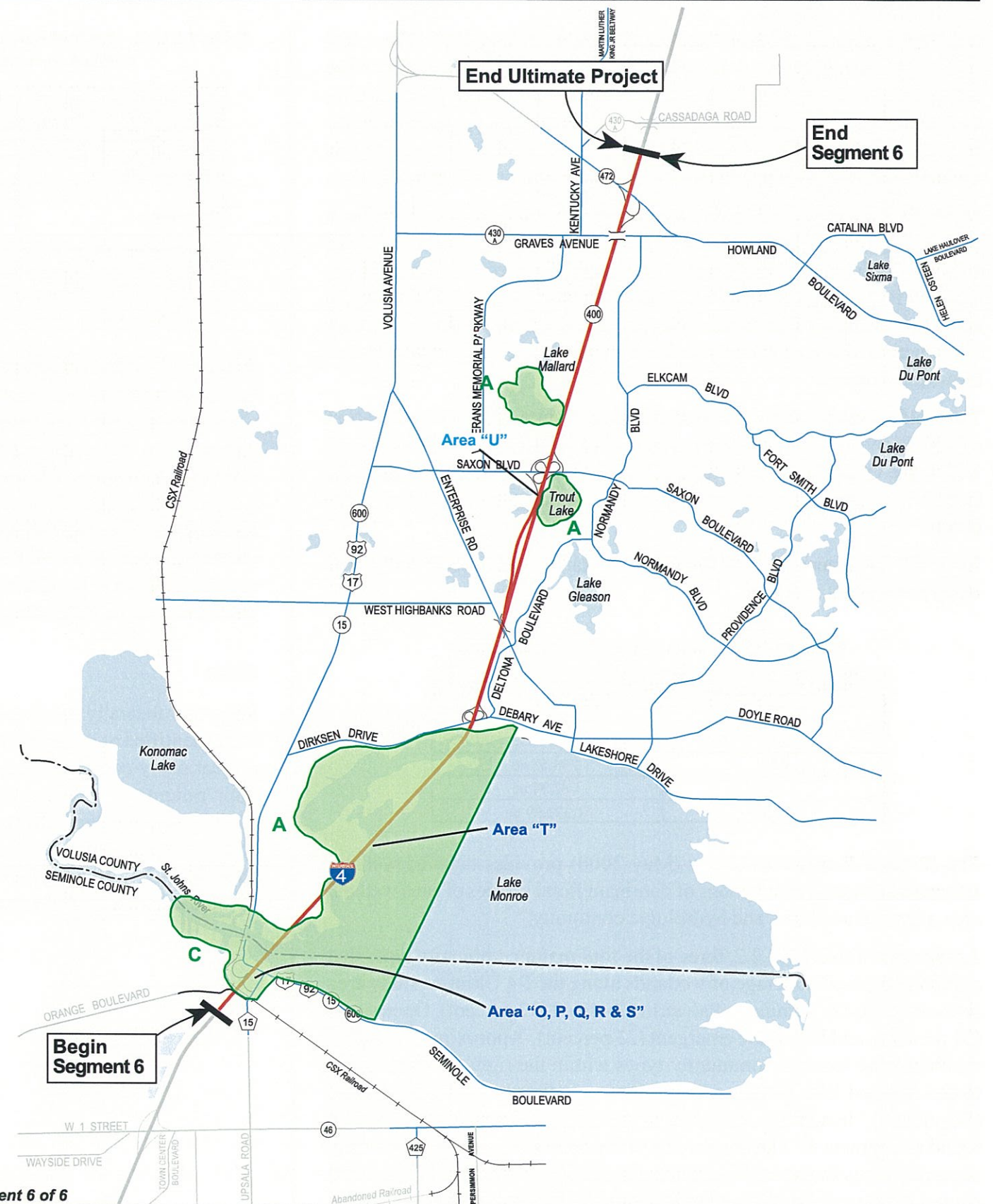
Figure 4.3.3.1.1
 Floodplains & Floodways



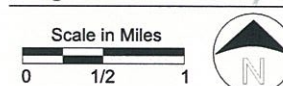
Segment 5 of 6



- A Floodplain and Zone Designation
- X Designation for floodplains proposed to be impacted by future improvements



Segment 6 of 6



- A Floodplain and Zone Designation
- X Designation for floodplains proposed to be impacted by future improvements

I-4 PD&E Study - Section 2

Figure 4.3.3.1.1
Floodplains & Floodways

field reviews conducted from October 1996 through May 1997. The width of the Ultimate study area was defined as 600 feet beyond each side of the existing right-of-way in order to plan for an ultimate design typical section that could be shifted left, right or center. At the interchanges proposed for improvements, a similar distance from the existing right-of-way edge was reviewed. The approximate wetland locations are shown in Figure 4.3.3.2.1.

Most of the wetlands within the Ultimate project study corridor have been previously disturbed. The degree of disturbance generally correlates with the surrounding land use type along that particular portion of the corridor, whether it is highly urbanized or rural/agriculture. Types of disturbances observed include fragmentation by development and/or roadway construction, ditching to drain or divert surface water from wetlands and livestock grazing.

The field reviews and mapping of wetlands resulted in the identification of 290 individual wetland sites (ditches and retention ponds included) within the Ultimate project study corridor. These wetlands are grouped into four dominant types: forested, open water, emergent marshes and scrub-shrub.

Table 4.3.3.2.1 quantifies all the major wetland types present within the study corridor by segment.

Table 4.3.3.2.1 - Wetland Summary by Segment

| Segment Number (s) | Total Wetland Area |
|--------------------|--------------------|
| 1 | 267.63 ac |
| 2&3 | 154.33 ac |
| 4&5 | 264.68 ac |
| 6 | 685.94 ac |
| Total | 1,372.59 ac |

The *Wetland Evaluation Report* (May 2000) provides detailed wetland information such as descriptions of dominant floral species of each wetland area, physical attributes and hydrologic contiguity.

As shown in Table 4.3.3.2.2, three of the four major community types that comprise the total coverage of wetlands along the I-4 Ultimate study area are nearly equally dominant: Palustrine forested (32 percent), Open water (31 percent), and Palustrine emergent (27 percent). Approximately half of the Palustrine forested community types within the right-of-way are due to the forested lake swamp communities associated with Lake Monroe (Segment 6). In addition, over half of the emergent (marsh) wetlands are found in Segment 6. The dominance of the open water is due to naturally occurring lakes found in all segments. Scrub-shrub wetlands (10 percent) consist of natural shrubby wetlands within the Ultimate study area but are also represented by littoral zones associated with stormwater retention ponds and ditches.

Table 4.3.3.2.2 - Wetland Community Classification and Percent Cover of Total Wetland Area within the Ultimate Project Corridor

| National Wetland Inventory Classification | Wet Code | Total Wetland Area (acres within 600 ft of right-of-way) | Percent of Total Wetland Area |
|---|------------------|--|-------------------------------|
| | | | |
| Palustrine Forested | PFO | 441.66 | 32% |
| Open Water | LUBH, RUBH, PUBH | 430.15 | 31% |
| Palustrine Emergent | PEM | 363.48 | 27% |
| Palustrine Scrub-Shrub | PSS | 137.29 | 10% |
| TOTAL | | 1,372.59 | 100% |

4.3.3.3 Wildlife and Habitat

Land use within the Ultimate project study corridor is characterized by commercial and residential development and fragmented natural communities. A high degree of disturbance typically limits species diversity and reduces the potential for threatened and endangered species to occur within these areas. However, remnant natural communities along the corridor may provide suitable habitat for some protected vegetative and wildlife species. Figure 4.3.3.3.1 depicts the general locations of protected species observed during the study and/or reported by an agency to occur within or near the Ultimate project corridor.

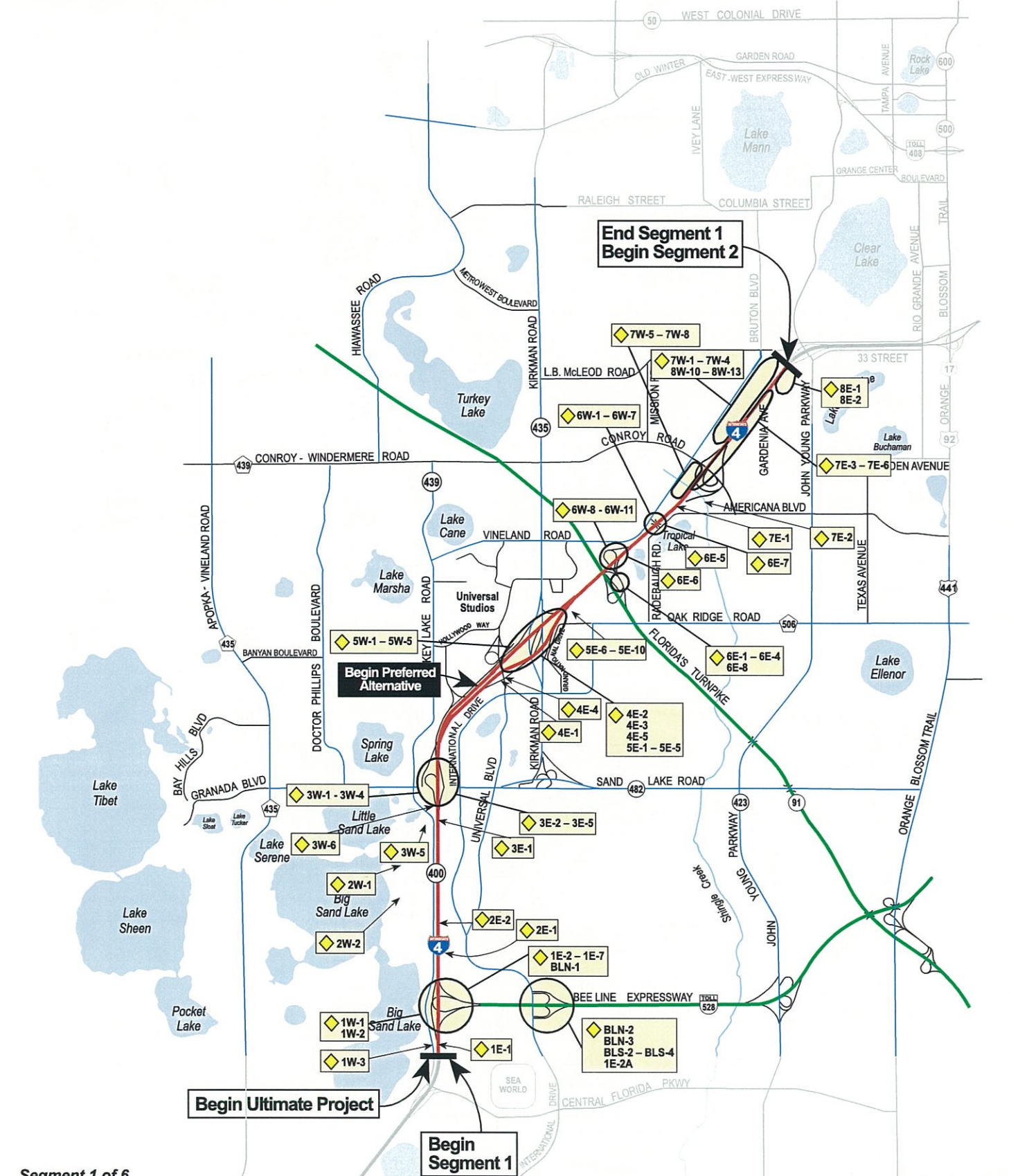
Flora

Sixty-four federally and state listed threatened and endangered plant species were identified as potentially occurring within the vicinity of the Ultimate project study corridor. These species, their state and federal status and their potential for occurrence are listed in the *Endangered Species Biological Assessment* (May 2000). Seven of these potential species were observed within or near the project corridor. These species are listed in Table 4.3.3.3.1. None of the other 57 species, with potential for occurrence as indicated in the 1997 report, were found.

Table 4.3.3.3.1 - Observed Listed Vegetative Species within or adjacent to the Ultimate Project

| Scientific Name | Common Name | Status | | Habitat Preference / Location Observed |
|-------------------------------|--------------------------------------|--------------------|------------------|--|
| | | USFWS ¹ | FDA ² | |
| <i>Clitoria fragrans</i> | Pigeon-wing (sandhill) butterfly-pea | T | E | Sandhills, scrub, scrubby flatwoods and roadsides (observed by project consultants 1997); northern Segment 6 |
| <i>Garberia heterophylla</i> | Garberia | | T | Sand pine and oak scrub |
| <i>Lechea cernua</i> | Nodding (drooping; scrub) pinweed | | T | Scrub communities; observed by project consultants 1997 in Segment 1 west of Turkey Lake Rd. (unable to confirm) |
| <i>Lupinus aridorum</i> | McFarlin's (scrub) lupine | E | E | Sand pine scrub; observed by project consultants 1997 in Segment 1 west of Turkey Lake Rd. (unable to confirm) |
| <i>Osmunda cinnamomea</i> | Cinnamon fern | | C | Wet woods & swamps throughout corridor |
| <i>Osmunda regalis</i> | Royal fern | | C | Wet woods & swamps throughout corridor |
| <i>Tillandsia fasciculata</i> | Common (stiff-leaved) wild pine | | E | Cypress swamps and hammocks throughout corridor |

E=Endangered
 T=Threatened
 C=Commercially Exploited
 SSC=Species of Special Concern
¹Status as of December 31, 1998
²USFWS=US Fish and Wildlife Service
³FDA=Florida Department of Agriculture and Consumer Services

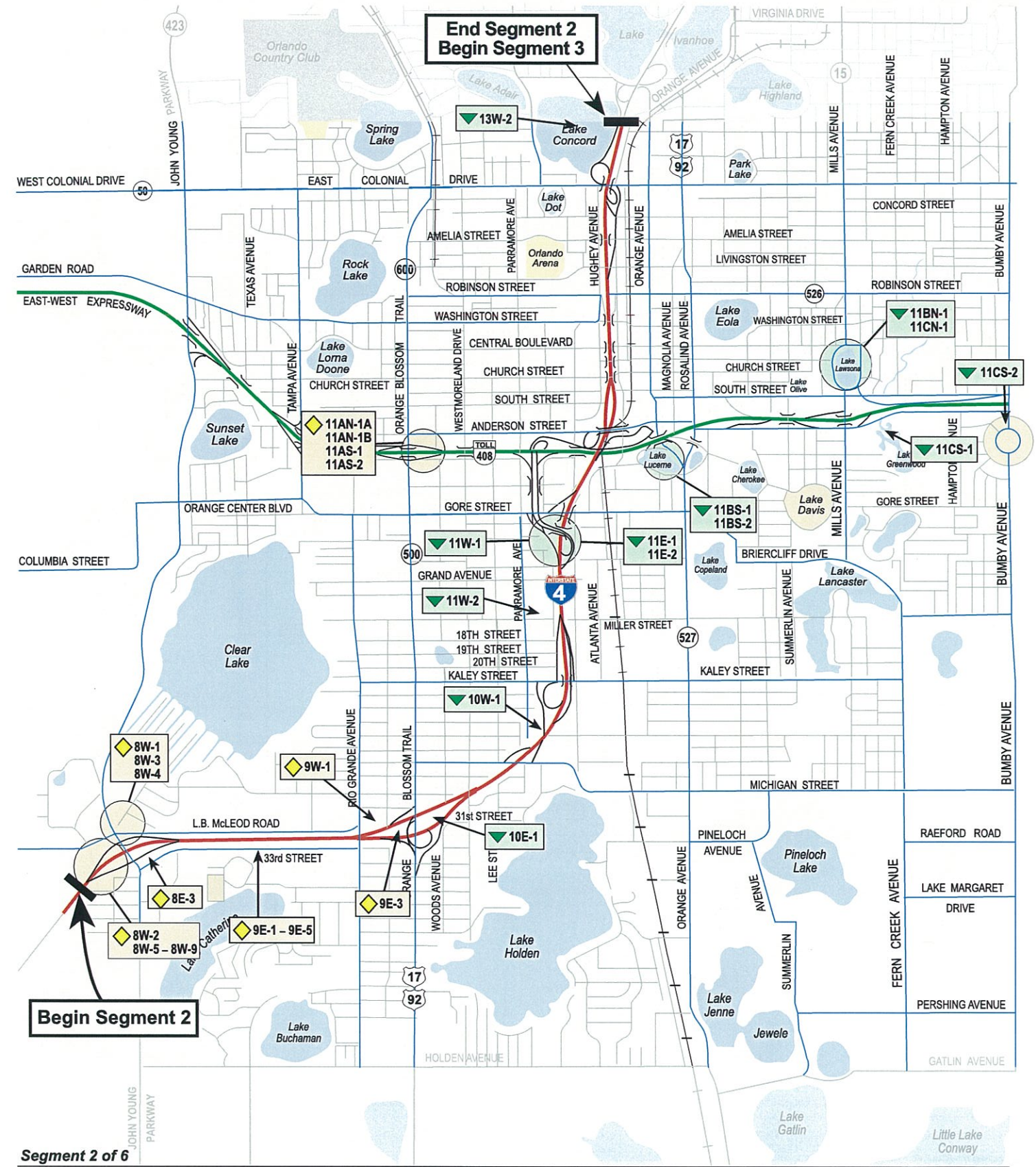


Segment 1 of 6

Scale in Miles
0 1/2 1

Area of Generalized Wetland Location
(For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

Watershed Basin Jurisdiction
 ◆ Shingle Creek/ Kissimmee River Basin (SFWMD)
 ▲ Lake Jessup Basin (SJRWMD)



Segment 2 of 6

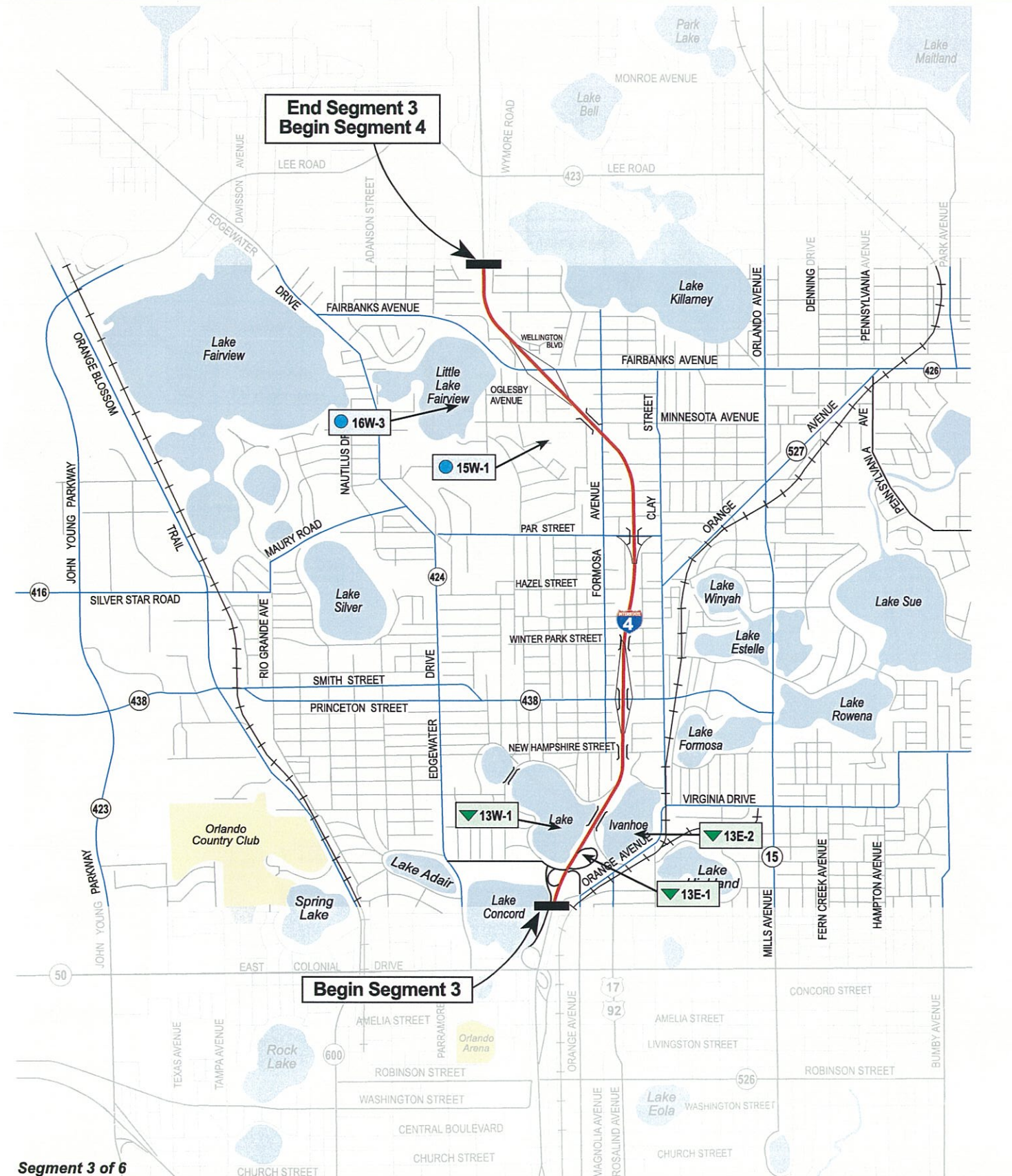
Scale in Miles
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Area of Generalized Wetland Location
(For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

Watershed Basin Jurisdiction
 ◆ Shingle Creek/ Kissimmee River Basin (SFWMD)
 ▲ Lake Jessup Basin (SJRWMD)

I-4 PD&E Study - Section 2

Figure 4.3.3.2.1 Existing Wetlands

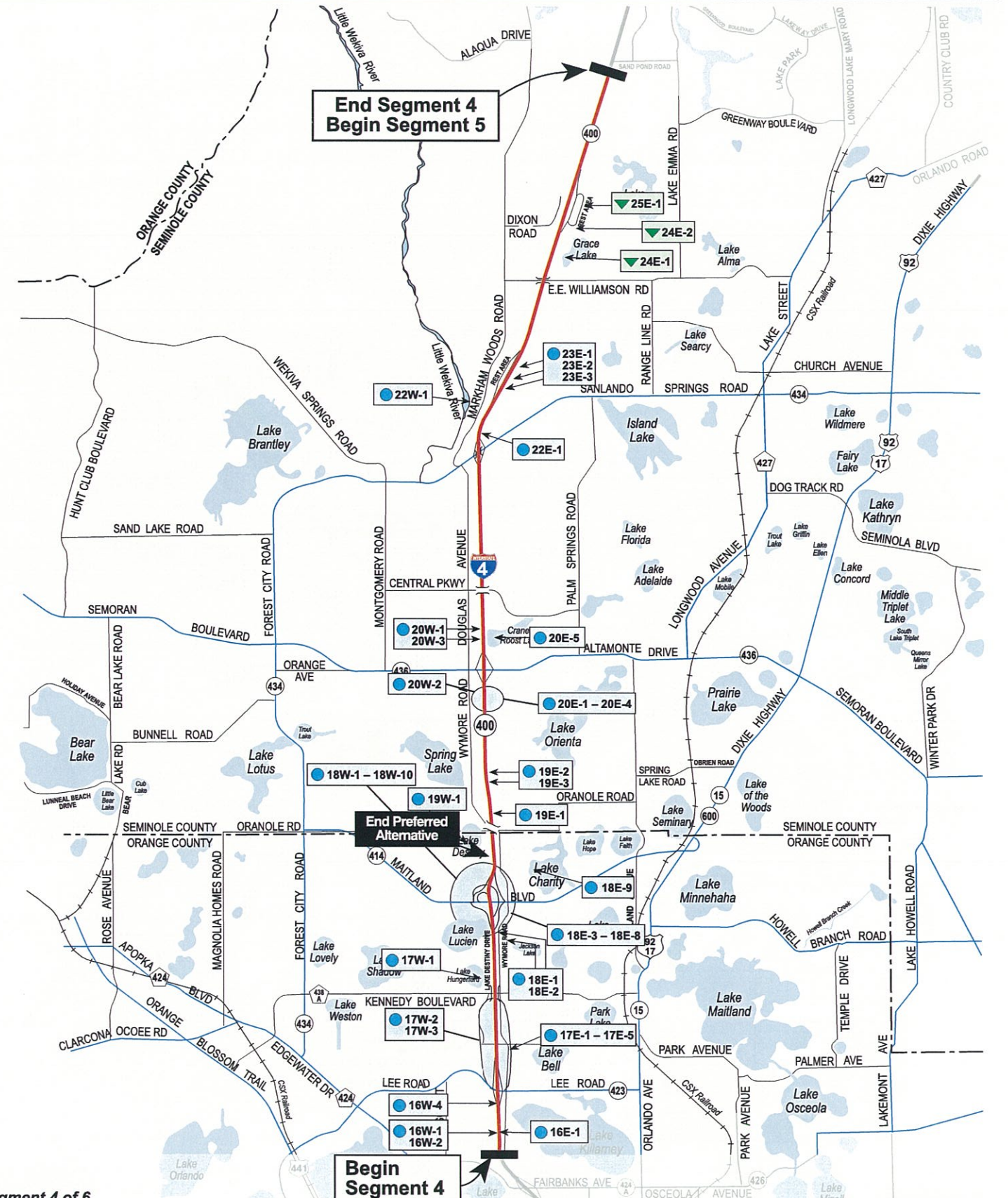


Segment 3 of 6

Scale in Miles
0 1/2 1

Watershed Basin
 ▲ Lake Jessup Basin (SJRWMD)
 ● Wekiva River Basin (SJRWMD)

Jurisdiction
 (SJRWMD)
 (SJRWMD)



Segment 4 of 6

Scale in Miles
0 1/2 1

Area of Generalized Wetland Location
 (For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

Watershed Basin
 ▲ Lake Jessup Basin (SJRWMD)
 ● Wekiva River Basin (SJRWMD)

Jurisdiction
 (SJRWMD)
 (SJRWMD)

Figure 4.3.3.2.1 Existing Wetlands

I-4 PD&E Study - Section 2

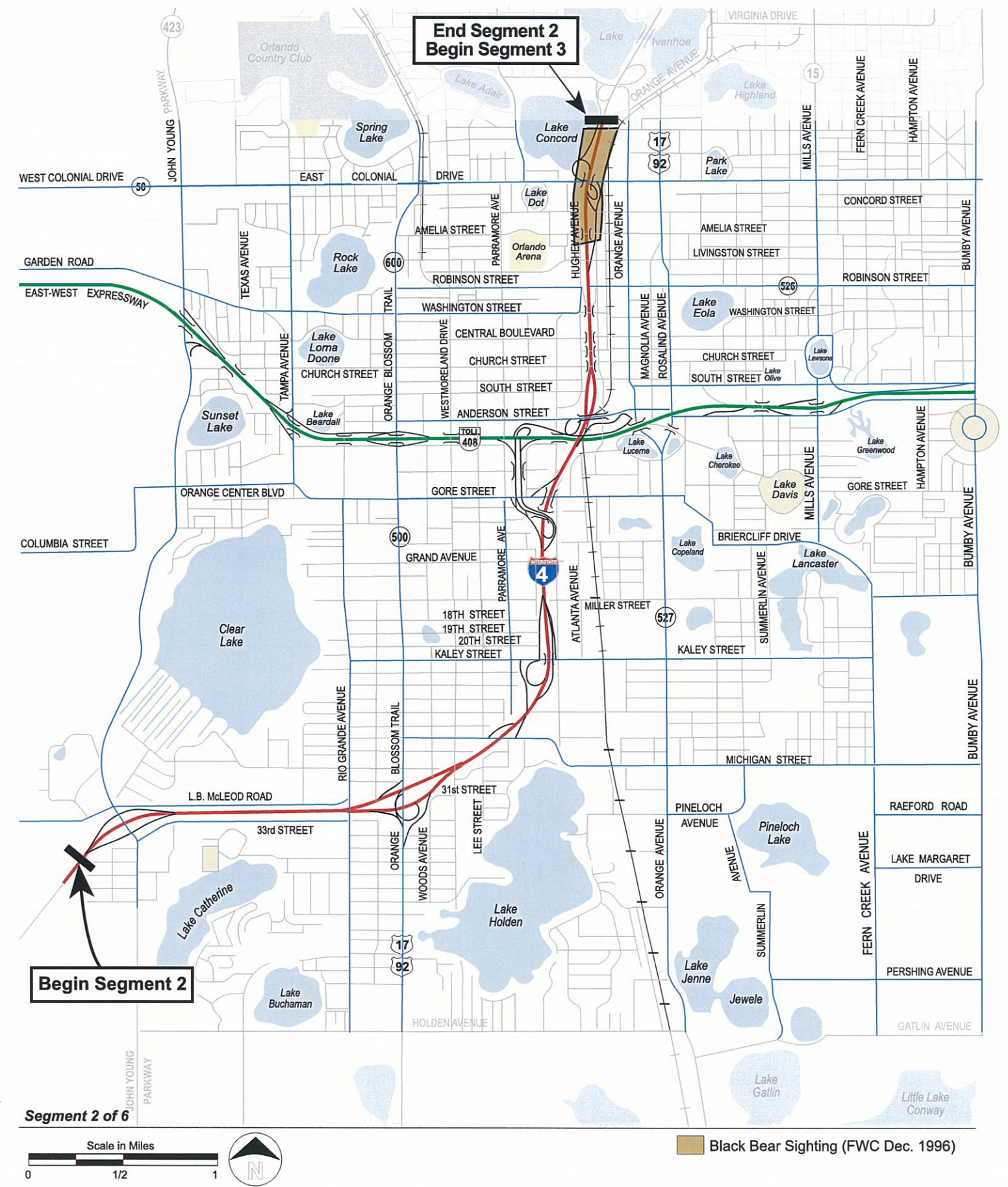
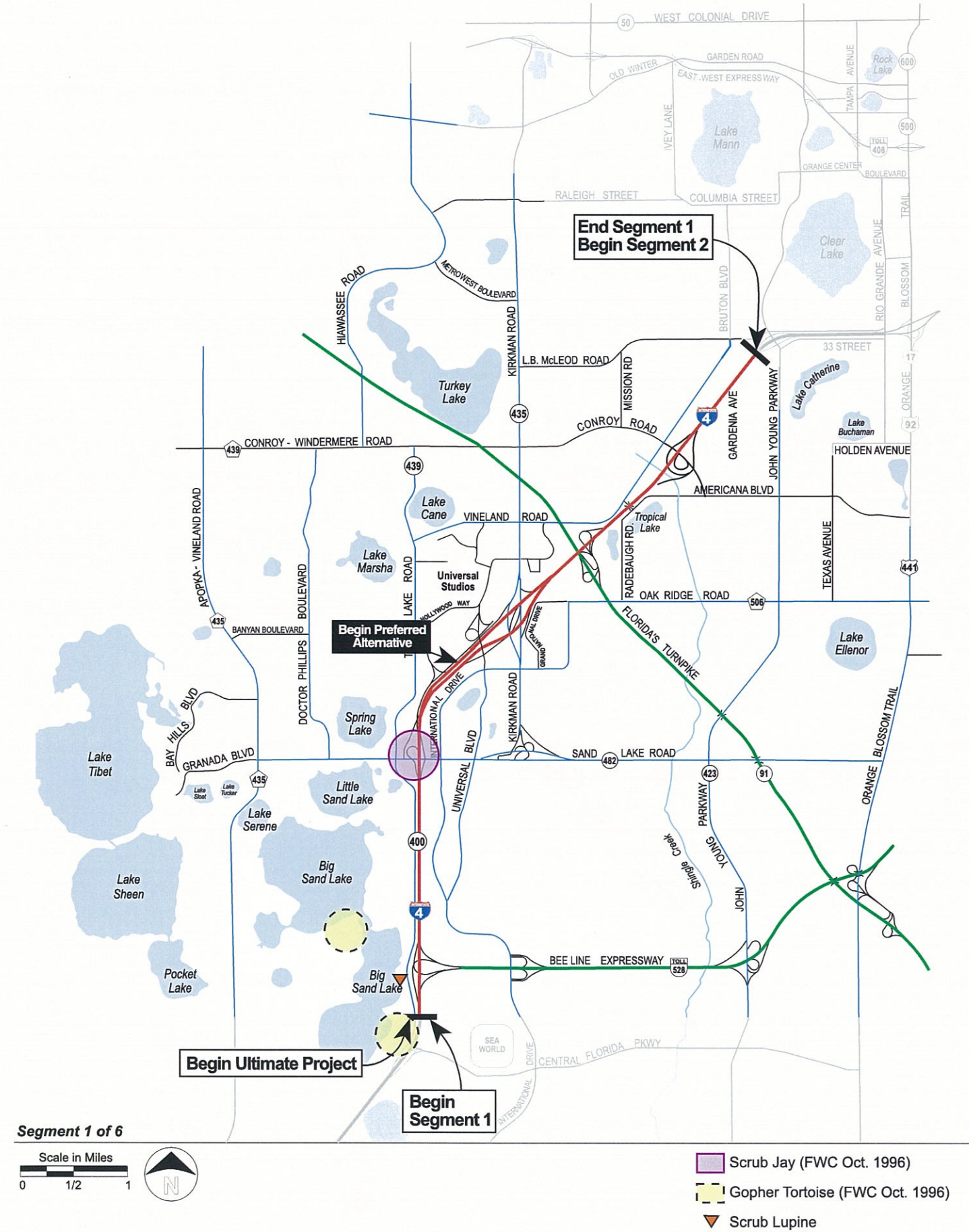
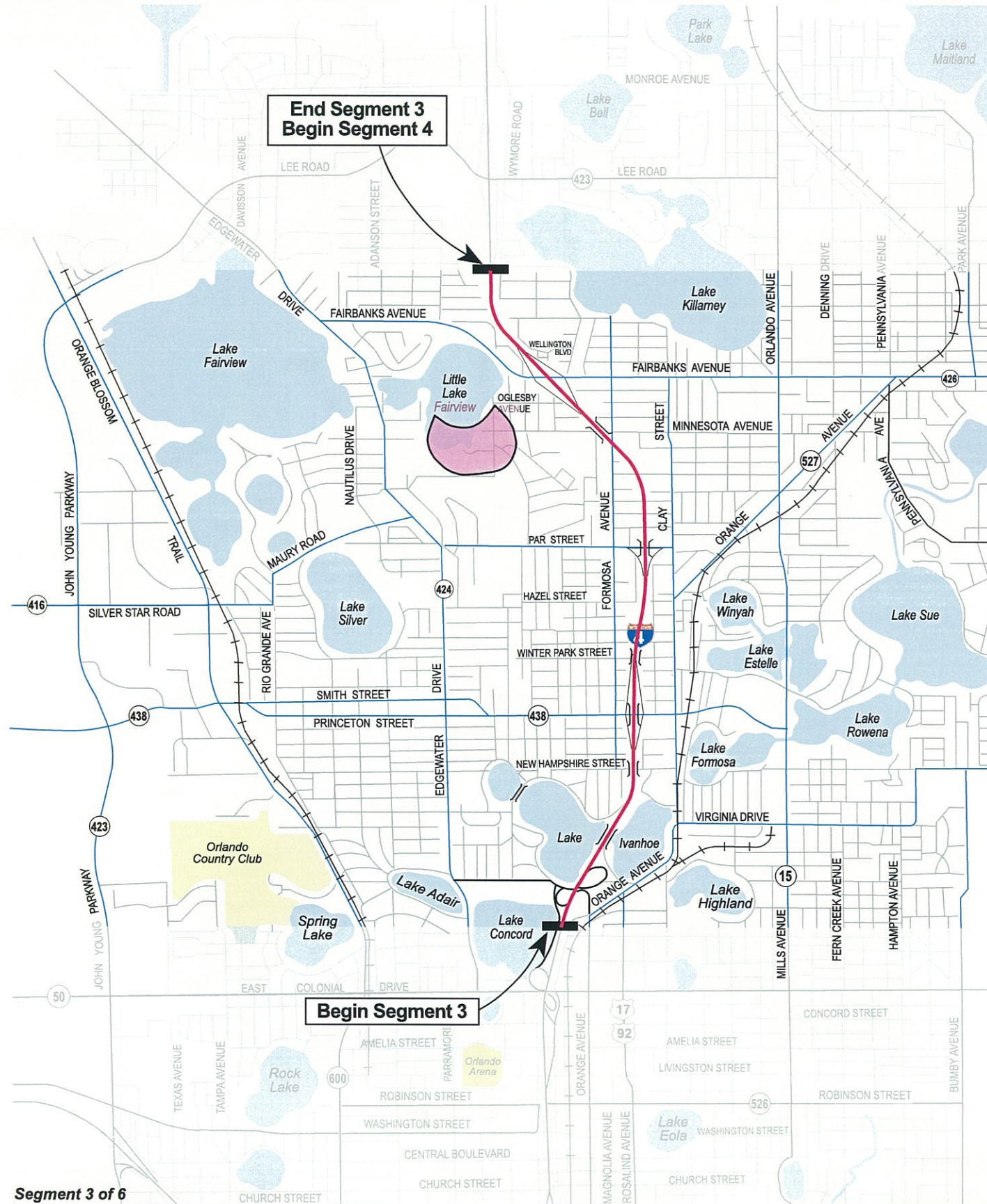
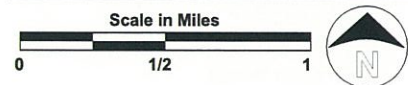


Figure 4.3.3.1
Threatened & Endangered Wildlife

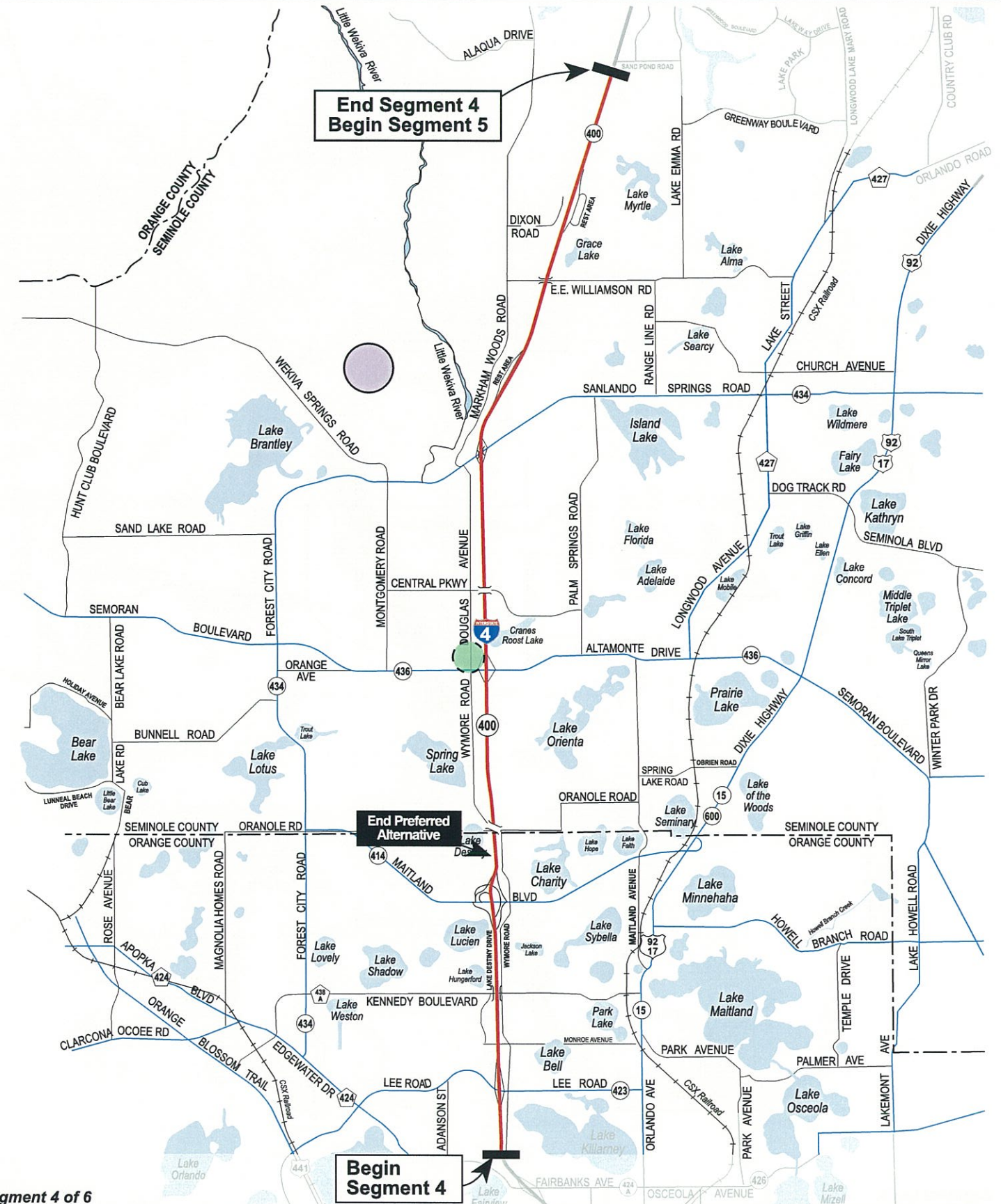
I-4 PD&E Study - Section 2



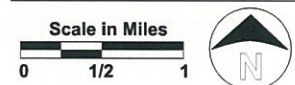
Segment 3 of 6



Eagle (FNAI Nov. 1996)



Segment 4 of 6

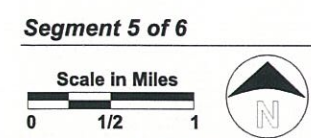
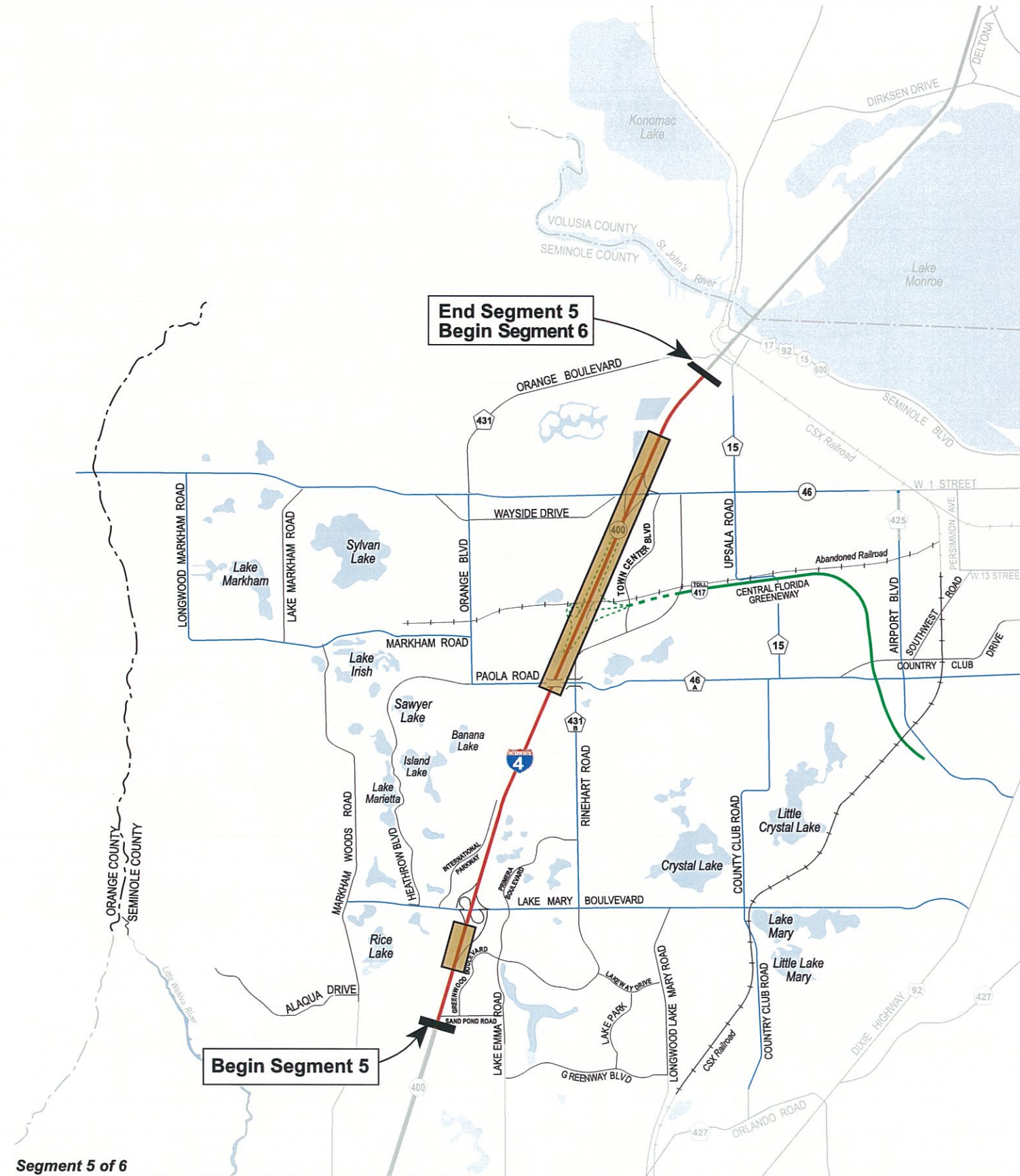


Scrub Jay (FWC Oct. 1996)

Least Tern (FWC Oct. 1996)

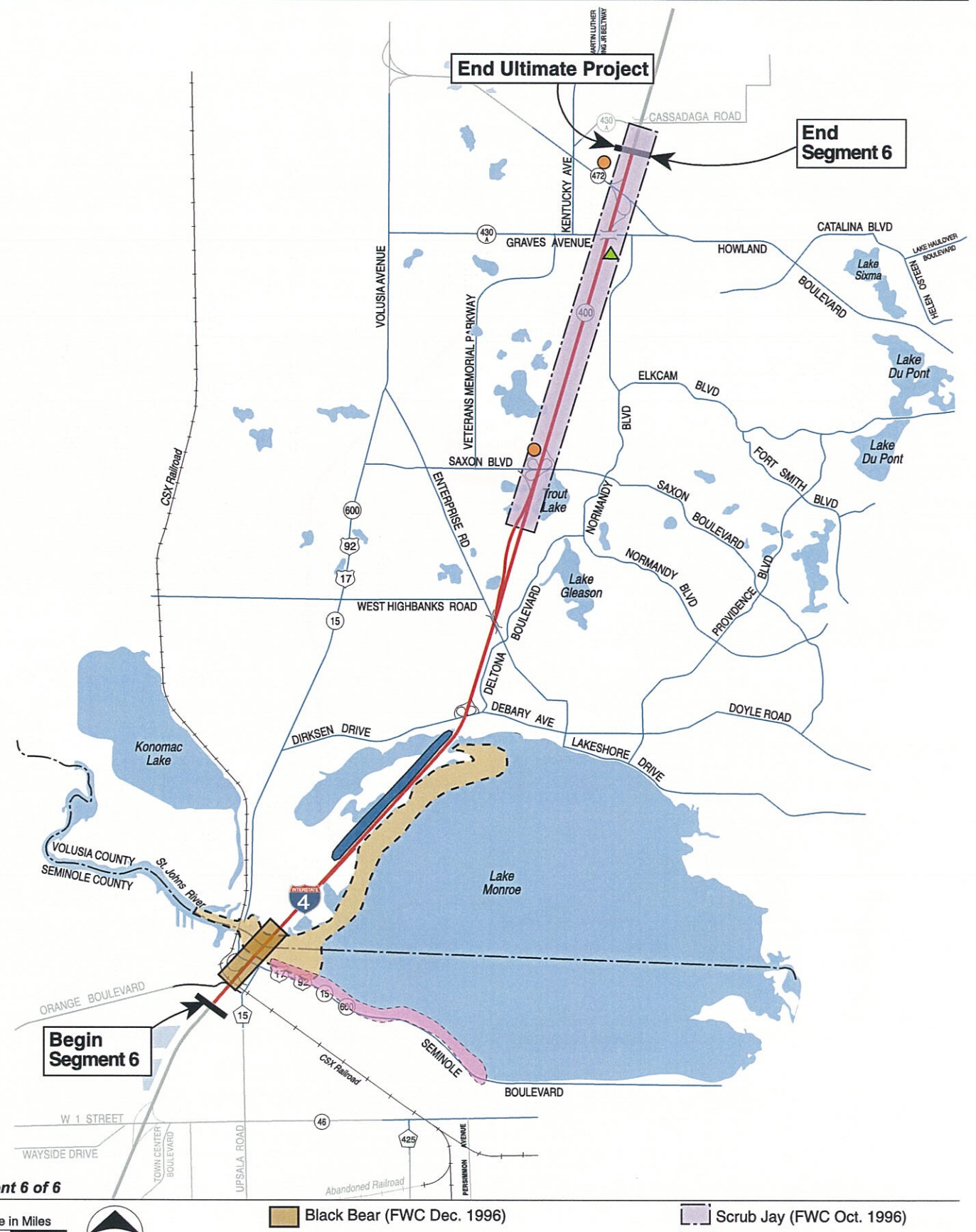
I-4 PD&E Study - Section 2

Figure 4.3.3.1
Threatened & Endangered Wildlife

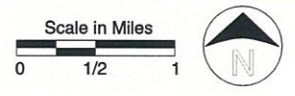


Black Bear (FWC Dec. 1996)

Figure 4.3.3.3.1
Threatened & Endangered Wildlife



Segment 6 of 6



- Black Bear (FWC Dec. 1996)
- Eagle (FNAI Nov. 1996)
- Manatee (FNAI and Environmental Management of Volusia County Nov. 1996)
- Scrub Jay (FWC Oct. 1996)
- Wood Stork
- Indigo Snake
- Pigeon Wings

I-4 PD&E Study - Section 2

Fauna

Those species listed as Threatened or Endangered (state and federal status) and their potential for occurrence as determined by project biologists, are described in the *Endangered Species Biological Assessment* (May 2000). Many of the protected wildlife species are wetland-dependent species. In general, a wetland's ability to support a great on-site diversity and/or abundance of fish or invertebrates is due to the vegetation community being structurally diverse. A wetland's ability to support wetland-dependent birds during the breeding season, migration or winter depends on the amount of foraging potential and littoral zone productivity for fish and invertebrate reproduction. Site disturbance and developed shorelines adversely affect these factors and result in a lack of suitable breeding/foraging habitat along shorelines.

Table 4.3.3.2 lists the protected wildlife species that have either been observed or have been determined to have a high potential for occurrence within the Ultimate project corridor.

4.3.3.4 Contamination

A contamination screening evaluation study was completed in August 1998. The results of the study are summarized in this section and documented in detail in the *Contamination Screening Evaluation Report* (May 1999). The study was conducted in accordance with the methodology prescribed in Chapter 22 of FDOT's *PD&E Manual*.

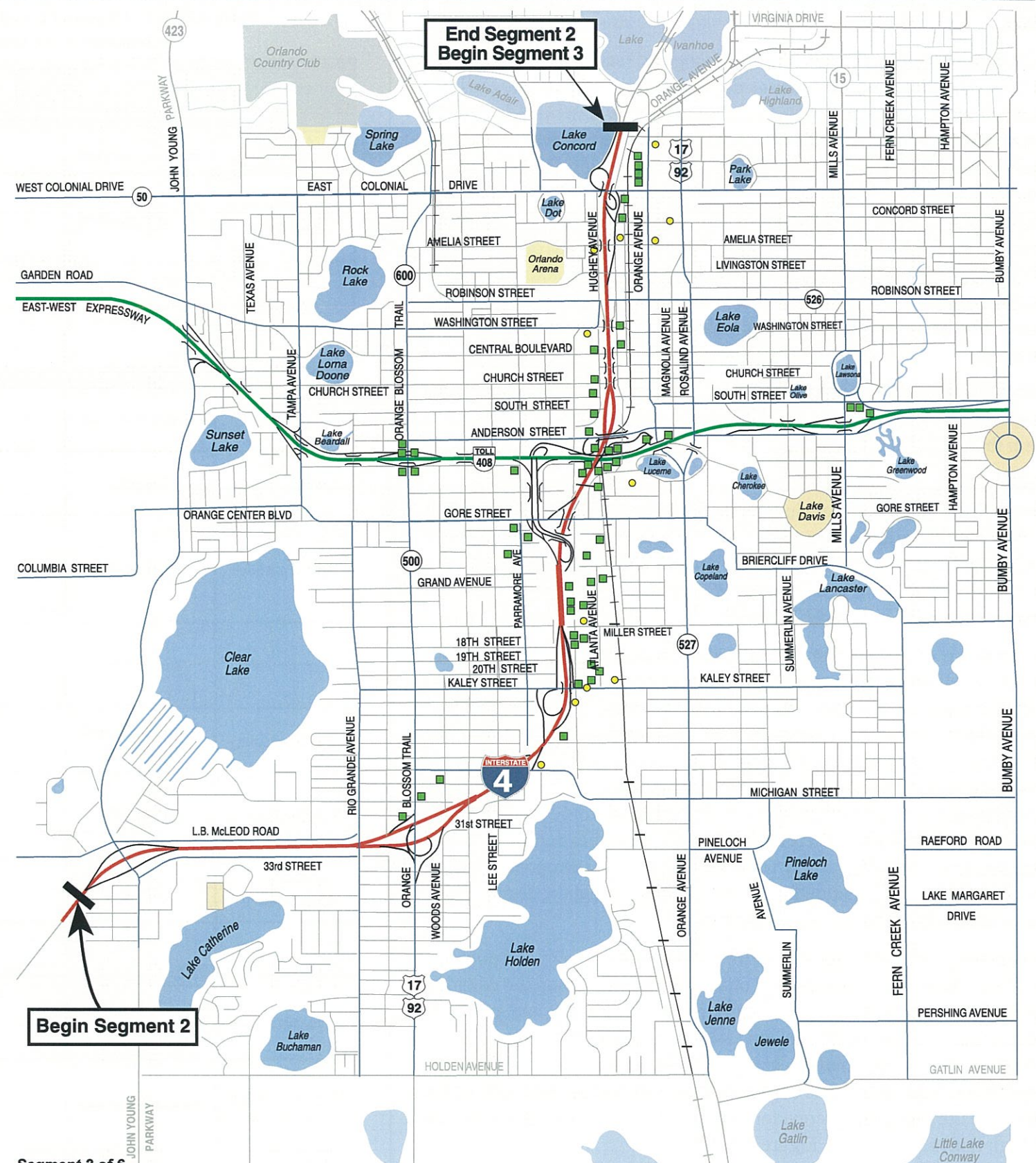
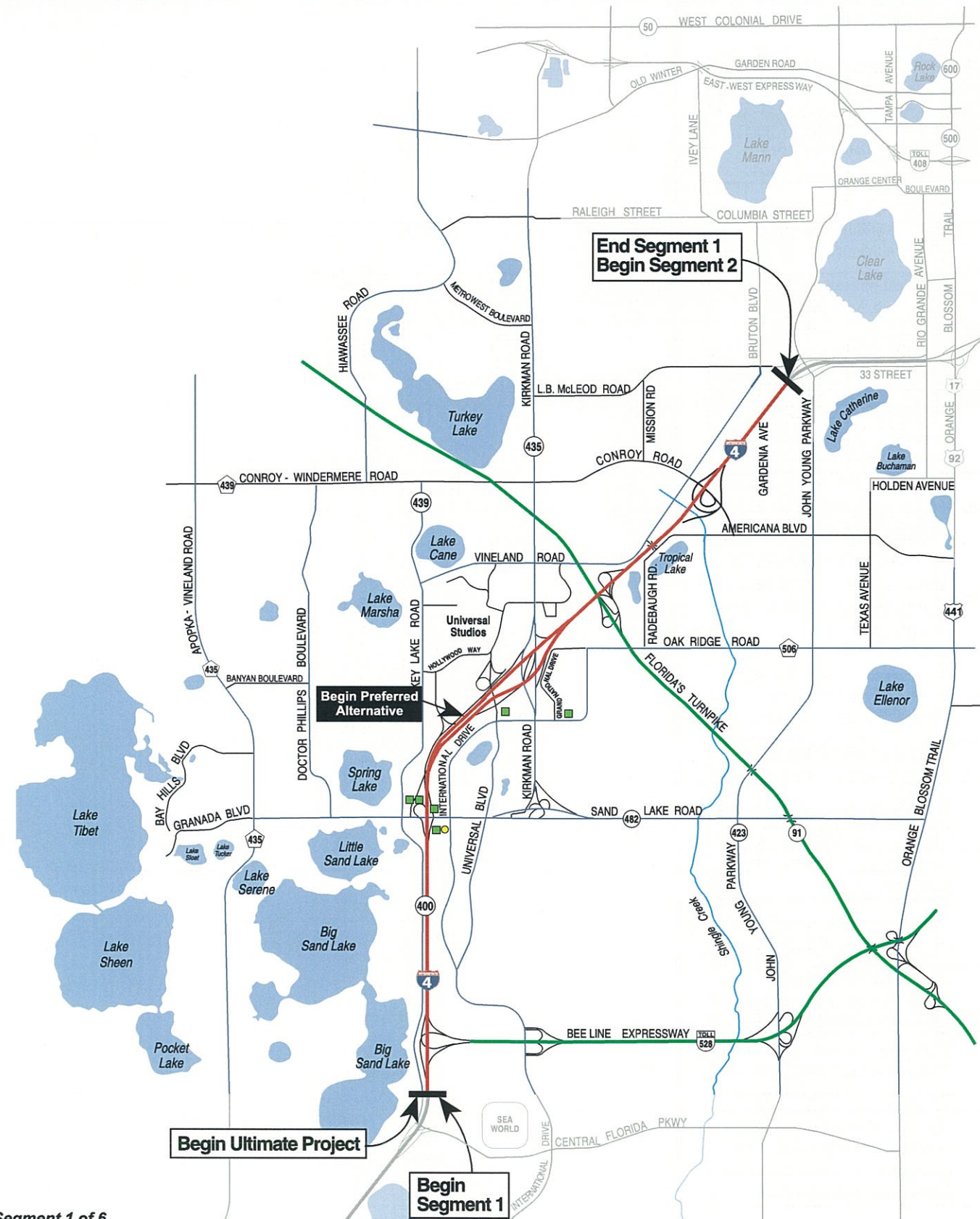
The presence of soil and/or groundwater contamination, or hazardous substances within existing or proposed right-of-way, can have a significant adverse impact on the cost and schedule to complete a transportation improvement project. Contaminated groundwater drawn into the dewatering system during construction could require special treatment and permitting prior to disposal. Contaminated soil unearthed during construction may require treatment and disposal and would not be useable to backfill excavations. Therefore, the early identification of potential contamination sites that could adversely impact the proposed project provides valuable information for the alternatives evaluation, design, right-of-way acquisition and construction phases.

The contamination screening evaluation identified any known and potential hazardous material and petroleum contamination sites along the corridor, evaluated their potential to impact the proposed project, and provided recommendations for additional investigations where required. For the purpose of the contamination screening evaluation, the limits of the investigation were defined as approximately 300-feet on each side of the proposed Ultimate project corridor. Potential sites (those rated medium and high risk) are shown in Figure 4.3.3.4.1.

Table 4.3.3.2 - Observed Listed Wildlife Species within or adjacent to the Ultimate Project

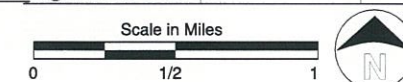
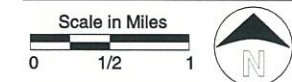
| Scientific Name | Common Name | Status | | Habitat Preference Location Observed |
|-----------------------------|-------------------------------|--------|-----|--|
| | | SAWS | FWC | |
| Reptiles | | | | |
| Alligator mississippiensis | American alligator | | SSC | Rivers, wetlands and open waterbodies; wetland 33E-1 |
| Drymarchon corais couperi | Eastern indigo snake | T | T | Wide range of habitat types, from upland sandhill to swamp edges; northern Segment 6 near SR 472. |
| Gopherus polyphemus | Gopher tortoise | | SSC | Longleaf pine-xeric oak, sand pine scrub, hammocks, dry prairie, pine flatwoods and disturbed habitats, southern Segment 1, northern Segment 6 |
| Birds | | | | |
| Aphelocoma coerulescens | Florida Scrub Jay | T | T | Oak scrub; low growing oaks with patches of bare sand; northern Segment 6 |
| Aramus guarauna | Limpkin | | SSC | Slow moving freshwater river and stream systems; wetlands 16W-1,2 and 11AN-1A |
| Egretta caerulea | Little Blue Heron | | SSC | Freshwater, brackish & saltwater wetlands; 10E-1, 11E-2, 11W-1, 20E-5, 28W-1,2,3, 29E-4, 38W-8, and 40W-1 |
| Egretta thula | Snowy Egret | | SSC | Freshwater and coastal wetlands; 5E-5, 5W-1, 20W-2, 28W-1,2,3, 36W-1, 38W-2,3, and 38W-9,10 |
| Egretta tricolor | Tricolored Heron (Louisiana) | | SSC | Typically found in freshwater & estuarine wetland; 9E-3, 13W-1, and 11AS-1 |
| Eudocimus albus | White Ibis | | SSC | Typically found in marshy sloughs, mud flats, lagoons and forested wetland; 5W-1, 10W-1, and 18W-2,3 |
| Haliaeetus leucocephalus | Bald Eagle | T | T | Large open water, mature pine; flyover at wetland 36W-1 |
| Mycteria americana | Wood Stork | E | E | Freshwater and brackish wetlands; near Lake Monroec |
| Mammals | | | | |
| Trichechus manatus | West Indian (Florida) manatee | E | E | Gulf coast, Atlantic coast, St. Johns River and various other waterways; southern Segment 6 |
| Ursus americanus floridanus | Florida black bear | | T | Forested communities: forested wetlands, pine flatwoods, sand pine scrub and mixed hardwood hammocks; segments 2 and 5. |

E=Endangered
T=Threatened
C=Commercially Exploited
SSC=Species of Special Concern
¹Status as of December 31, 1998
²USFWS=US Fish and Wildlife Service
³FDA=Florida Department of Agriculture and Consumer Services
⁴FWC=Florida Fish and Wildlife Conservation Commission



Segment 1 of 6

Segment 2 of 6

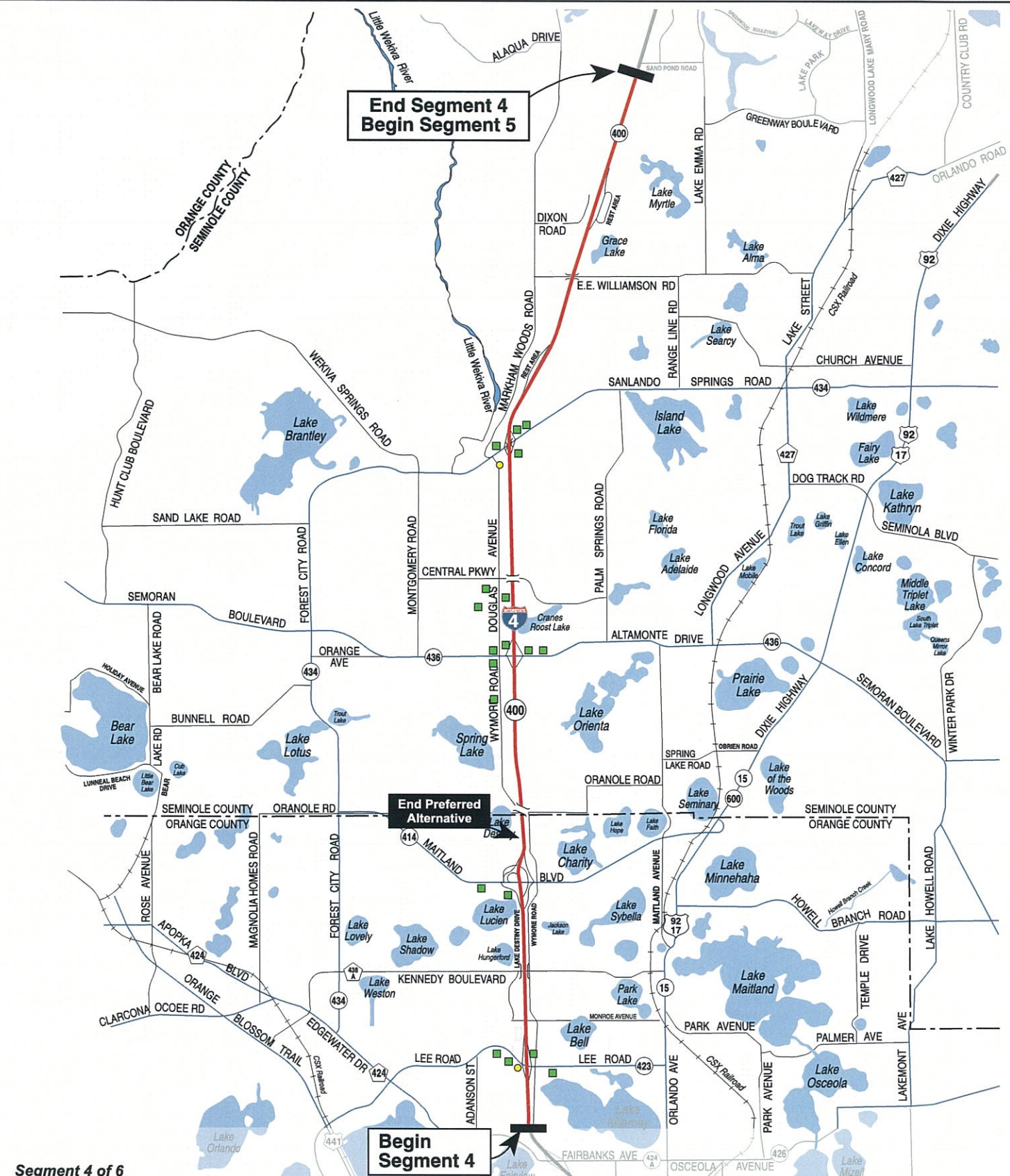
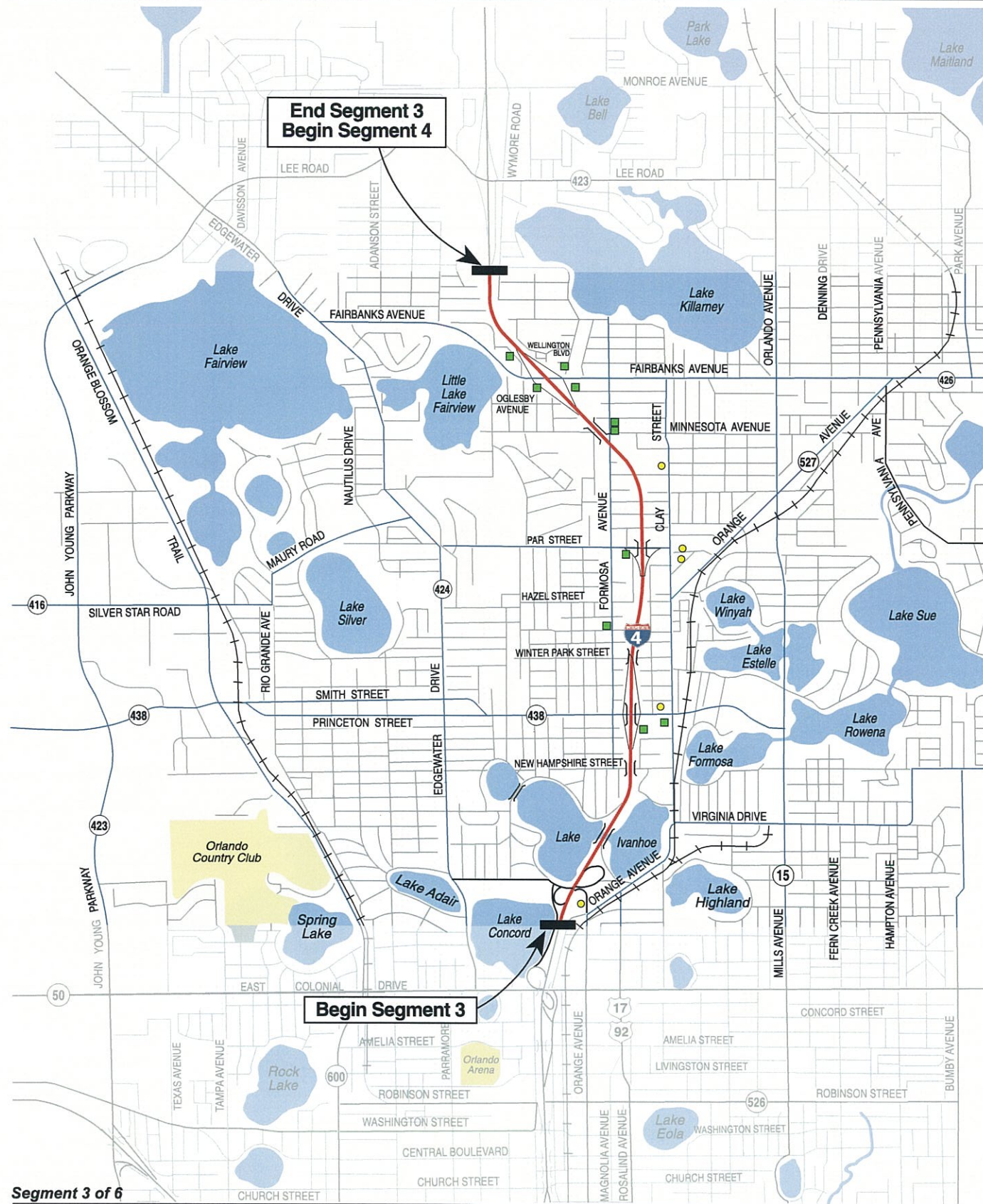


■ Site Rated High
● Site Rated Medium

■ Site Rated High
● Site Rated Medium

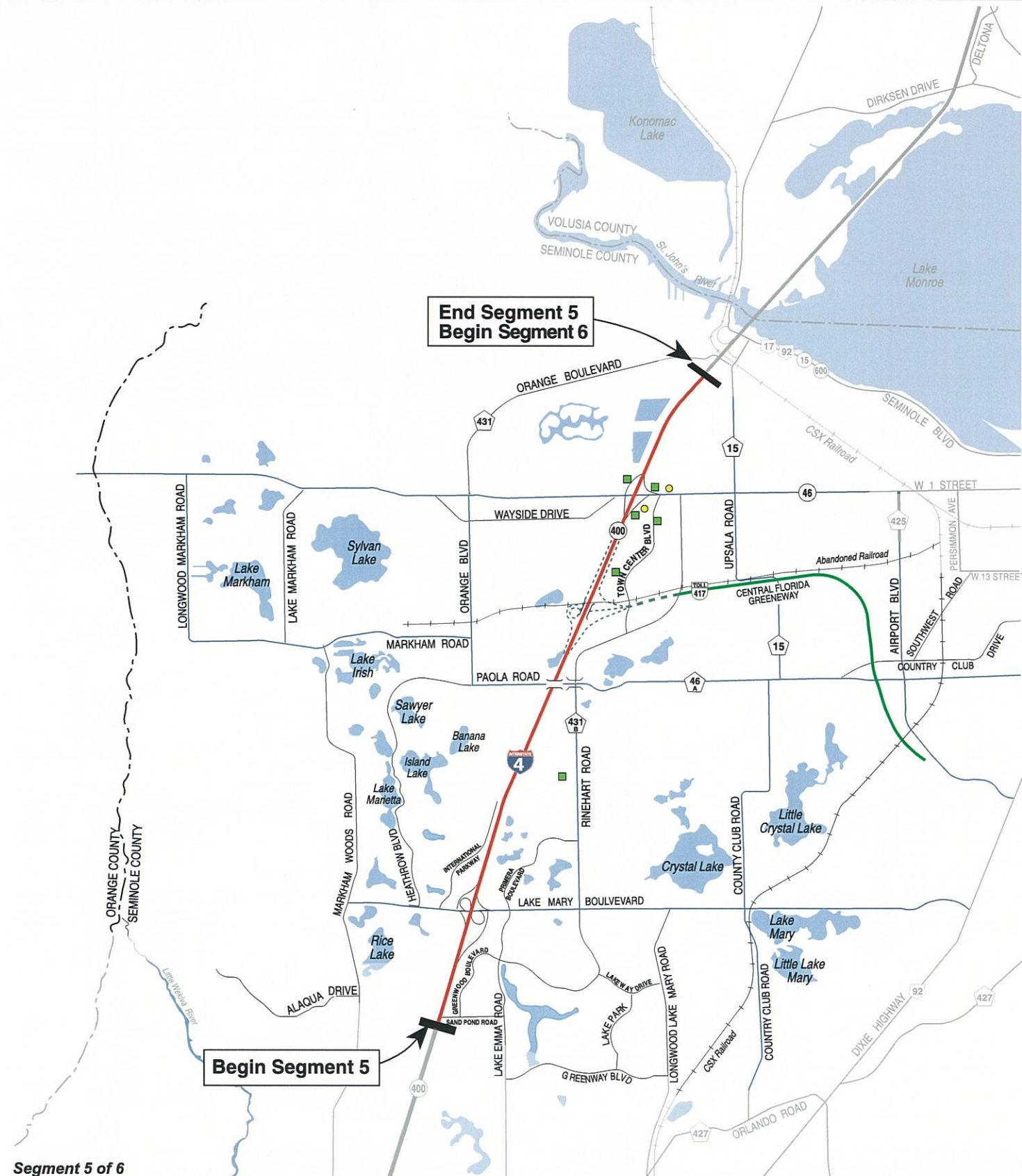
Figure 4.3.3.4.1
Potential Contamination Sites

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 4.3.3.4.1
Potential Contamination Sites



Segment 5 of 6

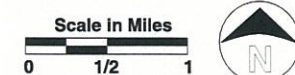
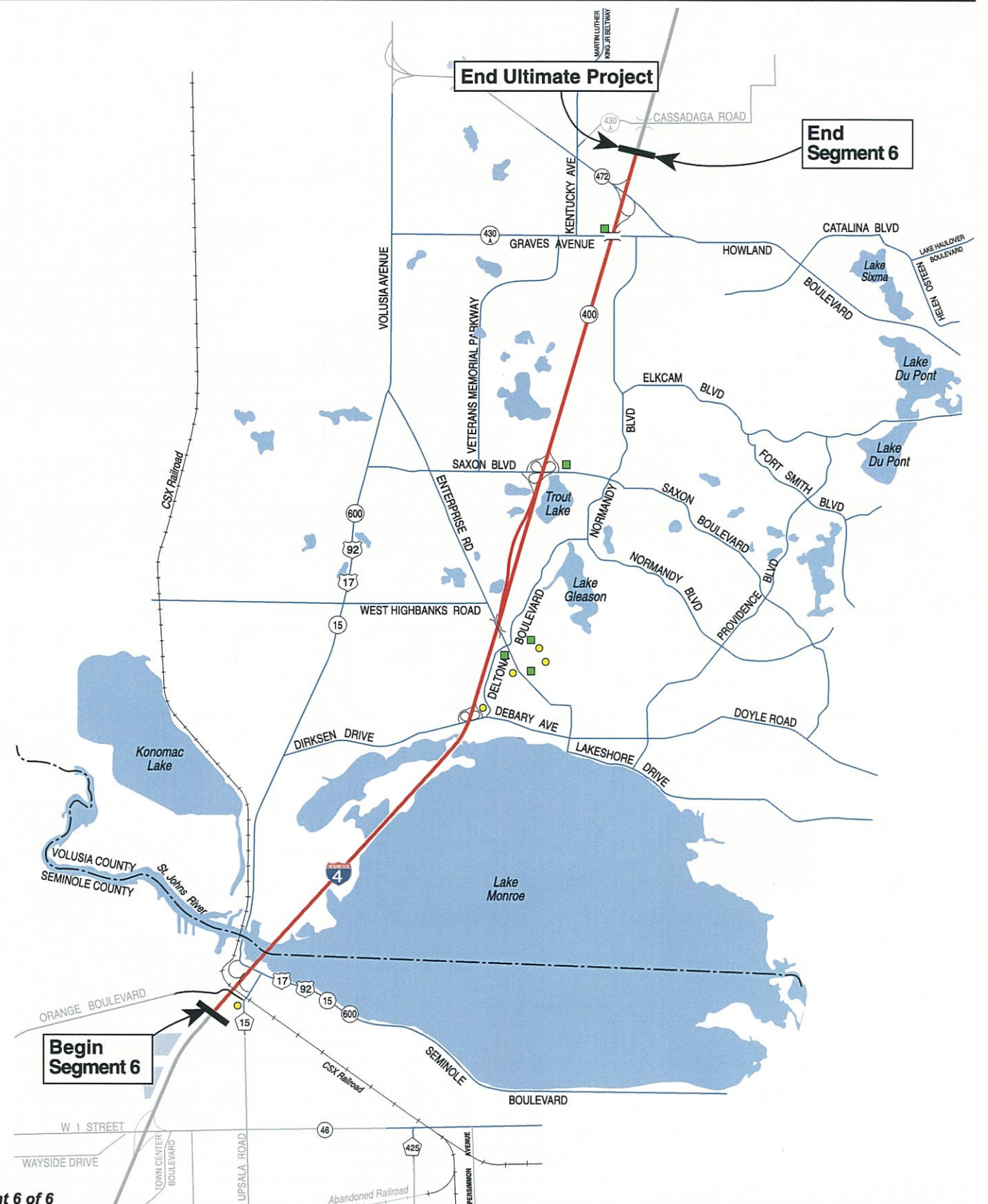
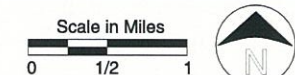


Figure 4.3.3.4.1
Potential Contamination Sites



Segment 6 of 6



Site Rated High
Site Rated Medium

The I-4 PD&E Study-Section 2 incorporates project elements with various design requirements. Table 5.1.1 presents the roadway design criteria established for each design element. The design criteria are based on design parameters outlined in *A Policy on Geometric Design of Highway and Streets* (AASHTO, 1990), *Roadway Plans Preparation Manual, Vol. I and II* (FDOT, 2000) and *Roadway and Traffic Design Standards* (FDOT, 1994).

Table 5.1.1 - Roadway Design Criteria

| Design Element | Design Standard | Sources |
|--|---|--|
| Design Vehicle | WB-60 | AASHTO, Pg 31 |
| Design Year | 2020 | FDOT Scope of Services |
| Design Speed | | |
| Mainline I-4 - Rural (North of US 17-92) | 70 mph | FDOT Plans Preparation Manual Page 1-12 |
| Mainline I-4 - Urban (South of US 17-92) | 60 mph | AASHTO, page 960 |
| Diamond Ramp | 50 mph | FDOT Roadway and Traffic Design Standards Index 600/614 |
| Loop Ramp | 30 mph (25 mph min as per AASHTO) | |
| Crossroad - Urban | 45 mph | FDOT Roadway and Traffic Design Standards Index 600/614 |
| Crossroad - Other | As approved | |
| Maintenance of Traffic | | |
| Mainline I-4 | Desirable - Same as normal posted speed on roadway | FDOT Roadway and Traffic Design Standards Index 600/614 |
| Crossroads | Reduced - Not more than 20 mph below normal posted speed on roadway | |
| | 40 mph min. | |
| Median Width I-4 | 64 ft. (with 44' median corridor) 22 ft. minimum with barrier (HOV Shoulders.) | FDOT Plans Preparation Manual Table 2.2.1 |
| Maximum degree of Curve | | |
| Mainline I-4 - Rural (North of US 17-92) | 3°30' | FDOT Plans Preparation Manual Table 2.9.1 (e _{MAX} = 0.10) |
| Mainline I-4 - Urban (South of US 17-92) | 5°15' | |
| Diamond Ramp | 8°15' | |
| Loop Ramp | 24°45' (190 ft. minimum radius) | |
| Length of Horizontal Curve | | |
| Mainline I-4 | 30(V) ¹ | FDOT Plans Preparation Manual, Table 2.8.2a |
| Crossroad & Ramps | 15(V) ¹ (Minimum - 400 ft) | |

Table 5.1.1 - Roadway Design Criteria, Cont.

| Design Element | Design Standard | Sources |
|---|---|--|
| Minimum Stopping Sight Distance | | |
| Mainline I-4 - Rural (North of US 17-92) | 800 ft. | FDOT Plans Preparation Manual, Table 2.7.1 |
| Mainline I-4 - Urban (South of US 17-92) | 625 ft. | |
| Diamond Ramps | 400 ft. | |
| Loop Ramps | 200 ft. (146 ft. for 25 MPH Design Speed) | |
| Decision Sight Distance | | |
| Mainline I-4 - Rural (North of US 17-92) | 1,100 ft. | AASHTO Table III-3, Page 127 |
| Mainline I-4 - Urban (South of US 17-92) | 1,275 ft. | |
| Diamond Ramps (Rural) | 750 ft. | |
| Loop Ramps (Rural) | 450 ft. | |
| Maximum Shoulder "Roll-Over" | 7% | FDOT Roadway and Traffic Design Standard Index No. 510, 2 of 3 |
| Maximum Lane "Roll-Over" | 4% | PPM, Page 2-4 |
| Superelevation Transition | | |
| Tangent | 80% desirable, 50% minimum | FDOT Plans Preparation Manual Page 2-13 |
| Curve | 20% desirable, 50% maximum | |
| Maximum Superelevation | | |
| Mainline I-4 | 0.10 | FDOT Roadway And Traffic Design Standards Index, No. 525 and AASHTO, Table X-4, Page 986 |
| Crossroads and Ramps | 0.10 | |
| Entrance - Exit Ramp Design | | |
| Loop Ramps | Parallel Type | AASHTO Page 949 |
| Diamond Ramps | Taper Type | |
| Entrance Ramp | | |
| Taper Type - Diamond Ramp Taper | 50:1 | FDOT Roadway And Traffic Design Standards Index, No. 525 and AASHTO, Table X-4, Page 986 |
| Accel. Length - Rural (North of US 17-92) | 1,410 ft. | |
| Accel. Length - Urban (South of US 17-92) | 1,000 ft. | |
| Parallel Type - Loop Ramp Taper | 300 ft. minimum | |
| Accel. Length - Rural (North of US 17-92) | 1,410 ft. | |
| Accel. Length - Urban (South of US 17-92) | 1,000 ft. | |

Table 5.1.1 - Roadway Design Criteria, Cont.

| Design Element | Design Standard | Sources |
|--|------------------------------|---|
| Exit Ramp | | |
| Taper Type - Diamond Ramp Taper | 4° (3° min, 5° max) | FDOT Roadway and Standards Index No. 525 and AASHTO Table X-6, Page 991 |
| Decel. Length - Rural (North of US 17-92) | 550 ft. | |
| Decel. Length - Urban (South of US 17-92) | 460 ft. | |
| Parallel Type - Loop Ramp Taper | 300 ft. minimum | |
| Decel. Length - Rural (North of US 17-92) | 550 ft. | |
| Decel. Length - Urban (South of US 17-92) | 460 ft. | |
| Maximum Profile Grade | | |
| Mainline I-4 - Rural (North of US 17-92) | 3% | FDOT Plans Preparation Manual, Table 2.6.1 and AASHTO Table VIII-1, page 585. |
| Mainline I-4 - Urban (South of US 17-92) | 3% | |
| Diamond Ramp | 3% - 5% | |
| Loop Ramp | 7% | |
| Crossroad - Urban | 8% | |
| Crossroad - Other | As appropriate | |
| Maximum Change in Grade without Vertical Curve | | |
| Mainline I-4 - Rural (North of US 17-92) | 0.20% | FDOT Plans Preparation Manual, Table 2.6.2 |
| Mainline I-4 - Urban (South of US 17-92) | 0.40% | |
| Diamond Ramp | 0.60% | |
| Loop Ramp | 1.00% | |
| Crossroad - Urban | 0.70% | |
| Crossroad - Other | As appropriate | |
| Crest Vertical Curve | | |
| Mainline I-4 - Rural (North of US 17-92) | K=500, Min. Length 1,000 ft. | FDOT Plans Preparation Manual, Table 2.8.5 |
| Mainline I-4 - Urban (South of US 17-92) | K=300, Min. Length 1000 ft. | |
| Diamond Ramp | K=130, Min. Length 150 ft | |
| Loop Ramp | K=30, Min. Length 90 ft. | |
| Crossroad - Urban | K=90, Min. Length 135 ft. | |
| Crossroad - Other | As appropriate | |

Table 5.1.1 - Roadway Design Criteria, Cont.

| Design Element | Design Standard | Sources |
|---|----------------------------|---|
| Sag Vertical Curve | | |
| Mainline I-4 - Rural (North of US 17-92) | K=200, Min. Length 800 ft. | FDOT Plans Preparation Manual, Table 2.8.6 |
| Mainline I-4 - Urban (South of US 17-92) | K=150, Min. Length 800 ft. | |
| Diamond Ramp | K=90, Min. Length | |
| Loop Ramp | K=40, Min. Length 90 | |
| Crossroad - Urban | K=80, Min. Length | |
| Crossroad - Other | As appropriate | |
| Minimum Vertical Clearance | | |
| Bridges over I-4 | 16'-6"² | FDOT Plans Preparation Manual Table 2.10.1 and 2.10.2 |
| I-4 Bridges over Cross Roads | 16'-6"² | |
| Overhead Signs | 17'-6"² | |
| Pedestrian Overpasses | 17'-6"² | |
| Rail | 23'-6" | |
| Lane Widths | | |
| Mainline (I-4) and HOV | 12 ft. - Tangent | FDOT Plans Preparation Manual Table 2.1.1, 2.1.2, and 2.1.3 |
| One Lane Ramp | 15 ft. - Tangent | |
| Two Lane Ramp | 24 ft. - Tangent | |
| Lane Drop Taper | | |
| Mainline (I-4) | 50:1 min; 70:1 Desirable | FDOT Roadway & Traffic Design Standard Index No. 525 and AASHTO, Page 909 |
| Shoulder Width - Roadway - Inside (or Left) | | |
| Mainline I-4 | Total 12 ft. Paved 10 ft. | FDOT Plans Preparation Manual Table 2.3.1 |
| One Lane Ramp | 6 ft. 2 ft. | |
| Two Lane Ramp | 8 ft. 4 ft. | |
| Shoulder Width - Roadway - Outside (or Right) | | |
| Mainline I-4 | Total 12 ft. Paved 10 ft. | FDOT Plans Preparation Manual Table 2.3.1 |
| One Lane Ramp | 6 ft. 4 ft. | |
| Two Lane Ramp | 12 ft. 10 ft. | |
| Minimum Spacing Ramp Terminals | | |
| Entrance to Exit³ | 1,600 to 2,000 ft. | AASHTO Figure X-68 Page 983 |
| Exit to Entrance | 500 ft. | |
| Entrance to Entrance | 1,000 ft. | |
| Exit to Exit | 1,000 ft. | |
| Turning Roadways | 600 to 800 ft. | |
| Typical Roadway Cross Section Slopes | | |
| Roadways | 0.02 to 0.03 | FDOT Plans Preparation Manual Figure 2.1.1 and Table 2.3.1 |
| Inside Shoulder | 0.05 | |
| Outside Shoulder | 0.06 | |

Table 5.1.1 - Roadway Design Criteria, Cont.

| Design Element | Design Standard | Sources |
|---|--------------------------------------|--|
| Clear Zone (Min. from edge of travel way) | 36 ft. | FDOT Plans Preparation Manual Table 2.11.9 (See Table 2.11.10 for Adjustments in curves) |
| Mainline I-4 | 24 ft. | |
| Auxiliary Lane | 14 ft. | |
| One Lane Ramp | 24 ft. | |
| Two Lane Ramp | 10 ft. | |
| One Lane Ramp | 18 ft. | |
| Crossroad - urban | 24 f. @ .45 mph | |
| Crossroad - Other | 4 ft @ 45 mph or less As appropriate | |
| Shoulder Width - Bridge Structures - Inside | | |
| Mainline I-4 | 12 ft. | FDOT Plans Preparation Manual Section 2.3 |
| One Lane Ramp | 6 ft. | |
| Two Lane Ramp | 6 ft. | |
| Shoulder Width - Bridge Structures - Inside | | |
| Mainline I-4 | 12 ft. | FDOT Plans Preparation Manual, Table 2.3 |
| Auxiliary Lane | 10 ft. | |
| One Lane Ramp | 6 ft. | |
| Two Lane Ramp | 10 ft. | |
| Border Width | 82 ft. 17 ft. min. | FDOT Plans Prep. Manual Table 2.5.1 |

¹Where V is equal to the design speed of the roadway
 ²Includes 6" allowance for resurfacing.
 ³Does not apply to cloverleaf ramps

Central Florida has experienced tremendous growth over the past several decades. A significant amount of this growth is occurring within close proximity to I-4. In recent years, congestion on I-4 has extended well beyond normal peak hours and major crashes have closed I-4 resulting in severe traffic congestion throughout the Orlando metropolitan area. Congestion and delays on I-4 and the parallel arterial highways is now considered the major transportation problem facing the region.

This section presents a summary of the results of the existing (1996) and design year (2020) traffic analyses for the I-4 improvements from SR 528 (Bee Line Expressway) in Orange County to SR 472 in Volusia County, as well as the No-Build scenario. A *System Access Modification Report (SAMR)* (April 2000) and *SAMR Update* (May 2002) have been prepared that also include opening year (2000) and mid-year (2010) analyses.

6.1 EXISTING TRAFFIC CONDITIONS

6.1.1 Existing Traffic Data

The existing (1996) traffic volumes were obtained from an extensive traffic count program conducted by FDOT. The count program included conducting 24-hour automatic traffic recorder counts on the Interstate mainline and each ramp within the project limits. Intersection turning movement counts were also conducted at each ramp terminal intersection and at adjacent intersections within ½ mile of each interchange. Peak hour design volumes were then derived from the existing volumes. These design hour volumes were then used to conduct a series of traffic operations analyses to establish the baseline existing conditions.

6.1.2 Existing Operating Conditions

Traffic capacity analyses were performed to ascertain the existing (1996) operating conditions and levels of service along the I-4 corridor and the interchanging arterials. The freeway analyses include ramp merges and diverges, weaving sections and basic freeway segments. The intersection analyses include ramp termini and intersections adjacent to the ramp termini for the various cross streets along I-4.

6.1.3 Existing Year (1996) Analyses Results

Capacity analyses were conducted for the existing freeway, intersections and cross street ramps. These analyses were conducted using the procedures outlined in the *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 1994. The following sections summarize the results of the capacity analyses for the existing year. A description of the analyses and results is provided in the *SAMR* (April 2000) and *SAMR Update* (May 2002).

6.1.3.1 Freeway Analyses

The following bullets summarize the results of the basic freeway segment analyses for the existing conditions:

- ◆ 23 basic freeway segments analyzed
- ◆ 2 operate at LOS D or better
- ◆ 4 operate at LOS E
- ◆ 17 operate at LOS F

The bullets below summarize the results of the ramp junction analyses for the existing conditions:

- ◆ 98 ramp junctions analyzed
- ◆ 22 operate at LOS D or better
- ◆ 2 operate at LOS E
- ◆ 74 operate at LOS F

Both the major merge/diverge locations operate under capacity.

The weaving analyses conducted for the existing conditions are summarized in the following bullets:

- ◆ 5 weaving sections analyzed
- ◆ 1 operates at LOS D
- ◆ 2 operate at LOS E
- ◆ 2 operate at LOS F

The existing volumes and levels of service are shown in Figure 6.1.3.1.

6.1.3.2 Intersection Analyses

The following bullets summarize the results of the existing conditions intersection capacity analyses:

- ◆ 91 intersections analyzed
- ◆ 51 operate at LOS D or better in both peak periods
- ◆ 15 operate at LOS E or F during at least one peak period
- ◆ 25 operate at LOS E or F during both peak periods

The intersection volumes and levels of service are shown in Figure 6.1.3.1.

6.1.3.3 Cross Street Ramp Analyses

Most of the cross street ramps and weaving sections operate at acceptable levels of service. Of the 20 ramp junctions, all operate at acceptable levels of service. Of the 20 major merge/diverge locations, two operate over capacity and the remaining 18 operate under capacity. Three of the six cross street weaving sections operate at LOS F, one operates at LOS E and the remaining two operate at LOS D or better. Figure 6.1.3.1 illustrates the cross street ramp volumes and levels of service.

6.1.3.4 Link Analyses

The levels of service for the interchanging cross streets were derived from the intersection analyses performed for the ramp termini and adjacent intersections. Just over half of the links operate at an acceptable level of service. Of the 54 links, 30 operate at an acceptable level of service and the remaining 24 operate at either LOS E or F.

6.2 MULTI MODAL TRANSPORTATION CONSIDERATIONS

The project corridor is served by several alternative travel modes including public and private transit services; railroad lines with freight and passenger rail service; airports; ports; Park & Ride facilities; bikeway, greenway and trail facilities; and pedestrian facilities.

6.2.1 Existing Multimodal Services

6.2.1.1 Existing Transit Services

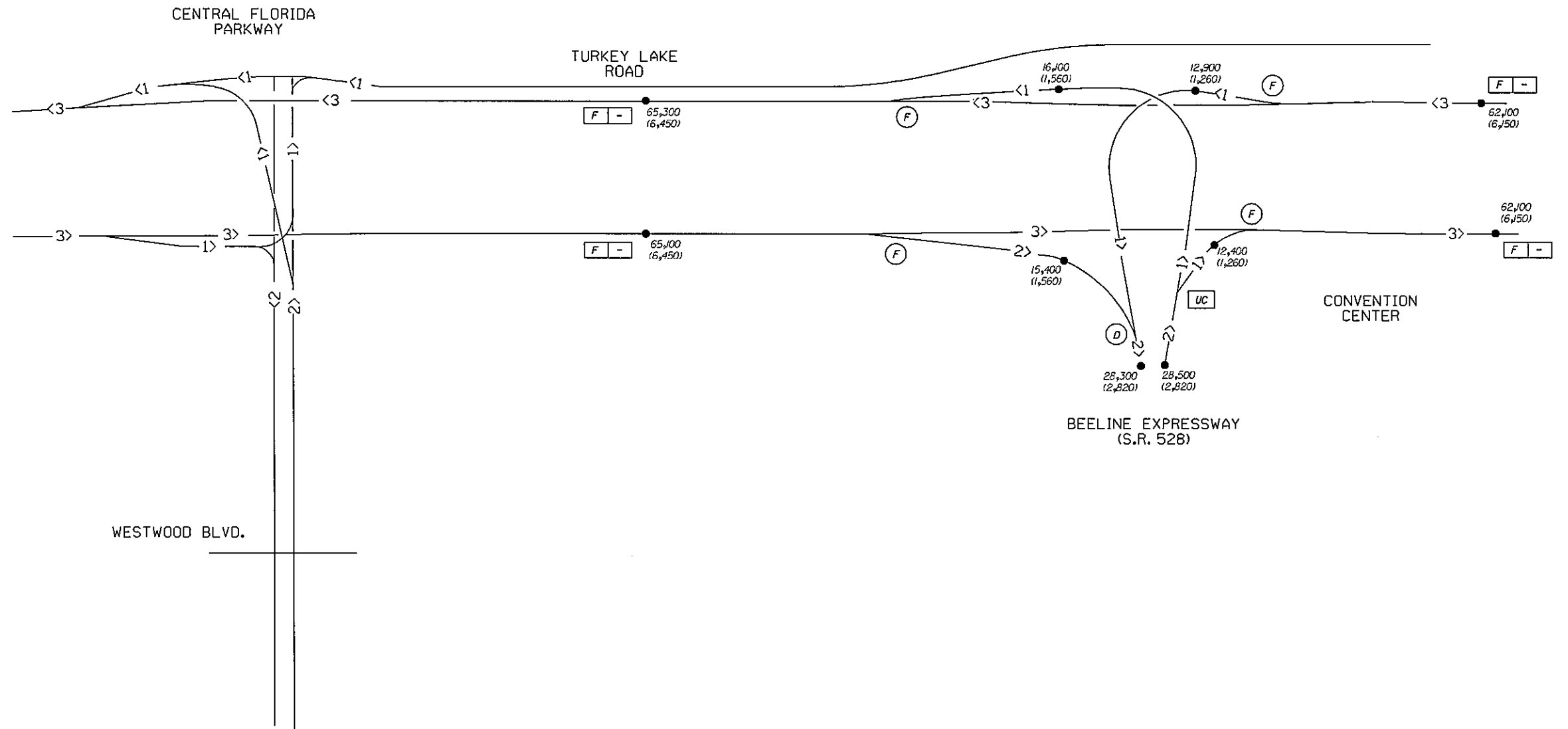
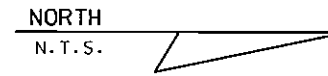
Existing transit services within the Ultimate project and Preferred Alternative study area include LYNX, VoTran and several private transportation providers.

LYNX

LYNX provides public transportation service within Orange, Seminole and Osceola Counties. LYNX, an agency of the State of Florida, was created in 1989 by the Florida Legislature to plan, design, construct, maintain and operate public regional bus and rail service in the three-county east central Florida region.

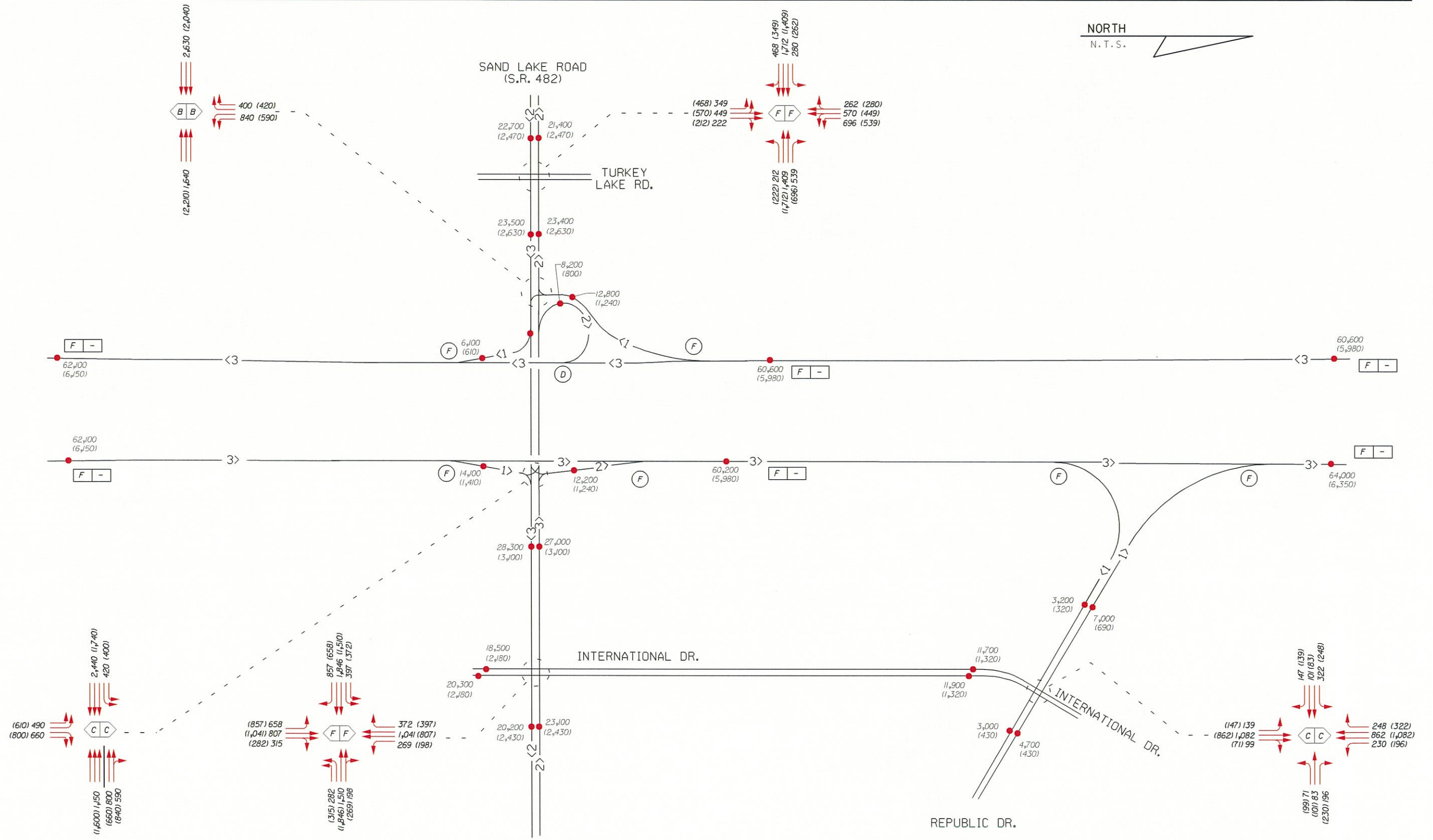
The existing LYNX transit system consists of 57 bus routes that link residential areas with major employment sites, downtown Orlando, hospitals and shopping centers. Service on these routes is provided using a fleet of 222 buses. Figure 6.2.1.1.1 illustrates the LYNX service area.

Other services provided by LYNX include the Mobility Assistance Program and paratransit services. The Mobility Assistance Program includes operation of a computerized matching program for carpools and vanpools



| LEGEND | | | |
|--------|---|-------|--|
| <1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | | (000) | = DDHV (Freeway / Ramps / Arterial) |

Figure 6.1.3.1
Existing Volumes & Levels of Service



LEGEND

| | | | | | | |
|----|------------------------------------|-----|---|-------|---|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity | |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) | (000) | = DDHV (Freeway / Ramps / Arterial) | |

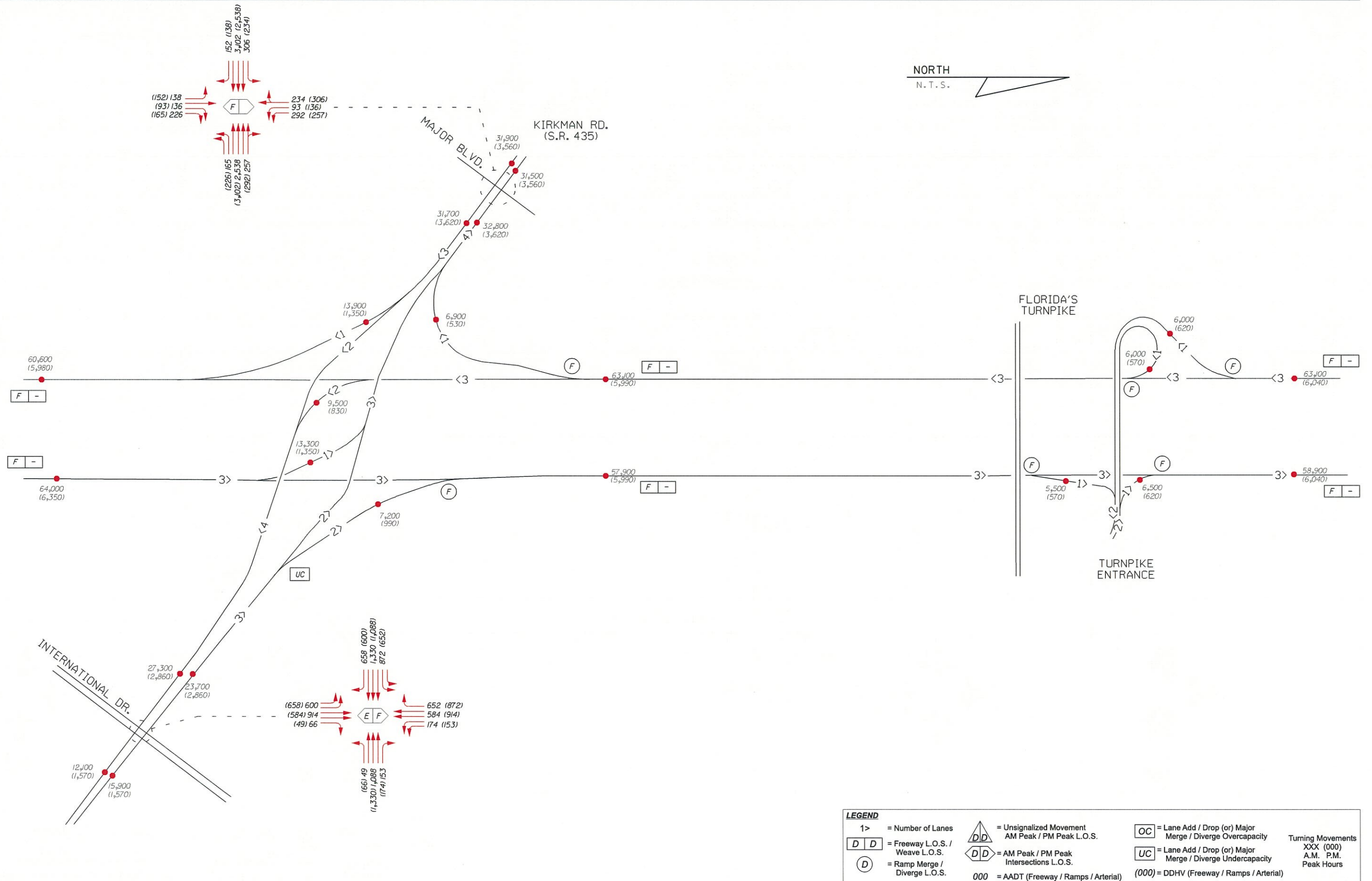
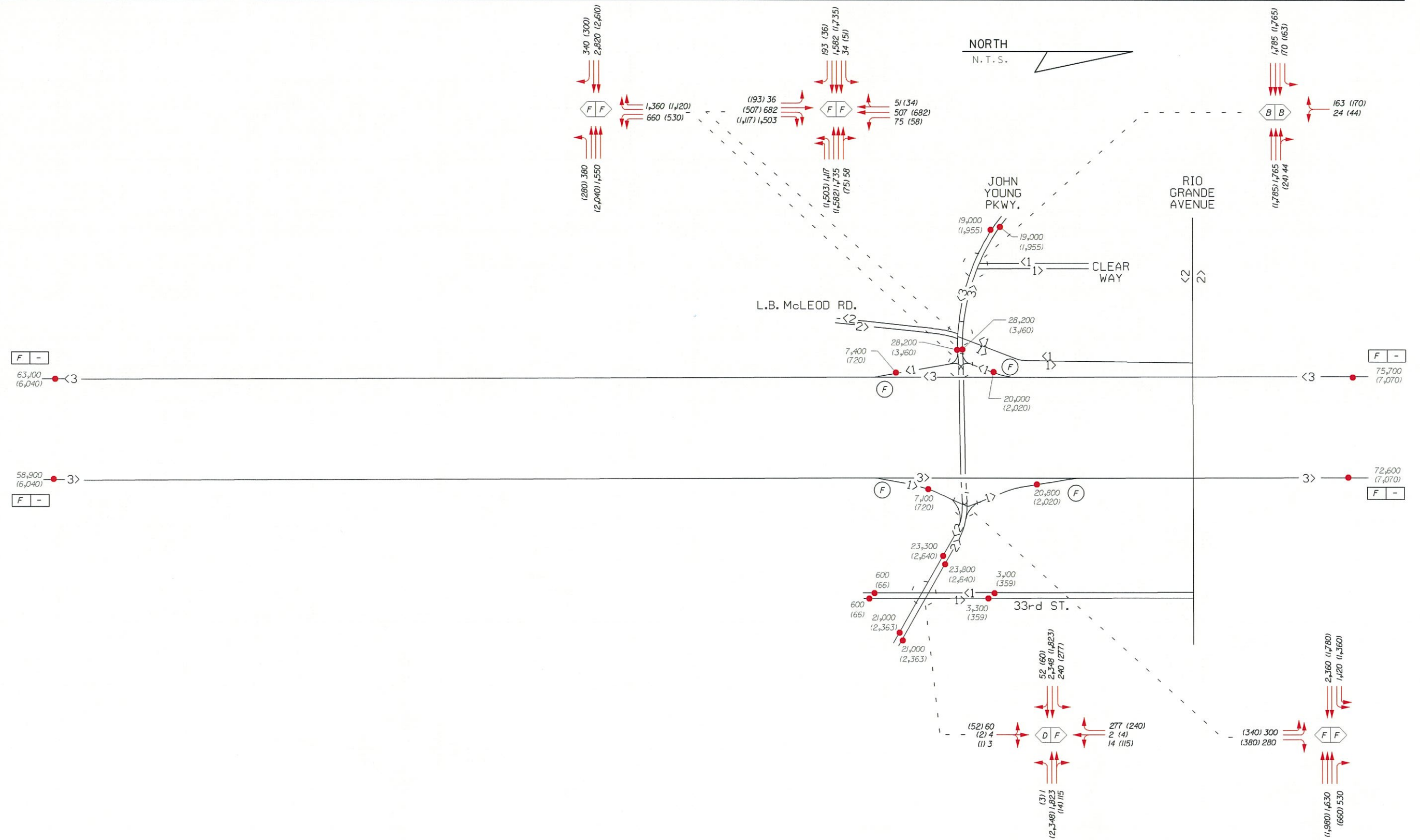


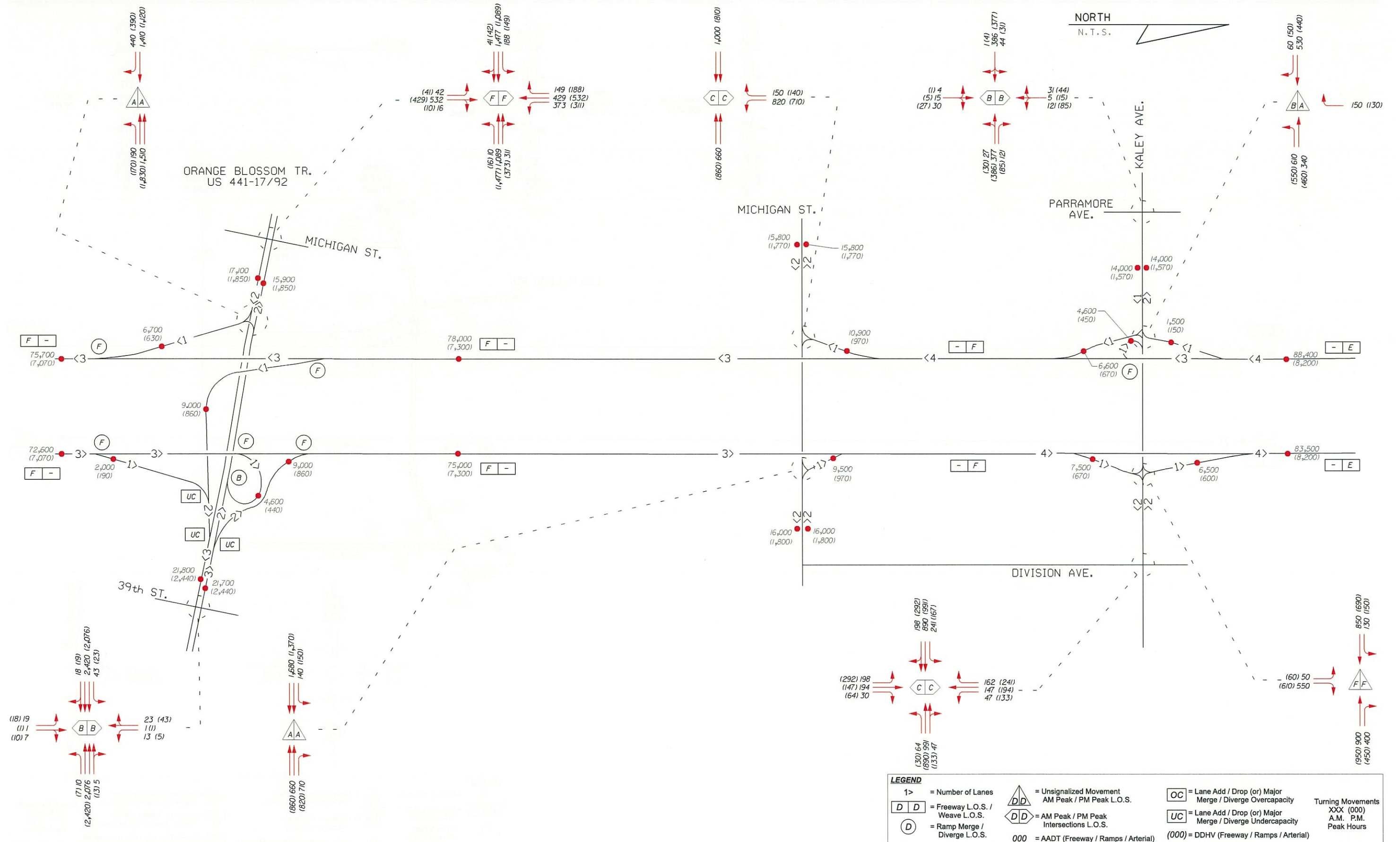
Figure 6.1.3.1
Existing Volumes & Levels of Service

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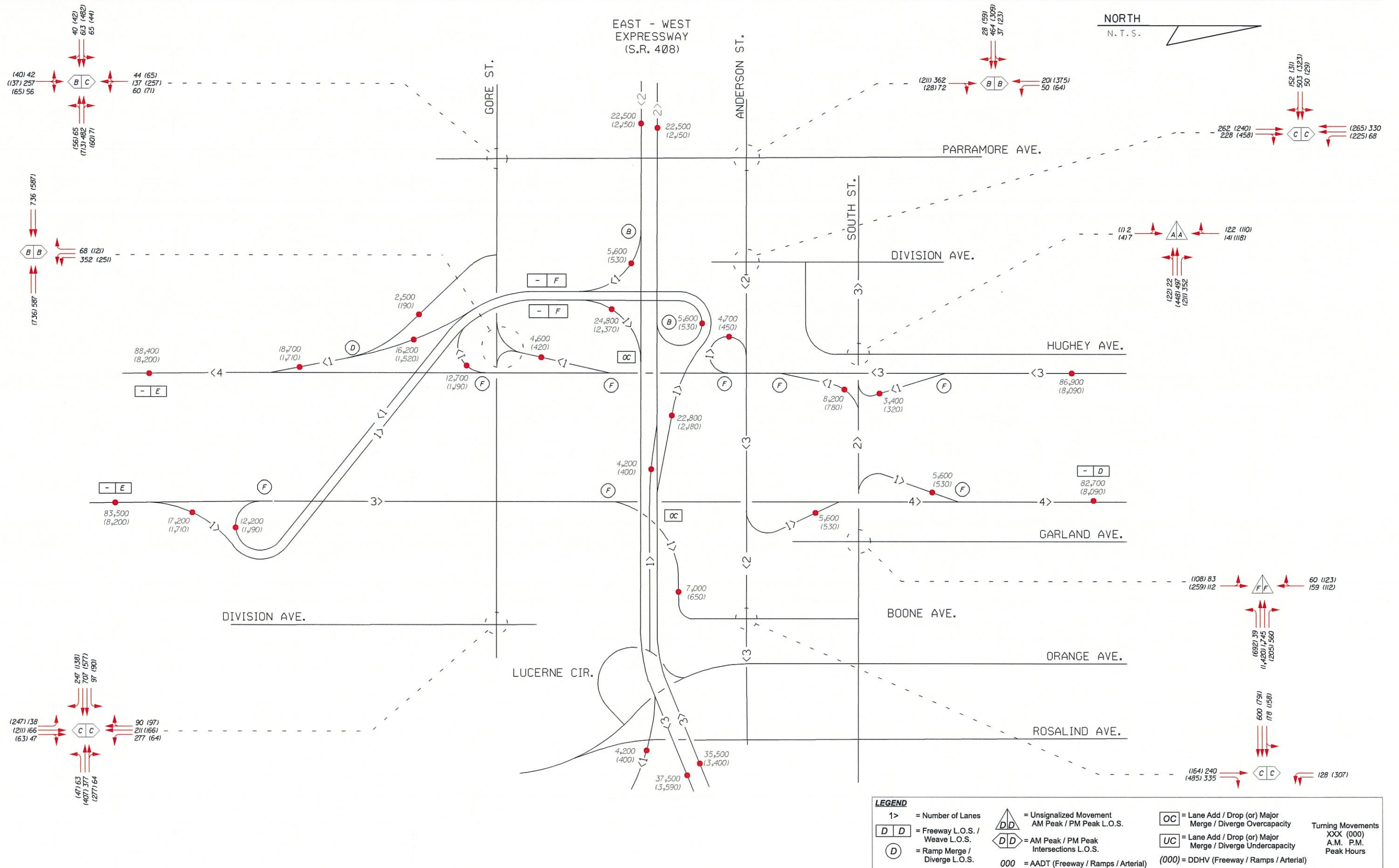
LEGEND

| | | | | | | |
|----|---------------------------------|-----|--|-------|--|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity | |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) | (000) | = DDHV (Freeway / Ramps / Arterial) | |



| LEGEND | | | |
|--------|---|--|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity |
| | | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | 000 = AADT (Freeway / Ramps / Arterial) | | 000 = DDHV (Freeway / Ramps / Arterial) |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |

Figure 6.1.3.1 Existing Volumes & Levels of Service



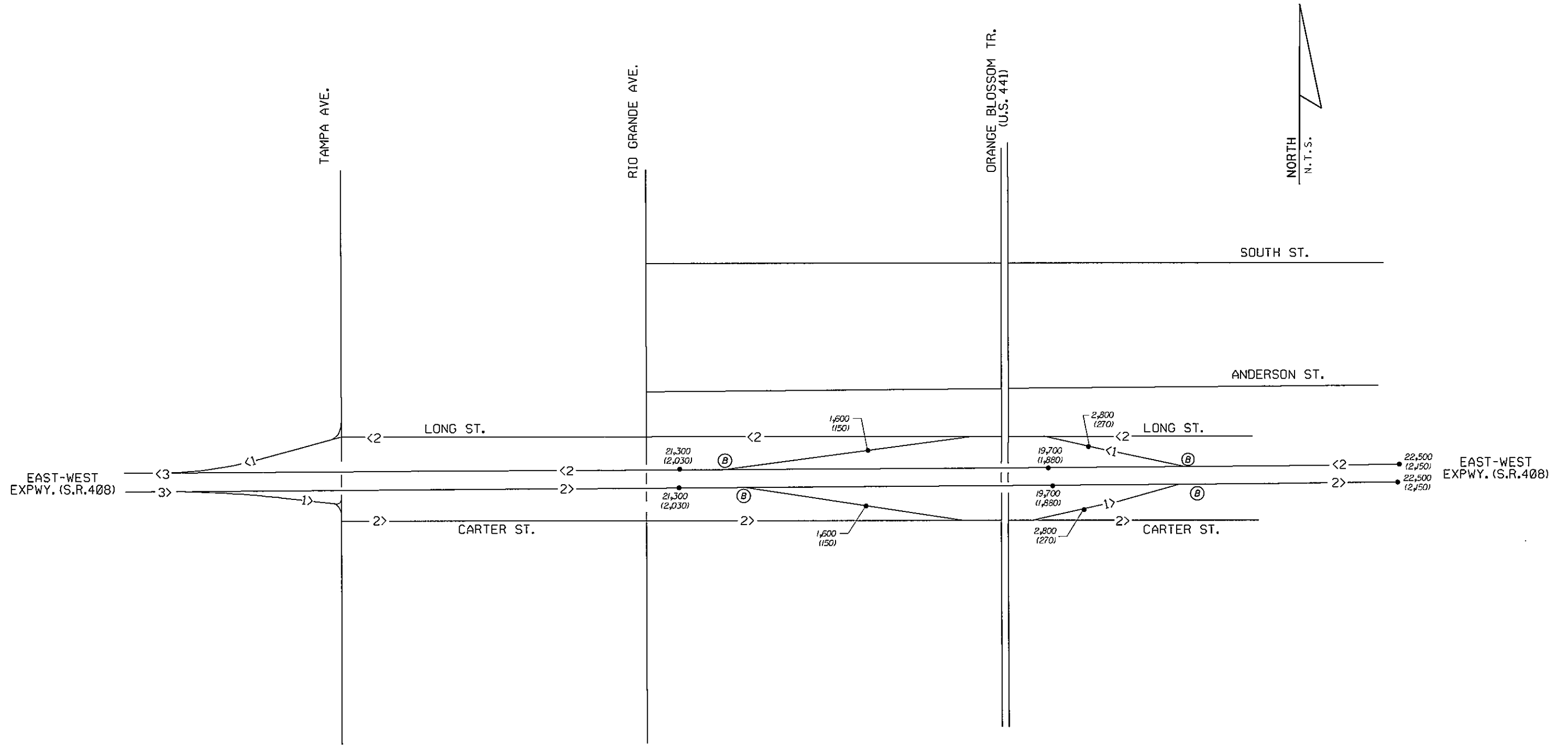
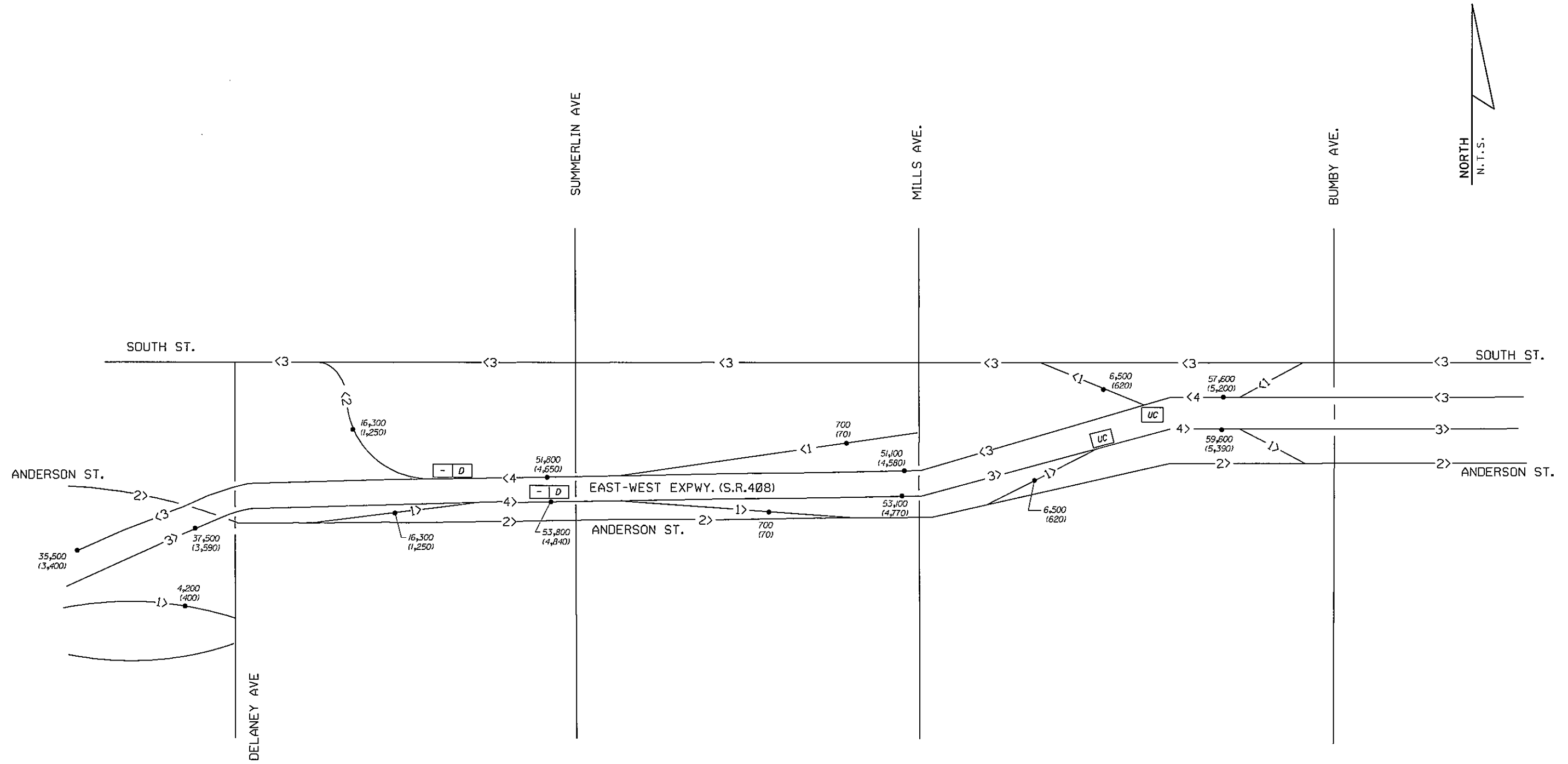


Figure 6.1.3.1
Existing Volumes & Levels of Service

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| LEGEND | | | |
|--------|--|-----|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | | | (000) = DDHV (Freeway / Ramps / Arterial) |



| LEGEND | | | |
|--------|--|-----|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
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| | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | | | (000) = DDHV (Freeway / Ramps / Arterial) |

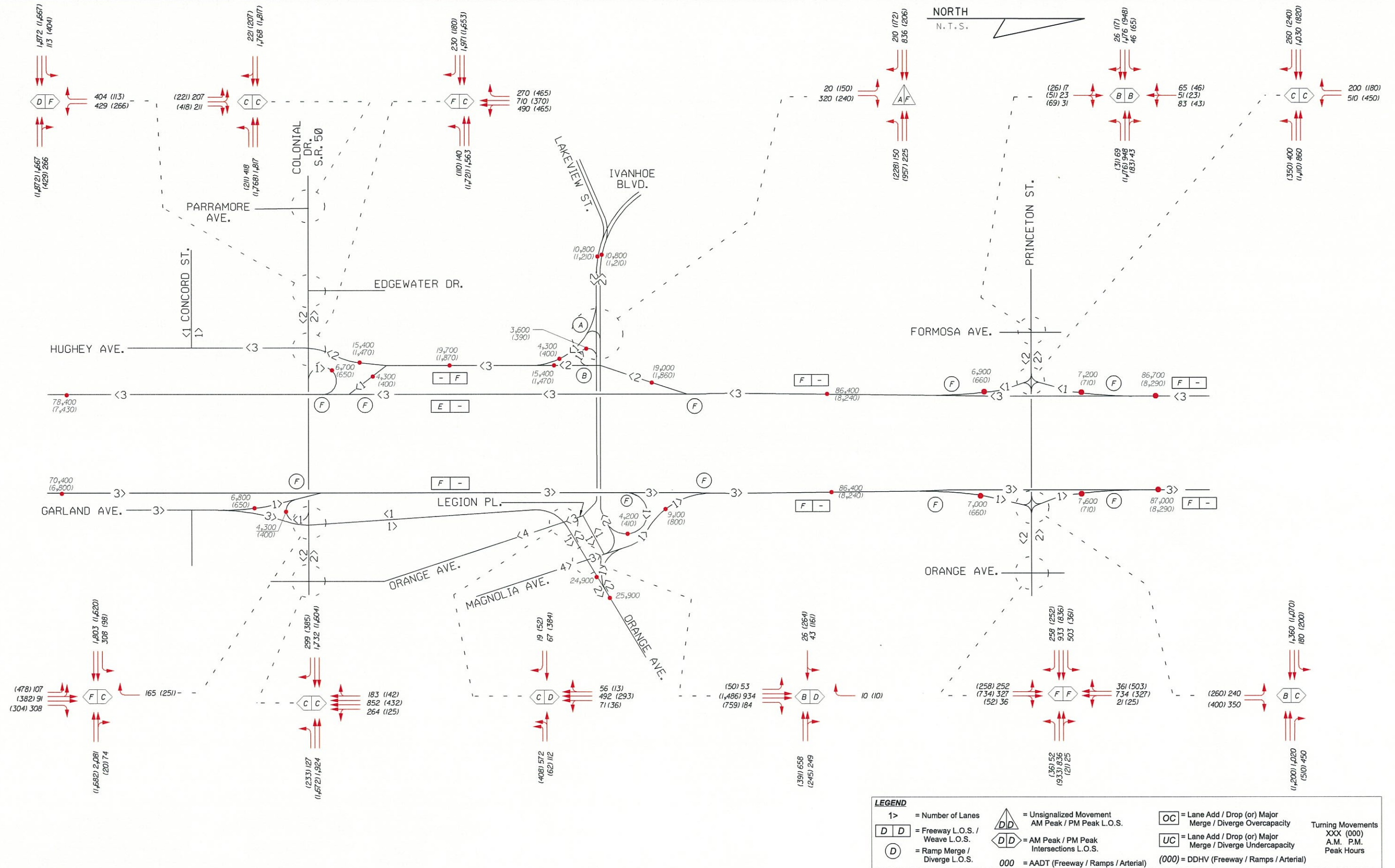
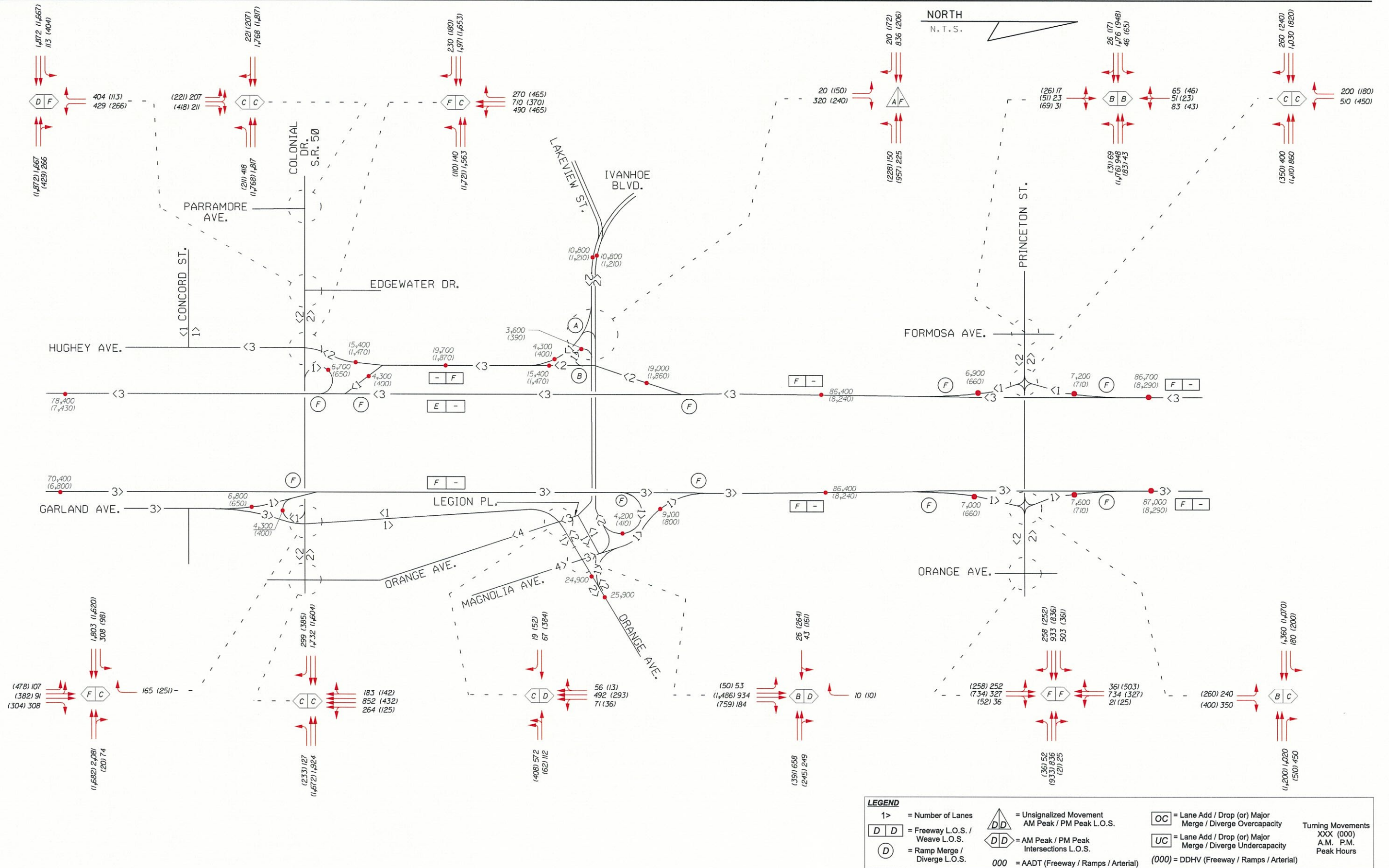


Figure 6.1.3.1
Existing Volumes & Levels of Service



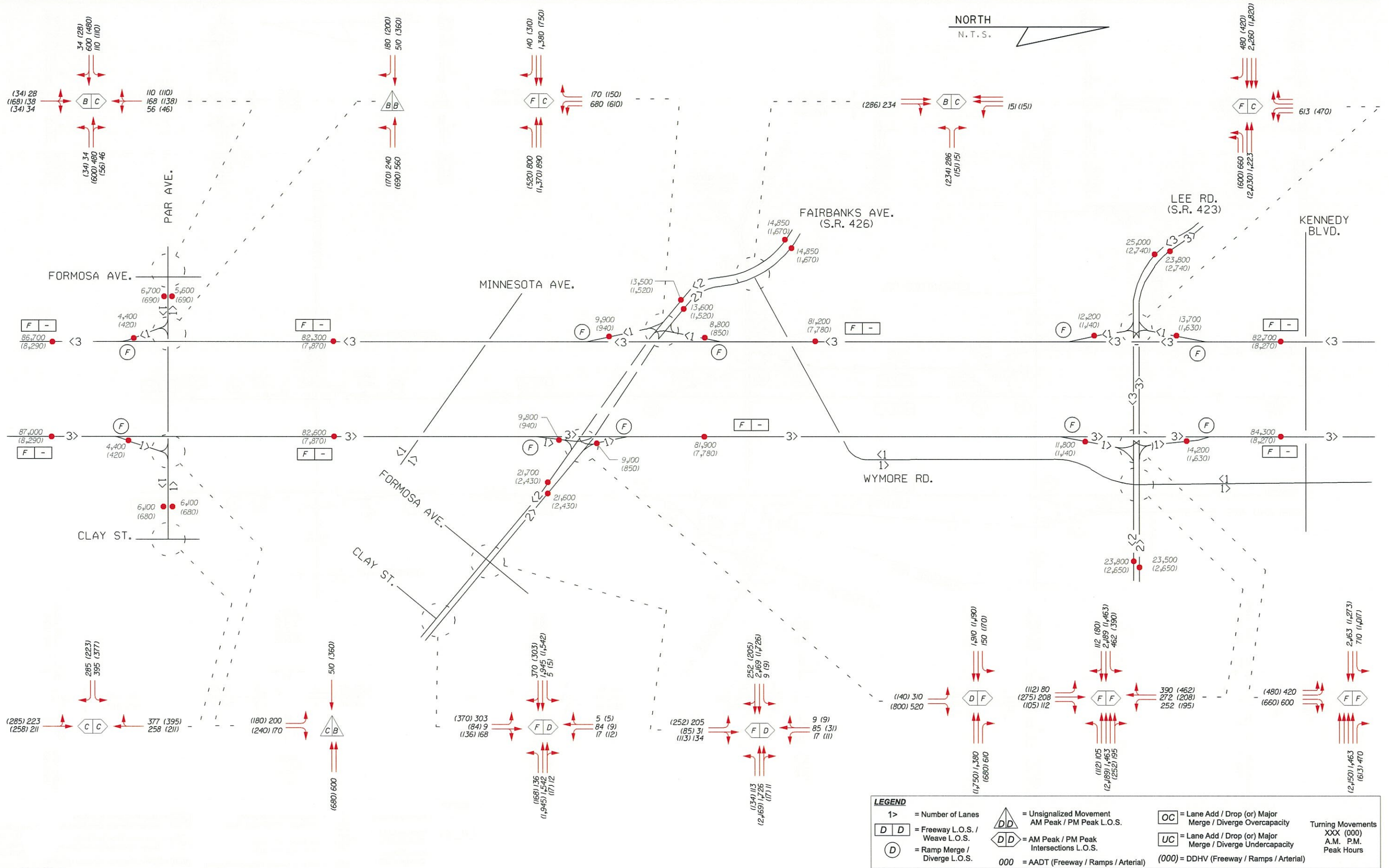
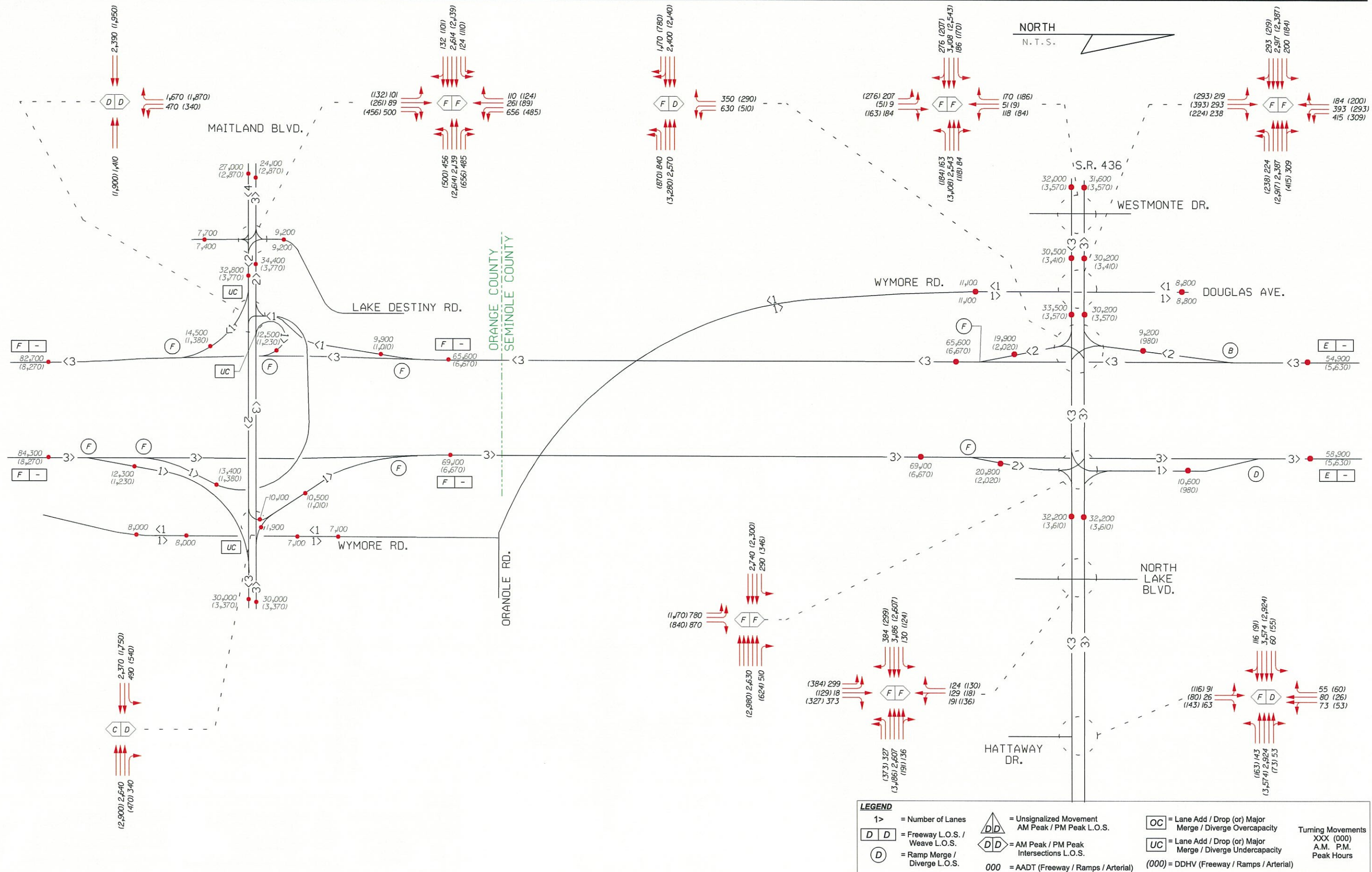


Figure 6.1.3.1
Existing Volumes & Levels of Service

I-4 PD&E Study - Section 2



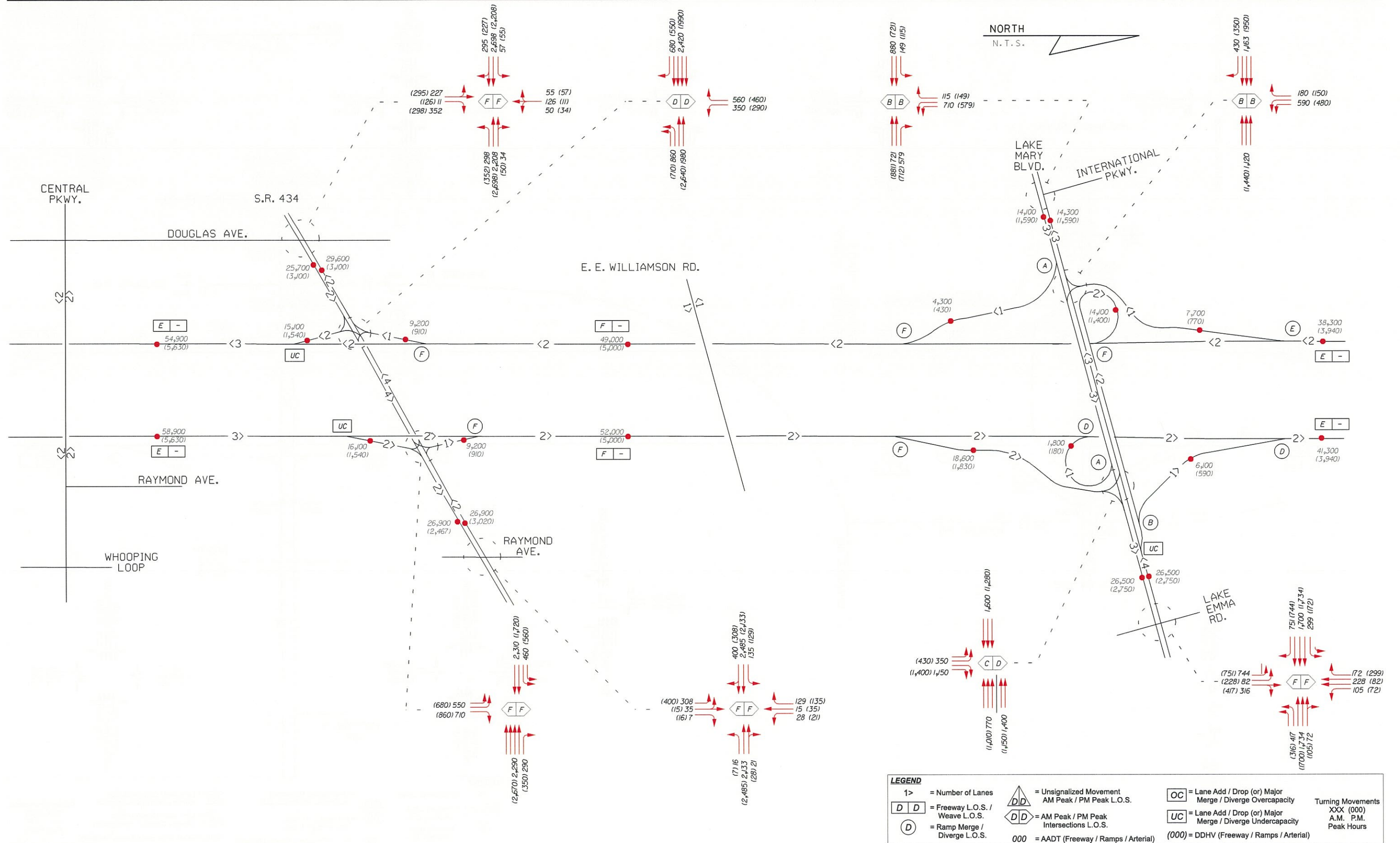
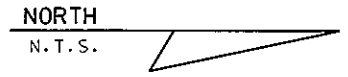


Figure 6.1.3.1
Existing Volumes & Levels of Service



| LEGEND | | | |
|--------|---|-----|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours (000) = DDHV (Freeway / Ramps / Arterial) |

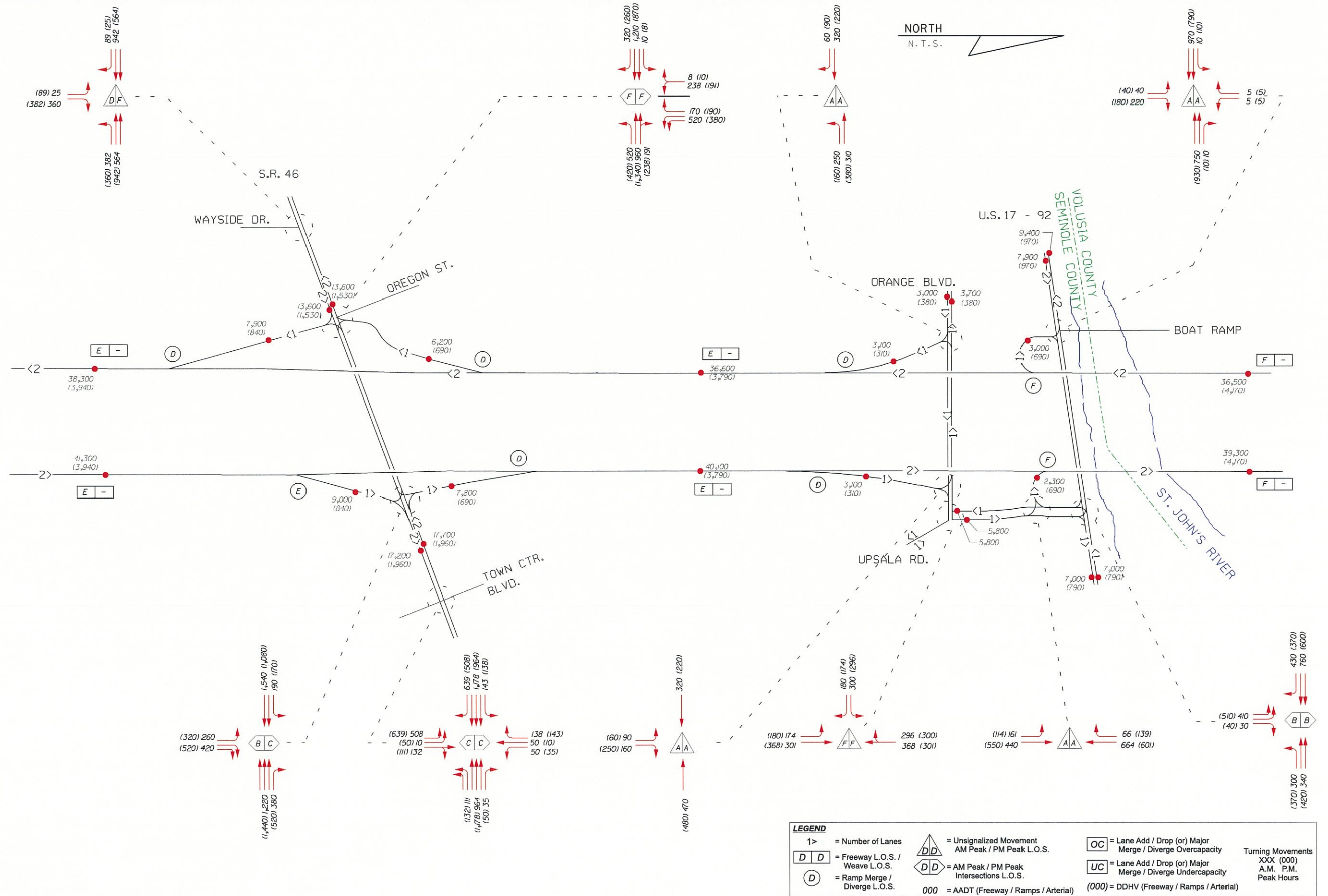
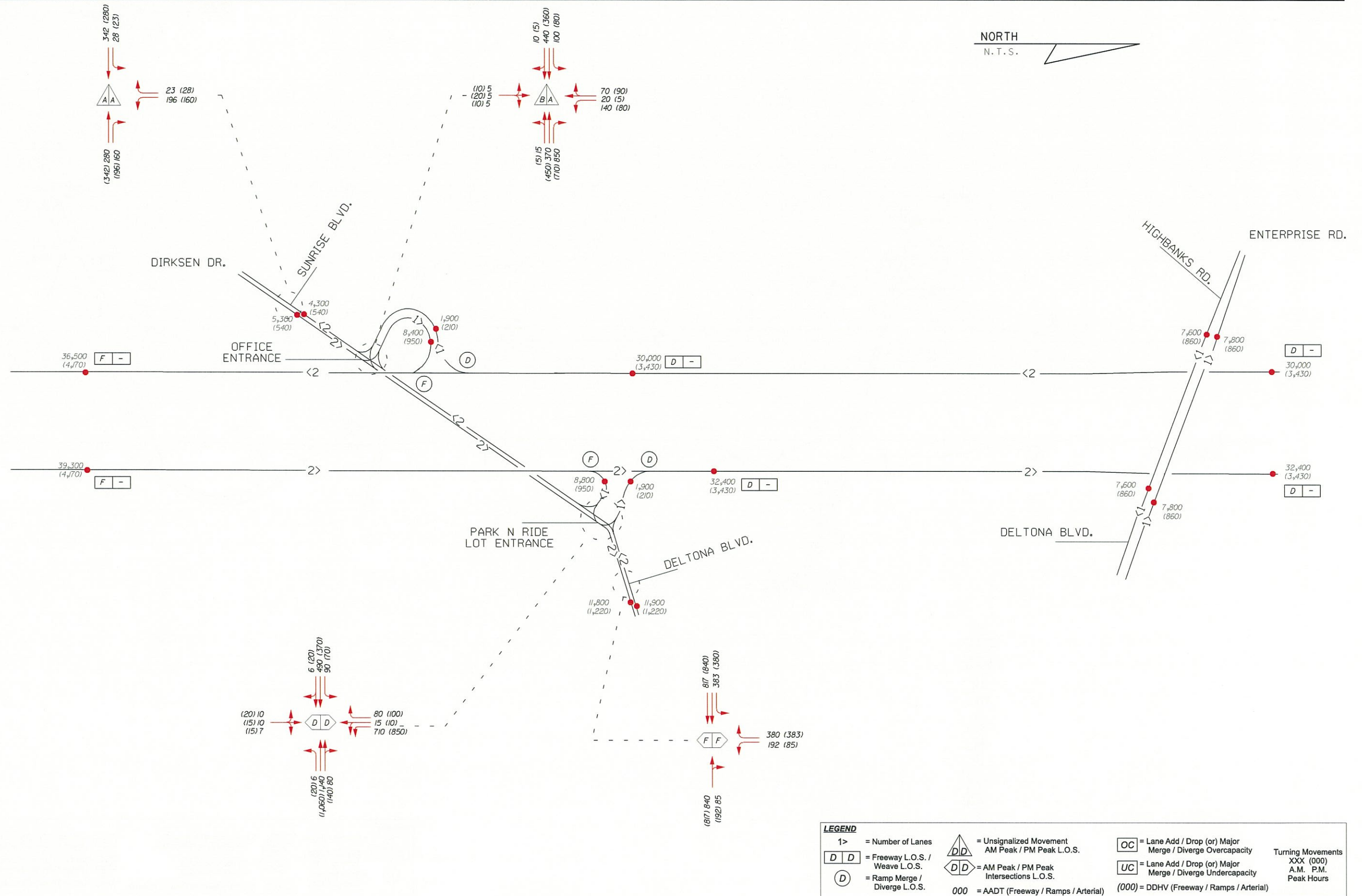


Figure 6.1.3.1
Existing Volumes & Levels of Service



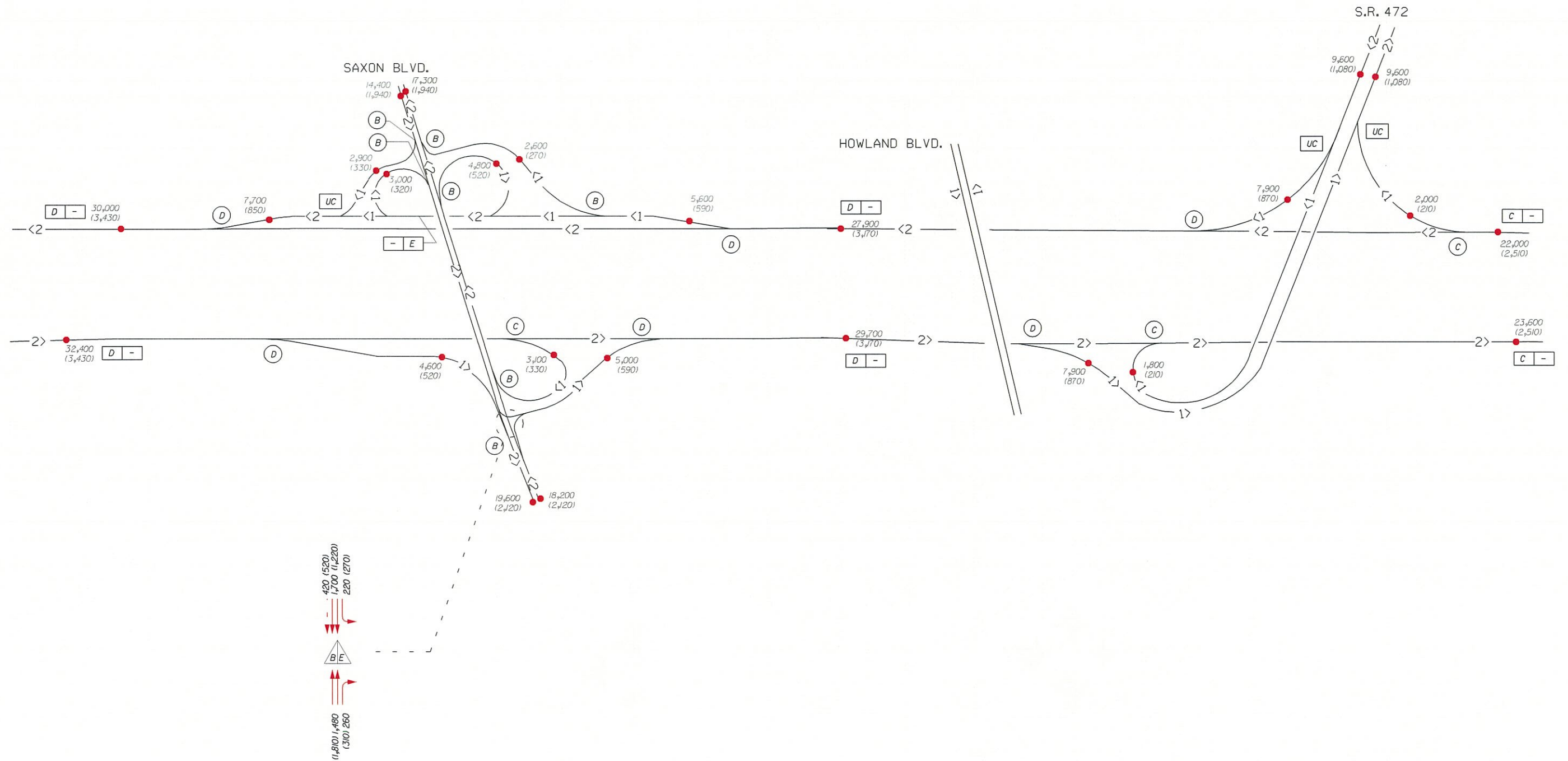
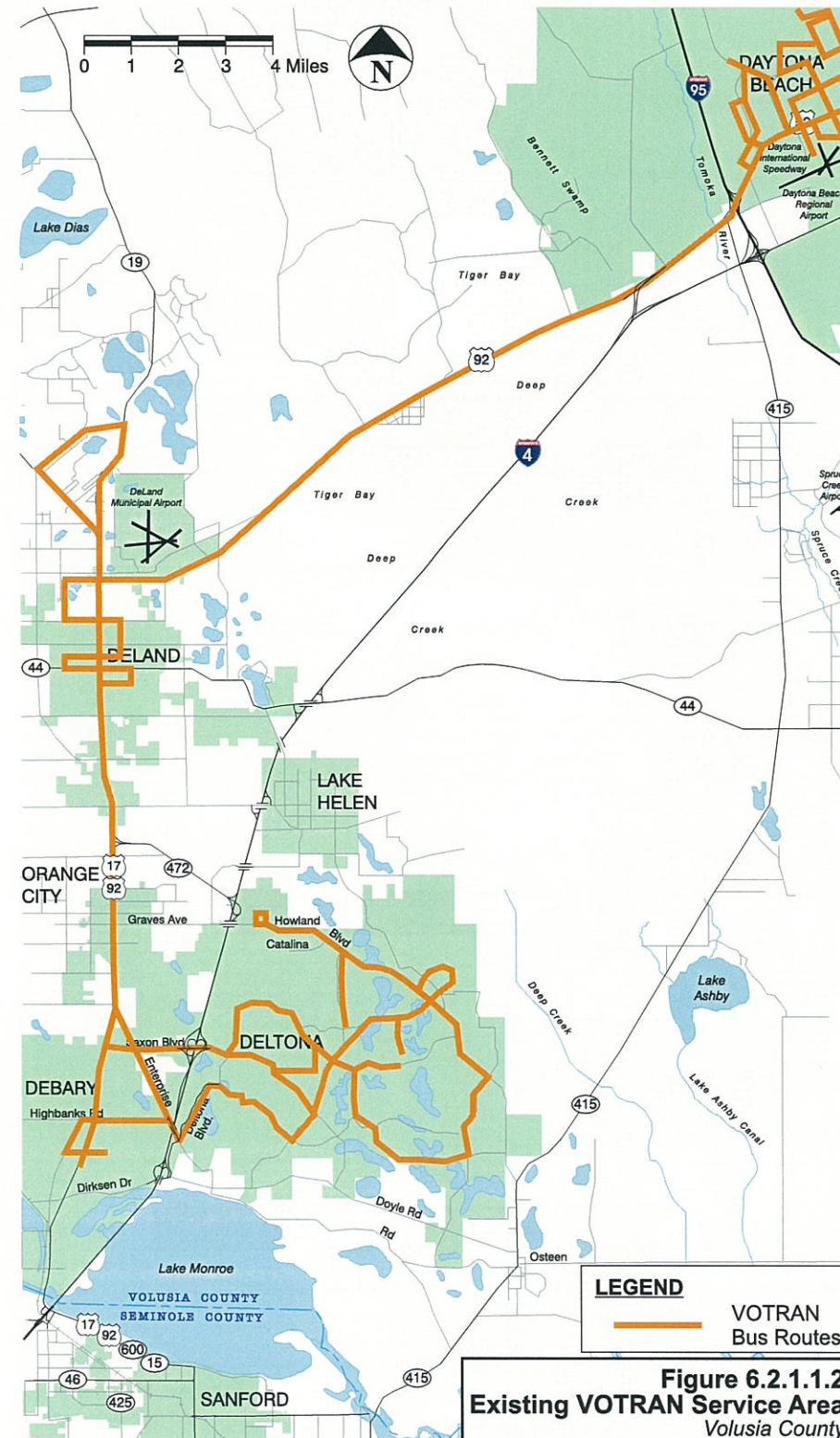
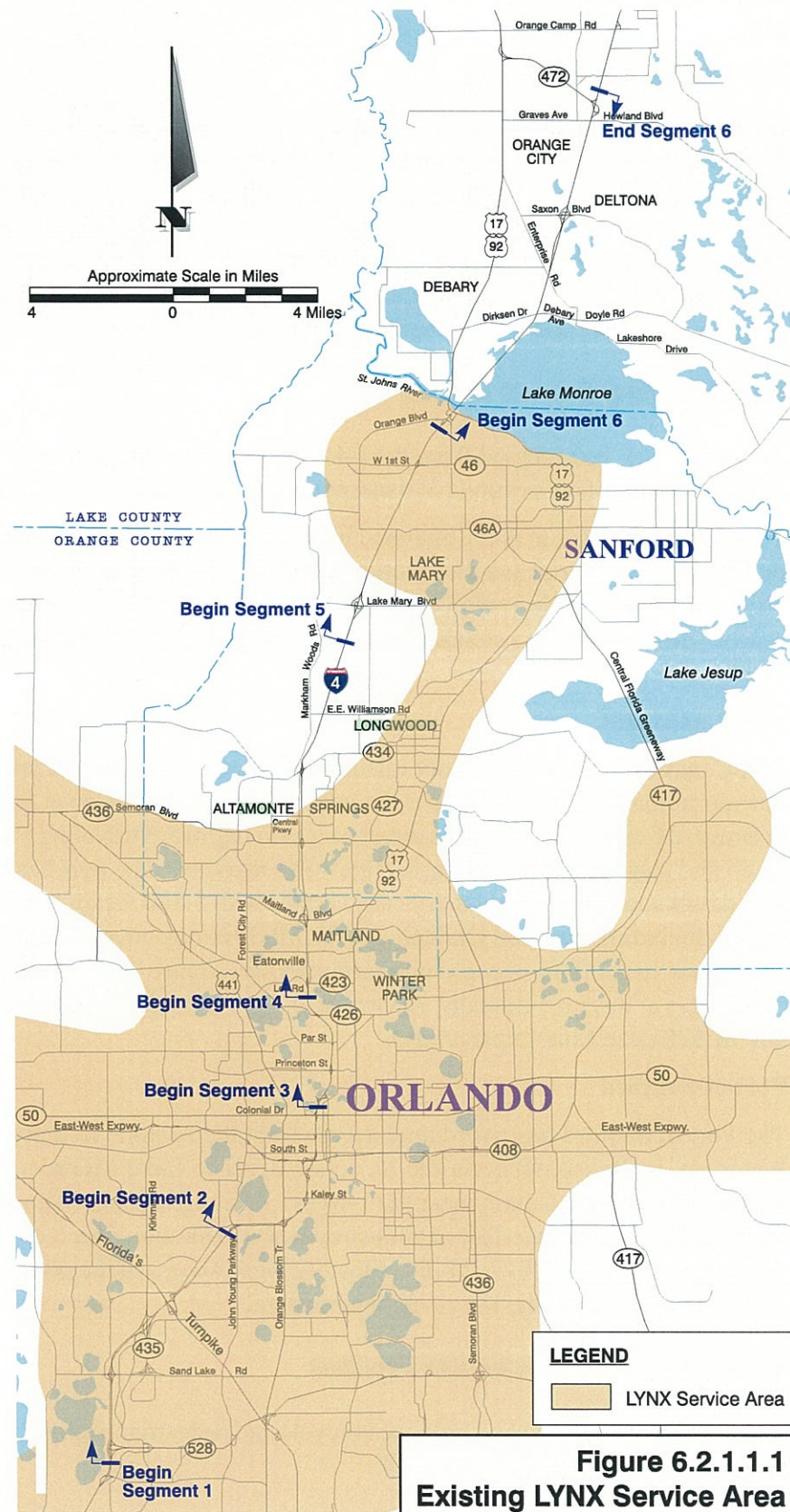


Figure 6.1.3.1 Existing Volumes & Levels of Service

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and a van-leasing program. Also included under the Mobility Assistance Program is a school pool matching service for parents who drive their children to school and a highway helper program, which provides assistance to stranded motorists on I-4.

VoTran

VoTran provides public transportation service within Volusia County and is a countywide, tax-supported public transit system that began operations in 1975. The existing system consists of a fleet of 49 fixed-route buses, four rubber tire trolleys and 38 paratransit units. VoTran’s existing service area within the project limits includes the municipalities of DeBary, Deltona and Orange City and is shown on Figure 6.2.1.1.2.

Other services provided by VoTran include VoTran Gold and the Commuter Assistance Program. VoTran Gold provides door-to-door transportation service for people who require personal special assistance and who are unable to use scheduled bus service. The Commuter Assistance Programs consist of Park & Ride facilities, rideshare matching, van pooling and a LYNX - administered express bus service to downtown Orlando called XL 200. The staging area for this service is the Park & Ride lot at the Saxon Boulevard interchange. There is another Park & Ride lot located at the Dirksen Drive/DeBary Avenue interchange.

Private Transportation Providers

Due to the high influx of tourists to the Central Florida area, there are a large number of private companies that provide specialized transit services. The LYNX 1996 Transit Development Plan (TDP) contains an inventory of most of the private transportation providers in Orange, Seminole and Osceola Counties. This inventory lists a total of 353 providers that offer an array of fixed route, charter, scheduled and non-scheduled services that transport tourists between Orlando International Airport, the International Drive Resort Area, Walt Disney World and other attractions. These private providers present a fleet of over 2,300 vehicles, with a reported ridership of 160,000 passengers weekly (23,000 daily).

Private transportation providers that serve west Volusia County include Med-Shuttle, TransMED and Daytona/Orlando Transportation Service (DOTS). Med-Shuttle and TransMED provide out-of-county Medicaid trips to Seminole and Orange Counties. DOTS provides shuttle service to and from Orlando International Airport.

6.2.1.2 Existing Rail Service

Existing railroad operations in the project corridor include both freight and passenger operations. The existing railroad network within the project study area was previously presented in Figure 4.1.13.1.

Freight Railroads

Both the CSXT Railroad and Florida Central Railroad (FCEN) provide rail freight operations in the project corridor. The majority of tracks in the network consist of the CSXT railroad main line through Orange, Seminole and Volusia Counties. The other CSXT railroad trackage in the Central Florida Region is the section currently leased to FCEN, which extends from downtown Orlando to the Orange/Lake County line with a branch to Ocoee.

Passenger Railroads

Amtrak provides passenger railroad services within the project corridor. Amtrak operates three daily round trips of the Miami-New York *Silver Service* through the corridor via track rights with CSXT Railroad.

6.2.1.3 Existing Airport Service

Three airports within the project study area offer convenient air travel for the tourism industry and business travelers. Their locations are shown on Figure 6.2.1.3.1. The following is a summary of the existing services offered by each of the airports.

Orlando International Airport

Orlando International Airport (OIA), located in the city of Orlando, is the fastest growing major international airport in the world, ranking it the 16th busiest in the nation and 24th busiest in the world. OIA is the fourth largest port of entry for international visitors in the continental United States. It schedules service to 33 international destinations and has scheduled non-stop service to 75 domestic U.S. destinations. Cargo tonnage at OIA has increased an overall 73.9 percent since 1990, including a 371.8 percentage increase in international cargo and an increase of 58 percent in domestic cargo. Nearly 28 million passengers were served at OIA in 1999 with 94 gates, including more than 400 arrivals and departures daily. Only 30 percent of the 15,000 acres of land owned by the airport is currently developed. Access to OIA from the I-4 corridor is via SR 528 (Bee Line Expressway).

Orlando-Sanford Airport

Orlando-Sanford Airport, located in the City of Sanford, has expanded to become the third busiest international port of entry in Florida. Expansion has included the enlargement of the domestic terminal and the opening of an international complex. The two-story international terminal can handle up to 1,000 incoming passengers per hour. The airport boasted an increase in charter arrivals and departures from 50,000 in 1995 to 1.1 million in 1997. The airport has a Federal Aviation Authority Air Traffic Control Tower and three paved runways, with the main runway providing an all-weather, Category I approved instrument approach. The airport also houses a 150-acre industrial park serving aviation and non-aviation industries.



**Figure 6.2.1.3.1
Regional Airport Locations**

Rail service is available to the western sector of the park. Access to Orlando-Sanford Airport from the I-4 corridor is via Lake Mary Boulevard or CR 46A.

Orlando Executive Airport

Orlando Executive Airport, located about two miles east of downtown Orlando, is the 25th busiest general aviation airport in the United States. Services include providing for personal and corporate flying needs, flight instruction, aircraft sales and rentals, maintenance, charter, storage and air ambulance services. Federal Aviation Authority offices are also located on-site at this airport. Access to Orlando Executive Airport from the I-4 corridor is via SR 408 (East/West Expressway).

6.2.1.4 Existing Seaport Service

Two ports may be accessed from the I-4 corridor, Port Canaveral and the Port of Sanford. The locations of these ports is shown on Figure 6.2.1.4.1.

The existing services at Port Canaveral include dry and liquid cargo, cruise facilities and industrial and distribution space. The existing services at the Port of Sanford include a small craft marina and industrial and distribution space. The following is a summary of the existing services offered at each facility.

Port Canaveral

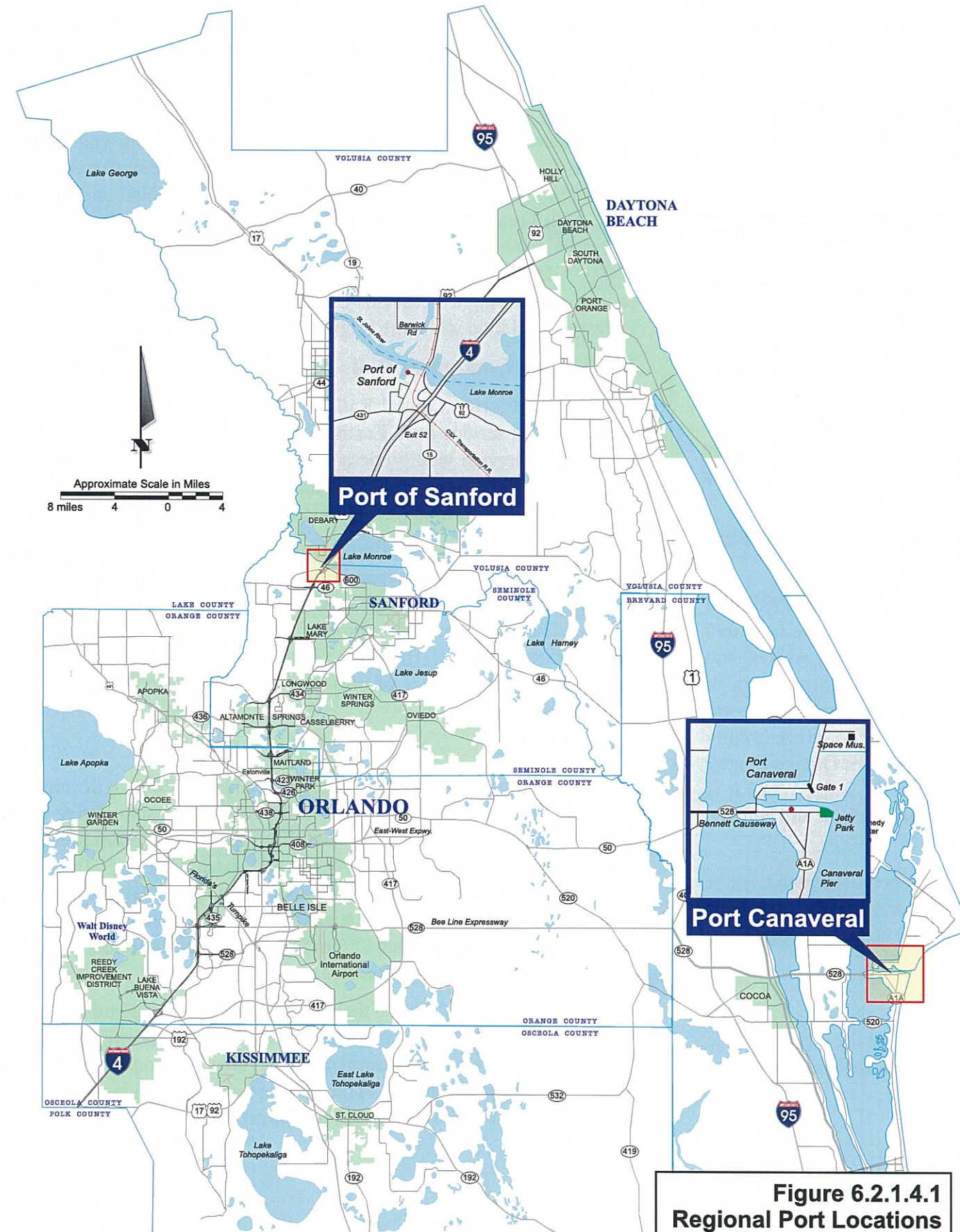
Port Canaveral, the world's only quadramodal (sea, land, air and space) transportation hub, is located 50 miles east of Orlando, near Cocoa Beach in Brevard County. This port has direct access to highways traveling north/south and east/west, connecting to state-wide markets. The port has two liquid bulk facilities and eight dry cargo berths with 3,800 feet of berthing space - including two Roll On/Roll Off (RO/RO) ramps - available for its customers. In addition, seven cruise terminals serve more than 1.6 million passengers at this port annually. Access to the port from the I-4 corridor is via SR 528 (Bee Line Expressway).

Port of Sanford

The Port of Sanford has river barge access from the Atlantic Intercoastal Waterway in Jacksonville via the St. Johns River to Lake Monroe. It is located in Seminole County near the I-4/US 17-92 interchange. This port includes 250,000 square feet of industrial and distribution space, a 350-foot main pier and a 100-foot bulk unloading pier. Access to the port from the I-4 corridor is via the US 17-92 interchange.

6.2.1.5 Bicycle and Pedestrian Facilities

A discussion of existing and proposed bicycle and pedestrian facilities can be found in Sections 4.1.3 and 4.1.4.



**Figure 6.2.1.4.1
Regional Port Locations**

6.2.2 Future Multimodal Services

6.2.2.1 Future Transit Services

LYNX and VoTran have plans to increase transit services within the project study area. The following paragraphs provide a discussion of the proposed service and facility improvements transit providers plan to make.

LYNX

The short range transit plan in LYNX's *TDP FY 2001 Update* contains proposed service and facility improvements. The following is a summary of proposed improvements:

- ◆ Peak bus requirement increase to 244, resulting in a total fleet of 293 buses (with a 20 percent spare ratio) by FY 2005.
- ◆ Expansion and replacement of vans for the commuter van program.
- ◆ Eleven transit centers/super stops (on-street stops with additional passenger amenities where several routes stop).
- ◆ Twelve Park & Ride lots to serve planned express bus routes, including passenger shelters and 100 to 150 parking spaces.
- ◆ Proposed downtown Orlando intermodal facility, which will replace the existing downtown bus station.
- ◆ Sanford Intermodal Center for bus, rail, and private sector transportation.
- ◆ Three new garages for bus storage and/or maintenance.
- ◆ Passenger amenities including shelters, signage, benches, information kiosks, vending machines, and other conveniences.
- ◆ Corridor Express Services including the design, construction, and operation of services and facilities related to FDOT HOV lanes.
- ◆ Community circulator services including the design, development, and implementation of flexible fixed route transit bus service.
- ◆ The use of intelligent transportation systems.

In addition, LYNX is proposing an ITS Flex Bus Circulator for north Orange and Seminole Counties.

The circulator would connect activity centers in suburban North Orange/ Seminole Counties and take advantage of traditional Bus Rapid Transit (BRT) - a system that provides high-frequency reserve lanes, signal priority, a high level of amenities and ease of use - with the added benefit of serving pre-designated secondary off-route locations on demand. The preliminary estimated costs are \$23.8 million (capital) and \$3.3 million (annual operations and maintenance). A feasibility study validated the ITS Flex Bus Circulator and recommended implementing connecting centers in

Altamonte Springs and Maitland Center or West Town Center as the first phase. The LYNX Board of Directors will select a consultant for the Project Development and Environmental Study and Engineering Design in May (the study will begin in June and should be completed by mid-2003). Service is projected to launch in 2006.

VoTran

VoTran has identified various programs for implementation within the 1999 to 2002 *Transit Development Plan*, FY 1999 Update. The proposed multi-modal programs are identified below:

- ◆ Identify appropriate locations for Park & Ride lots and implement express bus service.
- ◆ Increase or implement superstops for west and southeast Volusia County.
- ◆ Continue replacement and new vehicle expansion.
- ◆ Conduct complete bus stop inventory.
- ◆ Provide information kiosks at major transfer centers.
- ◆ Construct light maintenance facility in west Volusia County.
- ◆ Increase frequency and extended trolley service into downtown Daytona.
- ◆ Implement Route 7 extension.
- ◆ Implement new route on Clyde Morris Boulevard.
- ◆ Implement Saturday service on Route 18 connector.
- ◆ Implement west and southeast route deviation service.
- ◆ Increase frequency on VoTran's busiest routes.
- ◆ Access the opportunity for rail options in Volusia County.
- ◆ Implement Route 5 extension.
- ◆ Implement Route 12 extension.
- ◆ Implement higher frequency of service on Route 18 connector.
- ◆ Initiate later evening service on all routes.

The above transit improvements are planned to be implemented within the next five years.

6.2.2.2 Future Rail Service

There are several rail initiatives being proposed for the project area. There is an approved ROD for a light rail system in portions of the City of Orlando and Orange County; commuter rail is proposed to extend from DeLand to Kissimmee and from Eustis to Orlando; high speed rail is proposed from

Tampa to Orlando and the Orange County Convention Center to Port Canaveral along SR 528 (Bee Line Expressway); and Volusia County is currently preparing a rail feasibility study to examine rail options within the County. Rail options in Volusia County may include light rail and/or commuter rail. The following paragraphs provide a summary of the proposed rail initiatives within the project area.

Light Rail

The FTA, in consultation with the Central Florida Regional Transportation Authority (dba LYNX), has approved a ROD for the development of an LRT system in portions of the City of Orlando and Orange County. The project also includes the expansion of bus services to support the system. The project is known as the Central Florida Light Rail Transit System (CFLRTS) or LYNX LYNE. The limits of the CFLRTS project corridor extend from Central Florida Parkway (just south of Sea World) through downtown Orlando to the Loch Haven/Princeton Street area. The corridor is bounded by I-4 on the west and International Drive, SR 528 (Bee Line Expressway), and CSXT railroad on the east. The project corridor is approximately 16.33 miles in length.

A discussion of the CFLRTS project can be found in Section 9.29 of this report.

A study for a Supplemental Draft Environmental Impact Statement (SDEIS) has begun that will examine the alignments developed by the Northern and Southern Stakeholders Task Forces. LYNX and METROPLAN Orlando adopted the Northern Stakeholders Task Force recommendation to implement the Alden Road/I-4 alignment as the preferred alignment north of Orlando. The Southern Alignment Stakeholders Task Force is currently researching a southern alignment terminating at or near the Orange County Convention Center to be completed in the summer of 2002. When it is adopted by the LYNX and METROPLAN Orlando boards, it will become a part of the SDEIS effort.

A Financing Task Force will address the capital and operations/maintenance funding. The project will be positioned by September 2002 for submission as part of the re-authorization of the Federal enabling registration for surface transportation.

Commuter Rail

Two commuter rail initiatives are currently on-going in the region. These include the North/South Commuter Rail and the North/West Commuter Rail.

North/South Commuter Rail

The proposed project consists of approximately 55 miles of commuter rail service using existing CSXT Railroad tracks between DeLand, Orlando, and Kissimmee. The optimum service plan would provide seven through-

trips starting from DeLand and Kissimmee. Service would operate at a 30-minute frequency during the peak morning and afternoon commute times. LYNX was named project lead and grant recipient.

A Capacity Analysis determined that CSXT will use all current available track capacity resulting in a need for additional tracking and signaling systems for the project. A contract to perform an Alternative Analysis - documenting demand, operating requirements and capital and operating cost - will be awarded to a consultant selected by the LYNX Board of Directors at the March meeting (study should be completed by December 2002). Additionally, Representative John Mica has proposed an interim project using a single diesel-powered train on CSXT rails from DeLand or DeBary to Orlando while the original proposal moves forward.

North/West Commuter Rail

In 1999, the Florida Central Railroad (FCEN) developed a plan to run commuter rail service from Eustis to Orlando using 33 miles of existing freight rail. Service would operate at a 30-minute frequency and travel time would be 54 minutes. The preliminary estimated costs are \$64 million (capital) and \$3.5 million (annual operations and maintenance).

The FDOT sponsored a feasibility study to analyze the operating plans and requirements, travel demand, and operating and maintenance costs. The analysis concluded that the project is not competitive for federal funding. The FCEN revised the project based on the analysis and submitted a scaled-down proposal. However, the scaled-back service was not placed on the recommended list of projects by the Transportation Outreach Program committee.

High Speed Rail

Florida voters passed a constitutional amendment in 2000 to develop and operate high speed (125-150 mph) rail between the state's five major metropolitan areas. The coast-to-coast high speed rail system previously proposed by FDOT would initially provide service between Tampa and Orlando via Walt Disney World, OCCC, and OIA. A High Speed Rail (HSR) Authority was created to study how to implement the system. The preliminary estimated costs are \$1.3 to \$1.6 billion (capital) and \$3.5 million (annual operations and maintenance).

The HSR Authority submitted their findings to the Legislature in January 2002. Based on the report and legislative actions in the spring of 2002, both PD&E studies and investment grade ridership studies are moving forward. The implementation of the HSR program in Florida is contingent of the outcome of these on-going study efforts.

6.2.2.3 Future Airport Service

According to the Greater Orlando Aviation Authority (GOAA), OIA has development plans in place to significantly expand the airport's services in the future. GOAA has also indicated that the Orlando Executive Airport will not expand their services significantly, but will maintain existing services. The Orlando-Sanford Airport is in the process of building new facilities to accommodate increasing flight operations. A summary of the future services at the airports is provided below.

Orlando International Airport

As of March 2001, the new South Terminal Complex was under construction. The complex will handle 40 million passengers annually. The concept creates a terminal building and attached gate areas for ease of passenger flow. The initial terminal and subsequent terminal expansions will be directly connected to the concourses containing aircraft gates on the north and south sides of the terminal complex. This design, planned primarily for international passengers, brings landside building functions, particularly Immigration and Naturalization Services, United States Department of Agriculture and Customs facilities, as close to the international gates as possible.

The South Terminal Complex will feature:

- ◆ split landside (main) building,
- ◆ two-level landside (main) terminals,
- ◆ three-level airside providing for a total of up to 120 gates with domestic and international arrival and departure capabilities,
- ◆ parking and rental car facilities located in the center of the two terminals for ease of passenger access, and
- ◆ Federal Inspection Station located near all international gates.

Arriving international passengers will be processed in the main terminal and all arrival and departure functions will be performed on one level.

Baggage claim, delivery of baggage to passengers, customs, the ground transportation lobby area, arrival curbs and crosswalks to parking will be located on one level. Ticketing, all curbs for departing functions, concessions and immigration will be located on a second level. The first phase of the complex has been delayed due to the downturn in aviation activity nationwide. GOAA is currently implementing expansion and capacity enhancements in the existing North Terminal.

When fully developed, OIA will have the capacity to serve 70 million domestic and international passengers annually.

Orlando-Sanford Airport

The airport's master plan update was completed in January 1995 and revised in 1997. Highlights of infrastructure development during the last five years include a main runway declared distance enhancement, an international arrivals building, an expansion to the international arrivals building, taxiway improvements, new PAPI-2 and PAPI-4 systems, a Part 150 noise study, FAA control tower, air carrier ramp expansion, a general aviation runway, a new fire station, the Cargo Centre, a parking lot transition project and a Taxiway "B" West extension. Projects as of August 2000 include installation of a new instrument landing system (ILS), terminal and hangar facilities for SunJet Aviation and a new hangar for C.E. Avionics. Future development calls for a planned expansion to the domestic terminal building.

On January 26, 1999, the Orlando-Sanford Airport broke ground on the new ILS. The ILS provides navigational assistance for aircraft landing on the airport's main runway, 27R, during inclement weather.

On March 17, 1999, SunJet Aviation Inc. began construction on their new facilities at the Orlando-Sanford Airport. The 23,250 square-foot structure will be home to a terminal building with a first-class passenger waiting area, flight planning room, pilots' lounge and a small business conference room. The structure will also house a 15,500 square-foot hangar, which brings SunJet's total hangar space to nearly 50,000 square-feet.

The new facility will meet the requirements necessary for SunJet to become the newest Fixed Base Operator (FBO) at the Orlando-Sanford Airport. Their newly acquired FBO status will allow SunJet to fuel general aviation aircraft from their own fuel farm.

Orlando Executive Airport

The Orlando Executive Airport does not have any new infrastructure projects planned for the future. Improvements at the airport will be to upgrade and maintain existing facilities.

6.2.2.4 Future Seaport Service

Future services at the ports are discussed in the following paragraphs and include the expansion of cargo facilities, cruise terminals and industrial and distribution space.

Port Canaveral

Future plans call for the construction of two additional cargo berths in the port's West Turning Basin. In addition, there are plans for the addition of two more cruise terminals at the port.

In 1998, Port Canaveral began construction of a small container yard on the port's north side. This new \$6 million facility will allow Port Canaveral to serve as a feeder port to the much larger container hub being constructed at Freeport, Grand Bahamas. Phase 1 of the new facility will be configured

to accommodate 160 ground slots for forty-foot equivalent (FEU) containers on chassis. The site will also have the ability to be reconfigured to use a three-high straddle stacker, which will allow the site to accommodate up to 450 FEUs. Also, 40 ground slots will be equipped with electrical plug connections for refrigerated containers.

Port of Sanford

Plans for the Port Sanford include the expansion of industrial and distribution space. The port is actively seeking tenants for their facilities.

6.3 TRAFFIC ANALYSIS ASSUMPTIONS

Traffic analyses were performed for the Design Year (2020). The forecasted travel demand was based on the published traffic information in the *I-4 MMMP Traffic Report* (October 1996), with minor revisions provided by FDOT in October 1997.

Information about proposed improvements in the study area was obtained from METROPLAN Orlando, the Volusia County MPO and the Orlando-Orange County Expressway Authority (OOCEA). Central Florida transportation issues for Osceola, Orange and Seminole Counties are addressed by METROPLAN Orlando. Major planned improvements of the surrounding roadway network in Orange and Seminole Counties included in the LRTP are listed in Table 6.3.1. Volusia County transportation issues are addressed by the Volusia County MPO. Planned improvements for Volusia County within the project study area are listed in Table 6.3.2.

METROPLAN Orlando, the Volusia County MPO and OOCEA have five-year work programs in place along the project corridor. Projects included in the five-year work programs are listed in Tables 6.3.3 through 6.3.5.

6.4 TRAFFIC VOLUME PROJECTIONS

Traffic projections contained in this report are based on the adopted 2020 OUATS model. The forecasts reflect refined conditions in terms of interchange improvements, transportation system management strategies, highway improvements throughout the project area (based on METROPLAN Orlando's and the Volusia County MPO's Long Range Transportation Plan) and transit network assumptions.

The regional highway network used in the model is based upon the 2020 Financially Feasible Plans of METROPLAN Orlando and the Volusia County MPO. The baseline highway network was used in forecasting the 2020 Build and No-Build scenarios.

Table 6.3.1 - Metroplan Orlando OUATS 2020 Transportation Plan Update (Adopted December 2000)

| County | Project Name | From | To | Description |
|-------------------|---------------------------------|--------------------------|-------------------------------------|--------------------------|
| Federal and State | | | | |
| Orange | I-4 | Kirkman Road (SR 435) | Maitland Boulevard (SR 414) | 6 + special use lanes |
| Orange | I-4 | SR 408 (East/West Expwy) | -- | New interchange |
| Orange | I-4 | SR 46 | -- | Interchange improvements |
| Orange | Apopka Bypass | US 441 (north of Apopka) | US 441 (at Maitland Blvd Extension) | New 4-lane road |
| Orange | Kirkman Rd | Sand Lake Rd | SR 528 (East/West Expwy) | New 4-lane road |
| Seminole | SR 46 | Mellonville Ave | Volusia County line | Widen to 4 lanes |
| Seminole | SR 46 | Lake County line | Orange Blvd | Widen to 4 lanes |
| Orange | SR 50 (Colonial Dr) | Lake County line | Kirkman Rd | Widen to 6 lanes |
| Orange | SR 50 (Colonial Dr) | SR 436 | Old Cheney Hwy | Widen to 6 lanes |
| Orange | SR 408 (East/West Expwy) | Hiwassee Rd | John Young Pkwy (SR 423) | Widen to 8 lanes |
| Orange | SR 408 (East/West Expwy) | Rosalind Ave | SR 417 (Central Florida Gwvy) | Widen to 8 lanes |
| Seminole | SR 415 | SR 46 | Volusia County line | Widen to 4 lanes |
| Orange | SR 417 (Central Florida Gwvy) | Boggy Creek Rd | -- | Interchange improvements |
| Orange | SR 417 (Central Florida Gwvy) | Florida's Turnpike | -- | New interchange |
| Orange | SR 423 (John Young Pkwy) | SR 50 | Lee Rd | Widen to 6 lanes |
| Orange | SR 423 (John Young Pkwy) | Lee Rd/Lake Breeze Dr | Forest City Rd | New 6-lane road |
| Orange | SR 429 | Florida's Turnpike | I-4 | New 4-lane expwy |
| Seminole | SR 434 | Orange County line | SR 436 | Widen to 6 lanes |
| Orange | SR 434 (Forest City Rd) | Edgewater Dr | Maitland Blvd | Widen to 6 lanes |
| Seminole | SR 436 (Semoran Blvd) | US 17/92 | -- | New interchange |
| Orange | SR 482 (Sand Lake Rd) | Orange Blossom Tr | International Dr | Widen to 6 lanes |
| Orange | SR 528 (East/West Expwy) | International Dr | -- | Interchange improvements |
| Seminole | US 17/92 | Shepard Rd | Lake Mary Blvd | Widen to 6 lanes |
| Local | | | | |
| Seminole | CR 427 | SR 434 | Longwood-Lake Mary Rd | Widen to 6 lanes |
| Orange | Clarcona Rd | Clarcona-Ocoee Rd | Orange Blossom Tr | Widen to 4 lanes |
| Orange | Clark Rd | SR 50 | Silver Star Rd | Widen to 6 lanes |
| Orange | Clark Rd | AD Mims Rd | Clarcona-Ocoee Rd | Widen to 4 lanes |
| Orange | Clark Rd | Clarcona-Ocoee Rd | McCormick Rd | New 4-lane road |
| Orange | Crystal Lake Dr/Maguire Blvd | South St | Maguire Blvd | Widen to 4 lanes |
| Orange | Crystal Lake Dr/Maguire Blvd | Maguire Blvd | SR 50 | Widen to 6 lanes |
| Orange | Econlockhatchee Tr | Curry Ford Rd | University Blvd | Widen to 4 lanes |
| Orange | Econlockhatchee Tr Extension | Lee Vista Blvd | Curry Ford Rd | New 4-lane road |
| Orange | Good Homes Rd | West SR 50 | Silver Star Rd | Widen to 4 lanes |
| Orange | International Dr Extension | SR 536 | SR 535 | New 6-lane road |
| Orange | Kaley St | Rio Grande Ave | I-4 | Widen to 4 lanes |
| Orange | L.B. McLeod Rd | John Young Pkwy | Rio Grande Ave | Widen to 4 lanes |
| Orange | Lake Destiny Dr | Lee Rd | Kennedy Blvd | New 2-lane road |
| Seminole | Lake Mary Blvd | Rinehart Rd | Country Club Rd | Widen to 6 lanes |
| Seminole | Lake Mary Blvd | Markham Woods Rd | I-4 | Widen to 6 lanes |
| Orange | Lee Vista Blvd | Conway Rd | SR 436 (Semoran Blvd) | New 4-lane road |
| Orange | Naval Training Center (NTC) | | | |
| East-West Rd | Bennett Rd | SR 436 (Semoran Blvd) | New 2-lane road | |
| Orange | NTC North-South Rd | SR 50 | Lakemont Ave | New 2-lane road |
| Orange | North-South Rd | Westwood Blvd Extension | SR 417 (Central Florida Gwvy) | New 4-lane road |
| Orange | Oak Ridge Rd | Texas Ave | US 441 | Widen to 6 lanes |
| Orange | Ocoee-Apopka Rd | Silver Star Rd | Clarcona-Ocoee Rd | Widen to 4 lanes |
| Orange | Pine Hills Rd Extension (north) | Beggs Rd | Apopka Bypass | New 4-lane road |
| Orange | Pine Hills Rd Extension (south) | Conroy Rd | Old Winter Garden Rd | New 4-lane road |
| Orange | Plymouth Sorrento Rd | US 441 | Lake County line | Widen to 4 lanes |
| Seminole | Seminole Blvd | US 17/92 | Lake Dr | Widen to 6 lanes |
| Orange | Westwood Blvd Extension | Westwood Blvd | International Dr | New 4-lane road |
| Orange | Winter Garden-Vineland (CR 535) | Chase Rd | SR 50 | Widen to 4 lanes |
| Orange | Wymore Rd | Kennedy Blvd/Lake Ave | Seminole County line | Widen to 4 lanes |

Table 6.3.2 - Volusia County MPO 2020 Transportation Plan Refinement (Adopted November 2000)

| County | Project Name | From | To | Description |
|-------------------|---------------------------------|------------------------|------------------------|------------------|
| Federal and State | | | | |
| Volusia | I-4 | St Johns River Bridge | I-95 | Widen to 6 lanes |
| Volusia | I-4 | Taylor Rd Extension | -- | New interchange |
| Volusia | SR 15A | US 17 | Plymouth Ave | Widen to 4 lanes |
| Volusia | SR 15A | Beresford Ave | US 17/92 | Widen to 4 lanes |
| Volusia | SR 44 | Summit Ave | SR 415 | Widen to 4 lanes |
| Volusia | SR 415 | SR 44 | Seminole County line | Widen to 4 lanes |
| Volusia | US 17/92 | Enterprise Rd | Highbanks Rd | Widen to 4 lanes |
| Volusia | US 17/92 | Plantation Rd | Seminole County line | Widen to 4 lanes |
| Volusia | US 17/92 | SR 15A (Taylor Rd) | SR 472 | Widen to 6 lanes |
| Local | | | | |
| Volusia | Beresford Ave | Blue Lake Ave | Summit Ave | New 2-lane road |
| Volusia | Blue Lake Ave | Orange Camp Rd | SR 472 | New 2-lane road |
| Volusia | CR 92 | SR 15A | US 17/92 | Widen to 4 lanes |
| Volusia | Deltona Blvd | Enterprise Rd | DeBary Ave | Widen to 4 lanes |
| Volusia | Dirksen Dr | US 17/92 | I-4 | Widen to 4 lanes |
| Volusia | Dirksen/DeBary Rd (realignment) | I-4 | Providence Blvd | Widen to 4 lanes |
| Volusia | Elkcam Blvd | Riverhead Dr | SR 415 | New 2-lane road |
| Volusia | Enterprise Rd | US 17/92 | Saxon Blvd | Widen to 6 lanes |
| Volusia | Enterprise Rd | Saxon Blvd | Main St/Lexington Ave | Widen to 4 lanes |
| Volusia | Frontage Rd (along I-4) | Summit Ave | SR 472 | New 2-lane road |
| Volusia | Howland Blvd | Deltona High School | SR 415 | Widen to 4 lanes |
| Volusia | Howland Blvd Extension | SR 472/I-4 | Deltona High School | New 4-lane road |
| Volusia | Orange Camp Rd | US 17/92 | I-4 | Widen to 4 lanes |
| Volusia | Providence/Idlewise/Sixma | Lake Helen Osteen Rd | Howland Blvd | New 2-lane road |
| Volusia | Providence Blvd | Howland Blvd | Doyle Rd | Widen to 4 lanes |
| Volusia | Rhode Island Ave | Westside Connector | US 17/92 | New 2-lane road |
| Volusia | Rhode Island Ave | Veterans Memorial Pkwy | Normandy Blvd | New 2-lane road |
| Volusia | Saxon Blvd | US 17/92 | W of Enterprise Rd | Widen to 4 lanes |
| Volusia | Saxon Blvd | Enterprise Rd | I-4 | Widen to 6 lanes |
| Volusia | Saxon Blvd | Normandy Blvd | Providence Blvd | Widen to 4 lanes |
| Volusia | Saxon Blvd | Westside Connector | US 17/92 | New 2-lane road |
| Volusia | Westside Connector | SR 44 | Saxon Blvd | New 2-lane road |
| Volusia | Veterans Memorial Pkwy | SR 44 | Harley Strickland Blvd | Widen to 4 lanes |

Table 6.3.3 - Regionally Significant Projects in the METROPLAN ORLANDO Transportation Improvement Program (TIP), FY 2001/02 - 2003/06 (Approved December 2001)

| County | Project Name | From | To | Description |
|-------------------|-------------------------------|-------------------------------|-----------------------------|--------------------------|
| Federal and State | | | | |
| Orange | I-4 | Orange Blossom Tr | Seminole County line | Add auxiliary lanes |
| Orange | I-4 | SR 536 | SR 528 (Bee Line Expwy) | Add auxiliary lanes |
| Orange | I-4 | Kirkman Rd | W of Florida's Turnpike | Add auxiliary lanes |
| Orange | I-4 | SR 528 (Bee Line Expwy) | Sand Lake Rd | Add auxiliary lanes |
| Orange | I-4 | John Young Pkwy | -- | Interchange improvements |
| Orange | I-4 | SR 408 (East/West Expwy) | -- | Interchange improvements |
| Seminole | I-4 | Orange County line | SR 436 | Add auxiliary lanes |
| Seminole | I-4 | SR 417 (Central Florida Gwvy) | -- | New interchange |
| Seminole | I-4 | W of Lake Mary Blvd | W of US 17/92 | Widen to 6 lanes |
| Seminole | Aloma Ave (SR 426) | SR 417 (Central Florida Gwvy) | Mitchell Hammock Rd | Widen to 4 lanes |
| Orange | Conway Rd | SR 528 (Bee Line Expwy) | Hoffner Rd | Widen to 4 lanes |
| Orange | Goldenrod Rd Extension | SR 528 (Bee Line Expwy) | SR 15 | New 4-lane road |
| Orange | Kirkman Rd | S of Conroy Rd | SR 50 | Widen to 6 lanes |
| Orange | Orange Blossom Tr | Ocoee County line | Taft-Vineland Rd | Widen to 6 lanes |
| Orange | Silver Star Rd | W of Clarke Rd | Apopka-Vineland Rd | Widen to 4 lanes |
| Orange | Silver Star Rd | Apopka-Vineland Rd | Hiwassee Rd | Widen to 6 lanes |
| Orange | SR 408 (East/West Expwy) | W of Kirkman Rd | I-4 | Widen to 6 lanes |
| Orange | SR 408 (East/West Expwy) | Rosalind Ave | SR 436 | Widen to 8 lanes |
| Orange | SR 417 (Central Florida Gwvy) | SR 50 | Seminole County line | Widen to 6 lanes |
| Seminole | SR 417 (Central Florida Gwvy) | E of US 17/92 | E of Rinehart Rd | New 4-lane expwy |
| Orange | SR 429 | Scidel Rd | SR 50 | New 4-lane expwy |
| Orange | SR 436 (Semoran Blvd) | US 441 | Seminole County line | Widen to 6 lanes |
| Orange | SR 436 (Semoran Blvd) | SR 528 (Bee Line Expwy) | Curry Ford Rd | Widen to 6 lanes |
| Orange | SR 528 (Bee Line Expwy) | Narcoossee Rd | -- | Interchange improvements |
| Local | | | | |
| Seminole | Airport Blvd | US 17/92 | SR 46 | Widen to 4 lanes |
| Orange | All American Blvd | Clarcona-Ocoee Rd | Kennedy Blvd | Widen to 4 lanes |
| Orange | Apopka Blvd | Piedmont-Wekiva Rd | US 441 | Widen to 4 lanes |
| Orange | Clarcona-Ocoee Rd | Ocoee-Apopka Rd | Hiwassee Rd | Widen to 4 lanes |
| Seminole | CR 46A | Rinehart Rd | Old Lake Mary Rd | Widen to 4 lanes |
| Seminole | CR 427 | SR 436 | North St | Widen to 4 lanes |
| Seminole | CR 427 | US 17/92 | Lake Mary Blvd | Widen to 4 lanes |
| Orange | CR 535 | Apopka-Vineland Rd | Buena Vista Dr | Widen to 4 lanes |
| Orange | East-West Roadway | SR 436 | Dean Rd | New 2-lane road |
| Orange | Econlockhatchee Tr | Lake Underhill Rd | Trevarthon Rd | Widen to 4 lanes |
| Orange | Edgewater Dr | Pine Hills Rd | Clarcona-Ocoee Rd | Widen to 4 lanes |
| Seminole | E Lake Mary Blvd | US 17/92 | Airport Entrance | Widen to 4 lanes |
| Seminole | E Lake Mary Blvd | Airport Entrance | SR 46/SR 415 | New 4-lane road |
| Orange | Hiwassee Rd | Clarcona-Ocoee Rd | Beggs Rd | Widen to 4 lanes |
| Orange | Hiwassee Rd | Beggs Rd | US 441 | New 4-lane road |
| Orange | Holden Ave | John Young Pkwy | US 441 | Widen to 4 lanes |
| Orange | John Young Pkwy (SR 423) | SR 528 (Bee Line Expwy) | I-4 | Widen to 6 lanes |
| Orange | Kennedy Blvd | Forest City Rd | Wymore Rd | Widen to 4 lanes |
| Seminole | Lake Emma Rd | Sand Pond Rd | Longwood Hills Rd | Widen to 4 lanes |
| Orange | Lancaster Rd | US 441 | Orange Ave | Widen to 4 lanes |
| Orange | Landstreet Rd | US 441 | Orange Ave | Widen to 4 lanes |
| Orange | Old Winter Garden Rd | Hemple Ave | Friendship Dr | Widen to 4 lanes |
| Orange | Old Winter Garden Rd | Apopka-Vineland Rd | Hiwassee Rd | Widen to 4 lanes |
| Orange | Orange Ave | SR 417 (Central Florida Gwvy) | Taft-Vineland Rd | Widen to 6 lanes |
| Orange | Pine Hills Rd | Silver Star Rd | North Ln | Widen to 6 lanes |
| Orange | Rock Springs Rd | Ponkan Rd | Kelly Park Rd | Widen to 4 lanes |
| Orange | Taft-Vineland Rd | US 441 | Orange Ave | Widen to 4 lanes |
| Orange | Universal Blvd | Orangewood Blvd | -- | New interchange |
| Orange | Universal Blvd Extension | Universal Blvd | SR 528 (Bee Line Expwy) | New 4-lane road |
| Seminole | Upsala Rd (CR 15) | SR 46 | US 17/92 | Widen to 5 lanes |
| Orange | Westwood Connector | Westwood Blvd | Orange County Convention Ct | New 2-lane road |
| Orange | Wymore Rd | Fairbanks Ave | Kennedy Blvd | Widen to 4 lanes |
| Seminole | Wymore Rd | Orange County line | SR 436 | Widen to 4 lanes |

Table 6.3.4 - Volusia County Adopted FY 2001/02 Five Year Road Program Adopted June 20, 2001 (Amended January 22, 2002) Revised

| City | Project Name | From | To | Work Description |
|-------------------|----------------------------------|------------------------|----------------------|--------------------------|
| Federal and State | | | | |
| Volusia | I-4 | St Johns River Bridge | I-95 | Widen to 6 lanes |
| Volusia | I-4 | Saxon Blvd | -- | Interchange improvements |
| Volusia | I-4 | SR 472 | -- | Interchange improvements |
| Volusia | SR 15A | Plymouth Ave | US 17 (SR 15) | Widen to 4 lanes |
| Volusia | SR 15A | US 17/92 | Beresford Ave | Widen to 4 lanes |
| Volusia | SR 44 | CR 4139 (Summit Ave) | SR 415 | Widen to 4 lanes |
| Volusia | SR 415 | Seminole County line | SR 44 | Widen to 4 lanes |
| Volusia | US 17/92 | Old DeLand Rd | Enterprise Rd | Widen to 4 lanes |
| Volusia | US 17/92 | SR 472 | SR 15A | Widen to 6 lanes |
| Local | | | | |
| Volusia | Beresford Ave | Blue Lake Ave | Kepler Rd | New 2-lane road |
| Volusia | CR 92 | SR 15A | US 17/92 | Widen to 4 lanes |
| Volusia | DeBary Ave/Doyle Rd | I-4 | Providence Blvd | Widen to 4 lanes |
| Volusia | Elkcam Blvd Extension | Riverhead Dr | SR 415 | New 2-lane road |
| Volusia | Enterprise Rd | Saxon Blvd | US 17/92 | Widen to 6 lanes |
| Volusia | Enterprise Rd | Saxon Blvd | Deltona Blvd | Widen to 4 lanes |
| Volusia | Fatio Rd Extension | SR 44 | Beresford Ave | New 2-lane road |
| Volusia | Frontage Rd (along I-4) | SR 472 | CR 4139 (Summit Ave) | New 2-lane road |
| Volusia | Harley Strickland Blvd Extension | Veterans Memorial Pkwy | Saxon Blvd | New 2-lane road |
| Volusia | Howland Blvd | Deltona High School | Providence Blvd | Widen to 4 lanes |
| Volusia | Howland Blvd | Elkcam Blvd | Courtland Blvd | Widen to 4 lanes |
| Volusia | Plymouth Ave | SR 15A | US 17/92 | Widen to 4 lanes |
| Volusia | Plymouth Ave | US 17/92 | -- | Interchange improvements |
| Volusia | Providence Blvd | Alexander Ave | Saxon Blvd | Widen to 4 lanes |
| Volusia | Providence Blvd | Fort Smith Blvd | Tivoli Dr | Widen to 5 lanes |
| Volusia | Providence Blvd | Fort Smith Blvd | Elkcam Blvd | Widen to 4 lanes |
| Volusia | Rhode Island Extension | Veterans Memorial Pkwy | Normandy Blvd | New 2-lane road |
| Volusia | SR 472/Howland Extension | I-4 | Howland Blvd | New 4-lane road |
| Volusia | Saxon Blvd | Enterprise Rd | I-4 | Widen to 6 lanes |
| Volusia | Saxon Blvd | Normandy Blvd | Tivoli Dr | Widen to 5 lanes |
| Volusia | Saxon Blvd | US 17 | Enterprise Rd | Widen to 4 lanes |
| Volusia | Saxon Blvd Extension | US 17 | Westside Connector | New 2-lane road |
| Volusia | Veterans Memorial Pkwy | Saxon Blvd | Graves Ave | New 2-lane road |
| Volusia | Veterans Memorial Pkwy Extension | SR 472 | Graves Ave | New 5-lane road |
| Volusia | Westside Connector | Fatio Rd | Hamilton Ave | New 2-lane road |

Table 6.3.5 - Orlando-Orange County Expressway Authority, Five Year Work Plan FY 02 - FY 06 Existing System Improvements Summary (July 5, 2001)

| City | Project Name | From | To | Work Description |
|--------------------------------------|-------------------------------|--------------------|-------------------------|--------------------------|
| Existing System Improvements Summary | | | | |
| Orange | SR 408 (East/West Expwy) | W of Kirkman Rd | I-4 | Widen to 6 lanes |
| Orange | SR 408 (East/West Expwy) | Rosalind Ave | SR 417 | Widen to 8 lanes |
| Orange | SR 417 (Central Florida Gwpy) | SR 50 | Seminole County Line | Widen to 6 lanes |
| System Expansion Projects Summary | | | | |
| Orange | SR 429 | Seidel Rd | SR 50 | New 4-lane expwy |
| Orange | SR 429 Northern Extension | US 441 | SR 44 | New 4-lane expwy |
| Interchange Projects Summary | | | | |
| Orange | SR 408 (East/West Expwy) | I-4 | -- | Interchange improvements |
| Orange | SR 417 (Central Florida Gwpy) | Florida's Turnpike | -- | New interchange |
| Orange | SR 417 (Central Florida Gwpy) | Lee Vista Blvd | -- | New interchange |
| Orange | SR 528 (Bee Line Expwy) | Narcoossee Rd | -- | Interchange improvements |
| Non-System Projects Summary | | | | |
| Orange | Goldenrod Rd Extension | SR 15 | SR 528 (Bee Line Expwy) | New 4-lane road |

6.4.1 TRAFFIC CHARACTERISTICS

Application of appropriate traffic characteristics is required to develop the design traffic volumes used in the I-4 PD&E Study - Section 2. These characteristics include the K_{30} (design hour) and D_{30} (directional distribution) factors. Below is a brief description of each.

Design Hour Factor (K_{30})

The design hour volume (DHV) represents the 30th highest hourly volume at any location and is calculated by multiplying the Annual Average Daily Traffic (AADT) by the appropriate K_{30} factor. The K_{30} factor is defined as the proportion of the AADT occurring in the design hour.

Directional Distribution Factor (K_{30})

Capacity and operational analysis are based on the peak directional flow in the design hour. To calculate the directional design hour volume

(DDHV), the directional factor (D_{30}) is applied to the design hour volume.

The design characteristics used to develop the directional design hour volumes (DDHV) are consistent with those used in the I-4 MMAP, the SAMR (April 2002) and the SAMR Update (May 2002). The traffic characteristics for the I-4 mainline and ramps, HOV lanes and arterials are summarized in Table 6.4.1.1. This table shows that dividing the project corridor into segments was necessary to account for the different traffic characteristics. The segment from SR 528 (Bee Line Expressway) to SR 423 (John Young Parkway), which represents the tourist influenced area, requires the use of different design factors than the segment from SR 423 (John Young Parkway) to SR 423 (Lee Road), which reflects the congested, urban nature of the Orlando CBD. Similarly, the segments from SR 423 (Lee Road) to SR 472, which represent the residential and outlying business districts, require the use of different design factors than the downtown Orlando area.

Table 6.4.1.1 - Future Traffic Characteristics for the I-4 Corridor

| Segment | Category | Design K_{30} General Use Lanes | Design K_{30} Special Use Lanes ^{1,2} | Directional Distribution D_{30} | Peak Hour Factor | Truck, Bus & RV % | Driver Population Factor | Free Flow Speeds | | Build Design Speed |
|---|----------------------|-----------------------------------|--|-----------------------------------|------------------|-------------------|--------------------------|---------------------|-------|--------------------|
| | | | | | | | | Existing & No Build | Build | |
| Segment 1 | | | | | | | | | | |
| Tourist Recreational Area – SR 528 (Bee Line Expressway) to SR 423 (John Young Parkway) | Urban Interstate | 9% | 10% | 55% | 0.95 | 10% | 0.9 | 60 | 65 | 60 |
| Segments 2 & 3 | | | | | | | | | | |
| Orlando CBD & North Fringe – SR 423 (John Young Parkway) to SR 423 (Lee Road) | Urban Interstate | 9% | 10% | 53% | 0.95 | 5% | 1.0 | 55 | 55 | 60 |
| Segments 4 & 5 | | | | | | | | | | |
| North Residential & Outlying Business Districts – SR 423 (Lee Road) to US 17-92 | Urban Interstate | 9% | 10% | 55% | 0.95 | 5% | 1.0 | 55 | 55 | 60 |
| Segment 6 | | | | | | | | | | |
| Suburban Residential US 17-92 to SR 472 | Urban Interstate | 10% ¹ | 11% | 55% | 0.95 | 10% | 1.0 | 65 | 65 | 70 |
| | | 9% ² | | | | | | 65 | 65 | 70 |
| Arterials | Rural Non-Interstate | 11% | --- | 55% | 0.95 | 10% | 1.0 | N/A | N/A | N/A |
| Arterials | Urban Non-Interstate | 10% | --- | 55% | 0.95 | 5% | 1.0 | N/A | N/A | N/A |

¹When only general use lanes are provided in the segment.

²When both general use lanes and HOV lanes are provided in the segment.

Arterials used same MOCG as the respective interstate mainline section

Interim HOV improvements shall use K30 value of 12%

Source: I-4 Multi-Modal Master Plan Traffic Report

Interim HOV - 60 mph for mainline and 45 mph for ramps. All Slip Ramps speed should be equal to Mainline Speeds (General Use Lanes).

Ultimate HOV - 65 mph for mainline and 45 mph for ramps. All Slip Ramps speed should be equal to Mainline Speeds (General Use Lanes).

A speed of 45 mph was assigned to General Use Mainline Ramp to cross roads.

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Based on this information and field observations, the current travel patterns along I-4 throughout the project study area are indicative of a corridor which provides longer distance trips within Central Florida and also serves as a primary travel path within the regional roadway system. As Central Florida continues to develop and grow, travel characteristics may vary slightly but current data indicate that the design characteristics listed in Table 6.4.1.1 represent the best indication of travel patterns within the project area.

6.4.2 Development of Projected AADT

6.4.2.1 Mainline and Ramp Volumes

For the 2020 No-Build and Build scenarios, the I-4 ramp volumes were balanced for each interchange and compared to the 1996 volumes to verify reasonable growth. The ramp AADT for the 2000 and 2010 No-Build scenarios were estimated by interpolating between the existing volumes and 2020 No-Build volumes. Similarly, the ramp AADT for the 2000 and 2010 Build scenarios were developed by interpolating between the existing volumes and 2020 Build volumes. Since the configuration of the on- and off-ramps are not maintained between the 1996 volumes and the 2020 Build traffic assignments, the I-4 mainline AADTs were derived by establishing the I-4 mainline segment east of US 441 as the control point for interpolating the opening and mid-year design volumes. From this control point, the simple process of adding and subtracting the interpolated ramp volumes was used to arrive at the mainline AADTs.

6.4.2.2 Cross Street Volumes

In order to derive the cross street AADTs for this effort, the existing AADT contained in the I-4 MMMP and the output from the 2020 traffic forecasts were used. A comparison of the 2020 AADTs to the existing volumes yielded discrepancies at some locations, which is generally experienced with regional models. Where this occurred, professional judgement based on local experience in the I-4 corridor was used to provide the cross street AADTs. The cross street AADTs for the 2000 and 2010 No-Build scenarios were developed by interpolating between the existing volumes and 2020 No-Build volumes. Similarly, the 2010 Build AADTs were developed by interpolating between the existing volumes and 2020 Build volumes.

6.5 OPERATIONAL ANALYSIS

Operational analyses were conducted for the No-Build and Build scenarios for each of the analysis years (2000, 2010 and 2020). The analyses were conducted using the procedures outlined in the *Highway Capacity Manual*, Transportation Research Board, Special Report 209, 1994.

6.5.1 Design Year (2020) No-Build Analyses Results

Results of the Design Year (2020) No-Build analyses can be found in the *SAMR* (April 2000). The following sections summarize those results.

6.5.1.1 Freeway Analyses

The following bullets summarize the results of the basic freeway segment analyses:

- 27 basic freeway segments analyzed
- 5 projected to operate at LOS D or better
- 2 projected to operate at LOS E
- 20 projected to operate at LOS F

The freeway ramp junction analyses are summarized in the following bullets:

- 88 ramp junctions analyzed
- 5 projected to operate at LOS D or better
- 1 projected to operate at LOS E
- 82 projected to operate at LOS F

Of the 18 major merge/diverge locations, 12 are projected to operate under capacity and six are projected to operate over capacity.

The freeway weaving section analyses results are summarized in the following bullets:

- 8 weaving sections analyzed
- 3 projected to operate at LOS D or better
- 1 projected to operate at LOS E
- 4 projected to operate at LOS F

The 2020 No-Build traffic volumes and levels of service are shown in Figure 6.5.1.1.

6.5.1.2 Intersection Analyses

The intersection analyses results are summarized in the following bullets:

- 103 intersections analyzed
- 31 projected to operate at LOS D or better in both peak periods
- 14 projected to operate at LOS E or F in at least one peak period
- 58 projected to operate at LOS E or F in both peak periods

The intersection volumes and levels of service are shown in Figure 6.5.1.1.

6.5.1.3 Cross Street Ramp Analyses

The following bullets summarize the results of the cross street ramp junction analyses:

- 21 ramp junctions analyzed
- 13 projected to operate at LOS D or better
- 1 projected to operate at LOS E
- 7 projected to operate at LOS F

The major merge/diverge analysis results for the cross street ramps are summarized in the bullets below:

- 17 major merge/diverge locations analyzed
- 10 projected to operate under capacity
- 7 projected to operate over capacity

The 2020 No-Build condition weaving section analyses results for the cross street ramps indicate one weaving section is projected to operate at LOS D, one at LOS E and three at LOS F. The cross street ramp volumes and levels of service are shown in Figure 6.5.1.1.

6.5.1.4 Link Analyses

The levels of service for the interchanging cross streets were derived from the intersection analyses performed for the ramp termini and adjacent intersections. Over 70 percent of the links operate at an unacceptable level of service. Of the 59 links, 17 are projected to operate at LOS D or better and the remaining 42 are projected to operate at LOS F.

6.5.2 Design Year (2020) Build Analyses Results

Results of the Design Year (2020) Build analyses can be found in the *SAMR* (April 2000) and *SAMR Update* (May 2002). The following sections summarize the results.

6.5.2.1 Freeway Analyses - HOV Lanes

All of the basic freeway segments and ramp merges and diverges along the HOV lanes are projected to operate at acceptable levels of service. Four of the 19 basic freeway segments are projected to operate at LOS D and the remaining 15 are projected to operate at LOS C or better. Of the 46 ramp junctions, only three are projected to operate at LOS D and the remaining 43 are projected to operate at LOS C or better.

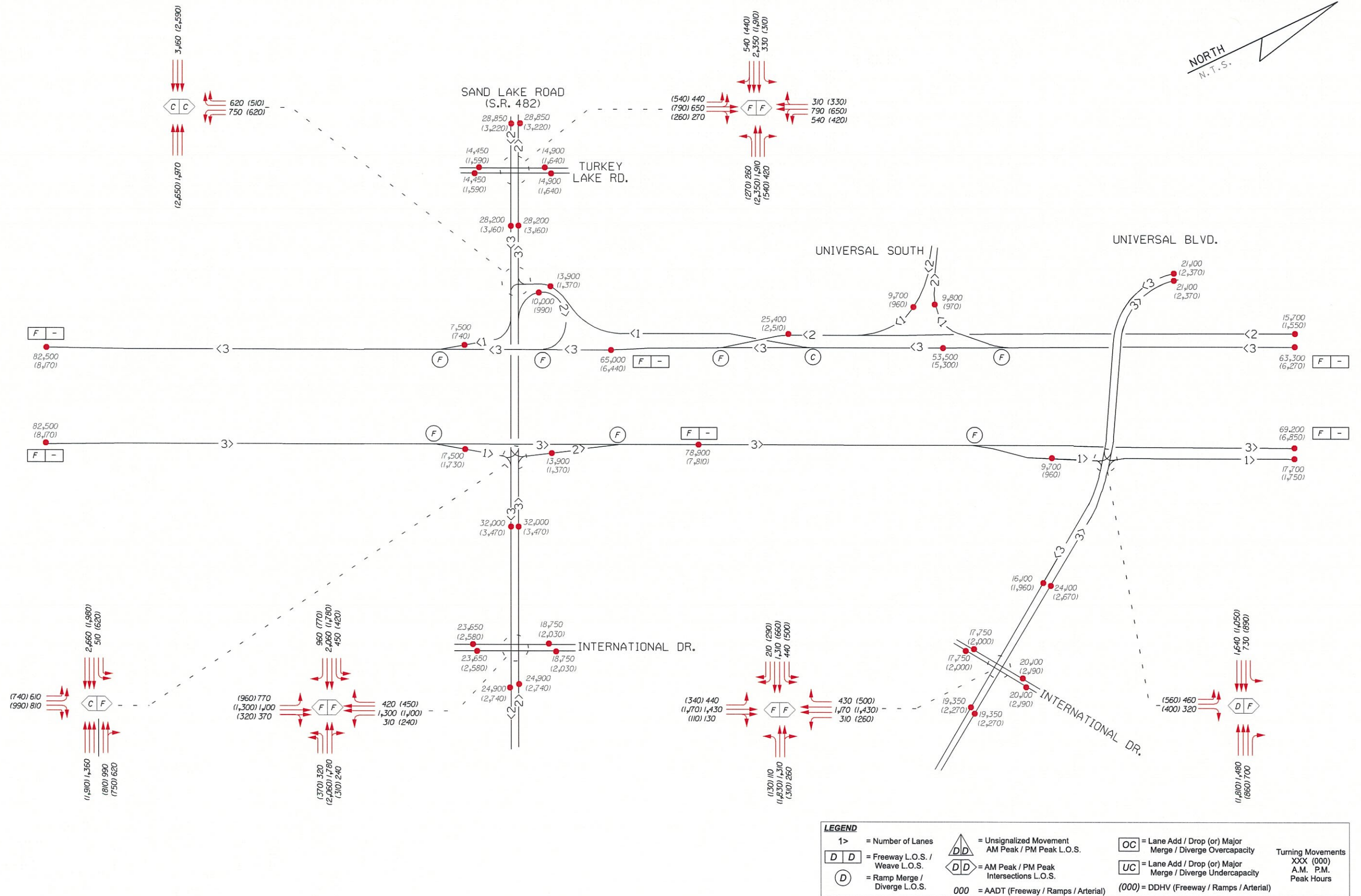


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service

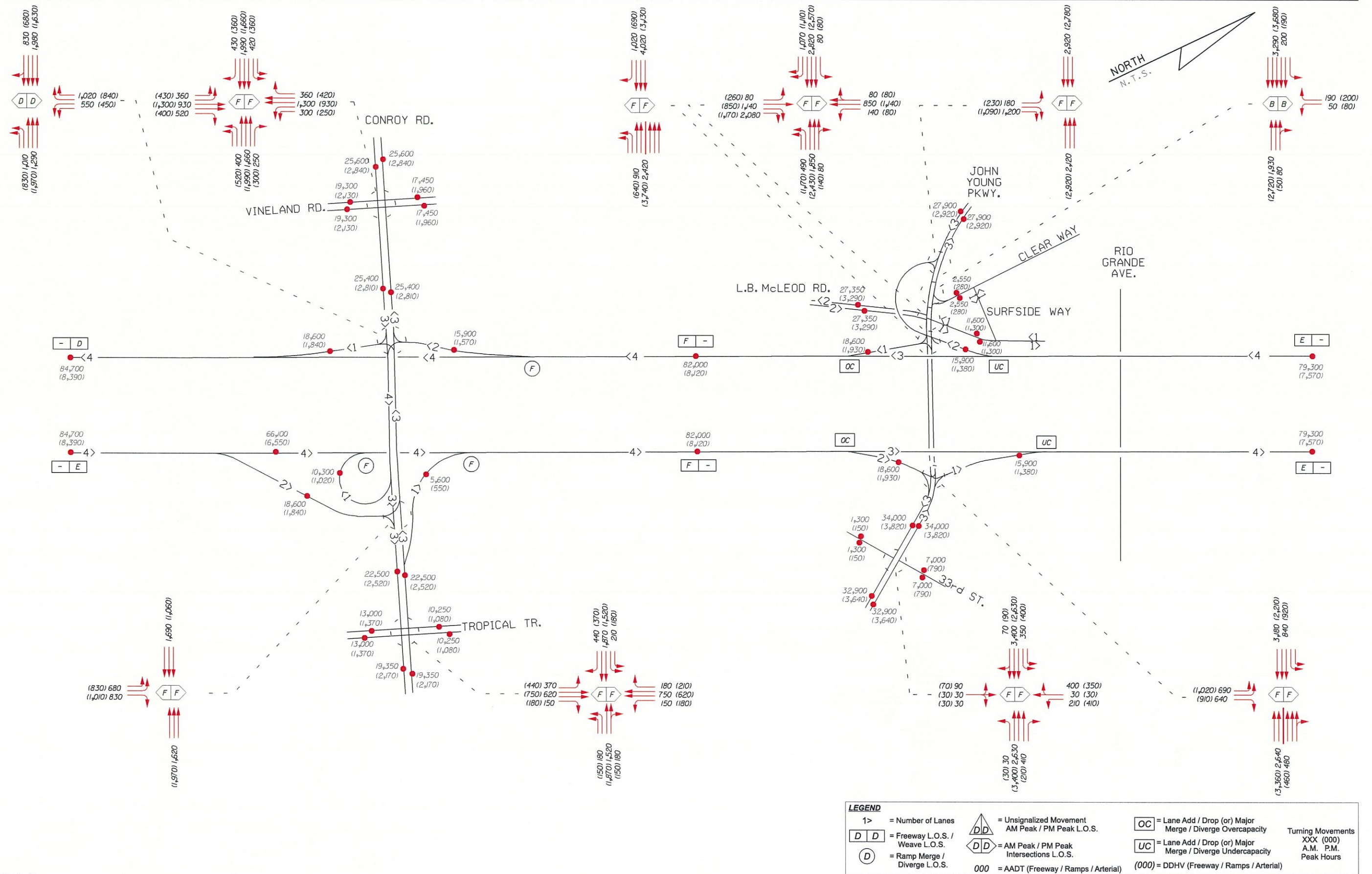
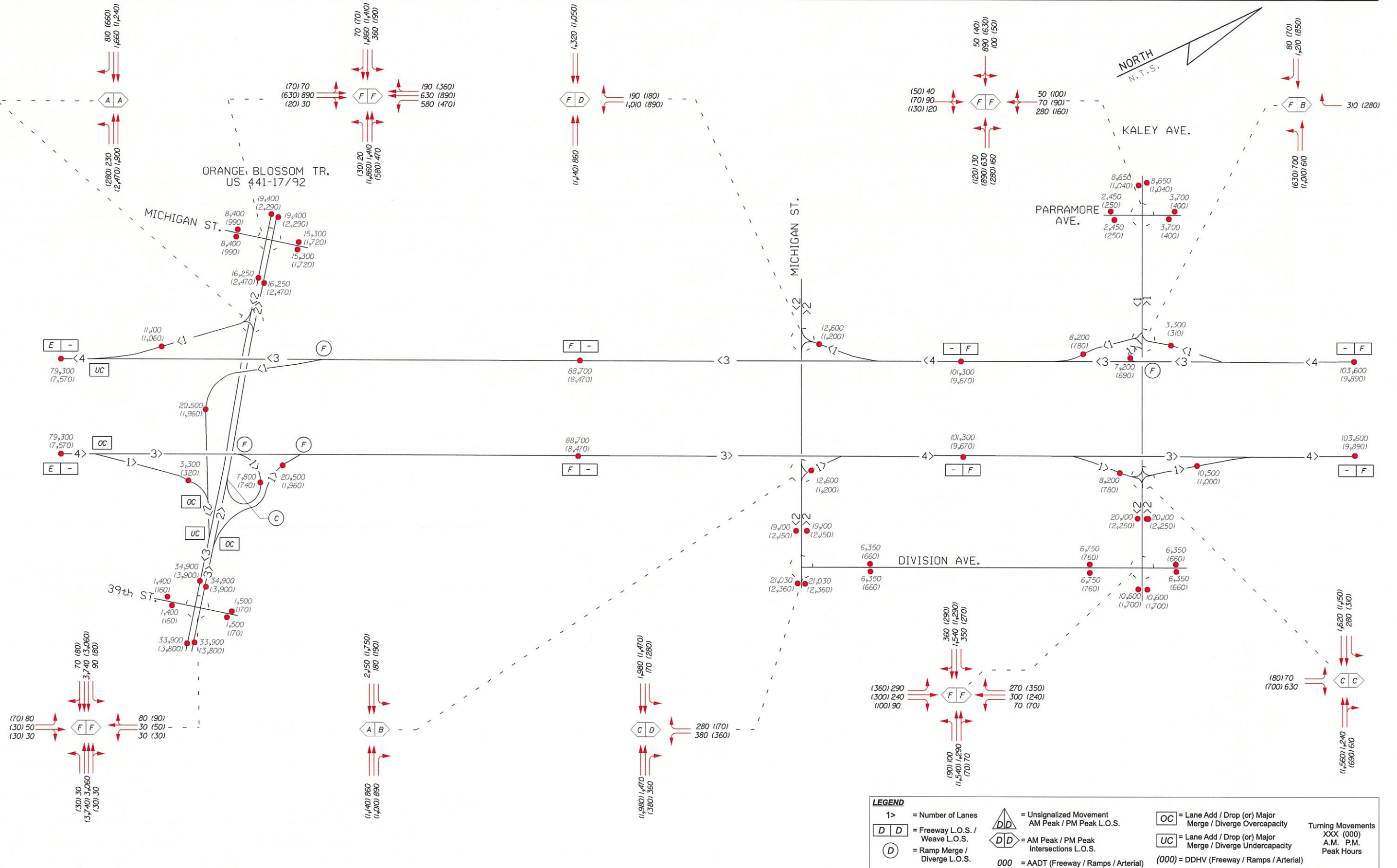


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service



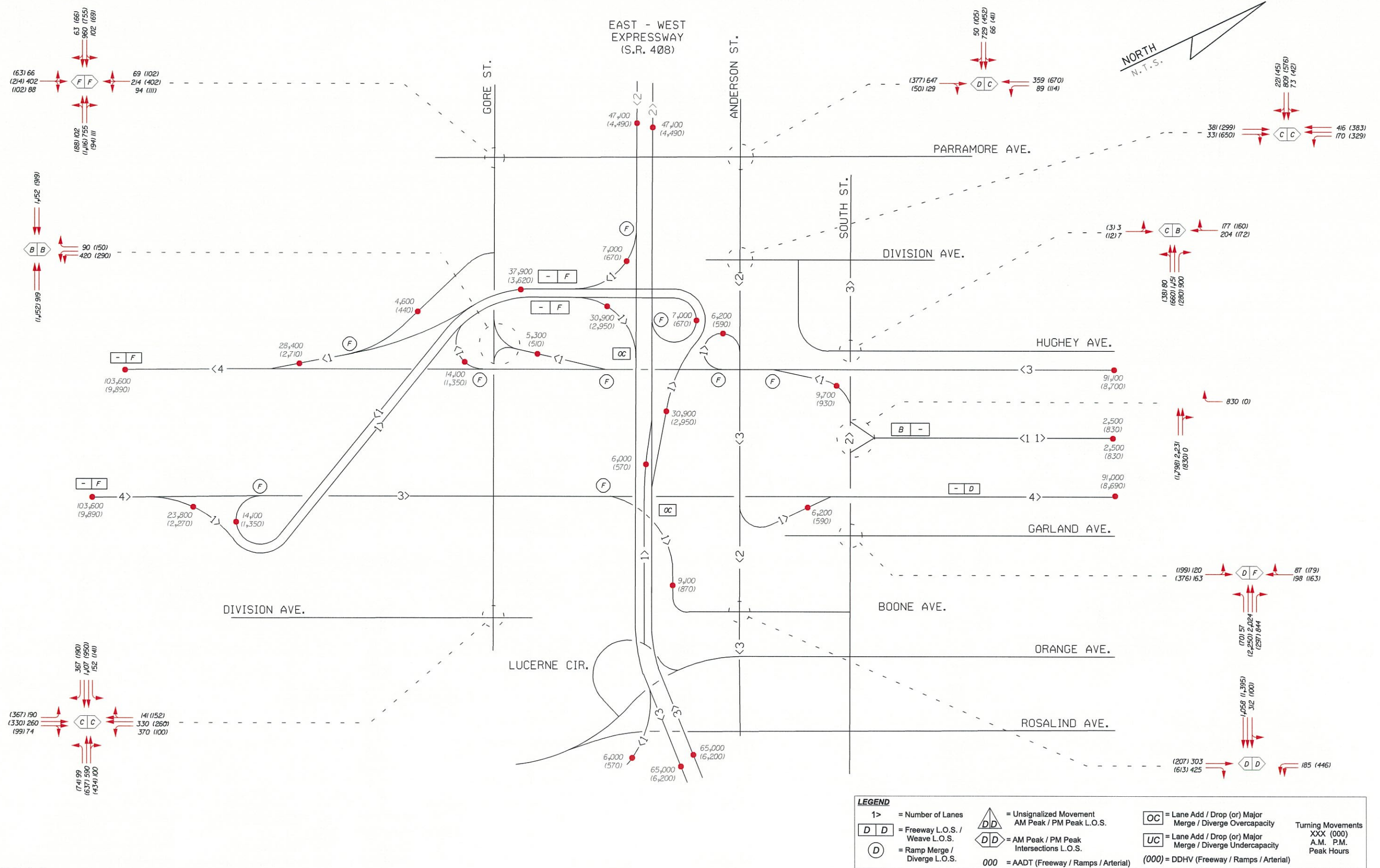
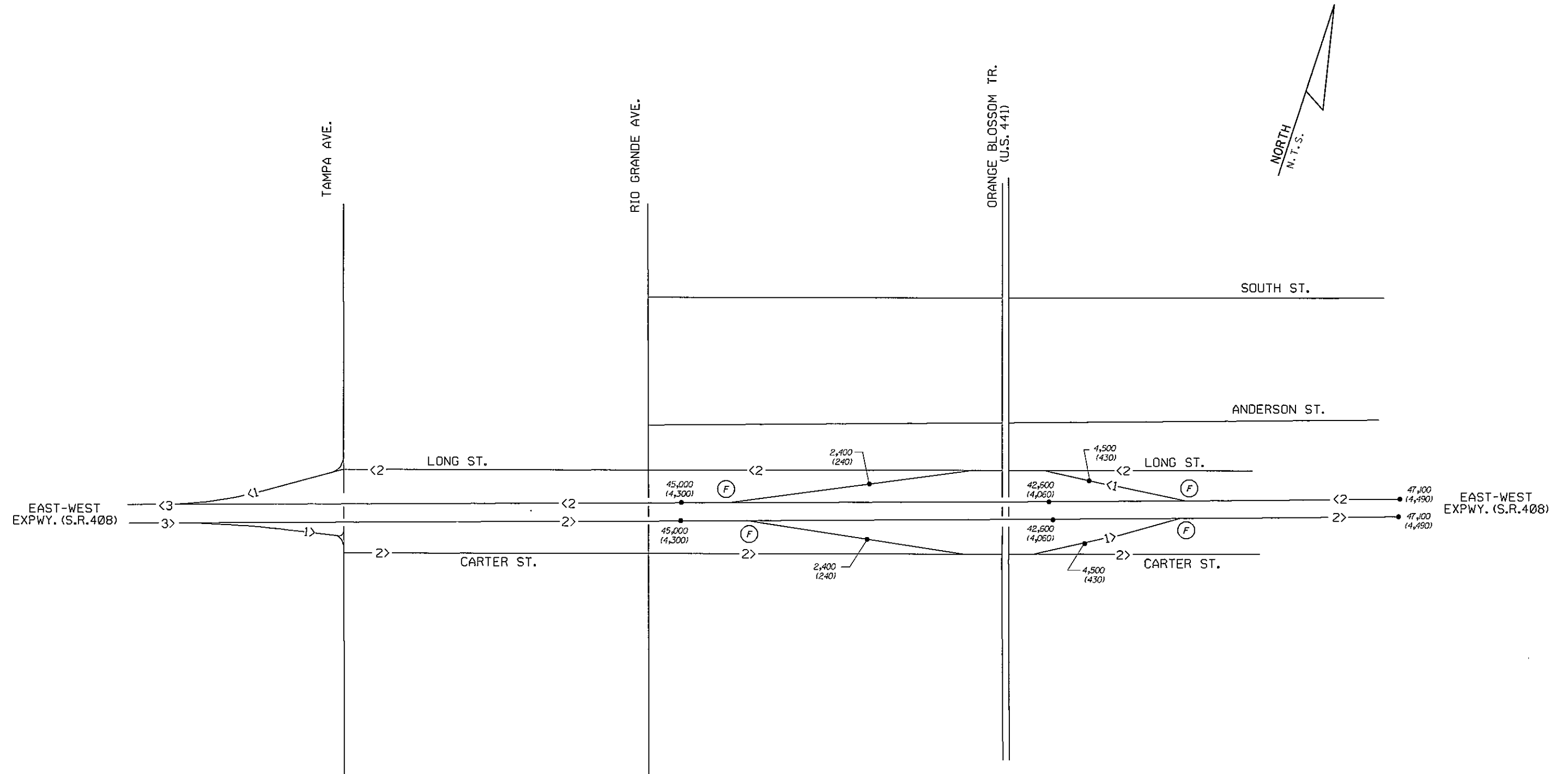
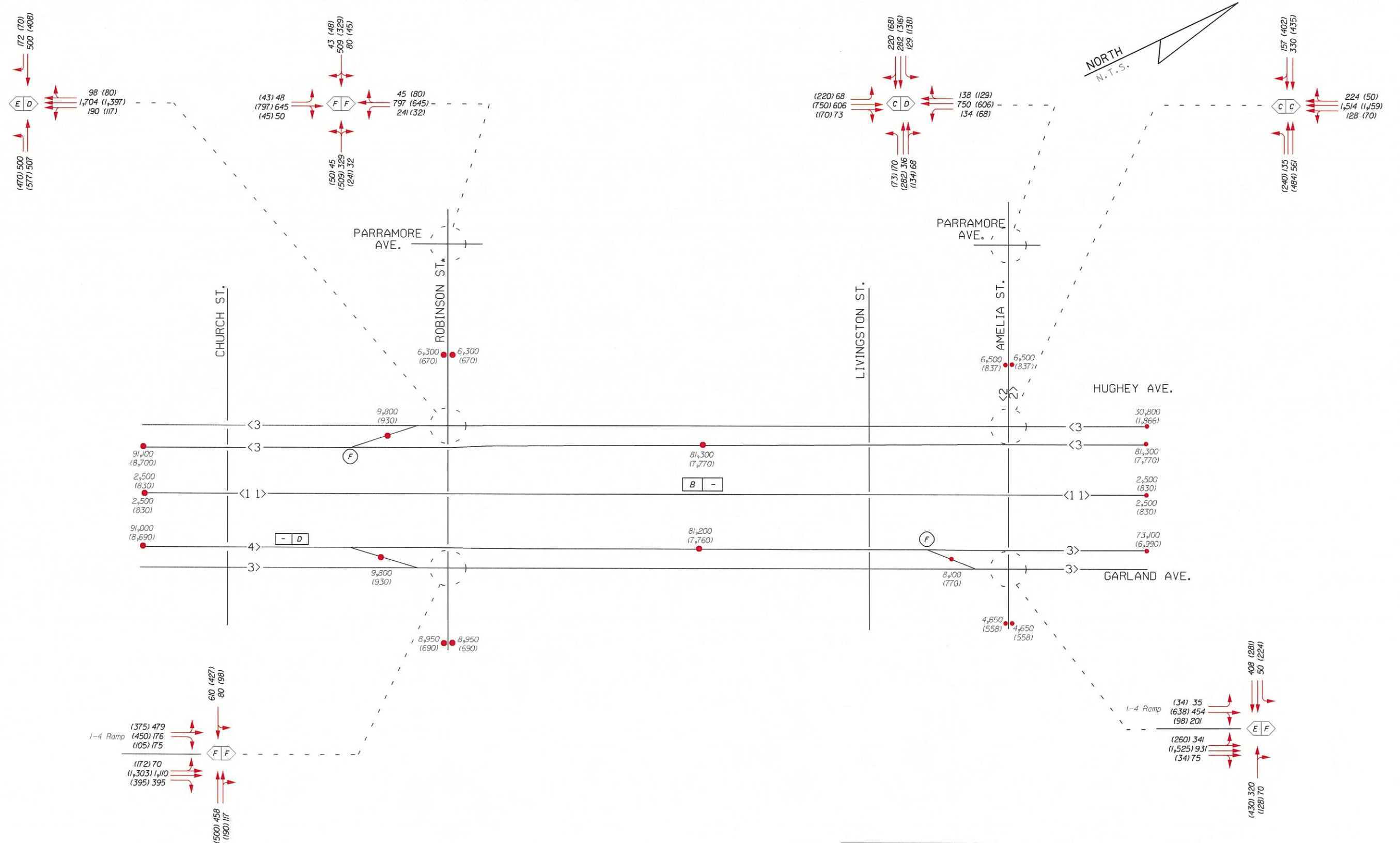


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service



| LEGEND | | | |
|--------|---|-----|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | | | (000) = DDHV (Freeway / Ramps / Arterial) |



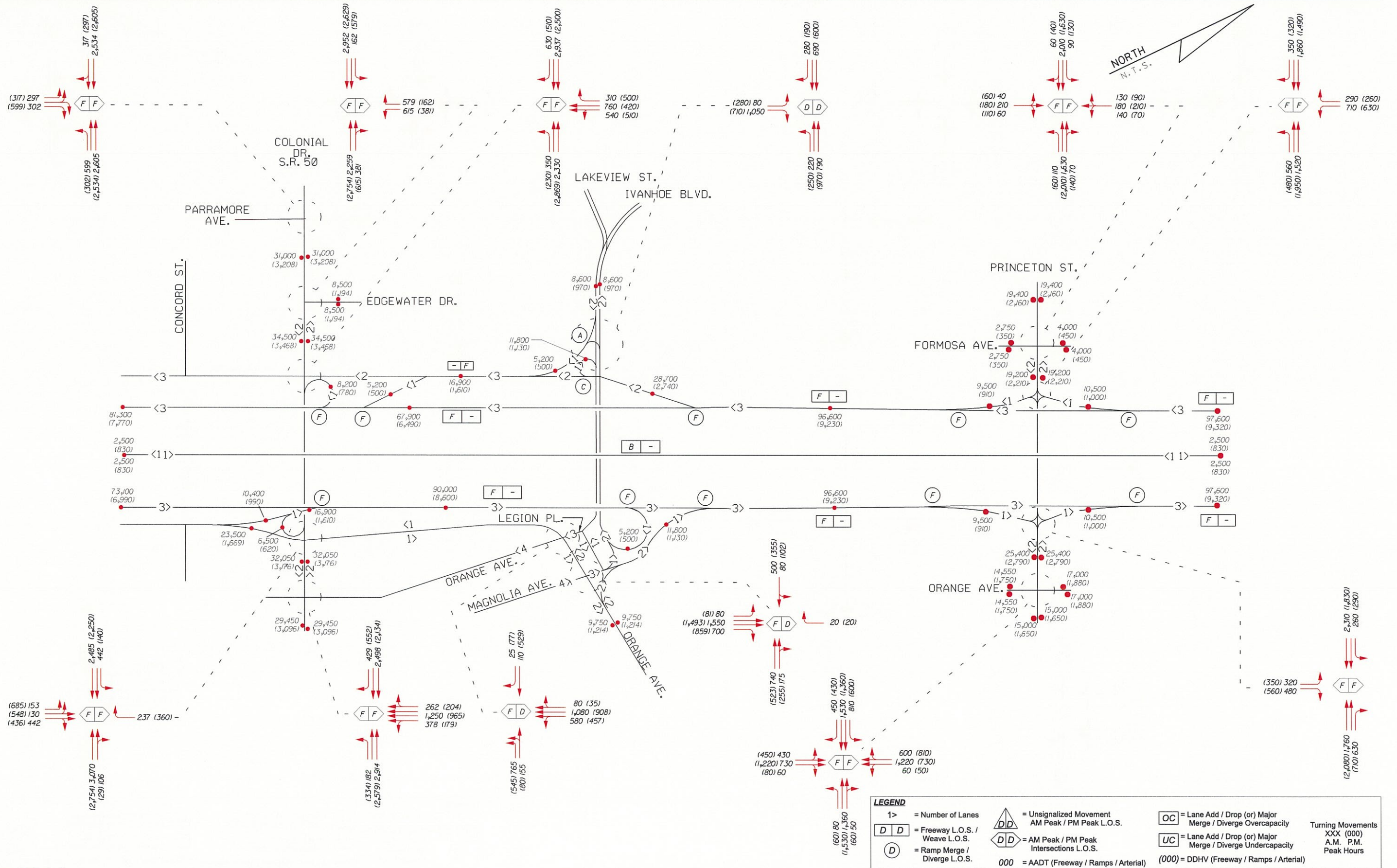
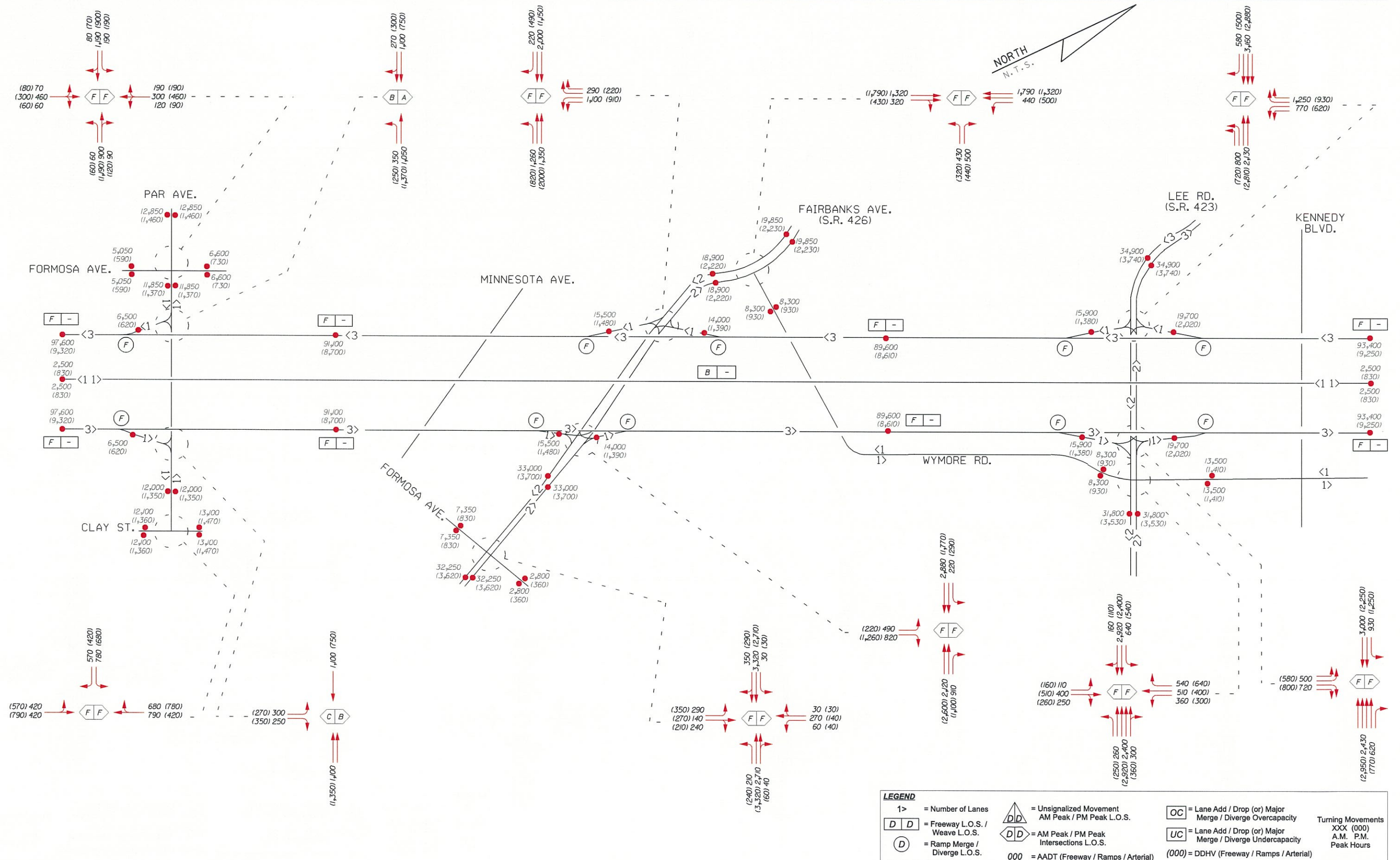


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service



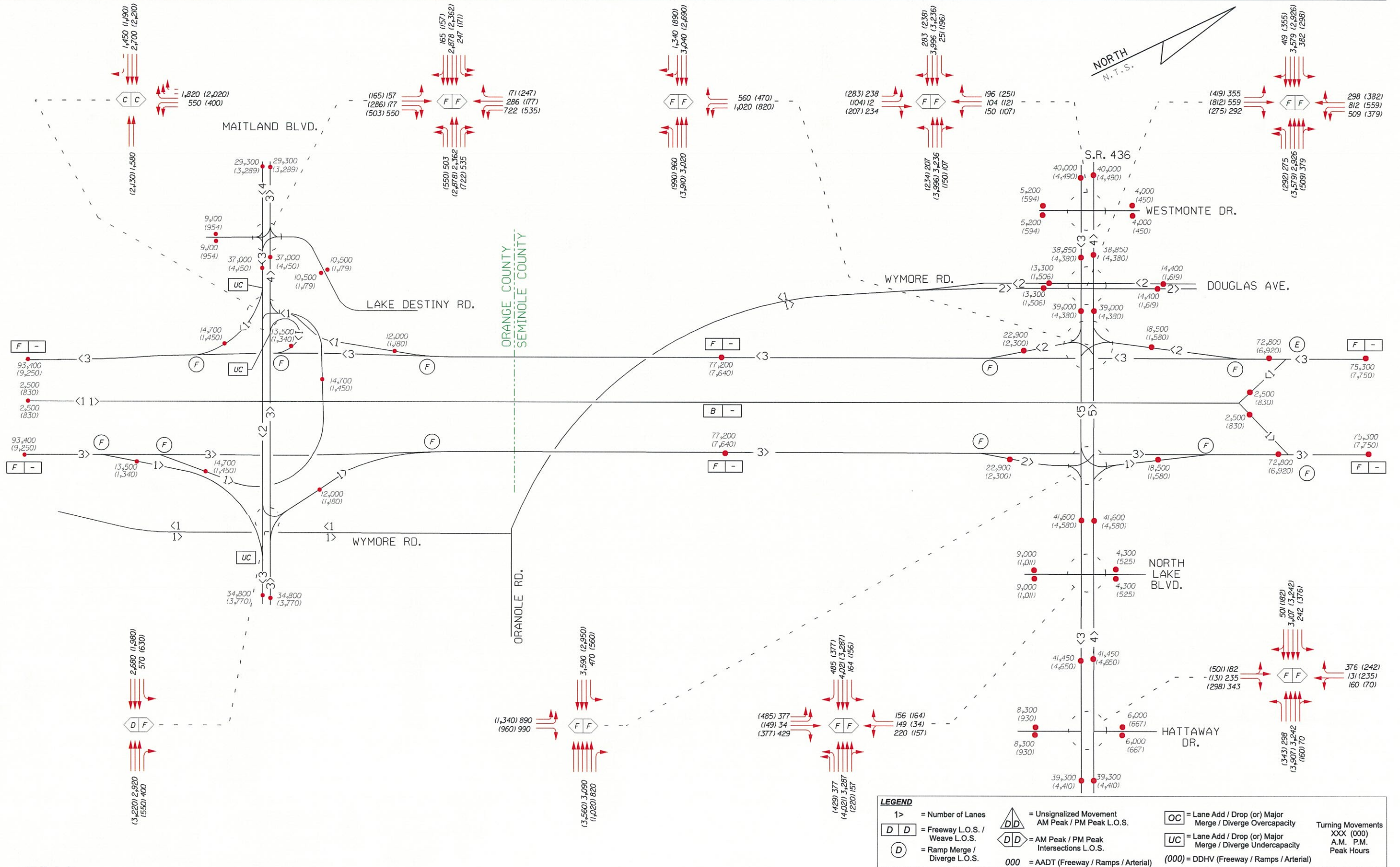
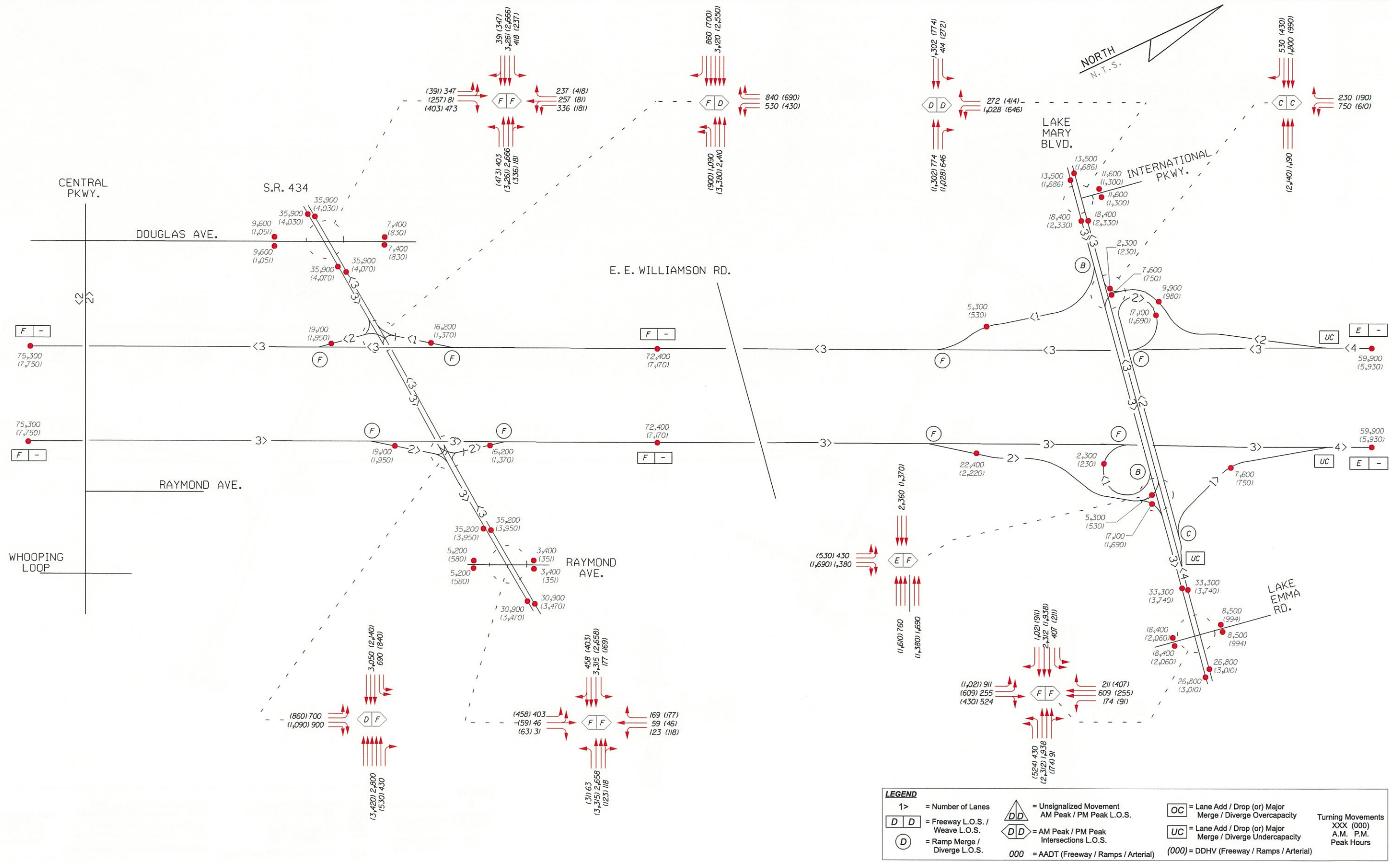


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service



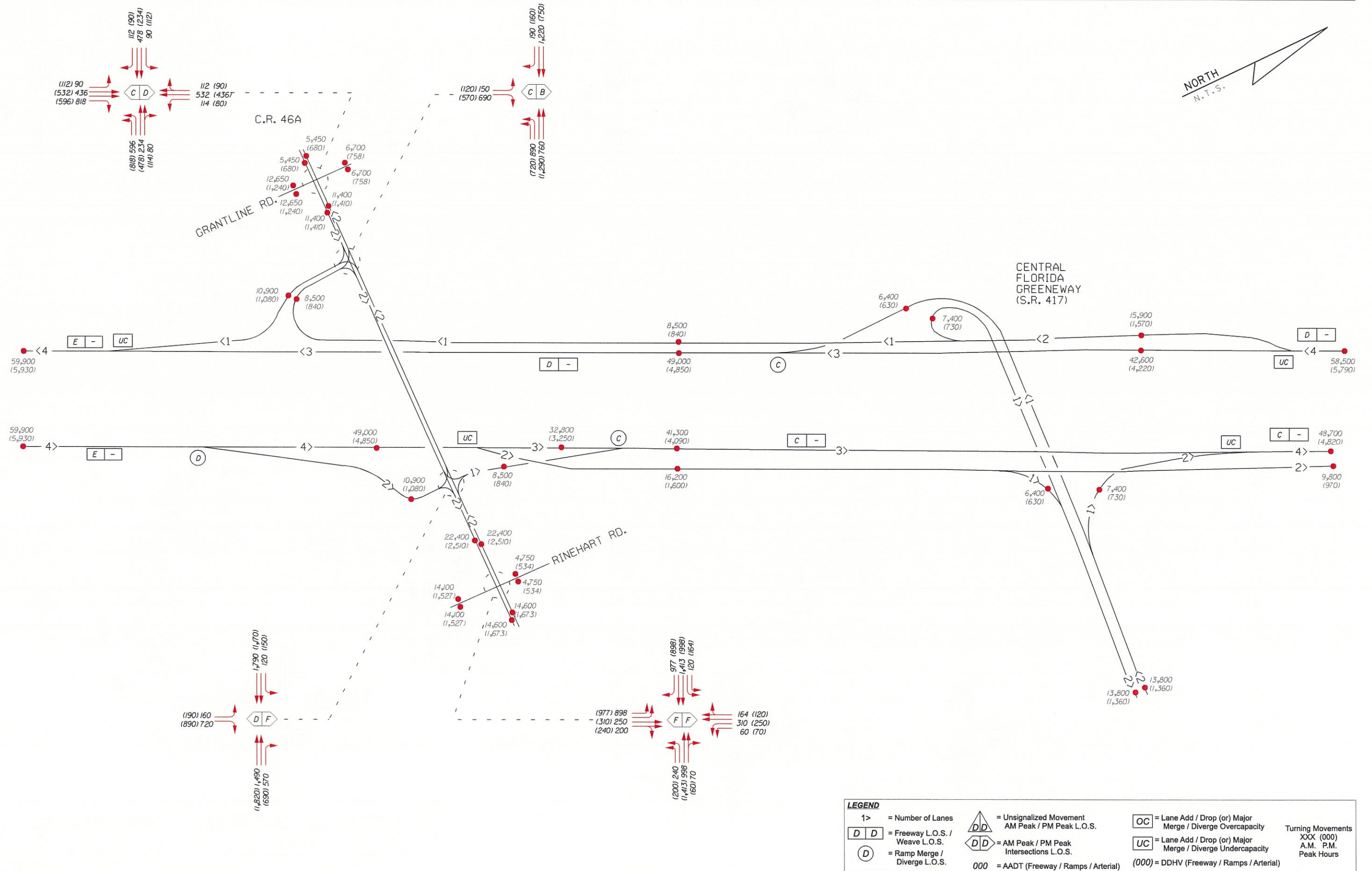
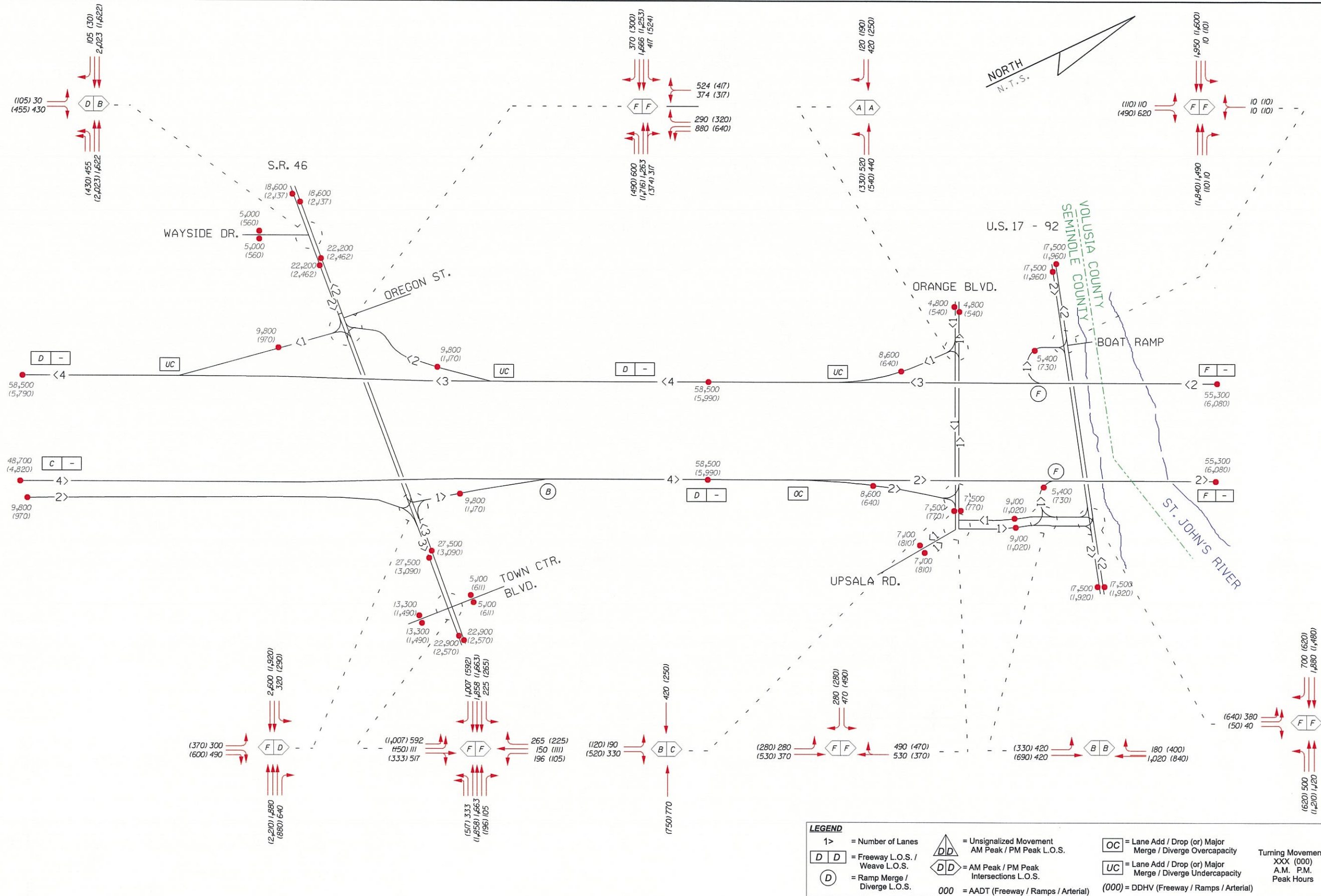


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service



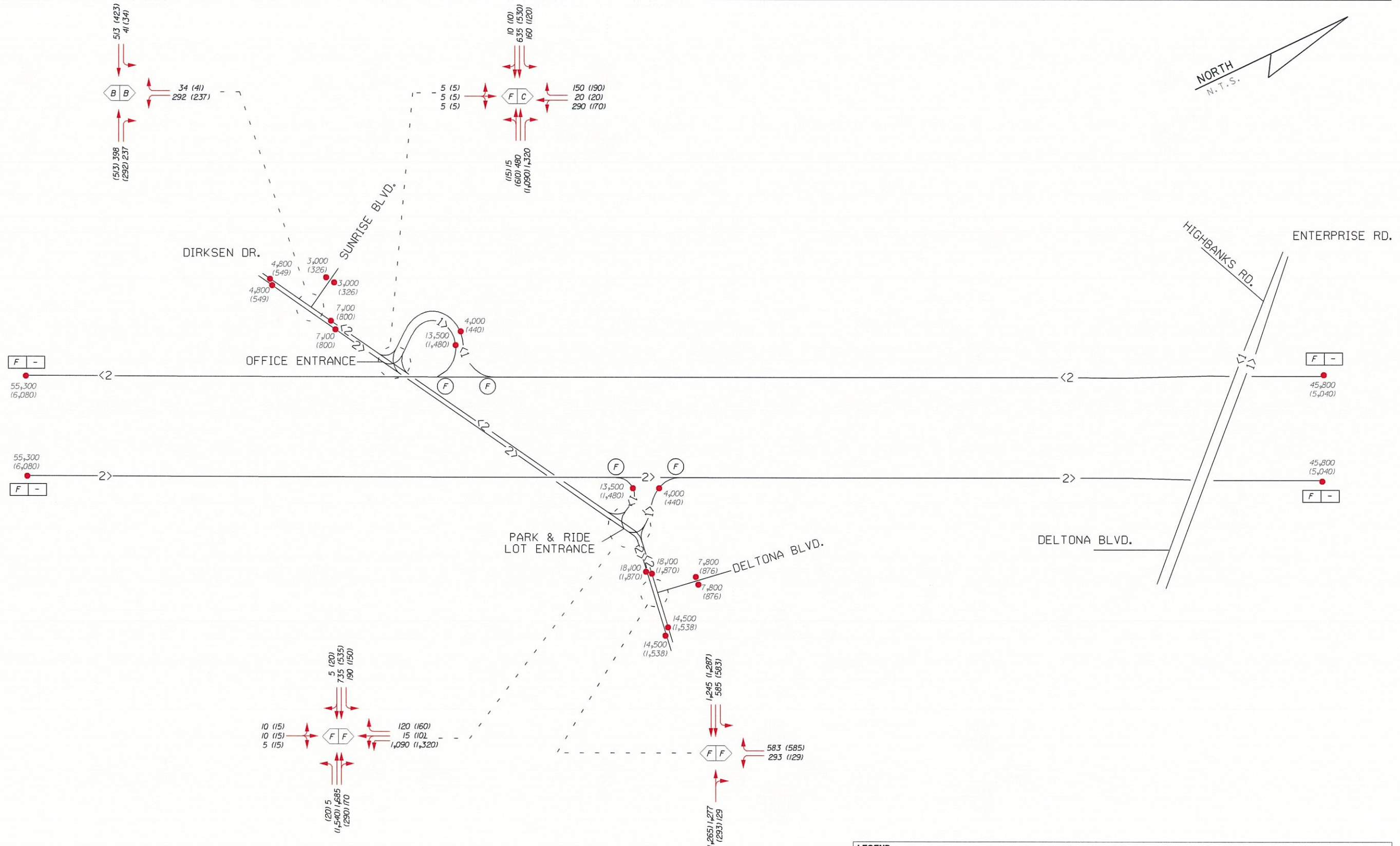
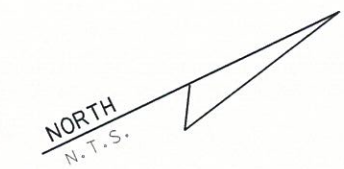


Figure 6.5.1.1
2020 No-Build Volumes & Levels of Service

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| LEGEND | | | |
|--------|--|-----|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |

6.5.2.2 Freeway Analyses - General Use Lanes

The following bullets summarize the results of the basic freeway segment analyses:

- 37 basic freeway segments analyzed
- 16 projected to operate at LOS D or better
- 14 projected to operate at LOS E
- 7 projected to operate at LOS F

The freeway ramp junction analyses are summarized in the following bullets:

- 47 ramp junctions analyzed
- 32 projected to operate at LOS D or better
- 0 projected to operate at LOS E
- 15 projected to operate at LOS F

Of the 41 major merge/diverge locations, 25 are projected to operate under capacity and 16 are projected to operate over capacity.

The freeway weaving section analyses results are summarized in the following bullets:

- 25 weaving sections analyzed
- 2 projected to operate at LOS D or better
- 9 projected to operate at LOS E
- 14 projected to operate at LOS F

It should be noted, however, that eight of the 14 weaving sections projected to operate at LOS F are between general use lanes and HOV slip ramps. The 2020 Build traffic volumes and levels of service are shown in Figure 6.5.2.1.

6.5.2.3 Intersection Analyses

The intersection analyses results are summarized in the following bullets:

- 100 intersections analyzed
- 28 projected to operate at LOS D or better in both peak periods
- 14 projected to operate at LOS E or F in at least one peak period
- 58 projected to operate at LOS E or F in both peak periods

The intersection volumes and levels of service are shown in Figure 6.5.2.1.

6.5.2.4 Cross Street Ramp Analyses

The cross street ramp junction analyses for the design year (2020) build condition indicate that all 44 ramp junctions are projected to operate at LOS D or better. Of the 22 cross street ramp major merge/diverge analyses, 21 are projected to operate under capacity and only one is projected to operate over capacity.

Four weaving sections were analyzed for the cross street ramps in the design year (2020) build condition. No weaving sections are projected to operate at LOS D. Three are projected to operate at LOS E and one is projected to operate at LOS F.

The cross street ramp volumes and levels of service are shown in Figure 6.5.2.1.

6.5.2.5 Link Analyses

The levels of service for the interchanging cross streets were derived from the intersection analyses performed for the ramp termini and adjacent intersections. Less than one quarter of the links are projected to operate at acceptable levels of service. Of the 58 links analyzed, 11 are projected to operate at LOS D or better, one is projected to operate at LOS E and 45 are projected to operate at LOS F. In addition, one link is projected to operate under capacity.

6.6 TRAFFIC OPERATIONAL PERFORMANCE

A comparison of the Build and No-Build alternatives reveals that both alternatives will experience operational deficiencies in the Design Year (2020). However, the Build alternative will have fewer operational deficient locations than the No-Build alternative due to the proposed improvements.

The addition of HOV lanes in the Build alternative provides a significant increase in vehicle and, more importantly, person carrying capacity. All of the basic HOV lane sections are projected to operate at LOS D or better. It should be noted, however, that at slip ramp locations from the HOV lane to the general use lanes, vehicles merging into the general use lanes may experience significant congestion during the peak hour.

It is not possible to conduct a comparison of the Build versus No-Build alternatives on a link-by-link, ramp-by-ramp or intersection-by-intersection basis due to the different freeway, interchange and cross street configurations involved. It is possible, however, to compare the percentages of each type of conflict point or operational segment (i.e., ramp junction, weaving section intersection, etc.) for the Build and No-Build conditions.

Table 6.6.1 summarizes the types of operational segments, the number of each type and the number and percentage projected to operate at LOS D or

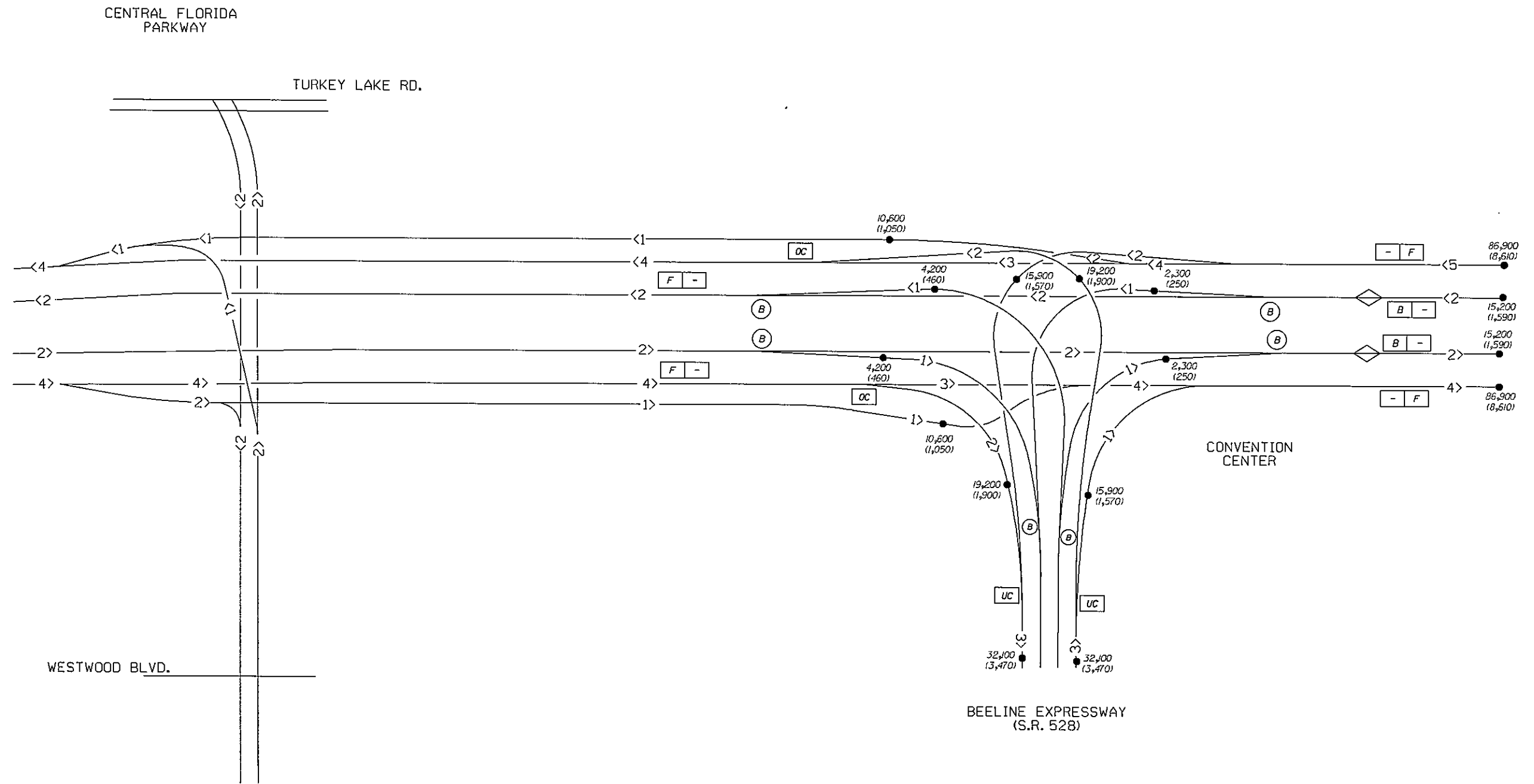
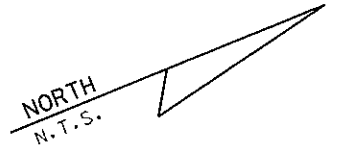
better. These are summarized for both the Build and No-Build conditions for the Design Year (2020).

The 2020 comparison of the Build and No-Build analyses indicates that higher percentages of operational elements are projected to operate at LOS D or better under the Build than under the No-Build condition. This is true for all operational elements except weaving sections and major merges/diverges. An overall comparison in the design year indicates improved traffic operations with the Build Alternative. It should also be noted that in the Build Alternative the HOV system is projected to operate at LOS D or better through the design year.

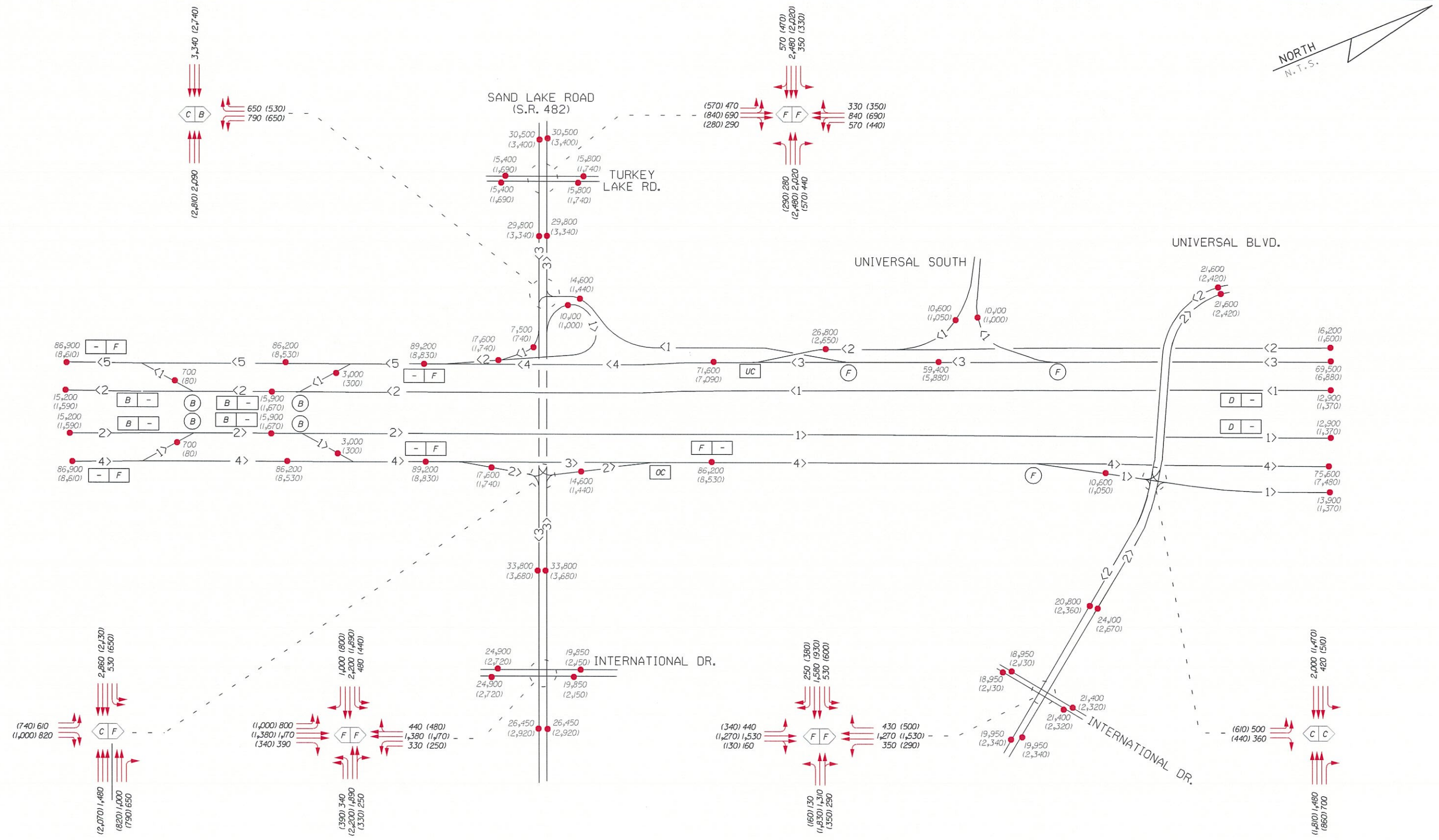
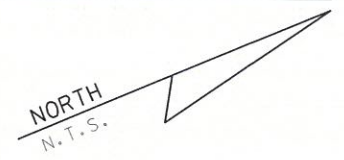
Based on the overall comparison of the Build versus the No-Build condition, it is clear the Build condition will provide improved traffic operations over the No-Build condition.

Table 6.6.1 - Alternative Comparison

| Element | Build Alternative | | | No-Build Alternative | | |
|---------------------|-------------------|--------------------|-----------------|----------------------|--------------------|--------------------|
| | No. of Locations | | Percent | No. of Locations | | Percent |
| | Total | at LOS D or better | LOS D or better | Total | at LOS D or better | at LOS D or better |
| 2020 | | | | | | |
| Freeway-General Use | | | | | | |
| Basic Segment | 37 | 16 | 43% | 27 | 5 | 19% |
| Ramp Junctions | 47 | 32 | 68% | 88 | 5 | 6% |
| Major Merge/Diverge | 41 | 25 | 61% | 18 | 12 | 67% |
| Weaving Sections | 25 | 2 | 8% | 8 | 3 | 38% |
| Cross Roads | | | | | | |
| Intersections | 100 | 28 | 28% | 103 | 31 | 30% |
| Ramp Junctions | 44 | 44 | 100% | 21 | 13 | 62% |
| Major Merge/Diverge | 22 | 21 | 95% | 17 | 10 | 58% |
| Weaving Sections | 4 | 0 | 0% | 5 | 1 | 20% |



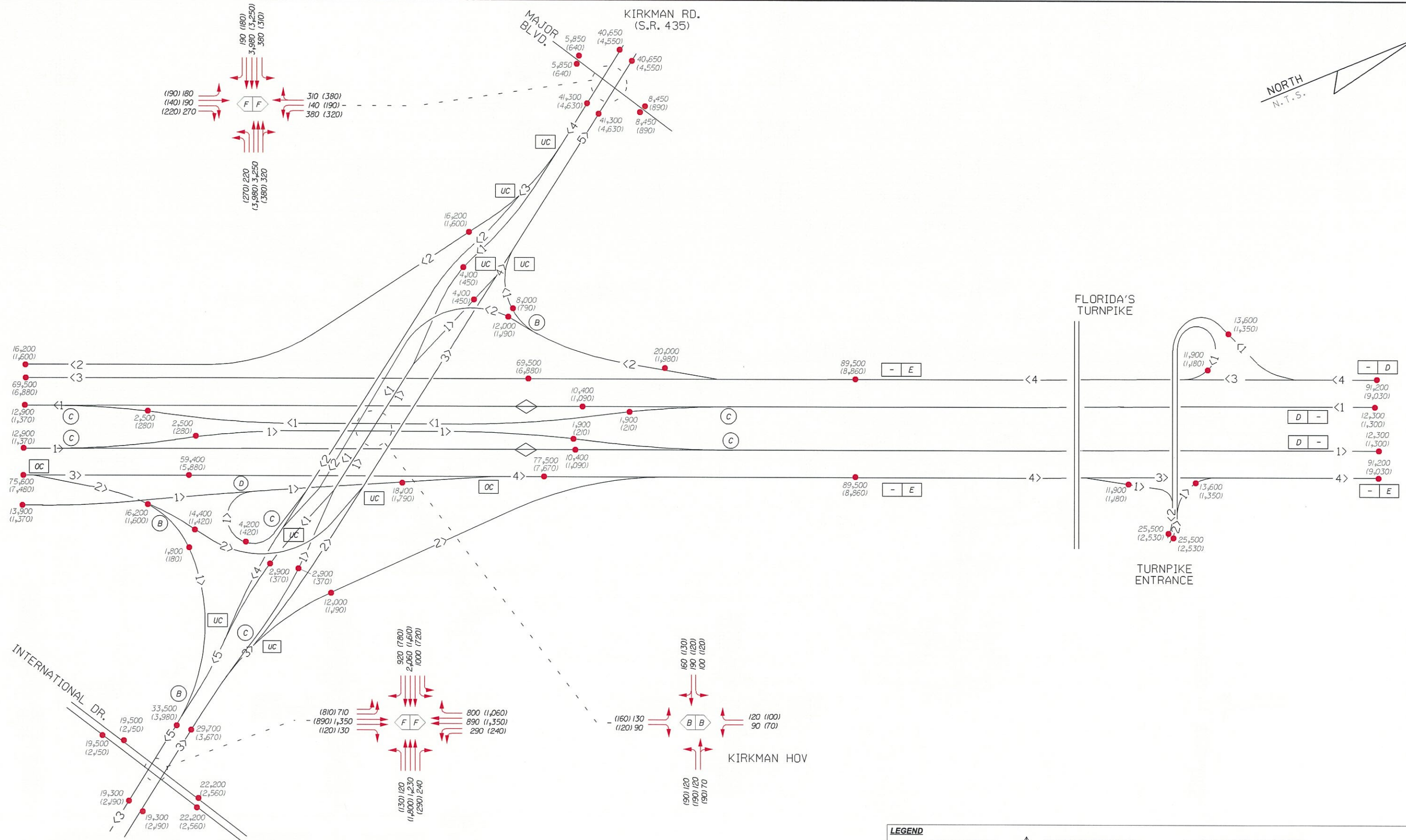
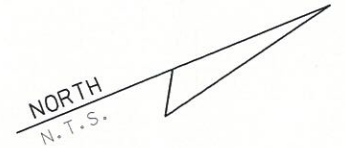
| LEGEND | | | |
|--------|--|-----|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | (000) = DDHV (Freeway / Ramps / Arterial) |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |



| LEGEND | | | |
|--------|---|---|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | Turning Movements XXX (000) A.M. P.M. Peak Hours | |
| | | (000) = DDHV (Freeway / Ramps / Arterial) | |

Figure 6.5.2.1
2020 Build Volumes & Levels of Service

I-4 PD&E Study - Section 2



LEGEND

| | | | | | | |
|----|------------------------------------|-----|---|-------|---|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity | |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) | (000) | = DDHV (Freeway / Ramps / Arterial) | |

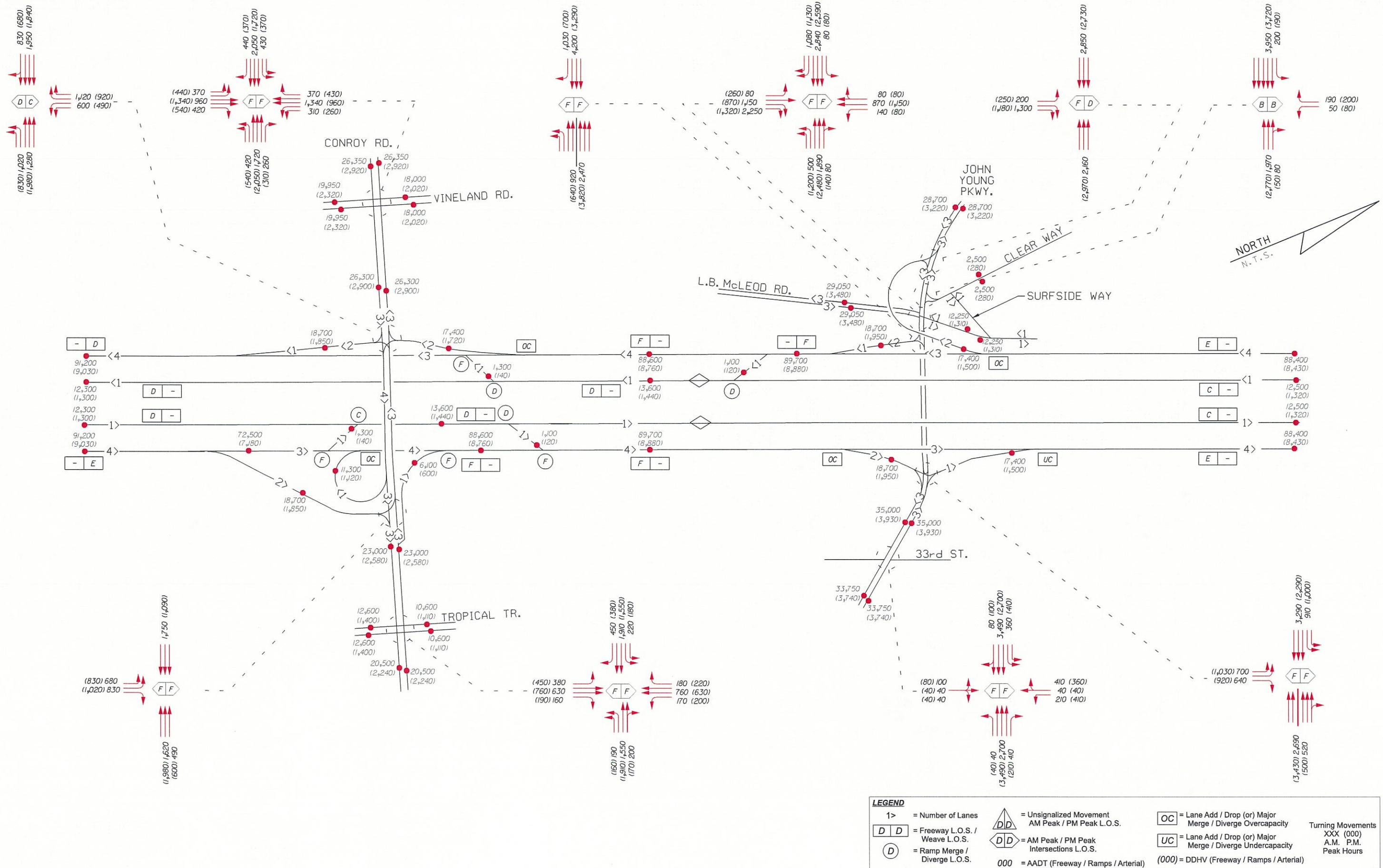
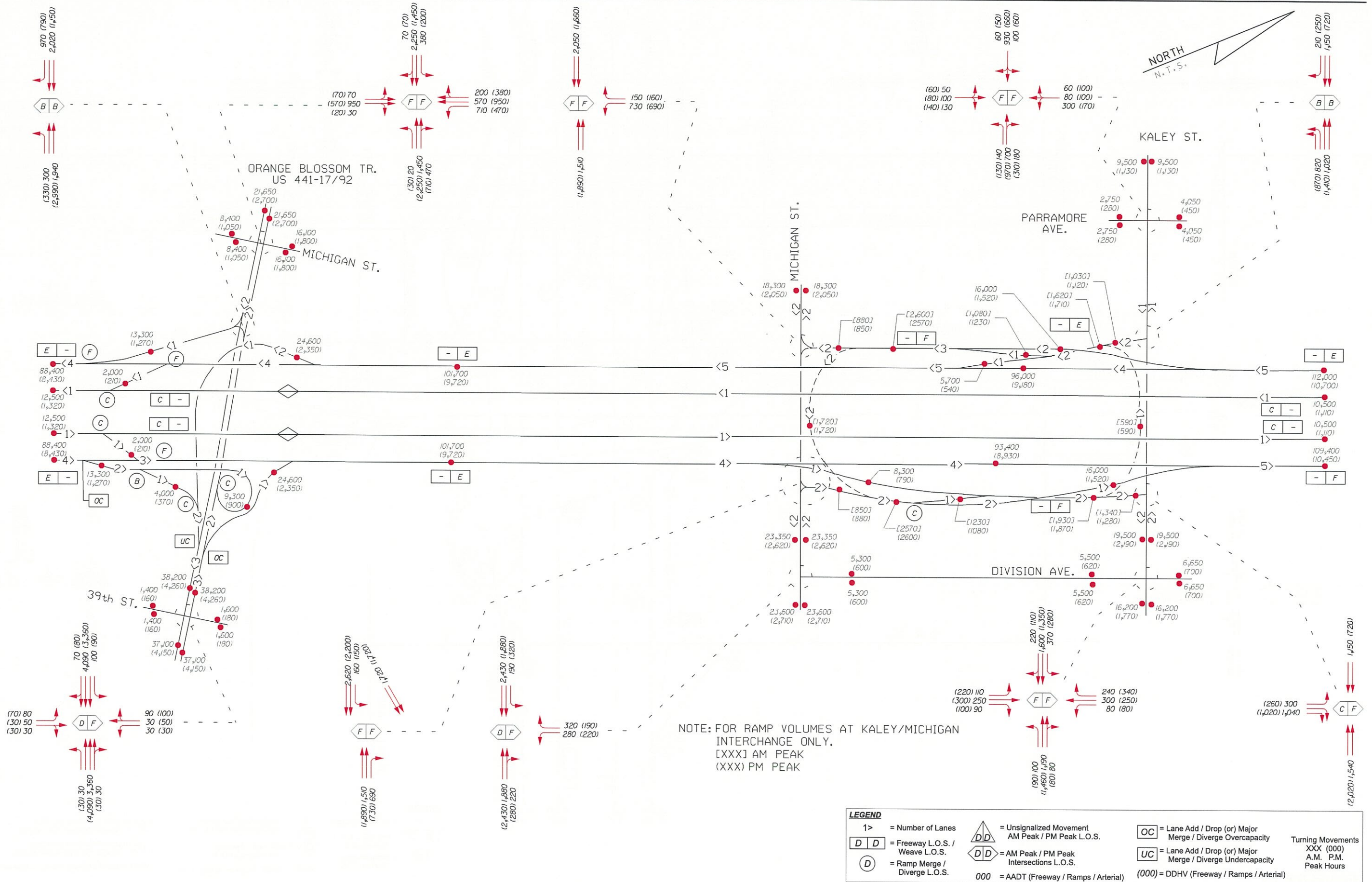


Figure 6.5.2.1
2020 Build Volumes & Levels of Service



NOTE: FOR RAMP VOLUMES AT KALEY/MICHIGAN INTERCHANGE ONLY.
[XXX] AM PEAK
(XXX) PM PEAK

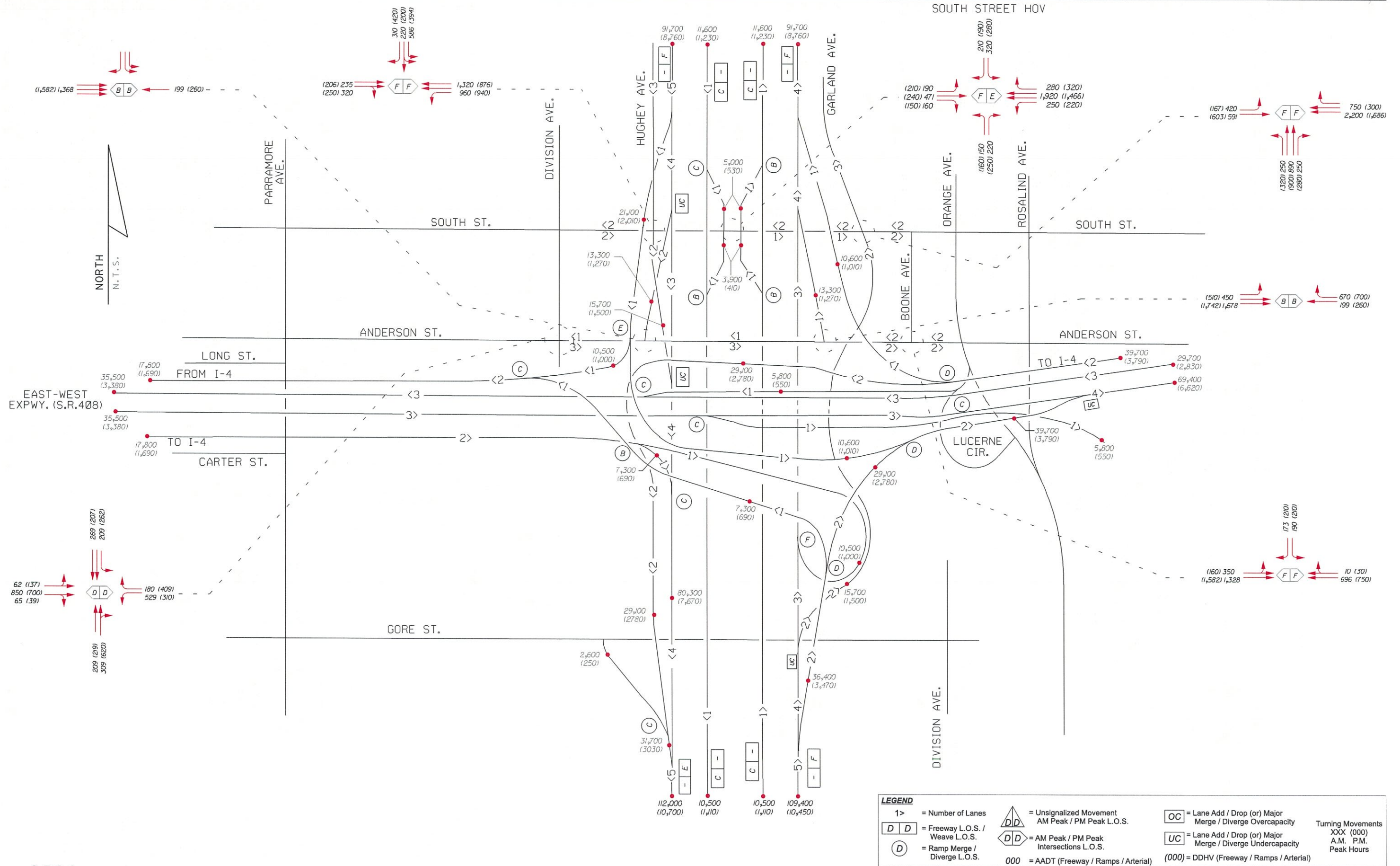
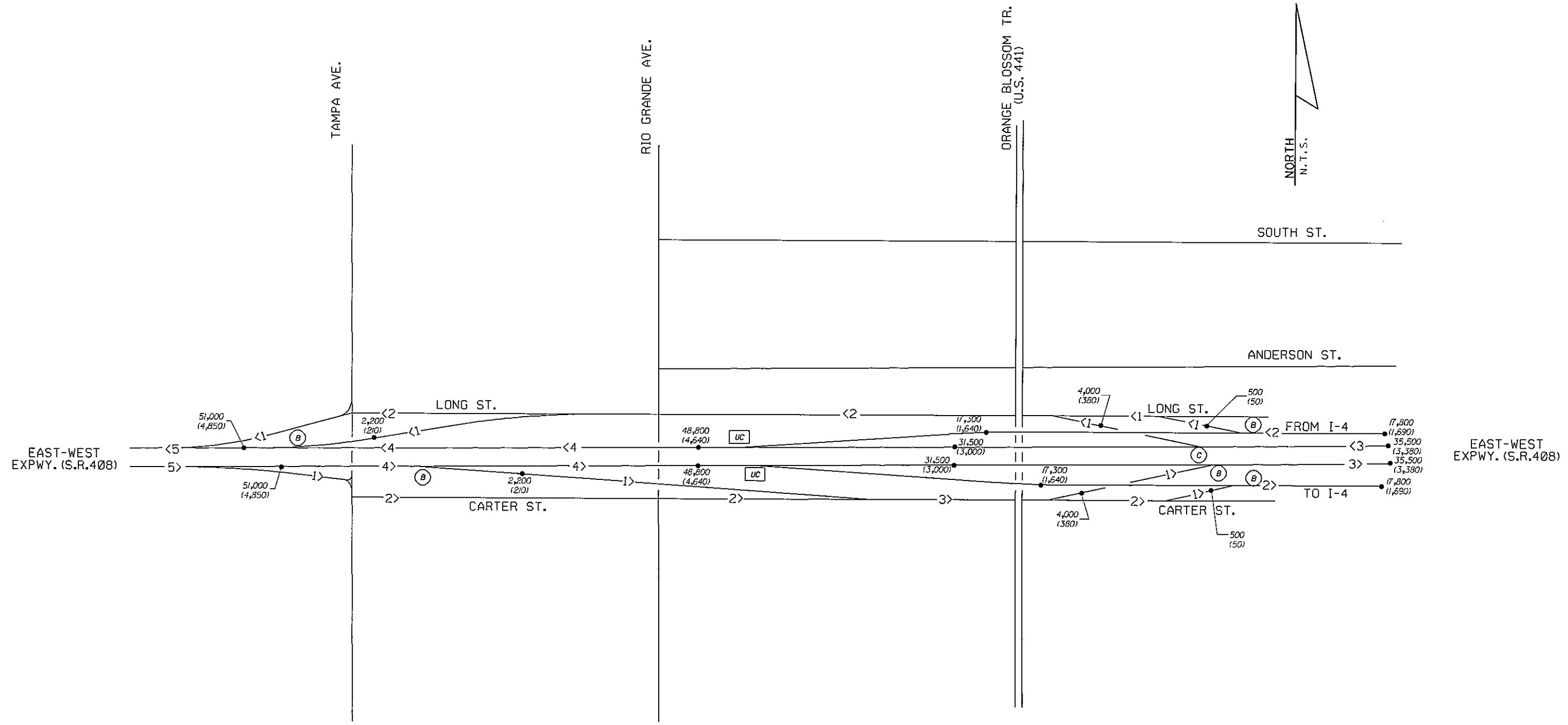
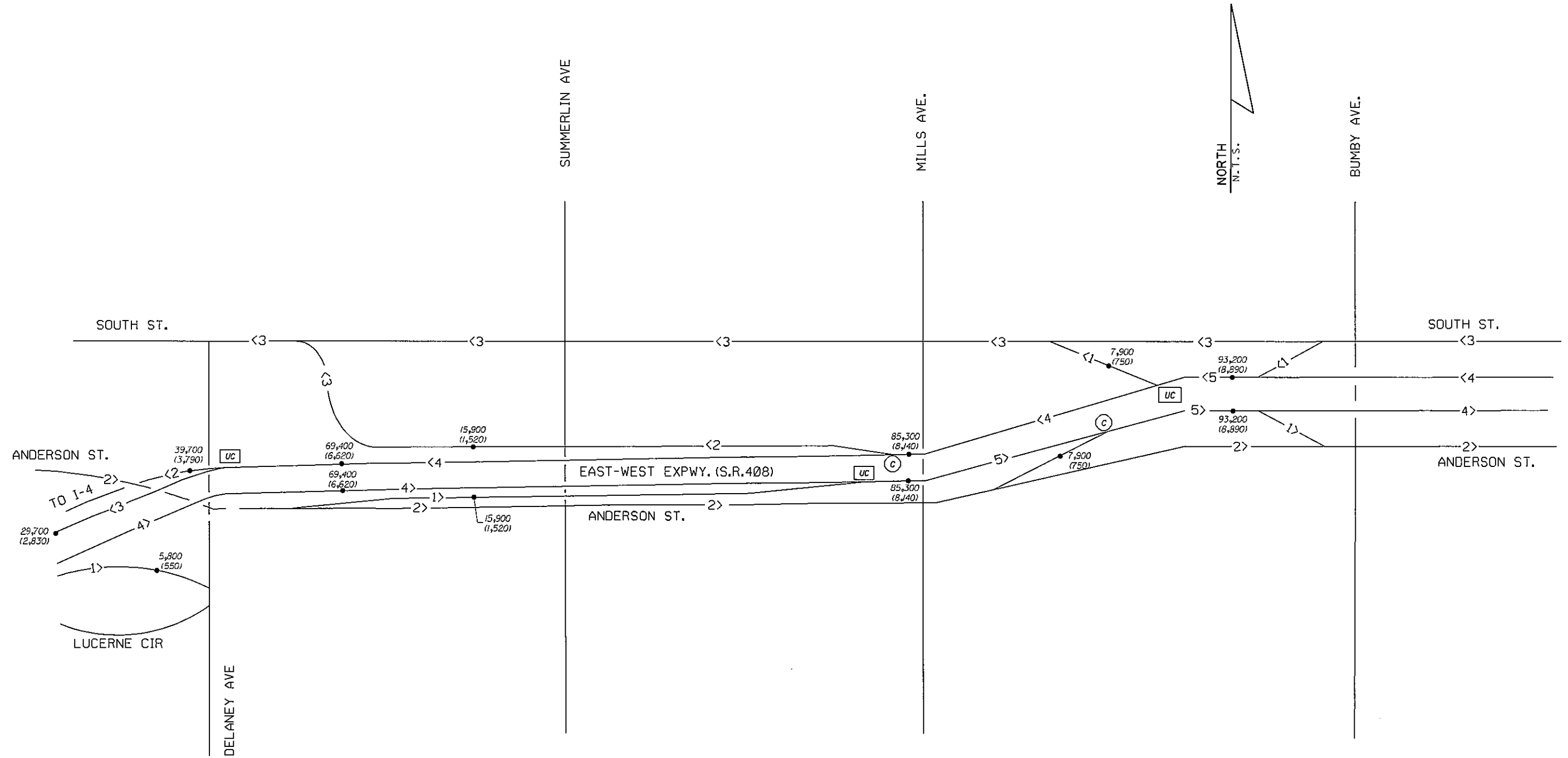


Figure 6.5.2.1
2020 Build Volumes & Levels of Service

I-4 PD&E Study - Section 2

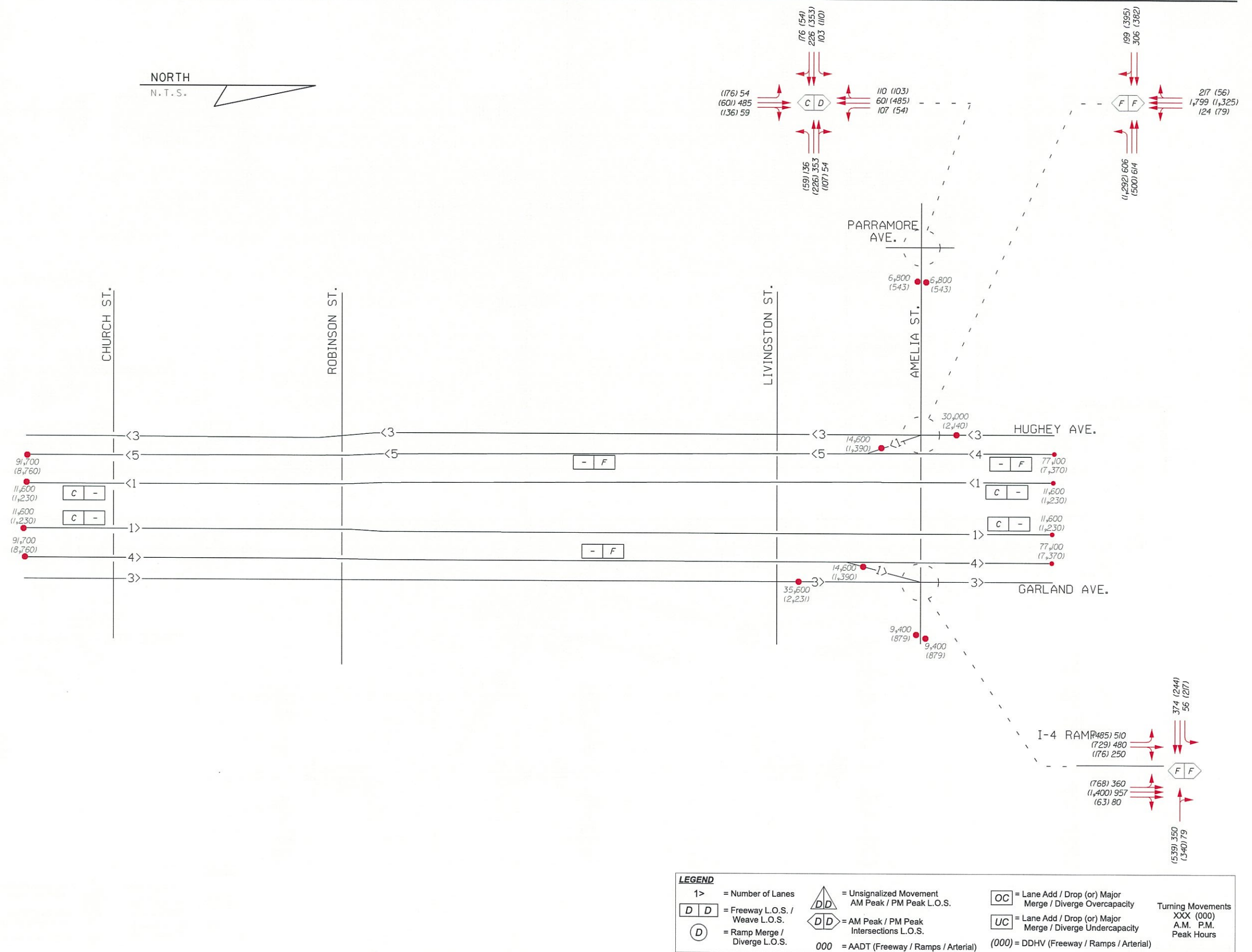


| LEGEND | | | |
|--------|---|-----|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | | | (000) = DDHV (Freeway / Ramps / Arterial) |



| LEGEND | | | |
|-----------|---|-------|--|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| XXX (000) | Turning Movements | (000) | = DDHV (Freeway / Ramps / Arterial) |
| A.M. P.M. | Peak Hours | | |

Figure 6.5.2.1
2020 Build Volumes & Levels of Service



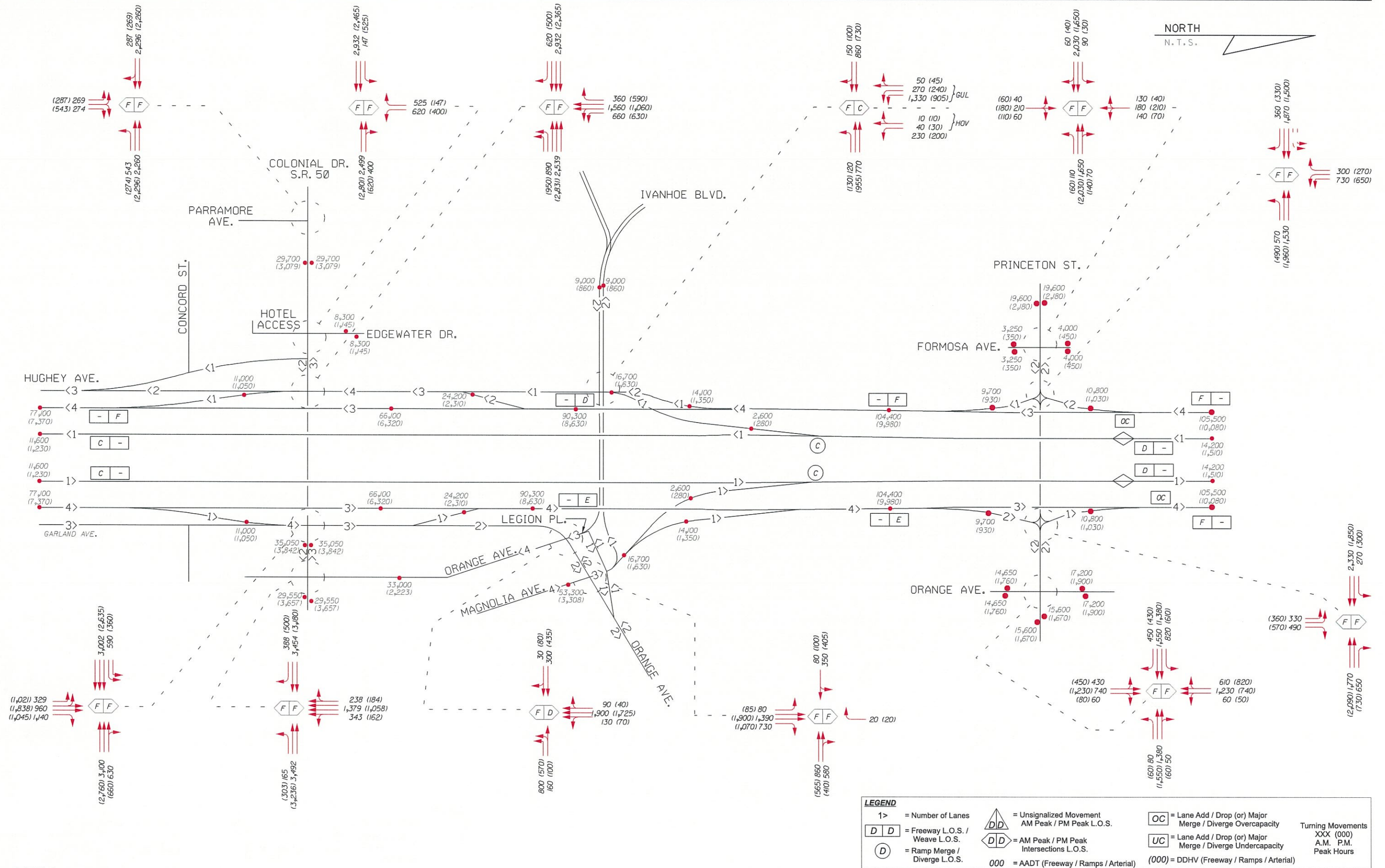
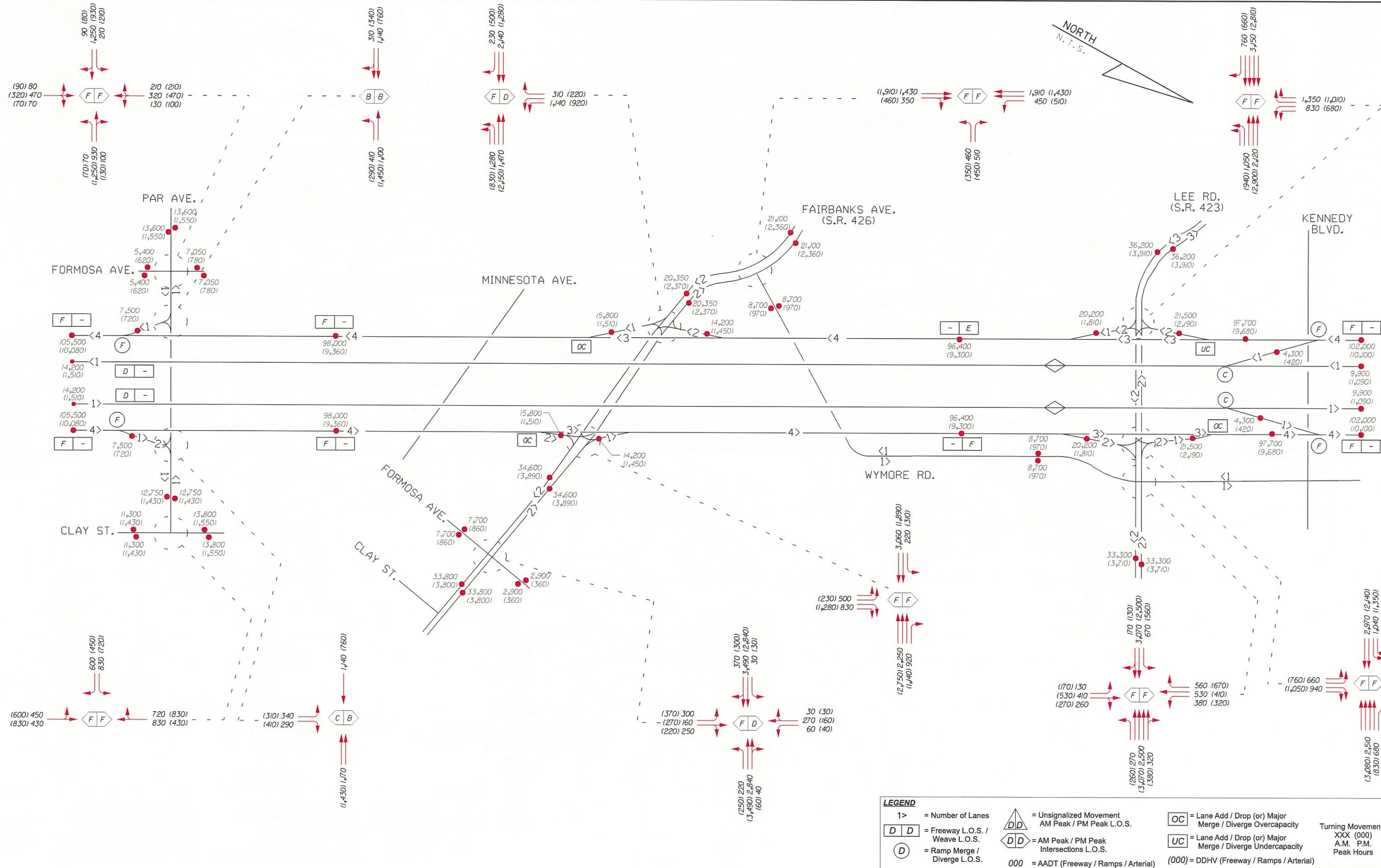


Figure 6.5.2.1
2020 Build Volumes & Levels of Service



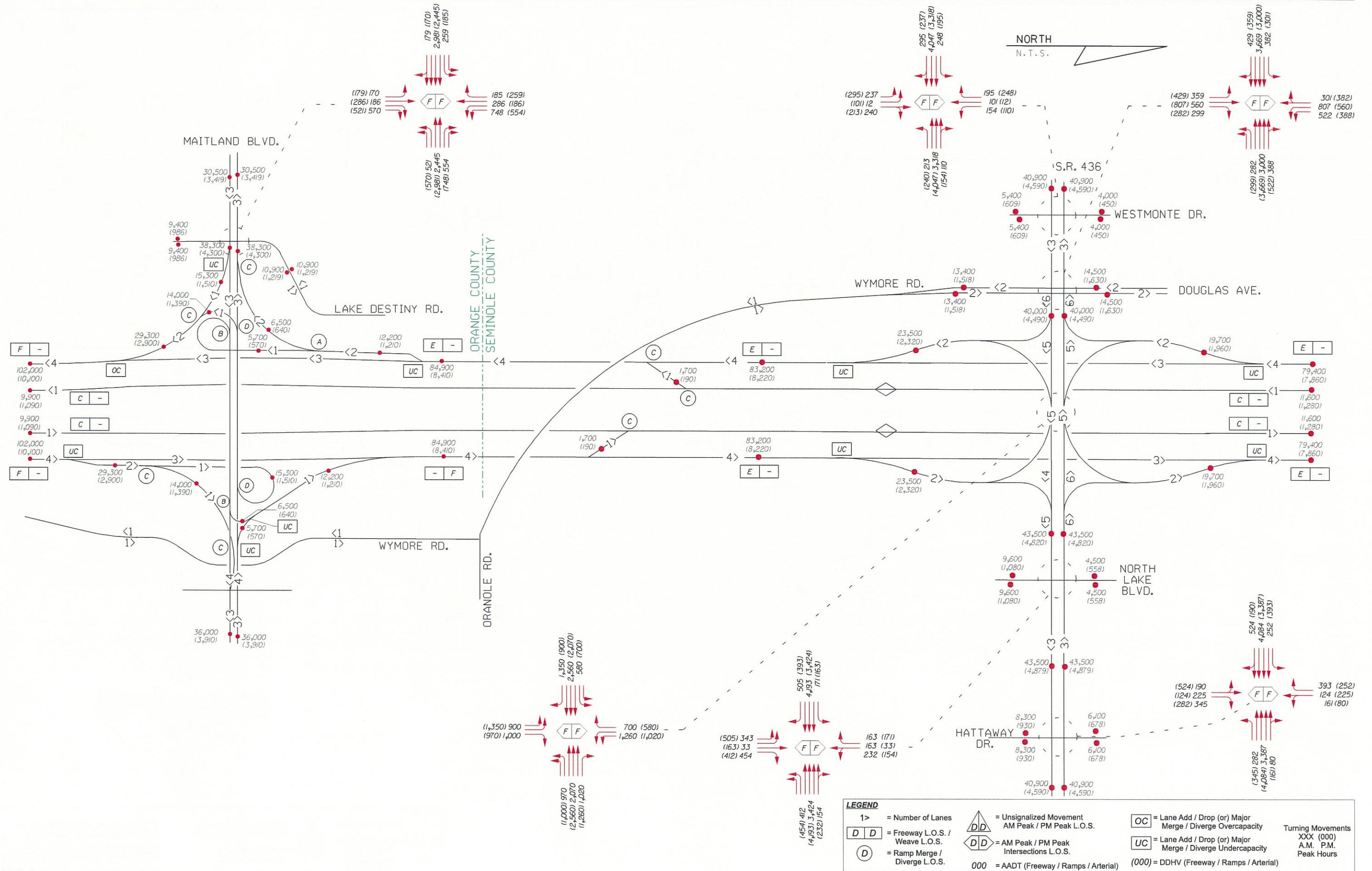
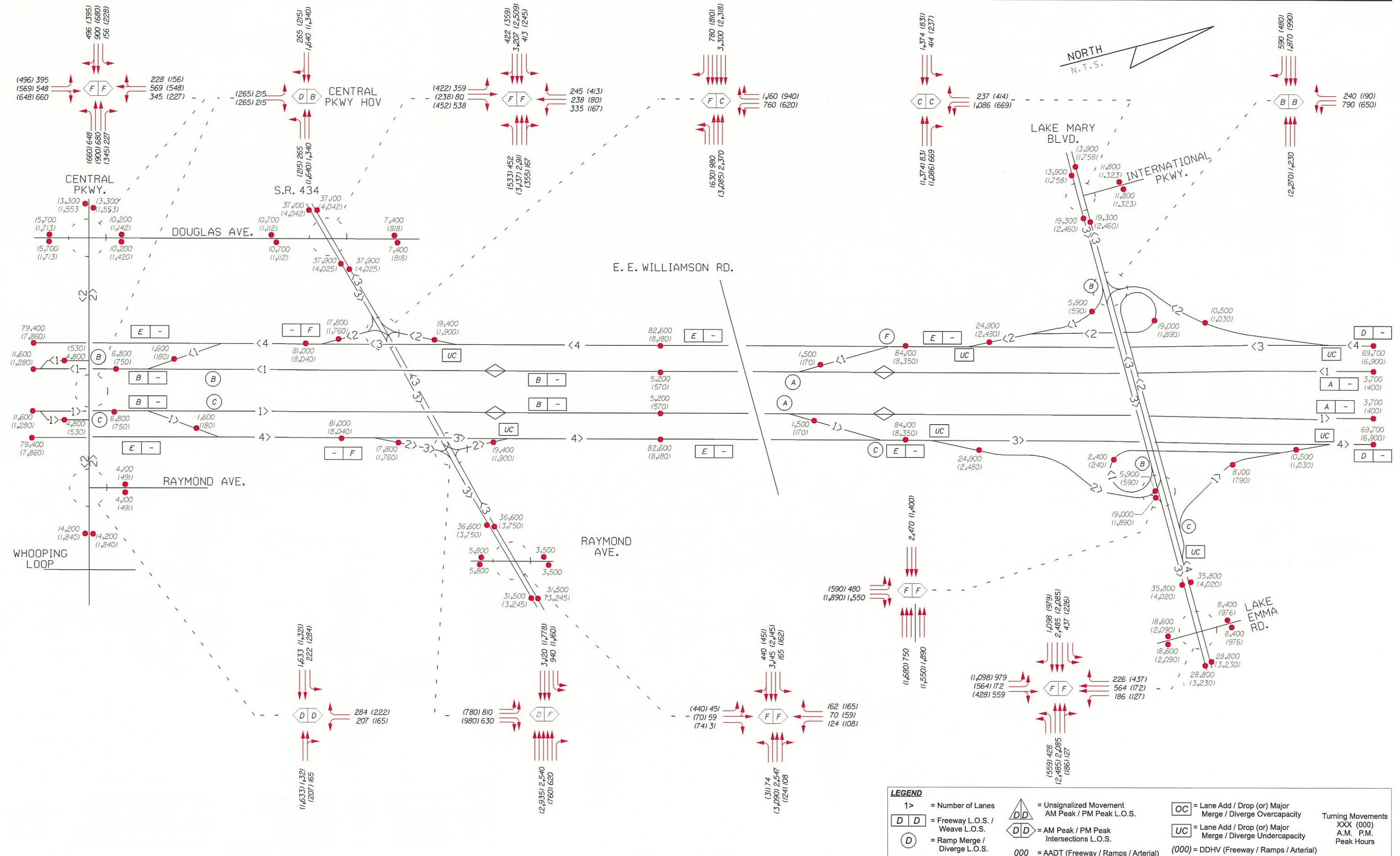
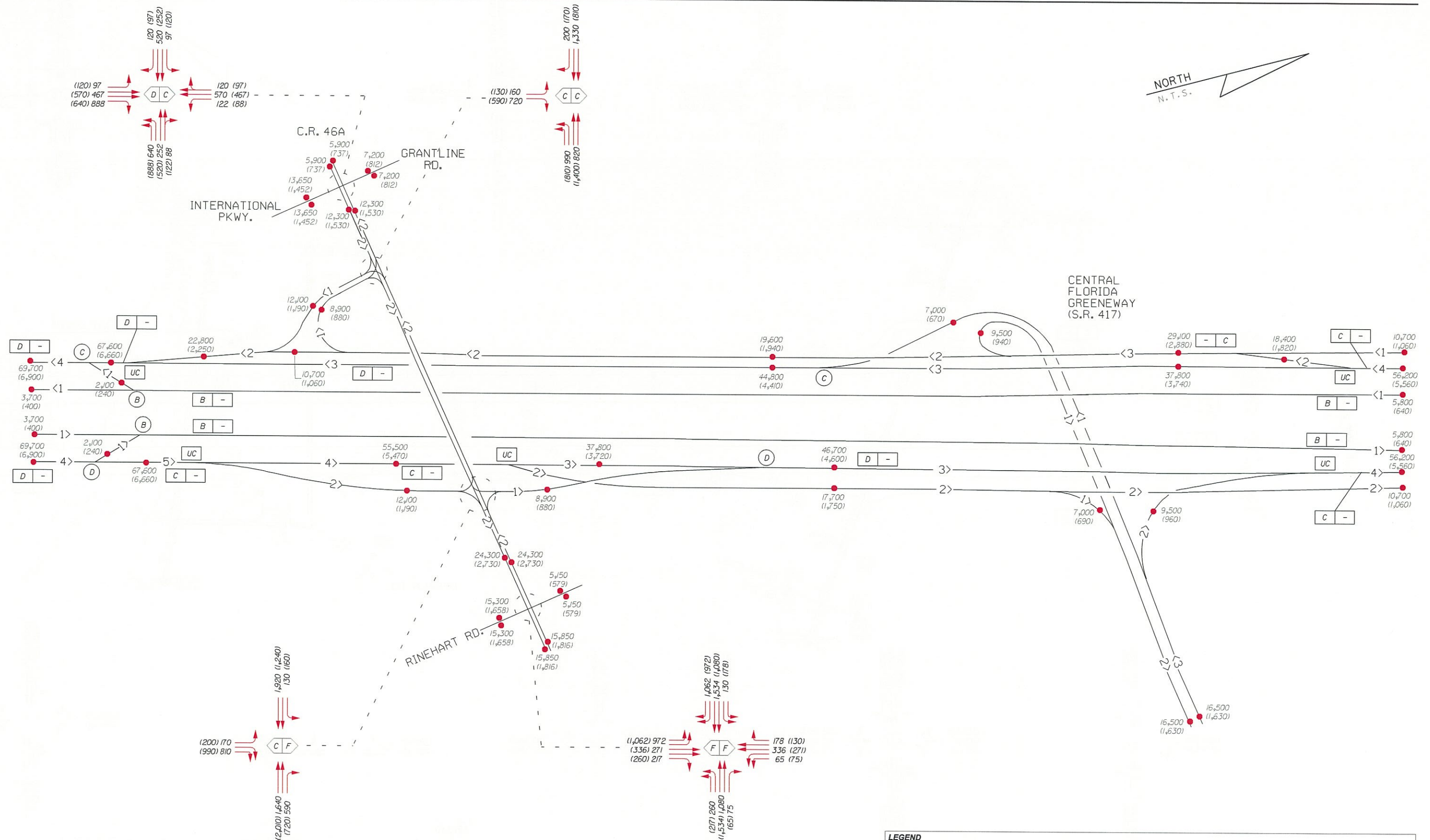


Figure 6.5.2.1
2020 Build Volumes & Levels of Service

I-4 PD&E Study - Section 2





| LEGEND | | | |
|--------|--|-----------|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) |
| | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity |
| | | XXX (000) | Turning Movements A.M. P.M. Peak Hours |
| | | (000) | = DDHV (Freeway / Ramps / Arterial) |

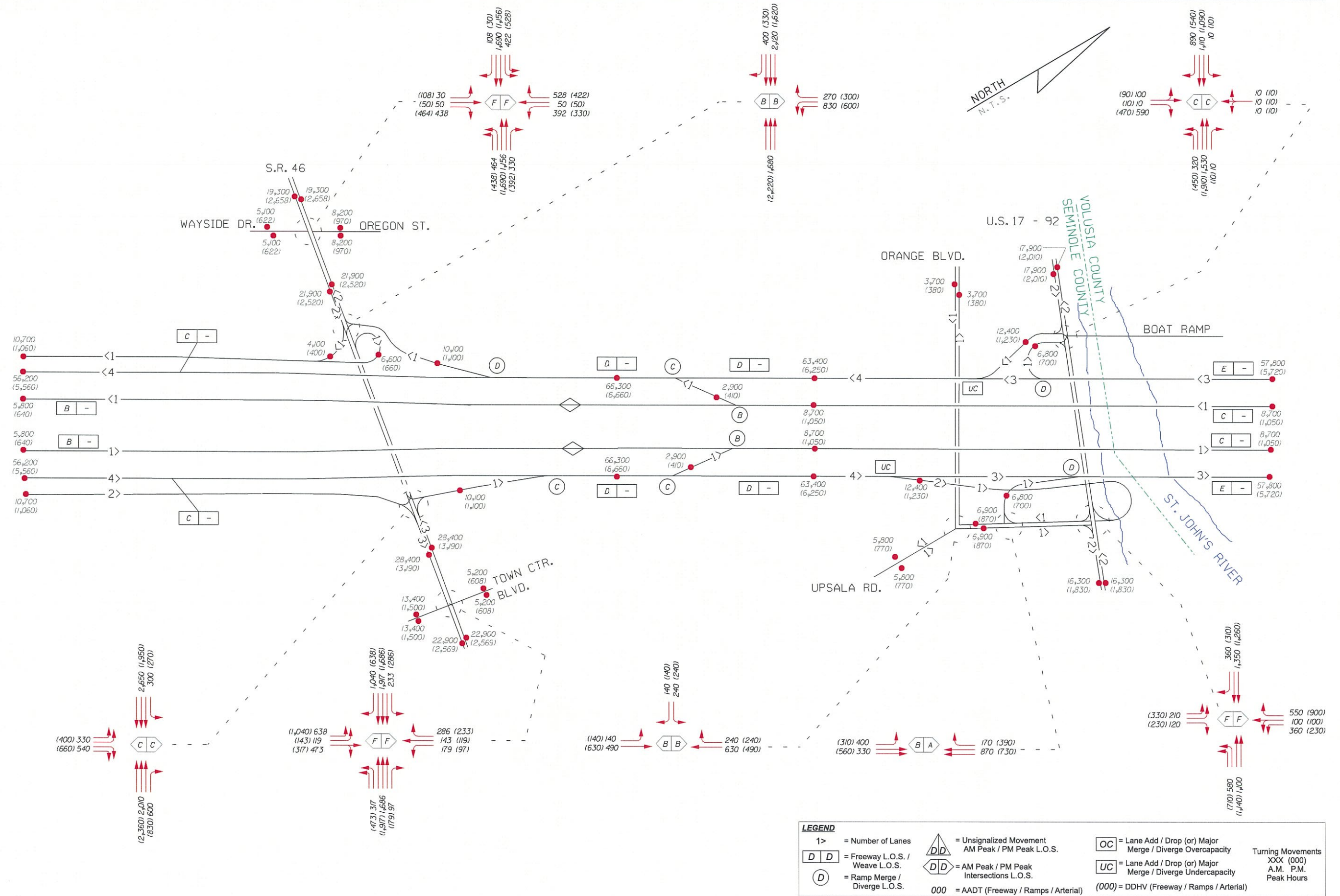
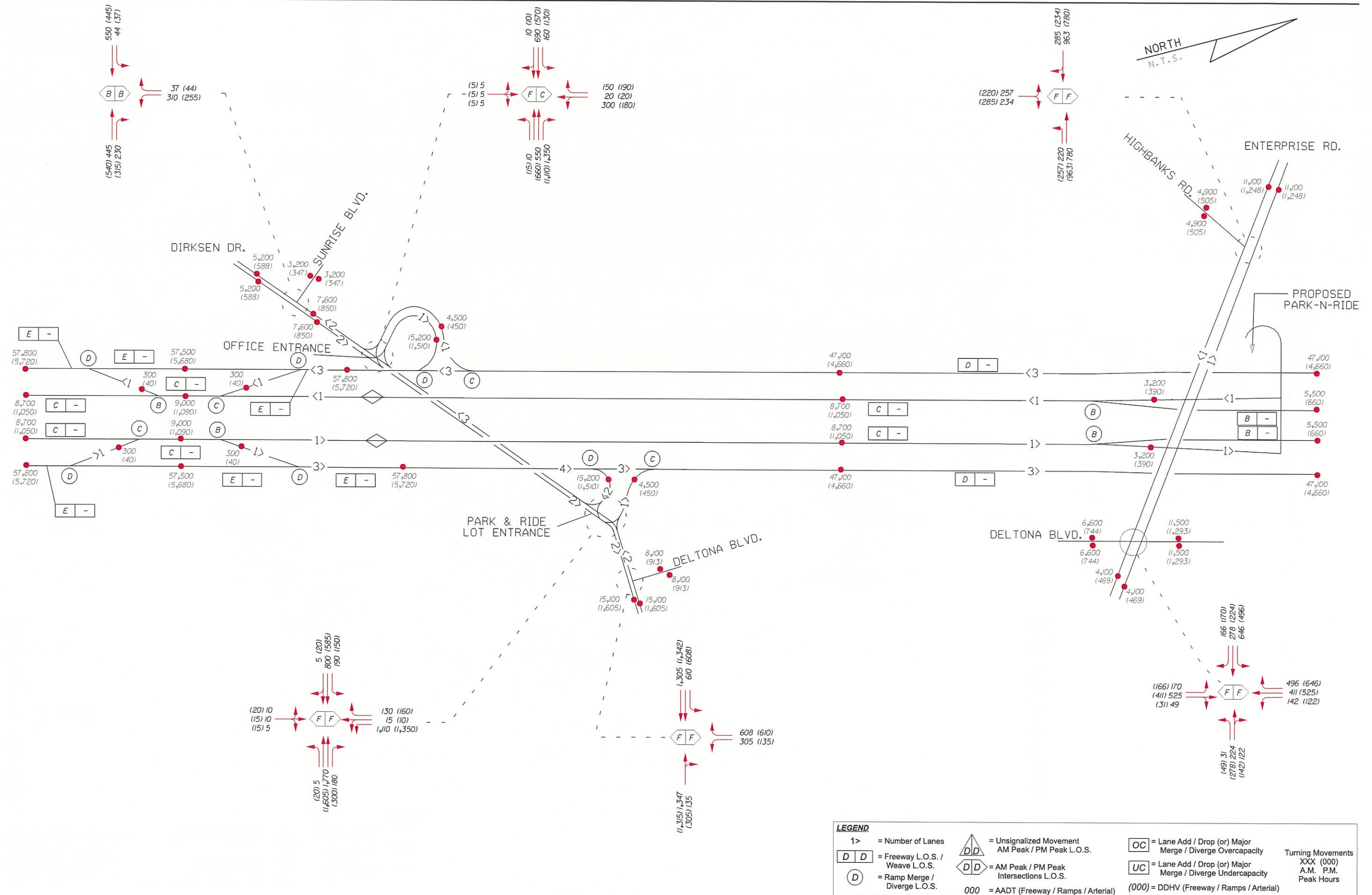


Figure 6.5.2.1
2020 Build Volumes & Levels of Service

I-4 PD&E Study - Section 2



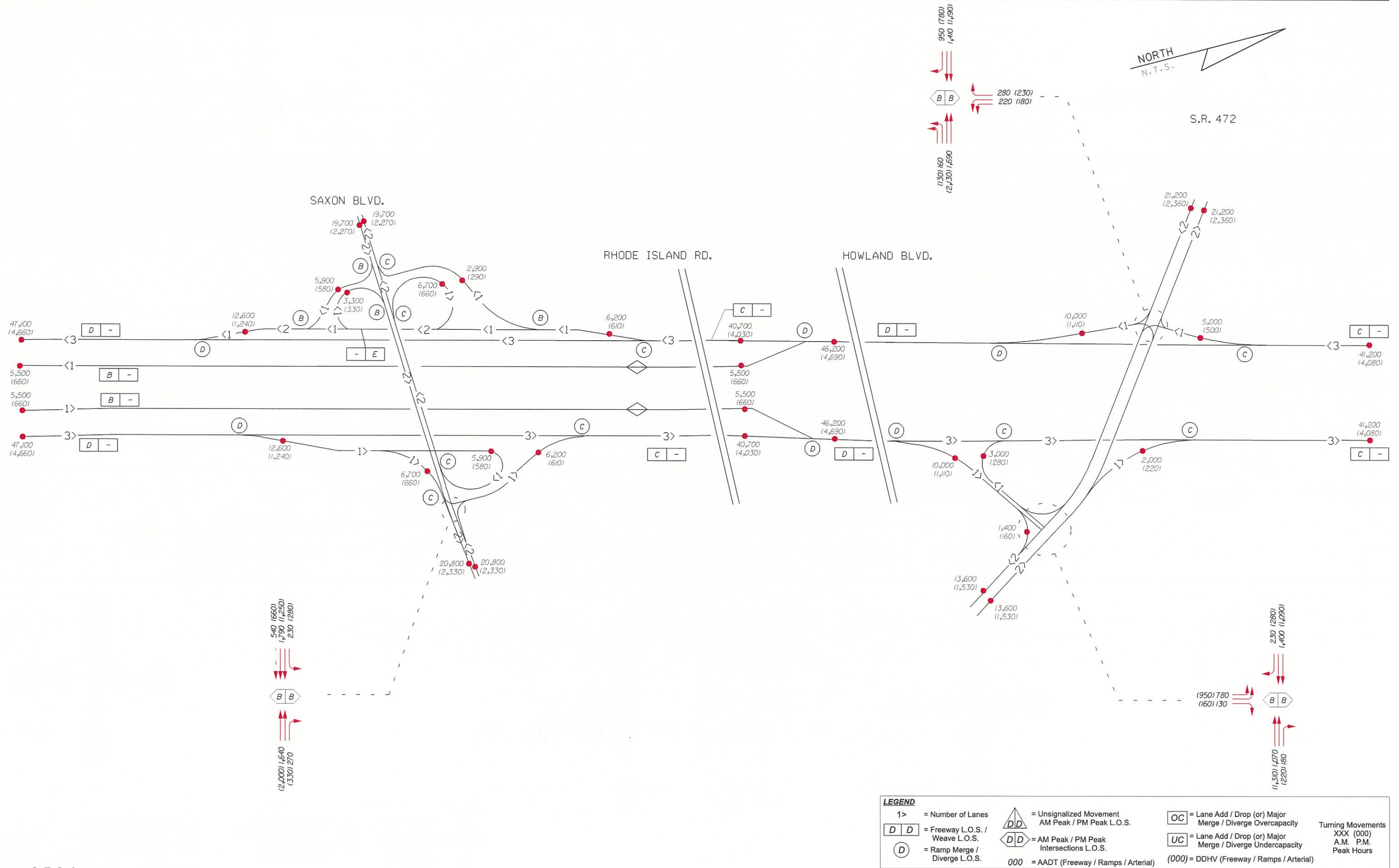


Figure 6.5.2.1
2020 Build Volumes & Levels of Service

I-4 PD&E Study - Section 2

LEGEND

| | | | | | | |
|----|------------------------------------|-----|---|-------|---|---|
| 1> | = Number of Lanes | | = Unsignalized Movement AM Peak / PM Peak L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Overcapacity | Turning Movements XXX (000) A.M. P.M. Peak Hours |
| | = Freeway L.O.S. / Weave L.O.S. | | = AM Peak / PM Peak Intersections L.O.S. | | = Lane Add / Drop (or) Major Merge / Diverge Undercapacity | |
| | = Ramp Merge / Diverge L.O.S. | 000 | = AADT (Freeway / Ramps / Arterial) | (000) | = DDHV (Freeway / Ramps / Arterial) | |

The following is a brief summary of the concept refinement analysis. A complete history can be found in the *Typical Section Concept Refinement Technical Memorandum* (January 1999).

The work activities initiated at the outset of the PD&E study included evaluations of the I-4 MMMP relative to constructability, design speeds and the type of separation between the HOV and general use lanes (buffer vs. barrier). The preliminary results of the design speed evaluation indicated that significant reconstruction of the existing facility is required to meet a 60 mph design speed utilizing the current FDOT design criteria.

The results of the preliminary evaluations were reviewed with FDOT District 5 staff in November and December 1996. After reviewing the data and information, FDOT determined that additional evaluations were required of the proposed typical sections and concepts shown in the I-4 MMMP documents to address specific project objectives. The specific project objectives included:

- ◆ Use the existing infrastructure to the maximum extent possible.
- ◆ Evaluate a barrier-separated HOV facility within the Section 2 limits.
- ◆ Provide a refined concept which minimizes traffic disruptions during construction.
- ◆ Minimize construction costs and right-of-way requirements.
- ◆ Avoid and/or minimize impacts especially for wetlands, floodplains, Section 4(f) properties, and Section 106 properties.

To assist in the development, review, and decision making process for the typical section and concept refinement work efforts, FDOT established a Core Team of District staff. The Core Team is composed of District representatives from Administration, Consultant Project Management, Design Engineering, Environmental Management, Maintenance, Structures Design, and Traffic Operations. Core Team members included:

- ◆ Annette Brennan – Structures
- ◆ Bob Cortelyou - Production
- ◆ Fred Ferrell – Traffic Operations
- ◆ Ray Gill – Design
- ◆ George Gillhooley – Operations
- ◆ Jim Hamelin – Construction
- ◆ Michael Hatchell – Design
- ◆ Alan Ledgerwood - Project Management
- ◆ Ken Morgan – Materials
- ◆ Jesus Mustafa – Structures
- ◆ Mike Snyder – District Secretary
- ◆ Alex Urchuk - Structures
- ◆ Harold Webb - Project Management
- ◆ Jerry Woods - Traffic Operations

At a January 1997 Core Team meeting, a flow chart illustrating the process to be followed for the evaluation of the typical sections and potential concept refinements was adopted. Initial consideration focused on the recommended concept of the I-4 MMMP, specifically, typical sections, interchange configurations and HOV access. A three level screening process was presented. Figure 7.0.1 illustrates the flow chart of the overall evaluation process.

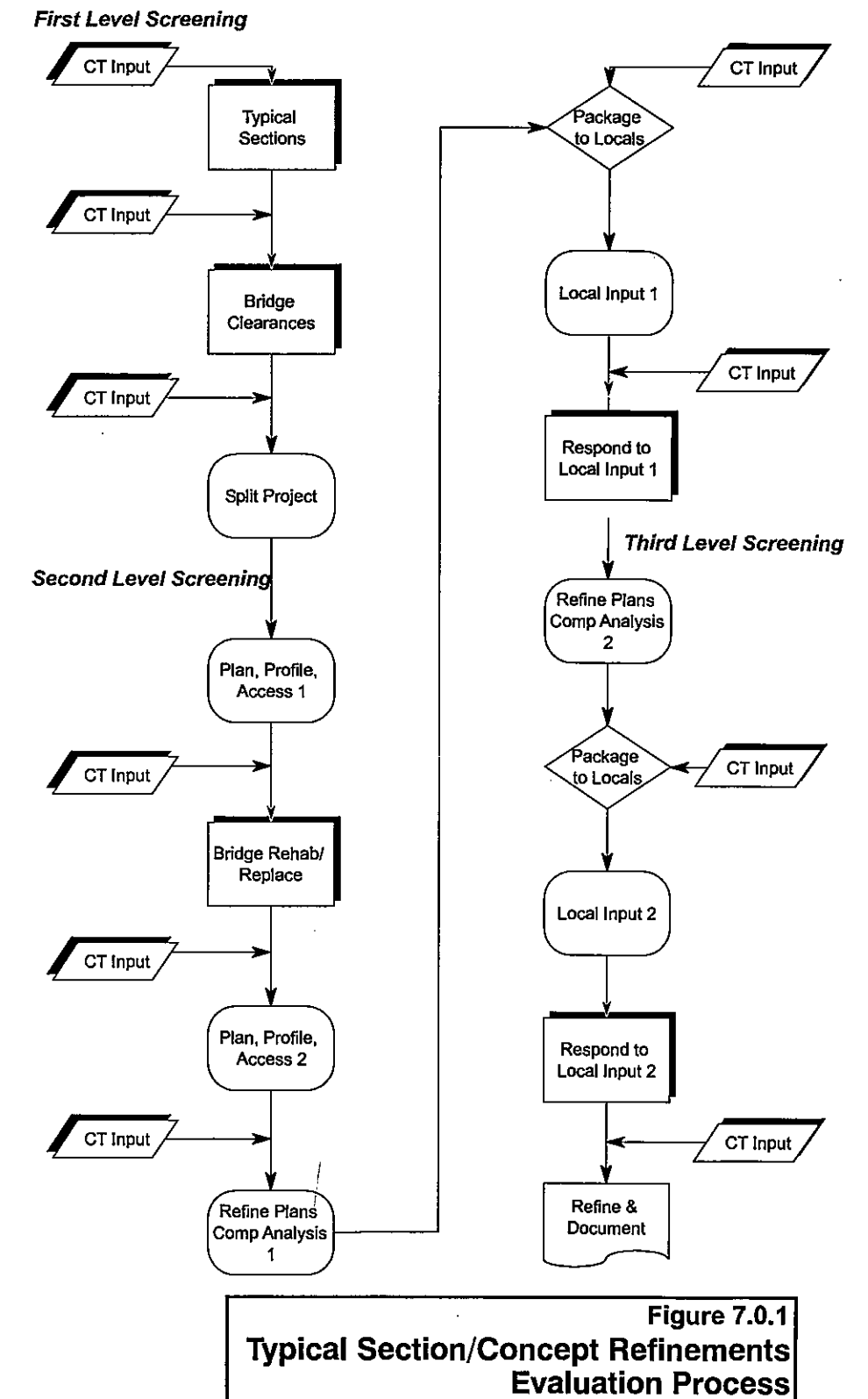
The first level screening involved typical section and bridge clearance evaluations. The process began with a review of the I-4 MMMP typical sections and development of a variety of alternative sections. These alternative typical sections were evaluated to identify the viable typical section alternatives to be carried into the concept refinement stage of the process. Seven typical sections were developed and evaluated. Four typical sections were carried forward for further evaluation.

In addition, existing bridge clearances on and over I-4 were evaluated. The bridges were evaluated for adequate horizontal and vertical clearances based on the proposed I-4 improvements as well as cross road improvements included in the adopted Long Range Transportation Plan and the I-4 MMMP. A preliminary recommendation for widening, rehabilitation or replacement of each bridge was also part of the evaluation process.

The second level screening involved assessments of the I-4 improvements with the four selected typical sections from the first level screening. The interchange configurations shown in the I-4 MMMP were used for this level screening. Preliminary concept plans and profiles were developed for each segment for each of the four selected typical sections. These preliminary concept plans were evaluated to assure that adequate access to and from I-4 was provided, including HOV access. Use and rehabilitation of existing bridges versus the complete replacement of structures was also considered in the second level screening process.

The Core Team then reviewed the preliminary concept plans and identified refinements, which could minimize costs and right-of-way impacts. After the Core Team reviewed the refined concept plans, input from local jurisdictions was sought on the concept plans. In several instances, multiple concepts were presented to the local jurisdictions for input on the proposed I-4 improvements.

This iterative process continued into the third level screening with further refinements to the concept plans and profiles, as well as improvements to HOV access and interchange configurations. Input on the refinements was again obtained from the Core Team and local jurisdictions. The recommendations from the Core Team were defined and incorporated into the concept plans. The recommended concept plans then moved forward through the PD&E process. The recommended concept plans for each segment reflect concurrence of FDOT as well as the local jurisdictions.



7.1 TYPICAL SECTIONS

FDOT requested that the I-4 MMMP typical sections be refined to include a 44-foot rail corridor in the median and a 34-foot barrier separated HOV facility and three general use lanes in each direction. In addition, the alternative typical sections were developed to reflect the following revisions from the I-4 MMMP:

- ◆ Maximize the use of the existing pavement and bridges.
- ◆ Barrier separate the HOV lanes.
- ◆ Minimize potential right-of-way impacts.
- ◆ Minimize construction costs.
- ◆ Minimize traffic disruption during construction.

Six typical sections (A through F) were developed to meet the Department's criteria. Each alternative centers on the existing I-4 alignment and provides various methods of providing the rail envelope, HOV envelope and general use lanes. Upon further review and discussion, Alternative F was refined and named F-prime (F'). A detailed discussion of Alternatives A, B, D and F and why they were eliminated from further consideration can be found in the *Typical Section Concept Refinement Technical Memorandum* (January 1999). Figure 7.1.1 illustrates Typical Section Alternatives A, B, D and F.

Based upon the Core Team's evaluations, Typical Section Alternatives C, E and F' were selected for further consideration during the concept refinement phase of the project. Alternative C is centered on the existing alignment and provides for a 60 mph design speed based on FDOT criteria. Alternative E uses the existing travel lanes for the general use facility and provides for the HOV facility outside the existing roadway. The HOV facility is evaluated in areas to overpass ramps and crossroads. Alternative F' uses the existing travel lanes and inside shoulders to provide for the HOV facility. The general use lanes would be constructed to the outside of the existing pavement.

Figures 7.1.2, 7.1.3 and 7.1.4 illustrate the typical section alternatives that were carried forward.

7.2 EVALUATION OF ALTERNATIVE CONCEPTS

Using the three selected typical sections (Alternatives C, E and F') and the preliminary bridge evaluations from the corridor level evaluations, preliminary concept plans and Interstate mainline profiles were developed for each segment in the corridor. The preliminary plans were developed centered on the existing I-4 alignment to maximize the potential use of the existing pavement.

Other elements included in the development of the concept plans and profiles are design speed, HOV lane access ramp treatments and interchange configurations. The preliminary plans were developed using a 60 mph design speed in Segments 1 through 5 and a 70 mph design speed in

Segment 6. Once the concepts were developed for the various typical sections, they were reviewed with the Core Team and refinements made. Once these refinements were reviewed and agreed upon, the concepts were then presented to the local jurisdictions for their review and comment. Any revisions requested by the local jurisdictions were taken back to the Core Team for consideration. After the first screening, Typical Section E was eliminated from consideration for the full length of the corridor. This alternative was eliminated due to visual impacts, costs and access limitations.

An iterative process of refinement and review was followed for each of the six segments in the corridor. When necessary, multiple meetings were held with the local jurisdictions to ensure that their concerns and issues were adequately addressed. In addition, the team held meetings with multiple jurisdictions together to ensure consensus of the proposed concepts. Meetings held with the City of Orlando and OOCEA were used to achieve consensus on the common and conflicting objectives within the downtown Orlando area.

7.3 SELECTION OF VIABLE ALTERNATIVES

7.3.1 Segment 1 – Bee Line Expressway to John Young Parkway

The concept plans for Segment 1 advanced through the PD&E Study incorporate the following refinements from the three level screening process:

- ◆ Typical Section C is used throughout Segment 1 except in the area of I-4 over Tropical Trail. Within this area Typical Section F' is proposed as an alternative roadway section.
- ◆ The SR 528 (Bee Line Expressway) interchange concept includes direct HOV ramps to/from the east and to/from the west on I-4. This concept also includes direct HOV ramps to/from the west along SR 528 (Bee Line Expressway) at International Drive. (See Figure 7.3.1.1)
- ◆ Between SR 528 (Bee Line Expressway) and SR 482 (Sand Lake Road), the centerline of I-4 improvements will be offset west of the existing I-4 centerline holding the east limited access right-of-way line to minimize impacts.
- ◆ The rail corridor was eliminated in the I-4 typical roadway section between SR 528 (Bee Line Expressway) and SR 435 (Kirkman Road) as it is located in the International Drive alignment.
- ◆ Two SR 435 (Kirkman Road) interchange alternatives are advanced through the PD&E process. (See Figures 7.3.1.2 and 7.3.1.3)
- ◆ Eastbound HOV slip ramp designs are modified under the future Conroy Road bridge to accommodate the designed horizontal clearance between bridge abutments.
- ◆ The auxiliary lane from Florida's Turnpike to SR 423 (John Young Parkway) will not be continuous through the Conroy Road inter-

change. The auxiliary lane will be dropped at the interchange exits and added at the entrance ramps to accommodate the designed horizontal clearance between bridge abutments.

7.3.2 Segments 2 & 3 – John Young Parkway to Lee Road

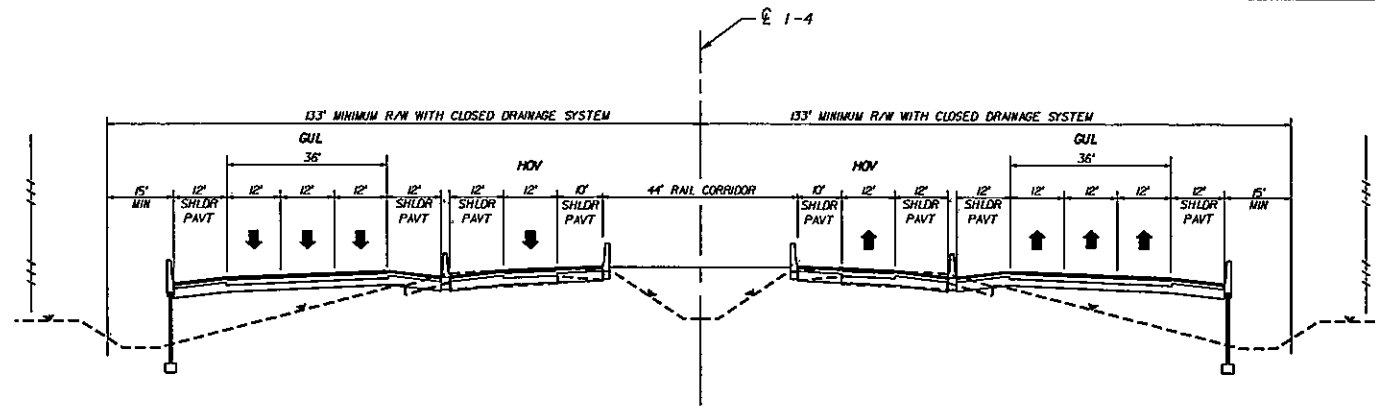
The concept plans for Segments 2 and 3 carried forward through the PD&E Study incorporate the following refinements from the three level screening process:

- ◆ Typical Section C is used throughout Segments 2 & 3. Typical Section F' is proposed as an additional alternative through the Kaley Street interchange and from New Hampshire Avenue to Lee Road.
- ◆ All mainline I-4 horizontal and vertical alignments will use a 60 mph design speed to reflect worse case conditions.
- ◆ A consensus alternative for the SR 408 (East West Expressway) interchange, reflecting input from the Department, the City of Orlando and the Orlando-Orange County Expressway Authority is carried forward into the PD&E phase. (See Figure 7.3.2.1)
- ◆ The SR 408 (East West Expressway) interchange improvements include improvements on SR 408 (East West Expressway) from Tampa Street to Mills Avenue.
- ◆ Downtown Orlando access and circulation is modified to provide direct access ramps from eastbound I-4 to Garland Avenue and from Hughey Street to westbound I-4. South Street and Anderson Street are two-way from Division Street to Orange Avenue.
- ◆ Typical Section C realigns mainline I-4 through the Kaley Avenue/Michigan Street interchange and through the Fairbanks curves to maintain a 60 mph design speed.
- ◆ Three alternatives are carried forward for the Kaley Avenue/Michigan Street interchange. (See Figures 7.3.2.2, 7.3.2.3, 7.3.2.4)
- ◆ The SR 50 (Colonial Drive) interchange is a single point urban interchange with full access to/from I-4.
- ◆ The Ivanhoe Boulevard interchange was reevaluated to determine whether full access at the proposed interchange could be accommodated. After further review, full access could not be provided at Ivanhoe Boulevard.
- ◆ The 44-foot median envelope for transit was eliminated from SR 438 (Princeton Street) to SR 423 (Lee Road). The LRT alignment in this section will be accommodated along the CSX corridor.

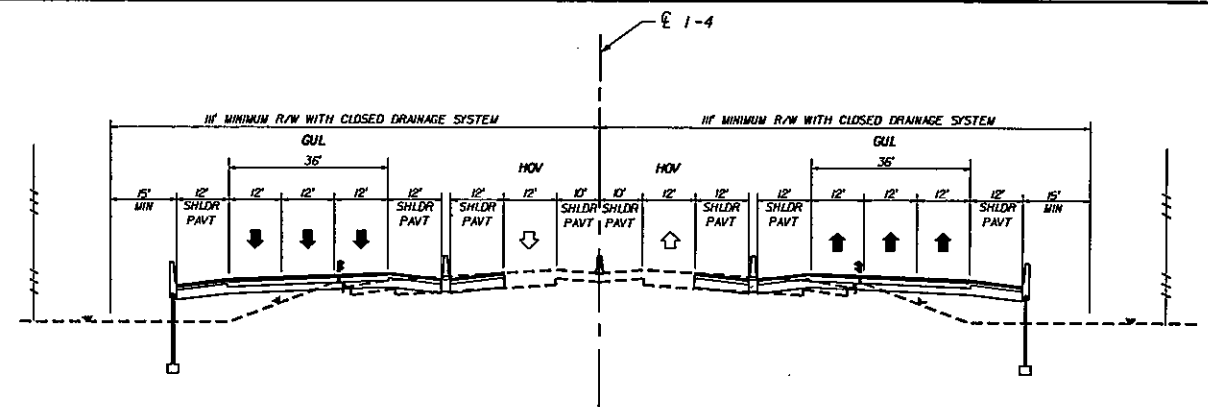
7.3.3 Segments 4 & 5 – Lee Road to US 17-92

The concept plans for Segments 4 & 5 advanced through the PD&E Study incorporate the following refinements from the three level screening process:

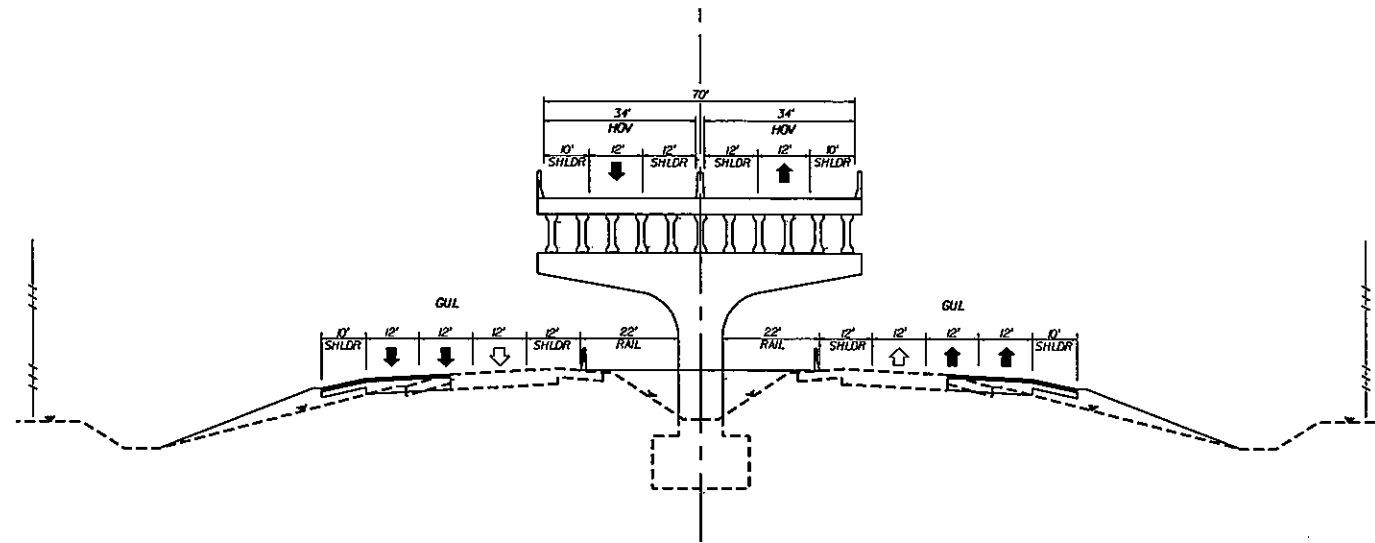
- ◆ Typical Section C is used throughout Segments 4 and 5. Typical Section F' is proposed as an alternative from north of SR 434 to north of Lake Mary Boulevard. Typical Section F is proposed as



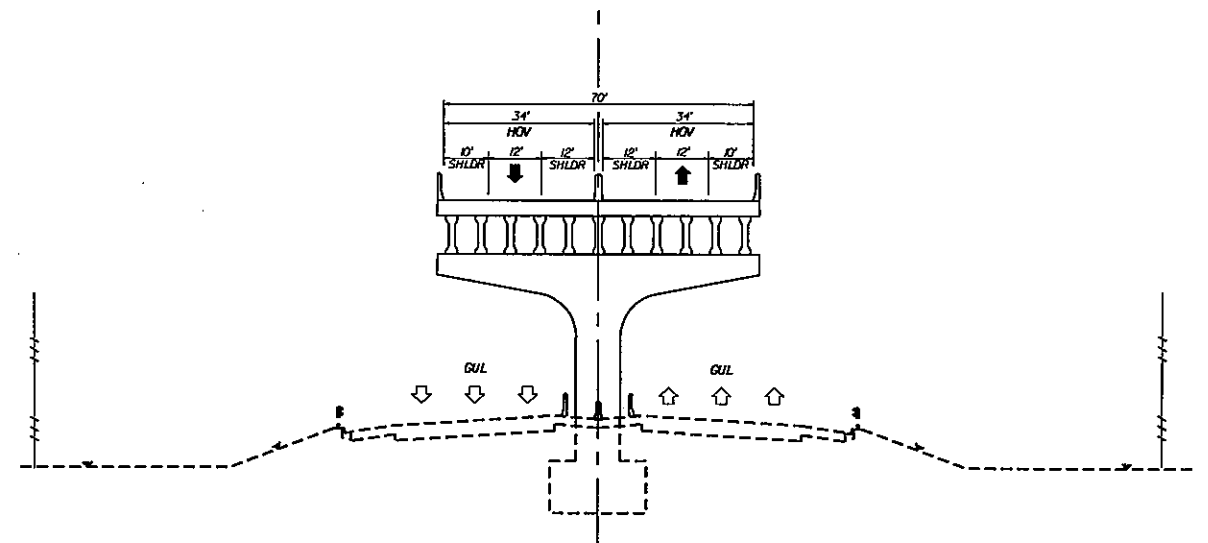
Typical Section
Alternatives "A" & "B"
44' Rail Corridor



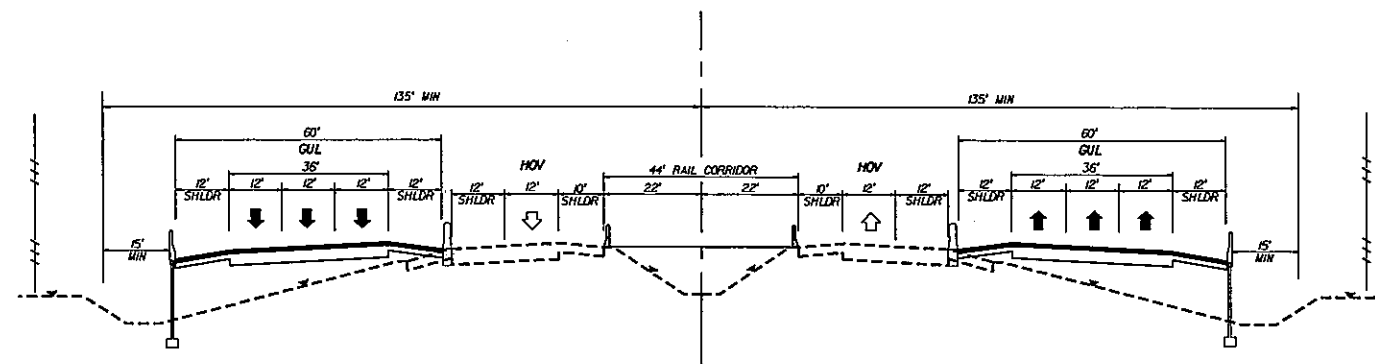
Typical Section
Alternatives "A" & "B"
No Rail Corridor



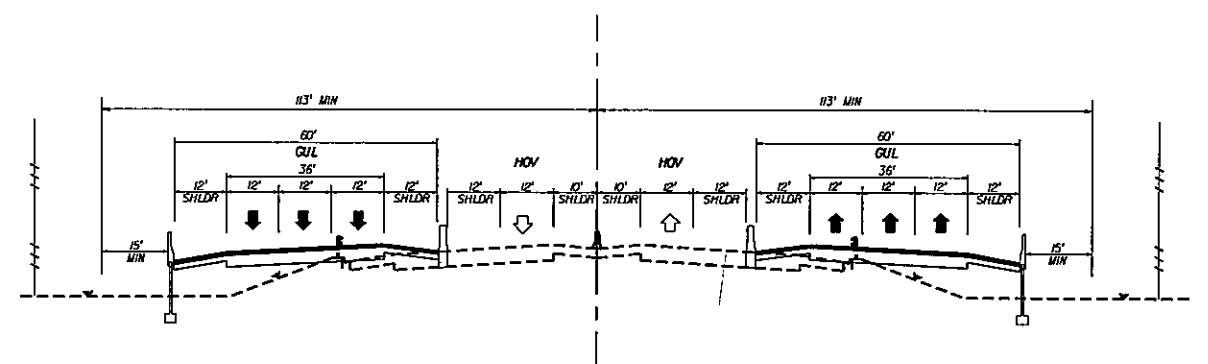
Typical Section
Alternative "D"
44' Rail Corridor



Typical Section
Alternative "D"
No Rail Corridor

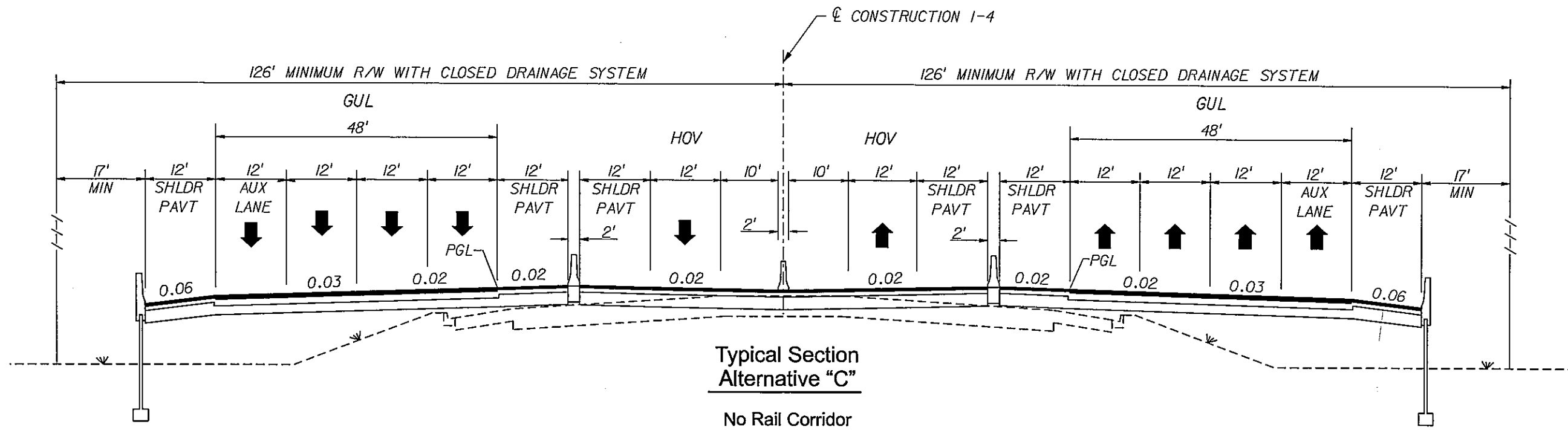
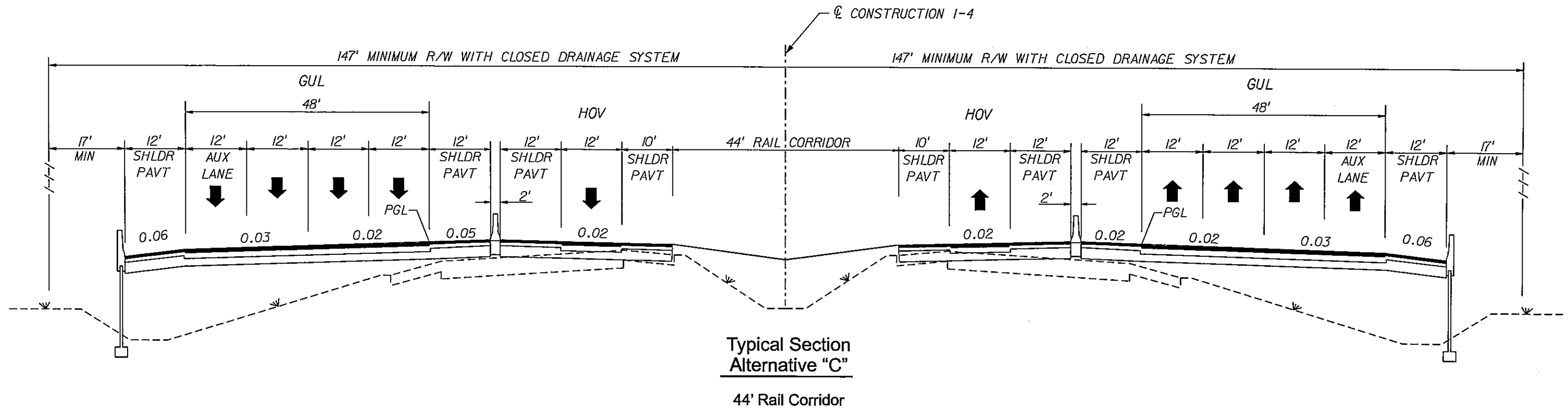


Typical Section
Alternative "F"
44' Rail Corridor



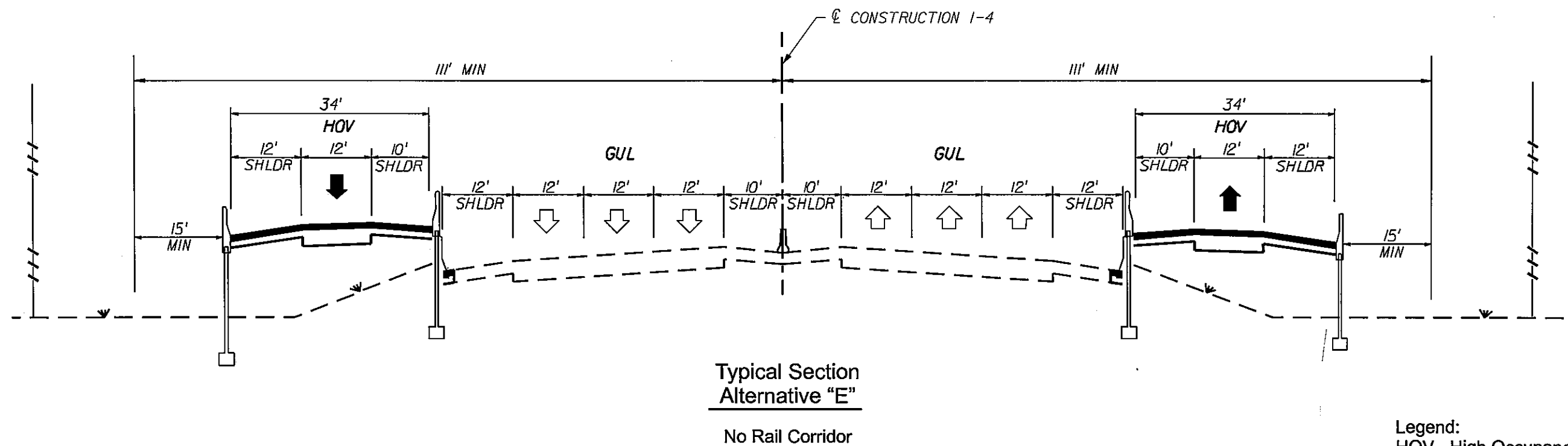
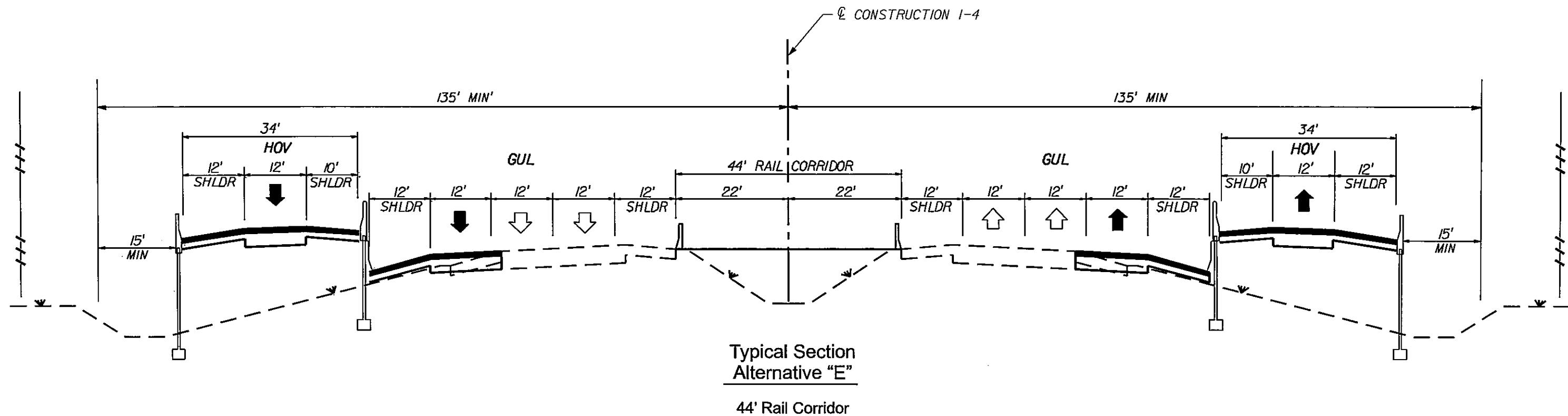
Typical Section
Alternative "F"
No Rail Corridor

Legend:
HOV - High Occupancy Vehicles
GUL - General Use Lanes

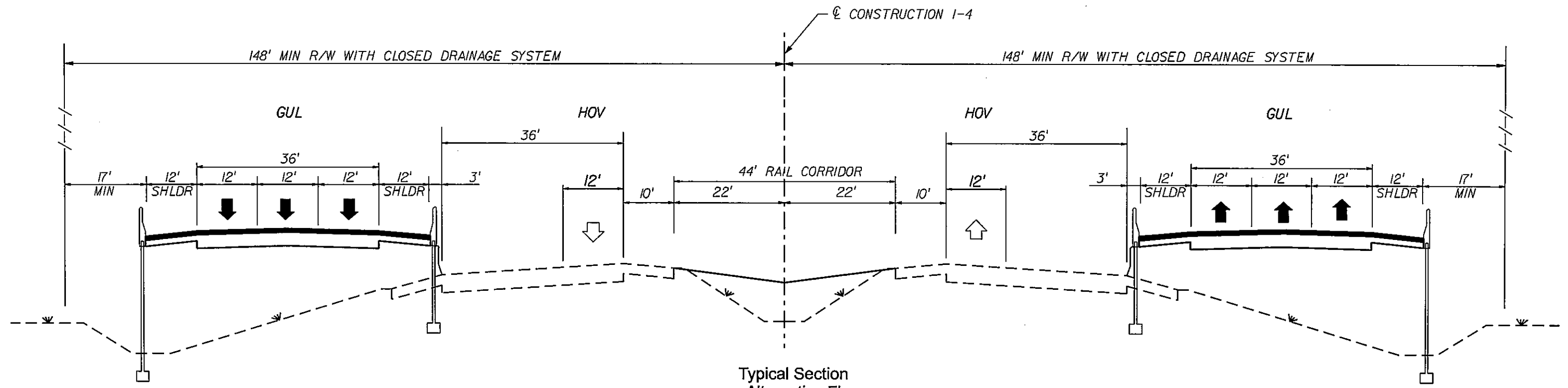


Legend:
 HOV - High Occupancy Vehicles
 GUL - General Use Lanes

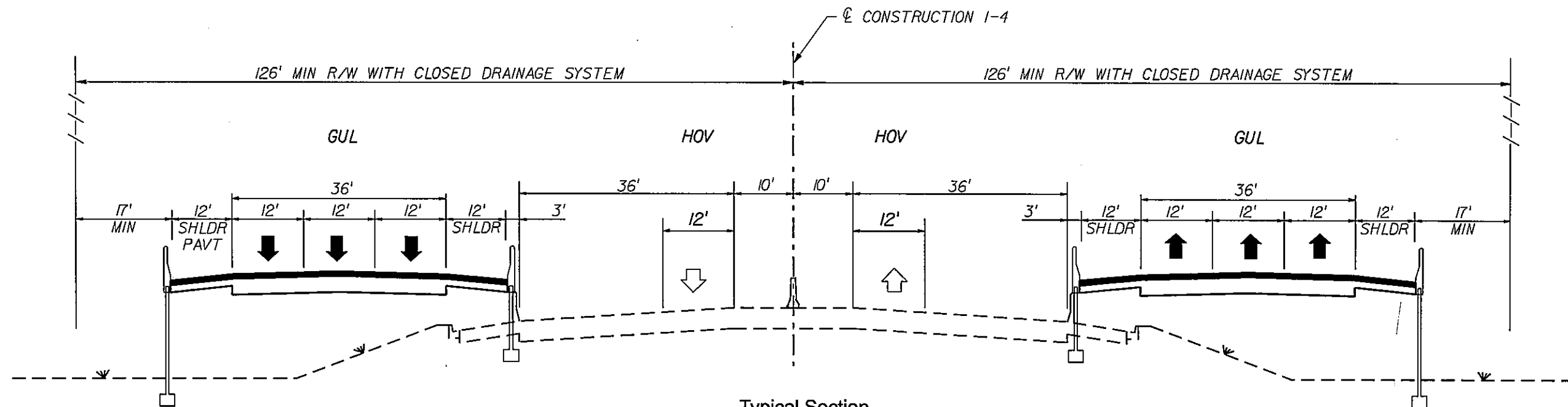
Figure 7.1.2
 Preliminary Typical Section C



Legend:
 HOV - High Occupancy Vehicles
 GUL - General Use Lanes



Typical Section
Alternative F'
44' Rail Corridor

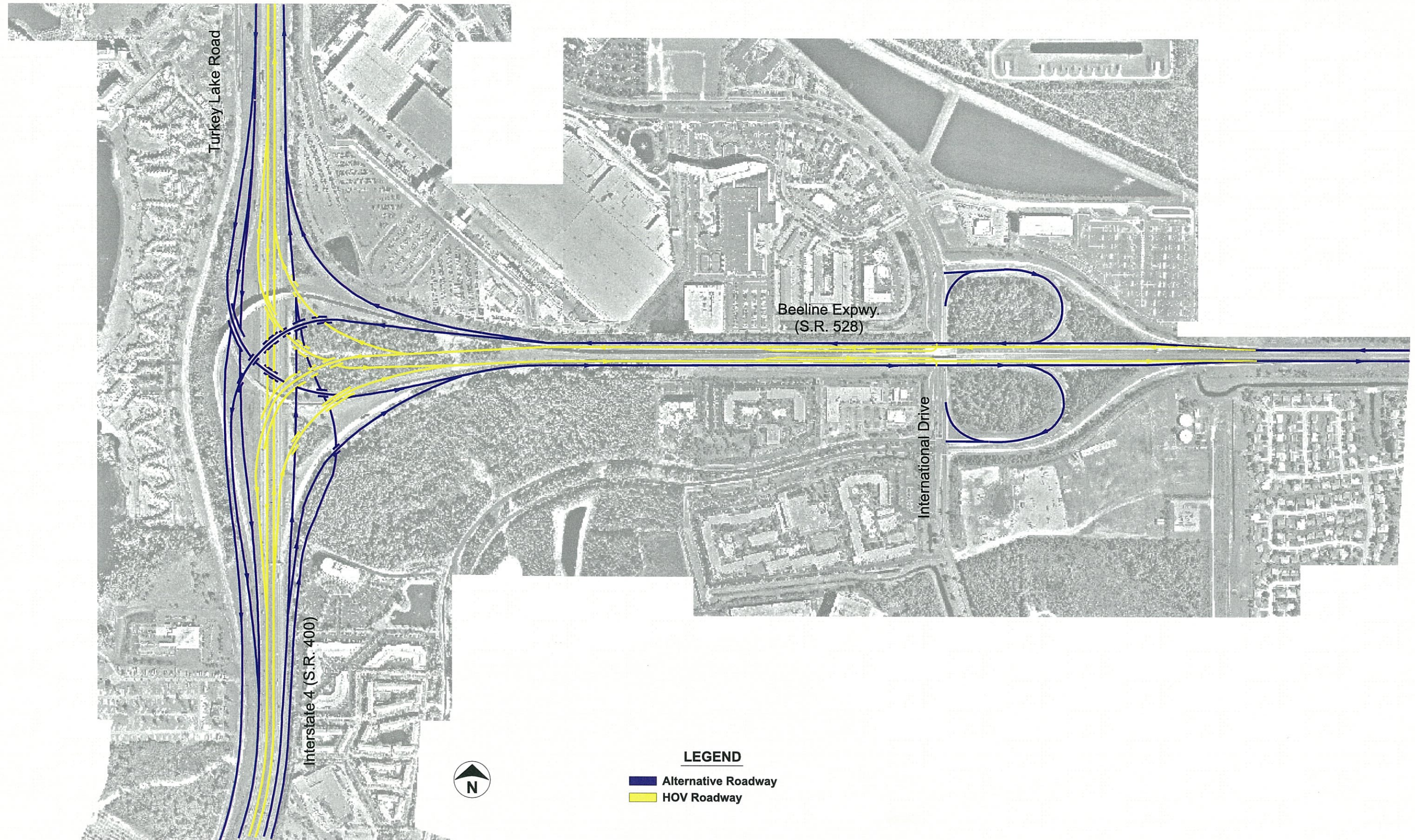


Typical Section
Alternative F'
No Rail Corridor

Legend:
HOV - High Occupancy Vehicles
GUL - General Use Lanes

Figure 7.1.4
Preliminary Typical Section F'

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 7.3.1.1
Bee Line Expressway / I-4 Interchange

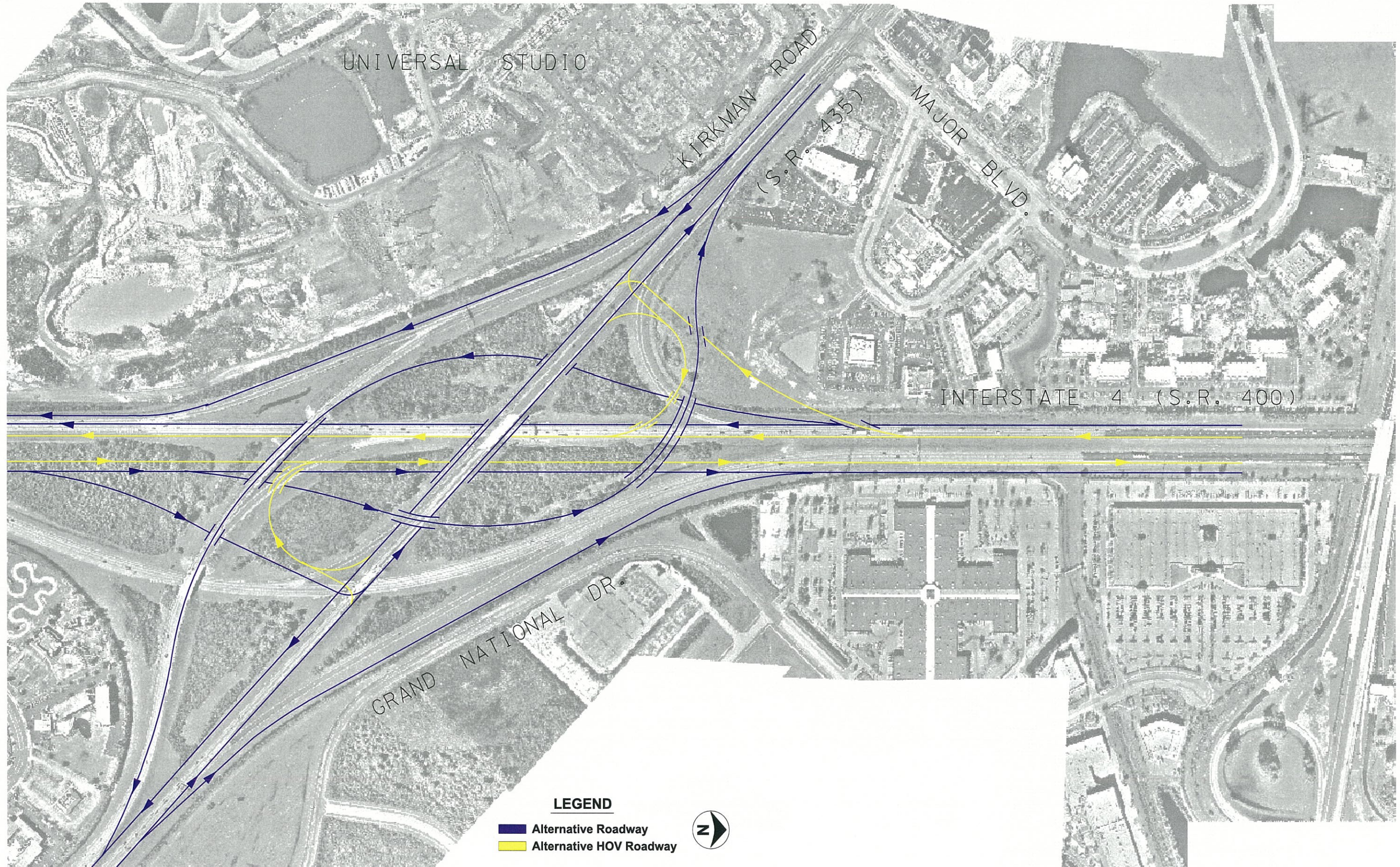
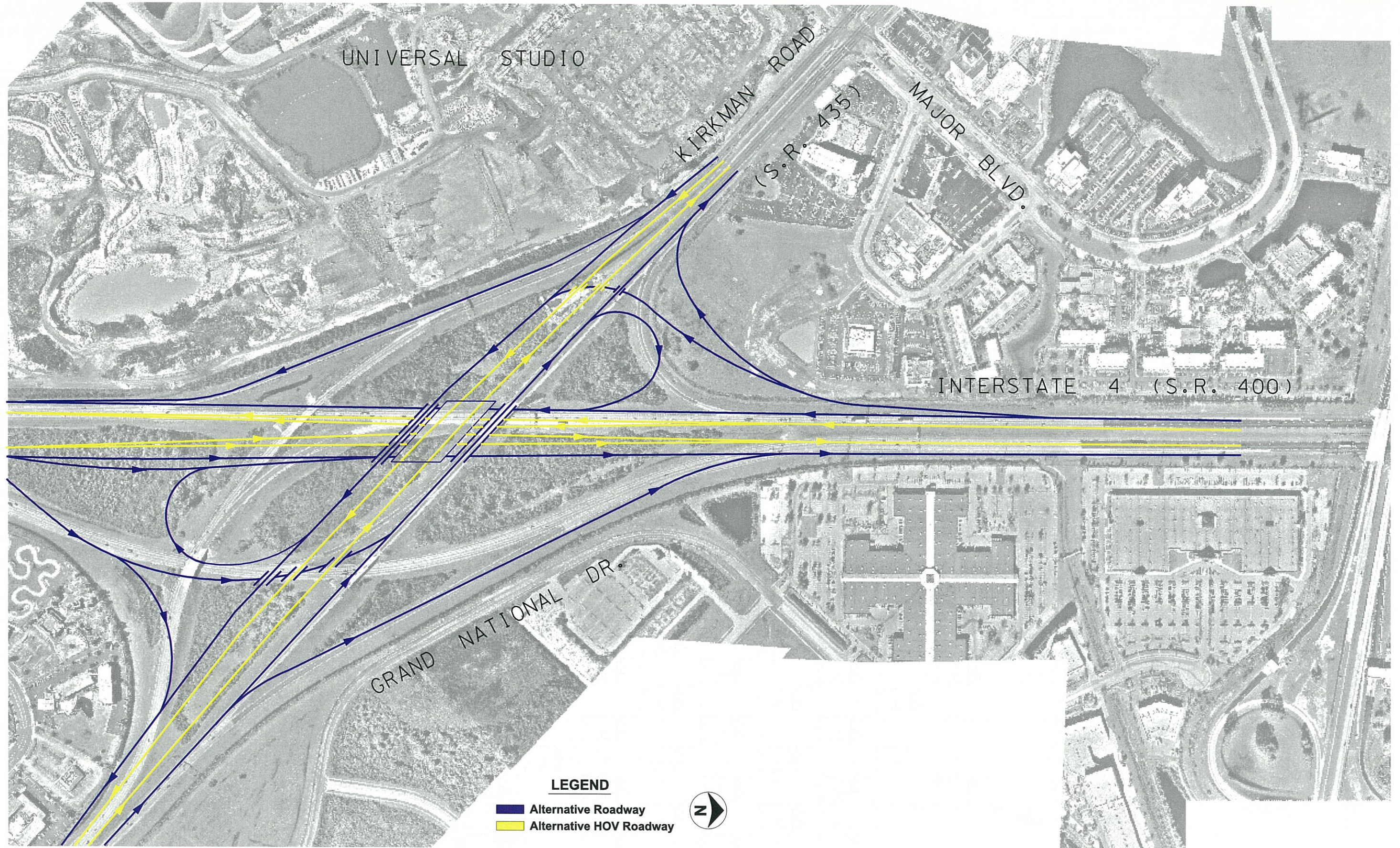


Figure 7.3.1.2
Kirkman Road / I-4 Interchange

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 7.3.1.3
Kirkman Road / I-4 Interchange



LEGEND

- Alternative Roadway
- HOV Roadway

I-4 PD&E Study - Section 2

Figure 7.3.2.1
East-West Expressway / I-4 Interchange

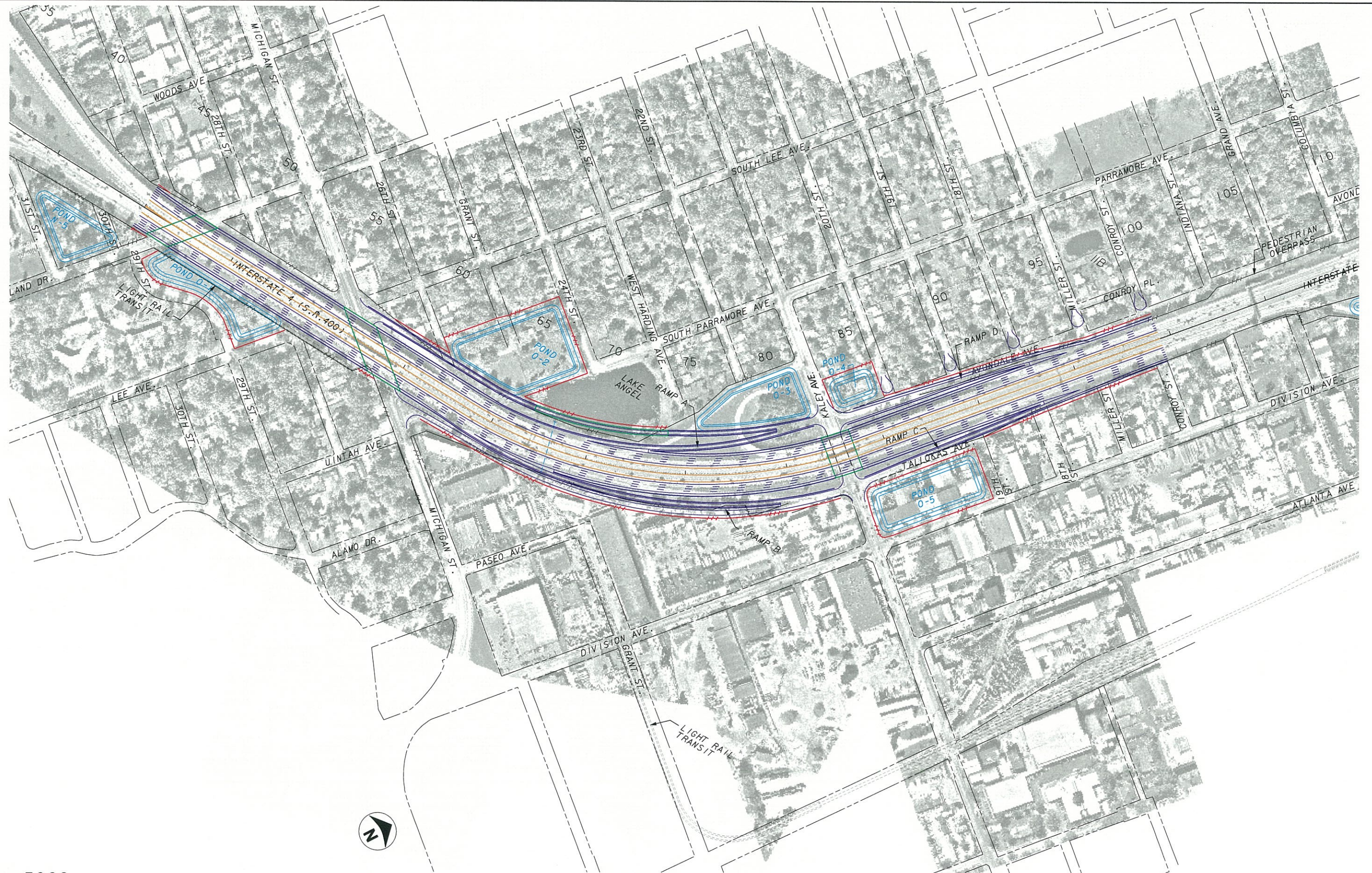


Figure 7.3.2.2
Kaley Avenue / Michigan Street Interchange

I-4 PD&E Study - Section 2

an alternative from north of Lake Mary Boulevard to north of SR 46.

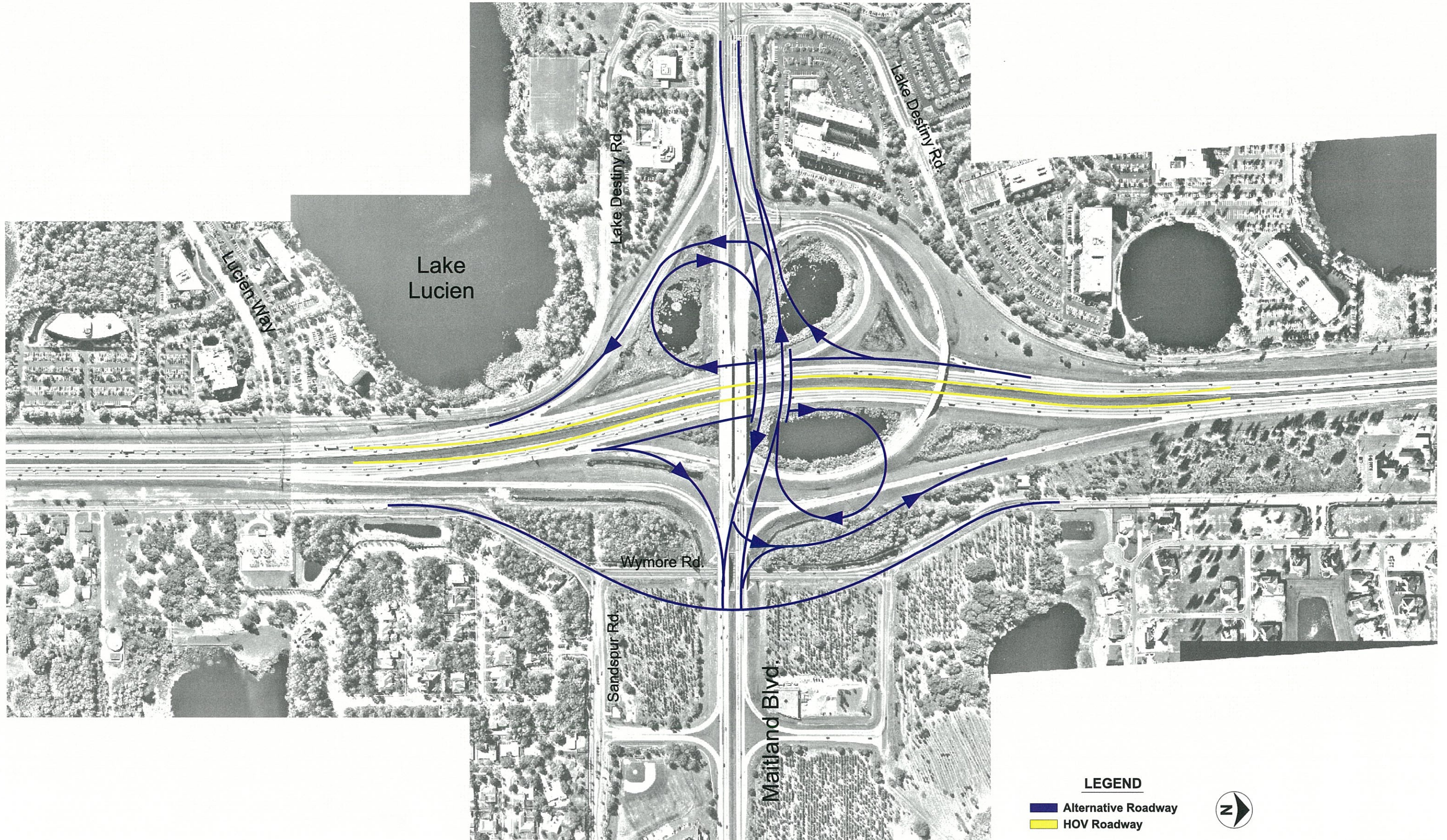
- ◆ The direct HOV access at Lake Mary Boulevard is replaced with slip ramps south of the interchange.
- ◆ Two SR 414 (Maitland Boulevard) interchange alternatives are carried into PD&E. (See Figures 7.3.3.1 and 7.3.3.2)
- ◆ The 44-foot median envelope for transit was eliminated from SR 423 (Lee Road) to Central Parkway, consistent with the LRT DEIS. The transit envelope can be accommodated adjacent to the I-4 corridor.
- ◆ The proposed median transit envelope transitions from 44-feet to 64-feet south of the US 17-92 interchange.
- ◆ The mainline alignment alternative shifts I-4 west (maintaining the existing east side right-of-way) between SR 414 (Maitland Boulevard) and SR 436 to minimize impacts.
- ◆ The HOV slip ramps between SR 414 (Maitland Boulevard) and SR 436 are revised to eliminate the westbound slip ramp from the general use lanes to the HOV lane and the eastbound slip ramp from the HOV lane to the general use lane.

7.3.4 Segment 6 – US 17-92 to SR 472

The Segment 6 concept plans that are advanced through the PD&E Study incorporate the following refinements from the screening process:

- ◆ Typical Section C with a 64-foot transit envelope is used throughout Segment 6.
- ◆ The HOV lanes begin/end south of the SR 472 interchange.
- ◆ The alignment in the vicinity of Enterprise Road is shifted west to limit right-of-way acquisition and relocations.
- ◆ The direct HOV access is located north of the existing Enterprise Road alignment serving a proposed park and ride lot located on the existing Uncle Bob's Storage site.
- ◆ The US 17-92 interchange is reconfigured to provide direct access. (See Figure 7.3.4.1)
- ◆ The SR 472 interchange is reconfigured while maintaining acceptable traffic operations.

The typical section and concept refinement process concluded with a final Core Team Meeting on February 25, 1998.



I-4 PD&E Study - Section 2

Figure 7.3.3.1
Maitland Boulevard / I-4 Interchange

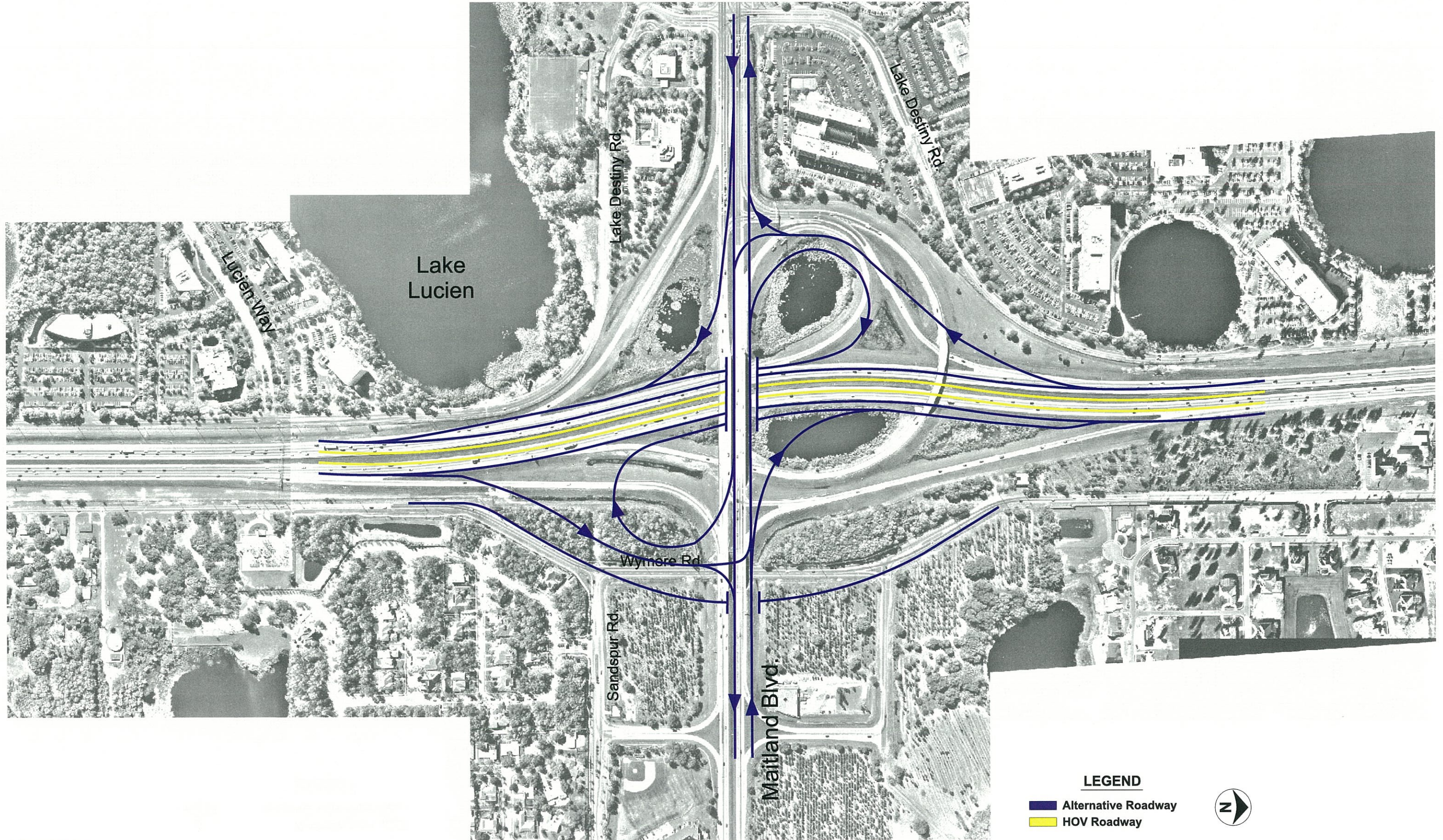
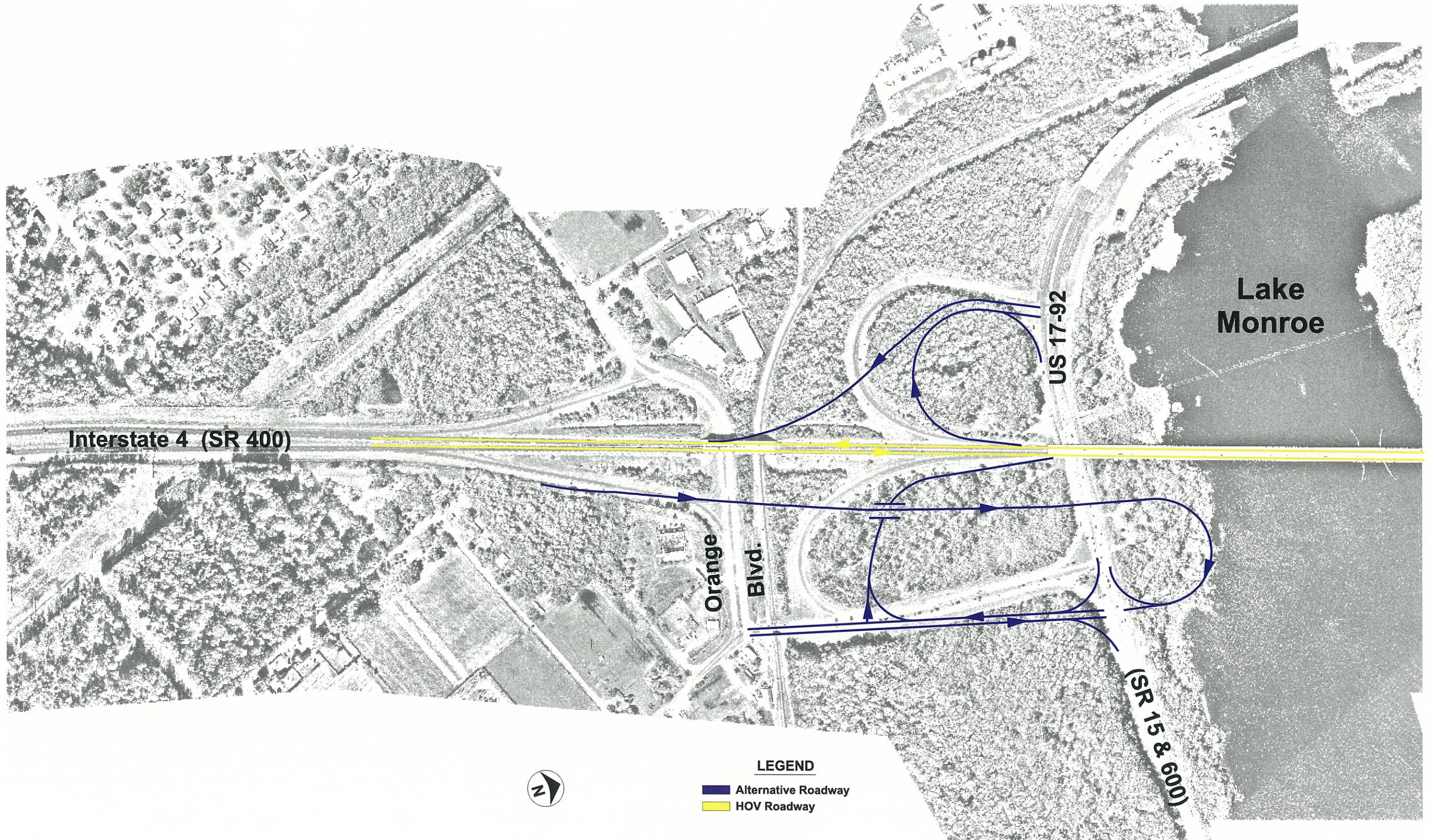


Figure 7.3.3.2
Maitland Boulevard / I-4 Interchange

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 7.3.4.1
US 17-92 / I-4 Interchange

The analyses described in this section follow the project development process by examining the various concepts considered for this project, including the No-Build Alternative, Transportation Systems Management and the Build alternatives. Alternatives that were previously selected as discussed in the *Typical Section Concept Refinement Technical Memorandum* (January 1999) are summarized.

8.1 NO-BUILD ALTERNATIVE

The No-Build Alternative involves no change to the transportation facilities within the project corridor beyond currently planned and programmed projects already committed within the Long Range Transportation Plans and the Transportation Improvement Programs for METROPLAN Orlando and the Volusia County MPO. The following I-4 improvements have separate environmental studies underway or completed and are included in the No-Build Alternative:

- ◆ Auxiliary lanes from SR 528 (Bee Line Expressway) to SR 482 (Sand Lake Road),
- ◆ Auxiliary lanes from SR 435 (Kirkman Road) to west of Florida's Turnpike,
- ◆ John Young Parkway interchange modifications,
- ◆ Auxiliary lanes from US 441 (Orange Blossom Trail) to SR 414 (Maitland Blvd.) (under construction)
- ◆ Six-laning from Lake Mary Boulevard to SR 472, including the replacement of the St. Johns River bridge (under construction),
- ◆ SR 417 interchange (under construction)

The absence of construction-related and short-term operational impacts associated with the Build Alternative is a benefit of the No-Build Alternative. However, longer-term benefits accrued from serving future traffic demands will not be realized with this alternative. As discussed in Section 6 of this report, many sections of I-4 within the study limits currently operate at less than desirable levels of service. Operating conditions are anticipated to worsen with time, further increasing congestion.

Specifically, the No-Build Alternative will offer no benefit to the existing or future traffic congestion anticipated on I-4. Distinct advantages and disadvantages associated with the No-Build Alternative are as follows:

Advantages

- ◆ No impedance to traffic flow during construction.
- ◆ No expenditure of funds for engineering, design or construction.
- ◆ No impact to the adjacent natural, physical and social environments.

- ◆ No disruption to existing land uses due to construction activities.

Disadvantages

- ◆ Increased traffic congestion and user cost associated with increased travel time due to excessive delay.
- ◆ Increase in carbon monoxide levels and levels of other air pollutants caused by greater congestion.
- ◆ Increase in maintenance costs due to roadway and structure deterioration.
- ◆ Increase in emergency service response time in addition to increased evacuation time during weather emergencies as a result of heavy congestion.
- ◆ Increase in crash rates because of heavy congestion.
- ◆ Does not comply with adopted Long Range Transportation Plans and Local Government Comprehensive Plans.
- ◆ Does not fulfill purpose and need of project as defined in Sections 2 and 3 of this report.

The No-Build Alternative remained under consideration through the public hearing process. The final selection of the Preferred Alternative was made after consideration of the impacts and public hearing comments were received.

8.2 TRANSPORTATION SYSTEMS MANAGEMENT

Transportation Systems Management (TSM) alternatives involve low capital cost transportation improvements designed to maximize the utilization and efficiency of the existing transportation system through improved system management. The various forms of TSM options include:

- ◆ Traffic signal improvements,
- ◆ Intersection/Interchange improvements,
- ◆ Widening of parallel arterials,
- ◆ Ridesharing programs,
- ◆ HOV lanes,
- ◆ Reversible flow roadway systems,
- ◆ Transit,
- ◆ ITS,
- ◆ Ramp-to-ramp auxiliary lanes, and
- ◆ Demand pricing.

TSM options have been considered during the development of the I-4 PD&E Study - Section 2. The following paragraphs describe the TSM options which are being carried forward as part of the proposed improvements.

Traffic signal improvements on the cross streets are proposed for all the interchange ramps. These improvements are expected to improve traffic flow approaching and departing I-4.

As part of the proposed improvements, several interchanges along the project corridor will be modified to enhance traffic operations.

The widening of parallel arterials is not proposed as part of the Ultimate project or Preferred Alternative. However, the widening of some of the parallel arterials is included in the long range transportation plans of METROPLAN Orlando and the Volusia County MPO.

The proposed improvements will include the addition of two HOV lanes (one in each direction) separated from the general use lanes by a barrier system. Initially, vehicles with two or more occupants will be allowed to use the HOV lanes. However, as traffic demand increases, HOV lane usage may be restricted to vehicles with three or more occupants to maintain acceptable levels of service. Ridesharing programs will be available to commuters using the HOV lanes.

Ridesharing is a TSM option that has the ability to increase person-trip capacity without requiring an increase in vehicle-trip capacity. Several methods can be used to encourage ridesharing, including Park & Ride lots. FDOT currently owns two Park & Ride lots. Two more are proposed as part of the Ultimate improvements. Refer to Section 9.26 of this report for a detailed discussion of I-4 Park & Ride lots.

A reversible roadway system is not being proposed as part of the ultimate improvements. An interim reversible express lane was proposed for the median of I-4 from South Street in downtown Orlando to SR 436 in Seminole County. However, public support for the project was not obtained and the project was replaced with an interim auxiliary lane project that is currently under construction as of August 2002.

The I-4 MMMP recommended typical section includes a 44-foot transit envelope within the median of the I-4 corridor from SR 528 (Bee Line Expressway) to Michigan Avenue and from Princeton Street to SR 472 in Volusia County. The transit envelope is intended to provide the opportunity for future rail facilities to use the I-4 corridor.

The proposed improvements have incorporated the recommended transit envelope within portions of the project corridor. A 44-foot median transit corridor is provided from just north of the Kirkman Road interchange to south of Rio Grande Avenue in Orange County and from north of Central Parkway in Seminole County to SR 472 in Volusia County. Additional transit corridor provisions within the I-4 corridor are provided from Lee Road to Central Parkway in Orange and Seminole Counties. This area generally provides an area within the I-4 corridor for transit in the outer separation. The I-4 Six Laning and St. Johns River Bridge project uses a portion of the transit median corridor extending from north of the St. Johns

River to SR 472. This use will be for an interim period, after which time the ultimate I-4 improvements re-establish the 44-foot corridor.

Auxiliary lanes are also provided as part of the proposed improvements within portions of the project corridor. The locations of the auxiliary lanes are described in detail in Section 8.4 of this report and can be seen on the Preliminary Concept Plans submitted with this report.

ITS features currently exist within the corridor. FDOT has implemented ITS measures along I-4 within the Ultimate project limits from SR 528 (Bee Line Expressway) in Orange County to Lake Mary Boulevard in Seminole County. This system is commonly referred to as the Surveillance and Motorist Information System (SMIS) and includes remote controlled variable message signs, cameras and vehicle detector stations. The SMIS enhances the management of incidents, recurring congestion and maintenance of traffic issues during construction. As of August 2002 FDOT is expanding the SMIS along I-4 from Lake Mary Boulevard in Seminole County to Saxon Boulevard in Volusia County. This project is being undertaken as part of the I-4 Six Laning and St. Johns River Bridge project under construction as of August 2002. Extending the SMIS within this portion of I-4 will enhance operations of the highway by providing FDOT and Florida Highway Patrol with increased ability to manage incidents including accidents and maintenance operations and apprise motorists of recurring congestion and lane closures during construction.

ITS measures proposed as part of the Ultimate project include enhancing the existing SMIS and extending the SMIS from Saxon Boulevard to SR 472 in Volusia County. Detailed information on the proposed ITS measures is provided in the *Intelligent Transportation Systems Plan* (November 2000).

Demand pricing is not being proposed as part of the Ultimate improvements or the Preferred Alternative improvements. According to FHWA policy, there is a provision allowing three or four states in the country to have toll roads on the Interstate. The tolls can be on the general use lanes, special use lanes (SULs), or both. However, the toll facility would have to be part of a reconstruction or rehabilitation project on the Interstate. The process to allow this requires an application. The I-4 MMMP examined several options for the use of the SULs. Based on the conclusions of the MMMP, a decision was made to move forward with HOV. The work in the PD&E Study is presented in a manner consistent with the I-4 MMMP design scope and concept conclusion; however, it has been suggested that the SULs be considered for different operational treatments (HOT Lanes, Tolloed Express Lanes, Express Bus Lanes). In some cases, institutional and/or regulatory barriers may exist for specific uses on the Interstate. FDOT is committed to reassess and define the appropriate operational use for the SULs based on technical, regulatory and public input as implementation of the Ultimate improvements on I-

4 progress. Such re-assessments will include transportation and mobility effects as well as any environmental impact changes. One of the advantages of the proposed barrier-separated HOV lanes is that the envelope provided by this concept is flexible and will permit operational changes with minimal changes in environmental effects.

The roadway improvements discussed herein do not preclude the use of TSM measures to enhance operations of the Interstate facility. As indicated above, the proposed improvements incorporate several TSM strategies as part of the Build Alternatives and Preferred Alternative. Since these TSM strategies have been incorporated as part of the Build Alternatives and Preferred Alternative, no further evaluation of the TSM alternative has been conducted as part of the study.

8.3 STUDY ALTERNATIVES

The concepts carried forward from the typical section concept refinement analysis were evaluated in greater detail to select a preferred alternative. Coordination with stakeholders, local municipalities, FDOT and FHWA resulted in new alternatives and refinements to the concepts outlined in the *Typical Section Concept Refinement Technical Memorandum* (January 1999) (TSCR TM).

In addition, a Project Team Partnering session was conducted to facilitate the review of the concept refinements and completion of the I-4 PD&E Study - Section 2. The Project Team consisted of representatives from FDOT, FHWA, FTA and the Consultants for the I-4 PD&E Studies - Sections 1 and 2.

The alternative typical sections carried forward from the TSCR TM are Typical Section C for the entire length of the project and Typical Section F' from Princeton Street to Lee Road, Typical Section F' from SR 434 to Lake Mary Boulevard and Typical Section F (same alignment and impacts as Typical Section C, requires widening of existing pavement) from Lake Mary Boulevard to US 17-92. Typical Section C requires the reconstruction of I-4. Typical Section F' maintains the existing travel lanes of I-4 as the HOV corridor and constructs new general use lanes outside the existing pavement. Figures 7.1.2 and 7.1.4 in Section 7 of this report illustrate the typical section alternatives.

The alternative concept analysis for each segment is described in the following sections.

8.3.1 Segment 1 - Bee Line Expressway to John Young Parkway

The refinement process identified concerns with the geometry at two locations, Sand Lake Road and Kirkman Road. The following discusses the concept refinements.

8.3.1.1 SR 482 (Sand Lake Road) Interchange

Concerns with the TSCR TM alternative were raised regarding lane balance between the westbound SR 435 (Kirkman Road) on-ramp and the SR 528 (Bee Line Expressway) off-ramp. Additional concerns were raised regarding the two westbound merge points from the SR 482 (Sand Lake Road) on-ramps. Two alternatives were developed to provide for improved traffic operation conditions on I-4 near SR 482 (Sand Lake Road) by providing lane balance at the ramp junctions and by reducing the number of mainline conflict points.

Alternative 1 provides four lanes on westbound I-4 approaching the SR 482 (Sand Lake Road) interchange and maintains the existing SR 482 (Sand Lake Road) two-lane on-ramp, which merges with I-4 (in an add lane condition). After one lane merges, five lanes continue westbound. The one-lane eastbound SR 482 (Sand Lake Road) to westbound I-4 on-ramp merges into the five-lane section approximately 700-feet downstream. The five-lane section is carried to SR 528 (Bee Line Expressway) where a two-lane exit ramp to SR 528 (Bee Line Expressway) diverges leaving four mainline lanes. Two more lanes diverge from I-4 to Central Florida Parkway leaving three mainline lanes through the interchange.

Alternative 2 provides four lanes on I-4 westbound approaching the SR 482 (Sand Lake Road) interchange. This alternative merges the existing SR 482 (Sand Lake Road) two-lane loop ramp to one-lane and merges both SR 482 (Sand Lake Road) on-ramps into a single two-lane ramp that merges onto I-4 at one access point. One lane merges and five lanes continue south to SR 528 (Bee Line Expressway). The five-lane section is carried to SR 528 (Bee Line Expressway) where a two-lane exit ramp to SR 528 (Bee Line Expressway) diverges with four mainline lanes continuing west to Central Florida Parkway. Two more lanes diverge from I-4 to Central Florida Parkway with three mainline lanes continuing through the interchange.

Evaluations of the two alternatives indicate no additional social, natural or physical environmental impacts compared to the TSCR TM concept. Construction costs for Alternative 1 are \$164.55 million and the costs for Alternative 2 are \$164.47 million.

The operational analysis for the two alternatives indicates a slight increase in operating speeds as compared to the TSCR TM concept. Alternative 2 reduces the number of weaves and conflict points on I-4 from two to one at Sand Lake Road.

Alternative 2 was selected as the Preferred Alternative due to the reduced number of weave and conflict points on I-4. In addition, Alternative 2 provides lane balance at SR 482 (Sand Lake Road) and at SR 528 (Bee Line Expressway).

8.3.1.2 SR 435 (Kirkman Road) Interchange

The original I-4 MMMP Alternative, designated as Alternative 2, and TSCRTM Alternative 3 carried forward from the typical section concept analysis were evaluated in greater detail to select a preferred alternative. The refined alternatives are described as follows:

Alternative 2 is a two and one-half level partial interchange with direct access HOV ramps connected to SR 435 (Kirkman Road). Access is provided to southbound SR 435 (Kirkman Road) from eastbound I-4 and to westbound I-4 from northbound SR 435 (Kirkman Road). These movements are not provided by the existing interchange. The proposed interchange concept is shown on Figure 8.3.1.

Alternative 3 is a three level partial interchange with an HOV only intersection at level two providing direct HOV access to SR 435 (Kirkman Road). No access is provided for northbound SR 435 (Kirkman Road) to westbound I-4. The proposed interchange concept is shown on Figure 8.3.2.

Additional Core Team discussions continued on these alternatives after the typical section and concept refinement process. The consensus of the Core Team was that Alternative 3 provided more desirable operation conditions for the HOV access that is easier to sign due to the separated HOV direct connect ramps and intersection. Alternative 2 was eliminated from further study.

8.3.2 Segment 2 - John Young Parkway to Ivanhoe Boulevard

Five areas were identified for further evaluations in this segment. These include investigating drainage requirements to minimize right-of-way impacts and alternatives for four interchange locations. The following summarizes each area assessed.

8.3.2.1 Drainage Alternatives

Exfiltration alternatives are proposed for stormwater treatment along I-4 from Orange Blossom Trail to Kaley Street to reduce right-of-way and relocation impacts. The evaluations included in the *Pond Siting Report* (August 2000), published separately, indicate that the exfiltration alternative is cost effective, even if higher maintenance costs are included, due to the high cost of right-of-way and relocations associated with retention/detention ponds.

An exfiltration trench is a subsurface drainage system that consists of a perforated pipe surrounded by aggregate material. Stormwater is directed to the perforated pipe via a surface inlet system. The perforated pipe provides temporary storage in order to facilitate infiltration through the trench walls and bottom into the shallow groundwater aquifer. Also known as a french drain, an exfiltration system is used where space is limited and/or there are high land costs such as in downtown urban areas.

8.3.2.2 Michigan/Kaley Interchange

Concerns with the TSCRTM alternatives have been raised regarding the operational performance at this interchange. Specifically, the operational concerns involve the weave condition between the Michigan/Kaley interchange and the SR 408 (East/West Expressway) interchange for Alternatives 1 - C and 1 - F' and the ramp terminal intersection operation for Alternative 2.

An additional alternative was developed similar to Alternative 2 that braids the Michigan/Kaley on- and off-ramps in lieu of a signalized intersection. The original alternative creates a full access, inverted diamond interchange with frontage road connections between Michigan and Kaley with Texas U-turns under I-4. The revised alternative eliminates the signalized intersections associated with the inverted diamond and provides for improved operations on the ramps.

The revised alternative increases the weave distance between the Michigan/Kaley ramps and SR 408 (East/West Expressway). Due to the improved operations of the revised alternative all TSCRTM alternatives were eliminated from further study and only the braided ramp alternative is carried forward.

8.3.2.3 SR 408 (East/West Expressway)/I-4 Interchange

The City of Orlando and several stakeholders in the downtown Orlando area raised concerns regarding the SR 408 (East/West Expressway)/I-4 interchange and downtown access developed in the TSCRTM. These concerns include consistency with potential redevelopment plans in the Parramore area, access changes to neighborhoods and downtown Orlando and impacts to historic areas. A reevaluation of the SR 408 (East/West Expressway)/I-4 interchange and the downtown access was initiated.

The process involved defining the objectives for the project, verifying stakeholder issues and concerns, developing and evaluating alternatives, reviewing alternatives with stakeholders and iterations of refinements. Objectives for the alternatives were established and a list of stakeholders for coordination and review of alternatives was developed.

The following objectives for alternatives were developed:

- ◆ Provide system-to-system access between I-4 and SR 408 (East/West Expressway).
- ◆ Provide an affordable interchange system.
- ◆ Provide an interchange concept that permits a phased implementation.
- ◆ Provide acceptable access to downtown Orlando.
- ◆ Provide acceptable local access to surrounding neighborhoods.
- ◆ Minimize impacts to surrounding neighborhoods.
- ◆ Compliment redevelopment of the Parramore Neighborhood.
- ◆ Preserve/enhance livability in the area of the interchange.

- ◆ Provide a sustainable neighborhood in terms of urban design considerations.
- ◆ Provide urban design enhancements to contribute to improved aesthetics.
- ◆ Improve pedestrian connections.
- ◆ Preserve/enhance pedestrian/bicycle access across I-4 and SR 408 (East/West Expressway).
- ◆ Promote positive use of public owned land.
- ◆ Achieve consensus among the stakeholders within the interchange area of influence.

The following list of stakeholders was developed:

Local Stakeholders

- ◆ City of Orlando,
- ◆ Orange County,
- ◆ Orlando Housing Authority,
- ◆ Orlando-Orange County Expressway Authority,
- ◆ Parramore Heritage Development Corporation,
- ◆ Downtown Development Board,
- ◆ Parramore Neighborhood,
- ◆ Griffin Park Neighborhood,
- ◆ Carter Street Association,
- ◆ Jones High School,
- ◆ Business interests on Long Street,
- ◆ Holden Heights Neighborhood Groups,
- ◆ Holden Heights Redevelopment Group,
- ◆ Business interests on Division Avenue,
- ◆ Callahan Neighborhood Association,
- ◆ Lake Cherokee Neighborhood,
- ◆ Lake Lawsona Neighborhood,
- ◆ Downtown business interests, and
- ◆ Carolina Florida Properties.

State and Regional Stakeholders

- ◆ Florida Department of Transportation,
- ◆ METROPLAN Orlando,
- ◆ St. Johns River Water Management District, and
- ◆ State Historic Preservation Office.

Federal Stakeholders

- ◆ Federal Highway Administration,
- ◆ Housing and Urban Development, and
- ◆ Advisory Council on Historic Preservation.

Meetings were held with stakeholders to establish certain alternative conditions within the SR 408 (East/West Expressway)/I-4 interchange and

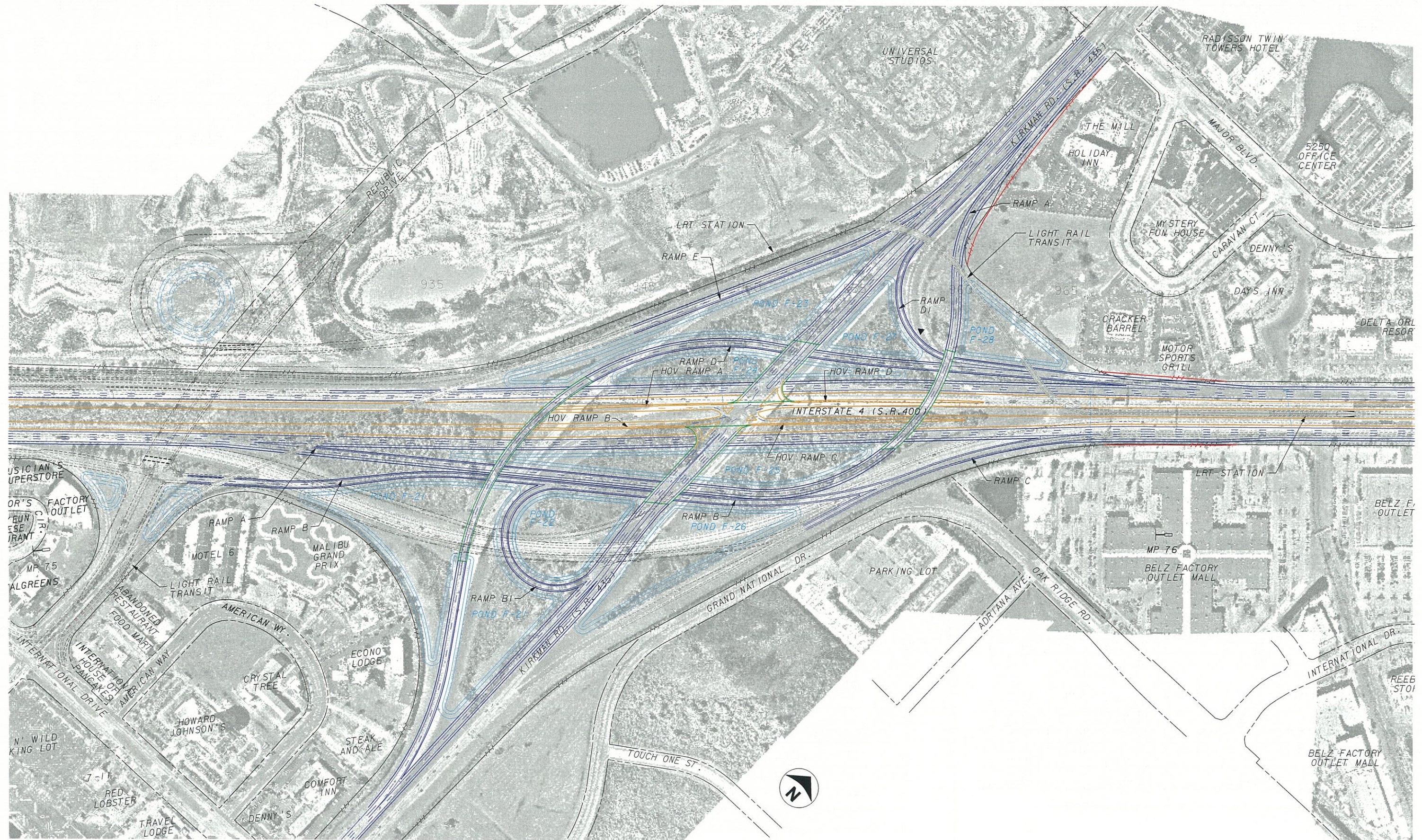
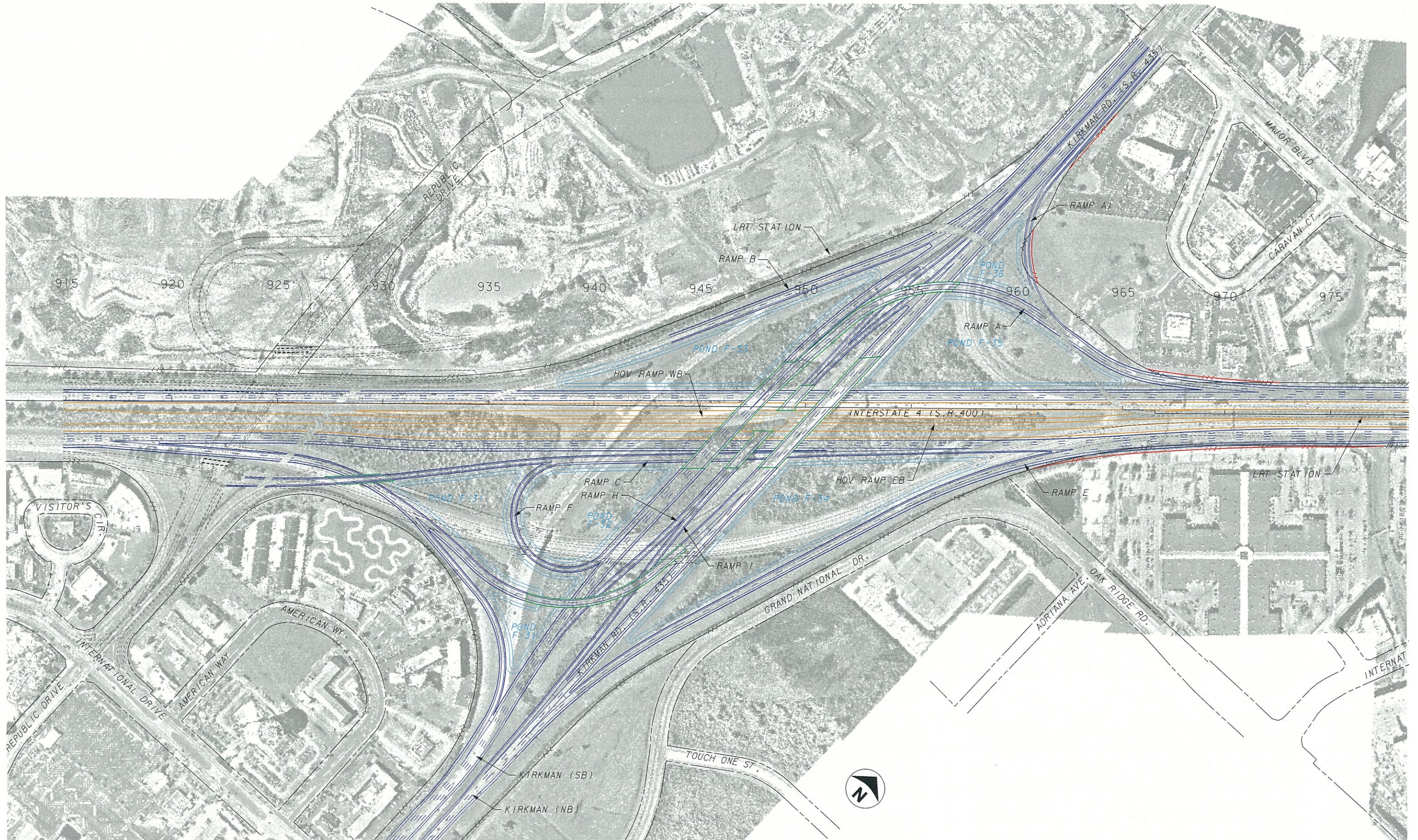


Figure 8.3.1
Kirkman Road Interchange - Alternative 2

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I-4 PD&E Study - Section 2

Figure 8.3.2
Kirkman Road Interchange - Alternative 3

downtown that would help meet the established objectives. The following conditions were developed:

- ◆ The Orlando Housing Authority requested an alternative relocating the SR 408 (East/West Expressway) ramps that separate Griffin Park from the Parramore neighborhood. The TSCRTM Alternative ramps maintain the existing physical barrier between Griffin Park and the Parramore neighborhood. Relocating the ramps would allow for the redevelopment and connectivity of the neighborhoods.
- ◆ Several stakeholders requested access between I-4 and US 441 (Orange Blossom Trail) via SR 408 (East/West Expressway) be maintained. This access is provided with the existing interchange configuration. The TSCRTM Alternative does not provide this connection. In addition, access at Gore Street is eliminated with the TSCRTM Alternative and the stakeholders requested additional access to the local street network be provided to replicate existing access options.
- ◆ Operational concerns on I-4 through downtown Orlando are a concern to some stakeholders because of the multiple ramp connections and short weaving sections.
- ◆ Other stakeholders expressed concerns about the number of ramp connections to the downtown area being reduced.

In response to the stakeholder's requests, six additional interchange alternative concepts were developed in schematic detail on aerial maps for the I-4/SR 408 interchange. One additional alternative concept was developed for downtown Orlando access. The alternative concepts were presented to the stakeholders during two workshop sessions. The stakeholders selected for further evaluation, two of the additional alternative concepts (in addition to the TSCRTM Alternative) for the SR 408 (East/West Expressway) /I-4 interchange (Alternatives 1A and 2B) and two alternative concepts for downtown Orlando access (Alternatives 1 and 2). These alternatives have varying degrees of impacts to the historic Griffin Park neighborhood. Minor revisions have been incorporated into the TSCRTM Alternative to avoid impacts to the historic Griffin Park neighborhood and has been renamed Alternative 4. Alternative 4 is an avoidance alternative and is a viable alternative for avoidance of Section 106 and Section 4(f) resources. All alternatives were carried forward as part of the DEIS.

Each SR 408 (East/West Expressway)/I-4 interchange alternative provides a full access multilevel interchange with a loop ramp in the southeast quadrant for the eastbound SR 408 (East/West Expressway) to eastbound I-4 movement. Braided ramps are proposed along SR 408 (East/West Expressway) at US 441 (Orange Blossom Trail) and at Orange Avenue. Slip ramps are provided from the braided ramps over US 441 (Orange Blossom Trail) to provide access to US 441 (Orange Blossom Trail) from I-4 via Long Street (Alternatives 1A, 2B and 4) and to provide access to I-

4 from US 441 via Carter Street (Alternatives 1A and 2B). The eastbound SR 408 (East/West Expressway) to Orange Avenue ramp has been braided over the I-4 to eastbound SR 408 (East/West Expressway) ramp to avoid the historic Peckham-Phillips House property. The limits of the improvements extend approximately 1.5 miles east and west of I-4 along SR 408 (East/West Expressway), impacting interchanges from Tampa Street to Bumby Avenue. All system to system ramps for each alternative are similar except for the westbound SR 408 (East/West Expressway) to westbound I-4 connection. A tunnel connection is proposed in Alternative 1A, a flyover connection is proposed in Alternative 2B and an alignment on bridge and fill is proposed for Alternative 4.

The downtown Orlando Access Alternative 1 proposes to relocate Anderson Street and provide access to and from downtown Orlando from the west via ramps from Hughey Avenue and to Garland Avenue, and from the east at Anderson Street. Additional access is proposed at Amelia Street, SR 50 (Colonial Drive) and Ivanhoe Boulevard. HOV direct access is proposed at South Street and at Ivanhoe Boulevard. In Alternative 2, access to Amelia Street is eliminated and additional lanes are added to Hughey Avenue and Garland Avenue. In addition, the ramps to Garland Avenue from I-4 and from Hughey Avenue to I-4 are widened to two-lane ramps. All other access is the same as in Alternative 1.

Combining the SR 408 (East/West Expressway)/I-4 alternatives with the downtown alternatives results into four new alternatives (Alternatives 1A1, 1A2, 2B1 and 2B2). The following discussion summarizes the alternatives:

Alternative 1A1 - SR 408 (East/West Expressway) Tunnel Alternative with Amelia Street Ramps

The primary component of this alternative is a tunnel that serves westbound SR 408 (East/West Expressway) to westbound I-4 traffic adjacent to the existing ramp connector. The tunnel begins north of Callahan Drive and extends beyond Gore Street. The eastbound SR 408 (East/West Expressway) to westbound I-4 ramp connection is moved eastward and connects to I-4 east of Griffin Park. The existing ramp connection is removed and the Griffin Park Historic District is reincorporated into the Holden-Parramore neighborhood. This alternative requires acquisition of right-of-way from the Griffin Park Historic District. The Amelia Street ramps are provided with this alternative. This alternative provides a four-level interchange (one level below grade). Alternative 1A1 can be seen in Figure 8.3.3.

Alternative 1A2 - SR 408 (East/West Expressway) Tunnel Alternative without Amelia Street Ramps

The primary component of this alternative is a tunnel that serves westbound SR 408 (East/West Expressway) to westbound I-4 traffic adjacent to the

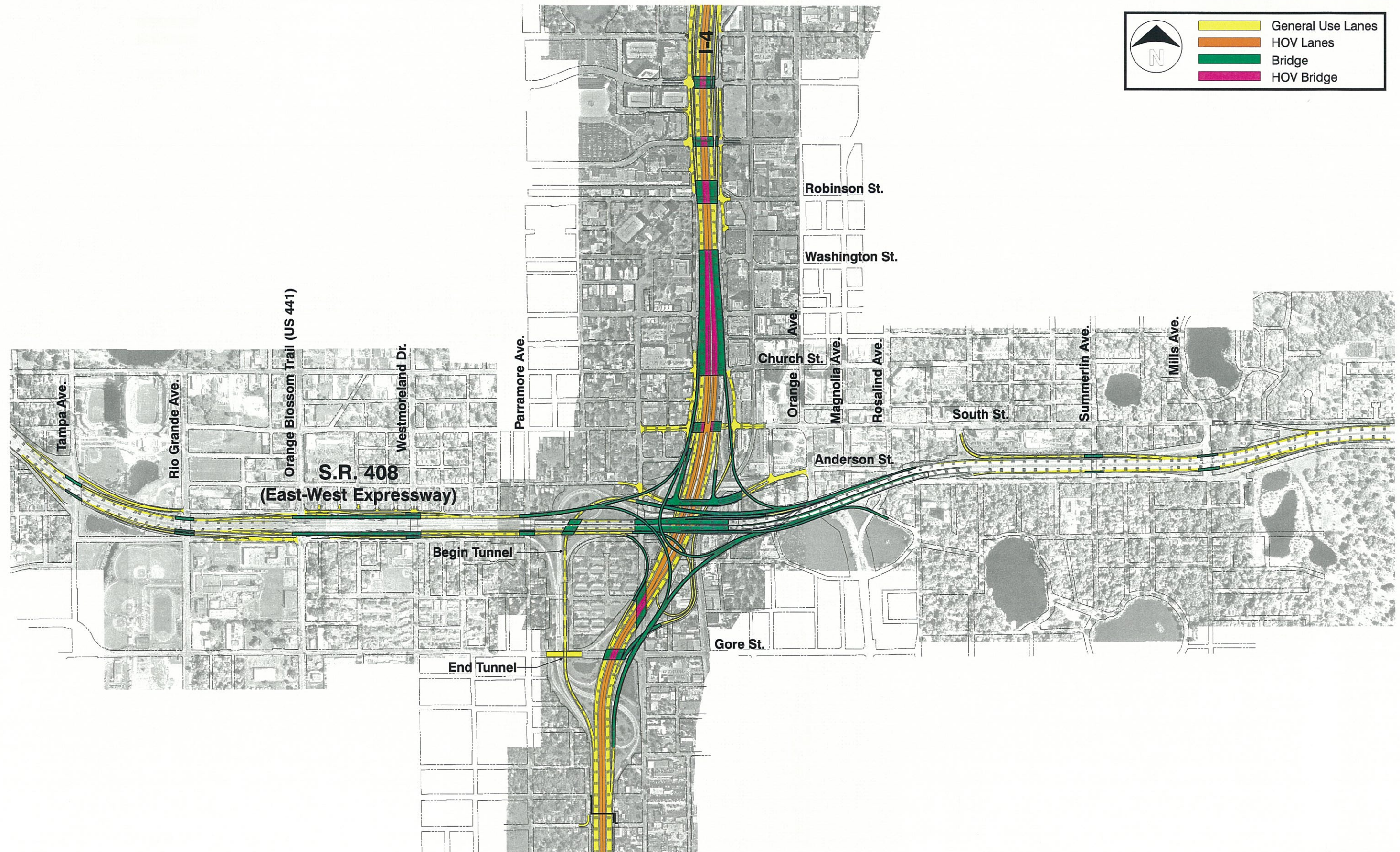
existing ramp connector. The tunnel begins north of Callahan Drive and extends beyond Gore Street. The eastbound SR 408 (East/West Expressway) to westbound I-4 ramp connection is moved eastward and connects to I-4 east of Griffin Park. The existing ramp connection is removed and the Griffin Park Historic District is reincorporated into the Holden-Parramore neighborhood. This alternative requires the acquisition of additional right-of-way from the Griffin Park Historic District when compared to Alternative 1A1. The Amelia Street ramps are eliminated and the ramp from eastbound I-4 to Garland Avenue and the ramp from Hughey Avenue to westbound I-4 are widened to two lanes. The proposed I-4 centerline is shifted to the west to accommodate the two-lane ramp to Garland Street. This alternative provides a four-level interchange (one level below grade). Alternative 1A2 can be seen in Figure 8.3.4.

Alternative 2B1 - SR 408 (East/West Expressway) Flyover Alternative with Amelia Street Ramps

The primary component of this alternative is a fourth-level flyover connection for the westbound SR 408 (East/West Expressway) to westbound I-4 movement. The eastbound SR 408 (East/West Expressway) to westbound I-4 ramp connection is moved eastward and connects to I-4 east of Griffin Park. The existing ramp connection is removed and the Griffin Park Historic District is reincorporated into the Holden-Parramore neighborhood. This alternative requires acquisition of right-of-way from the historic Griffin Park Historic District. The Amelia Street ramps are provided with this alternative. Alternative 2B1 can be seen on Figure 8.3.5.

Alternative 2B2 - SR 408 (East/West Expressway) Flyover Alternative without Amelia Street Ramps

The primary component of this alternative is a fourth-level flyover connection for the westbound SR 408 (East/West Expressway) to westbound I-4 movement. The eastbound SR 408 (East/West Expressway) to westbound I-4 ramp connection is moved eastward and connects to I-4 east of Griffin Park. The existing ramp connection is removed and the Griffin Park Historic District is reincorporated into the Holden-Parramore neighborhood. The Amelia Street ramps are eliminated and the ramp from I-4 eastbound to Garland Avenue and the ramp from Hughey Avenue to I-4 westbound are widened to two lanes. The proposed I-4 centerline is shifted to the west to accommodate the two-lane ramp to Garland Street. This alternative requires acquisition of the most right-of-way from the I-4 Griffin Park Historic District. Alternative 2B2 can be seen on Figure 8.3.6.



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Figure 8.3.3
I-4 / SR 408 Interchange Improvements - Alternative 1A1

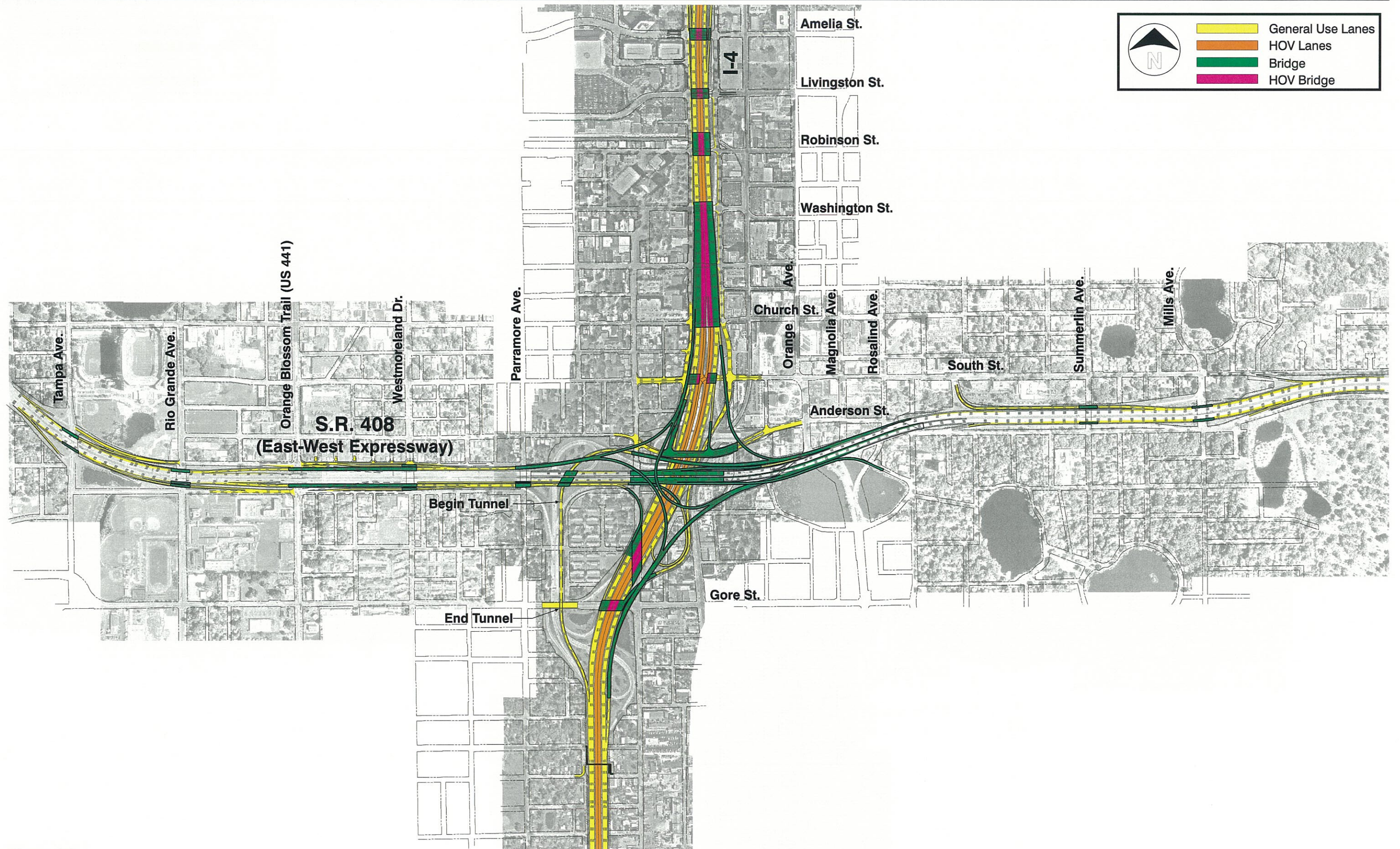
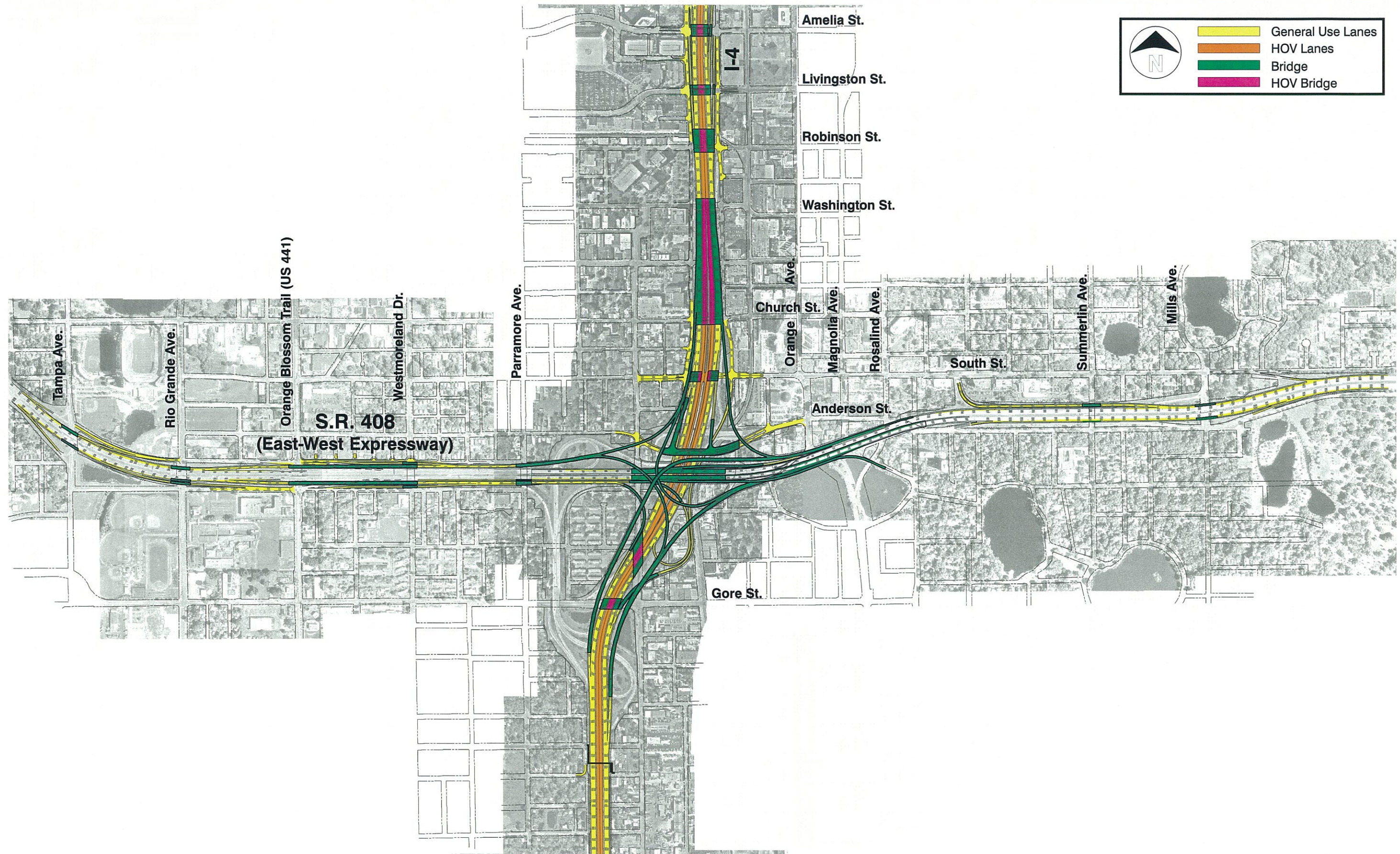


Figure 8.3.4
I-4 / SR 408 Interchange Improvements - Alternative 1A2

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 8.3.5
I-4 / SR 408 Interchange Improvements - Alternative 2B1

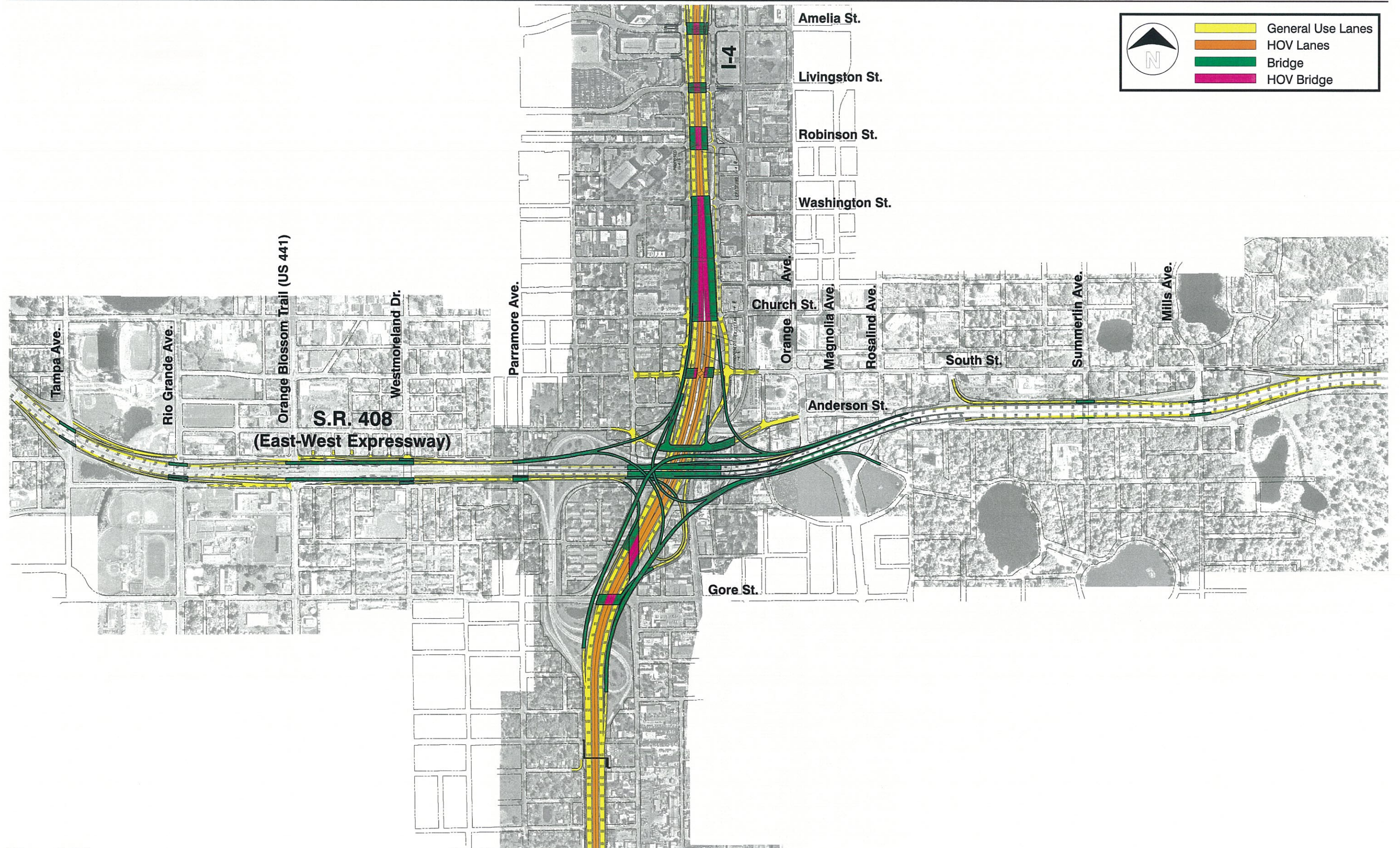


Figure 8.3.6
I-4 / SR 408 Interchange Improvements - Alternative 2B2

I-4 PD&E Study - Section 2

Alternative 4 - SR 408 (East/West Expressway) Avoidance Alternative

This alternative is identical to the alternative proposed in the TSCRTM with the few exceptions noted above that have been incorporated into all alternatives. It avoids impacts to the Griffin Park Historic District and the historic Peckham-Phillips House. This alternative is a three-level interchange. Alternative 4 can be seen on Figure 8.3.7.

8.3.2.4 SR 50 (Colonial Drive)

The Cultural Resource Assessment identified two properties along SR 50 (Colonial Drive) as having high potential for listing on the NRHP. The Judge Cheney House located east of I-4 on the north side of SR 50 (Colonial Drive) and the Colonial Garage located east of I-4 on the south side of SR 50 (Colonial Drive). The alignment of SR 50 (Colonial Drive) through the single point TSCRTM interchange alternative impacts both properties. Avoidance alternatives (Alternatives 1 and 2) were developed that realign SR 50 (Colonial Drive) through the single point interchange. Alternatives 1 and 2 are discussed as follows:

Alternative 1 maintains the existing SR 50 (Colonial Drive) north right-of-way line and shifts the SR 50 (Colonial Drive) alignment and right-of-way acquisition to the south. This alternative impacts the Colonial Garage structure and property. The Judge Cheney House property is not impacted with this alternative.

Alternative 2 maintains the existing SR 50 (Colonial Drive) south right-of-way line and shifts the SR 50 (Colonial Drive) alignment and right-of-way acquisition to the north. This alternative impacts the Judge Cheney House property. The Judge Cheney House structure and the Colonial Garage structure and property will not be impacted under this alternative.

8.3.2.5 Ivanhoe Boulevard

Concerns with the TSCRTM alternative have been raised regarding the short weaving distance on the I-4 westbound general use lanes between the on-ramp from SR 438 (Princeton Street) and the off-ramp to Ivanhoe Boulevard. Additional concerns were raised concerning the impacts to Beth Johnson Park located on Ivanhoe Boulevard. Alternatives were developed to increase the weaving distance between SR 438 (Princeton Street) and Ivanhoe Boulevard and avoid impacts to Beth Johnson Park.

Alternative 1 maintains the one-lane on-ramp and auxiliary lane at the Princeton Street interchange and provides a one-lane off-ramp to Ivanhoe Boulevard. The one-lane ramp bridges Lake Ivanhoe and widens to two lanes terminating at a signalized intersection on Ivanhoe Boulevard west of I-4. This ramp intersection aligns with the westbound frontage road between Ivanhoe Boulevard and SR 50 (Colonial Drive). The westbound

HOV off-ramp to Ivanhoe Boulevard terminates at a signalized intersection on Ivanhoe Boulevard between the I-4 eastbound and westbound lanes.

Alternative 2 maintains the one-lane westbound on-ramp and auxiliary lane at the Princeton Street interchange and provides a one-lane off-ramp to Ivanhoe Boulevard. The one-lane ramp widens to two-lanes terminating at a signalized intersection on Ivanhoe Boulevard west of I-4. This ramp intersection aligns with the westbound frontage road between Ivanhoe Boulevard and SR 50 (Colonial Drive). The westbound I-4 HOV off-ramp to Ivanhoe Boulevard crosses under the westbound I-4 lanes and terminates at the same intersection with Ivanhoe Boulevard as the general use lane ramp. This concept creates a five-legged intersection between the I-4 off-ramps, the frontage road and Ivanhoe Boulevard.

The weave distance for westbound I-4 is improved with both alternatives. Alternative 1 requires an additional signalized intersection on Ivanhoe Boulevard and impacts nine existing recreational parking spaces under the I-4 bridge over Lake Ivanhoe. Alternative 2 adds an additional phase to one traffic signal and does not impact the existing parking. Alternative 2 was selected to be carried forward.

8.3.3 Segment 3 - Ivanhoe Boulevard to Lee Road

The TSCRTM concept improvements for Alternatives C and F' require significant changes in the existing profile of I-4. The profile changes, up to 20 feet in some locations, are required to provide the 16.5-foot vertical clearance for bridges for I-4 over cross roads and to meet the 60 mph design speed. Coordination with the College Park Neighborhood Association (CPNA) resulted in the formation of an I-4 Technical Committee by CPNA to review and evaluate the proposed improvement alternatives between Ivanhoe Boulevard and Lee Road. The specific concerns raised by both the City of Orlando and CPNA's I-4 Technical Committee involve the impacts of raising the profile grade on I-4 and the right-of-way acquisition and relocations associated with stormwater treatment requirements. The following summarizes the concept revisions responding to these issues.

8.3.3.1 Vertical and Horizontal Alignment

The bridge vertical clearance criterion for I-4 over New Hampshire Street, SR 438 (Princeton Street), Winter Park Street, Par Street, Minnesota/Formosa Avenue and Wymore Road was reduced from 16.5 feet to 14.5 feet, and for Fairbanks Avenue was reduced to 15.5 feet. This reduction in vertical clearance is consistent with AASHTO criteria for crossing over local roads. In addition, a design speed variation was proposed to reduce the vertical and horizontal alignment criteria from 60 mph based on FDOT desirable criteria to 60 mph based on AASHTO criteria. These revisions result in significant lowering of the roadway profile and the associated reduction in roadway fill and wall heights through the College Park neighborhood.

8.3.3.2 Drainage Alternatives

Exfiltration alternatives were proposed for stormwater treatment through the College Park neighborhood to reduce right-of-way acquisition requirements and relocation impacts. The alternatives are described as Alternative C - Ponds, Alternative C - Exfiltration, Alternative F' - Ponds and Alternative F' - Exfiltration.

8.3.4 Segment 4 - Lee Road to Lake Mary Boulevard

8.3.4.1 Kennedy Boulevard

Coordination with the Town of Eatonville resulted in the request by the town for FDOT to evaluate an I-4 interchange at Kennedy Boulevard. In addition, the Project Team Partnering session recommended that the feasibility of an interchange at this location be evaluated. The Town of Eatonville formed an Interchange Review Committee to assist in the review of alternative interchange concepts. Two alternative interchange concepts were developed for the intersection of I-4 and Kennedy Boulevard and presented to the Eatonville Interchange Review Committee.

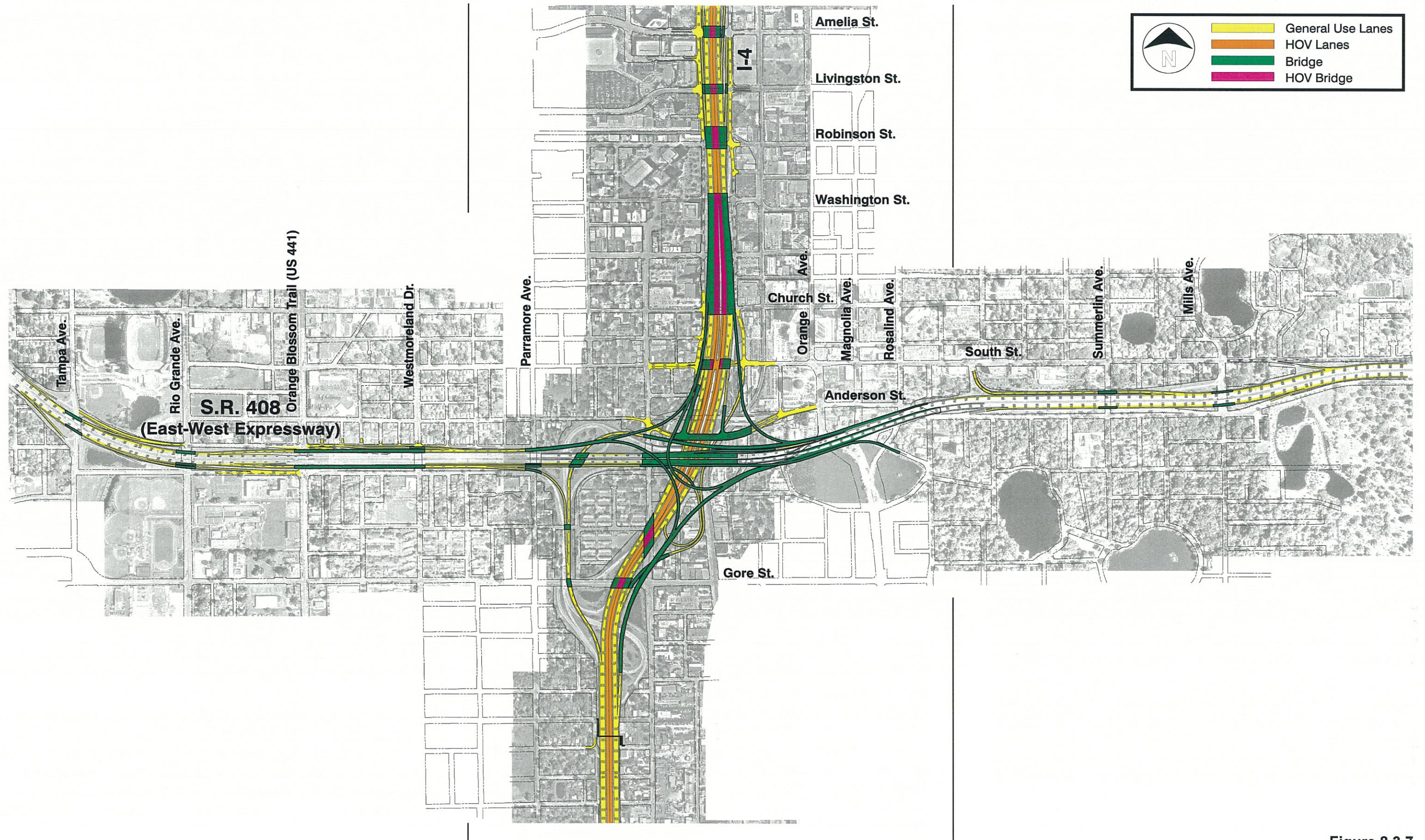
The proposed interchanges significantly impact commercial property and traffic circulation within the Town of Eatonville. Consequently, the Town of Eatonville has not pursued their original request.

8.3.4.2 SR 414 (Maitland Boulevard)

The TSCRTM Alternatives 2B and 7 were initially developed in schematic detail on aerial photography. The schematic interchange concepts were developed in detail to ensure compliance with design criteria and assist in the more detailed analysis of potential impacts. The public outreach program with the City of Maitland solicited input on the refined concepts. A Transportation Committee was established by the city and the concepts were put through an extensive review. The committee raised concerns regarding the impacts to development along Wymore Road, the distance between the westbound I-4 off-ramp and Lake Destiny Drive and maintaining two signalized intersections on SR 414 (Maitland Boulevard) at the I-4 ramp terminal intersections. A reevaluation of the SR 414 (Maitland Boulevard) interchange was initiated.

The impacts to the commercial development along Wymore Road could not be avoided with Alternative 7; therefore it was eliminated from further study.

Alternative 2B was modified to provide a three-level partial cloverleaf interchange. This modification eliminated the two signalized intersections on SR 414 (Maitland Boulevard) at the ramp terminal intersections. In addition, the westbound SR 414 (Maitland Boulevard) to westbound I-4 and the westbound I-4 to westbound SR 414 (Maitland Boulevard) ramps were reconfigured to allow greater distance between the I-4 off-ramp and



I-4 PD&E Study - Section 2

Figure 8.3.7
I-4 / SR 408 Interchange Improvements - Alternative 4

the Lake Destiny Drive intersection. The modifications to Alternative 2B satisfied the City of Maitland Transportation Committee's concerns. The modified alternative has no additional right-of-way impacts and minimal wetland impacts within the existing right-of-way. Construction costs for the modified alternative increased by approximately \$5.9 million.

The modified version of Alternative 2B was selected as the Preferred Alternative due to the improved traffic operations on SR 414 (Maitland Boulevard).

8.3.4.3 HOV Access Modifications

In response to coordination with FHWA and Orange and Seminole Counties, alternative HOV slip ramp access was evaluated between Lee Road and Maitland Boulevard and at the Central Parkway HOV interchange. Modifications proposed for the HOV system between Lee Road and Maitland Boulevard include slip ramps from the eastbound I-4 HOV lanes to the eastbound I-4 general use lanes and from the westbound I-4 general use lanes to the westbound HOV lanes. Modifications proposed for the Central Parkway HOV interchange include replacing the direct connection ramps to/from the east with slip ramps. The slip ramps will provide access from the eastbound I-4 HOV lanes to the eastbound I-4 general use lanes and from the westbound I-4 general use lanes to the westbound I-4 HOV lanes. These access modifications did not cause any operational impacts and were carried forward through the impact evaluation phase of project development.

8.3.5 Segment 5 - Lake Mary Boulevard to US 17-92

As indicated in Section 7.3.3 of this report, Alternative F was proposed from Lake Mary Boulevard to SR 46. However, due to two interim construction projects and two interim design projects within this portion of I-4, the existing conditions and feasibility of widening could not be determined. Therefore, the worst case scenario was proposed and Alternative C was carried forward.

8.3.5.1 HOV Access Modifications

In response to coordination with Seminole County, alternative HOV slip ramp access was evaluated between SR 46 and US 17-92. Modifications proposed for the HOV system between SR 46 and US 17-92 include slip ramps from the eastbound I-4 general use lanes to the eastbound I-4 HOV lanes and from the westbound I-4 HOV lanes to the westbound I-4 general use lanes. These access modifications did not cause any operational impacts and were carried forward through the impact evaluation phase of project development.

8.3.6 Segment 6 - US 17-92 to SR 472

In response to a Value Engineering recommendation, the 64-foot median transit envelope proposed in Segment 6 was reduced to 44 feet. The reduced median transit envelope can accommodate transit while reducing impacts.

8.3.6.1 I-4 Six Laning and St. John's River Bridge Replacement

An EA/FONSI (May 2000) was prepared for the six laning of I-4 from US 17-92 to I-95 and the replacement of the St. Johns River bridge. The proposed improvements include the addition of two general use lanes to the existing four lanes and the replacement of the I-4 bridge over the St. Johns River. This project was approved and is under construction as of August 2002. The two general use lanes are being constructed in the median from US 17-92 to SR 472. The four-lane St. John's River Bridge is being replaced with a six-lane bridge in the location of the general use lanes proposed in this project.

8.4 ULTIMATE BUILD ALTERNATIVES

The build alternative concepts are comprised of the I-4 mainline improvements (both general use lanes and HOV lanes), interchanges for the general use lane system and interchanges for HOV system. The following discussion describes each system component. Each of the following Build Alternatives were presented at the Public Hearings.

8.4.1 I-4 Mainline - General Use Lanes

The proposed Alternative C and Alternative F' typical sections for I-4 provided three general use lanes and one barrier separated HOV facility in each direction. To satisfy operational requirements such as lane balance along specific segments of roadway, additional auxiliary lanes were proposed. All mainline descriptions (both eastbound and westbound) are described from west to east.

Three general use lanes plus one auxiliary lane eastbound and two auxiliary lanes westbound convey traffic between SR 528 and SR 482 (one auxiliary lane in both directions if the I-4 PD&E Study - Section 1 improvements are not complete). Between SR 482 and Universal Boulevard, the eastbound auxiliary lane is dropped at the SR 435 exit. One westbound auxiliary lane is dropped at SR 482 (with I-4 PD&E Study - Section 1 improvements) and the second is dropped at the SR 435 collector-distributor road entrance. The three general use lanes do not pick up additional auxiliary lanes until east of SR 435.

One auxiliary lane in each direction is provided between SR 435 and US 441. An additional westbound auxiliary lane is provided between US 441 and Michigan Street to preserve lane balance in the area. East of Kaley Avenue, both directions on I-4 provide three general use lanes and two auxiliary lanes.

The two auxiliary lanes are dropped at the SR 408 interchange. Through downtown Orlando, three general use lanes plus one auxiliary lane in both directions were proposed. The auxiliary lanes are dropped at SR 50 and no auxiliary lanes are required until east of Ivanhoe Boulevard. Alternatives C and F' were proposed between Princeton Street and north of Lee Road.

Exfiltration and Pond alternatives were also proposed between Princeton Street and Lee Road. The three general use lanes plus one auxiliary lane configuration between interchanges continues through to the CR 46A/SR 417/SR 46 area.

At CR 46A, the eastbound auxiliary lane is carried through to the SR 417 exit. In the westbound direction it is added from the collector-distributor system that extends from SR 46 through CR 46A. The auxiliary lane is again added in both directions between SR 417 and SR 46. At US 17-92, the auxiliary lanes are dropped and only the three general use lanes are provided to the end of the project.

Depending on when the improvements proposed in the I-4 PD&E Study - Section 3 are implemented, there were two alternatives evaluated at the end of the project north of SR 472. If the I-4 PD&E Study - Section 3 improvements have not been implemented, the three general use lanes will tie into the existing four-lane roadway. If the I-4 PD&E Study - Section 3 preferred alternative has been constructed, the three general use lanes will tie into an existing six lane facility.

8.4.2 SR 528 (Bee Line Expressway) Mainline

As part of the I-4 PD&E Study - Section 2, SR 528 is widened to six lanes from the I-4 interchange to east of International Drive then transitions into a four-lane section. HOV lanes are provided as a continuation of the I-4 direct access ramps in the median of SR 528 from I-4 to International Drive. The HOV lanes end by providing direct access ramps to International Drive and merging into the SR 528 mainline lanes east of International Drive.

8.4.3 SR 408 (East/West Expressway) Mainline

The proposed I-4/SR 408 interchange concepts have reconstruction and widening impacts on the SR 408 mainline from west of Tampa Street to Bumby Avenue. The SR 408 mainline bridges over I-4 are replaced to accommodate the I-4 typical section. SR 408 is widened from four-lanes to six-lanes and auxiliary lanes are required between Tampa Avenue and US 441 and between Anderson Street and Bumby Avenue. In order to provide adequate lane balance and ramp access spacing, the Mills Avenue ramps to and from the west are removed.

8.4.4 System-to-System Interchanges

There are four existing or approved system-to-system interchanges along the project limits. These are SR 528 (Bee Line Expressway), Florida's Turnpike, SR 408 (East/West Expressway) and SR 417 (Central Florida Greene Way). The following summarizes the improvements proposed.

8.4.4.1 SR 528 (Bee Line Expressway)

The proposed SR 528 (Bee Line Expressway) interchange is a three-level, three-leg, directional system-to-system interchange with direct HOV access flyover ramps. Improvements along SR 528 extend to approximately 1/2

mile east of the International Drive interchange. Minor adjustments to the International Drive ramps and replacement of the SR 528 bridge over International Drive are required. SR 528 is upgraded to a six-lane limited access highway with auxiliary lanes in this area. Two-lane ramps serving the general use lanes are provided for the following movements: eastbound I-4 to eastbound SR 528, westbound I-4 to eastbound SR 528 and westbound SR 528 to westbound I-4. A single lane ramp is provided for the remaining movement.

Two alternatives have been evaluated at SR 528 (Bee Line Expressway). They include the Ultimate Bee Line Expressway Alternative if the interchange is constructed after the Section 1 improvements are constructed and the Tie to Existing Bee Line Expressway Alternative if the Section 2 improvements are constructed before the Section 1 improvements.

8.4.4.2 Florida's Turnpike

All ramp movements will remain as they are in the existing double trumpet configuration. However, a new ramp bridge over I-4 will be constructed to accommodate the proposed I-4 typical section. It should be noted that the existing mainline bridges for Florida's Turnpike over I-4 are being replaced to accommodate auxiliary lanes associated with the Conroy Road interchange. These bridges, under construction as of May 2002, will accommodate the Ultimate improvements on I-4.

8.4.4.3 SR 408 (East/West Expressway)

The proposed I-4/SR 408 interchange is a full access directional system-to-system interchange with a loop ramp provided for the eastbound SR 408 to eastbound I-4 movement. The limits of improvements extend from approximately 1.5 miles east and west of I-4 along SR 408. Modifications are required to the following interchanges along SR 408: Tampa Street, US 441 (Orange Blossom Trail), Orange Avenue, Anderson Street, Rosalind Avenue/South Street, Mills Avenue and Bumby Avenue. Due to the close proximity of the I-4/SR 408 interchange to the Orlando CBD, access modifications are required at the following locations on I-4: Michigan Street, Kaley Street, Gore Street, Anderson Street, Hughey Avenue, Garland Avenue, Robinson Street, Amelia Street and Colonial Drive.

Five Build Alternatives (including the TSCRTM Alternative) were under consideration for this interchange. Each Build Alternative (with the exception of the TSCRTM Alternative) is a combination of an interchange improvement and a downtown Orlando access improvement, of which there are two each. The five Build Alternatives that were evaluated are as follows:

- ◆ *Alternative 1A1* - SR 408 Tunnel Alternative with Amelia Ramps.
- ◆ *Alternative 1A2* - SR 408 Tunnel Alternative without Amelia Ramps.
- ◆ *Alternative 2B1* - SR 408 Flyover Alternative with Amelia Ramps.

- ◆ *Alternative 2B2* - SR 408 Flyover Alternative without Amelia Ramps.
- ◆ *Alternative 4* - TSCRTM Alternative

8.4.4.4 SR 417 (Central Florida GreeneWay)

Ramp movements will remain as in the "future existing" conditions (construction began in the summer of 2000 and is ongoing as of May 2002). Ramp junctions to and from I-4 will be modified slightly to connect to the reconstructed freeway. The westbound I-4 to SR 417 ramp junction is moved east from its current proposed location to approximately 2100 feet west of SR 46. This ramp merges with the SR 46 to SR 417/I-4 collector-distributor ramp and forms a three-lane facility adjacent to I-4.

8.4.5 System-to-Service Interchanges General Use Lanes

There are 30 general use system-to-service interchanges that are proposed for modification or elimination along the project limits. The following sections provide descriptions of each interchange modified or eliminated.

8.4.5.1 General Use Interchanges

SR 482 (Sand Lake Road)

This two-level interchange is a full-access diamond with a loop ramp (Ramp D) for westbound SR 482 to westbound I-4 traffic. The preferred alternative keeps this basic configuration and modifies the loop ramp to connect it to the eastbound SR 482 to westbound I-4 ramp (Ramp A) to create a single access point on I-4. Both Ramps A and D require reconstruction; however, the remaining ramps will only be modified at their I-4 gore areas.

Universal Boulevard

Access to Universal Boulevard from I-4 is through a partial access diamond. This newly constructed interchange is not modified as a part of this project with the exception of the gore areas on I-4.

SR 435 (Kirkman Road)

This interchange is totally reconstructed as a part of this project. The proposed interchange is a partial access four-level directional interchange with a loop ramp for southbound SR 435 to eastbound I-4 traffic. There will be no access to westbound I-4 from northbound SR 435. Southbound SR 435 to westbound I-4 traffic will be routed onto a collector-distributor ramp, which merges into I-4 just east of SR 482.

Conroy Road

This interchange has two levels and is a full access diamond with a loop ramp serving eastbound Conroy Road to eastbound I-4 traffic. No improvements are required for this interchange, with the exception of minor ramp modifications at the gore areas on I-4.

SR 423 (John Young Parkway)

This interchange is under design as of May 2002 to be reconstructed as a separate project. It involves enhancing the full access diamond by providing a flyover ramp for westbound I-4 traffic exiting to SR 423.

US 441 (Orange Blossom Trail)

The existing interchange is a two-level partial diamond with a loop ramp provided for eastbound I-4 to northbound US 441 traffic. Westbound I-4 motorists exiting to southbound US 441 do so via a left-hand exit, which is less than desirable. The build alternative modifies the existing interchange by exiting westbound I-4 to southbound US 441 traffic from the right side and connecting to the existing ramp. The I-4 alignment is shifted east in order to accomplish this. As in the existing configuration, a westbound I-4 to northbound US 441 movement is not provided with the Preferred Alternative.

Michigan Street

Exiting westbound I-4 traffic and entering eastbound I-4 traffic are served by a partial access diamond at Michigan Street. The proposed improvements combine this interchange with Kaley Avenue (see below) to create a new full access, braided ramp interchange with frontage road connections and Texas U-turns to provide full movements.

Two alternatives were evaluated at the Michigan Street and Kaley Avenue Interchange with I-4. They include the Kaley/Michigan Interchange with Ponds and the Kaley/Michigan Interchange with Exfiltration.

Kaley Avenue

The Kaley Avenue interchange is a full access diamond with a loop ramp for westbound I-4 to eastbound Kaley Avenue traffic. This interchange is combined with the Michigan Street interchange to create a new full access, braided ramp interchange with frontage road connections and Texas U-turns to provide full movements.

Hughey Avenue/Garland Avenue

There is no existing direct access between the Interstate and the Hughey Avenue/Garland Avenue one-way pair frontage roads. The Build

Alternatives provide an exit from eastbound I-4 to Garland Avenue and an entrance from Hughey Avenue to westbound I-4. Both ramps connect to the existing frontage roads at their intersections with South Street. The Garland Avenue off-ramp will replace the existing I-4 eastbound to Anderson Street ramp and the Hughey Avenue on-ramp will replace the South Street to I-4 westbound on-ramp.

Gore Street

The Gore Street interchange is a partial access diamond that serves entering and exiting westbound I-4 traffic. This interchange is eliminated as part of the proposed alternatives.

Anderson Street

The existing partial access diamond interchange directs traffic from both directions of I-4 to Anderson Street, and from Anderson Street to eastbound I-4. Anderson Street is one-way eastbound. The proposed alternative relocates Anderson Street to the south of its current alignment and allows two-way traffic on the roadway between Orange Avenue and Division Avenue. The Anderson Street interchange will still be a partial diamond, but modified to allow access to eastbound I-4 from Anderson Street and to Anderson Street from westbound I-4 only. The I-4 eastbound exit to Anderson Street will be eliminated. Access will be provided by the proposed Garland Avenue off-ramp.

South Street

The existing South Street interchange is a partial access diamond serving westbound I-4 entering and exiting traffic and eastbound entering I-4, all via left-hand ramps. South Street is currently one-way westbound. The interchange is modified to a full access diamond for HOV traffic only. In addition, the proposed alternatives modify South Street to accommodate two-way traffic from Division Avenue to Orange Avenue.

SR 526 (Robinson Street)

The existing configuration of the Robinson Street interchange is a partial access diamond. Eastbound I-4 traffic can exit to Robinson Street and Robinson Street traffic can access westbound I-4. This interchange is eliminated in the proposed alternatives and downtown Orlando access will be diverted to Garland Avenue, Hughey Avenue, Amelia Street and SR 50 (Colonial Drive).

Amelia Street

Only one movement (eastbound I-4 to Amelia Street) is currently allowed

at this interchange. Alternatives 1A1, 2B1 and 4 modify the interchange to a partial access diamond and allows traffic to exit from eastbound I-4 to Amelia Street and enter westbound I-4 from Amelia Street. The interchange is eliminated in Alternatives 1A2 and 2B2 and access to downtown Orlando is diverted to Hughey Avenue, Garland Avenue and SR 50.

SR 50 (Colonial Drive)

The partial access, partial cloverleaf interchange at SR 50 allows for all traffic movements except for exiting eastbound I-4 traffic which is accommodated at Amelia Street, eastbound SR 50 to westbound I-4 traffic which is accommodated at Robinson Street and westbound SR 50 to eastbound I-4 traffic which is accommodated at the Magnolia Avenue/Ivanhoe Boulevard intersection. This interchange is replaced with a full access single-point diamond interchange and will permit direct access to Garland and Hughey Avenues. There will be a one way frontage road pair on either side of I-4 for use by exiting and entering traffic.

Two alternatives were evaluated at the SR 50/I-4 interchange. They included Alternative 1 (Judge Cheney House Avoidance) and Alternative 2 (Colonial Garage Avoidance). Alternative 1 widens SR 50 to the south and Alternative 2 widens SR 50 to the north.

Ivanhoe Boulevard

The existing Ivanhoe Boulevard interchange provides full access through a partial cloverleaf configuration. The proposed improvements replace the existing interchange with a partial access diamond serving westbound I-4 to Ivanhoe Boulevard traffic and Ivanhoe Boulevard to eastbound I-4 traffic. Motorists on Ivanhoe Boulevard wishing to access westbound I-4 must follow a frontage road south to the next access point at SR 50. Eastbound I-4 traffic wishing to access Ivanhoe Boulevard must exit at SR 50 and follow Garland Avenue north to Legion Place.

Princeton Street

Princeton Street and I-4 interact through a full access diamond. The interchange remains a full access diamond interchange and is modified to provide two-lane ramps for exiting I-4 traffic.

Par Avenue

The existing configuration of the Par Avenue interchange is a partial access diamond with access to westbound I-4 and from eastbound I-4. The interchange configuration is maintained and the I-4 ramp gore areas are modified to accommodate the widened mainline.

SR 426 (Fairbanks Avenue)

SR 426 is provided full access through a diamond interchange. It remains a full access diamond and is modified to provide two-lane off-ramps for exiting I-4 traffic.

SR 423 (Lee Road)

The configuration of the SR 423 interchange is a full access diamond. It remains a full access diamond and is modified to provide two-lane off-ramps for exiting I-4 traffic.

SR 414 (Maitland Boulevard)

The existing SR 414 (Maitland Boulevard) interchange is a full access interchange. A loop ramp is provided for westbound SR 414 (Maitland Boulevard) to westbound I-4 traffic and a directional flyover ramp serves eastbound I-4 to westbound Maitland Boulevard traffic. The remaining movements are accommodated with diamond ramps. The proposed alternative replaces the existing interchange with a three-level partial cloverleaf. The profile for eastbound and westbound SR 414 (Maitland Boulevard) is bifurcated. Directional ramps for traffic traveling from eastbound SR 414 (Maitland Boulevard) to eastbound I-4 and from westbound SR 414 (Maitland Boulevard) to westbound I-4 are grade separated from the opposing traffic with the bifurcated profile of SR 414 (Maitland Boulevard). The loop ramps serve traffic traveling from eastbound I-4 to westbound SR 414 (Maitland Boulevard) and from westbound I-4 to eastbound SR 414 (Maitland Boulevard). The existing eastbound I-4 dual exits to eastbound and westbound SR 414 (Maitland Boulevard) are revised to one single point exit serving both directions. Similarly, the dual westbound on-ramps are modified to a single entrance ramp.

SR 436

A full access diamond with two-lane ramps (with the exception of a one-lane ramp from SR 436 to eastbound I-4 ramp) is the configuration for the existing SR 436 interchange. This interchange is reconstructed as a single-point diamond with two-lane ramps for each movement.

SR 434 (Sanlando Springs Road)

Two alternatives were proposed for this full access diamond interchange with two-lane ramps for all movements except for the westbound off-ramp. Alternative 1 maintains the existing diamond concept and provides two-lane ramps for all movements. Alternative 2 also proposes a full access diamond but adds a new loop ramp for westbound SR 434 to westbound I-

4 traffic. Two-lane ramps are provided for all movements except from SR 434 to westbound I-4, which is provided by a one-lane loop ramp (from westbound SR 434) and a one-lane diamond ramp (from eastbound SR 434).

Lake Mary Boulevard

The existing partial cloverleaf design remains with minor modifications to ramp gore areas at I-4 with one exception; the two westbound I-4 on-ramps merge into a single ramp before accessing I-4.

CR 46A (Paola Road)

Construction of this interchange was completed in late 1999. It is a full access diamond with a loop ramp provided for the westbound I-4 to eastbound CR 46A movement. The interchange is modified to allow for the continuation of the westbound collector-distributor ramp from SR 46. West of the interchange this collector-distributor merges with the westbound I-4 on-ramp from CR 46A.

SR 46

As of May 2002, this interchange is a standard full access diamond. It will be slightly modified once the construction of SR 417 is completed. The "future existing" condition is still a full access diamond; however, the eastbound I-4 to SR 46 movement is provided via a collector-distributor ramp that exits just east of CR 46A. The proposed alternative keeps the full access diamond concept but adds a new loop ramp for westbound SR 46 to westbound I-4 traffic. This loop ramp begins the westbound collector-distributor roadway that will serve the SR 46, SR 417 and CR 46A interchanges.

US 17-92

The full access partial cloverleaf design of the existing US 17-92 interchange is split between US 17-92 and Orange Boulevard and will be replaced as part of ongoing and proposed separate projects. Access for traffic from eastbound I-4 and to westbound I-4 is currently provided via Orange Boulevard while traffic to eastbound I-4 and from westbound I-4 travels along loop ramps connecting to US 17-92. With the exception of traffic wishing to enter onto eastbound I-4, all movements will be shifted to US 17-92. Entering eastbound I-4 traffic will do so by way of CR 15, a collector road parallel to I-4 connecting US 17-92 and Orange Boulevard.

The eastbound I-4 to US 17-92 exit will be at approximately the same location as in the existing conditions; however, instead of terminating at Orange Boulevard, the ramp will continue over Orange Boulevard and US 17-92 before looping back toward US 17-92 along the Lake Monroe

shoreline. As in the existing conditions, a loop ramp is provided for exiting traffic from westbound I-4. Motorists wishing to enter westbound I-4 will do so via a direct ramp from US 17-92 instead of Orange Boulevard.

The US 17-92 to eastbound and westbound I-4 and westbound I-4 to US 17-92 ramps are being constructed as part of the I-4 Six Laning and St. Johns River Bridge project. The eastbound I-4 to US 17-92 loop ramp will be constructed as a separate project under design as of May 2002.

Dirksen Drive/DeBary Avenue

The existing Dirksen Drive/DeBary Avenue interchange is a full access partial cloverleaf. This concept will remain in the build alternative with minor ramp modifications at the I-4 gore locations. In addition, the eastbound I-4 off-ramp is widened to a two lane ramp.

Saxon Boulevard

A full access partial cloverleaf with loop ramps in the southwest, northwest and northeast quadrants provides access between Saxon Boulevard and I-4. This configuration is retained with minor ramp gore modifications. In addition, the two eastbound I-4 off-ramps will be consolidated to one exit and the two movements will diverge once clear of the mainline.

SR 472

SR 472 recently been extended eastward over I-4 to Howland Boulevard. Once a westbound SR 472 to eastbound I-4 ramp is added (in design as of May 2002), the "future existing" configuration of the SR 472 interchange will be a full access diamond with a loop ramp provided for eastbound SR 472 to eastbound I-4 traffic. The proposed improvements preserve this design with only minor modifications to the ramp gore areas on I-4.

8.4.6 HOV System

The I-4 PD&E Study - Section 2 proposed alternatives provide for three general use lanes and a 34-foot HOV facility in each direction. The general use lanes will serve all vehicle components of the traffic mix while the HOV lanes will be dedicated for multiple occupant vehicles. It is the intent to open the facility to vehicles with two or more occupants (HOV 2+). If the demand in the HOV system results in operations less than LOS D, then the occupancy requirements will be increased to three or more persons (HOV 3+). FDOT is committed to maintaining LOS D or better operations in the HOV system. This would include carpool, vanpool and public transit vehicles. In addition, motorcycles may also be granted access to the HOV system.

An HOV corridor is proposed for nearly the entire length of the Ultimate project, from SR 528 (Bee Line Expressway) to east of Rhode Island Avenue

in Volusia County, approximately 1.85 miles west of SR 472. Eighteen access points to and from the HOV system are proposed; seven direct connections to intersecting surface streets and 11 slip ramp locations for general use lanes access. The proposed HOV access locations are shown on Figure 8.4.6.1 and described as follows:

8.4.6.1 Direct-Access HOV Interchanges

Access to/from the HOV system is provided at six direct access locations to public arterials crossing I-4 as part of the Ultimate improvements. The direct access points are located as follows:

- ◆ SR 528/International Drive - Full HOV access.
- ◆ Kirkman Road - Full HOV access.
- ◆ South Street - Full HOV access.
- ◆ Ivanhoe Boulevard - HOV ramps to/from the east.
- ◆ Central Parkway - HOV ramps to/from the west.
- ◆ Enterprise Road Park & Ride Lot - HOV ramps to/from the west.

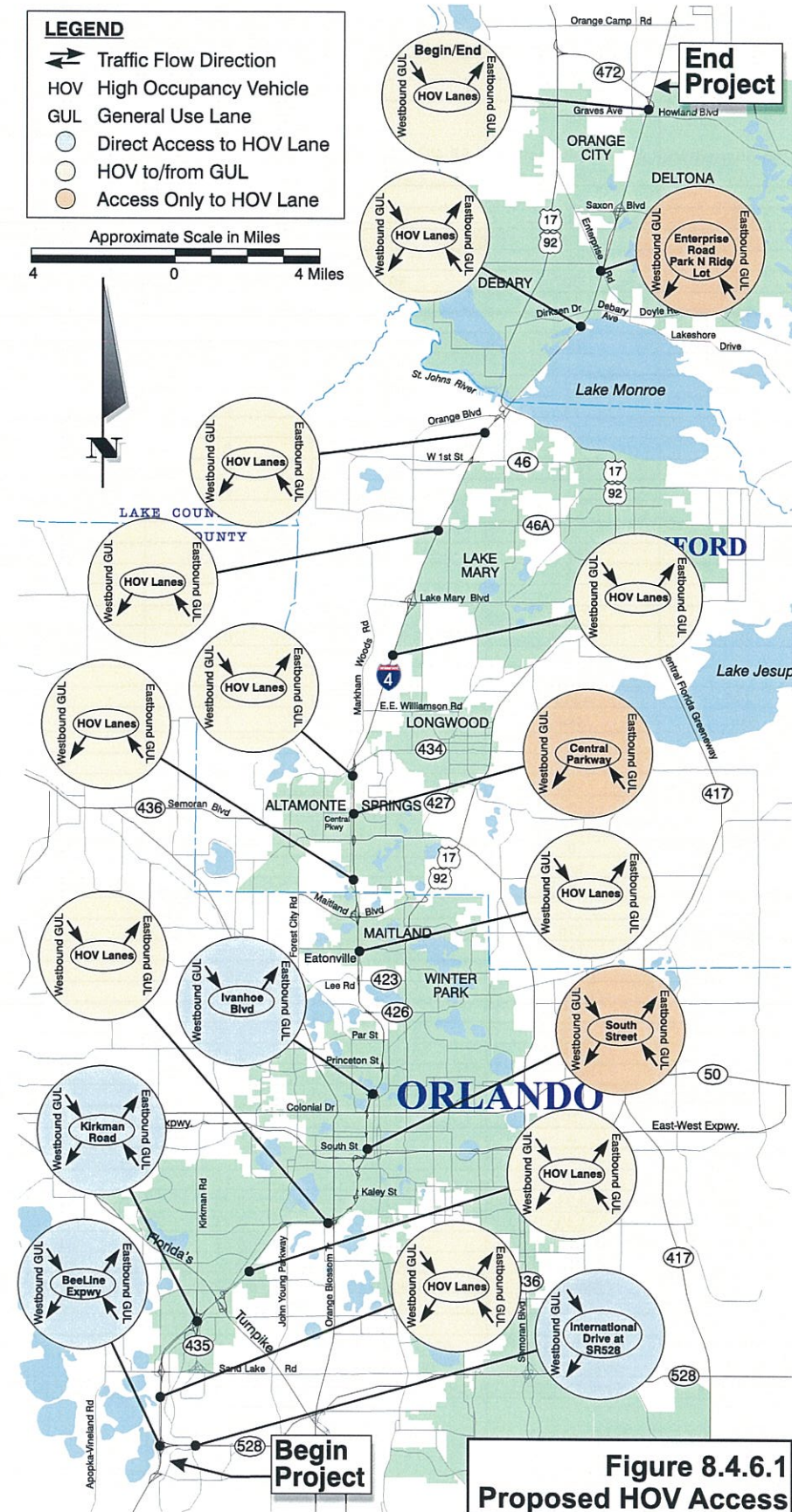
8.4.6.2 Slip Ramp HOV Access

The slip ramps between the HOV and general use lanes have been located along the Ultimate project limits to maximize the access to/from the system while providing an efficient system that provides acceptable traffic operations. The slip ramps are provided at the following locations:

- ◆ South of Sand Lake Road - full access in both directions
- ◆ Conroy Road - full access in both directions
- ◆ South of Orange Blossom Trail - eastbound HOV to general use and westbound general use to HOV
- ◆ South of Maitland Boulevard - eastbound HOV to general use and westbound general use to HOV
- ◆ North of Maitland Boulevard - eastbound general use to HOV and westbound HOV to general use
- ◆ North of Central Parkway - eastbound HOV to general use and westbound general use to HOV
- ◆ South of Lake Mary Boulevard - eastbound HOV to general use and westbound general use to HOV
- ◆ South of CR 46A - eastbound general use to HOV and westbound HOV to general use
- ◆ North of SR 46 - eastbound general use to HOV and westbound HOV to general use
- ◆ South of Dirksen Drive/DeBary Avenue - full HOV access
- ◆ South of SR 472 - begin/end system with eastbound HOV to general use and westbound general use to HOV

8.5 EVALUATION OF ULTIMATE BUILD ALTERNATIVES

The proposed Ultimate build alternatives for each segment were evaluated for impacts to businesses and residences, community facilities, noise, cultural and historic resources, right-of-way and the natural and physical



environment. In addition, preliminary construction costs and right-of-way costs were evaluated. Table 8.5.1 presents the estimated impacts for the proposed Ultimate Build Alternatives.

To determine the range of impacts for the entire 43-mile project corridor, impacts for different combinations of ultimate build alternatives were totaled and listed in the right hand column of Table 8.5.1. The ultimate build alternatives that were combined to determine the low and high impact evaluation are noted at the bottom of the table.

8.6 PROPOSED CONCEPT CHANGES AFTER PUBLIC HEARING

The DEIS was distributed in May 2001 for public and agency comments and questions. A Public Hearing was conducted in June 2001 with a comment period extending through August 1, 2001. Based on comments received as a part of the DEIS, six major concept refinements are recommended for the proposed improvements. In addition, modifications are recommended to be consistent with the I-4/John Young Parkway interchange and the I-4/SR 408 (East/West Expressway) Interim interchange design projects. The following discussions provide descriptions of and the rationale for the proposed modifications.

8.6.1 Add Gore Street Westbound Entrance Ramp

The City of Orlando and community input from the Holden/Parramore neighborhoods indicated that the existing I-4 access at Gore Street is an important feature for the businesses and residents in the area. Based on this input, FDOT examined the opportunity for maintaining both the existing movements at this location (westbound I-4 exit ramp and westbound I-4 entrance ramp). This portion of I-4 through downtown Orlando has several access points. Coupled with the proposed reconstruction of the I-4/SR 408 (East/West Expressway) interchange, ramp spacing and traffic operations are most critical.

The addition of the westbound I-4 exit ramp to Gore Street results in an unacceptable weave condition with the westbound Hughey Avenue entrance ramp. Concept design adjustments to accommodate the existing movement are not viable.

The evaluation of the Gore Street entrance ramp to westbound I-4 was determined feasible. This movement can be provided with a ramp that ties to the I-4 entrance ramp from SR 408 (East/West Expressway) with minimal additional impacts. In addition, Avondale Avenue can be opened and intersect with Gore Street at the ramp intersection, improving local circulation. Impacts to the interstate traffic flow were assessed and documented in the *SAMR Update* (May 2002).

Consequently, in light of concerns from the City of Orlando and the community residents in this area, the Gore Street entrance ramp to westbound I-4 was added as a part of the Preferred Alternative.

8.6.2 Maintain the Existing Eastbound SR 408 Exit Ramp to Mills Avenue

Comments received from the Lake Cherokee neighborhood requested consideration of maintaining the existing eastbound SR 408 (East/West Expressway) off-ramp to Mills Avenue. Initial concerns of weaving operations between the Anderson Street entrance ramp to eastbound SR 408 (East/West Expressway) and the eastbound SR 408 (East/West Expressway) exit ramp to Mills Avenue resulted in the proposal to eliminate the exit ramp to Mills Avenue. However, with the reversing of the I-4 on-ramp to SR 408 and the SR 408 off-ramp to Lucerne Circle/Orange Avenue, the distance to the Mills Avenue off-ramp was increased. Through coordination with the Orlando-Orange County Expressway Authority (owner and operator of the SR 408 facility), it was determined that projected traffic operations for this exit movement are acceptable due to the relatively small projected traffic volume.

Therefore, given the community concern and the determination of minimal traffic operation impacts, the SR 408 (East/West Expressway) eastbound exit ramp to Mills Avenue will be maintained as part of the Preferred Alternative.

8.6.3 Revise Hughey Avenue and Garland Avenue to Three-Lane Facilities

FDOT and the City of Orlando have undertaken an in-depth assessment of the local street operations in downtown Orlando with the proposed I-4 access changes. As a result of this assessment, it was determined that providing a four-lane Hughey Avenue and Garland Avenue for Alternatives 1A2 and 2B2 did not improve downtown traffic operations.

Therefore, the Preferred Alternative concepts reflect three-lane facilities for both Hughey Avenue and Garland Avenue.

8.6.4 Provide Channelization for Pinehurst Avenue/Par Street/ Eastbound I-4 Exit Ramp Intersection

The City of Orlando, the Calvary Assembly of God, area residents and businesses expressed significant concerns regarding the potential closing of Pinehurst Avenue at Par Street. The basis of the concern is loss of access will result in traffic circulating through several adjacent neighborhoods and also impact the church and local businesses. The primary concern of maintaining this access is the potential for a wrong way movement onto the I-4 exit ramp. Alternatives were examined to channelize the movements from Pinehurst Avenue to Par Street that reduce the potential for the wrong way movement.

Table 8.5.1 - Alternative Impact Evaluation

| Categories | Evaluation Criteria | SEGMENT 1 | | SEGMENT 2 | | | | | | | | | |
|---|--|--------------------------|--------------------------|----------------------|-----------------------------|---|------------------------|------------------------|------------------------|------------------------|--|---|--|
| | | Tie to Ultimate Bee Line | Tie to Existing Bee Line | Sub-segment 1 | | Sub-segment 2 | | | | Sub-segment 3 | | | |
| | | | | Kaley/Michigan Ponds | Kaley/Michigan Exfiltration | SR 408 Alternative 4 (Griffin Park Avoidance) | SR 408 Alternative 1A1 | SR 408 Alternative 1A2 | SR 408 Alternative 2B1 | SR 408 Alternative 2B2 | SR 50 Alternative 1 (Judge Cheney Avoidance) | SR 50 Alternative 2 (Colonial Garage Avoidance) | |
| Human Environment | BUSINESS IMPACTS | | | | | | | | | | | | |
| | Total number of businesses property impacts (no. parcels) | 35 | 25 | 37 | 22 | 107 | 107 | 107 | 109 | 109 | 21 | 21 | |
| | No. property impacts due to roadway impacts | 26 | 18 | 5 | 6 | 98 | 98 | 98 | 100 | 100 | 15 | 15 | |
| | No. property impacts due to pond impacts | 9 | 7 | 32 | 16 | 9 | 9 | 9 | 9 | 9 | 6 | 6 | |
| | Number of potential business relocations (units) | 2 | 1 | 22 | 9 | 28 | 28 | 28 | 30 | 30 | 13 | 13 | |
| | Number of relocations due to roadway impacts | 2 | 1 | 2 | 2 | 27 | 27 | 27 | 29 | 29 | 9 | 9 | |
| | Number of relocations due to pond impacts | 0 | 0 | 20 | 7 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | |
| | Number of displaced employees | 173 | 28 | 263 | 105 | 458 | 458 | 458 | 458 | 458 | 320 | 188 | |
| | RESIDENTIAL IMPACTS | | | | | | | | | | | | |
| | Total number of residential property impacts (no. parcels) | 3 | 2 | 25 | 22 | 26 | 28 | 28 | 27 | 27 | 0 | 0 | |
| | No. property impacts due to roadway impacts | 2 | 1 | 11 | 9 | 24 | 26 | 26 | 25 | 25 | 0 | 0 | |
| | No. property impacts due to pond impacts | 1 | 1 | 14 | 13 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | |
| | Total number of potential residential relocations (units) | 1 | 1 | 29 | 21 | 86 | 95 | 103 | 113 | 113 | 0 | 0 | |
| | Number of relocations due to roadway impacts | 0 | 0 | 6 | 6 | 83 | 92 | 100 | 110 | 110 | 0 | 0 | |
| | Number of relocations due to pond impacts | 1 | 1 | 23 | 15 | 3 | 3 | 3 | 3 | 3 | 0 | 0 | |
| | COMMUNITY FACILITIES IMPACTS | | | | | | | | | | | | |
| | Total number of facilities with impacts | 3 | 1 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 2 | 1 | |
| | Number of property impacts due to roadway impacts | 3 | 1 | 1 | 1 | 4 | 4 | 4 | 4 | 4 | 2 | 1 | |
| | Number of property impacts due to pond impacts | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Total number of relocations | 1 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | |
| | Number relocations due to roadway impacts | 1 | 0 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 1 | 0 | |
| | Number relocations due to pond impacts | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | NOISE IMPACTS WITHIN 65 dBA CONTOUR (DESIGN YEAR 2020) | | | | | | | | | | | | |
| | Total number of noise sensitive sites | 4572 | 4572 | 381 | 381 | 1245 | 1245 | 1245 | 1245 | 1245 | 319 | 319 | |
| | Number of noise sensitive sites (residences) impacted ¹ | 409 | 409 | 253 | 253 | 660 | 589 | 589 | 584 | 584 | 2 | 2 | |
| | CULTURAL & HISTORIC IMPACTS | | | | | | | | | | | | |
| | Number of historic resources | 0 | 0 | 0 | 0 | 15 | 15 | 15 | 15 | 15 | 2 | 2 | |
| | Number of historic resources potentially affected | 0 | 0 | 0 | 0 | 8 | 8 | 7 | 8 | 7 | 2 | 2 | |
| | Number of Direct Use impacts | 0 | 0 | 0 | 0 | 3 | 5 | 4 | 5 | 4 | 1 | 0 | |
| | Number of resources with Adverse Affects | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | |
| | Number of archaeological sites | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Archaeological site potential (low, medium, high) | low | low | low | low | low | low | low | low | low | low | low | |
| | Number of parks and recreational areas impacted | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | RIGHT-OF-WAY IMPACTS | | | | | | | | | | | | |
| | Total number of impacted parcels | 38 | 27 | 62 | 44 | 133 | 135 | 135 | 136 | 136 | 21 | 21 | |
| | Number of roadway impacts | 28 | 19 | 16 | 15 | 122 | 124 | 124 | 125 | 125 | 15 | 15 | |
| | Number of pond impacts | 10 | 8 | 46 | 29 | 11 | 11 | 11 | 11 | 11 | 6 | 6 | |
| | Number of full acquisitions | 6 | 6 | 48 | 28 | 54 | 54 | 54 | 54 | 54 | 6 | 6 | |
| | Number of partial acquisitions | 32 | 21 | 14 | 16 | 79 | 81 | 81 | 82 | 82 | 15 | 15 | |
| | Area of impacted ROW in acres | 40.66 | 16.48 | 28.42 | 21.31 | 25.94 | 26.29 | 26.12 | 28.32 | 27.72 | 3.52 | 3.59 | |
| | Area of roadway impacts (acres) | 11.35 | 3.71 | 7.5 | 7.5 | 22.31 | 22.66 | 22.49 | 24.69 | 24.09 | 1.13 | 1.19 | |
| | Area of pond impacts (acres) | 29.31 | 12.77 | 20.92 | 13.81 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 | 2.39 | 2.39 | |
| | LIMITED ACCESS (LA) IMPACTS | | | | | | | | | | | | |
| | Total number of parcels with LA severance damages | 0 | 0 | 17 | 21 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | |
| | Total number of parcels with LA relocation | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Natural Environment | NATURAL ENVIRONMENT & PHYSICAL IMPACTS | | | | | | | | | | | | |
| | Number of wetland systems | 57 | 57 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 4 | 4 | |
| | Area of impacted wetlands in acres | 57.54 | 57.54 | 6.71 | 6.71 | 3.31 | 3.31 | 3.31 | 3.31 | 3.31 | 8.95 | 8.95 | |
| | Area of roadway impacted wetlands (acres) | 38.23 | 38.23 | 6.71 | 6.71 | 1.26 | 1.13 | 1.13 | 1.13 | 1.13 | 8.44 | 8.44 | |
| | Area of pond impacted wetlands (acres) | 19.31 | 19.31 | 0 | 0 | 2.05 | 2.18 | 2.18 | 2.18 | 2.18 | 0.51 | 0.51 | |
| | Threatened & endangered species potential (low, medium, high) | low | low | low | low | low | low | low | low | low | low | low | |
| | Base floodplain encroachment - acre-ft | 40.01 | 40.01 | minimal | minimal | minimal | minimal | minimal | minimal | minimal | minimal | minimal | |
| | Number of impacted contamination sites | 0 | 0 | 1 | 0 | 21 | 21 | 21 | 21 | 21 | 2 | 2 | |
| | PROJECT COSTS (IN 2000 \$) | | | | | | | | | | | | |
| | Preliminary construction costs (in 2000 \$) | \$281,247,855 | \$187,885,211 | \$97,677,747 | \$101,991,390 | \$270,349,590 | \$318,255,631 | \$313,387,344 | \$297,580,858 | \$293,042,266 | \$34,860,289 | \$34,849,928 | |
| Right-of-way (in 2000 \$) | \$48,934,000 | \$21,210,000 | \$39,178,000 | \$31,121,000 | \$85,606,999 | \$86,023,000 | \$87,542,000 | \$98,773,300 | \$100,114,000 | \$22,451,000 | \$18,631,000 | | |
| Subtotal Construction + ROW Costs (in 2000 \$) | \$330,181,855 | \$209,095,211 | \$136,855,747 | \$133,112,390 | \$355,956,589 | \$404,278,631 | \$400,929,344 | \$396,354,158 | \$393,156,266 | \$57,311,289 | \$53,480,928 | | |
| Engineering, Legal, Admin, CEI Post Design (27% of Preliminary Construction Cost) | \$75,936,921 | \$50,729,007 | \$26,372,992 | \$27,537,675 | \$72,994,389 | \$85,929,020 | \$84,614,583 | \$80,346,832 | \$79,121,412 | \$9,412,278 | \$9,409,481 | | |
| TOTAL PROJECT COSTS (in 2000 \$) | \$406,118,776 | \$259,824,218 | \$163,228,739 | \$160,650,065 | \$428,950,978 | \$490,270,651 | \$485,543,927 | \$476,700,990 | \$472,277,678 | \$66,723,567 | \$62,890,409 | | |

Table 8.5.1 - Alternative Impact Evaluation, cont.

| Categories | Evaluation Criteria | SEGMENT 3 | | | | SEGMENT 4 & 5 | | | | SEGMENT 6 | | TOTAL | | |
|--|--|-------------------------|--------------------------|--------------------------------|---------------------------------|--|---|--|---|------------------------------|------------------------------|------------------------|--------|--|
| | | Typical Section C Ponds | Typical Section F' Ponds | Typical Section C Exfiltration | Typical Section F' Exfiltration | Typical Section C & SR 434 Alternative 1 | Typical Section F' & SR 434 Alternative 1 | Typical Section C & SR 434 Alternative 2 | Typical Section F' & SR 434 Alternative 2 | Tie to Ultimate North SR 472 | Tie to Existing North SR 472 | LOW | HIGH | |
| Human Environment | BUSINESS IMPACTS | | | | | | | | | | | | | |
| | Total number of businesses property impacts (no. parcels) | 47 | 74 | 33 | 59 | 115 | 113 | 122 | 120 | 51 | 51 | 372 | 449 | |
| | No. property impacts due to roadway impacts | 34 | 54 | 33 | 59 | 99 | 97 | 106 | 104 | 35 | 35 | 302 | 341 | |
| | No. property impacts due to pond impacts | 13 | 20 | 0 | 0 | 16 | 16 | 16 | 16 | 16 | 16 | 70 | 108 | |
| | Number of potential business relocations (units) | 8 | 11 | 8 | 8 | 7 | 7 | 11 | 11 | 10 | 10 | 76 | 99 | |
| | Number of relocations due to roadway impacts | 8 | 8 | 8 | 8 | 7 | 7 | 11 | 11 | 10 | 10 | 64 | 71 | |
| | Number of relocations due to pond impacts | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 28 | |
| | Number of displaced employees | 30 | 63 | 30 | 33 | 203 | 203 | 604 | 604 | 191 | 191 | 1335 | 1940 | |
| | RESIDENTIAL IMPACTS | | | | | | | | | | | | | |
| | Total number of residential property impacts (no. parcels) | 127 | 144 | 66 | 70 | 21 | 21 | 21 | 21 | 2 | 2 | 139 | 222 | |
| | No. property impacts due to roadway impacts | 60 | 61 | 66 | 70 | 16 | 16 | 16 | 16 | 2 | 2 | 118 | 117 | |
| | No. property impacts due to pond impacts | 67 | 83 | 0 | 0 | 5 | 5 | 5 | 5 | 0 | 0 | 21 | 105 | |
| | Total number of potential residential relocations (units) | 139 | 177 | 60 | 81 | 196 | 196 | 196 | 196 | 0 | 0 | 364 | 516 | |
| | Number of relocations due to roadway impacts | 60 | 80 | 60 | 81 | 4 | 4 | 4 | 4 | 0 | 0 | 153 | 200 | |
| | Number of relocations due to pond impacts | 79 | 97 | 0 | 0 | 192 | 192 | 192 | 192 | 0 | 0 | 211 | 316 | |
| | COMMUNITY FACILITIES IMPACTS | | | | | | | | | | | | | |
| | Total number of facilities with impacts | 7 | 5 | 7 | 4 | 9 | 8 | 9 | 8 | 1 | 1 | 26 | 26 | |
| | Number of property impacts due to roadway impacts | 6 | 4 | 7 | 4 | 9 | 8 | 9 | 8 | 1 | 1 | 24 | 23 | |
| | Number of property impacts due to pond impacts | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | |
| | Total number of relocations | 3 | 4 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 11 | 12 | |
| | Number relocations due to roadway impacts | 3 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 9 | 9 | |
| | Number relocations due to pond impacts | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | |
| | NOISE IMPACTS WITHIN 65 dBA CONTOUR (DESIGN YEAR 2020) | | | | | | | | | | | | | |
| | Total number of noise sensitive sites | 1199 | 1199 | 1199 | 1199 | 2253 | 2253 | 2253 | 2253 | 763 | 763 | 10732 | 10732 | |
| | Number of noise sensitive sites (residences) impacted ¹ | 409 | 409 | 427 | 427 | 1323 | 1323 | 1323 | 1323 | 329 | 329 | 3403 | 3309 | |
| | CULTURAL & HISTORIC IMPACTS | | | | | | | | | | | | | |
| | Number of historic resources | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 20 | 20 | |
| | Number of historic resources potentially affected | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 11 | 12 | |
| | Number of Direct Use impacts | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | |
| | Number of resources with Adverse Affects | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | |
| | Number of archaeological sites | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | Archaeological site potential (low, medium, high) | low | low | low | low | low | low | low | low | low | low | low | low | |
| | Number of parks and recreational areas impacted | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| | RIGHT-OF-WAY IMPACTS | | | | | | | | | | | | | |
| | Total number of impacted parcels | 174 | 218 | 99 | 129 | 136 | 134 | 143 | 141 | 53 | 53 | 511 | 671 | |
| | Number of roadway impacts | 94 | 115 | 99 | 129 | 115 | 113 | 122 | 120 | 37 | 37 | 420 | 458 | |
| | Number of pond impacts | 80 | 103 | 0 | 0 | 21 | 21 | 21 | 21 | 16 | 16 | 91 | 213 | |
| | Number of full acquisitions | 117 | 129 | 20 | 11 | 15 | 15 | 17 | 17 | 14 | 14 | 143 | 274 | |
| | Number of partial acquisitions | 57 | 89 | 79 | 118 | 121 | 119 | 126 | 124 | 39 | 39 | 368 | 397 | |
| | Area of impacted ROW in acres | 29.84 | 31.9 | 10.34 | 7.52 | 66.72 | 66.85 | 72.78 | 72.91 | 60.65 | 60.65 | 205.09 | 266.32 | |
| | Area of roadway impacts (acres) | 10.33 | 7.54 | 10.34 | 7.52 | 29.59 | 29.71 | 35.38 | 35.5 | 28.62 | 28.62 | 103.32 | 116.27 | |
| | Area of pond impacts (acres) | 19.51 | 24.36 | 0 | 0 | 37.13 | 37.14 | 37.4 | 37.41 | 32.03 | 32.03 | 101.77 | 150.04 | |
| | LIMITED ACCESS (LA) IMPACTS | | | | | | | | | | | | | |
| | Total number of parcels with LA severance damages | 22 | 22 | 22 | 22 | 12 | 0 | 15 | 15 | 19 | 19 | 79 | 78 | |
| | Total number of parcels with LA relocation | 4 | 4 | 4 | 4 | 4 | 0 | 5 | 5 | 0 | 0 | 9 | 10 | |
| NATURAL ENVIRONMENT & PHYSICAL IMPACTS | | | | | | | | | | | | | | |
| Number of wetland systems | 0 | 0 | 0 | 0 | 42 | 42 | 42 | 42 | 29 | 29 | 143 | 143 | | |
| Area of impacted wetlands in acres | 0 | 0 | 0 | 0 | 29.8 | 29.8 | 29.8 | 29.8 | 25.05 | 25.05 | 131.36 | 131.36 | | |
| Area of roadway impacted wetlands (acres) | 0 | 0 | 0 | 0 | 20.61 | 20.61 | 20.61 | 20.61 | 24.82 | 24.82 | 100.01 | 99.94 | | |
| Area of pond impacted wetlands (acres) | 0 | 0 | 0 | 0 | 9.19 | 9.19 | 9.19 | 9.19 | 0.23 | 0.23 | 31.29 | 31.42 | | |
| Threatened & endangered species potential (low, medium, high) | low | low | low | low | low | low | low | low | medium | medium | low | medium | | |
| Base floodplain encroachment - acre-ft | minimal | minimal | minimal | minimal | 6.29 | 6.29 | 6.29 | 6.29 | 292.02 | 292.02 | 338.32 | 338.32 | | |
| Number of impacted contamination sites | 0 | 2 | 0 | 2 | 3 | 3 | 4 | 4 | 0 | 0 | 26 | 30 | | |
| PROJECT COSTS (IN 2000 \$) | | | | | | | | | | | | | | |
| Preliminary construction costs (in 2000 \$) | \$160,758,704 | \$144,383,882 | \$172,384,532 | \$155,144,176 | \$369,649,488 | \$367,923,104 | \$370,953,831 | \$369,227,446 | \$210,281,895 | \$213,232,963 | \$1,328,425,294 | \$1,476,987,020 | | |
| Right-of-way (in 2000 \$) | \$56,871,000 | \$61,142,000 | \$34,240,000 | \$32,321,000 | \$132,351,000 | \$133,753,000 | \$158,669,000 | \$160,071,000 | \$38,707,000 | \$38,707,000 | \$361,349,999 | \$450,833,000 | | |
| Subtotal Construction + ROW Costs (in 2000 \$) | \$217,629,704 | \$205,525,882 | \$206,624,532 | \$187,465,176 | \$502,000,488 | \$501,676,104 | \$529,622,831 | \$529,298,446 | \$248,988,895 | \$251,939,963 | \$1,689,775,293 | \$1,927,820,020 | | |
| Engineering, Legal, Admin, CBI, Post Design (27% of Preliminary Construction Cost) | \$43,404,850 | \$38,983,648 | \$46,543,824 | \$41,888,928 | \$99,805,362 | \$99,339,238 | \$100,157,534 | \$99,691,410 | \$56,776,112 | \$57,572,900 | \$358,674,829 | \$398,786,495 | | |
| TOTAL PROJECT COSTS (in 2000 \$) | \$261,034,554 | \$244,509,530 | \$253,168,356 | \$229,354,104 | \$604,805,850 | \$601,015,342 | \$629,780,366 | \$628,989,856 | \$305,765,007 | \$309,512,863 | \$2,048,450,122 | \$2,326,606,516 | | |

Therefore, given this concern over closing the Pinehurst Avenue connection to Par Street, the Preferred Alternative provides a channelization island that will allow access while reducing the potential for a wrong way movement onto the eastbound I-4 exit ramp.

8.6.5 Widen Padgett Creek Bridge

The US Army Corps of Engineers (ACOE) raised concerns about wildlife crossing accessibility under the Padgett Creek bridge in Volusia County. To alleviate ACOE concerns, the Padgett Creek bridge has been lengthened an additional 20 feet (10 feet on each side of the creek bed) to enable wildlife to cross under the bridge.

8.6.6 Add Dual Left Turn Lanes at the SR 472 Interchange

Volusia County raised concerns regarding the long-term operations at the I-4 interchange with SR 472. Based on assessment of the traffic operations, it was determined that the development of two left-turn lanes for the westbound SR 472 to the westbound I-4 entrance ramp is beneficial.

Consequently, based on comments from Volusia County, dual left-turn lanes for the referenced movement will be provided.

8.6.7 I-4/John Young Parkway Interchange

As of May 2002 FDOT is preparing final design plans for the I-4/John Young Parkway interchange. Modifications to the proposed concepts as part of the Preferred Alternative are required to be consistent with the interchange design. The modification is a realignment of the I-4 mainline lanes to reduce the curvature.

The updated Preliminary Concept Plans submitted with this report include the latest design for the I-4/John Young Parkway interchange.

8.6.8 I-4/SR 408 (East/West Expressway) Interim Interchange

Modifications to the proposed concepts as part of the Preferred Alternative will be required to be consistent with the interim interchange design, ongoing as of May 2002. The modifications involve minor ramp realignments to maintain design speeds.

The updated Preliminary Concept Plans submitted with this report include the latest proposed modifications to the I-4/SR 408 (East/West Expressway) Interim interchange.

8.7 PREFERRED ALTERNATIVE

This section provides the rationale for the selection of the Preferred Alternative, a description of the Preferred Alternative, and the impacts associated with the Preferred Alternative.

At the initiation of the I-4 PD&E Study - Section 2, the LRTPs for METROPLAN Orlando and the Volusia County MPO included the

proposed improvements to I-4. However, the Year 2020 LRTP Update performed by METROPLAN Orlando and the Volusia County MPO identified additional financial constraints, which dictated that the Ultimate improvements for I-4 not be included in the cost feasible plan for 2020. Therefore, METROPLAN Orlando reduced the limits of the Ultimate improvements on I-4 to include the segment extending from SR 435 (Kirkman Road) to SR 414 (Maitland Boulevard) in Orange County (identified as the Preferred Alternative).

8.7.1 Rationale for Selection of the Preferred Alternative

The basic improvements for the Preferred Alternative involve reconstruction of existing I-4 and implementation of the following:

- Six general use lanes, three in each direction
- Two HOV lanes, one in each direction
- Auxiliary lanes between interchanges as needed for traffic operations;
- Reconstruction of arterial interchanges along I-4 including:

| | |
|------------------------------|--------------------------------|
| -Kirkman Road | -Orange Blossom Trail (US 441) |
| -Michigan Street | -Kaley Street |
| -Anderson Street | -South Street |
| -Robinson Street (SR 526) | -Amelia Street |
| -SR 50 (Colonial Drive) | -Ivanhoe Boulevard |
| -Princeton Street (SR 438) | -Par Street |
| -Fairbanks Avenue (SR 426) | -Lee Road (SR 423) |
| -Maitland Boulevard (SR 414) | |
- Construction of drainage and retention pond facilities
- Mitigation components identified to offset significant impacts

Viable Ultimate Build Alternatives were proposed within the Preferred Alternative limits. These viable Ultimate Build Alternatives included:

- Kaley-Michigan Stormwater Treatment Alternatives
- I-4/SR 408 Interchange and Downtown Access Alternatives
- I-4/SR 50 (Colonial Drive) Alternatives
- College Park Typical Section and Stormwater Treatment Alternatives

The following discussions provide rationale for the recommendations of the Preferred Alternative for each of the above locations.

8.7.1.1 Kaley-Michigan Stormwater Treatment Alternatives

Two alternatives were analyzed for this portion of the I-4 corridor:

- Kaley-Michigan Pond
- Kaley-Michigan Exfiltration

The assessment of these alternatives indicated that the Kaley-Michigan Pond Alternative impacted more businesses (22 versus nine), more residential dwelling units (29 versus 21), more total parcels impacted (62 versus 44), and higher project costs than the Kaley-Michigan Exfiltration Alternative.

Given the lower impacts and costs for the Kaley-Michigan Exfiltration Alternative, this alternative is included as part of the Preferred Alternative.

8.7.1.2 I-4/SR 408 Interchange Alternatives

Five alternatives were analyzed for this interchange area:

- Alternative 1A1 - Ramp Tunnel with Amelia Street Access
- Alternative 1A2 - Ramp Tunnel without Amelia Street Access
- Alternative 2B1 - Ramp Flyover with Amelia Street Access
- Alternative 2B2 - Ramp Flyover without Amelia Street Access
- Alternative 4 - Griffin Park Avoidance Alternative

In general, Alternative 4 had the least impacts and Alternatives 2B1 and 2B2 had slightly greater impacts of the five alternatives evaluated. The primary impacts associated with the alternatives were related to historic resources, most notably the Griffin Park Historic District.

An extensive coordination effort was undertaken to identify potential solutions to the transportation needs in the downtown Orlando area. A technical group of primary stakeholders was assembled to assist in the development and assessment of alternatives for the I-4/SR 408 (East/West Expressway) interchange. Participating parties included representatives from FDOT, City of Orlando, Orange County, Orlando-Orange County Expressway Authority, Orlando Housing Authority, Downtown Development Board, and Orlando Community Redevelopment Agency. Through these efforts, Alternatives 1A1, 1A2, 2B1, and 2B2 were developed.

In addition, significant community outreach was undertaken as a part of the alternatives development. As the technical group defined concepts and alternatives, coordination with neighborhoods, community agencies, and historic interests was accomplished, which resulted in further refinements of the alternatives. In general, the conclusions of the stakeholders group indicated the following:

- Alternative 4, although avoiding direct use impacts to Griffin Park area, was not consistent or acceptable to the City of Orlando due to sustaining impacts to access and economic opportunity in this area of downtown. Furthermore, Alternative 4 was not consistent and did not support redevelopment plans of the City and the Orlando Housing Authority.
- Alternatives 1A1 and 1A2 involved the use of a short tunnel for one of the ramp movements. The Orlando-Orange County

Expressway Authority did not support Alternatives 1A1 and 1A2 due to maintenance and operation concerns. These alternatives are also more costly than the Flyover Alternatives (Alternatives 2B1 and 2B2), given the construction requirements of the tunnel.

- The City of Orlando supports alternatives that include the I-4 access ramps at Amelia Street. Based on traffic circulation assessments, the City indicated that this access is essential for downtown traffic circulation.
- Furthermore, through deliberations after circulation of the DEIS, the City of Orlando and the Orlando Housing Authority have indicated their specific preference for the Flyover Alternatives, and most specifically with the City, Alternative 2B1.

Given the wide range of support for the Flyover Alternatives, the importance of the Amelia Street access, and the land use incompatibility of Alternative 4, Alternative 2B1 is included as part of the Preferred Alternative.

8.7.1.3 I-4/SR 50 (Colonial Drive) Alternatives

Two alternatives were carried in the DEIS for the SR 50 improvements:

- Alternative 1 - Judge Cheney Avoidance, improve SR 50 to south
- Alternative 2 - Colonial Garage Avoidance, improve SR 50 to the north

Alternative 1 had higher impacts as compared to Alternative 2. Most notably, Alternative 1 impacted the Colonial Garage (eligible for listing on the NRHP and two buildings within the Salvation Army campus west of I-4. Alternative 2 impacted several businesses and required right-of-way near the NRHP-eligible Judge Cheney house. However, coordination with the State Historic Preservation Office (SHPO) indicated that Alternative 2 did not involve adverse effects to this resource. The City of Orlando indicated support for Alternative 2.

Given the lower impacts and the local government support for Alternative 2, this alternative will be included as a part of the Preferred Alternative.

8.7.1.4 College Park Typical Section and Stormwater Treatment Alternatives

Four alternatives were analyzed for the College Park area improvements:

- Typical Section C Ponds
- Typical Section C Exfiltration
- Typical Section F' Ponds
- Typical Section F' Exfiltration

The Typical Section F' alternatives maintain the existing centerline alignment of I-4, resulting in impacts to Matthews Park, which is owned by the City of Orlando. The Typical Section F' alternatives also required more new right-of-way, impacted more parcels, relocated more businesses,

and relocated more residential dwellings than the respective Typical Section C alternatives. In contrast, the Typical Section F' alternatives were less costly than the Typical Section C alternatives.

The impact comparisons of the Pond alternatives versus the Exfiltration alternatives indicated that the Pond alternatives have more impacts. Most notably, the Pond alternatives involved 79 to 97 more residential dwelling unit relocations than the Exfiltration alternatives. In addition, the Exfiltration alternatives were less costly.

Given the impacts to Matthews Park associated with the Typical Section F' alternatives, these alternatives were eliminated as part of the Preferred Alternative. In consideration of the lower cost and fewer impacts of the Exfiltration alternatives, the Typical Section C Exfiltration Alternative is included as part of the Preferred Alternative.

8.7.2 Description of Preferred Alternative

The Preliminary Concept Plans submitted with this report illustrate the proposed improvements that are being carried forward as part of the PD&E Study. The preliminary concept plans include proposed improvements for the entire 43-mile project corridor, which includes the Preferred Alternative.

The preliminary concept for the Preferred Alternative is composed of three main components, which consist of I-4 mainline improvements (both general use lanes and HOV lanes), interchanges for the general use lanes system, and interchanges for the HOV system. In addition, the proposed improvements to the I-4/SR 408 (East/West Expressway) interchange will impact the SR 408 (East/West Expressway) mainline.

Typical Section C is proposed for the entire length of the Preferred Alternative. Typical Section C provides three general use lanes in each direction, one barrier-separated 34-foot HOV facility in each direction, and a 44-foot rail corridor in portions of the Preferred Alternative project corridor. To satisfy operational requirements such as lane balance, additional auxiliary lanes are also proposed.

The general use lanes will serve all vehicle components of the traffic mix while the HOV lanes will be dedicated for multiple occupant vehicles. It is the intent to open the facility to vehicles with two or more occupants (HOV2+). If the demand in the HOV system results in operations less than LOS D, then the occupancy requirements will be increased to three or more persons (HOV3+). As stated in the approved *SAMR* (April 2000) and *SAMR Update* (May 2002), FDOT is committed to maintaining LOS D or better traffic operations in the HOV system. This will be accomplished by continuous monitoring of the system and making appropriate adjustments to the access and/or user groups in the facility. The concept for the HOV system incorporates a flexibility to accommodate future enhancements for ITS and other strategies. In addition, an Origin-Destination Study will be conducted during the design

phase of the project to verify HOV access locations.

An HOV corridor is proposed for the entire length of the Preferred Alternative. Seven access points to and from the HOV system are proposed - three direct connections to intersecting surface streets and four slip ramp locations for general use lane access.

The proposed Preferred Alternative is described by segment in the following sections and summarized in Table 8.7.2.1.

8.7.2.1 Segment 1 (Kirkman Road to John Young Parkway)

Typical section C with ponds will extend from Kirkman Road to just south of John Young Parkway. Three general use lanes, one HOV lane, and one auxiliary lane in each direction will be provided. The Preferred Alternative will tie into the existing conditions at the newly constructed Universal Boulevard interchange.

The 44-foot rail corridor will be provided east of the Kirkman Road interchange to the end of the Segment 1 limits. Retention ponds will provide treatment for stormwater runoff.

Kirkman Road to Florida's Turnpike

The Kirkman Road interchange will be completely reconstructed as part of this project. The proposed interchange is a partial access four-level directional interchange with a loop ramp for southbound Kirkman Road to eastbound I-4 traffic. There will be no access to westbound I-4 from northbound Kirkman Road. Southbound Kirkman Road to westbound I-4 traffic will be routed onto a collector/distributor ramp, which merges into I-4 just east of Sand Lake Road. Direct HOV access ramps to and from the east will also be provided with the proposed interchange concept.

In the eastbound direction, one auxiliary lane will be provided from the southbound Kirkman Road on-ramp to the Florida's Turnpike off-ramp. In the westbound direction, one auxiliary lane will be provided to the Kirkman Road off-ramp from the Florida's Turnpike on-ramp.

HOV slip ramps will be provided south of the Kirkman Road interchange. The eastbound slip ramp signifies the start of the HOV system for the Preferred Alternative and will provide access to the HOV lane from the general use lanes. The westbound slip ramp signifies the end of the HOV system for the Preferred Alternative and will provide access to the general use lanes from the HOV lane. The slip ramps will be removed once the Ultimate improvements south of the Preferred Alternative are constructed.

Florida's Turnpike to Conroy Road

All ramp movements for the Florida's Turnpike interchange will remain as they are in the existing double trumpet configuration; however, to accommodate the wider typical section on I-4, a new ramp bridge over I-4 will be constructed.

The eastbound auxiliary lane will extend from the Florida's Turnpike

on-ramp to the Conroy Road off-ramp. In the westbound direction, the auxiliary lane will extend to the Florida's Turnpike off-ramp from the Conroy Road on-ramp.

Conroy Road to John Young Parkway

The Conroy Road interchange has two levels and is a full access diamond with a loop ramp serving eastbound Conroy Road to eastbound I-4 traffic. No improvements are required for this interchange, with the exception of minor modifications at the gore areas on I-4.

In the eastbound direction, the auxiliary lane will start at the southbound Conroy Road on-ramp and continue through the end of the Segment 1 limits. In the westbound direction, the auxiliary lane will extend to the Conroy Road off-ramp from the Segment 1 limits. Full directional HOV

slip ramps will be provided in this portion of the project corridor.

Full directional HOV slip ramps will be provided at the Conroy Road interchange.

8.7.2.2 Segment 2 (John Young Parkway to Ivanhoe Boulevard)

Typical Section C is proposed throughout Segment 2. The 44-foot rail corridor will be provided from the start of the Segment 2 limits to approximately 2,600 feet south of Rio Grande Avenue. The rail envelope will then be closed through the remaining portion of Segment 2.

The following paragraphs describe the Preferred Alternative for Segment 2.

John Young Parkway to Orange Blossom Trail

The three general use lanes, one HOV lane, and one auxiliary lane in each direction will continue from Segment 1 into Segment 2 to John Young Parkway. At this point, the general use lanes and auxiliary lanes will be reconstructed as part of the I-4/John Young Parkway interchange project. The bridges and embankment for the HOV lanes will also be constructed as part of the I-4/John Young Parkway interchange project. However, the pavement for the HOV lanes are included as part of the Preferred Alternative.

The general use lanes, HOV lanes, and auxiliary lanes will continue to the Orange Blossom Trail interchange. The eastbound auxiliary lane will be dropped at the Orange Blossom Trail off-ramp and westbound auxiliary lane will continue from the Orange Blossom Trail interchange and be dropped at the John Young Parkway off-ramp.

Improvements for the I-4/John Young Parkway interchange are under design as of May 2002. The improvements involve enhancing the full access diamond by providing a flyover ramp for westbound I-4 traffic exiting to John Young Parkway.

Retention ponds will provide treatment for stormwater runoff.

Orange Blossom Trail to Michigan Street/Kaley Street

Three general use lanes, one HOV lane and auxiliary lanes in each direction will be provided through this portion of the project. In the eastbound direction, one auxiliary lane will be added at the Orange Blossom Trail on-ramp and will continue through the Michigan Street/Kaley Street interchange. In the westbound direction, one auxiliary lane will be added through the Michigan Street/Kaley Street interchange. An additional westbound auxiliary lane is provided between the Kaley Street on-ramp and the Orange Blossom Trail off-ramp to provide lane balance in the area.

The existing Orange Blossom Trail interchange is a two-level partial diamond with a loop ramp provided for eastbound I-4 to northbound Orange Blossom Trail traffic. Westbound I-4 motorists exit to the left to southbound Orange Blossom Trail, which is not a desirable situation. The Preferred Alternative modifies the existing interchange by exiting westbound I-4 to southbound Orange Blossom Trail traffic from the right side and connecting to the existing ramp. The I-4 alignment is shifted southeast in order to accomplish this modification. As in the existing configuration, a westbound I-4 to northbound Orange Blossom Trail movement will not be provided with the Preferred Alternative. This movement can be accommodated at the Michigan Street access point.

The proposed improvements to the Orange Blossom Trail interchange result in access changes to properties located along 30th Street and 34th Street. To meet design criteria, 30th Street will be closed at Orange Blossom

Table 8.7.2.1 - Summary of Proposed Improvements - Preferred Alternative

| Description | Typical Section | | Transit Envelope | | Auxiliary Lanes | | HOV Interchange | | | Drainage Alternative | | Type of Proposed Interchanges |
|---|-----------------|---|------------------|-----|-----------------|-----|-----------------|------------|-------|----------------------|---|--|
| | C | R | No | Yes | No | Yes | Direct Access | Slip/Ramps | Roads | Exfiltration | | |
| Kirkman Road to Florida's Turnpike | X | | | X | | X | X | X | X | | | Kirkman Road - The proposed improvements replace existing interchange with a partial access 4-level directional interchange with one loop ramp (Kirkman SB to EB I-4). NB Kirkman to WB I-4 movement to/from the east not provided. Direct HOV access ramps. |
| Florida's Turnpike to Conroy Road | X | | | X | | X | | | X | | | Florida's Turnpike - The existing double trumpet interchange configuration will remain the same. |
| Conroy Road to John Young Parkway | X | | | X | | X | | | X | X | | Conroy Road - The existing interchange will remain the same. |
| John Young Parkway to Orange Blossom Trail | X | | | X | | X | | | X | | | John Young Parkway - The previously approved improvements will modify the existing diamond interchange by adding a flyover ramp for WB I-4 exit to John Young Parkway. |
| Orange Blossom Trail to Michigan Street/Kaley Street | X | | X | | | X | | | X | X | | Orange Blossom Trail - The WB I-4 to SB OBT left-side exit will be modified to right-side exit; all other movements remain the same. WB I-4 to NB OBT movement ramp is not provided under either existing or proposed interchanges. |
| Michigan/Kaley Street to SR 408 (East/West Expressway) | X | | X | | | X | | | | | X | Michigan Street/Kaley Street - Proposed improvements combine Michigan Street and Kaley Street into a full access, inverted diamond interchange. Two-lane, one-way frontage road connections between Kaley and Michigan with U-turns to provide full movements. South Street - Modified to a full access diamond interchange for HOV access only; will be revised to a two-way street from Orange Avenue to Division Avenue. Amelia Street - The existing interchange will be modified to a partial access diamond interchange (EB I-4 to Amelia Street and Amelia Street to WB I-4). |
| SR 408 (East/West Expressway) to SR 50 (Colonial Drive) | X | | X | | | X | X | | X | X | | SR 408 (East/West Expressway) - Full access directional four-level interchange with loop ramp (EB SR 408 to EB I-4). Modifies access to and from the downtown core area. Hughey Avenue/Garland Avenue - Proposed improvements provided direct access ramps from EB I-4 to Garland Avenue and from Hughey Street to WB I-4. Limit of improvements extends for approximately 1.5 miles on both sides of I-4 along East/West Expressway, impacting interchanges from Tampa Street to Bumby Avenue on SR 408. |
| SR 50 (Colonial Drive) to Ivanhoe Boulevard | X | | X | | | X | | | X | X | | SR 50 (Colonial Drive) - The existing interchange will be replaced with a full access single point diamond interchange. Provides direct access to Hughey Avenue and Garland Avenue. Garland Avenue converted to one-way north of Colonial Drive. |
| Ivanhoe Boulevard to Princeton Street | X | | X | | | X | X | | X | X | | Ivanhoe Boulevard - The proposed improvements replace the existing interchange with a partial access directional interchange for WB I-4 to Ivanhoe Boulevard and Ivanhoe Boulevard to EB I-4. The WB I-4 on-ramp will be replaced with frontage road to Colonial Drive. Proposed interchange includes HOV direct access ramps to and from the east. |
| Princeton Street to Par Street | X | | X | | | X | | | | | X | Princeton Street - The existing diamond interchange configuration will remain the same. Provide 2-lane EB and WB off-ramps. |
| Par Street to Fairbanks Avenue | X | | X | | | X | | | | | X | Par Street - The existing diamond interchange configuration will remain the same. |
| Fairbanks Avenue to Lee Road | X | | X | | | X | | | | | X | Fairbanks Avenue - The existing interchange concept will remain the same. Provide 2-lane EB and WB off-ramps. |
| Lee Road to Maitland Boulevard | X | | X | | | X | | | X | X | X | Lee Road - The existing interchange concept will remain the same. Provide 2-lane EB and WB off-ramps. |
| Maitland Boulevard to SR 436 | X | | X | | | X | | | X | X | | Maitland Boulevard - The existing interchange will be replaced with loop ramps in northeast and southwest quadrants. Directional unsignalized left-turn ramps from Maitland Avenue to WB and EB I-4. Existing EB I-4 dual exits revised to single point exit. |

Trail. Owners of property located along 30th Street will be required to travel west on 30th Street, north on Nashville Avenue, and east on 29th Street to gain access to Orange Blossom Trail.

In addition, 34th Street will be closed on both sides of Orange Blossom Trail. To gain access to Orange Blossom Trail, properties located on 34th Street west of Orange Blossom Trail will be required to travel west on 34th Street, south on Nashville Avenue, and east on 35th Street. Properties located along 34th Street east of Orange Blossom Trail will be required to travel east on 34th Street, south on Woods Street, and west on 35th Street.

Slip ramps for access to and from the HOV system are provided at the Orange Blossom Trail interchange. In the eastbound direction, a slip ramp is provided from the HOV lane to the general use lanes. In the westbound direction, a slip ramp is provided from the general use lanes to the HOV lane. Retention ponds provide treatment for stormwater runoff.

Michigan Street/Kaley Street to SR 408 (East/West Expressway)

The proposed configuration of I-4 within this portion of the project corridor consists of three general use lanes, an HOV lane, and two auxiliary lanes in each direction. One auxiliary lane is provided in the eastbound direction from the Michigan Street on-ramp to the Garland Avenue off-ramp. An additional auxiliary lane is provided eastbound from the Orange Blossom Trail interchange to the SR 408 (East/West Expressway) interchange. In the westbound direction, one auxiliary lane begins at the Hughey Avenue on-ramp and the other begins at the SR 408 on-ramp. One auxiliary lane drops at the Michigan Street off-ramp and the other continues through the Orange Blossom Trail interchange.

Today, I-4 has interchanges at Michigan Street and Kaley Street. Traffic exiting I-4 westbound and entering I-4 eastbound are currently served by a partial access half diamond interchange at Michigan Street. The existing Kaley Street interchange is a full access diamond with a loop ramp for westbound I-4 to eastbound Kaley Street traffic. The proposed improvements combine the Michigan Street interchange with the Kaley Street interchange to create a full access, braided ramp interchange with frontage road connections and Texas U-turns. This interchange will allow for full access to and from I-4 at Michigan Street and Kaley Street.

The proposed improvements will require the closure of Unitah Avenue at Michigan Street and Tallokas Avenue at Kaley Street. In addition, Avondale Avenue will be closed at Kaley Street and from Miller Street to Indiana Street. Motorists accessing properties along Unitah Avenue from Michigan Street will be required to travel south on Alamo Drive, west on 29th Street, and north on Unitah Avenue. Properties located along Tallokas Avenue will be required to travel north on Tallokas Avenue, east on Miller Street, and south on Division Avenue to gain access to Kaley Street. Finally, motorists will no longer be able to gain access to Kaley Street

through Avondale Avenue. Motorists will be required to access Kaley Street via Parramore Avenue.

The proposed improvements will require the removal of the pedestrian overpass located north of Kaley Street to accommodate the wider typical section. To compensate for the loss of the pedestrian facility, FDOT has committed to enhancing sidewalks on side streets for pedestrian access to Gore Street.

Exfiltration provides stormwater treatment at the Kaley-Michigan interchange. North of the interchange, a combination of exfiltration and retention ponds will treat the stormwater.

SR 408 (East/West Expressway) Interchange to SR 50 (Colonial Drive)

Through downtown Orlando, three general use lanes, one HOV lane, and one auxiliary lane in each direction are proposed. The eastbound auxiliary lane extends from the Anderson Street on-ramp to the SR 50 (Colonial Drive) off-ramp. In the westbound direction, the auxiliary lane extends to the Anderson Street off-ramp from the SR 50 (Colonial Drive) on-ramp.

I-4/SR 408 (East/West Expressway) Interchange Alternative 2B1 (Flyover with Amelia Street ramps) is the Preferred Alternative at the I-4/SR 408 (East/West Expressway) interchange. The primary component of this alternative is a fourth-level flyover connection for the westbound SR 408 (East/West Expressway) to westbound I-4 movement. The eastbound SR 408 (East/West Expressway) to westbound I-4 ramp connection is moved east and connects to I-4 east of Griffin Park. The existing ramp connection is removed and the Griffin Park Historic District is reincorporated into the Holden-Parramore neighborhood. The alternative eliminates the I-4 westbound off-ramp to Gore Street, but provides an I-4 westbound entrance ramp from Gore Street. This alternative requires acquisition of right-of-way from the historic Griffin Park neighborhood.

The preferred I-4/SR 408 (East/West Expressway) interchange alternative will have construction and widening impacts to the SR 408 (East/West Expressway) mainline from west of Tampa Street to Bumby Avenue.

Due to the close proximity of the I-4/SR 408 (East/West Expressway) interchange to the Orlando CBD, access modifications will be required at the following interchange locations within this portion of the project corridor: Gore Street, Anderson Street, Hughey Avenue, Garland Avenue, South Street, Robinson Street, and Amelia Street.

Gore Street - The Gore Street interchange is a partial access diamond that serves entering and exiting westbound I-4 traffic. The westbound off-ramp will be eliminated as part of the proposed improvements due to the weave conflicts with the westbound Hughey Avenue entrance ramp. However, the on-ramp to westbound I-4 is maintained.

The Gore Street ramp will result in the closure of Avondale Avenue from Columbia Street to Miller Street. Properties along Conroy Street, Indiana Street, and Grand Avenue will be accessed through Parramore Avenue.

Hughey Avenue/Garland Avenue - There is no existing direct access between the Interstate and the Hughey Avenue/Garland Avenue one-way pair frontage roads. The Preferred Alternative provides an exit from eastbound I-4 to Garland Avenue and an entrance from Hughey Avenue to westbound I-4. Both ramps will connect to the existing frontage roads at their intersections with South Street. The Garland Avenue ramp will replace the existing I-4 eastbound off-ramp to Anderson Street and the Hughey Avenue ramp will replace the South Street on-ramp to I-4 westbound. Both the Garland Avenue and Hughey Avenue ramps will be two-lane ramps.

Hughey Avenue and Garland Avenue will be realigned as part of the proposed improvements. The realignment of Hughey Avenue results in closing Hughey Court at South Street. Hughey Court becomes a cul-de-sac and access from South Street is denied. The realignment of Garland Avenue affects access to parcels located south of South Street. Access to Garland Avenue will be denied and access to South Street will be via Boone Avenue.

Anderson Street - The existing I-4/Anderson Street interchange is a partial access diamond configuration that directs traffic from both directions of I-4 to Anderson Street, and from Anderson Street to eastbound I-4. Anderson Street is currently one-way eastbound. The Preferred Alternative relocates Anderson Street to the south of its current alignment and allows two-way traffic on the roadway between Orange Avenue and Division Avenue. The Anderson Street interchange is a partial diamond allowing access to eastbound I-4 from Anderson Street and to Anderson Street from westbound I-4. The I-4 eastbound exit to Anderson Street is eliminated. This access is replaced by the Garland Avenue off-ramp.

South Street - The existing South Street interchange is a partial access diamond serving westbound I-4 entering and exiting traffic and eastbound traffic entering I-4, all via left-hand ramps. The interchange is modified to a full access diamond for HOV traffic only; general use traffic is not accommodated. South Street becomes a two-way street between Division Avenue and Orange Avenue to accommodate both directions of traffic to and from the HOV lanes.

Robinson Street - The existing configuration of the Robinson Street interchange is a partial access diamond. Eastbound I-4 traffic can exit to Robinson Street and Robinson Street traffic can access westbound I-4. This interchange is eliminated in the Preferred Alternative and downtown Orlando access is diverted to Garland Avenue, Hughey Avenue, Amelia Street, and SR 50 (Colonial Drive).

Amelia Street - Existing eastbound I-4 traffic exits to Amelia Street at Garland Avenue. In addition, an eastbound I-4 on-ramp is provided from Garland Avenue just north of Amelia Street. The I-4/SR 408 (East/West Expressway) Preferred Alternative modifies this interchange to a partial access diamond that allows traffic to exit from eastbound I-4 to Amelia Street and enter westbound I-4 from Amelia Street.

Stormwater runoff is treated through a combination of retention ponds and exfiltration.

SR 408 (East/West Expressway) Mainline

The limits of improvements along the SR 408 (East/West Expressway) extend from approximately 1.5 miles east and west of I-4 along SR 408 (East/West Expressway). Modifications are required to the following interchanges along the SR 408 (East/West Expressway): Tampa Avenue, US 441 (Orange Blossom Trail), Orange Avenue, Anderson Street, Rosalind Avenue/South Street, Mills Avenue and Bumby Avenue. The Mills Avenue ramps to and from the west will be maintained.

The SR 408 (East/West Expressway) bridge over I-4 is replaced to accommodate the wider I-4 typical section. In addition, SR 408 (East/West Expressway) is widened from four lanes to six lanes and auxiliary lanes are required between Tampa Avenue and US 441 (Orange Blossom Trail) and between Anderson Street and Bumby Avenue.

The improvements to the SR 408 (East/West Expressway) mainline restrict local and property access to Long Street east of Parramore Avenue and between Orange Blossom Trail and Boston Avenue. Easy Avenue, Grove Avenue, and Woods Avenue become cul-de-sacs and do not have direct access to Long Street.

SR 50 (Colonial Drive) to Ivanhoe Boulevard

Three general use lanes and one HOV lane in each direction are provided through the SR 50 (Colonial Drive) interchange. In the eastbound direction, one auxiliary lane extends from the SR 50 (Colonial Drive) on-ramp through the Ivanhoe Boulevard interchange to the Princeton Street off-ramp. In the westbound direction, one auxiliary lane is provided to the SR 50 (Colonial Drive) off-ramp, through the Ivanhoe Boulevard interchange, from the Princeton Street on-ramp.

The existing partial access, partial cloverleaf interchange at SR 50 (Colonial Drive) allows for all traffic movements except for exiting eastbound I-4 traffic, which is currently accommodated at Amelia Street. The interchange is replaced with a full access, single-point diamond interchange that provides direct access to Garland and Hughey Avenues. Hughey Avenue and Garland Avenue will be a one-way frontage road pair through the interchange area. Alternative 2 was chosen as the Preferred Alternative at the SR 50 (Colonial Drive) interchange.

Alternative 2 maintains the existing SR 50 (Colonial Drive) south right-of-way line and shifts the SR 50 (Colonial Drive) alignment and right-of-way acquisition to the north. This alternative impacts the area near the Judge Cheney House property. However, the Judge Cheney House structure will not be impacted. In addition, Alternative 2 does not impact Colonial Garage (a NRHP-eligible historic resource) and avoids the Women and Children Center of the Salvation Army.

Hughey Avenue is realigned between Concord Street and SR 50 (Colonial Drive). Properties located along Hughey Avenue between these two roadways cannot access Hughey Avenue. An access road for the Holiday Inn, located in the southwest quadrant of SR 50 (Colonial Drive) and Hughey Avenue, is constructed. This proposed roadway provides the hotel with access to SR 50 (Colonial Drive) (refer to the Preliminary Concept Plans for the location of the proposed access road).

The Preferred Alternative closes Concord Street at Garland Avenue. Properties located along Concord Street will access Garland Avenue and SR 50 (Colonial Drive) via Orange Avenue or Magnolia Avenue.

Stormwater runoff is treated through a combination of retention ponds and exfiltration.

8.7.2.3 Segment 3 (Ivanhoe Boulevard to Lee Road)

Typical Section C with exfiltration is the Preferred Alternative for Segment 3. This alternative provides three general use lanes, one HOV lane, and one auxiliary lane in each direction throughout Segment 3. The 44-foot rail corridor is not provided in Segment 3 due to the narrow existing right-of-way.

Ivanhoe Boulevard to Princeton Street

The existing Ivanhoe Boulevard interchange provides full access through a partial cloverleaf configuration. The proposed improvements replace the existing interchange with a partial access diamond serving westbound I-4 to Ivanhoe Boulevard and Ivanhoe Boulevard to eastbound I-4 traffic. Motorists on Ivanhoe Boulevard wishing to access westbound I-4 will follow a frontage road south to the next access point south of SR 50 (Colonial Drive). Eastbound I-4 traffic wishing to access Ivanhoe Boulevard will exit at SR 50 (Colonial Drive) and follow Garland Avenue north to Legion Place.

The eastbound auxiliary lane terminates at the Princeton Street off-ramp and the westbound auxiliary lane begins at the Princeton Street on-ramp.

Direct access ramps to the HOV system to and from the east are provided with the proposed Ivanhoe Boulevard interchange.

Stormwater runoff is treated through a combination of retention ponds and exfiltration at the Ivanhoe Boulevard interchange. North of the interchange, exfiltration treats stormwater runoff.

Princeton Street to Par Street

The existing configuration of the Princeton Street interchange is a full access diamond. The interchange will remain a full access diamond interchange with two-lane ramps for exiting I-4 traffic.

In the eastbound direction, the auxiliary lane extends from the Princeton Street on-ramp through the Par Street interchange. In the westbound direction, the auxiliary lane extends to the Princeton Street off-ramp through the Par Street interchange.

Improvements to the interchange will acquire right-of-way on Cornell Avenue south of Princeton Street and Dade Avenue north of Princeton Street. Access to Cornell Avenue between Vanderbilt Street and Yale Street will be restricted. Access to Dade Avenue will be restricted south of Bay Run Street.

Exfiltration will treat stormwater runoff.

Par Street to Fairbanks Avenue

The existing configuration of the Par Avenue interchange is a partial access half diamond with access to westbound I-4 and from eastbound I-4. The interchange configuration will be maintained and the I-4 ramp gore areas will be modified to accommodate the widened mainline.

The eastbound auxiliary lane drops at the Fairbanks Avenue off-ramp and the westbound auxiliary lane begins at the Fairbanks Avenue on-ramp.

Improvements to the Par Street interchange result in access changes to properties located along Cornell Avenue and Pinehurst Avenue. With the proposed improvements, Cornell Avenue will not connect with Par Street. From Par Street, access to properties along Cornell Avenue between Hazel Street and Par Street will be via Formosa Avenue and Hazel Street.

As part of the Preferred Alternative, Pinehurst Avenue at Par Street will remain open. A channelization island will be placed at the entrance of Pinehurst Avenue at the intersection with Par Street to reduce the potential for wrong way movements onto the I-4 eastbound off-ramp. Refer to the Preliminary Concept Plans for an illustration of the channelization island.

The Preferred Alternative requires the reconstruction of the horizontal curve between Par Street and Fairbanks Avenue. To meet current criteria, additional right-of-way is required and a number of properties are impacted. Refer to the Preliminary Concept Plans for a graphical representation of the improvements.

Exfiltration treats stormwater runoff.

Fairbanks Avenue to Lee Road

The existing Fairbanks Avenue interchange provides full access to I-4 through a diamond interchange. The interchange remains a full access diamond and provides two-lane ramps for exiting I-4 traffic.

In the eastbound direction, the auxiliary lane extends from the Fairbanks Avenue on-ramp to the Lee Road off-ramp. In the westbound direction, the auxiliary lane extends to the Fairbanks Avenue off-ramp from the Lee Road on-ramp.

The proposed improvements to the interchange realign Stanley Street and Granada Drive. The realignment of the roadways requires additional right-of-way; however, access to the properties located along the roadways, including Killarney Elementary School, remains the same.

The Preferred Alternative requires the reconstruction of the horizontal curve between Fairbanks Avenue and Lee Road. To meet current criteria, additional right-of-way is required and a number of properties are impacted. Refer to the Preliminary Concept Plans for a graphical representation of the improvements.

The Preferred Alternative improvements include the extension of Riddle Drive under I-4.

Exfiltration treats stormwater runoff.

8.7.2.4 Segment 4 (Lee Road to Maitland Boulevard)

The limits of the Preferred Alternative end within the Segment 4 limits (north of Maitland Boulevard).

Typical Section C with exfiltration extends from south of Lee Road to the Lee Road interchange. Typical Section C with ponds extends from the Lee Road interchange to the end of the Preferred Alternative limits (just north of Maitland Boulevard). Three general use lanes, one HOV lane, and one auxiliary lane in each direction are provided.

The 44-foot rail corridor is not provided in this portion of the project corridor. However, there will be a limited provision for LRT north of Lee Road to the end of the Preferred Alternative limits within the outer separation of the east side of the right-of-way.

Lee Road to Maitland Boulevard

The existing configuration of the Lee Road interchange is a full access diamond. The proposed improvement also provides a full access diamond with the addition of two-lane ramps for exiting I-4 traffic.

In this portion of the Preferred Alternative, the eastbound auxiliary lane begins at the Lee Road on-ramp and continues to the Maitland Boulevard off-ramp. In the westbound direction, the auxiliary lane extends to the Lee Road off-ramp from the Maitland Boulevard on-ramp.

The improvements to the Lee Road interchange require the construction of an access road to Lee Road for the properties located in the southwest quadrant of the interchange. Refer to the Preliminary Concept Plans for the location of the new access road.

HOV slip ramps are provided south of the Maitland Boulevard interchange. In the eastbound direction, a slip ramp is provided from the HOV lane to the general use lanes. In the westbound direction, a slip ramp is provided from the general use lanes to the HOV lane.

Exfiltration is proposed from the beginning of the Segment 4 limits through the Lee Road interchange (Basin AA). North of the Lee Road interchange, retention ponds are provided for the treatment of stormwater.

Maitland Boulevard to End of Preferred Alternative

The existing Maitland Boulevard interchange is a full access interchange. A loop ramp is provided for westbound Maitland Boulevard to westbound I-4 traffic and a directional flyover ramp serves eastbound I-4 to westbound Maitland Boulevard traffic. The remaining movements are accommodated with diamond ramps. The proposed Maitland Boulevard interchange alternative replaces the existing interchange with a three-level partial cloverleaf. The profile for eastbound and westbound Maitland Boulevard is bifurcated over I-4. Directional ramps for traffic traveling from eastbound Maitland Boulevard to eastbound I-4 and from westbound Maitland Boulevard to westbound I-4 are grade separated from the opposing traffic with the bifurcated profile of Maitland Boulevard. The loop ramps serve traffic traveling from eastbound I-4 to westbound Maitland Boulevard and from westbound I-4 to eastbound Maitland Boulevard. The existing eastbound I-4 dual exits to eastbound and westbound Maitland Boulevard are revised to one single point exit serving both directions. Similarly, the dual westbound on-ramps are modified to a single entrance ramp.

Auxiliary lanes are not proposed as part of the Preferred Alternative north of the Maitland Boulevard interchange. The general use lanes will tie into the existing roadway configuration north of the interchange.

The proposed HOV slip ramps located north of the Maitland Boulevard interchange begin/end the HOV system for the northern limits of the Preferred Alternative. For the Preferred Alternative, the eastbound slip ramp ends the HOV system and provides access to the general use lanes from the HOV lane. The westbound slip ramp starts the HOV system and provides access to the HOV lane from the general use lanes.

Retention ponds treat the stormwater runoff.

8.7.3 Evaluation of Preferred Alternative

The Preferred Alternative for each segment was evaluated for impacts to businesses and residences, community facilities, noise, cultural and historic resources, right-of-way, and the natural and physical environment. In addition, preliminary construction costs and right-of-way costs were

evaluated. Table 8.7.3.1 presents the estimated impact evaluation for the proposed Preferred Alternative. A detailed discussion of the engineering analysis and impacts for the Preferred Alternative is presented in Chapter 9 of this document.

As indicated previously, the I-4 PD&E Study - Section 2 includes discussions and assessments on the improvements for the entire 43-mile project (Ultimate project). Table 8.7.3.2 presents the estimated impact evaluation for the Ultimate Build Alternatives for the entire 43-mile including the Preferred Alternative. Table 8.7.3.2 updates the information contained in Table 8.5.1 with the Preferred Alternative impact evaluations and the concept changes described in Section 8.6.

Table 8.7.3.1 - Estimated Impact Evaluation - Preferred Alternative

| Categories | Evaluation Criteria | Segment 1 | Segment 2 | | | Segment 3 | Segment 4 | Preferred Alternative Total |
|---------------------|--|------------------------------------|-----------------------------|------------------------|---------------------|--------------------------------|------------------------------|-----------------------------|
| | | From Kirkman Rd to John Young Pkwy | Kaley/Michigan Exfiltration | SR 408 Alternative 2B1 | SR 50 Alternative 2 | Typical Section C Exfiltration | From Lee Rd to Maitland Blvd | |
| Human Environment | BUSINESS IMPACTS | | | | | | | |
| | Total number of business property impacts (no. parcels) | 21 | 22 | 113 | 21 | 33 | 34 | 244 |
| | Number of property impacts due to roadway impacts | 20 | 6 | 104 | 15 | 33 | 28 | 206 |
| | Number of property impacts due to pond impacts | 1 | 16 | 9 | 6 | 0 | 6 | 38 |
| | Total number of potential residential relocations (units) | 1 | 9 | 30 | 13 | 8 | 2 | 63 |
| | Number of relocations due to roadway impacts | 1 | 2 | 29 | 9 | 8 | 2 | 51 |
| | Number of relocations due to pond impacts | 0 | 7 | 1 | 4 | 0 | 0 | 12 |
| | Number of displaced employees | 28 | 105 | 458 | 188 | 30 | 128 | 937 |
| | RESIDENTIAL IMPACTS | | | | | | | |
| | Total number of residential property impacts (no. parcels) | 0 | 22 | 28 | 0 | 66 | 2 | 118 |
| | Number of property impacts due to roadway impacts | 0 | 9 | 26 | 0 | 66 | 2 | 103 |
| | Number of property impacts due to pond impacts | 0 | 13 | 2 | 0 | 0 | 0 | 15 |
| | Total number of relocations (units) | 0 | 21 | 114 | 0 | 60 | 0 | 195 |
| | Number of relocations due to roadway impacts | 0 | 6 | 111 | 0 | 60 | 0 | 177 |
| | Number of relocations due to pond impacts | 0 | 15 | 3 | 0 | 0 | 0 | 18 |
| | COMMUNITY FACILITY IMPACTS | | | | | | | |
| | Total number of facilities with impacts | 1 | 4 | 4 | 1 | 7 | 3 | 20 |
| | Number of property impacts due to roadway impacts | 1 | 2 | 4 | 1 | 7 | 3 | 18 |
| | Number of property impacts due to pond impacts | 0 | 2 | 0 | 0 | 0 | 0 | 2 |
| | Total number of relocations | 0 | 4 | 3 | 1 | 4 | 0 | 12 |
| | Number of property impacts due to roadway impacts | 0 | 2 | 3 | 0 | 4 | 0 | 9 |
| | Number of property impacts due to pond impacts | 0 | 2 | 0 | 1 | 0 | 0 | 3 |
| | NOISE IMPACTS WITHING 65 dBA CONTOUR (DESIGN YEAR 2020) | | | | | | | |
| | Total number of noise sensitive sites | 978 | 381 | 1245 | 319 | 1199 | 87 | 4209 |
| | Number of noise sensitive sites (residences) impacted | 182 | 241 | 613 | 2 | 427 | 29 | 1494 |
| | CULTURAL AND HISTORIC IMPACTS | | | | | | | |
| | Number of historic resources | 0 | 0 | 14 | 2 | 2 | 1 | 19 |
| | Number of historic resources potentially affected | 0 | 0 | 7 | 1 | 1 | 1 | 10 |
| | Number of Direct Use impacts | 0 | 0 | 4 | 0 | 1 | 0 | 5 |
| | Number of resources Adversely Affected | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| | Number of archaeological sites | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Archaeological site potential (low, medium, high) | low | low | low | low | low | low | LOW |
| | Number of parks and recreational areas impacted | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | RIGHT-OF-WAY IMPACTS | | | | | | | |
| | Total number of impacted parcels | 21 | 44 | 141 | 21 | 99 | 36 | 362 |
| | Number of roadway impacts | 20 | 15 | 130 | 15 | 99 | 30 | 309 |
| | Number of pond impacts | 1 | 29 | 11 | 6 | 0 | 6 | 53 |
| | Number of full acquisitions | 0 | 28 | 55 | 6 | 20 | 2 | 111 |
| | Number of partial acquisitions | 21 | 16 | 86 | 15 | 79 | 34 | 251 |
| | Area of impacted ROW in acres | 8.16 | 21.31 | 31.29 | 3.59 | 10.34 | 22.25 | 96.94 |
| | Area of roadway impacts (acres) | 3.71 | 7.5 | 27.66 | 1.19 | 10.34 | 6.51 | 56.91 |
| | Area of pond impacts (acres) | 4.45 | 13.81 | 3.63 | 2.39 | 0 | 15.74 | 40.02 |
| | LIMITED ACCESS (LA) IMPACTS | | | | | | | |
| | Total number of parcels with LA severance damages | 0 | 21 | 0 | 5 | 19 | 0 | 45 |
| | Total number of parcels with LA relocations | 0 | 1 | 0 | 0 | 4 | 0 | 5 |
| Natural Environment | NATURAL ENVIRONMENT & PHYSICAL IMPACTS | | | | | | | |
| | Number of wetland systems | | 5 | 6 | 4 | 0 | | 15 |
| | Area of impacted wetlands in acres | 44.95 | 6.71 | 3.31 | 8.95 | 0 | 18.29 | 82.21 |
| | Area of Roadway impacted wetlands (acres) | 27.5 | 6.71 | 1.13 | 8.44 | 0 | 9.13 | 52.91 |
| | Area of Pond impacted wetlands (acres) | 17.45 | 0 | 2.18 | 0.51 | 0 | 9.16 | 29.3 |
| | Threatened & endangered species potential (low, medium, high) | low | low | low | low | low | low | LOW |
| | Base floodplain encroachment - acre-ft | 40.01 | minimal | minimal | minimal | minimal | 0 | 40.01 |
| | Number of impacted contamination sites | 0 | 0 | 19 | 2 | 0 | 0 | 21 |
| Project Costs | PROJECT COSTS (IN 2000 \$ MILLIONS) | | | | | | | |
| | Preliminary construction costs (in 2000 \$ Millions) | \$159.01 | \$101.99 | \$301.32 | \$34.85 | \$172.38 | \$124.94 | \$894.49 |
| | Right-of-way (in 2000 \$ Millions) | \$11.14 | \$31.12 | \$98.77 | \$18.63 | \$33.82 | \$49.07 | \$242.56 |
| | Subtotal Construction + ROW Costs (in 2000 \$ Millions) | \$170.15 | \$133.11 | \$400.09 | \$53.48 | \$206.20 | \$174.01 | \$1,137.05 |
| | Engineering, Legal, Admin, CEI, Post Design (27% of Preliminary Construction Cost) | \$42.93 | \$27.54 | \$81.36 | \$9.41 | \$46.54 | \$33.73 | \$241.51 |
| | TOTAL PROJECT COSTS (in 2000 \$ Millions) | \$213.08 | \$160.65 | \$481.44 | \$62.89 | \$252.75 | \$207.75 | \$1,378.56 |

Table 8.7.3.2 - Estimated Impact Evaluation - Ultimate Build Alternative

| Categories | Evaluation Criteria | Segment 1 | | Segment 2 | | | Segment 3 | Segment 4 | | Segment 5 | Segment 6 | | TOTAL | |
|--|--|--------------------------|--------------------------|-----------------------------|------------------------|---------------------|--------------------------------|--|--|-------------------|------------------------------|------------------------------|-------------------|--------|
| | | Tie to Ultimate Bee Line | Tie to Existing Bee Line | Kaley/Michigan Exfiltration | SR 408 Alternative 2B1 | SR 50 Alternative 2 | Typical Section C Exfiltration | Typical Section C & SR 434 Alternative 1 | Typical Section C & SR 434 Alternative 2 | Typical Section C | Tie to Ultimate North SR 472 | Tie to Existing North SR 472 | LOW | HIGH |
| Human Environment | BUSINESS IMPACTS | | | | | | | | | | | | | |
| | Total number of business property impacts (no. parcels) | 37 | 27 | 22 | 113 | 21 | 33 | 80 | 87 | 33 | 53 | 53 | 384 | 399 |
| | Number of property impacts due to roadway impacts | 28 | 20 | 6 | 104 | 15 | 33 | 64 | 71 | 33 | 37 | 37 | 312 | 327 |
| | Number of property impacts due to pond impacts | 9 | 7 | 16 | 9 | 6 | 0 | 16 | 16 | 0 | 16 | 16 | 70 | 72 |
| | Total number of potential residential relocations (units) | 2 | 1 | 9 | 30 | 13 | 8 | 4 | 8 | 1 | 10 | 10 | 76 | 81 |
| | Number of relocations due to roadway impacts | 2 | 1 | 2 | 29 | 9 | 8 | 4 | 8 | 1 | 10 | 10 | 64 | 69 |
| | Number of relocations due to pond impacts | 0 | 0 | 7 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 |
| | Number of displaced employees | 172 | 28 | 105 | 458 | 188 | 30 | 192 | 594 | 6 | 191 | 191 | 1198 | 1744 |
| | RESIDENTIAL IMPACTS | | | | | | | | | | | | | |
| | Total number of residential property impacts (no. parcels) | 1 | 1 | 22 | 28 | 0 | 66 | 15 | 15 | 5 | 0 | 0 | 137 | 137 |
| | Number of property impacts due to roadway impacts | 0 | 0 | 9 | 26 | 0 | 66 | 10 | 10 | 5 | 0 | 0 | 116 | 116 |
| | Number of property impacts due to pond impacts | 1 | 1 | 13 | 2 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 21 | 21 |
| | Total number of relocations (units) | 1 | 1 | 21 | 114 | 0 | 60 | 193 | 193 | 3 | 0 | 0 | 392 | 392 |
| | Number of relocations due to roadway impacts | 0 | 0 | 6 | 111 | 0 | 60 | 1 | 1 | 3 | 0 | 0 | 181 | 181 |
| | Number of relocations due to pond impacts | 1 | 1 | 15 | 3 | 0 | 0 | 192 | 192 | 0 | 0 | 0 | 211 | 211 |
| | COMMUNITY FACILITY IMPACTS | | | | | | | | | | | | | |
| | Total number of facilities with impacts | 3 | 1 | 4 | 4 | 1 | 7 | 7 | 7 | 2 | 1 | 1 | 27 | 29 |
| | Number of property impacts due to roadway impacts | 3 | 1 | 2 | 4 | 1 | 7 | 7 | 7 | 2 | 1 | 1 | 25 | 27 |
| | Number of property impacts due to pond impacts | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| | Total number of relocations | 1 | 0 | 4 | 3 | 1 | 4 | 0 | 0 | 0 | 1 | 1 | 13 | 14 |
| | Number of property impacts due to roadway impacts | 1 | 0 | 2 | 3 | 0 | 4 | 0 | 0 | 0 | 1 | 1 | 10 | 11 |
| | Number of property impacts due to pond impacts | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 |
| | NOISE IMPACTS WITHING 65 dBA CONTOUR (DESIGN YEAR 2020) | | | | | | | | | | | | | |
| | Total number of noise sensitive sites | 4572 | 4572 | 381 | 1245 | 319 | 1199 | 2176 | 2176 | 77 | 763 | 763 | 10732 | 10732 |
| | Number of noise sensitive sites (residences) impacted | 409 | 409 | 241 | 613 | 2 | 427 | 1305 | 1305 | 18 | 329 | 329 | 3344 | 3344 |
| | CULTURAL AND HISTORIC IMPACTS | | | | | | | | | | | | | |
| | Number of historic resources | 0 | 0 | 0 | 14 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 20 | 20 |
| | Number of historic resources potentially affected | 0 | 0 | 0 | 7 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 10 | 10 |
| | Number of Direct Use impacts | 0 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| | Number of resources Adversely Affected | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| | Number of archaeological sites | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Archaeological site potential (low, medium, high) | low | low | low | low | low | low | low | low | low | low | low | LOW | LOW |
| | Number of parks and recreational areas impacts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | RIGHT-OF-WAY IMPACTS | | | | | | | | | | | | | |
| | Total number of impacted parcels | 38 | 28 | 44 | 141 | 21 | 99 | 95 | 102 | 38 | 53 | 53 | 519 | 536 |
| | Number of roadway impacts | 28 | 20 | 15 | 130 | 15 | 99 | 74 | 81 | 38 | 37 | 37 | 428 | 443 |
| | Number of pond impacts | 10 | 8 | 29 | 11 | 6 | 0 | 21 | 21 | 0 | 16 | 16 | 91 | 93 |
| | Number of full acquisitions | 6 | 6 | 28 | 55 | 6 | 20 | 14 | 16 | 1 | 14 | 14 | 144 | 146 |
| | Number of partial acquisitions | 32 | 22 | 16 | 86 | 15 | 79 | 81 | 86 | 37 | 39 | 39 | 375 | 390 |
| | Area of impacted ROW in acres | 40.66 | 16.48 | 21.31 | 31.29 | 3.59 | 10.34 | 50.1 | 56.16 | 16.62 | 60.65 | 60.65 | 210.38 | 240.62 |
| | Area of roadway impacts (acres) | 11.35 | 3.71 | 7.5 | 27.66 | 1.19 | 10.34 | 12.97 | 18.76 | 16.62 | 28.62 | 28.62 | 108.61 | 122.04 |
| | Area of pond impacts (acres) | 29.31 | 12.77 | 13.81 | 3.63 | 2.39 | 0 | 37.13 | 37.4 | 0 | 32.03 | 32.03 | 101.76 | 118.57 |
| | LIMITED ACCESS (LA) IMPACTS | | | | | | | | | | | | | |
| | Total number of parcels with LA severance damages | 0 | 0 | 21 | 0 | 5 | 19 | 11 | 14 | 1 | 19 | 19 | 76 | 79 |
| | Total number of parcels with LA relocations | 0 | 0 | 1 | 0 | 0 | 4 | 4 | 5 | 0 | 0 | 0 | 9 | 10 |
| Natural Environment | | | | | | | | | | | | | | |
| NATURAL ENVIRONMENT & PHYSICAL IMPACTS | | | | | | | | | | | | | | |
| Number of wetland systems | 57 | 57 | 5 | 6 | 4 | 0 | 26 | 26 | 16 | 29 | 29 | 143 | 143 | |
| Area of impacted wetlands in acres | 57.54 | 57.54 | 6.71 | 3.31 | 8.95 | 0 | 21.46 | 21.46 | 8.34 | 25.52 | 25.52 | 131.83 | 131.83 | |
| Area of Roadway impacted wetlands (acres) | 38.23 | 38.23 | 6.71 | 1.13 | 8.44 | 0 | 12.27 | 12.27 | 8.34 | 25.29 | 25.29 | 100.41 | 100.41 | |
| Area of Pond impacted wetlands (acres) | 19.31 | 19.31 | 0 | 2.18 | 0.51 | 0 | 9.19 | 9.19 | 0 | 0.23 | 0.23 | 31.42 | 31.42 | |
| Threatened & endangered species potential (low, medium, high) | low | low | low | low | low | low | low | low | low | medium | medium | LOW | MEDIUM | |
| Base floodplain encroachment - acre-ft | 40.01 | 40.01 | minimal | minimal | minimal | minimal | 6.03 | 6.03 | 0.26 | 292.02 | 292.02 | 338.32 | 338.32 | |
| Number of impacted contamination sites | 0 | 0 | 0 | 19 | 2 | 0 | 2 | 3 | 1 | 0 | 0 | 24 | 25 | |
| PROJECT COSTS (IN 2000 \$ MILLIONS) | | | | | | | | | | | | | | |
| Preliminary construction costs (in 2000 \$ Millions) | \$281.25 | \$187.88 | \$101.99 | \$301.32 | \$34.85 | \$172.38 | \$256.75 | \$258.06 | \$112.90 | \$210.59 | \$213.54 | \$1,378.67 | \$1,476.29 | |
| Right-of-way (in 2000 \$ Millions) | \$48.93 | \$21.21 | \$31.12 | \$98.77 | \$18.63 | \$33.82 | \$117.66 | \$143.98 | \$14.69 | \$38.71 | \$38.71 | \$374.61 | \$428.66 | |
| Subtotal Construction + ROW Costs (in 2000 \$ Millions) | \$330.18 | \$209.10 | \$133.11 | \$400.09 | \$53.48 | \$206.20 | \$374.41 | \$402.04 | \$127.59 | \$249.30 | \$252.25 | \$1,753.28 | \$1,904.94 | |
| Engineering, Legal, Admin, CEI, Post Design (27% of Preliminary Construction Cost) | \$75.94 | \$50.73 | \$27.54 | \$81.36 | \$9.41 | \$46.54 | \$69.32 | \$69.67 | \$30.48 | \$56.86 | \$57.66 | \$372.24 | \$398.60 | |
| TOTAL PROJECT COSTS (in 2000 \$ Millions) | \$406.12 | \$259.82 | \$160.65 | \$481.44 | \$62.89 | \$252.75 | \$443.74 | \$471.71 | \$158.07 | \$306.16 | \$309.91 | \$2,125.52 | \$2,303.54 | |

Note:

For Human and Natural Environment Impacts:

LOW PROJECT TOTAL = EXISTING BEE LINE+KM EXFIL+SR 408 ALT 2B1+SR 50 ALT 2+C-EXFIL+C SR 434 ALT 1+EXISTING SR 472

HIGH PROJECT TOTAL = ULTIMATE BEE LINE+KM EXFIL+SR 408 ALT 2B1+SR 50 ALT 2+C-POND+C SR 434 ALT 1+ULTIMATE SR 472

For Project Costs:

LOW PROJECT TOTAL = EXISTING BEE LINE+KM EXFIL+SR 408 ALT 2B1+SR 50 ALT 2+C-EXFIL+C SR 434 ALT 1+ULTIMATE SR 472

This section presents the results of the preliminary design analysis for both the Ultimate project and *Preferred Alternative*. Included in this section is a discussion of the roadway and bridge improvements, typical sections, drainage issues, costs and socioeconomic and environmental impacts for the proposed alternatives. Discussions related to the *Preferred Alternative* are presented in **bold, italicized text**.

9.1 DESIGN TRAFFIC VOLUMES

The analysis of design traffic is documented in Section 6 of this report. The traffic volume projections for the 2020 No-Build and Build scenarios are shown on Figures 6.5.1.1 and 6.5.1.2, respectively.

9.2 TYPICAL SECTIONS

The proposed typical section for both the Ultimate project and *Preferred Alternative* provides an eight-lane Interstate facility with three 12-foot general use lanes and one 12-foot HOV lane in each direction. The HOV facility is barrier separated from the general use lanes. The barrier separated HOV facility has a 10-foot inside shoulder and a 12-foot outside shoulder. The general use lanes have 12-foot shoulders and 12-foot auxiliary lanes between most interchanges. The median width varies from 22 feet to 64 feet. A 44-foot rail corridor has been preserved in the areas with the 64-foot median. The proposed typical section is shown on Figure 9.2.1.

Figure 9.2.2 illustrates the bridge typical sections (with and without a rail corridor). An eight-lane interstate facility with three 12-foot general use lanes and one 12-foot HOV lane in each direction is provided. The HOV lane is barrier separated from the general use lanes and has a 10-foot inside shoulder and a 12-foot outside shoulder. The general use lanes have 12-foot inside and 10-foot outside shoulders. Concrete barriers flank both the inside shoulder of the HOV lane and outside shoulder of the general use lanes.

The typical sections for the cross streets under and over I-4 are submitted with this report under separate cover.

9.3 INTERSECTION CONCEPTS AND SIGNALIZATION

Analyses of intersections affected by the improvements are discussed in Section 6.5.2.3. Intersection lane geometries, traffic volumes and LOS for the proposed improvements are schematically shown on Figure 6.5.2.1, previously presented. Detailed results of the intersection capacity analyses of the proposed improvements can be found in the *I-4 System Access Modification Report* (April 2000) and the *I-4 SAMR Update* (May 2002). The Preliminary Concept Plans, submitted with this report, illustrate the proposed intersection concepts.

9.4 ALIGNMENT AND RIGHT OF WAY NEEDS

9.4.1 Horizontal Alignment

In general, the proposed horizontal alignment of I-4 closely follows the existing I-4 alignment and meets the horizontal design criteria established in Section 5 of this report. The Ultimate project and *Preferred Alternative* require the realignment of I-4 to meet horizontal design criteria at the following locations:

- ◆ *From west of US 441 to east of Kaley Street, and*
- ◆ *From east of Princeton Street to west of Lee Road.*

The proposed improvements require the realignment of I-4 to avoid or minimize impacts to parks and historic sites at the following locations:

- ◆ *From west of Kaley Street to Amelia Street, and*
- ◆ *From Princeton Street to Par Street.*

Additional right-of-way for alignment purposes is required at the above locations. Right-of-way acquisition for retention/detention ponds, typical section and interchange modifications will be required throughout the Ultimate corridor and *Preferred Alternative* limits. The Preliminary Concept Plans and Baseline Data submitted with this report illustrate in detail the proposed horizontal alignment for the I-4 mainline, ramps and interchange layouts.

9.4.2 Vertical Alignment

The proposed improvements require significant vertical alignment modifications to meet established criteria for the vertical alignment as outlined in Section 5 of this report. The proposed profile for I-4 needs to be raised as much as 15 feet in order to meet established criteria for stopping sight distances and vertical bridge clearances. The Preliminary Concept Plans, Baseline Data and Profiles submitted with this report illustrate in detail the proposed vertical alignment for the I-4 mainline and ramps, for both the Ultimate project and *Preferred Alternative*.

9.4.3 Limited Access Right-of-Way

The ramp terminal modifications for the Ultimate project and *Preferred Alternative* include both reconstruction along the cross streets and tying to existing conditions along the cross street. If right-of-way acquisition is required along a cross street, the limited access right-of-way line is extended to meet criteria. If no right-of-way acquisition or construction is proposed along a cross street, the existing limited access right-of-way limits were reviewed to determine compliance with FDOT criteria. When FDOT criteria were not met, an evaluation was prepared to determine the impacts associated with meeting the limited access criteria. In general, most ramp terminal locations were modified to meet limited access criteria. However, since design for the I-4 corridor will occur over many years, the limited access requirements must be reevaluated during design to ensure that changes in operations, safety and land use are considered.

9.4.3.1 Limited Access Right-of-Way Impacts

Limited access limits at the interchanges and crossroads along the I-4 project corridor were reviewed to meet FDOT criteria in accordance with the *Plans Preparation Manual* (PPM). In order to meet criteria, the existing access to many properties would be potentially impacted. Property owners would receive severance damages for the loss of existing access. However, if the property becomes landlocked due to the changes in limited access, relocation may be required.

9.4.3.1.1 Segment 1 - SR 528 to John Young Parkway

No limited access impacts are proposed along Segment 1 in either the Ultimate project limits or the *Preferred Alternative*.

9.4.3.1.2 Segment 2 - SR 423 (John Young Parkway) to Ivanhoe Boulevard

John Young Parkway to SR 408 (East/West Expressway)

Most of the limited access impacts occur at the interchanges of US 441 (Orange Blossom Trail), Michigan Street, Kaley Street and SR 408. A total of 21 parcels will receive limited access severance damages for the Preferred Alternative. Twelve of the parcels are commercial land uses, four are vacant properties and one is a child day care, Lois' Learning Center. Lois' Learning Center is the only facility in this area to be relocated due to the proposed limited access.

SR 408 (East/West Expressway) to Ivanhoe Boulevard

Most of the limited access impacts occur at the interchange of SR 50 (Colonial Drive). A total of five parcels will receive limited access severance damages. One of the parcels is commercial land use, four are vacant properties and no relocations are required.

9.4.3.1.3 Segment 3 - Ivanhoe Boulevard to Lee Road

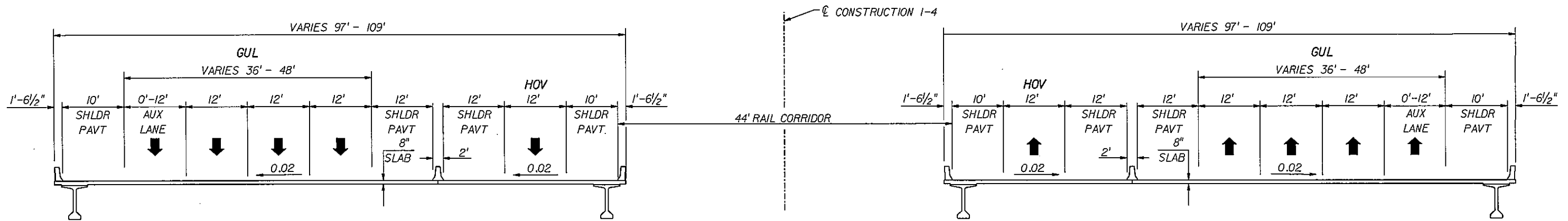
Most of the limited access impacts occur at the interchanges of SR 438 (Princeton Street) and SR 426 (Fairbanks Avenue). A total of 19 parcels will receive limited access severance damages. Ten of the parcels are commercial land uses, three are residential, three are medical offices and three are vacant properties. Four relocations are required; two commercial businesses, one single-family residence, and one medical office.

9.4.3.1.4 Segment 4 & 5 - Lee Road to US 17-92

Most of the limited access impacts occur at the interchanges of SR 436, SR 434 and SR 46. *There are no limited access impacts due to the Preferred Alternative from SR 423 (Lee Road) to SR 414 (Maitland Boulevard).* A total of 12 parcels will receive limited access severance damages for SR 434 Alternative 1. Eleven of the parcels are commercial land uses and one is multi-family residential. Three additional commercial parcels are impacted by SR 434 Alternative 2. Alternative 1 requires the relocation of four businesses and Alternative 2 requires the relocation of five businesses.

9.4.3.1.5 Segment 6 - US 17-92 to SR 472

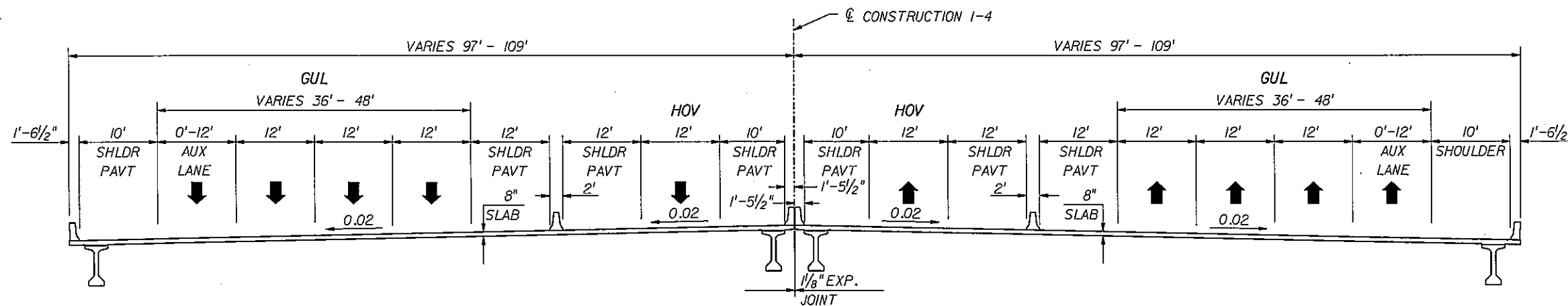
Most of the limited access impacts occur at the interchanges of US 17-92 and Dirksen Drive/DeBary Avenue. A total of 19 parcels will receive limited access severance damages. Two of the parcels are commercial land uses and 17 are vacant properties. No relocations are required.



Typical Section

44' Rail Corridor

Legend:
 HOV - High Occupancy Vehicles
 GUL - General Use Lanes



Typical Section

No Rail Corridor

I-4 PD&E Study - Section 2

Figure 9.2.2
 Bridge Typical Sections

9.5 DESIGN EXCEPTIONS AND VARIANCES

Occasionally, it becomes necessary to deviate from the standard criteria used in the design process. Two specific deviations may occur: a design exception or a design variation. A design exception is required when the design applied falls below the minimum criteria established by AASHTO. A design variation is required when the design applied falls below FDOT established criteria and the deviation is not covered by the design exception.

Design exceptions and variations for the mainline from SR 528 (Bee Line Expressway) to US 17-92 are based on a design speed of 60 mph. From US 17-92 to SR 472, design exceptions and variations are based on a design speed of 70 mph.

Table 9.5.1 lists 17 design elements and states whether or not FDOT and AASHTO design criteria have been satisfied for each element. If a design exception or variation is required, it is noted in the table.

Table 9.5.1 - Design Exceptions and Variations

| Design Criteria | Design Exception | | | | Design Variation | | |
|--------------------------------|------------------|-----|-------------|-------|------------------|-------------|-------|
| | Design Element | I-4 | Cross Roads | Ramps | I-4 | Cross Roads | Ramps |
| Critical Elements | | | | | | | |
| 1. Design Speed | S | S | S | S | S | S | S |
| 2. Lane Width | S | S | S | S | S | S | S |
| 3. Shoulder Width | S | S | S | S | S | S | S |
| 4. Bridge Width | S | S | S | S | S | S | S |
| 5. Structural Capacity | S | S | S | S | S | S | S |
| 6. Vertical Clearance | S | S | S | R | S | S | S |
| 7. Grades | S | S | S | S | S | S | S |
| 8. Cross Slopes | S | S | S | S | S | S | S |
| 9. Superelevation | S | S | S | S | S | S | S |
| 10. Horizontal Alignment | S | S | S | S | S | S | S |
| 11. Vertical Alignment | S | S | R | R | S | R | R |
| 12. Stopping Sight Distance | R | S | R | R | S | R | R |
| 13. Horizontal Clearance | S | S | S | S | S | S | S |
| Other Design Elements | | | | | | | |
| 14. Border Width | N/A | N/A | N/A | R | S | S | S |
| 15. Median Width | N/A | N/A | N/A | R | S | R | R |
| 16. Length of Horizontal Curve | N/A | N/A | N/A | R | S | R | R |
| 17. Length of Vertical Curve | N/A | N/A | N/A | R | S | S | S |

Note: S - Satisfied / R - Required

Design Exceptions

Stopping Sight Distance

The minimum stopping sight distance required for facilities with design speeds of 70, 60 and 50 mph is 625, 525 and 400 feet, respectively. There is one area where a design exception for stopping sight distance is required, which is listed in Table 9.5.2.

Table 9.5.2 - Vertical Clearance Design Exception

| Location | PII Sta. | Radius (ft) | Design Speed (mph) | SSD (ft) | Required SSD (ft) |
|-------------------------------------|----------|-------------|--------------------|----------|-------------------|
| I-4 @ Gore St (WB HOV 10' Shoulder) | 120+50 | 1969 | 60 | 504 | 525 |

Design Variations

Vertical Clearance

According to FDOT standards, vertical clearance over a roadway should be a minimum of 16.5 feet. Table 9.5.3 lists areas where design variations for vertical clearance will be necessary.

Table 9.5.3 - Vertical Clearance Design Variations

| Location | Vertical Clearance (ft) | Required Vertical Clearance (ft) |
|--------------------------------------|-------------------------|----------------------------------|
| I-4 | | |
| Bee Line Flyover to WB I-4 | 16.35 | 16.5 |
| Bee Line Flyover from WB I-4 | 16.45 | 16.5 |
| North Shore Terr (WB) | 14.5 | 16.5 |
| New Hampshire St (EB, WB) | 14.5 | 16.5 |
| Princeton St (EB, WB) | 14.5 | 16.5 |
| Winter Park St (EB, WB) | 14.5 | 16.5 |
| Par Ave (EB, WB) | 14.5 | 16.5 |
| Formosa/Minnesota (EB, WB) | 14.5 | 16.5 |
| Fairbanks Ave (EB, WB) | 15.5 | 16.5 |
| Riddle Dr. (EB, WB) | 14.5 | 16.5 |
| Wymore Rd (EB, WB) | 14.5 | 16.5 |
| Lee Rd (EB, WB) | 15.03 | 16.5 |
| SR 408 (East/West Expressway) | | |
| Tampa Ave (EB, WB) (Widening) | 15.15 | 16 |
| Rio Grande Ave (Widening) | 15.41 | 16 |
| Parramore Ave (Widening) | 15.25 | 16 |
| Magnolia/Orange (Widening) | 15.32 | 16 |
| Summerlin Ave (Widening) | 15.42 | 16 |

Horizontal Alignment

For a facility such as I-4, FDOT standards state that the minimum length of a horizontal curve shall be no less than 15 times the design speed. The minimum length of horizontal curves at cross streets and for interchange ramps is 400 feet. There are several areas along the project limits that will require horizontal alignment design variations for curve length.

Vertical Alignment

FDOT standards state that lengths of crest vertical curves should not be less than 1000 feet for open highways and 1800 feet within interchanges. Lengths of sag vertical curves should not be less than 800 feet. Along interchange ramps and cross roads, lengths of vertical curves are not to be less than three times the design speed of the facility. Throughout the study area, many vertical curves will require design variations for vertical curve lengths.

FDOT Interstate mainline "K" values for a design speed of 70 mph are 500 and 200 for crest and sag vertical curves, respectively. Interstate mainline "K" values for a design speed of 60 mph are 300 and 150 for crest and sag vertical curves, respectively. Interchange ramp "K" values for a design speed of 50 mph are 150 and 100 for crest and sag vertical curves, respectively. Table 9.5.4 lists areas where design variations for "K" values will be required.

Table 9.5.4 - Vertical Alignment Design Variations

| PVI Station | Crest/Sag | K | Required "K" |
|-----------------|-----------|-----|--------------|
| 8+06 | Sag | 133 | 150 |
| 53+29 (WB) (A) | Crest | 204 | 300 |
| 54+50 (EB) (A) | Crest | 204 | 300 |
| 70+00 | Sag | 122 | 150 |
| 71+61 (WB) | Sag | 123 | 150 |
| 82+75 (B) | Crest | 204 | 300 |
| 95+48 | Sag | 125 | 150 |
| 113+40 | Sag | 143 | 150 |
| 125+90 (C) | Crest | 204 | 300 |
| 140+60 | Sag | 121 | 150 |
| 154+30 (D) | Crest | 204 | 300 |
| 179+10 (E) | Crest | 203 | 300 |
| 207+75 (F) | Crest | 205 | 300 |
| 221+25 | Sag | 122 | 150 |
| 232+75 (EB) (G) | Crest | 205 | 300 |
| 233+95 (WB) (G) | Crest | 204 | 300 |
| 243+40 (WB) | Sag | 122 | 150 |
| 246+60 (EB) | Sag | 146 | 150 |
| 262+40 (H) | Crest | 204 | 300 |
| 268+40 | Sag | 122 | 150 |
| 276+50 (I) | Crest | 204 | 300 |
| 283+40 | Sag | 122 | 150 |
| 291+50 (J) | Crest | 204 | 300 |
| 300+00 | Sag | 148 | 150 |
| 307+25 | Sag | 122 | 150 |
| 316+86 (K) | Crest | 204 | 300 |
| 325+00 | Sag | 148 | 150 |
| 332+00 | Sag | 122 | 150 |
| 343+25 (L) | Crest | 204 | 300 |
| 353+84 | Sag | 122 | 150 |
| 364+00 (M) | Crest | 204 | 300 |
| 373+89 | Sag | 122 | 150 |
| 384+70 (N) | Crest | 204 | 300 |
| 398+59 | Sag | 122 | 150 |
| 404+90 | Sag | 148 | 150 |
| 416+22 (O) | Crest | 204 | 300 |
| 428+58 | Sag | 134 | 150 |
| 2132+08 | Sag | 133 | 150 |
| 2143+54 (P) | Crest | 204 | 300 |
| 2155+00 | Sag | 126 | 150 |
| 2849+00 (Q) | Crest | 288 | 300 |
| 2944+77 | Sag | 144 | 150 |
| 2957+00 (R) | Crest | 205 | 300 |
| 2966+00 | Sag | 139 | 150 |
| 2983+00 (S) | Crest | 412 | 500 |

A - Michigan Street, B - Kaley Street, C - Gore Street, D - South Street, E - Robinson Street, F - SR 50, G - Ivanhoe Blvd., H - New Hampshire Street, I - Princeton Street, J - Winter Park Street, K - Par Street, L - Formosa Avenue/Minnesota Avenue, M - Fairbanks Avenue, N - Wymore Road, O - Lee Road, P - Kennedy Boulevard, Q - East of SR 417, R - Orange Boulevard, S - St. John's River

Stopping Sight Distance

According to FDOT standards, minimum stopping sight distance for an Interstate mainline with a 70 mph design speed is 800 feet. For an Interstate mainline with a design speed of 60 mph, the required stopping sight distance is 625 feet. In addition, stopping sight distance for 50 mph design speed interchange ramps is 400 feet. Stopping sight distance design variations are listed in Table 9.5.5.

Table 9.5.5 - Stopping Sight Distance Design Variations

| Location | PI Sta | Radius (ft) | Design Speed (mph) | SSD (ft) | Required SSD (ft) |
|--|---------|-------------|--------------------|----------|-------------------|
| I-4 @ Bee Line (EB HOV 10' Shoulder) | 713+75 | 2789 | 60 | 599 | 625 |
| I-4 between Sand Lake and Universal Blvd (WB HOV 10' Shoulder) | 910+75 | 2904 | 60 | 612 | 625 |
| I-4 @ JYP (WB HOV 10' Shoulder) | 1139+18 | 2871 | 60 | 608 | 625 |
| I-4 north of Lk Ivanhoe (EB HOV 10' Shoulder) | 258+53 | 2385 | 60 | 555 | 625 |
| I-4 @ SR 434 (WB HOV 10' Shoulder) | 2419+01 | 2864 | 60 | 607 | 625 |

Border Width

A border width of 94 feet for freeways and interchange ramps is required by FDOT. In order to minimize impacts to adjacent properties and reduce right-of-way acquisition costs, a 17-foot border width has been used throughout the project limits. Standard concrete barrier wall will be placed at the edges of the outside shoulders to meet clear zone requirements.

Median Width

FDOT requires a median width of 26 feet. This corresponds to 12-foot inside shoulders and a 2-foot wide median barrier wall. However, 10-foot inside shoulders have been proposed for the HOV corridor resulting in a median width of 22 feet in areas without a rail corridor.

SR 408 (East/West Expressway)

Table 9.5.6 shows detailed geometric analyses for the Preferred SR 408 (East/West Expressway) interchange Alternative and lists necessary design exceptions and variations.

9.6 RELOCATIONS

Right-of-way acquisition for the I-4 PD&E Study - Section 2 Ultimate project and Preferred Alternative involves some partial or complete purchase of parcels of land with some resulting in displacement of residential and non-residential land uses. FDOT will acquire all rights-of-way needed for the Ultimate project and the Preferred Alternative. Under the requirements of federal law and state statute, property owners will be paid fair market value for their property and given assistance in finding replacement business sites and dwellings.

It should be noted that FDOT has proceeded with advanced right-of-way acquisition for a number of the parcels affected by the Ultimate project and Preferred Alternative. However, this advanced right-of-way acquisition has not affected the selection of the Preferred Alternative.

9.6.1 Displacements

Acquisitions and displacements were calculated based on engineering drawings dated February 25, 2002. In addition, field reviews were performed in January 1999 and April 2002. Generally, if the percentage of the impacted property was less than 100 percent of the entire property, it was considered a partial take even if the impact involved a building located on the property.

Table 9.5.6 - SR 408 Design Exceptions and Variations

| Design ID | Description | No. Lanes | Min. Res. Design Speed (MPH) | LAW Min. Radius (ft) | Meets FDOT Curvature (e) & SSD Criteria for Design Speed (MPH) | | | Meets AASHTO Curvature (e) & SSD Criteria for Design Speed (MPH) | | | STD SHOULDER WIDTH | Average 1/2 for All Curves | Meets FDOT Design Speed for Vertical Alignment | | Meets AASHTO Design Speed for Vertical Alignment | | COMMENTS |
|---|----------------------------------|-----------|------------------------------|----------------------|--|---------------|--------------|--|---------------|--------------|---------------------------|----------------------------|--|-------|--|-------|---|
| | | | | | Curvature (e) | STD. Shoulder | 12' Shoulder | Curvature (e) | STD. Shoulder | 12' Shoulder | | | Sag | Crest | Sag | Crest | |
| A | EB I-4 To EB E/W | 2 | 40 | 949 | 50 | 40 | 45 | 50 | 40 | 45 | 10' Shoulder | 80 | 45 | - | 45 | - | - |
| A1 | EB I-4 To WB E/W | 1 | 40 | 780 | 50 | 35 | 45 | 50 | 40 | 45 | 6' Shoulder | 936 | - | 50 | - | 50 | Design Variance is required for SSD with Std 6' Bridge Shldr. 12' Shldr will eliminate the variance. Geometric constraints include bridge pier placement and connections with Ramp "A" & "B1". |
| B | WB I-4 To EB E/W | 1 | 40 | 415 | 35 | 30 | 35 | 35 | 30 | 35 | 6' Shoulder | 104 | - | 45 | - | 45 | Design Exception is required for Curvature (e). Design exception is required for SSD even with 12' Shldr. Geometric constraints include avoiding OUC Substation, pier placement and span arrangement. |
| B1 | WB I-4 To WB E/W | 1 | 40 | 750 | 50 | 35 | 40 | 50 | 40 | 45 | 6' Shoulder | 107 | - | 45 | - | 45 | Design Variance is required for SSD with Std 6' Bridge Shldr. 12' Shldr will eliminate the variance. Geometric constraints include limiting R/W impact, pier placement and span arrangements. |
| C | EB E/W To EB I-4 | 1 | 25 (Loop) | 183 | 25 | 25 | 25 | 25 | 25 | 25 | 6' Shoulder | 139 | 50 | - | 50 | - | - |
| C1 | EB E/W To WB I-4 | 1 | 40 | 377 | 35 | 30 | 30 | 35 | 30 | 35 | 6' Shoulder | N/A | 50 | 50 | 50 | 50 | Design Exception is required for Curvature (e). Design exception is required for SSD even with 12' Shldr. Geometric constraints include Griffin Park avoidance, pier placement and span arrangements. |
| D | WB E/W To WB I-4 | 2 | 40 | 518 | 40 | 30 | 35 | 40 | 35 | 40 | 6' Shoulder | 113 | - | 45 | - | 50 | Design Exception is required for Curvature (e). Design exception is required for SSD even with 12' Shldr. Geometric constraints include Griffin Park avoidance, pier placement and span arrangements. |
| D1 | WB E/W To EB I-4 | 1 | 40 | 558 | 45 | 30 | 35 | 45 | 35 | 40 | 6' Shoulder | 141 | - | 50 | - | 50 | Design Exception is required for SSD with Std 6' (LT) Bridge Shldr. 12' Shldr will eliminate the exception. However it will require variance even with 12' shldr. Geometric constraints include pier placement and span arrangements. |
| (I) System To Service Ramps (Min. Res. Design Speed (MPH) @ 25 MPH for Loops) - Design Speed 45 MPH | | | | | | | | | | | | | | | | | |
| C2 | EB I-4 To OBT | 1 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 91 | - | 45 | - | 45 | - |
| E | EB I-4 To Garland | 2 | 30 | 315 | 30 | 30 | 30 | 30 | 30 | 30 | 6' Shoulder | 153 | 50 | - | 50 | - | - |
| F1 | Anderson To EB I-4 | 1 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 138 | 50 | - | 50 | - | - |
| F2 | WB I-4 To Anderson | 1 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 59 | - | 35 | - | 35 | - |
| G | Hughey To WB I-4 | 1&2 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | N/A | 50 | 50 | 50 | 50 | 50 |
| H | Lucerne Circle To WB E/W | 1 | 30 | 3609 | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 74 | 40 | - | 45 | - | - |
| A2 | EB E/W To Lucerne Circle | 1 | 30 | 525 | 45 | 30 | 35 | 45 | 35 | 40 | 6' Shoulder | 103 | - | 45 | - | 45 | - |
| OBT Slip(C) | OBT To Ramp "C", "C1" | 1 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 73 | - | 40 | - | 40 | - |
| OBT Slip(B-1) | Ramp "B-1 To OBT | 1 | 30 | N/A | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 40 | 30 | - | 30 | - | - |
| HOV Ramp | South SL HOV Ramps To/From North | 1 | 30 | 4921 | 50 | 50 | 50 | 50 | 50 | 50 | 6' Shoulder | 40 | 30 | - | 30 | - | - |
| F | Relocated Anderson | 2 | 30 | 594 | 45 | 30 | 35 | 45 | 35 | 40 | Local City of Orlando St. | 51 | - | 35 | - | 35 | - |

I-4 PD&E Study - Section 2

Orange County, Seminole County and Volusia County Property Appraiser information and field reviews were used to characterize parcel use. Employment estimates were calculated based on employee per square-foot assumptions for each type of land use. A parcel breakdown of this information can be found in the project files. Table 9.6.1 provides a summary of residential and non-residential relocations broken down by segment and alternative. *The Preferred Alternative will result in the relocation of 195 residences.* The Ultimate project will result in the relocation of 392 residences. Reconstruction of the SR 434 interchange results in the largest percentage of residential relocations in the project area. *The Preferred Alternative will result in the relocation of 63 businesses.* The Ultimate project will result in the relocation of 76 to 81 businesses.

Vehicle and pedestrian access impacts will occur to businesses along the I-4 corridor. Another important issue related to non-residential property impacts is acquisitions that involve existing parking spaces. The impacts to parking are included in the *Conceptual Stage Relocation Plan* (August 2001) and shown in Table 9.6.1.

Table 9.6.1 - Summary of Relocations

| Alternative | Relocations | | |
|------------------------------|-------------|------------|------------|
| | Residential | Commercial | Parking |
| Segment 1 | | | |
| Bee Line Ultimate | 1 | 2 | 263 |
| Bee Line Existing | 1 | 1 | 129 |
| Preferred Alternative | 0 | 1 | 129 |
| Segment 2 | | | |
| Preferred Alternative | 135 | 52 | 456 |
| Segment 3 | | | |
| Preferred Alternative | 60 | 8 | 44 |
| Segment 4 | | | |
| Preferred Alternative | 0 | 2 | 253 |
| SR 434 Alt 1 | 193 | 4 | 366 |
| SR 434 Alt 2 | 193 | 8 | 321 |
| Segment 5 | | | |
| Typical Section C | 3 | 1 | 103 |
| Segment 6 | | | |
| SR 472 Ultimate & Existing | 0 | 10 | 0 |
| Total | | | |
| Preferred Alternative | 195 | 63 | 882 |
| Low Ultimate Project Total | 392 | 76 | 1053 |
| High Ultimate Project Total | 392 | 81 | 1232 |

9.7 RIGHT OF WAY, CONSTRUCTION AND PRELIMINARY ENGINEERING COSTS

Cost estimates for the additional right-of-way required for the proposed improvements were completed as part of this project. Right-of-way cost information was calculated from similar FDOT construction projects. Required right-of-way and associated costs are shown in Table 9.7.1.

Table 9.7.1 - Right-of-Way Acquisition and Costs

| Alternative | Right-of-Way Acquisition (acres) | Right-of-Way Costs (2000\$ in Millions) | Limited Access Severance Damages (2000\$ in Millions) |
|------------------------------------|----------------------------------|---|---|
| Segment 1 | | | |
| Bee Line Ultimate | | | |
| Roadway | 11.35 | \$21.28 | \$0.00 |
| Ponds | 29.31 | \$27.65 | |
| Bee Line Existing | | | |
| Roadway | 3.71 | \$7.66 | \$0.00 |
| Ponds | 12.77 | \$13.55 | |
| Preferred Alternative | 3.71 | \$7.66 | \$0.00 |
| Ponds | 4.45 | \$3.48 | |
| Segment 2 | | | |
| Preferred Alternative | 36.35 | \$106.30 | \$18.81 |
| Roadway | | | |
| Ponds | 19.83 | \$23.41 | |
| Segment 3 | | | |
| Preferred Alternative | 10.34 | \$21.57 | \$12.25 |
| Roadway | | | |
| Ponds | 0.00 | \$0.00 | |
| Segment 4 | | | |
| Preferred Alternative | 6.51 | \$28.42 | \$0.00 |
| Roadway | | | |
| Ponds | 15.74 | \$20.66 | |
| SR 434 Alt 1 | | | |
| Roadway | 12.97 | \$48.85 | \$12.35 |
| Ponds | 37.13 | \$56.46 | |
| SR 434 Alt 2 | | | |
| Roadway | 18.76 | \$70.70 | \$16.76 |
| Ponds | 37.40 | \$56.53 | |
| Segment 5 | | | |
| Typical Section C | | | |
| Roadway | 16.62 | \$14.33 | \$0.36 |
| Ponds | 0.00 | \$0.00 | |
| Segment 6 | | | |
| SR 472 Ultimate & Existing | | | |
| Roadway | 28.62 | \$28.41 | \$4.51 |
| Ponds | 32.03 | \$5.79 | |
| Total | | | |
| Preferred Alternative | 56.91 | \$163.95 | \$31.06 |
| Ponds | 40.02 | \$47.55 | |
| Low Ultimate Project Total | 108.61 | \$227.13 | \$48.28 |
| Roadway | | | |
| Ponds | 101.76 | \$99.21 | |
| High Ultimate Project Total | 122.04 | \$262.39 | \$52.60 |
| Roadway | | | |
| Ponds | 118.57 | \$113.38 | |

The preliminary construction cost estimates for the Ultimate Project and the *Preferred Alternative* were developed from the February 25, 2002 Preliminary Concept Plans. In addition, existing construction plans and available topographic information were also taken into consideration. The cost estimate includes major cost components such as embankment, roadway and bridge construction, retaining walls, maintenance of traffic and signage. Costs for other components, such as erosion control, drainage, pavement markings, fencing and grassing were estimated on a per mile basis. Project construction costs do not include costs associated with environmental permits, dump fees or removal and disposal of contaminated soils or materials.

Quantities and unit costs for the construction components of each alternative were used to tabulate construction cost estimates. Mobilization costs are estimated at five percent, utility relocation costs are estimated at 1.5 percent, maintenance of traffic costs are estimated at 12 percent and a 15 percent contingency factor was added to the construction costs for an estimate of the total construction cost. These costs are included as part of the preliminary construction costs in Table 9.7.2.

Table 9.7.2 - Preliminary Construction Cost Estimates (In 2000 \$)

| Alternative | Construction Costs (2000\$ in Millions) |
|------------------------------|---|
| Segment 1 | |
| Bee Line Ultimate | \$281.25 |
| Bee Line Existing | \$187.89 |
| Preferred Alternative | \$159.01 |
| Segment 2 | |
| Preferred Alternative | \$438.16 |
| Segment 3 | |
| Preferred Alternative | \$172.38 |
| Segment 4 | |
| Preferred Alternative | \$124.94 |
| SR 434 Alt 1 | \$256.75 |
| SR 434 Alt 2 | \$258.06 |
| Segment 5 | |
| Typical Section C | \$112.90 |
| Segment 6 | |
| SR 472 Ultimate | \$210.59 |
| SR 472 Existing | \$213.54 |
| Total | |
| Preferred Alternative | \$894.49 |
| Low Ultimate Project Total | \$1,378.67 |
| High Ultimate Project Total | \$1,476.29 |

Preliminary engineering costs are typically developed as a percentage of the total construction costs. For the proposed project, the preliminary engineering costs have been estimated at 27 percent of the total construction costs. This percentage is based on projects of similar design and construction. Included in these estimated costs are preliminary engineering fees, final design fees, legal fees, administrative fees, construction engineering and inspection and post-design services for this project. Preliminary project cost ranges are based on 2000 dollars and are shown in Table 9.7.3.

Table 9.7.3 - Preliminary Project Cost Ranges (In 2000 \$)

| Alternative | Item | Project Costs (2000\$) Millions) Low | Project Costs (2000\$) Millions) High |
|-----------------------|-----------------|--------------------------------------|---------------------------------------|
| Segment 1 | | | |
| Ultimate Project | Construction | \$187.89 | \$281.25 |
| | PE, CEI, Admin. | \$50.73 | \$75.94 |
| | Right-of-Way | \$21.21 | \$48.93 |
| | Segment Total | \$259.83 | \$406.12 |
| Preferred Alternative | Construction | \$159.01 | N/A |
| | PE, CEI, Admin. | \$42.93 | N/A |
| | Right-of-Way | \$11.14 | N/A |
| | Segment Total | \$213.08 | N/A |
| Segment 2 | | | |
| Preferred Alternative | Construction | \$438.16 | N/A |
| | PE, CEI, Admin. | \$118.30 | N/A |
| | Right-of-Way | \$148.52 | N/A |
| | Segment Total | \$704.98 | N/A |
| Segment 3 | | | |
| Preferred Alternative | Construction | \$172.38 | N/A |
| | PE, CEI, Admin. | \$46.54 | N/A |
| | Right-of-Way | \$33.82 | N/A |
| | Segment Total | \$252.74 | N/A |
| Segment 4 | | | |
| Preferred Alternative | Construction | \$124.94 | N/A |
| | PE, CEI, Admin. | \$33.73 | N/A |
| | Right-of-Way | \$49.07 | N/A |
| | Segment Total | \$207.74 | N/A |
| Ultimate Project | Construction | \$256.75 | \$258.06 |
| | PE, CEI, Admin. | \$69.32 | \$69.68 |
| | Right-of-Way | \$117.66 | \$143.98 |
| | Segment Total | \$443.73 | \$471.72 |
| Segment 5 | | | |
| Ultimate Project | Construction | \$112.90 | N/A |
| | PE, CEI, Admin. | \$30.48 | N/A |
| | Right-of-Way | \$14.69 | N/A |
| | Segment Total | \$158.07 | N/A |
| Segment 6 | | | |
| Ultimate Project | Construction | \$210.59 | \$213.54 |
| | PE, CEI, Admin. | \$56.86 | \$57.66 |
| | Right-of-Way | \$38.71 | \$38.71 |
| | Segment Total | \$306.16 | \$309.91 |
| Total | | | |
| Preferred Alternative | Construction | \$894.49 | N/A |
| | PE, CEI, Admin. | \$241.51 | N/A |
| | Right-of-Way | \$242.55 | N/A |
| | Segment Total | \$1,378.55 | N/A |
| Ultimate Project | Construction | \$1,378.67 | \$1,363.39 |
| | PE, CEI, Admin. | \$372.24 | \$398.60 |
| | Right-of-Way | \$472.75 | \$428.65 |
| | Segment Total | \$2,223.66 | \$2,190.64 |

9.8 RECYCLING OF SALVAGEABLE MATERIAL

Since the proposed I-4 improvements involve reconstruction of the existing roadway in most areas, the potential for recycling salvageable material for use in the new construction is somewhat limited. However, existing bridges that are structurally sound and provide adequate vertical and horizontal clearance will be widened and re-used where possible. In addition, existing asphalt and base material may be recycled into new asphalt and base material. Excavated material from establishing final roadway grades and stormwater pond construction could be used in embankment construction on the project.

The cross street typical sections will utilize as much of existing pavement as possible by milling and resurfacing, and widening the existing asphalt pavement.

Table 9.8.1 shows the potential re-use of structures on the project.

The exact amount of salvageable material will be established in the final design phase of the project.

Table 9.8.1 - Potential Bridge Structure Re-Use

| Segment | Structure | Modification and Type of Re-use |
|---------|---|---|
| 1 | I-4 over SR 482 (Sand Lake Road) | Widening will allow HOV lanes and additional lane and shoulder widths |
| 1 | Universal Boulevard over I-4 | Existing structure over I-4 meets clearances and length for new I-4 typical section |
| 1 | I-4 over Shingle Creek | Widening will allow HOV lanes and additional lane and shoulder widths |
| 1 | Conroy Road over I-4 | Proposed structure (as a separate project) over I-4 was designed to meet clearances and lengths |
| 2 | I-4 over SR 423 (John Young Parkway) | Proposed structure (as a separate project) over I-4 was designed to meet clearances and lengths |
| 2 | SR 408 over Tampa Avenue | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over Rio Grande Avenue | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over US 441 (Orange Blossom Trail) | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over Westmoreland Drive | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over Parramore Avenue | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over Summerlin Avenue | Widening will allow additional lanes and shoulder widths |
| 2 | SR 408 over Mills Avenue | Widening will allow additional lanes and shoulder widths |
| 5 | CR 46A (Paola Road) over I-4 | Proposed structure (as a separate project) over I-4 was designed to meet clearances and lengths |

9.9 USER BENEFITS

Discussions of the existing deficiencies of the roadway network within the study area, and those that are anticipated in the future, provide evidence of the benefits associated with the construction of the proposed I-4 improvements. These benefits are reflected in improved traffic service, reduced congestion and motorist delay, lower vehicle operating costs and greater safety. From the viewpoint of transportation needs, the specific benefits of the project include:

- ◆ Enhancement of motorist safety by providing improved intersection designs on cross streets due to lower signalized intersection delays.
- ◆ Resultant improvements in the level of service along cross streets.
- ◆ Improvements in the level of service on I-4 because of the addition of HOV lanes and auxiliary lanes.
- ◆ Reduction in overall road user costs through higher operating speeds, reduced number of accidents and reduced time delays.
- ◆ Reduction in response time for police, fire and ambulance rescue emergency services.

9.10 BICYCLE, GREENWAY AND TRAIL FACILITIES

The existing and proposed bicycle, greenway and trail facilities were assessed to determine which facilities may be impacted due to the proposed improvements. The proposed improvements will accommodate all existing and proposed bicycle facilities identified on Figure 4.2.3.1, previously presented, except for those facilities that will be impacted by other projects.

In compliance with Section 109(n) of 23 USC, the proposed project will provide bicyclists and pedestrians a reasonable alternative to the existing facilities, which will meet the design standards of the FDOT *Bicycle Facilities Planning and Design Handbook*, February 1998.

9.11 PEDESTRIAN FACILITIES

All the pedestrian facilities documented in Section 4.1.4 and on Figure 4.1.4.1 may be impacted by the Ultimate Project and Preferred Alternative. Those facilities impacted will be replaced.

In addition, there is a pedestrian overpass, located in Segment 2, that crosses I-4 and will be impacted by the Ultimate project and the Preferred Alternative. It is located approximately 2,150 feet north of the I-4/Kaley Street interchange. This pedestrian crosswalk connects Indiana Street and Grand Avenue, which leads to the Grand Avenue Elementary School. However, the land use on the east side of I-4 has changed from residential to industrial and there is minimal use of the pedestrian overpass. Due to land use changes in the area, the pedestrian bridge will not be replaced. Pedestrian facility enhancements have been proposed at Kaley Street to the west and Gore Street to the east to provide alternative pedestrian routes from each side of I-4.

There is a second pedestrian overpass located approximately 1,000 feet northwest of the I-4/Fairbanks Avenue interchange. This pedestrian crossing is used primarily by students of Killarney Elementary School (approximately 50

or more students per day) and local residents. This pedestrian overpass will be replaced as part of the I-4 Interim Auxiliary Lane project (under construction as of June 2002) by an alternative pedestrian route that will follow Wymore Road to Roxbury Road and Granada Drive. As part of the *Preferred Alternative*, the pedestrian route will follow a Wymore Road to Riddle Drive and Granada Drive route. Coordination with Killarney Elementary School will continue through all phases of design.

9.12 SAFETY

The anticipated growth in the project area will increase the traffic demand in the I-4 corridor. Naturally as the traffic volumes increase, the potential for accidents will increase. Increasing the capacity of the facility, improving acceleration/deceleration lanes at the interchanges, adding auxiliary lanes and meeting current design criteria will greatly enhance the corridor's safety and reduce the potential for excessive accidents.

The inclusion of a physically separated HOV facility will further enhance safety in the corridor by minimizing interaction between the HOV and general use lanes. In addition, the deployment of ITS elements will provide timely information to motorists and assist in incident management.

The Ultimate project and the *Preferred Alternative* therefore, enhance safety in the corridor.

9.13 ECONOMIC AND COMMUNITY DEVELOPMENT

9.13.1 Population and Community Growth Characteristics

Substantial local and regional project impacts will result from the construction of the I-4 improvements relative to the No-Build Alternative. The intent of this section is to discuss the likely overall Ultimate project and *Preferred Alternative* impacts that will be attributed to the I-4 improvements and its effects on the population, employment and regional growth, land use and development activity.

9.13.1.1 Population Impacts

In general, the tri-county area population is growing rapidly and has a diverse ethnicity and age constituency. The regional growth is anticipated to be greater than any other area in Florida through 2020. Impacts to the local and regional population due to the Ultimate project and *Preferred Alternative* include direct use impacts related to physical and environmental impacts, and indirect and cumulative impacts that may occur as a consequence of the proposed improvements.

A high number of residential and business property impacts and relocations are expected due to the expansion. The Ultimate project and *Preferred Alternative* impact populations from various neighborhoods located adjacent to the I-4 corridor. The neighborhoods with direct use impacts include the following in Orange County: *Angebilt, located south of I-4 and east of Rio Grande Avenue; Holden Heights, located east of I-4 and south of Gore Street; Holden-Parramore, located west of I-4, between Gore Street and Central*

Boulevard; College Park, located on both sides of I-4 between Colonial Drive and Fairbanks Avenue; and North Orange, located east of I-4 between Ivanhoe Boulevard and Par Street.

In Seminole County, the neighborhoods with direct use impacts include the following: Spanish Trace Apartments, in Altamonte Springs, west of I-4, just south of SR 436; Sanlando Springs, east of I-4, just south of SR 434; the Palm Springs neighborhood near I-4 and Central Parkway; and the Town of Monroe, east of I-4 and US 17-92, south of Lake Monroe.

Indirect and cumulative impacts include land use changes that may result from the acquisition of properties within these neighborhoods and communities adjacent to I-4. The Ultimate project and *Preferred Alternative* will require some acquisition of properties along the edge of these neighborhoods. The removal of these properties will create a new edge of properties and homes that may pattern the transition from owner-occupied homes to rental properties immediately adjacent to I-4. *This "edge" effect is most evident in the Holden-Parramore area that is already predominately rental. This area has been targeted for redevelopment to redirect residents to home ownership and encourage the investment of substantial commercial businesses that would increase employment opportunities for the residents and attract economic development.*

Other indirect and cumulative impacts may be due to the enhanced access and mobility attributed to the Ultimate project and *Preferred Alternative*. *Existing access will be modified at several interchanges along the I-4 corridor, most significantly the SR 408 and Kaley-Michigan interchanges. Alternate routes where feasible will be provided to compensate for the changes in access. Where access is eliminated changes in traffic patterns will result.*

9.13.1.2 Regional Growth Impacts

I-4 carries by far the greatest number of people and vehicles of any transportation facility in the region. I-4 connects with SR 528 (Bee Line Expressway) and Florida's Turnpike within the Ultimate Project study area. SR 528 (Bee Line Expressway) is a regional roadway that connects Central Florida to the Atlantic Seaboard on the east coast of Florida and serves motorists traveling to many popular destinations such as Cocoa Beach, Cape Canaveral and the Kennedy Space Center and travelers to and from Orlando International Airport (OIA).

Future growth in the region will be focused on the Ultimate project corridor's six activity centers in the developed business districts of International Drive, Orlando, Winter Park, Maitland, Altamonte Springs and Lake Mary. I-4 serves all of these activity centers and is directly related to the economic development of these areas. The Ultimate Project and *Preferred Alternative* are expected to encourage and support growth within the activity centers. This is especially true for Orange County, which is expected to have the largest growth in population and employment in Central Florida. These effects on the regional population and labor force are considered positive and are consistent with regional growth

management plans.

Without improvement in levels of service, the No-Build Alternative would be less supportive of growth at the regional activity centers. The region's gross economy could, in time, gradually slow its projected growth in employment if tourism activities are not supported by transportation improvements to effectively transport residents, tourists and employees to and from entertainment venues, the Orlando CBD and other areas of activity.

9.13.2 Economic Conditions

Tourism is the leading industry in the project area, evidenced by the fact that services and retail trade account for over half of the employment in the region. In 1990, the services and retail trade sectors accounted for 61 percent of all employment for Orange County. In Seminole and Volusia Counties, these sectors accounted for 59 percent of the employment. Manufacturing, the third largest employment sector, accounted for 10 percent of the employment for Orange County, 12 percent for Seminole County and 11 percent for Volusia County.

The Ultimate Project and *Preferred Alternative* will provide the opportunity for tourist and commuter vehicles with two or more passengers to use HOV lanes, increasing mobility within the study area. The HOV lanes will provide increased mobility for motorists to get to SR 528 and SR 408. Tourists using SR 528 can access Orlando International Airport, Cape Canaveral and I-95. Increased mobility brings more economic development to the region as people and businesses decide to move to the region. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors and employees can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.

9.13.2.1 Employment Opportunity Impacts

The specific purpose of the Ultimate project and *Preferred Alternative* is to improve mobility on the Interstate in the primary commuter shed of the Orlando metropolitan area. The Ultimate Project will serve the developed business districts of Orlando, Maitland, Altamonte Springs and Lake Mary. *The Preferred Alternative will serve the developed business districts of Orlando, Maitland and Altamonte Springs.* The Ultimate project and *Preferred Alternative* will affect employment opportunities by enhancing access and mobility. The Ultimate project and *Preferred Alternative* will afford the opportunity for residents of Seminole County and especially Volusia County to commute to the activity centers along I-4 for improved career opportunities and salaries.

Adverse economical effects to existing businesses may result from the construction phase of the Ultimate project and *Preferred Alternative*. For further discussion on construction related impacts, refer to Section 9.14.11 of this report.

9.13.2.2 Income Impacts

An increase in mobility as a result of the improvements will provide residents with wider, more diverse and higher paying employment opportunities. In addition, income will be generated by construction of the Ultimate project and *Preferred Alternative*, such as construction related employment. Construction expenditures will occur over a number of years, directly creating new demand for construction materials and jobs. These direct impacts will then lead to indirect or secondary impacts as the production of output by firms in other industries increase to supply inputs to the construction industry. Both the direct and indirect impacts of construction expenditures cause firms in all industries to employ more workers to meet increases in demand; this leads to induced impacts as the additional wages and salaries paid to workers create higher consumer spending.

9.13.2.3 Regional Economic Impacts

A Cost Effective Analysis (CEA), or determination of benefit to cost ratios, was performed for this study and is documented in the *I-4 SAMR* (April 2000). The primary purpose of the CEA for this project is to define, in economic terms; the net benefits that can be expected to result if the proposed I-4 improvements are constructed. Basically, the analysis compares the cost of implementing the improvement against the road user benefits that can be expected to accrue from having the improvement in place. Costs as defined in this application are engineering, right-of-way, construction, maintenance and rehabilitation. Benefits are defined as the realized user benefits and salvage value costs.

The results of the CEA clearly indicate that the economic benefits that will be derived from traveling on the improved Interstate system will more than offset the costs of construction and maintaining the facility. It is also demonstrated that the project will benefit the overall region travel and timesaving costs.

9.14 ENVIRONMENTAL IMPACTS

9.14.1 Community Cohesion

An assessment was performed to identify impacts to neighborhoods and communities in the Ultimate project and *Preferred Alternative* study areas. Specific information on relocations and displacements was previously provided in Section 9.7 of this report. In terms of specific impacts related to neighborhoods and community cohesion, the following issues were examined:

Physical Barriers - Does the proposed action create a physical barrier that separates or splits integral community facilities?

Access Changes - Does the proposed action decrease neighborhood or community access?

Land Impacts - Does the project create large pieces of vacant lands within the community that are out of context to the neighborhood function?

Community Services - Does the project directly or indirectly impact community facilities that are important to the functionality and operation of the community?

9.14.1.1 Segment 1 - Bee Line Expressway to John Young Parkway

Ultimate and Existing Bee Line Interchange Alternatives

Segment 1 is a predominantly commercial area that was established following the construction of I-4. The seven I-4 interchanges within Segment 1 allow for access to the surrounding areas and have led to the development of the International Drive Resort Area and other activity and employment centers. Most of the roadway improvements are within FDOT existing right-of-way, with the exception of the interchange areas of SR 528, *Kirkman Road and Conroy Road*. The proposed ponds in Segment 1, ponds A-1 and A-7 (near SR 528 on Turkey Lake Road), pond B-2 (on Turkey Lake Road), and pond C-2 (near Sand Lake Road) are proposed in both options that tie to the ultimate and existing SR 528 interchange.

Physical Barriers - The proposed roadway improvements will not create additional physical barriers within Segment 1. The proposed ponds are not located within any designated neighborhood. Therefore, physical barrier impacts to the neighborhood due to the I-4 improvements will be minimal.

Access Changes - There are no adverse effects to traffic circulation in Segment 1 due to changes in limited access.

Land Impacts - Land for the proposed ponds and roadway improvements will be acquired resulting in existing buildings and landscaping being removed, which, in turn, will expose a limited portion of the surrounding areas to increased visual and noise sources. The acquisitions will involve one residential and several commercial land uses. Only one single family home is impacted due to proposed stormwater pond, pond B-2. This residence is not within a defined neighborhood and currently landlocked between Turkey Lake Road, Boo Boo's Lake and condominiums. None of the other neighborhoods identified along the I-4 corridor in Segment 1 are impacted. The proposed ponds will be fenced and become limited access areas.

Community Facilities - The proposed improvements associated with the ultimate SR 528 interchange will involve the direct use impact of the Places of Learning currently operated by the Orange County Sheriff's office. A partial acquisition will be required.

Overall, the neighborhood and community cohesion impacts for the Ultimate project are not expected to be significant within Segment 1.

Preferred Alternative - As indicated previously, this portion of Segment 1 is a predominantly commercial area that was established following the construction of I-4. Most of the roadway improvements are within FDOT existing right-of-way, with the exception of the interchange areas of *Kirkman Road and Conroy Road*.

Physical Barriers - The proposed roadway improvements will not create

additional physical barriers within this portion of Segment 1. The proposed ponds are not located within any designated neighborhood. Therefore, physical barrier impacts to the neighborhood due to the I-4 improvements will be minimal.

Access Changes - There are no adverse effects to traffic circulation in this portion of Segment 1 due to changes in limited-access.

Land Impacts - Land for the proposed ponds and roadway improvements will be acquired, resulting in the removal of existing buildings and landscaping, which in turn, will expose a limited portion of the surrounding areas to increased visual and noise sources. The acquisitions will involve no residential and several commercial land uses. The proposed ponds will be fenced and become limited-access areas.

Community Facilities - There are no adverse effects to community cohesion impacts for the *Preferred Alternative* are not expected to be significant within this portion of Segment 1.

Overall, the neighborhood and community cohesion impacts for the *preferred Alternative* are not expected to be significant within this portion of Segment 1.

9.14.1.2 Segment 2 - John Young Parkway to Ivanhoe Boulevard

The Preferred Alternative impacts the neighborhoods of *Angebilt, Holden Heights and Holden - Parramore*.

Kaley-Michigan Exfiltration Alternative

There are two neighborhoods within this area that are significantly impacted including: *Angebilt and Holden Heights*.

Angebilt

Specific impacts to the neighborhood and the community within *Angebilt* are described in the following paragraphs.

Physical Barriers - Ponds N-4 and N-5 are proposed in the *Preferred Alternative*; however, the proposed improvements do not create an additional physical barrier through this neighborhood. The proposed roadway improvements are within existing FDOT right-of-way and the proposed ponds are located immediately adjacent to the existing right-of-way, bordering the *Pineloch Elementary School and the Veranda Nursing Home*. Therefore, physical barrier impacts to the neighborhood due to the I-4 improvements will be minimal.

Access Changes - Access changes within the *Angebilt* neighborhood include the closure of 34th Street on both sides of US 441 (*Orange Blossom Trail*) and *Unitah Avenue at Michigan Street*. The closure of the 34th Street and *Unitah Avenue* may result in the change of land uses

for the parcels located along these roadways. These land use changes could include the migration of commercial parcels located near US 441 (Orange Blossom Trail) and Michigan Street to residential land uses. Vehicles accessing parcels along the roadways may increase traffic circulation through the neighborhood.

Land Impacts - Land for the proposed ponds N-4 and N-5 will be acquired resulting in the existing buildings and some of the landscaping being removed, which, in turn, will expose a limited portion of the neighborhood to increased visual and noise sources. The proposed ponds will be fenced and become limited access areas.

Community Services - The acquisitions will involve residential and commercial land uses including the House of Hope, a social service operation, and the Hare Krishna House.

Holden Heights

Specific impacts to the neighborhood and the community within Holden Heights are described in the following paragraphs.

Physical Barriers - The proposed roadway improvements will not create additional physical barriers. The proposed roadway and pond improvements are located immediately adjacent to the existing right-of-way. Therefore, physical barrier impacts to the neighborhood due to the I-4 improvements will be minimal.

Access Changes - Access changes in this area are described as follows
30th Street - Access to Orange Blossom Trail will be closed. The closure of 30th Street may change land uses for the parcels located along the roadway. In addition, vehicles gaining access to the parcels located along the roadway will circulate traffic through the neighborhood.

Avondale Avenue - Access to Kaley Street from Avondale Avenue will be blocked. Access along Avondale Avenue north of Kaley Street will be restricted and will result in a change in traffic circulation patterns. As this area is primarily residential, the access changes will not require changes to the existing land uses and may reduce the cut-through traffic.

Tallockas Avenue (south of Kaley Street) - Access to Kaley Street will be denied on both sides of the roadway.

Kaley-Michigan Interchange - The improvement in access due the proposed interchange configuration at Kaley Street and Michigan Street increases accessibility to Michigan Street, therefore decreasing the cut-through traffic along Kaley Street, a primarily residential area. This improved access may improve the economic development and quality of life in the Holden Heights area and, in turn, increase property values over time.

Land Impacts - The proposed improvements will involve the direct use of several residences, one commercial building, and one community service facility. Residential impacts are increased with the Kaley-Michigan Pond Alternative. Land for the proposed roadway and ponds will be acquired resulting in the existing buildings and some of the landscaping being removed, which, in turn, will expose a limited portion of the neighborhood to increased visual and noise sources. The proposed ponds will be fenced and become limited access areas.

The proposed impacts include areas considered as urban blight adjacent to the I-4 corridor and should not impact current renewal efforts by the community.

Community Services - The proposed improvements will involve the direct use of the Holden Heights Community Center and the limited-access relocation of Lois' Learning Center.

SR 408 Preferred Alternative

The Holden-Parramore neighborhood (including the Griffin Park Historic District) is significantly impacted. Additionally, the Orlando CBD, which is a large commercial district, is also significantly impacted by the Preferred Alternative.

Holden-Parramore

The Holden-Parramore/Griffin Park community has been targeted as part of the City of Orlando and Orlando Housing Authority's redevelopment program in coordination with the Parramore Heritage Development Corporation (PHDC), Community Redevelopment Agency (CRA) and the Downtown Development Board (DDB). The objective of the redevelopment proposed by the City of Orlando is to reunite the Holden-Parramore and Griffin Park neighborhoods, thereby improving the opportunities for social interaction, economic development and quality of life for its residents.

Physical Barriers - The existing I-4/SR 408 interchange ramp connector presents a physical barrier within the neighborhood of Holden-Parramore, resulting in the isolation of Griffin Park Historic District. The Preferred Alternative proposes to reconfigure the interchange to eliminate this physical barrier between the neighborhoods and open the area to redevelopment as proposed by the City of Orlando.

The Preferred Alternative has greater noise and visual effects to the adjacent neighborhood due to the proposed flyover bridge structure.

Access Changes - The improvement in traffic operation of the proposed I-4/SR 408 interchange may decrease the cut-through traffic through the adjacent neighborhoods. The following access changes result from the Preferred Alternative.

For the Holden-Parramore area, Figures 9.14.1.2.1 and 9.14.1.2.2 present access from Jones High School to I-4 for the No-Build and Build scenarios, respectively. As shown in Figure 9.14.1.2.2, the Preferred Alternative will provide access to I-4 at Orange Blossom Trail/SR 408, Anderson Street (eastbound only) and Hughey Avenue (westbound only).

Figures 9.14.1.2.3 and 9.14.1.2.4 present access to Jones High School from I-4 for the No-Build and Build scenarios, respectively. As shown in Figure 9.14.1.2.4, Jones High School can be accessed from the Anderson Street westbound off-ramp, and SR 408 westbound off-ramp. In addition, travelers in the HOV lanes may exit I-4 at the South Street off-ramps (eastbound and westbound). The Gore Street off-ramps are eliminated with the proposed improvements.

Griffin Park - The construction of the existing highway altered the access to Griffin Park. Access to Griffin Park is fairly restricted to Callahan Drive/Conley Street via Parramore Avenue. Access via Avondale Avenue is blocked. Only partial access exists at Division Avenue and Callahan Drive due to the bridge pier locations. With the Preferred Alternative, Callahan Drive will become a cul-de-sac and access to Division Avenue will not be maintained at Callahan Drive. All existing access to Griffin Park will remain. In addition, Avondale Avenue access to Gore Street will be opened.

Gore Street Ramp Elimination - The I-4 westbound exit-ramp to Gore Street will be eliminated, decreasing the cut-through traffic to adjacent neighborhoods. However, an I-4 westbound on ramp will be provided. The Gore Street ramp will result in the closure of Avondale Avenue from Columbia Street to Hiller Street. Properties along Conroy Street, Indiana Street and Grand Avenue will be accessed through Parramore Avenue.

Long Street Limited Access - Access along Long Street will be blocked east of Parramore and restricted between Orange Blossom Trail and Westmoreland Drive. Easy Avenue, Grove Avenue and Woods Avenue will become cul-de-sacs and will not have direct access to Long Street. The acquisition of landlocked parcels will result in the separation of homes, which will affect the overall identity of this portion of the neighborhood.

Lake Cherokee - The elimination of the Gore Street off-ramp and access from I-4 to the SR 408 off-ramp to Orange Avenue ramps will result in a change in traffic circulation through the neighborhood. Residents will be required to travel to Kaley/Michigan Streets, Anderson Street (eastbound only) or Hughey Avenue (westbound only). Access from Lake Cherokee to I-4 is provided for the No-Build and Build scenarios on Figures 9.14.1.2.5 and 9.14.1.2.6, respectively. General use lane travelers will gain access to I-4 at Kaley/Michigan Street, Anderson

Street (eastbound only) and Hughey Avenue (westbound only). HOV lane travelers will be able to access I-4 at the South Street interchange.

Figures 9.14.1.2.7 and 9.14.1.2.8 illustrate access routes to Lake Cherokee from I-4. As shown in Figure 9.14.1.2.8, access from I-4 will be provided at Anderson Street (westbound only) and Garland Avenue (eastbound only). Access is eliminated from I-4 along SR 408 to Orange Avenue and along I-4 at the eastbound Anderson Street off-ramp.

Land Impacts - Land for the proposed roadway improvements and ponds will be acquired resulting in the existing buildings and some of the landscaping being removed, which, in turn, will expose a limited portion of the neighborhood to increased visual and noise sources. The proposed ponds will be fenced and become limited access areas.

The proposed improvements will involve the direct use impact of several single and multi-family residences and commercial buildings within Holden-Parramore due to roadway and pond impacts.

The Preferred Alternative proposes Ramp D as a flyover ramp. Although the Preferred Alternative has direct use impacts to Griffin Park Historic District, the opportunities for redevelopment positively offset the property impacts.

Community Services - The proposed improvements involve direct use of the Tuberculosis (T.B.) Shelter managed by the Coalition for the Homeless, the Lakeside Alternative, and the Bethel Baptist Church. In addition, the Preferred Alternative involves the direct use of two residential buildings and the community and recreational area of Griffin Park.

Orlando Central Business District (CBD)

The types of land uses that have developed in the immediate area of the Preferred Alternative adjacent to I-4 consist of primarily commercial and industrial sites. The impacts are associated with the proposed SR 408 ramps, the realignment of Hughey Avenue and Garland Avenue and pond P-8. This is not a primarily residential area; therefore, community cohesion issues are minimal in this area.

Physical Barriers - The widening of I-4 presents a wider barrier between the west and east sides of I-4. Efforts to redevelop the west side of I-4 along Church Street have had limited success due partially to the separation caused by the I-4 structure through downtown, which is perceived to discourage pedestrians from accessing those businesses.

Access Changes - For access changes due to the Preferred Alternative and the elimination of the Robinson Street ramps in the downtown Orlando area, refer to Section 9.23. The changes in access through the downtown Orlando area will not greatly affect the existing and future land uses.

Figures 9.14.1.2.9 and 9.14.1.2.10 present access onto I-4 from Lake Eola for the No-Build and Build scenarios, respectively. As shown in Figure 9.14.1.2.10, the Preferred Alternative provides access for vehicles traveling in the general use lanes at Garland Avenue (eastbound off-ramp), Amelia Street (eastbound off-ramp, westbound on-ramp), Hughey Avenue (westbound on-ramp), and Anderson Street (eastbound on-ramp, westbound off-ramp). In addition, vehicles utilizing the HOV lanes will be able to access I-4 at South Street (eastbound and westbound).

Figures 9.14.1.2.11 and 9.14.1.2.12 present access to Lake Eola from I-4 for the No-Build and Build scenarios, respectively. Vehicles traveling eastbound from I-4 in the general use lanes to Lake Eola will either exit the highway at the Garland Avenue off-ramp or the Amelia Street off-ramp. Westbound general use lane travelers will exit the highway at Anderson Street. Eastbound and westbound vehicles in the HOV lanes will have the opportunity to exit at the South Street ramps. The Preferred Alternative will eliminate the eastbound off-ramp at Anderson Street and the westbound off-ramp at Robinson Street.

Land Impacts - There are no land impacts with the proposed improvements.

Community Services - The proposed improvements will result in the direct use of the Orlando Day Nursery. In addition, Magnolia Towers, a multi-story retirement facility adjacent to SR 408, will also be impacted by the improvements and will directly affect the facility's parking area.

Colonial Drive (SR 50) Preferred Alternative

The impacted areas around the SR 50 interchange include portions of Lake Dot, College Park and Garland Avenue. This area is primarily commercial and has no impacts to residential land uses. Therefore, community cohesion issues are minimal in this area.

Physical Barriers - The proposed roadway improvements will not create additional physical barriers. Therefore, physical barrier impacts to these neighborhoods due to the Preferred Alternative will be minimal.

Access Changes - There are access changes on Garland Avenue and Concord Street.

Garland Avenue Limited Access - Access along Garland Avenue will be restricted between SR 50 and Marks Street. Those properties without any other access will receive severance damages for loss of existing access and may require relocation.

Concord Street - The proposed improvements will result in the closure of Concord Street at Garland Avenue. The change in access may result in a change in land use for parcels located along the roadway. In addition, vehicles accessing parcels along the roadway will be recirculated through other local streets.

Land Impacts - The Preferred Alternative impacts the north side of SR 50, impacting the Judge Cheney House (Colonial Bank property) and several businesses.

Land for the proposed roadway improvements will be acquired resulting in existing buildings and landscaping being removed, which, in turn, will expose a limited portion of the surrounding areas to increased visual impacts.

Community Facilities - The Preferred Alternative will not impact any community facilities within this portion of Segment 2.

9.14.1.3 Segment 3 - Ivanhoe Boulevard to Lee Road

Community cohesion impacts to the College Park neighborhood are described in the following paragraphs.

Physical Barrier - The College Park neighborhood was originally split by the construction of I-4 in the early 1960s. The existing right-of-way is the narrowest in the Preferred Alternative corridor through this neighborhood. The Preferred Alternative will not create additional physical barriers. Therefore, physical barrier impacts to these neighborhoods due to the I-4 improvements will be minimal.

Access Changes - The access changes in this segment are limited to Cornell Avenue.

Cornell Avenue - Improvements to the Princeton Street interchange will acquire right-of-way on Cornell Avenue south of Princeton Street. In addition, Cornell Avenue will be closed at Par Street. The closing of Cornell Avenue may alter the land use of parcels located near Par Street. In addition, traffic circulation patterns through the neighborhood may be altered.

Land Impacts - The Preferred Alternative will involve the direct use of residences, commercial buildings and several community services. Land for the proposed roadway and ponds will be acquired resulting in the existing buildings and some of the landscaping being removed, which, in turn, will expose a limited portion of the neighborhood to increased visual and noise sources. The proposed ponds will be fenced and become limited access areas.

Community Services - The acquisitions will involve residential and commercial land uses including several community services.

The impacted community facilities are listed below.

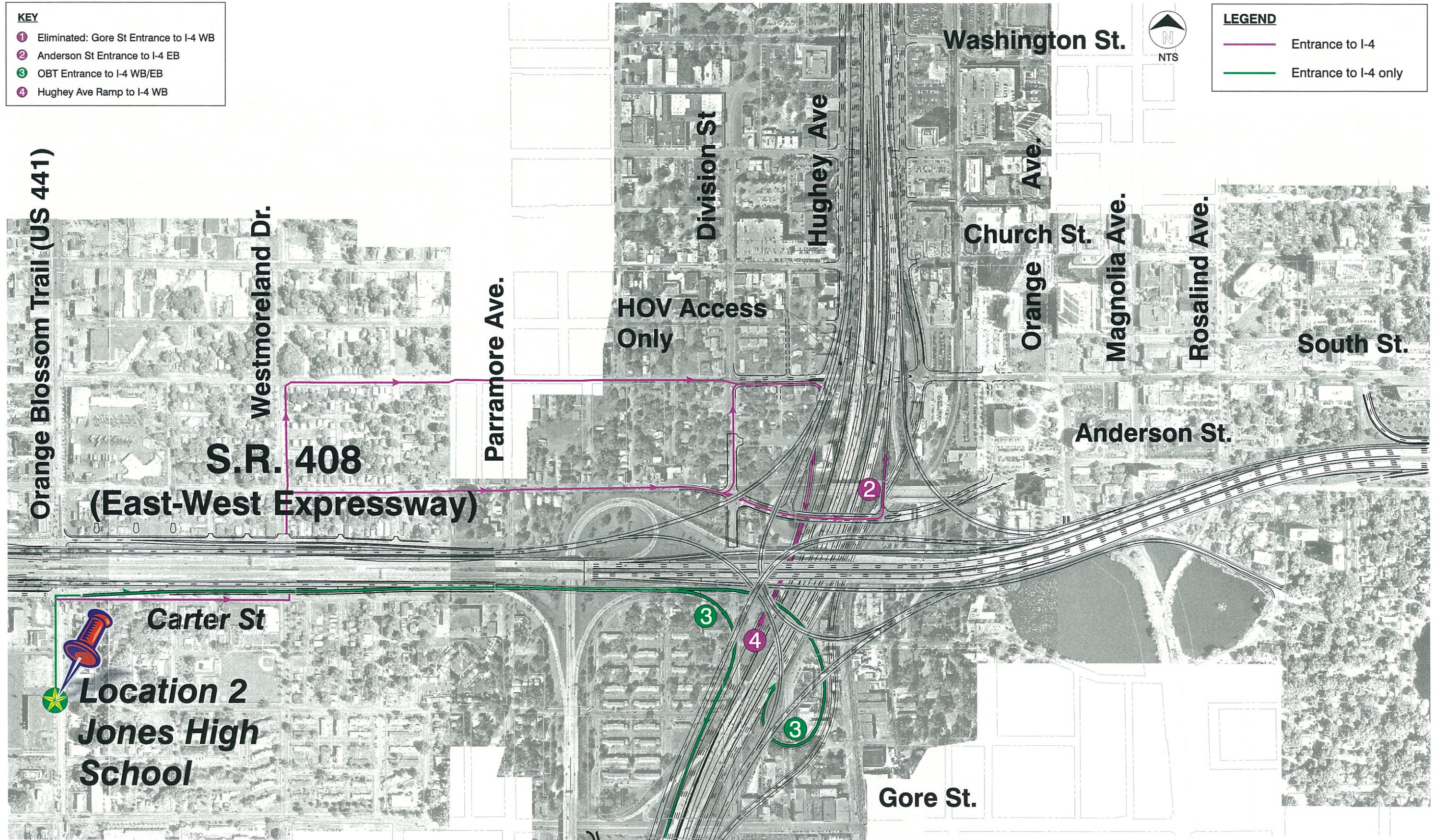
- ◆ Templo Evangelistico Del Nazareno Church,
- ◆ Calvary Assembly of God, and
- ◆ Killarney Elementary School

KEY

- ❶ Eliminated: Gore St Entrance to I-4 WB
- ❷ Anderson St Entrance to I-4 EB
- ❸ OBT Entrance to I-4 WB/EB
- ❹ Hughey Ave Ramp to I-4 WB

LEGEND

- Entrance to I-4
- Entrance to I-4 only



I-4 PD&E Study - Section 2

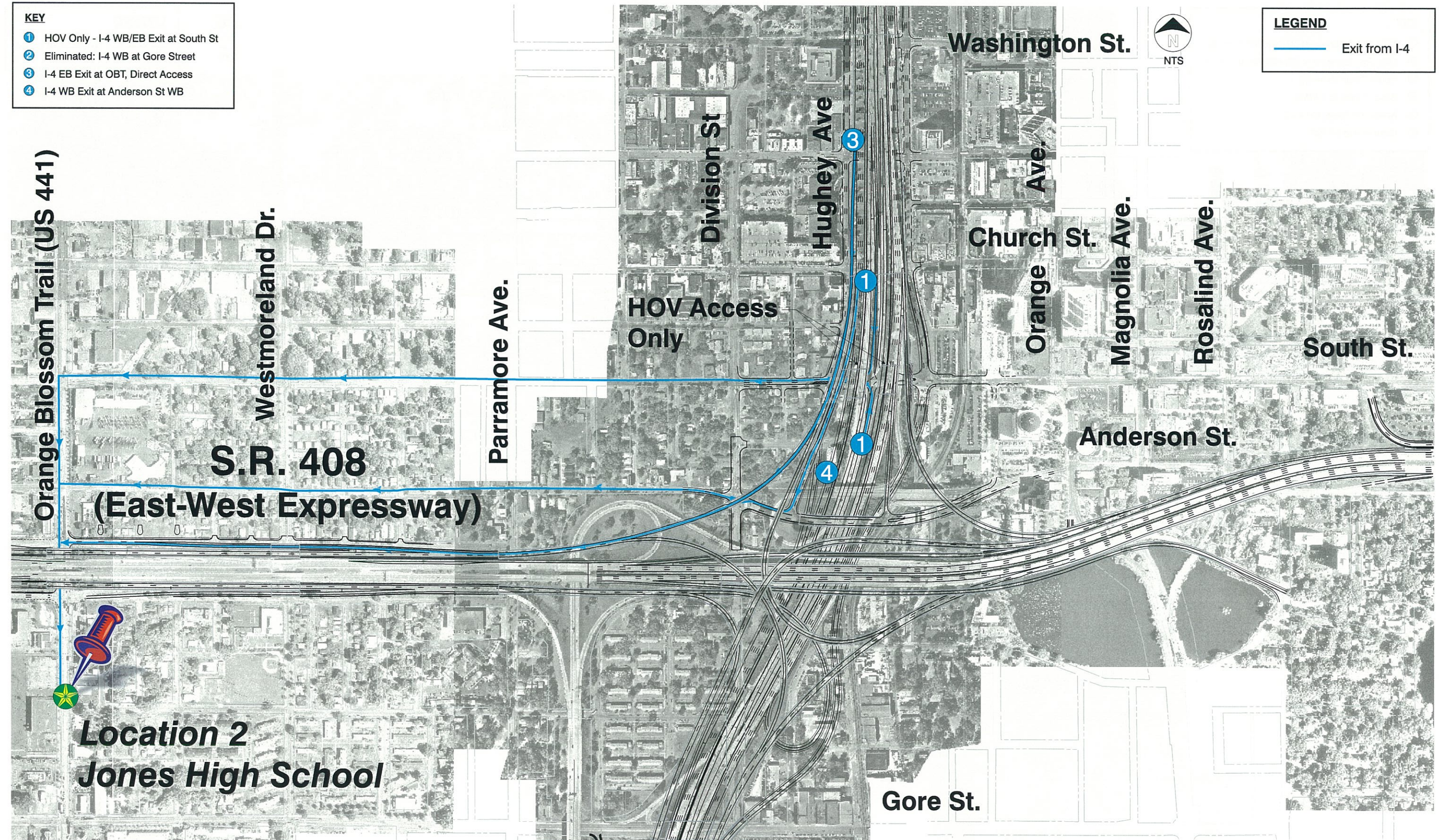
Holden Parramore - Build Proposed Access from Jones High School to I-4

Figure 9.14.1.2.2



Figure 9.14.1.2.3
Holden Parramore - No Build Existing Access from I-4 to Jones High School

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Holden Parramore - Build Proposed Access from I-4 to Jones High School

Figure 9.14.1.2.4

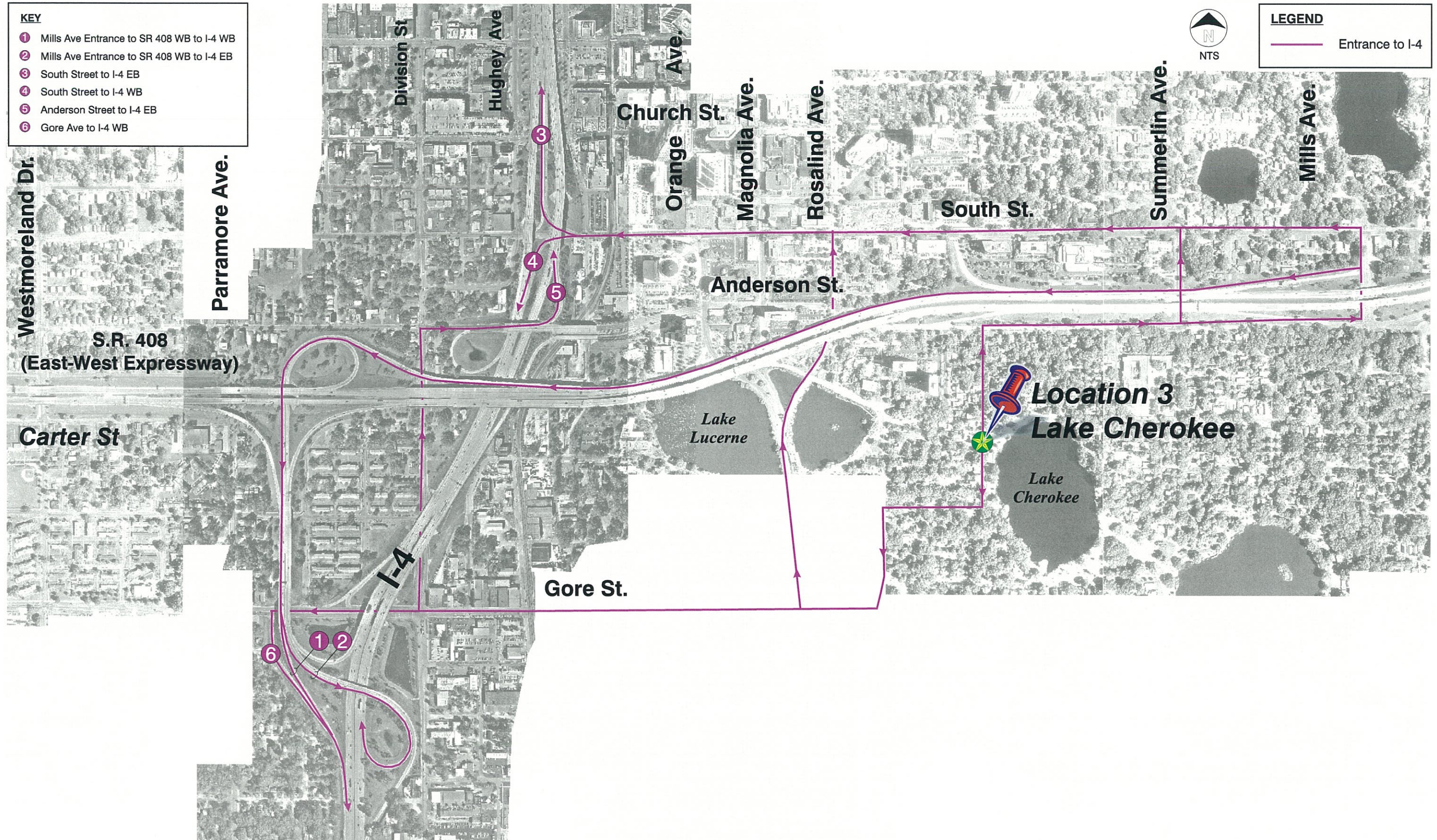
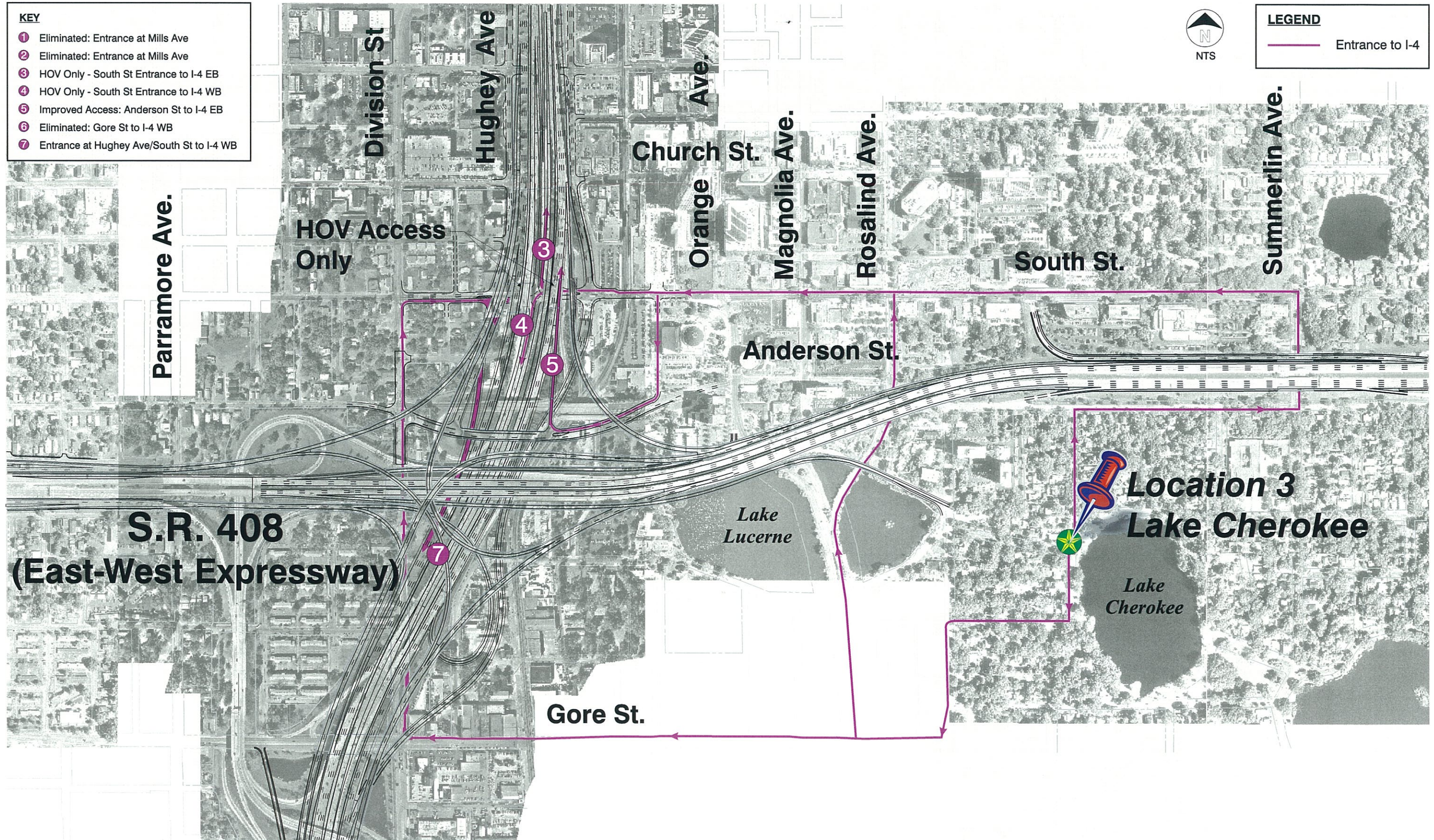


Figure 9.14.1.2.5
Lake Cherokee - No Build Existing Access to I-4 from Lake Cherokee

I-4 PD&E Study - Section 2



- KEY**
- ① Eliminated: Entrance at Mills Ave
 - ② Eliminated: Entrance at Mills Ave
 - ③ HOV Only - South St Entrance to I-4 EB
 - ④ HOV Only - South St Entrance to I-4 WB
 - ⑤ Improved Access: Anderson St to I-4 EB
 - ⑥ Eliminated: Gore St to I-4 WB
 - ⑦ Entrance at Hughey Ave/South St to I-4 WB

- LEGEND**
- Entrance to I-4



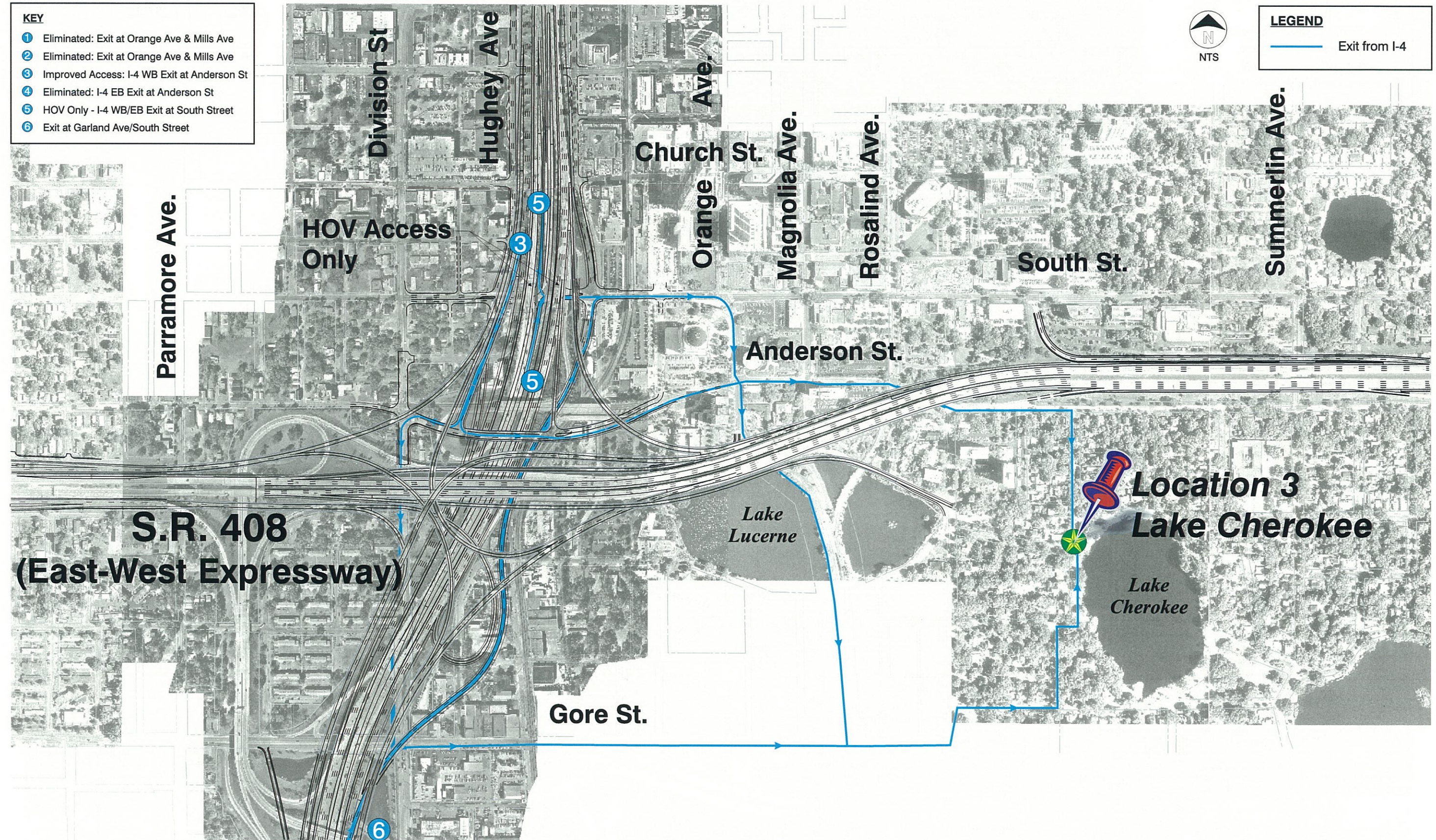
I-4 PD&E Study - Section 2

Figure 9.14.1.2.6
Lake Cherokee - Build Proposed Access to I-4 from Lake Cherokee



Figure 9.14.1.2.7
 Lake Cherokee - No Build Existing Access from I-4 to Lake Cherokee

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Lake Cherokee - Build Proposed Access from I-4 to Lake Cherokee

Figure 9.14.1.2.8

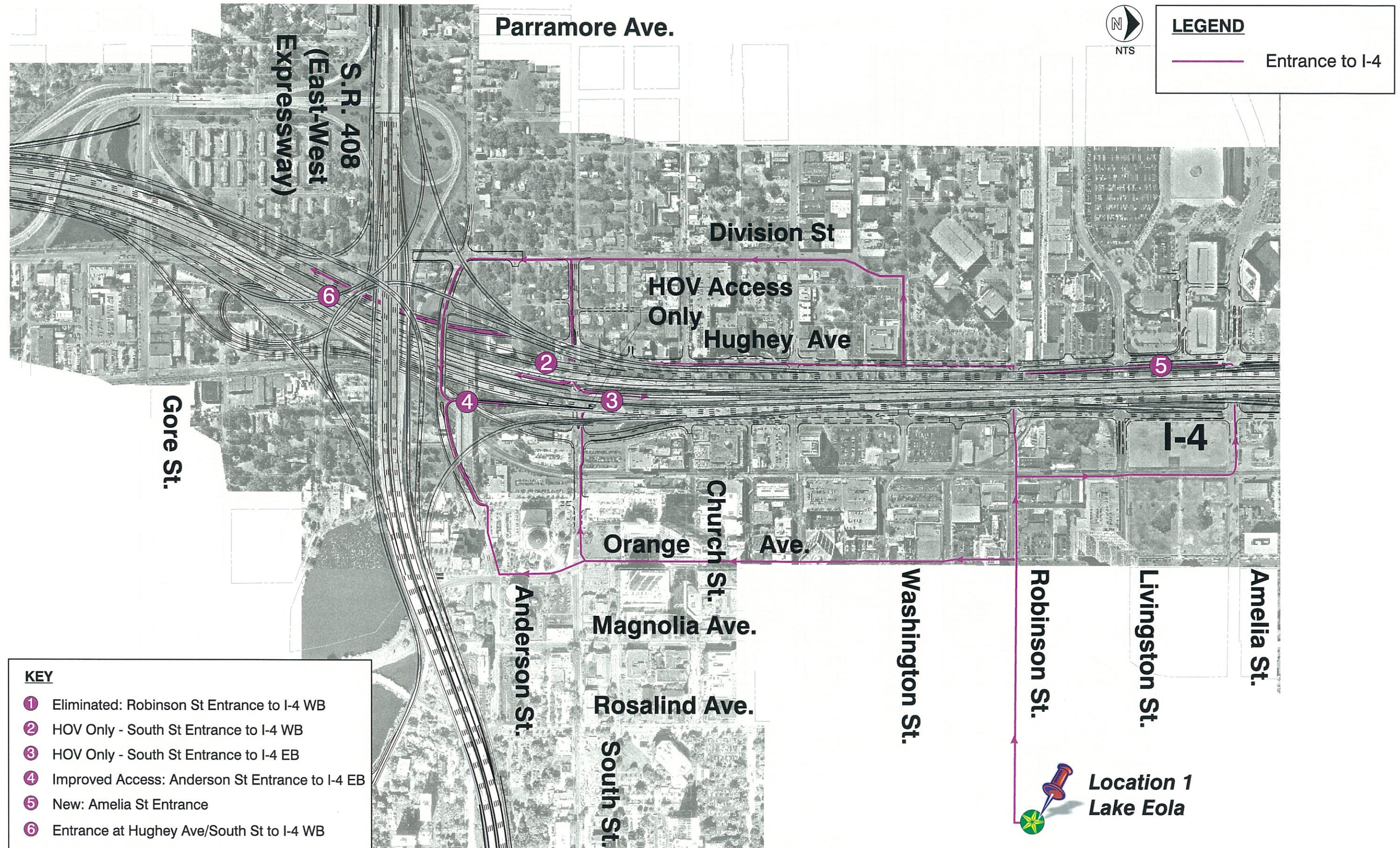
| KEY | |
|-----|------------------------------------|
| ① | Robinson Street Entrance to I-4 WB |
| ② | South Street Entrance to I-4 WB |
| ③ | South Street Entrance to I-4 EB |
| ④ | Anderson Street Entrance to I-4 EB |



| LEGEND | |
|--------|-----------------|
| | Entrance to I-4 |



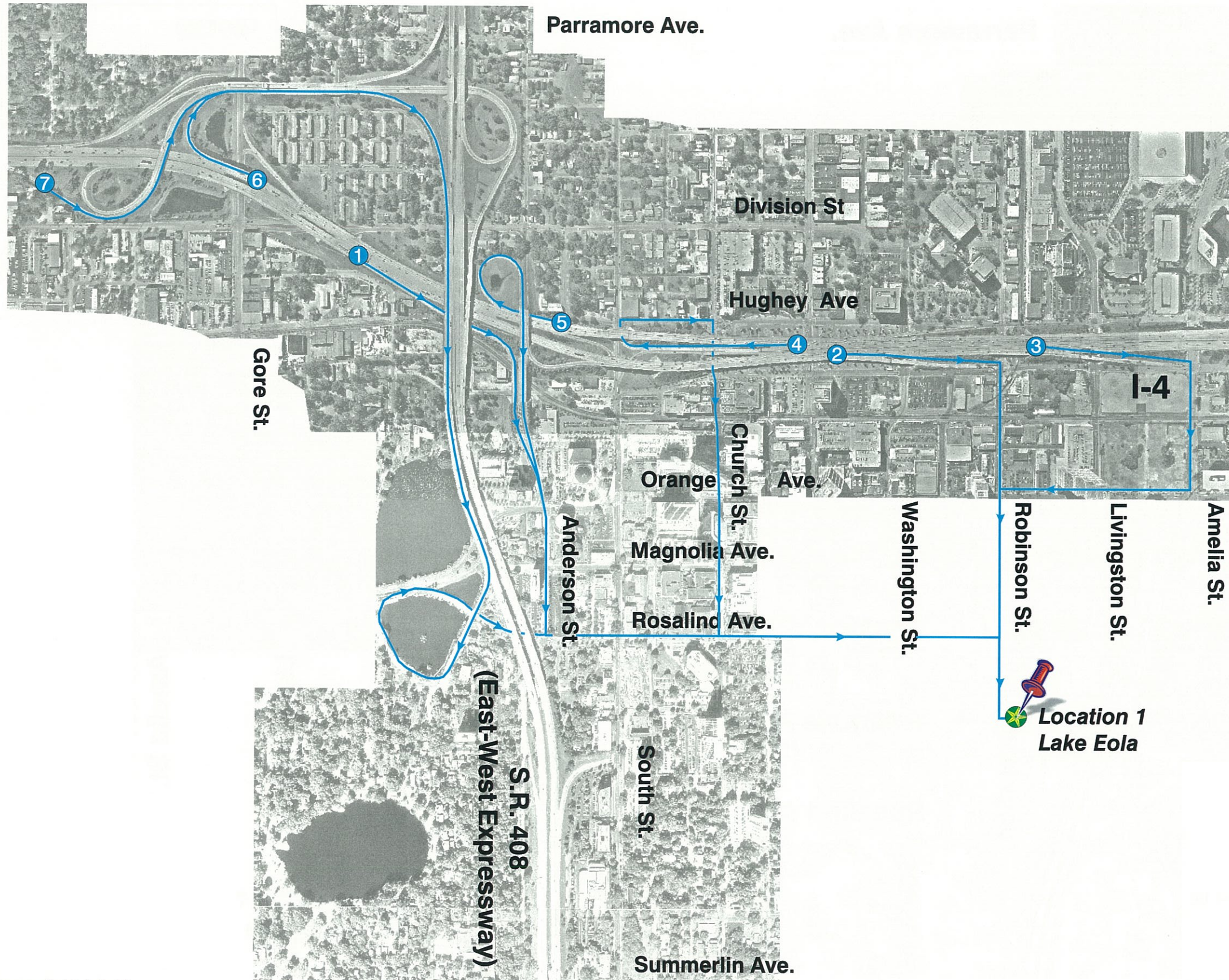
Figure 9.14.1.2.9
 Downtown Orlando - No Build Existing Access to I-4 from Lake Eola



I-4 PD&E Study - Section 2

Downtown Orlando - Build Proposed Access to I-4 from Lake Eola

Figure 9.14.1.2.10



LEGEND

— Exit from I-4

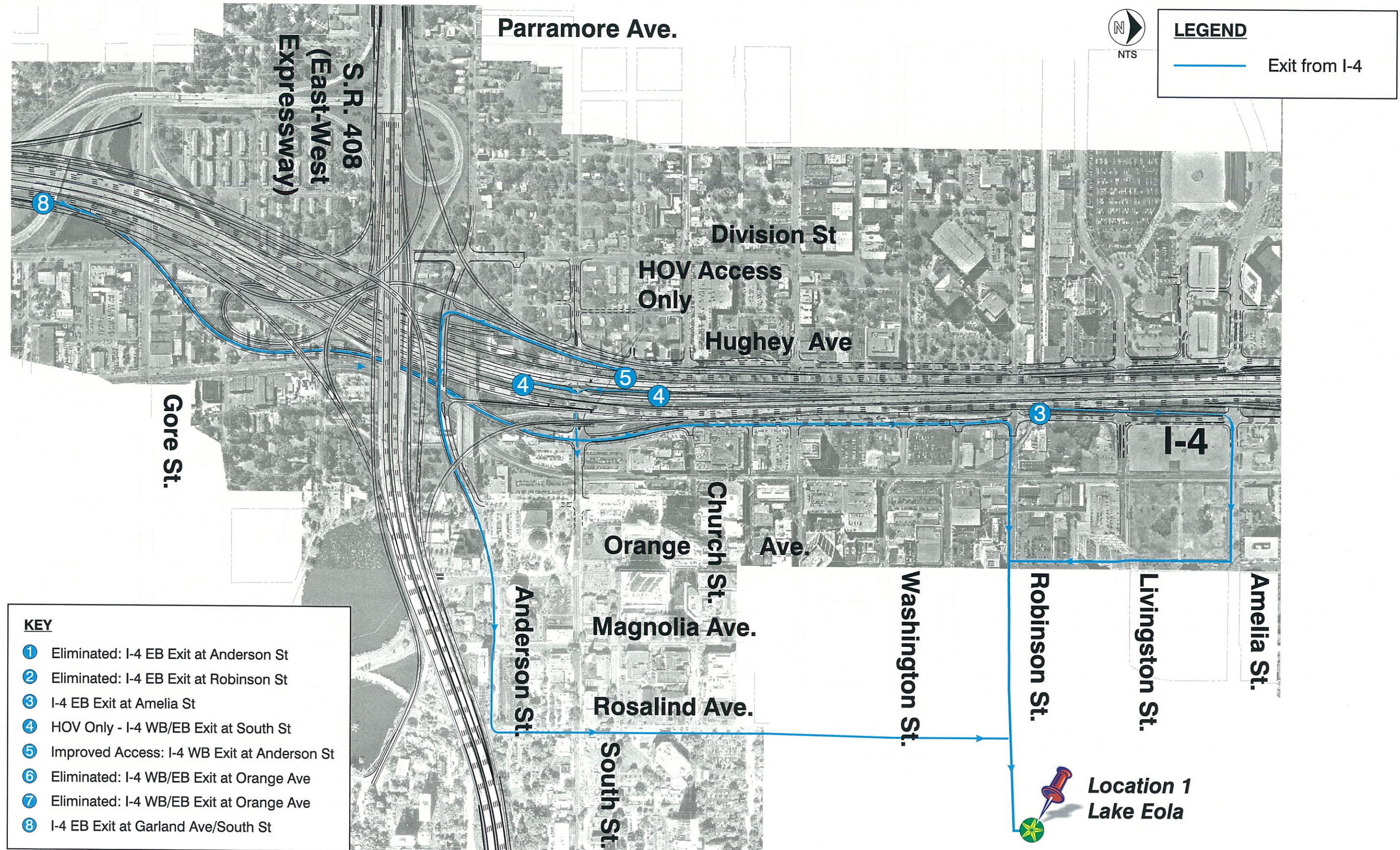


KEY

- ① I-4 EB Exit at Anderson Street
- ② I-4 EB Exit at Robinson Street
- ③ I-4 EB Exit at Amelia Street
- ④ I-4 WB Exit at South Street
- ⑤ I-4 WB Exit at Anderson Street
- ⑥ I-4 WB Exit to SR 408 EB to Orange Ave
- ⑦ I-4 EB Exit to SR 408 EB to Orange Ave

Figure 9.14.1.2.11
Downtown Orlando - No Build Existing Access from I-4 to Lake Eola

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 9.14.1.2.12
 Downtown Orlando - Build Proposed Access from I-4 to Lake Eola

9.14.1.4 Segments 4 & 5 - Lee Road to US 17-92***Preferred Alternative - Lee Road to Maitland Boulevard***

This portion of Segment 4 is predominantly a mix of residential, commercial/office, and industrial designations. Most of the roadway improvements are within FDOT existing right-of-way, with the exception of the interchange areas of Lee Road and Maitland Boulevard. Neighborhoods located within this portion of the Preferred Alternative will not be impacted adversely.

Physical Barriers - The proposed roadway improvements will not create additional physical barriers within this portion of Segment 4. The proposed ponds are not located within any designated neighborhood. Therefore, physical barrier impacts to the neighborhood due to the Preferred Alternative will be minimal.

Access Changes - There are no adverse effects to traffic circulation in this portion of Segment 4 due to changes in limited-access.

Land Impacts - Land for the proposed ponds and roadway improvements will be acquired, resulting in the removal of existing buildings and landscaping, which, in turn, will expose a limited portion of the surrounding areas to increased visual and noise sources. The acquisitions will involve no residential and several commercial land uses. The proposed ponds will be fenced and become limited-access areas.

Community Facilities - The impacts to the community services in this portion of Segment 4 involve impacts to the existing structure at the Nova Southeastern University. The Nova facility has a covered west entrance to the main building facing I-4. This covered entrance is impacted; however, the primary building is not impacted by the proposed roadway improvements. The impacts to this community facility will not affect the services provided to the surrounding neighborhoods.

Overall, the neighborhood and community cohesion impacts for the Preferred Alternative are not expected to be significant within this portion of Segment 4.

There are several neighborhoods from Maitland Boulevard to US 17-92 that are impacted by the Ultimate project: the Spanish Trace Apartments, Palm Springs and Sanlando Springs. These neighborhoods are not located within high minority or poverty level census tracts. The land use adjacent to the I-4 corridor is primarily commercial within Segments 4 & 5. Therefore, community cohesion issues are minimal in this area.

Physical Barriers - The proposed improvement does not create an additional physical barrier through the area. Therefore, physical barrier impacts to the adjacent neighborhoods due to the I-4 improvements will be minimal.

Access Changes - There are no adverse effects to traffic circulation due to changes in limited access.

Land Impacts - Land will be acquired resulting in existing buildings and some landscaping being removed, which, in turn, will expose a limited portion of neighborhoods to increased visual and noise sources. The proposed ponds will be fenced and become limited access areas. The majority of the residential impacts are due to proposed Ponds CC-2, FF-3, and FF-4. Pond CC-2 requires a direct use impact to the Spanish Trace Apartments on Wymore Road. Impacts to the neighborhoods in this area are common to all proposed alternatives. There will be minor impacts to commercial buildings, including hotels, restaurants and gas stations.

In addition, right-of-way will also be required for a proposed Park & Ride lot at Central Parkway. Land use surrounding the Park & Ride lot may change to accommodate motorists traveling there.

Community Services - The acquisitions required for the Ultimate Project will involve residential and commercial land uses including several community services. However, the impacts to the community services in this area do not involve relocations or impacts to existing structures. The impacts to these community facilities will not affect the services provided to the surrounding neighborhoods.

9.14.1.5 Segment 6 - US 17-92 to SR 472***Ultimate and Existing SR 472 Interchange Alternatives***

Segment 6 is predominantly rural with pockets of residential and commercial land uses. Most of the roadway improvements are within FDOT existing right-of-way, with the exception of the interchange areas of US 17-92, Dirksen Drive/DeBary Avenue, the proposed Park & Ride lot at Enterprise Road, Saxon Boulevard and SR 472. Ponds TT-8, UU-2, VV-2 and VV-3, are proposed in vacant areas. Impacts are common to both tying to existing and tying to the ultimate improvements alternatives. As there are no impacts within a designated neighborhood, community cohesion issues are minimal.

Physical Barriers - The proposed roadway improvements will not create additional physical barriers within Segment 6. Therefore, physical barrier impacts to the neighborhood due to the I-4 improvements will be minimal.

Access Changes - There are no adverse effects to traffic circulation in Segment 6 north of Orange Boulevard due to changes in limited access.

Orange Boulevard Ramp Relocation - The I-4 westbound entrance-ramp and I-4 eastbound exit ramp to Orange Boulevard will be relocated to US 17-92. No direct access to Orange Boulevard will be provided. Additional access to replace the Orange Boulevard ramps will be provided with the proposed US 17-92 interchange modifications. The elimination of the Orange Boulevard access will not affect adjacent neighborhoods significantly, but may require the rerouting of truck routes used by the commercial and industrial development in the area. This relocation of the I-4 ramps from Orange Boulevard to US 17-92 will reduce the number of vehicles crossing the CSX Railroad located between US 17-92 and Orange Boulevard.

Land Impacts - Land for the proposed ponds and roadway improvements will be acquired resulting in landscaping being removed, which, in turn, will expose a limited portion of the surrounding areas to increased visual and noise sources. The acquisitions will involve several commercial businesses for the proposed Park & Ride lot on Enterprise Road. The proposed ponds will be fenced and become a limited access area.

Community Facilities - Within the Enterprise Industrial Park is the Lord of Life Lutheran Church. Several attempts to contact this organization were initiated. No information is available on the services provided at this facility.

The neighborhood and community cohesion impacts are not expected to be significant within Segment 6.

9.14.2 Land Use Impacts

The Ultimate project and *Preferred Alternative* are not expected to substantially alter future land use designation as established in the regional and local government comprehensive plans. Only a minimal amount of vacant land exists along the Ultimate project corridor, primarily in Segments 5 and 6; consequently, most of the land use patterns have already been established. The generalized future land use maps have been previously presented on Figure 4.4.1.2.

The Ultimate project improvements will require approximately 210 to 241 acres of right-of-way for public transportation use. Approximately 109 to 122 acres are required for roadway and approximately 102 to 119 acres are required for stormwater ponds. Additional impacts to future land use may occur due to access changes resulting from the addition and removal of ramps along the Interstate.

The Preferred Alternative will require approximately 97 acres of right-of-way for transportation use. Approximately 57 acres are required for roadway and approximately 40 acres are required for stormwater ponds.

Indirect land use impacts may occur due to residents moving away from their homes as the Interstate and stormwater ponds encroach on the neighborhoods. In addition, the HOV lanes may facilitate residents moving farther away from employment centers adding to urban sprawl.

The following paragraphs summarize the potential land use impacts by project segments.

9.14.2.1 Segment 1 - Bee Line Expressway to John Young Parkway

Land use impacts within this portion of Segment 1 are expected to be minimal. There may be some localized land use changes because of additional right-of-way needed for roadway and ponds. However, the impacts will not significantly affect the future land use plans for this area.

Interchange modifications are not expected to impact the land use within the surrounding areas.

Segment 1 - Ultimate Project (SR 528 to Kirkman Road)

Proposed future land use activities within Segment 1 from SR 528 (Bee Line Expressway) to Kirkman Road indicate an increase in commercial, office, and industrial use development along the I-4 corridor.

Segment 1 - Preferred Alternative (Kirkman Road to John Young Parkway)

The proposed future land use activities within Segment 1 from Kirkman Road to John Young Parkway are similar to the portion of Segment 1 from SR 528 (Bee Line Expressway) to Kirkman Road. The future land use indicated an increase in commercial, office, and industrial use development along this portion of the project corridor.

Land use impacts are expected to be minimal. There may be some localized land use changes as a result of additional right-of-way needed for roadway and ponds. However, the impacts will not affect the future land use plans for this area.

Interchange modifications are not expected to impact the land use within the surrounding areas.

9.14.2.2 Segment 2 - John Young Parkway to Ivanhoe Boulevard
The proposed future land use plans along the project corridor in Segment 2 include large tracts of land reserved for residential, industrial, commercial/office and public facilities.

Segment 2 may experience the largest land use impacts of all the segments along the project corridor. This is primarily due to the reconstruction of the I-4/SR 408 interchange. Modifications to the Kaley/Michigan interchange and SR 50 interchange are also expected to incur land use changes.

The modifications to the Kaley/Michigan interchange provide increased access to the Interstate, which may facilitate commercial intrusion into the neighborhoods. In addition, the additional right-of-way required for the roadway and ponds may also cause intrusion into the neighborhoods, providing potential opportunities for land use transitions. However, these changes in land uses will be localized and are not expected to change the type of land use patterns significantly.

Modifications to the I-4/SR 408 interchange redirect the access to downtown Orlando and result in a number of residential and business relocations.

The SR 50 interchange improvements will impact several businesses, community facilities and historic resources. Localized land use impacts surrounding these relocations may occur. However, these localized land use impacts are not expected to be significant.

9.14.2.3 Segment 3 - Ivanhoe Boulevard to Lee Road

Land use within Segment 3 is primarily designated as residential, with some office and commercial sites located within the large residential sections and three conservation sites.

The proposed improvements will result in additional right-of-way acquisition for roadway and ponds. This additional right-of-way will impact several residences, commercial buildings and community services located along the Preferred Alternative corridor. Localized land use impacts surrounding these relocations may occur.

Community access in Segment 3 will essentially stay the same. Modifications to the Ivanhoe Boulevard interchange may cause localized land use impacts from the change in access at this interchange. However, these localized land use impacts are not expected to be significant.

9.14.2.4 Segments 4 and 5 - Lee Road to US 17-92**Segment 4 - Preferred Alternative (Lee Road to north of Maitland Boulevard)**

Land use in the portion of Segment 4 from Lee Road to Maitland Boulevard is a mix of residential, commercial/office, public facility, and agricultural designations. The primary designations directly adjacent to the corridor in this portion of Segment 4 are residential and commercial/office.

Land use impacts are expected to be minimal. There may be some localized land use changes as a result of additional right-of-way acquisition for roadway and ponds. However, the impacts will not significantly affect the future land use plans for this area.

Interchange modifications are not expected to impact the land use within the surrounding areas.

Segments 4 and 5 - Ultimate Project (north of Maitland Boulevard to US 17-92)

Land use in this segment is a mix of residential, commercial/office, public facility and industrial designations. The primary designations directly adjacent to the corridor in this segment are residential and commercial/office.

Land use impacts within these segments are expected to be minimal. There may be some localized land use changes as a result of additional right-of-way needed for roadway and ponds. However, the impacts will not significantly affect the future land use plans for this area.

Interchange modifications within the segments are not expected to impact the land use within the surrounding areas.

9.14.2.5 Segment 6 - US 17-92 to SR 472

This segment is primarily designated for conservation and residential land use plans, with a few areas for office, commercial and industrial use.

Land use impacts within this segment are expected to be minimal. There may be some localized land use changes as a result of additional right-of-way needed for roadway and ponds; however, the impacts will not significantly affect the future land use plans for this area.

The primary interchange improvement proposed in this segment will be at US 17-92. The existing ramps at Orange Boulevard will be removed and replaced by reconstructed ramps to US 17-92, providing access to and from I-4 in all directions. The modified interchange at US 17-92 may facilitate development in the area.

9.14.3 Cultural Resources

Cultural resources with the greatest potential to be impacted or adversely affected by the Ultimate project and Preferred Alternative include a total of 19 NRHP-listed or NRHP-eligible cultural resources. These include six historic districts and 13 individual properties. Effects to historic districts or individual resources within the project corridor would be primarily visual and associated with the introduction of new ramps, noise walls and in some areas elevated general use lanes and HOV lanes. There are direct use impacts to several cultural resources as well as access impacts and noise level increases.

To evaluate historic structures, districts and archaeological sites an Area of Potential Effect (APE) was determined by the type of improvement under consideration and the possible effects these improvements could have on significant resources. This determination also considered the changing urban/commercial and residential character of the project area and the large number of historic resources that can be found in this region. Potential effects to these resources include physical impacts as well as visual, noise, traffic and light. Previous cultural resource assessment studies (CRAS) have shown that potential visual effects can be the most far-reaching. As a result, the APE for historic structures and districts takes into consideration the area within which potential visual effects from the proposed improvements may be observed.

9.14.3.1 Historic Resources

Preliminary effects to historic properties and districts listed on or eligible for the listing on the NRHP were evaluated during this phase of the project. At this time, potential visual, noise and access impacts were identified as well as the direct use of resources. These impacts are detailed in the *Final Section 4(f) Evaluation* (August 2002). Figure 9.14.3.1.1 shows the locations of the historic resources that were evaluated for potential effects relative to the alternative alignments. The potential effects to historic resources in each segment are described and summarized in Table 9.14.3.1.1. All identified resources, including those with no potential effects, are included in the table.

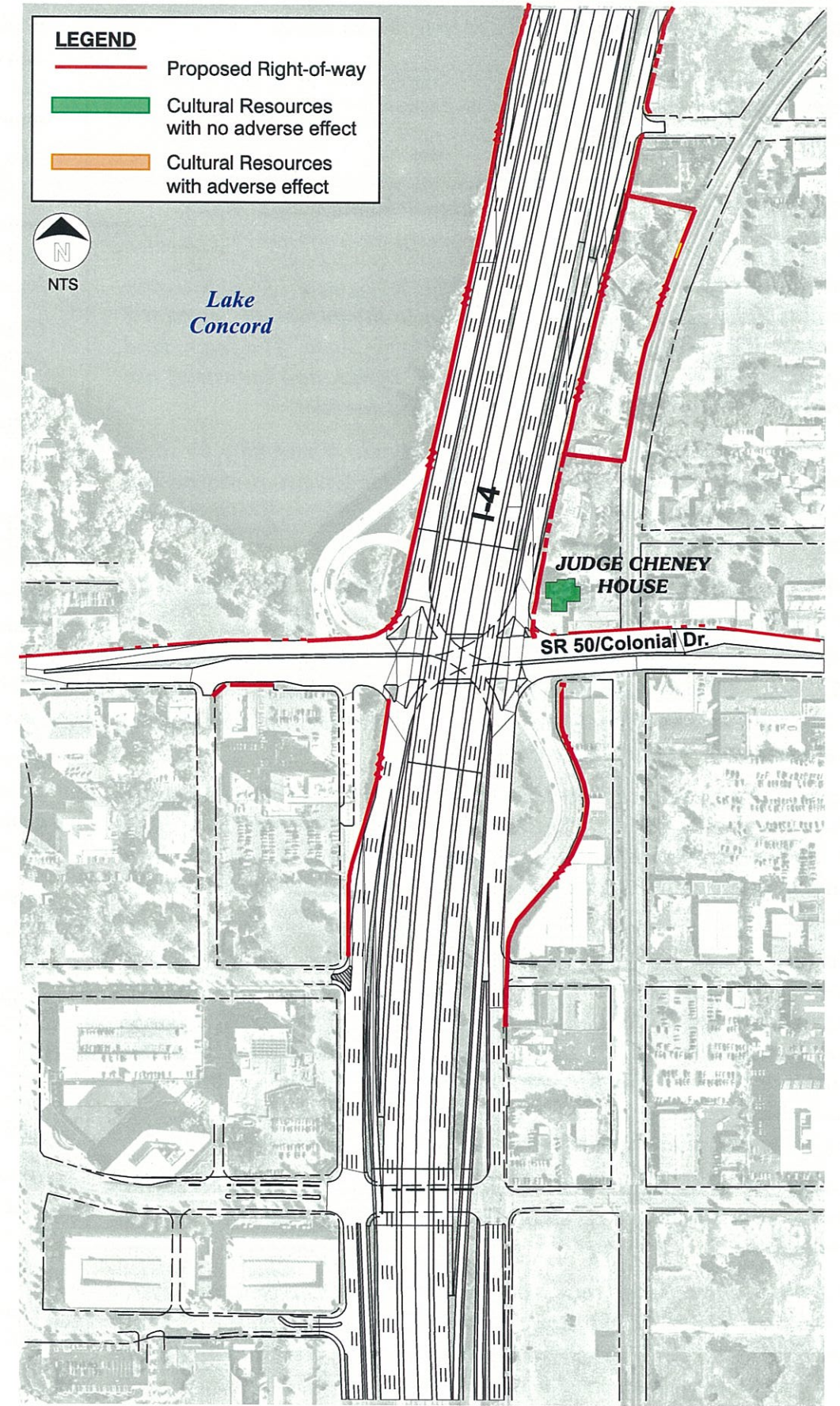
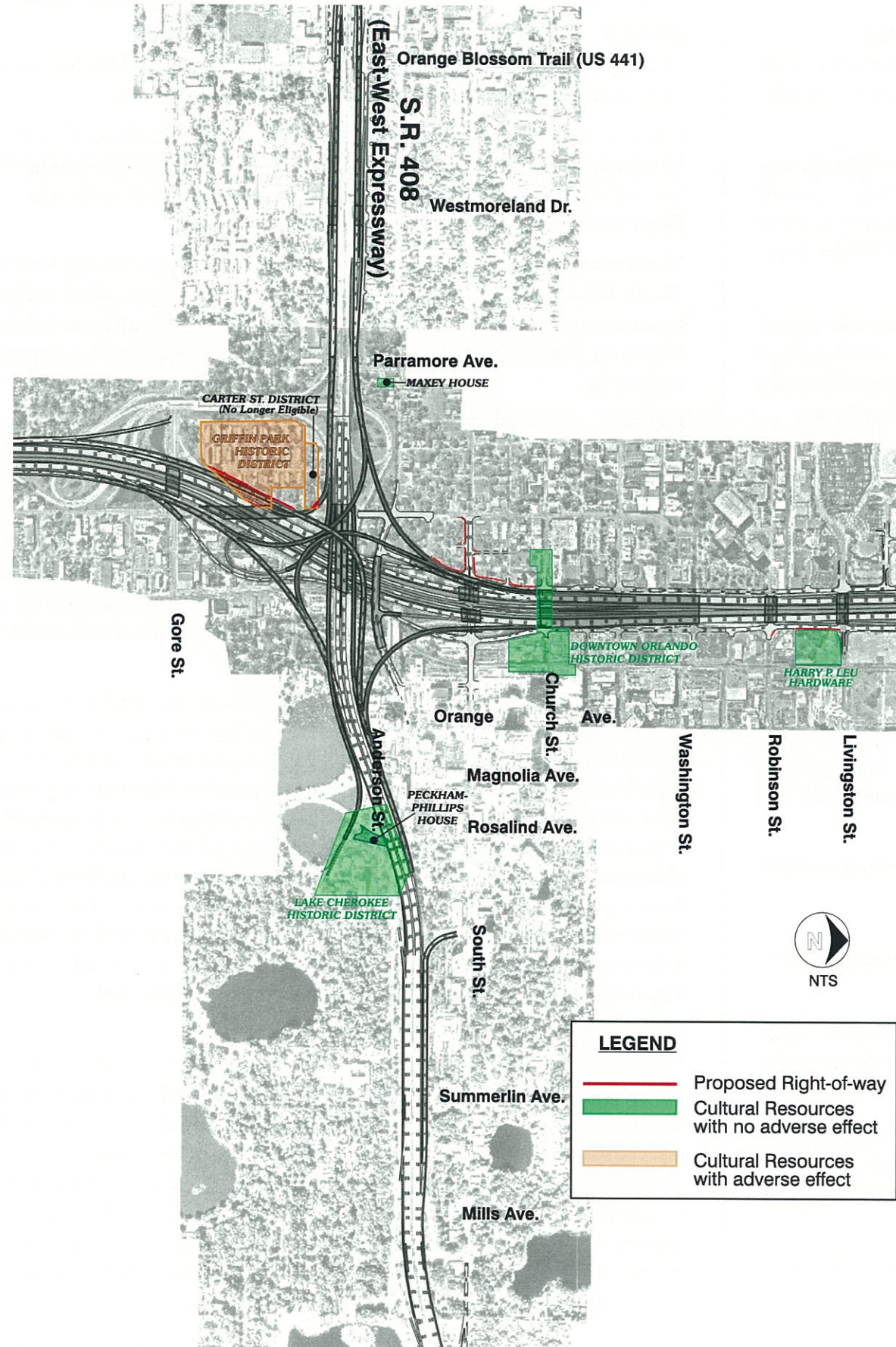
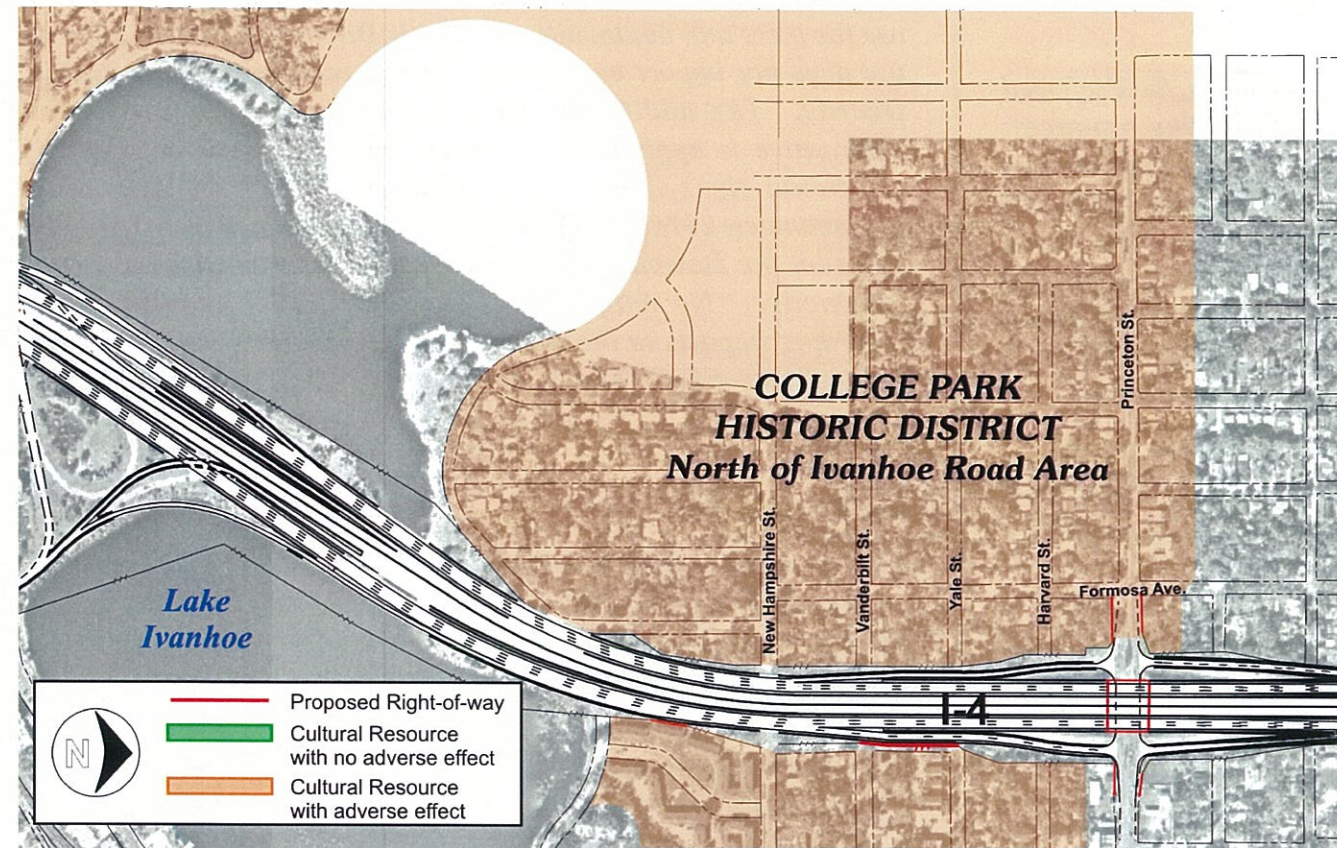


Figure 9.14.3.1.1
 Potential Adversely Affected Cultural & Historic Resources



College Park Alternatives



I-4 PD&E Study - Section 2

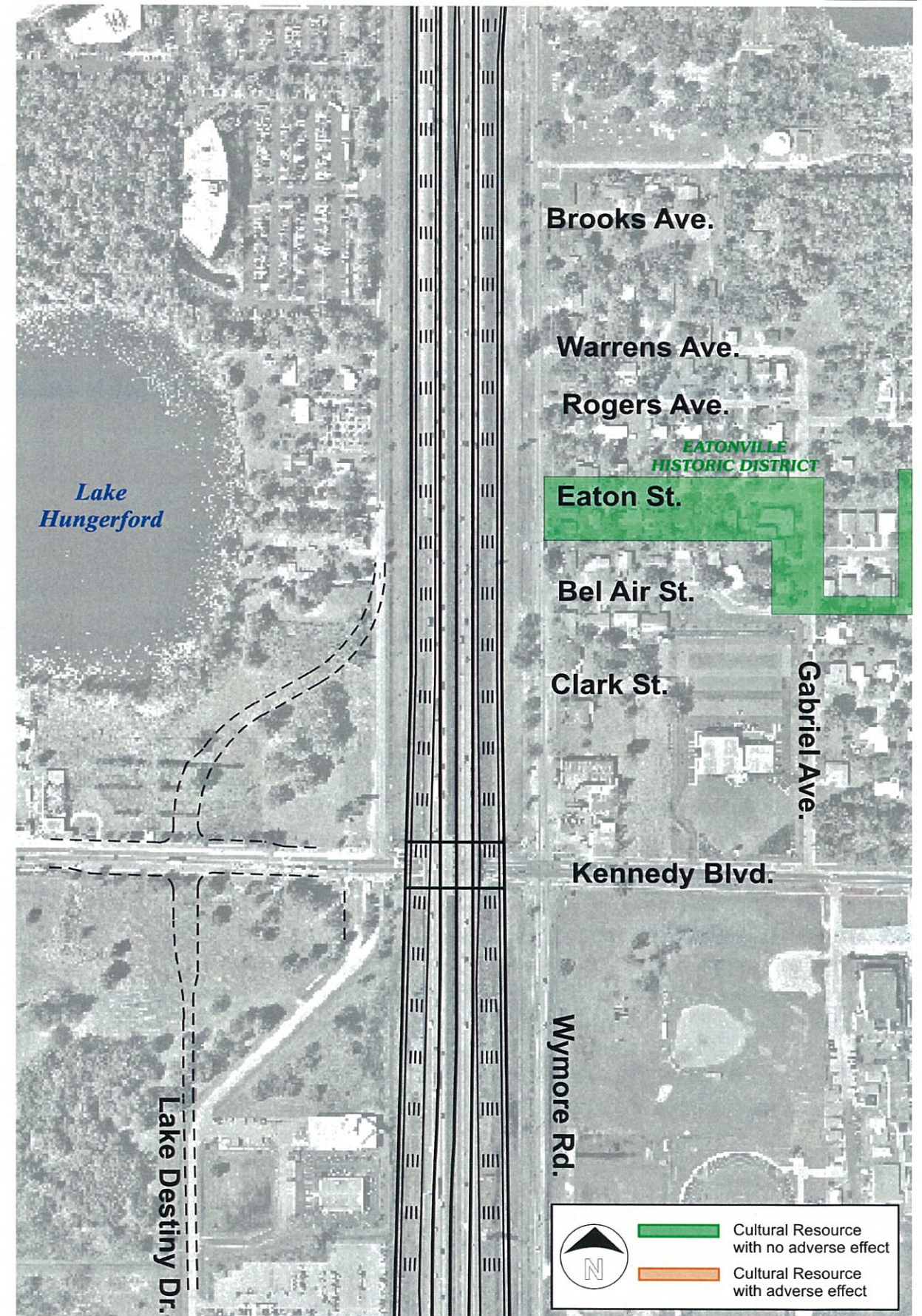


Figure 9.14.3.1.1
Potential Adversely Affected Cultural & Historic Resources

Table 9.14.3.1.1 - Potential Effects to Historic Resources

| USE No. | Historic Resource | NRHP Status | Summary Description of Impacts | Determination of Effect |
|---|--|-----------------------------|--------------------------------|--------------------------|
| Segment 1 | | | | |
| No historic resources identified in this segment. | | | | |
| Segment 2 | | | | |
| 8OR4306 | Griffin Park Historic District | NRHP Listed in 1996 | <i>Visual/Noise/Direct Use</i> | <i>Adverse Effect</i> |
| 8OR258 | Lake Cherokee Historic District | NPS Certified in 1982 | <i>Visual/Noise/Direct Use</i> | <i>No Adverse Effect</i> |
| 8OR111 | Peckham-Phillips House/135 N. Lucerne Circle | NRHP Listed in 1979 | <i>Visual</i> | <i>No Adverse Effect</i> |
| 8OR8731 | Downtown Orlando Historic District | NPS Certified in 1982 | <i>Visual/Direct Use</i> | <i>No Adverse Effect</i> |
| 8OR25 | Old Orlando Railroad Depot | NRHP Listed in 1976 | <i>No Impacts</i> | |
| 8OR20 | Bumby Hardware | Determined Eligible in 1999 | <i>No Impacts</i> | |
| 8OR183 | Harry P. Leu, Inc./100 W. Livingston Street | Determined Eligible in 1999 | <i>Direct Use</i> | <i>No Adverse Effect</i> |
| 8OR1293 | Woodford James Maxey House | Determined Eligible in 1999 | <i>Visual/Noise</i> | <i>No Adverse Effect</i> |
| 8OR1947 | Dr. W.M. Wells House | Determined Eligible in 1999 | <i>No Impacts</i> | |
| 8OR8699 | Parramore Avenue and Conley Street Historic District | Determined Eligible in 1999 | <i>Visual/Noise</i> | <i>No Adverse Effect</i> |
| 8OR110 | J.J. Bridges House | NRHP Listed in 1984 | <i>No Impacts</i> | |
| 8OR3394 | Masonry Vernacular Building, 116 America Street | Determine Eligible in 1999 | <i>No Impacts</i> | |
| 8OR3377 | Westminster Retirement | Determine Eligible in 1999 | <i>No Impacts</i> | |
| 8OR9088 | Greenwood Cemetery | Determined Eligible in 1999 | <i>No Impacts</i> | |
| 8OR3447 | Colonial Garage/62-70 W. Colonial Drive | Determined Eligible in 1998 | <i>No Impacts</i> | |
| 8OR177 | Judge Cheney House/715 N. Garland Avenue | Determined Eligible in 1998 | <i>Access</i> | <i>No Adverse Effect</i> |
| Segment 3 | | | | |
| 8OR8483 | College Park Historic District | Determined Eligible in 1999 | <i>Visual/Noise/Direct Use</i> | <i>Adverse Effect</i> |
| 8OR8498 | Folk Victorian Style Residence, 2739 Riddle Drive | Determined Eligible in 1998 | <i>No Impacts</i> | |
| Segment 4 | | | | |
| 8OR9101 | Eatonville Historic District | NRHP Listed in 1998 | <i>Visual</i> | <i>No Adverse Effect</i> |
| Segments 5 & 6 | | | | |
| No historic resources identified in this segment. | | | | |

All impacts associated with the Preferred Alternative are shown in *Bold Italics*.

9.14.3.1.1 Segment 1 - Bee Line Expressway to John Young Parkway

No NRHP-listed or NRHP-eligible historic resources were identified in this segment.

9.14.3.1.2 Segments 2 and 3 - John Young Parkway to Lee Road Segments 2 and 3 contain the majority of the historic resources identified during the I-4 PD&E Study - Section 2. Because these segments include downtown Orlando and immediate surrounding areas, they encompass a large number of historic resources. The following resources in Segments 2 and 3 are likely to be impacted by the proposed improvements: Griffin Park Historic District, Downtown Orlando Historic District, Harry P. Leu, Inc., and College Park Historic District. Impacts to these properties are described in the paragraphs that follow.

Griffin Park Historic District

The Preferred Alternative will visually impact the historic district and require the direct use of contributing historic resources. The Preferred Alternative reconstructs the I-4/SR 408 (East/West Expressway) interchange including additional ramps and flyovers that increase the elevation of the interchange. Elevation increases may be up to 70 feet

in some locations of the Preferred Alternative. In addition, the Preferred Alternative will require the direct use of three contributing resources: two residential buildings composed of 16 units and the Griffin Park community center. The area of land required for the Preferred Alternative is approximately 51,975 square feet (1.19 acres). The direct use of contributing resources will adversely affect the character and integrity of the historic district. Additional information regarding impacts to the Griffin Park Historic District can be found in the FEIS (August 2002) and Final Section 4(f) Evaluation (August 2002).

Measures have been developed to minimize adverse effects to significant cultural resources. For contributing buildings within the Griffin Park Historic District that are slated for demolition, FDOT will prepare the following documentation:

- Drawings - Select existing drawings, where available, with large-format negatives or photographically reproduced on archival mylar.
- Photographs - Photographs with large-format negatives of exterior and interior views.
- Written Data - Architectural data form.

Within the boundaries of the Holden-Parramore neighborhood, qualified cultural resources consultants will conduct a survey of the historic resources (to include the preparation of Florida Master Site File forms). Any survey work will exclude the historic resources located within the historic district boundaries that were previously documented for the Cultural Resources Assessment Survey (July 1999) for this project.

Upon the completion of the survey work, a complete National Register of Historic Places nomination proposal for the Holden-Parramore neighborhood will be prepared and will be submitted to the Florida SHPO.

Downtown Orlando Historic District

The Preferred Alternative will visually impact this historic district. Additional ramps and flyovers have the potential to compromise the viewshed of downtown Orlando from the Interstate. The westbound elevation of I-4 will increase approximately five to eight feet and the eastbound elevation of I-4 will decrease up to approximately eight feet within the vicinity of the Downtown Orlando Historic District.

The Preferred Alternative will require the reconstruction and widening of the bridges in the Hughey Avenue/Church Street area and modification of the existing bridge pier locations. The reconstruction and widening of the bridges will require additional air rights and direct use for piers and abutments within this District. However, such direct use does not impact any of contributing resources that comprise the District. The additional aerial area required for the Preferred Alternative is approximately 20,100 square feet (0.46 acre). The additional right-of-way required for the Preferred Alternative is approximately 257 square feet. SHPO has determined there is no adverse effect on the Downtown Orlando Historic District with the Preferred Alternative. No mitigation is required. Additional information regarding impacts to the Downtown Orlando Historic District can be found in the FEIS (August 2002) and Final Section 4(f) Evaluation (August 2002).

Harry P. Leu, Inc.

The Preferred Alternative will require the direct use of a sliver of property on the western edge of the Harry P. Leu, Inc. site that falls within the historic property boundaries. The area of land required for the Preferred Alternative is approximately 3,477 square feet (0.08 acre).

The Preferred Alternative will not diminish the views to or from the historic resource, since the Harry P. Leu, Inc. building faces Livingston Street and not I-4. In addition, noise walls are not proposed within the vicinity of Harry P. Leu, Inc.

SHPO has determined there is no adverse effect on this historic resource with the Preferred Alternative and no mitigation is required. Additional information regarding impacts to Harry P. Leu, Inc. can be found in the FEIS (August 2002) and Final Section 4(f) Evaluation (August 2002).

College Park Historic District

The Preferred Alternative will visually impact the Collect Park Historic District and will require the acquisition and direct use of a small portion of land (approximately 600 square feet) at the Lake Ivanhoe Shores Apartment complex that is included within the district's boundaries. However, no contributing buildings within the Lake Ivanhoe Shores Apartment Complex will be affected by the right-of-way acquisition. The Preferred Alternative will also require additional air rights, which will not require the direct use of any contributing buildings. The additional aerial area required for the Preferred Alternative is approximately 1,615 square feet (0.04 acre).

SHPO has determined there is an adverse effect to this resource with the Preferred Alternative. An MOA has been prepared detailing the mitigation for the adverse effects. Within the proposed boundaries of the College Park Historic District, which is eligible for inclusion in the National Register of Historic Places, qualified cultural resources consultants will conduct a survey of the historic resources (to include the preparation of Florida Master Site File forms). Any survey work will exclude the historic resources located within the historic district boundaries that were previously documented in the Cultural Resources Assessment Survey (July 1999) for this project. Upon the completion of the survey work, a complete National Register of Historic Places nomination proposal for the College Park Historic District will be prepared and will be submitted to the SHPO. Additional information regarding impacts to the College Park Historic District can be found in the FEIS (August 2002) and Final Section 4(f) Evaluation (August 2002).

9.14.3.1.3 Segments 4 and 5 - Lee Road to US 17-92

The Preferred Alternative will not require the direct use of resources within the Eatonville Historic District. However, because of the raised profile of these alternatives, there may be visual impacts.

No NRHP-listed or NRHP-eligible historic resources were identified in Segment 5.

9.14.3.1.4 Segment 6 - US 17-92 to SR 472

No NRHP-listed or NRHP-eligible historic resources were identified in this segment.

9.14.3.2 Archaeological Resources

9.14.3.2.1 Segment 1 - Bee Line Expressway to John Young Parkway

No NRHP-listed or NRHP-eligible archaeological resources were identified in this segment.

9.14.3.2.2 Segments 2 and 3 - John Young Parkway to Lee Road

No NRHP-listed or NRHP-eligible archaeological resources were identified in these segments.

9.14.3.2.3 Segments 4 and 5 - Lee Road to US 17-92

No NRHP-listed or NRHP-eligible archaeological resources were identified in these segments.

9.14.3.2.4 Segment 6 - US 17-92 to SR 472

Lake Monroe Outlet Midden

There will be no impacts to the Lake Monroe Outlet Midden as a result of the proposed improvements for the I-4 PD&E Study - Section 2. However, the construction of the I-4 Six Laning and St. Johns River Bridge project is occurring within the boundaries of the NRHP eligible Lake Monroe Outlet Midden, 8V053. FHWA, FDOT and SHPO executed an MOA in August and September of 1999 that outlines conditions to mitigate adverse effects potentially caused by the project.

Based on the work performed consistent with the MOA and through subsequent coordination with Federally recognized Native American Tribes, SHPO, FHWA, and FDOT, additional commitments have been drafted to ensure appropriate protection of the Lake Monroe Outlet Midden during construction. Refer to the I-4 Six Laning and St. Johns River Bridge EA/FONSI (May 2000) for information on the commitments.

9.14.4 Parks and Recreational Facilities

A proximity analyses was conducted for the 98 publicly and privately owned parks and recreational facilities identified within ½ mile of the project corridor. Potential direct and indirect effects associated with the proposed improvements, including right-of-way acquisition and access, were evaluated at each site based on field observations and analysis of the preliminary concept plans. The evaluation results are documented in the project files. There are no parks or recreational facilities directly impacted by the Ultimate Project or Preferred Alternative.

9.14.5 Air and Noise

Detailed studies were conducted to determine the air quality and noise impacts associated with the Ultimate project.

The project will not cause carbon monoxide (CO) concentrations to rise above the one- and eight-hour National Ambient Air Quality Standards (NAAQS) for CO. CO concentrations will be within standards for both the Build and No-Build conditions in 2010 and 2020. Therefore, this project will not have a significant impact on air quality.

Fifty-one noise sensitive areas (NSA's) containing 10,732 noise sensitive sites are expected to experience noise levels that approach or exceed FHWA noise abatement criteria. Noise barriers reduce noise levels by blocking the sound path between a roadway and noise-sensitive area. To be effective, noise barriers must be long, continuous and sufficiently high. When noise barriers are evaluated to abate (reduce) noise levels, feasibility and reasonableness are considered. The feasibility of providing noise abatement primarily addresses engineering considerations (physical constraints, drainage and accessibility considerations, safety and maintenance requirements, utility impacts, etc.). Reasonableness addresses the use of common sense and good judgement when considering noise abatement.

FDOT has established 21 reasonableness and feasibility factors that must be evaluated relative to each abatement measure. Each of these factors are weighed before reasonableness and feasibility are determined for any individual barrier location. A brief explanation of each factor to be considered in determining the reasonableness and feasibility of traffic noise abatement at any given location and how they relate to the overall project is provided below. Any special case items that are not common to the overall project will be handled on an individual basis.

- 1. Relationship of future levels to the abatement criterion:** If the future levels are only expected to approach or just barely exceed (up to 3 dBA) the criterion, abatement may not be as desirable as it would be if the impact were to be greater. Most noise sensitive areas along the project limits average increases of 3 dBA to 5 dBA over the abatement criterion.
- 2. Insertion Loss:** This is the lowering of the noise level as a result of some type of abatement effort. A normal design goal is 10 dBA or more. If a minimum 5 dBA insertion loss cannot be achieved, a noise barrier is not considered to be feasible. The majority of the barriers evaluated achieve a minimum insertion loss of 5 dBA, with the majority of the impacted receptors receiving a 7 dBA to 10 dBA insertion loss.
- 3. Safety:** A very critical factor in determining whether a particular abatement scheme is viable is the impact it may have on safety. Maintaining a clear recovery zone is very important, as is sight distance. The typical section of the proposed roadway includes concrete barrier walls adjacent to the outside shoulders. Noise barriers in the same location will not compromise safety. Further investigation into the safety of the proposed barriers will be performed during the design phase of this project.
- 4. Community Desires:** Extremely important in determining whether a noise barrier should be built at any location is whether the affected community really wants to have a barrier. Preliminary public workshops held during this phase of the project indicate that noise barriers would be acceptable in most locations determined to be reasonable and feasible. A survey of residential properties affected by noise barriers determined

reasonable and feasible will be undertaken during the design phase of the project.

5. **Accessibility:** This refers to the ingress and egress to properties that would be affected by the noise abatement measure. Since this project involves a limited access facility, the placement of noise barriers will not effect the ingress or egress of adjacent properties.
6. **Land Use Stability:** This refers to whether or not an area's land use designation is stable and if noise sensitive land uses are likely to remain for an indefinite period of time. The areas adjacent to each noise sensitive area are established communities. It is unlikely that land use in these areas will change in the near future.
7. **Local Controls:** Local zoning and planning unit actions to control noise sensitive land uses from building adjacent to the project corridor should be examined. This implies that if no controls are used, noise abatement is not a very high priority in the community. The project area ranges from rural/suburban to urban in nature. Most of the urban areas are built out and new development is being subjected to noise criteria in these areas. The more suburban/rural areas are not developing adjacent to the existing facility without some abatement technique.
8. **Views of officials with jurisdiction in the area:** This implies that consideration should be given to the views of the local politicians who may be asked to represent the views of concerned citizens within the area. Their views will be obtained during the survey of affected residences in the design phase of the project.
9. **Noise level increase from existing to future build conditions:** The magnitude of the noise level increase should be examined. A 15 dBA increase to 64 dBA is far more noticeable than a 3 dBA increase to 67 dBA, even though 64 dBA is below the abatement criterion. The increase over existing noise levels varies throughout the corridor. Because this is an existing facility, noise levels currently approach or exceed the noise abatement criterion. In general, most areas will experience an increase of less than 4 dBA. In some cases where retaining walls are being proposed to minimize right-of-way impacts, the future year noise levels are less than existing noise levels. In some cases, the existing noise levels will be reduced by as much as 8 dBA.
10. **Noise level changes from future build and no-build conditions:** If the difference between the future no-build and the future build is 3 dBA or less, most people would not notice the change. If the change is greater than 3 dBA, abatement consideration should be given more weight. The existing and No-Build noise levels are the same for this evaluation because they both use Level of Service C conditions for the existing roadway geometry. Therefore, the change between the future build and No-Build conditions is the same as described in Factor 9 above.
11. **Antiquity:** This implies that someone who builds or buys a noise sensitive site along an existing highway (or within a corridor where a road is planned for construction) probably does not consider noise a significant factor in

location. Many of the areas adjacent to I-4 existed prior to the original construction of the roadway. However, these areas have been subject to steadily increasing traffic and noise levels over the past 10 to 15 years.

12. **Constructability:** Factors affecting constructability include terrain, utilities, safety (lane closures, etc.), bridges, overpasses and similar difficulties. All proposed noise barriers should be able to be constructed using routine construction methods and techniques. Wall heights on bridges have been limited. Constructability will be further investigated during the design phase of this project.
13. **Maintainability:** Proposed barrier location and material should not be an impediment to maintenance.
14. **Aesthetics:** This refers to the physical appearance of the wall from both the highway side and the affected property side. It also incorporates the landscaping concept, the view of the property owners and the local requirements relative to color, height, style, materials, etc. This will be addressed on a case by case basis during the survey of community desires, to take place during the design phase of the project.
15. **Right-of-way needs including access rights (air, view, ingress/egress), construction and/or maintenance easements and additional land:** Right-of-way impacts include the cost to obtain access rights, easements and land. It also includes the consideration of donation, purchase, etc. Normally, right-of-way needs and costs will be determined early in the process. If access rights and easements are required, these will normally be by donation. This is in consideration of the construction of the wall for the benefit of the property owners. All proposed barriers can be constructed within the proposed right-of-way.
16. **Cost:** Cost factors will include the cost of construction (material and labor), the cost of the right-of-way (including easements, etc.) and any other associated costs less the cost of designing the wall. It will be assumed that a cost per benefited receiver will be calculated. The lower the cost the higher the benefit to the impacted area. For this evaluation, cost was established at \$20.00 per square foot of barrier. A cost of \$30,000 per benefited receiver is looked upon as an upper limit although a higher level of expenditure can be used if justified by other circumstances. A benefited receiver is defined as a noise sensitive receiver that will obtain a minimum of 5 dBA of noise reduction as a result of the use of a specific noise abatement activity such as the construction of a noise barrier wall. Only benefited receivers are included in calculations needed to determine if a particular noise abatement plan has a reasonable cost.
17. **Utilities:** The impact of noise barriers on utilities and the reverse must be assessed early in the process. Large overhead power lines and underground pipes and conduits can have a significant impact on cost and design options. It appears that the proposed barriers can be constructed with minimal impacts to utilities.
18. **Drainage:** One of the most important elements in the location and design of a noise barrier is drainage. Directing water along, under or away

from a noise barrier can be expensive and cause construction and maintenance problems. It is not anticipated that the proposed noise barriers will impede drainage. Final roadway alignment, barrier locations and drainage design will be evaluated during the design phase.

19. **Special land use considerations:** If a noise impact is identified at a special land use such as a school, church or park, the process outlined in the research report "Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations" may be followed. However, most special use areas within the project corridor are located within residential areas and were considered as part of those areas.
20. **Other environmental impacts:** This refers to impacts of noise barrier installation that should be considered on a site by site basis. The installation of noise barriers should not increase the impacts to other environmental considerations.
21. **Additional considerations:** This refers to the unanticipated contingencies that can seriously impact whether a noise barrier is reasonable or feasible as conceived at a given location. An example would be the impact of a wall on a nearby hospital heli-pad for emergency medical transport.

Each of the 51 noise sensitive areas within the project limits has been evaluated using the 21 reasonableness and feasibility factors. The results can be seen in Table 9.14.5.1. The noise sensitive areas are illustrated on Figure 9.14.5.1.

Of those 51 NSA's, 16 NSA impacts can be abated with noise barriers. These sites were represented in the modeling effort. The following provides a description of each of the 16 noise sensitive areas, and Figure 9.14.5.2 shows areas where noise barriers are determined to be reasonable and feasible.

A total of 3,344 noise sensitive sites are predicted to experience traffic noise impacts with the Ultimate Project. *A total of 1,494 noise sensitive sites are predicted to be impacted with the Preferred Alternative.*

Noise Sensitive Area 1-A

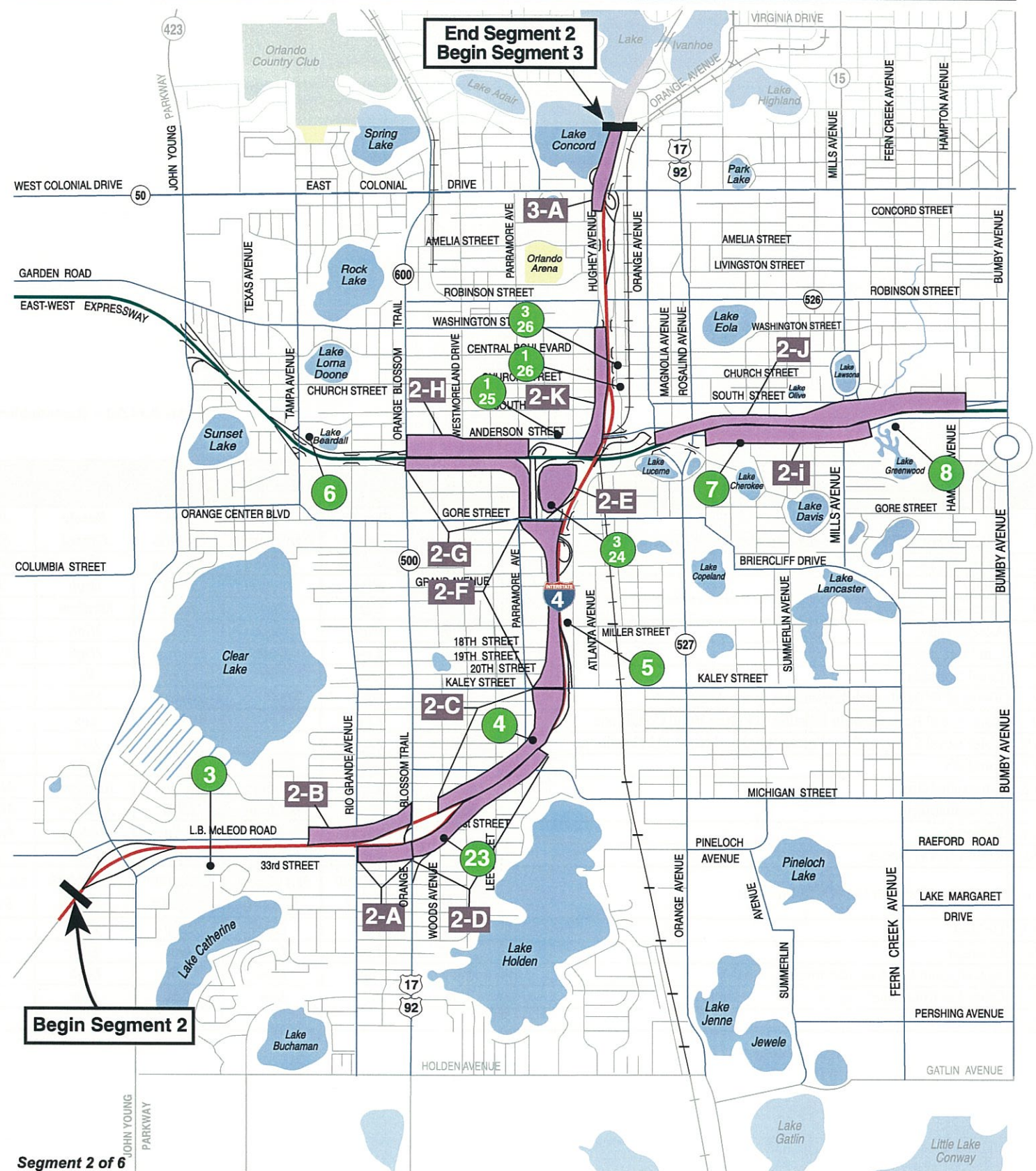
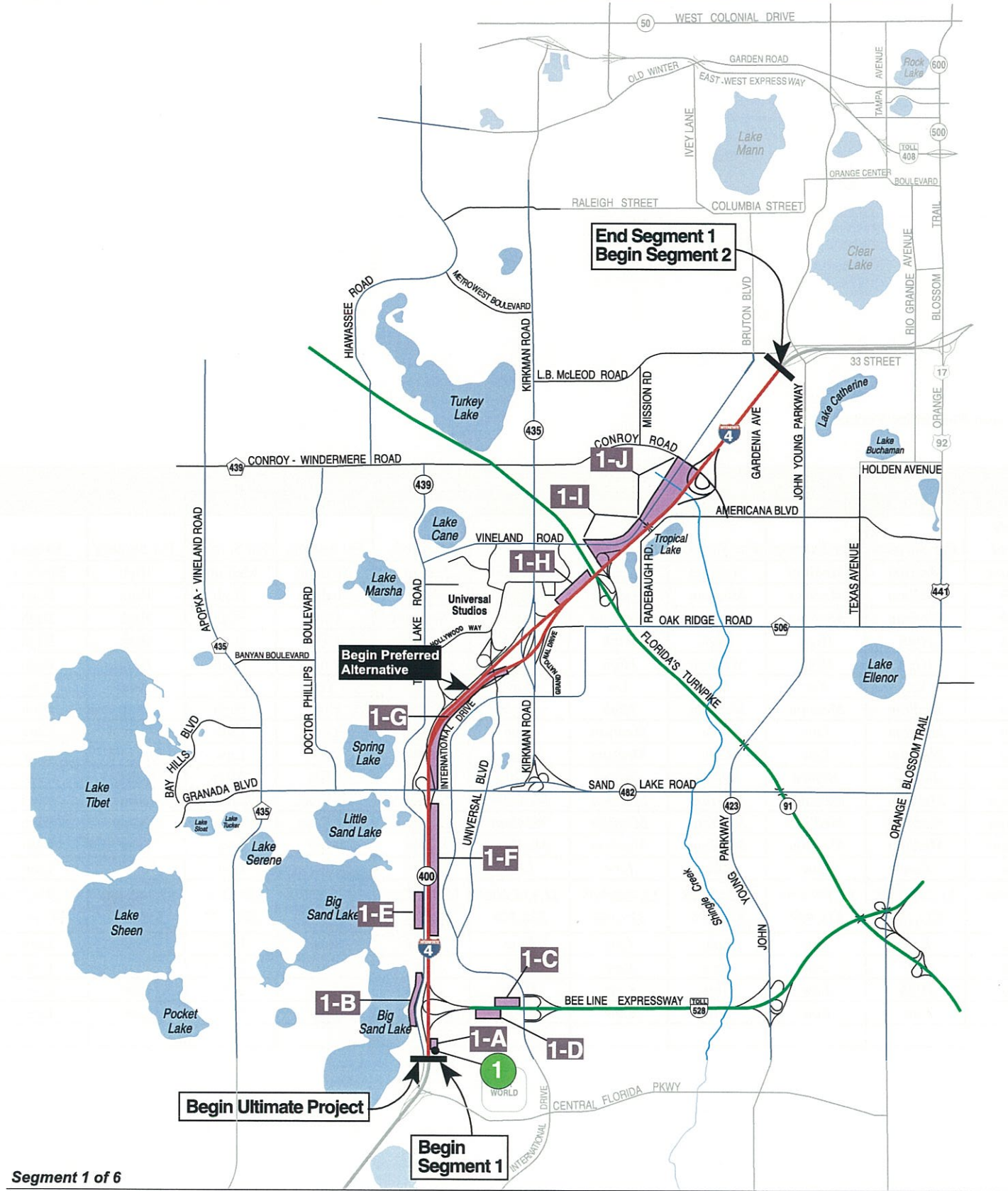
A noise barrier 800 feet long, with an average height of 19 feet will provide a minimum 5 dBA insertion loss to 28 residences. The total cost and cost-per-residence benefited is \$304,000 and \$10,857, respectively. This barrier is considered reasonable and feasible.

Noise Sensitive Area 2-E

A noise barrier 2950 feet long, with an average height of 14.0 feet will provide a minimum 5 dBA insertion loss to 152 residences. The total cost and cost-per-residence benefited is \$826,000 and \$5,434, respectively. This barrier is considered reasonable and feasible.

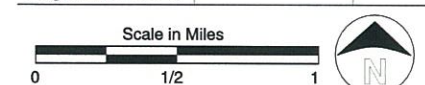
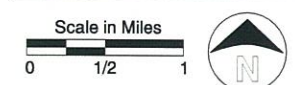
Table 9.14.5.1 - Reasonableness and Feasibility Factors

| Reasonableness and Feasibility Factors | | Noise Sensitive Areas | | | | | | | | | | | | | | | |
|--|---|------------------------|-----------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|------------------------|--------------------------|--------------------------|
| | | 1-A | 2-E | 2-F | 2-H | 2-I | 2-J | 3-B | 3-C | 3-D | 3-E | 3-F | 4-G | 4-H | 4-J | 6-C | 6-F |
| 1. | Relationship of Future Levels to the Abatement Criterion | Far Surpass | Barely Exceed | Far Surpass | Far Surpass | Barely Exceed | Barely Exceed | Far Surpass | Far Surpass | Far Surpass | Far Surpass | Exceed | Exceed | Far Surpass | Far Surpass | Far Surpass | Exceed |
| 2. | Insertion Loss | High | Medium | Medium | Medium | Low | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | High | Medium |
| 3. | Safety | High | High | Medium | High | High | High | Medium | Medium | Medium | Medium | High | Medium | Medium | High | High | High |
| 4. | Community Desires | High | High | High | High | Medium | High | Medium | Medium | Medium | Medium | Low | Medium | High | High | High | High |
| 5. | Accessibility | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High | High |
| 6. | Land Use Stability | High | Low | High | Medium | High | Medium | High | High | Medium | High | High | High | High | High | High | High |
| 7. | Local Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 8. | Views of Officials with Jurisdiction in the Area | High | High | Medium | Medium | High | High | Medium | Medium | Medium | High | High | High | High | High | High | High |
| 9. | Noise Level Increase from Existing to Future Build Conditions | Medium | Low | Low | Medium | Low | Low | Medium | Low | Low | Medium | Low | Low | Low | Low | Medium | Low |
| 10. | Noise Level Changes from Future Build and No-Build Conditions | Medium | Low | Low | Medium | Low | Low | Medium | Low | Low | Medium | Low | Low | Low | Low | Medium | Low |
| 11. | Antiquity | After | Before | Before | Before | Before | Before | Before | Before | Before | Before | Before | Before | After | After | After | After |
| 12. | Constructability | Medium | High | Medium | High | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | High |
| 13. | Maintainability | Medium | High | Medium | High | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | High |
| 14. | Aesthetics | Low | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Medium | Low | Low | Low | Low | Low |
| 15. | Right-of-Way Needs | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low |
| 16. | Total Cost/ Cost Per Benefitted Receiver | \$304,000/ \$10,857 | \$826,000/ \$5,434 | \$1,104,460/ \$23,499 | \$896,400/ \$23,589 | \$1,068,898/ \$28,889 | \$1,508,000/ \$12,361 | \$1,201,320/ \$23,102 | \$1,477,440/ \$16,982 | \$2,143,440/ \$15,996 | \$1,732,500/ \$25,109 | \$1,936,000/ \$22,776 | \$1,940,200/ \$10,053 | \$2,178,720/ \$8,253 | \$831,600/ \$23,100 | \$2,340,480/ \$15,398 | \$1,804,000/ \$15,419 |
| 17. | Utilities | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low |
| 18. | Drainage | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low |
| 19. | Special Land Use Considerations | Low | High | Low | Low | High | Low | High | Low | High | Low | High | Low | Low | Low | Low | Low |
| 20. | Other Environmental Impacts | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low | Low |
| 21. | Additional Considerations | | | | | | | | | | | | | | | | |



Segment 1 of 6

Segment 2 of 6

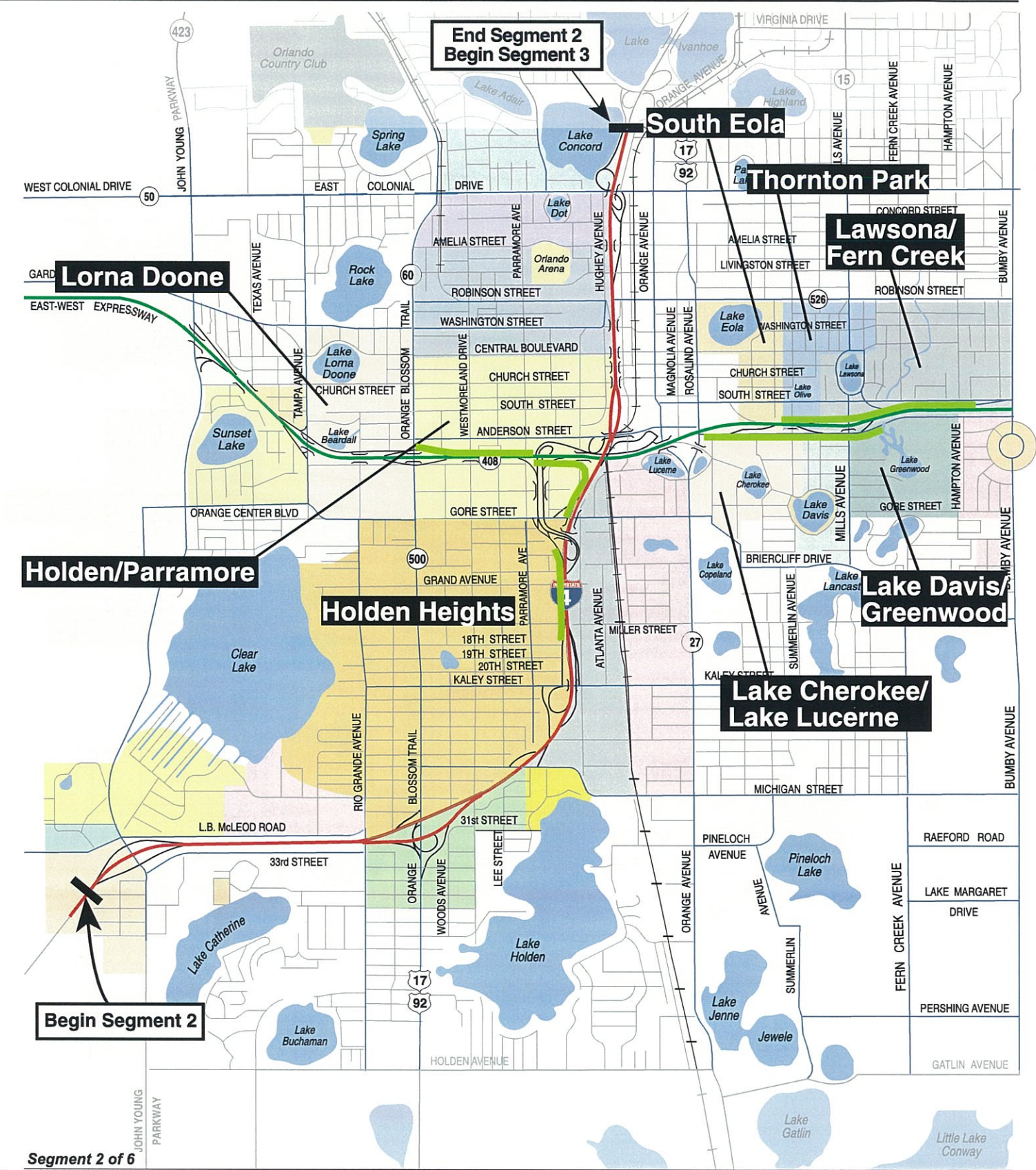


- 1 Noise Monitoring Site
- Noise Sensitive Area

- 1 Noise Monitoring Site
- Noise Sensitive Area

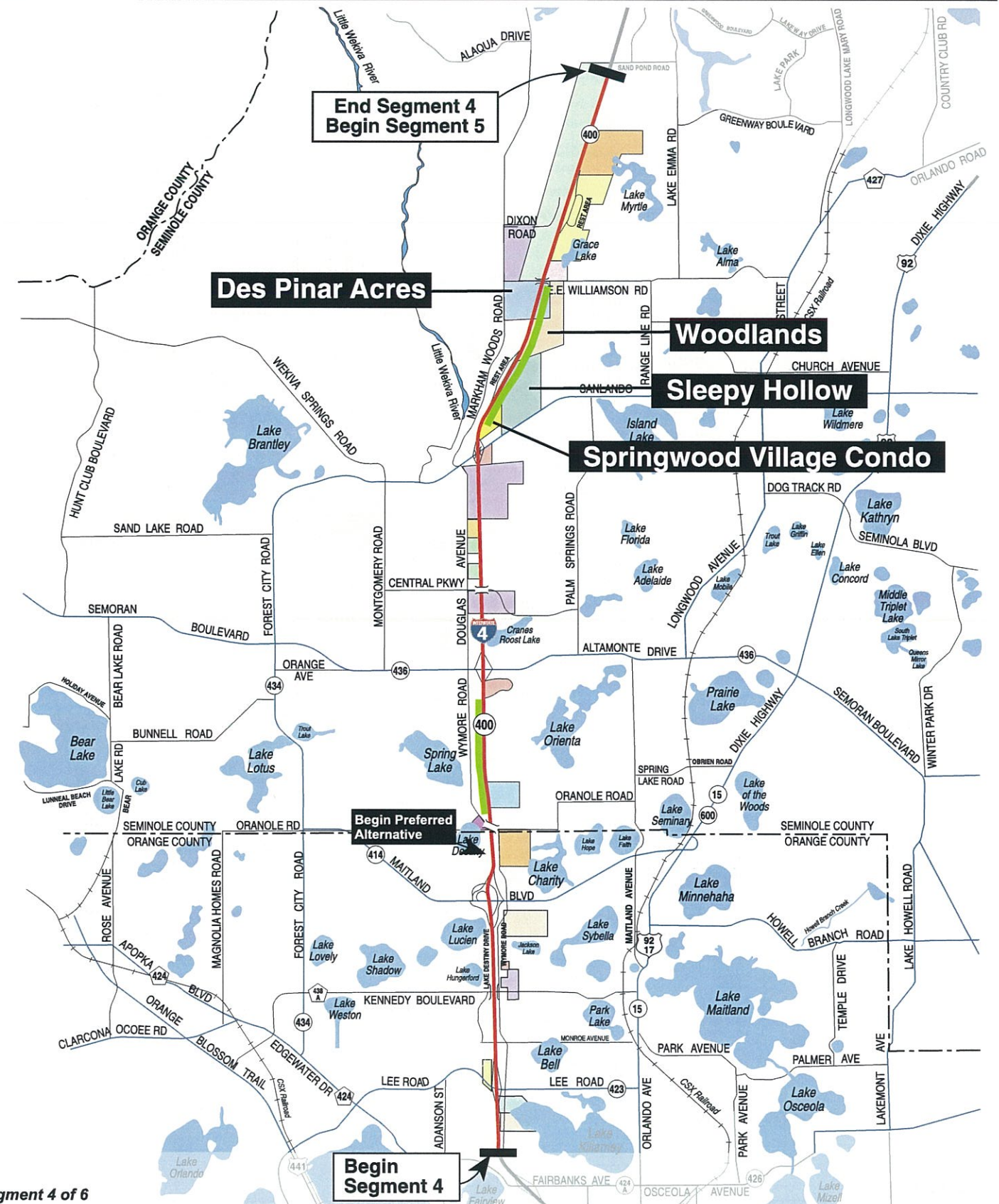
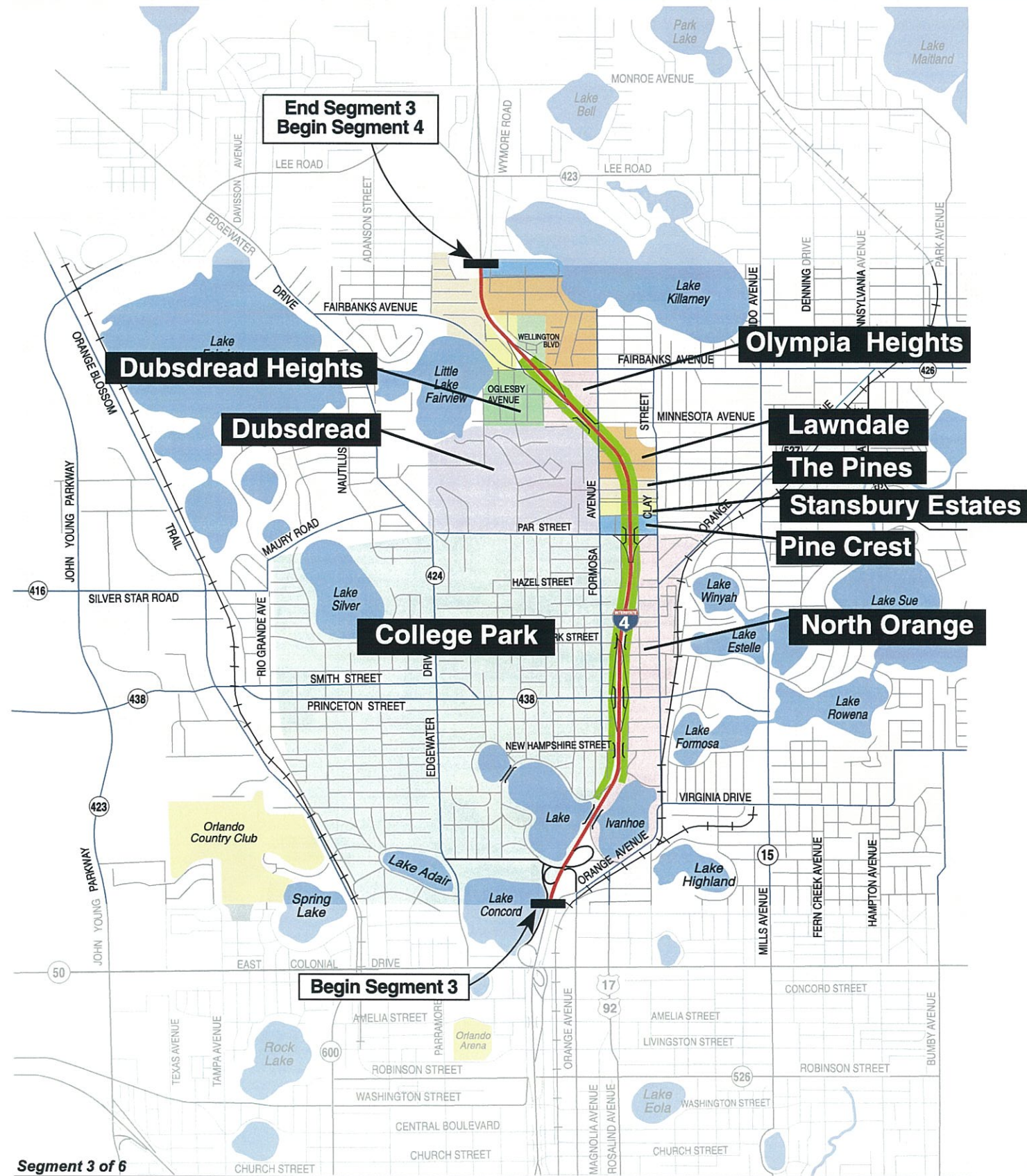
Figure 9.14.5.1 Noise Sensitive Areas

I-4 PD&E Study - Section 2



I-4 PD&E Study - Section 2

Figure 9.14.5.2
Noise Barrier Locations



Segment 3 of 6

Segment 4 of 6

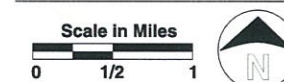
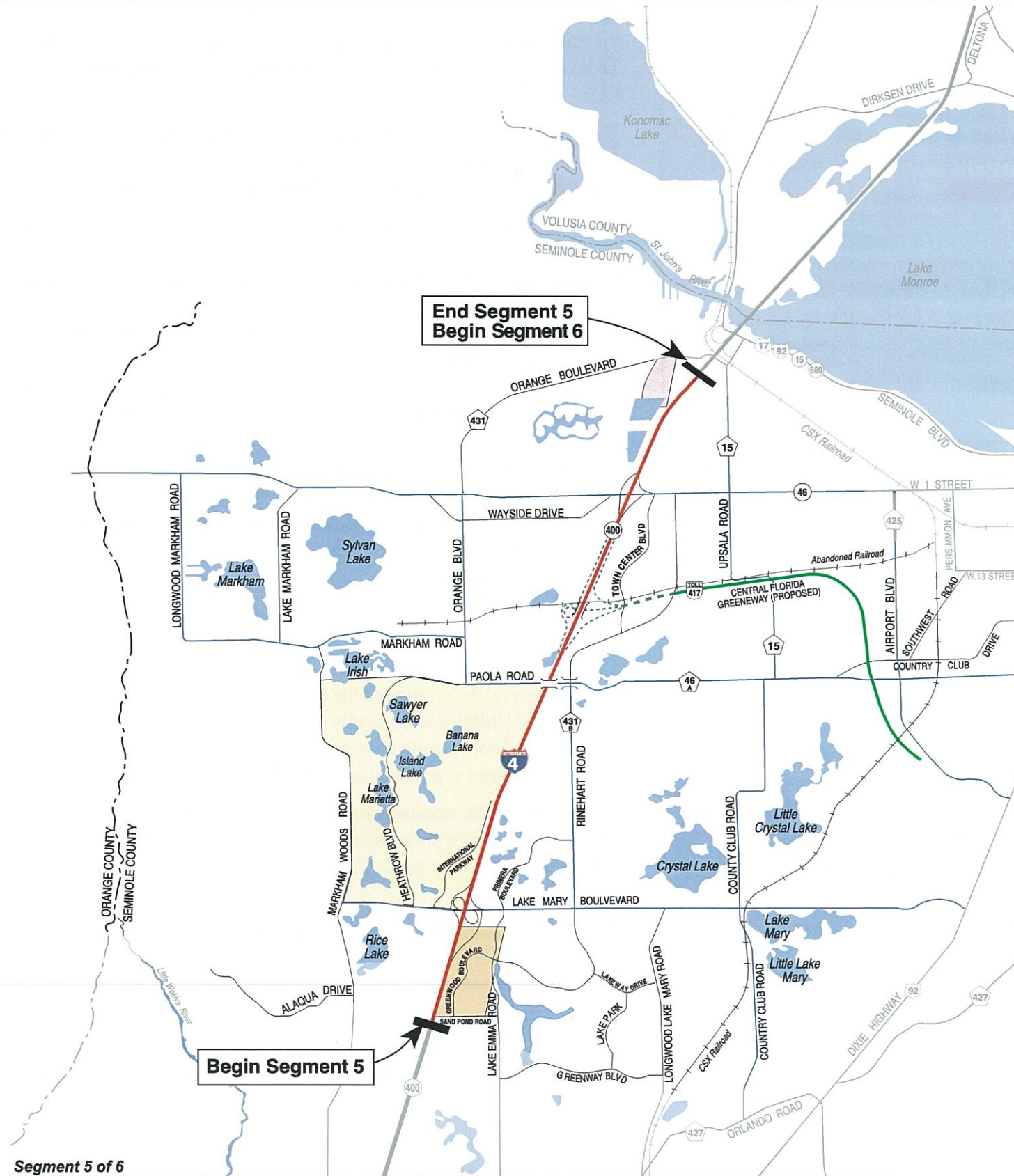
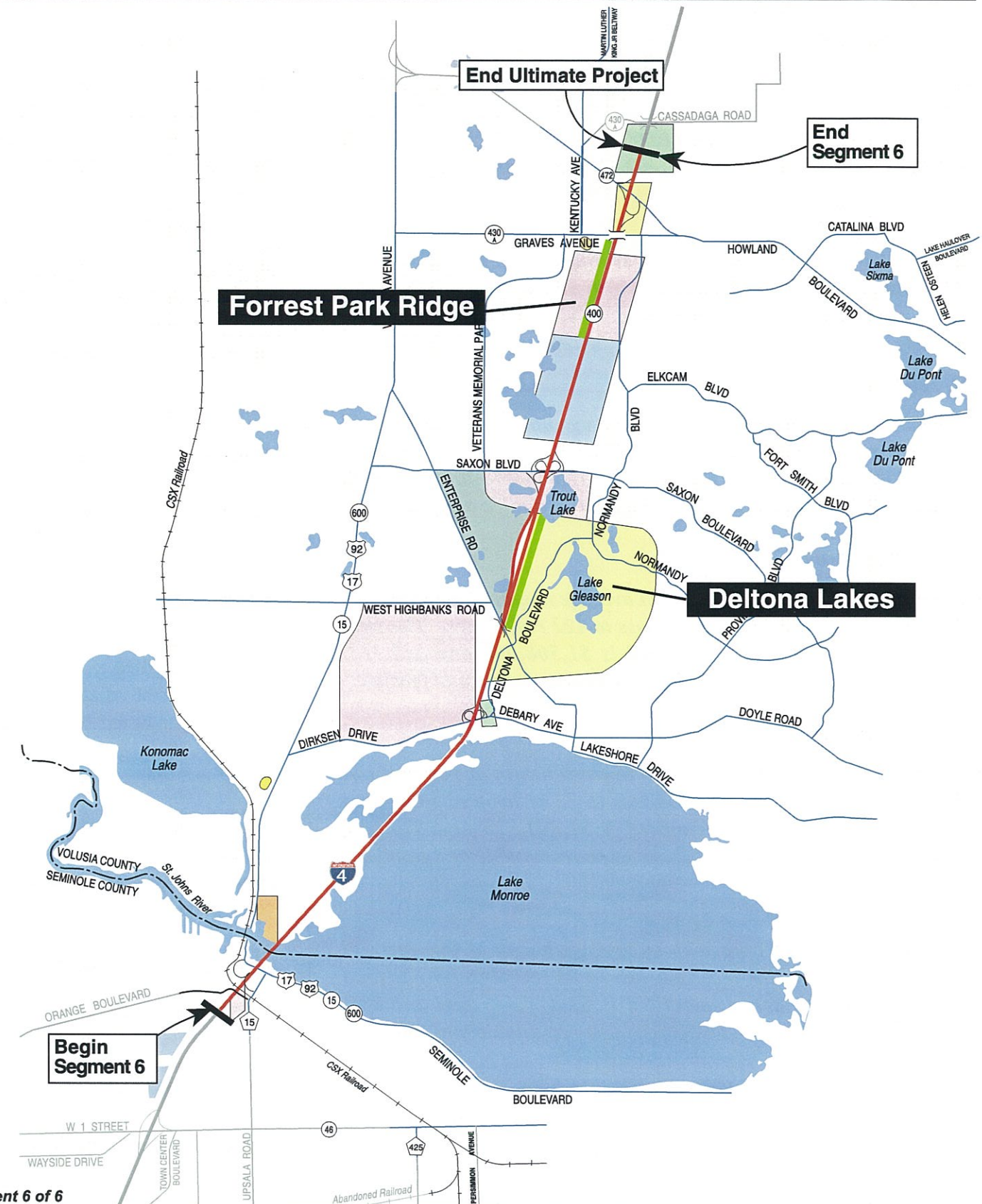


Figure 9.14.5.2
Noise Barrier Locations

I-4 PD&E Study - Section 2



Segment 5 of 6



Segment 6 of 6



I-4 PD&E Study - Section 2

Figure 9.14.5.2
Noise Barrier Locations

Noise Sensitive Area 2-F

A noise barrier 3430 feet long, with an average height of 16.1 feet will provide a minimum 5 dBA insertion loss to 47 residences. The total cost and cost-per-residence benefited is \$1,104,460 and \$23,499, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 2-H

A noise barrier 3320 feet long, with an average height of 13.5 feet will provide a minimum 5 dBA insertion loss to 38 residences. The total cost and cost-per-residence benefited is \$896,400 and \$23,589, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 2-I

A noise barrier 3295 feet long, with an average height of 16.2 feet will provide a minimum 5 dBA insertion loss to 37 residences. The total cost and cost-per-residence benefited is \$1,068,898 and \$28,889, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 2-J

A noise barrier 5200 feet long, with an average height of 14.5 feet will provide a minimum 5 dBA insertion loss to 122 residences. The total cost and cost-per-residence benefited is \$1,508,000 and \$12,361, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 3-B

A noise barrier 4230 feet long, with an average height of 14.2 feet will provide a minimum 5 dBA insertion loss to 52 residences. The total cost and cost-per-residence benefited is \$1,201,320 and \$23,102, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 3-C

A noise barrier 4560 feet long, with an average height of 16.2 feet will provide a minimum 5 dBA insertion loss to 93 residences. The total cost and cost-per-residence benefited is \$1,477,440 and \$15,886, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 3-D

A noise barrier 6870 feet long, with an average height of 15.6 feet will provide a minimum 5 dBA insertion loss to 149 residences. The total cost and cost-per-residence benefited is \$2,143,440 and \$14,386, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 3-E

A noise barrier 5250 feet long, with an average height of 16.5 feet will provide a minimum 5 dBA insertion loss to 77 residences. The total cost and cost-per-residence benefited is \$1,732,500 and \$22,500, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 3-F

A noise barrier 6050 feet long, with an average height of 16 feet will provide a minimum 5 dBA insertion loss to 85 residences. The total cost and cost-per-residence benefited is \$1,936,000 and \$22,776, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 4-C

A noise barrier 5450 feet long, with an average height of 17.8 feet will provide a minimum 5 dBA insertion loss to 193 residences. The total cost and cost-per-residence benefited is \$1,940,200 and \$10,053, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 4-I

A noise barrier 6120 feet long, with an average height of 17.8 feet will provide a minimum 5 dBA insertion loss to 264 residences. The total cost and cost-per-residence benefited is \$2,178,720 and \$8,253, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 4-J

A noise barrier 2200 feet long, with an average height of 18.9 feet will provide a minimum 5 dBA insertion loss to 36 residences. The total cost and cost-per-residence benefited is \$831,600 and \$23,100, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 6-C

A noise barrier 6360 feet long, with an average height of 18.4 feet will provide a minimum 5 dBA insertion loss to 152 residences. The total cost and cost-per-residence benefited is \$2,340,480 and \$15,398, respectively. This barrier is considered to be reasonable and feasible.

Noise Sensitive Area 6-F

A noise barrier 4400 feet long, with an average height of 20.5 feet will provide a minimum 5 dBA insertion loss to 117 residences. The total cost and cost-per-residence benefited is \$1,804,000 and \$15,419, respectively. This barrier is considered to be reasonable and feasible.

A detailed analysis and discussion of specific proposed noise barrier locations can be found in the *Noise Impact Report* (August 2002) and the Noise Study Plans.

FDOT is committed to the implementation of reasonable and feasible noise abatement measures in noise-impacted locations contingent upon the project meeting the following conditions during the final design phase of the project.

1. Detailed noise analyses during the final design process support the need for abatement;
2. Reasonable cost analyses indicate that the economic cost of the barriers will not exceed the guidelines;
3. Community input regarding desires, types, heights and locations of barriers has been solicited;
4. Preferences regarding compatibility with adjacent land uses, particularly as addressed by officials having jurisdiction over such land uses, has been noted;
5. Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed; and
6. Any other mitigating circumstances found in Volume 2, Section 17-4.6.1 of the *PD&E Manual* have been analyzed.

9.14.6 Wetlands

The approximate wetland impact locations are shown in Figure 9.14.6.1. A complete list of wetlands and the proposed impact area, whether due to roadway or pond construction, is provided in the *Wetland Evaluation Report* (May 2000). A general description of the typical dominant floral species, physical attributes and hydrologic contiguity of a particular wetland type is provided in Section 4.4.3. More detailed wetland information, which includes the WET 2 analysis and results, is provided in the *Wetland Evaluation Report* (May 2000).

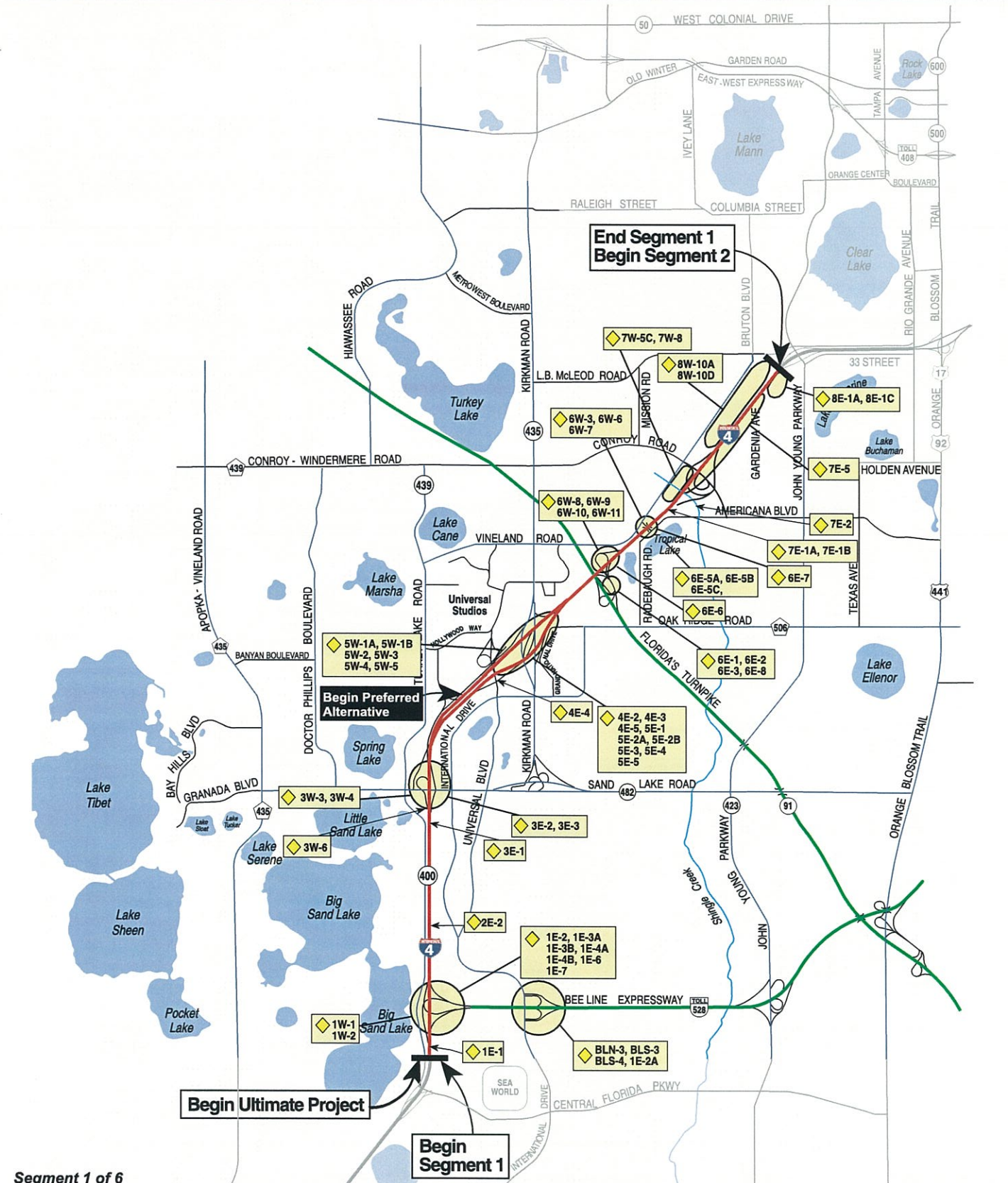
Excluded from the wetland impact totals are wetlands that are previously accounted for in other projects, such as the I-4 Six-Laning and St. Johns River Bridge Project, the John Young Parkway interchange and previously permitted stormwater ponds.

Wetland impacts are grouped into four dominant types: Forested, Open water, Emergent marshes, and Scrub-shrub. A summary of the total impact area by major wetland community type is presented in Table 9.14.6.1.

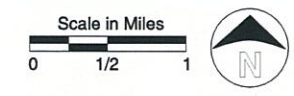
In total, 10 percent of the wetland area (132 out of 1,373 acres) within the Ultimate project limits **and 19 percent of the wetland area (82 out of 437 acres) within the Preferred Alternative** will be impacted. These impacts will be due to roadway construction or pond construction.

9.14.7 Threatened and Endangered Species

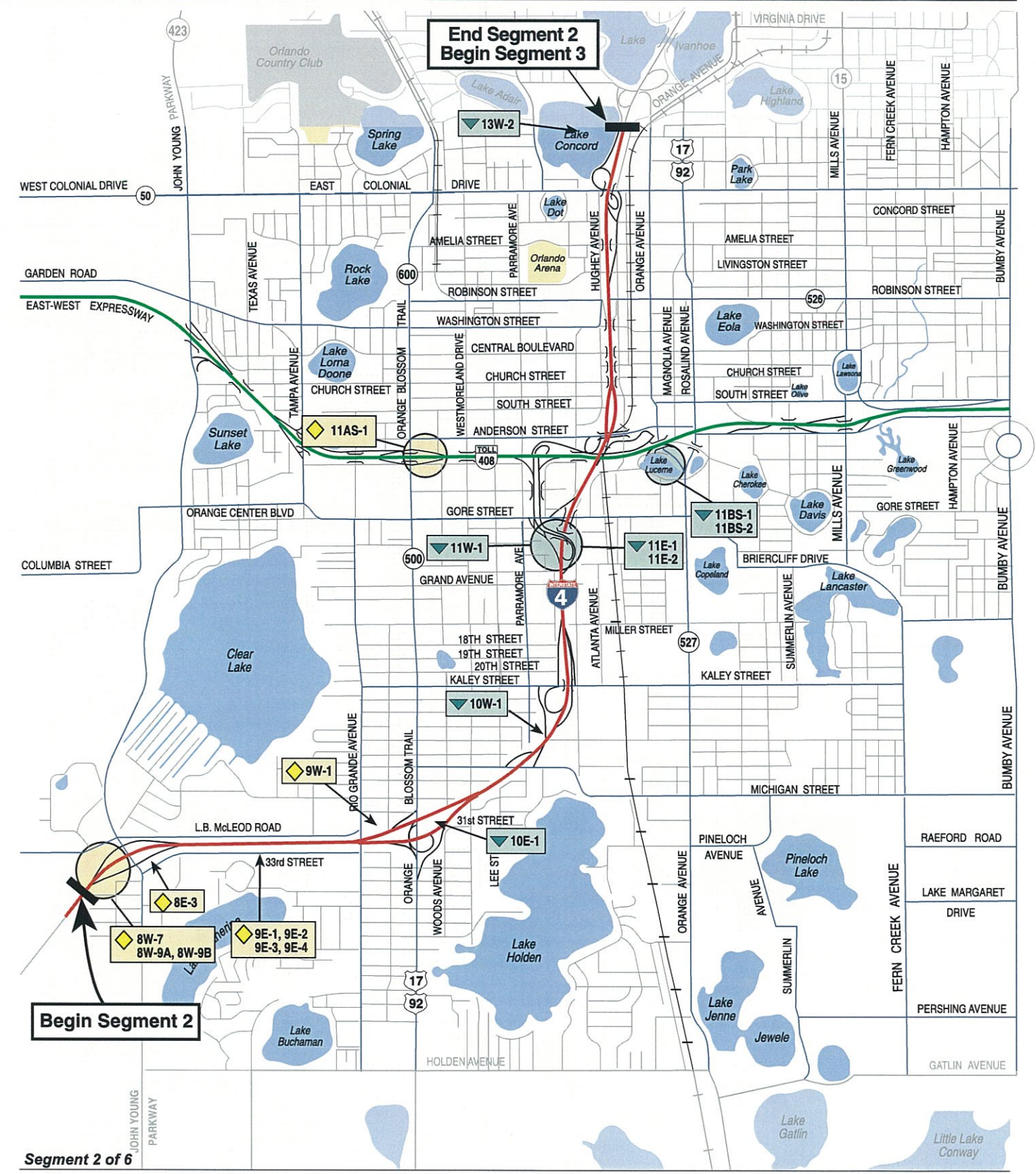
The natural communities along the I-4 PD&E Study - Section 2 Ultimate project corridor and *Preferred Alternative* are fragmented by commercial and residential development. This typically limits species diversity and reduces the potential for threatened and endangered species (plants and animals) to occur



Segment 1 of 6



- Area of Generalized Wetland Location (For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)
- Watershed Basin Jurisdiction (SFWMD)
- Shingle Creek/ Kissimmee River Basin



Segment 2 of 6



- Area of Generalized Wetland Location (For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)
- Watershed Basin Jurisdiction (SFWMD)
- Shingle Creek/ Kissimmee River Basin
- Lake Jessup Basin (SJRWMD)

I-4 PD&E Study - Section 2

Figure 9.14.6.1 Impacted Wetlands

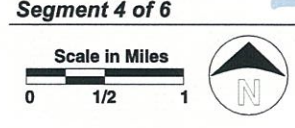
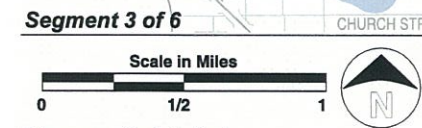
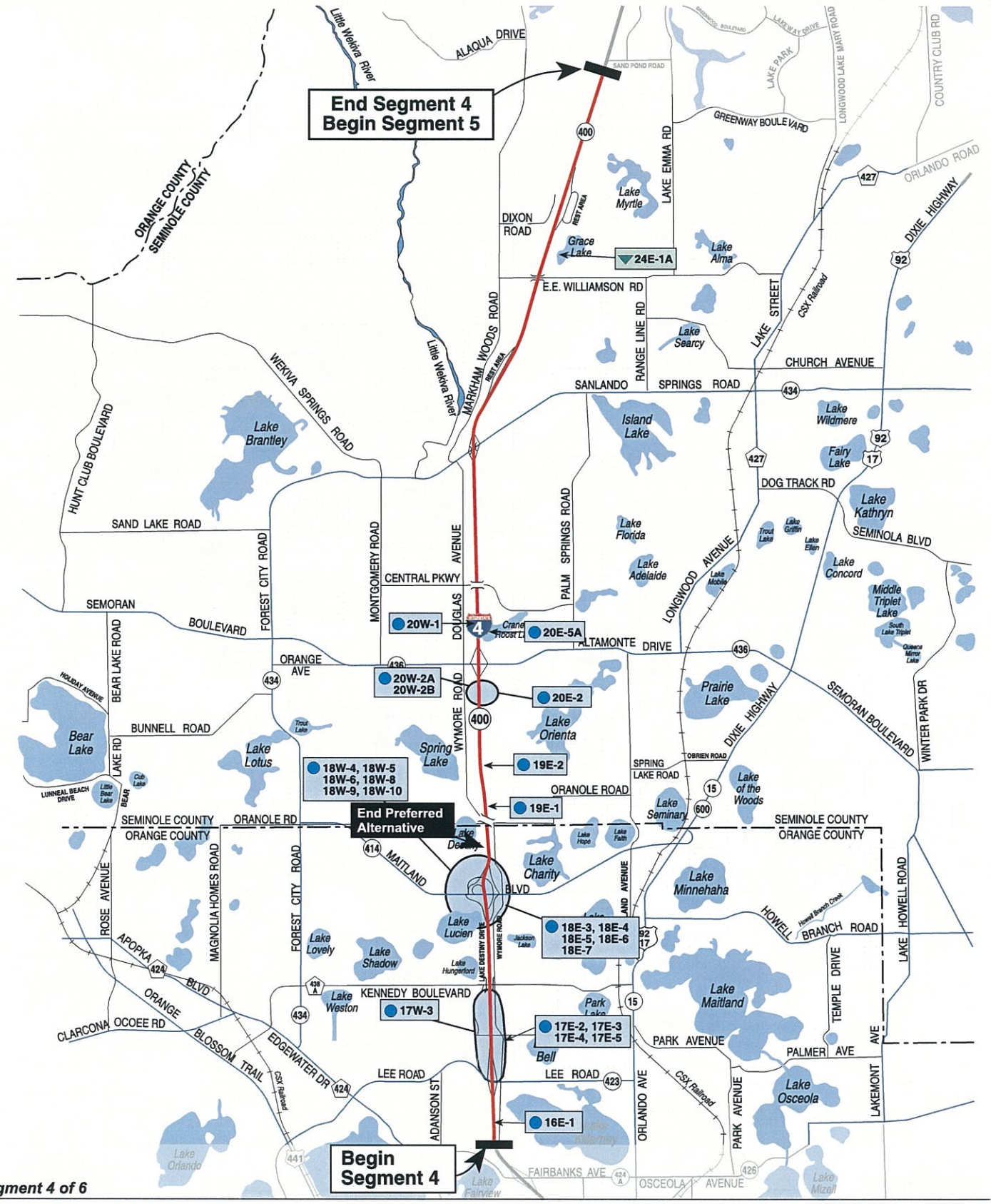
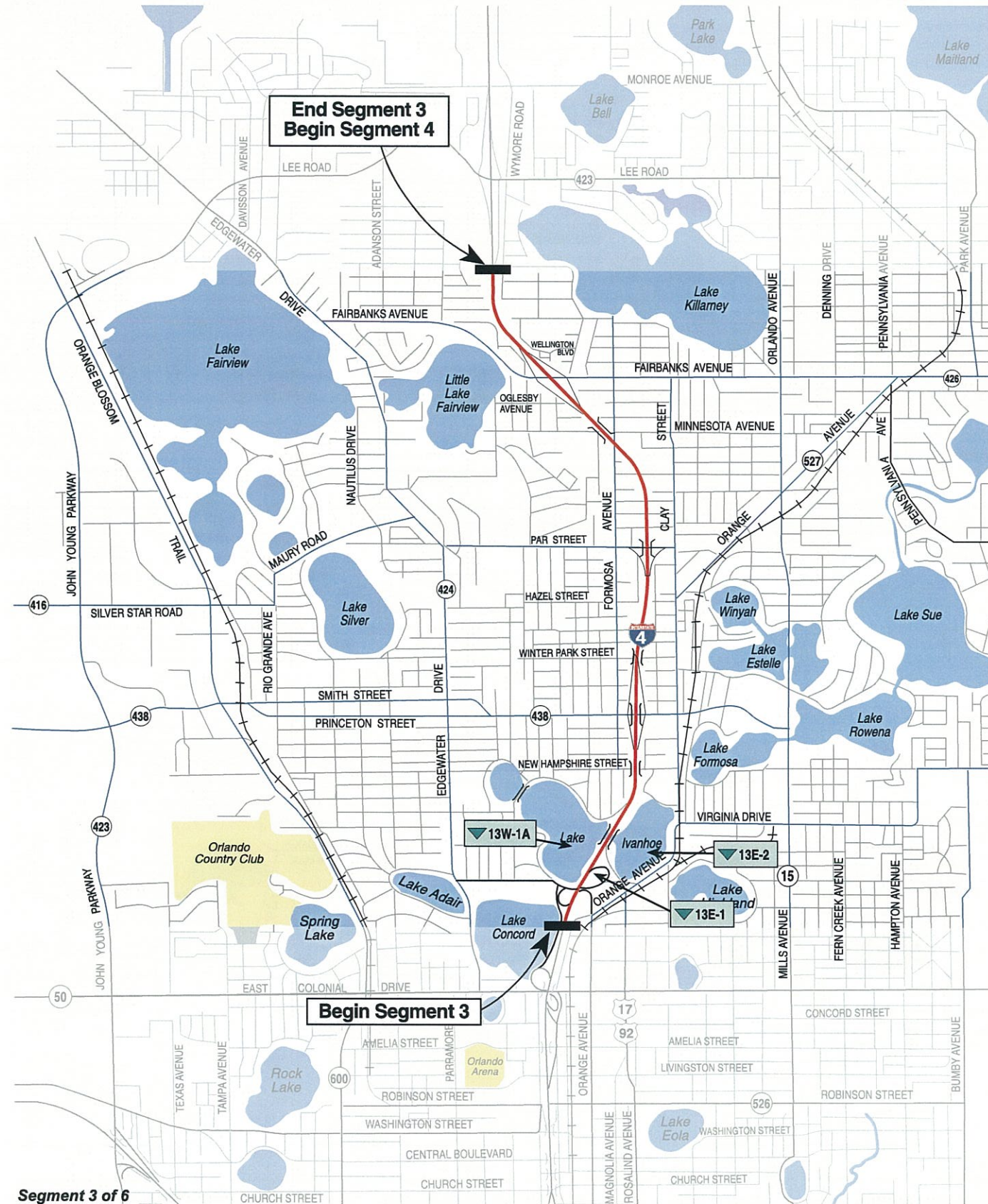
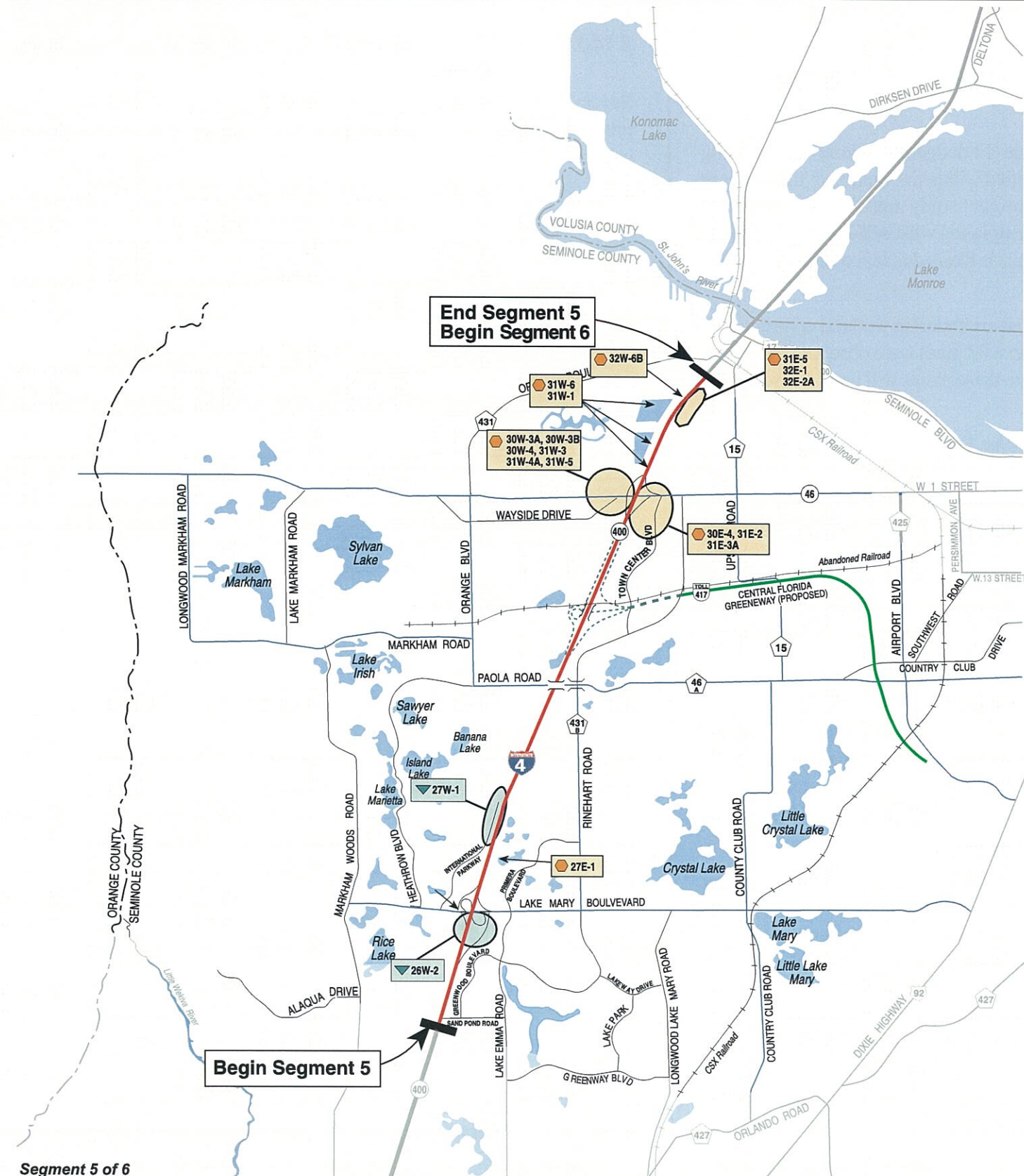


Figure 9.14.6.1 Impacted Wetlands

I-4 PD&E Study - Section 2



Segment 5 of 6



Area of Generalized Wetland Location
(For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

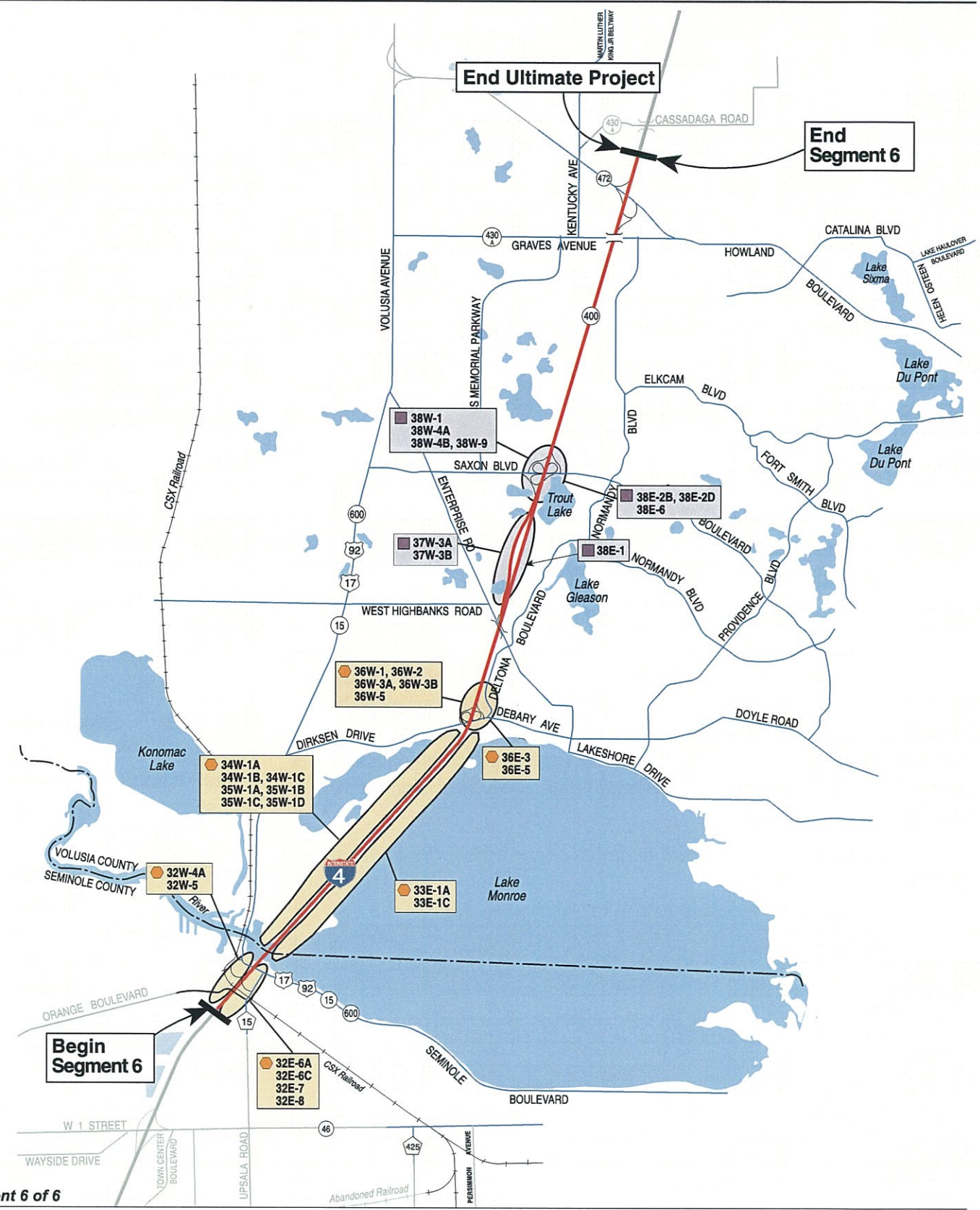
Watershed Basin
 Lake Jessup Basin (SJRWMD)
 Lake Monroe Basin (SJRWMD)

Segment 6 of 6



Area of Generalized Wetland Location
(For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

Watershed Basin
 Lake Monroe Basin (SJRWMD)
 Lake Woodruff Basin (SJRWMD)



Segment 6 of 6



Area of Generalized Wetland Location
(For Specific Wetland Boundaries Refer to the Wetlands Evaluation Report)

Watershed Basin
 Lake Monroe Basin (SJRWMD)
 Lake Woodruff Basin (SJRWMD)

I-4 PD&E Study - Section 2

Figure 9.14.6.1 Impacted Wetlands

Table 9.14.6.1 - Total Wetland Impact Area and Percent Cover by Community Classification within the Study Corridor

| Wetland Community/Classification | NWI Code | Total Project Wetland Area | Percent of Total Project Wetland Area | Total Wetland Impact Area | Percent Impacts to Community Type | Percent of Project Total Impacts |
|----------------------------------|------------------|----------------------------|---------------------------------------|---------------------------|-----------------------------------|----------------------------------|
| Ultimate Project | | | | | | |
| Palustrine Forested | PFO | 442 ac | 32% | 18 ac | 4% | 14% |
| Open Water | LUBH, RUBH, PUBH | 430 ac | 31% | 30 ac | 7% | 22% |
| Palustrine Emergent | PEM | 364 ac | 27% | 49 ac | 13% | 37% |
| Palustrine Scrub-Shrub | PSS | 137 ac | 10% | 35 ac | 26% | 27% |
| TOTAL | | 1373 ac | 100% | 132 ac | 10% | 100% |
| Preferred Alternative | | | | | | |
| Palustrine Forested | PFO | 144 ac | 33% | 6 ac | 8% | 7% |
| Open Water | LUBH, RUBH, PUBH | 196 ac | 45% | 26 ac | 32% | 32% |
| Palustrine Emergent | PEM | 47 ac | 11% | 22 ac | 26% | 27% |
| Palustrine Scrub-Shrub | PSS | 49 ac | 11% | 28 ac | 34% | 34% |
| TOTAL | | 437 ac | 100% | 82 ac | 19% | 100% |

All impacts associated with the Preferred Alternative are shown in **Bold Italics**.
 *Total Wetland Area is within 600 feet of pavement or to right-of-way line, whichever is greater.

within these areas. However, a few remnant natural communities along the limits of the Ultimate Project and Preferred Alternative do provide suitable habitat for some protected vegetative and wildlife species. Figure 9.14.7.1 shows areas of potential impact to threatened and endangered species. Potential impacts to these areas, and to specific species, are described below.

9.14.7.1 Threatened and Endangered Flora and Significant Habitat

Table 9.14.7.1 lists seven listed plant species that were identified within the Ultimate project study area by project biologists, and may be impacted by the roadway improvements. These species are among the 64 federal and state listed threatened and endangered plant species that were identified as potentially occurring within the vicinity of the I-4 Ultimate project study area. None of the other 57 species were found.

No impacts to flora species are anticipated to occur within the limits of the Preferred Alternative.

Table 9.14.7.1 - Potentially Impacted Listed Plant Species

| Common Name | Scientific Name | Federal Listing (USFWS) | State Listing (FSA) | Round near Segment# |
|--------------------------------------|------------------------|-------------------------|---------------------|---------------------|
| Wetland Plants | | | | |
| Cinnamon fern | Osmunda cinnamomea | | C | All |
| Common wild pine | Tillandsia fasciculata | | E | All |
| Royal fern | Osmunda regalis | | C | All |
| Upland or Scrub Plants | | | | |
| Garberia | Garberia heterophylla | | T | 6 |
| McFarlin's lupine | Lupinus aridorum | E | E | 1 |
| Nodding pinweed | Lechea cernua | | T | 1 |
| Pigeon wings/ Sandhill butterfly pea | Clitoria fragrans | T | E | 6 |

FDA = Florida Department of Agriculture and Consumer Services
 USFWS = United States Fish and Wildlife Service
 E = Endangered
 T = Threatened
 C = Commercially Exploited

9.14.7.1.1 Segment 1 - Bee Line Expressway to John Young Parkway

Two protected species, McFarlin's lupine (Endangered/Federal) and nodding pinweed (Threatened/State), were identified within the vicinity of the southern portion of Segment 1 of the Ultimate project study area. Project biologists identified their occurrence to be in the uplands west of I-4 and adjacent to Turkey Lake Road. Impact to these plants is likely due to road improvements and pond construction in that area.

Those State listed vegetative species that are found in wetland communities (cinnamon fern, royal fern, and common wild pine) were observed by project biologists in this segment. Any impacts to these plants will be addressed in the wetland permitting process.

9.14.7.1.2 Segments 2 and 3 - John Young Parkway to Lee Road
The only listed (State) vegetative species that were observed by project biologists in these segments are those found in wetland communities: cinnamon fern, royal fern and common wild pine. Any impacts to these plants will be addressed in the wetland permitting process. The likelihood of occurrence of listed species is low due to the high degree of residential and commercial development along Segments 2 and 3. Impacts to these plants will be addressed during the wetland permitting process.

9.14.7.1.3 Segments 4 and 5 - Lee Road to US 17-92

The only listed (State) vegetative species that were observed by project biologists in these segments are those found in wetland communities: cinnamon fern, royal fern and common wild pine. Any impacts to these plants as a result of the Ultimate I-4 improvements will be addressed in the wetland permitting process.

9.14.7.1.4 Segment 6 - US 17-92 to SR 472

Two of the five specimens of the pigeon wings (or sandhill butterfly pea) (Threatened/Federal and Endangered/State) were identified by the project team along Segment 6 in 1997, at the edge of an overgrown scrub community on the northwest corner of the Saxon Boulevard interchange. It is anticipated that the Ultimate project will impact this community. Suitable habitat will continue to exist along this segment, thus this species will not be significantly impacted. Another protected floral species, garberia (Threatened/State), which is found in sand pine communities such as those in the northern section of the Ultimate project corridor, was observed. Numerous individuals were found in scattered locals throughout the sand pine and scrub communities.

Those State listed vegetative species that are found in wetland communities (cinnamon fern, royal fern and common wild pine) were observed by project biologists in this segment. Any impacts by the Ultimate improvements to these plants will be addressed in the wetland permitting process.

9.14.7.2 Threatened and Endangered Fauna and Significant Habitat

Several of the protected wildlife species that may be found within the Ultimate project and Preferred Alternative study corridor are associated with wetland habitat.

Table 9.14.7.2.1 provides a list of the protected wildlife species that have been observed within the Ultimate project and Preferred Alternative study corridor, based on historic agency records and 1996 field observations. Not listed in the table but a species of regional concern that is discussed and identified in the figures is the Florida Black Bear.

Table 9.14.7.2.1 - Potentially Impacted Listed Animal Species

| Common Name | Scientific Name | Federal Listing (USFWS) | State Listing (FWC) | Round in Segment# |
|----------------------|--------------------------|-------------------------|---------------------|-------------------|
| Bald Eagle | Haliaeetus leucocephalus | T | T | 2, 3, 4 & 5 |
| Eastern indigo snake | Drymarchon corai couperi | T | T | 6 |
| Florida scrub jay | Aphelocoma coerulescens | T | T | 1, 4, 5 & 6 |
| Gopher tortoise | Gopherus polyphemus | | SSC | 1, 4 & 5 |
| Least tern | Sterna antillarum | | T | 4 |
| West Indian manatee | Trichechus manatus | E | E | 6 |
| Wood stork | Mycteria americana | E | E | 6 |

FWC = Florida Fish and Wildlife Conservation Commission
 USFWS = United States Fish and Wildlife Service
 E = Endangered
 T = Threatened
 SSC = Species of Special Concern

9.14.7.2.1 Segment 1 - Bee Line Expressway to John Young Parkway

Florida scrub jays were not found along Segment 1, although they were previously reported by Florida Fish and Wildlife Conservation Commission (FWC) in the area. Gopher tortoises have been documented in the vicinity (1/2-mile to the west) of Segment 1, and wildlife species commensal with gopher tortoises also may occur in this area. These species are typically impacted by roadway improvement projects through a reduction of suitable habitat. Mitigation for potential impacts (if any) to these species will be conducted in accordance with agency recommendations established during the permitting phases.

American alligators and wading birds such as wood storks, snowy egrets, little blue herons, white ibis and tricolored herons may occur in the emergent wetland systems and along Shingle Creek. The Preferred Alternative is not expected to significantly impact these species, except for temporary disruption of foraging habitat during construction.

9.14.7.2.2 Segments 2 and 3 - John Young Parkway to Lee Road

No impacts to bald eagles are expected as a result of the project. There are no known active nests in the construction area, and mitigation measures will be implemented during construction to minimize disturbance to any eagles that may be in the vicinity.

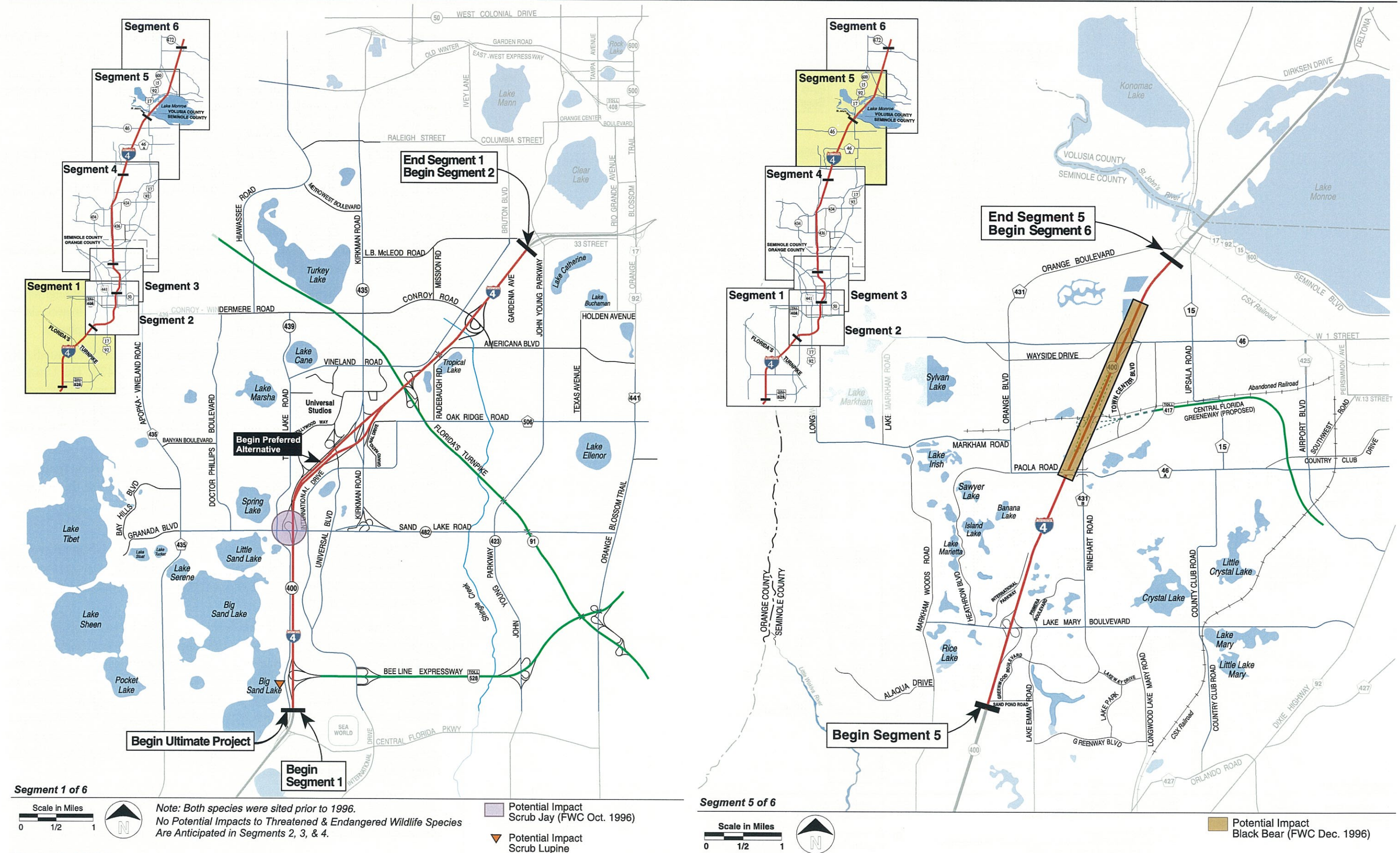
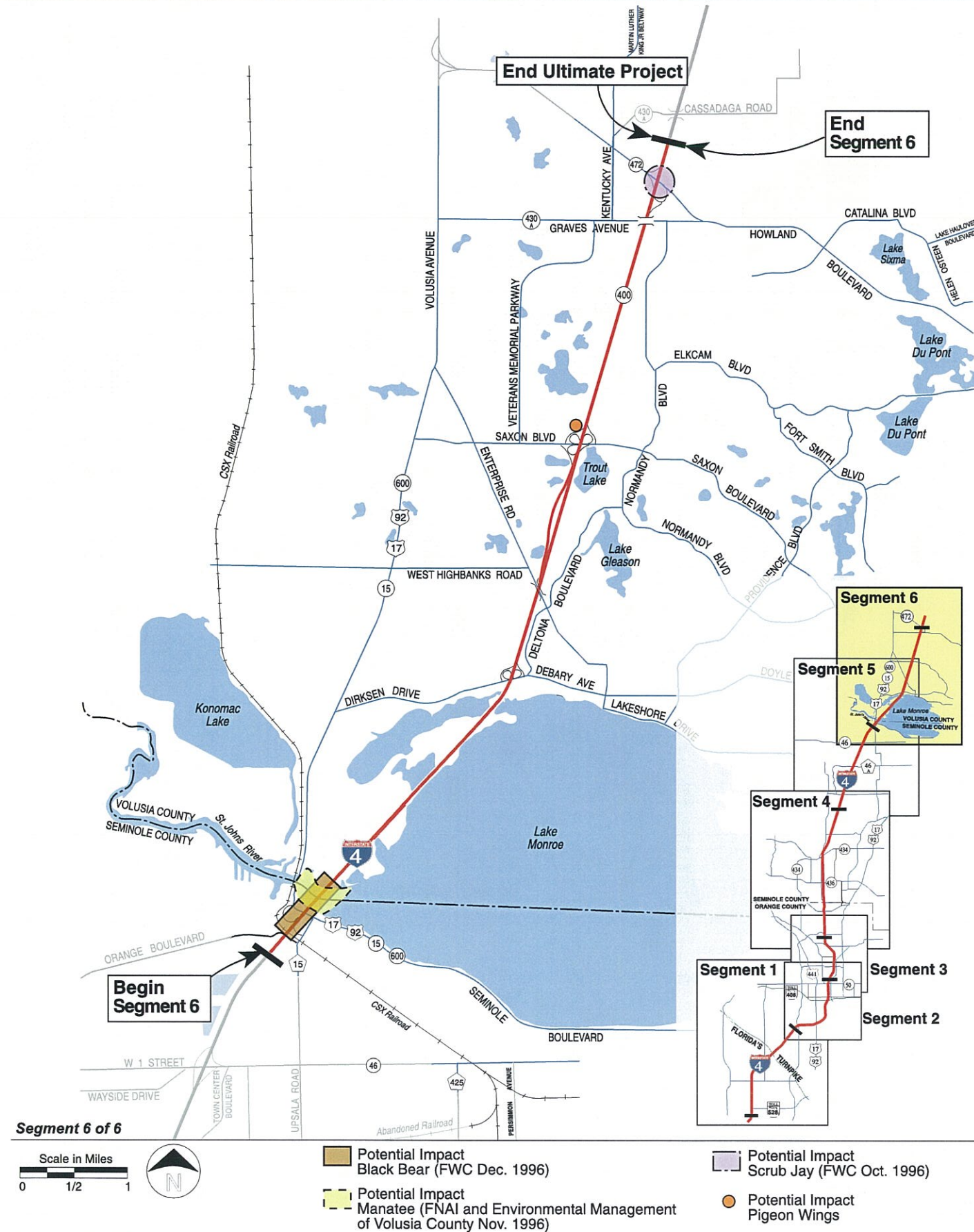


Figure 9.14.7.1
Potential Impacts to Threatened & Endangered Wildlife Species

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Lake Concord in Segment 2 and Lake Ivanhoe in Segment 3 provide foraging habitat for a variety of avian species, including the protected snowy egret, little blue heron and limpkin. No rookeries were identified in the project area. No impacts to these protected species are expected as a result of the Preferred Alternative.

9.14.7.2.3 Segments 4 and 5 - Lee Road to US 17-92

The Ultimate project is not expected to impact bald eagles. There are no known active nests in the impact area, and mitigation measures will be implemented during construction to minimize disturbance to any eagles that may be in the vicinity.

Florida black bear mortality has been previously reported by FWC along the northern end of Segment 5; however, the mortality rate is not expected to increase significantly as a result of the Ultimate improvements.

Agency reports indicate that scrub jays may occur in the vicinity of Segments 4 and 5. Mitigation for potential impacts to jays will be conducted in accordance with agency recommendations established during the permitting phases.

Gopher tortoises were documented in the vegetative communities immediately adjacent to the eastern rest area along I-4, north of SR 434. The Ultimate project is not likely to impact these tortoises or their habitat as no construction is planned to occur east of the rest area. Mitigation for these potential impacts will be conducted in accordance with agency recommendations established during the permitting phases.

A least tern was reported near Segment 4 in 1996. Nesting habitat for the tern (beaches) does not occur in the project area, and therefore the roadway improvement project is not likely to affect this species.

9.14.7.2.4 Segment 6 - US 17-92 to SR 472

No impacts to bald eagles are expected as a result of the Ultimate project. There are no known active nests in the construction area, and mitigation measures will be implemented during construction to minimize disturbance to any eagles that may be in the vicinity.

The Ultimate project improvements have no direct impact to scrub jay habitat and should have no significant adverse affect on regional or local populations of scrub jays. The USFWS provided a letter of "No Significant Impact" for the Volusia County SR 472 extension project, which will displace over five acres (DRMP 1997). Similarly, USFWS provided a letter of "No Significant Impact" for the I-4 Six Laning and St. Johns River Bridge project, which would displace only a fraction of the amount (0.14 acres) of jay habitat as the SR 472 extension project. Refer to the I-4 Six Laning and St. Johns River Bridge EA/FONSI (May 2000) for further information.

No direct impacts to Florida manatees are anticipated to occur from the project. The only loss of habitat will be for the placement of the bridge pilings for the St. Johns River Bridge. However, as part of the I-4 Six Laning and St. Johns River

Figure 9.14.7.1 Potential Impacts to Threatened & Endangered Wildlife Species

Bridge Project, the St. Johns River Bridge substructure and superstructure for the general use lanes will be constructed, as well as the ultimate foundation for the HOV lanes. The eastbound I-4 US 17-92 loop ramp that will be partially bridged over Lake Monroe will be constructed as a separate project. Therefore, construction within the St. Johns River is not expected to occur as part of the Ultimate project. The widening of the St. Johns River Bridge will not create an adverse impact to this manatee feeding area. Provisions will be met during construction in accordance with state and federal permits that will protect the manatee within the project area.

As part of the interim I-4 Six Laning and St. Johns River Bridge project, impacts to scrub jays will be mitigated. Refer to the I-4 Six Laning and St. Johns River Bridge EA/FONSI (May 2000).

No significant impact to habitat used by the Indigo Snake is anticipated with this project.

No impacts to wood storks are anticipated as a result of the Ultimate improvements. Individuals using the project area as foraging habitat are expected to utilize similar habitat areas nearby.

The Florida black bear is a threatened species and a species of regional concern. Bear mortality has been reported along this section of I-4; however, the mortality rate is not expected to increase significantly as a result of the Ultimate improvements.

9.14.8 Floodplains and Regulatory Floodways

The proposed improvements to I-4 will minimally impact several floodplains and floodways along the corridor. Since the improvements consist of widening an existing facility, the application of alternative typical sections will not change the impacts to the floodplains significantly; therefore, each alternative is not separately explored with regard to these impacts. All impacts can be generally described as follows:

- ◆ The impact of the proposed improvements is minimal and will be mitigated as appropriate. The likelihood of flood risk is minimized due to the stringent culvert hydraulic analysis and floodplain impact mitigation proposed.
- ◆ No adverse impacts on natural and beneficial floodplain values are anticipated since the majority of improvements are confined within the existing roadway corridor. Additionally, mitigation is proposed where necessary.
- ◆ The improvements to the Interstate will not encourage developments within the base floodplain since they occur within a limited access facility that provides controlled entrance and exit points.
- ◆ There are no records of traffic interruption due to flooding on the existing mainline and the facility will continue to provide flood free access;

therefore, the floodplain impacts associated with the improvements will not adversely affect the operation of emergency services.

- ◆ Floodplain impacts have been minimized and avoided where practicable by using shoulder gutters, closed drainage systems, retaining walls and bridges.

A separate *Location Hydraulics Report* (August 2000) providing an in-depth study of the floodplain and floodway impacts has been prepared for this project. The subsequent segment discussions provide a general description of those floodplain and floodway impacts as well as restoration and/or mitigation measures for each impact area. Table 9.14.8.1 summarizes these impacts.

9.14.8.1 Segment 1 - Bee Line Expressway to John Young Parkway

There are two floodplains and one floodway impacted in this segment with the Preferred Alternative. Figure 9.14.8.1 identifies the location of each impact area and corresponds to the impact area designation provided in Section 4.4.3.

- ◆ *Impact Areas A and B - The impacts to these floodplains are approximately 29.33 ac-ft for Area A and 1.98 ac-ft for Area B. This constitutes a minimal impact when compared to the overall floodplain with which these areas are associated. Compensation for these displaced volumes will be provided in the proposed stormwater management ponds. As stated in Section 4.4.3, these floodplains are associated with existing structures, identified as Structures 6 and 7 in Figure 4.2.8.1, previously presented. The property upstream of these culverts has experienced minor flooding in the existing condition. With the implementation of the improvements to I-4, the headwater elevation increases 0.04 feet with the extension of the culverts. This is a minimal increase. As stated in the Location Hydraulics Report (August 2000), this upstream flooding problem will require a more in-depth analysis during final design to determine an appropriate solution to reduce upstream impacts and ensure that downstream impacts are not increased.*
- ◆ *Impact Area C - Approximately 8.70 ac-ft of displaced floodplain volume is anticipated at this site. Additionally, this impact area is associated with Shingle Creek, which is identified as a FEMA regulated floodway. The extension of the existing box culvert to accommodate the proposed improvements will require permitting and coordination with Orange County and FEMA. This hydraulic analysis, coordination and permitting will take place during final design; however, initial analysis of this box culvert extension indicates that the headwater increases 0.08 feet, which will not adversely impact the upstream environment. Compensation for the displaced volume at this site will be provided in proposed stormwater management ponds.*

Table 9.14.8.1 - Impacts to Floodplains

| Impact Area | Volume (acre-feet) | Comments |
|-------------------------|--------------------|---|
| Segment 1 | | |
| A | 29.33 | Compensation will be provided in proposed stormwater management ponds |
| B | 1.98 | Compensation will be provided in proposed stormwater management ponds |
| C | 8.70 | Compensation will be provided in proposed stormwater management ponds |
| Segments 2 and 3 | | |
| D | Minimal | Impacts will be equal to volume of bridge piers |
| E | Minimal | Impacts will be equal to volume of bridge piers |
| Segments 4 and 5 | | |
| F | Minimal | Impacts will be equal to volume of bridge piers |
| G | 6.03 | Compensation will be provided in Pond CP-1 |
| N | 0.26 | Displaced volume is insignificant; no separate compensation is proposed |
| Segment 6 | | |
| O, P, Q, R, S and T | 289.17 | Retaining walls, bridges, enclosed storm sewer systems, and cross culverts will be proposed through the FEMA permitting process |
| U | 2.85 | Shoulder gutter, closed storm sewer system, and retention pond are proposed to minimize impacts |

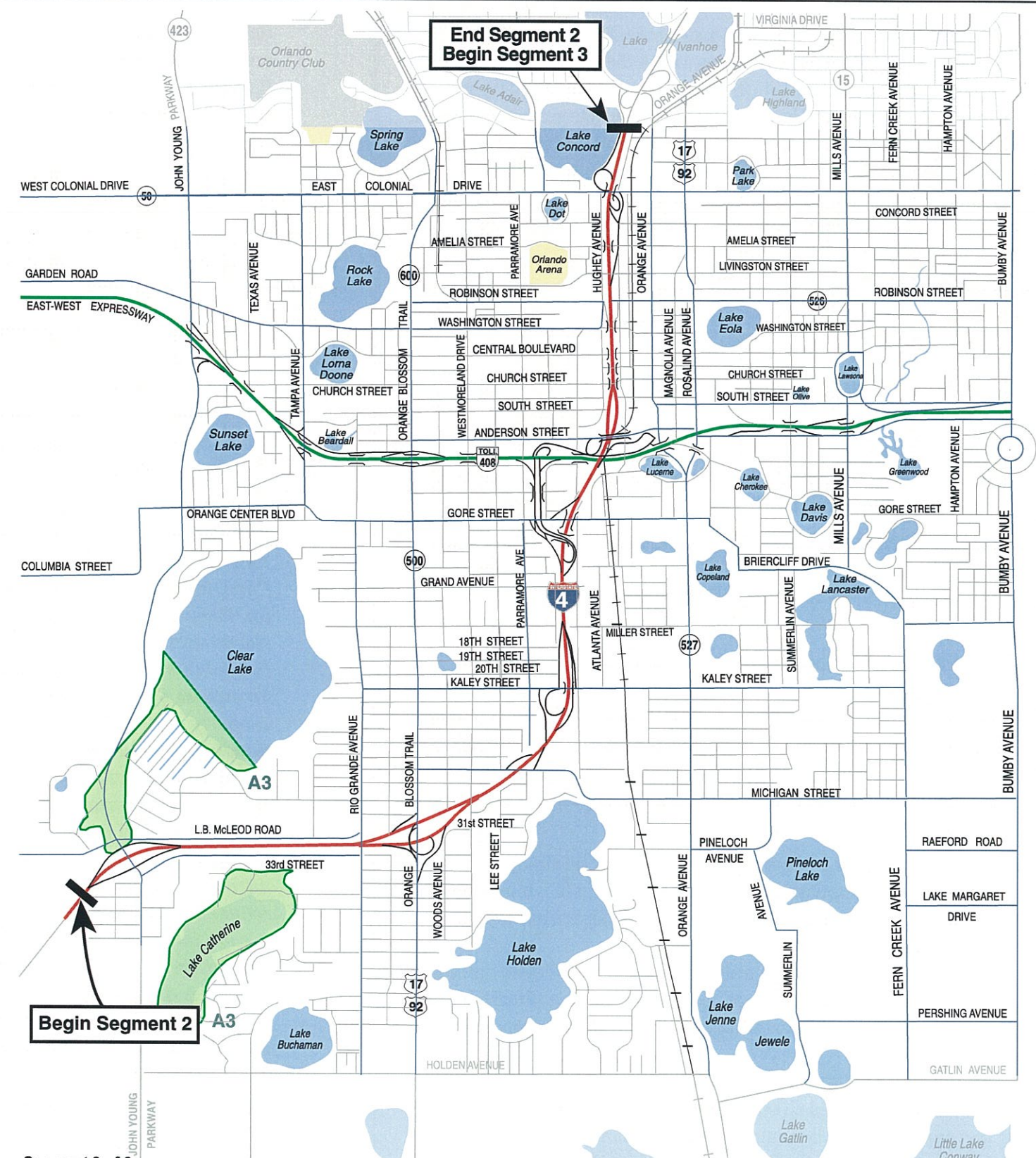
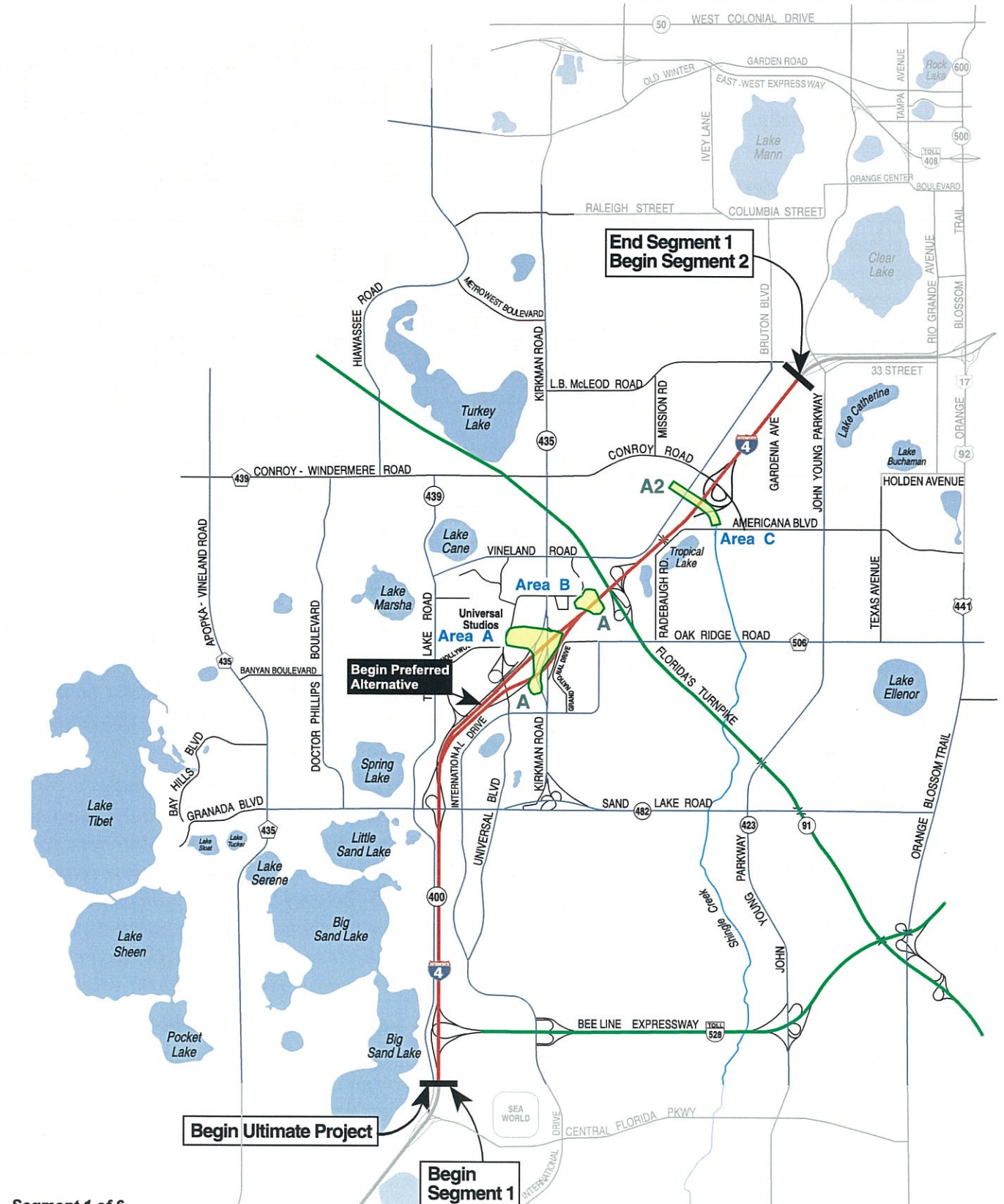
9.14.8.2 Segments 2 and 3 - John Young Parkway to Lee Road
There are two floodplain impacts in these segments. Their impacts and proposed mitigation are described below. Figure 9.14.8.1 identifies the location of each impact area and corresponds to the impact area designation provided in Section 4.4.3.

- ◆ *Impact Areas D and E - The estimated impacts to these floodplains associated with Lake Concord and Lake Ivanhoe, respectively, are minimal. To minimize impacts to these recreational lakes, the proposed mainline improvements and additional ramps will be bridges instead of built on fill; therefore, the impacts within the floodplains will be equal to the volume of the bridge piers. Excavating existing fill adjacent to the Interstate will compensate for this minimal fill volume.*

9.14.8.3 Segments 4 and 5 - Lee Road to US 17-92

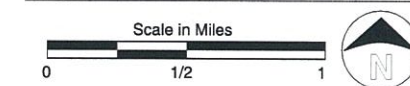
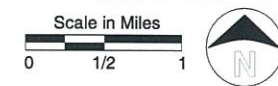
There are three floodplain impacts anticipated within these segments from the Ultimate project. Their impacts and proposed mitigation are described below. Figure 9.14.8.1 identifies the location of each impact area and corresponds to the impact area designation provided in Section 4.4.3.

- ◆ **Impact Area F** - The approximate impacts to this floodplain associated with Cranes Roost is minimal. In an effort to minimize impacts, the proposed improvements will be on bridge; therefore, the impacts to this floodplain are equal to the volume of the bridge piers. By excavating



Segment 1 of 6

Segment 2 of 6

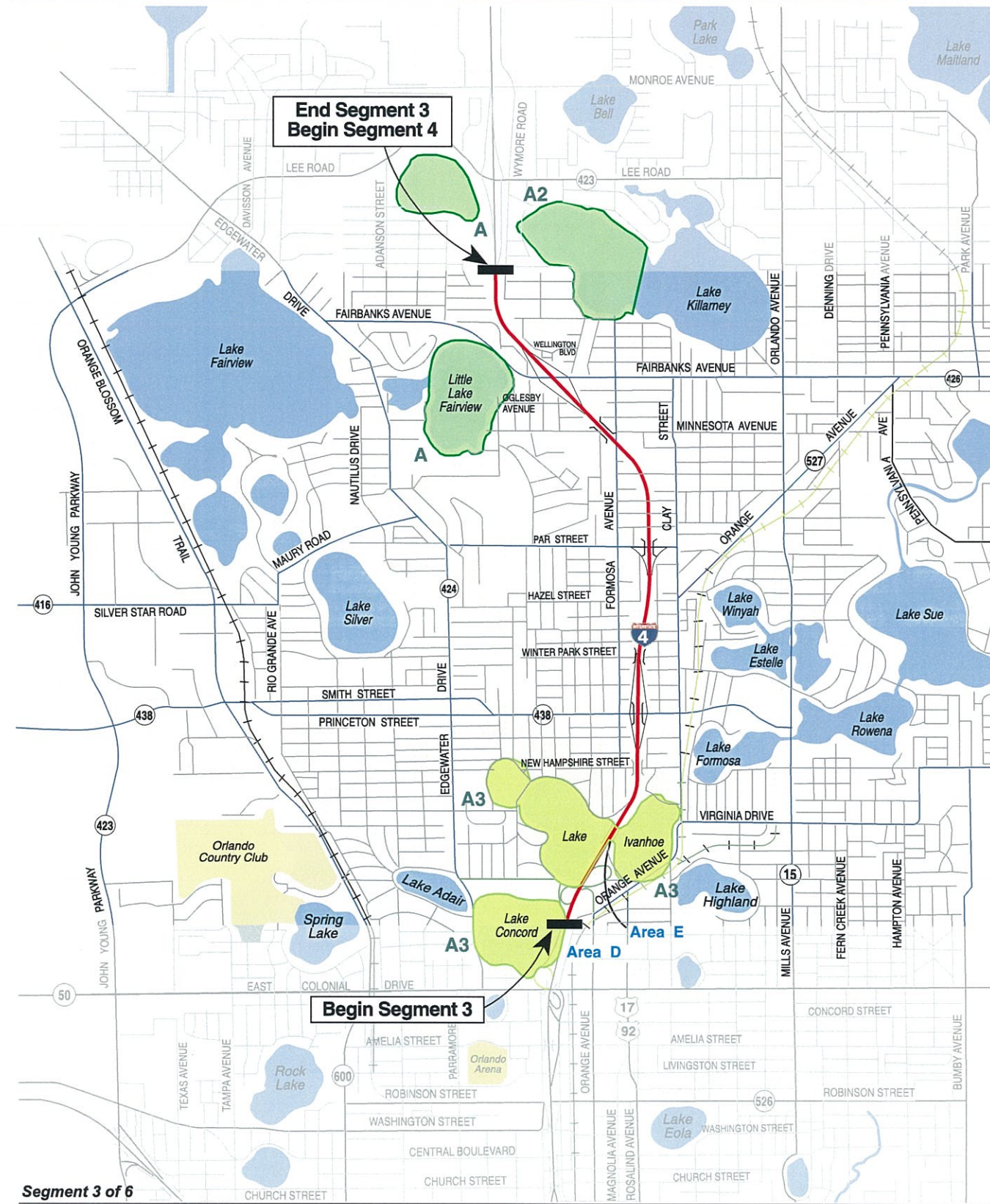


- A Potential Floodplain Impact
- Area X Designation for floodplains proposed to be impacted by future improvements

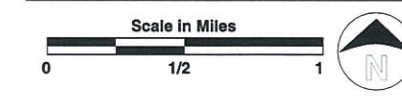
- A Floodplain and Zone Designation
- Area X Designation for floodplains proposed to be impacted by future improvements

Figure 9.14.8.1 Potentially Affected Base Floodplains & Floodways

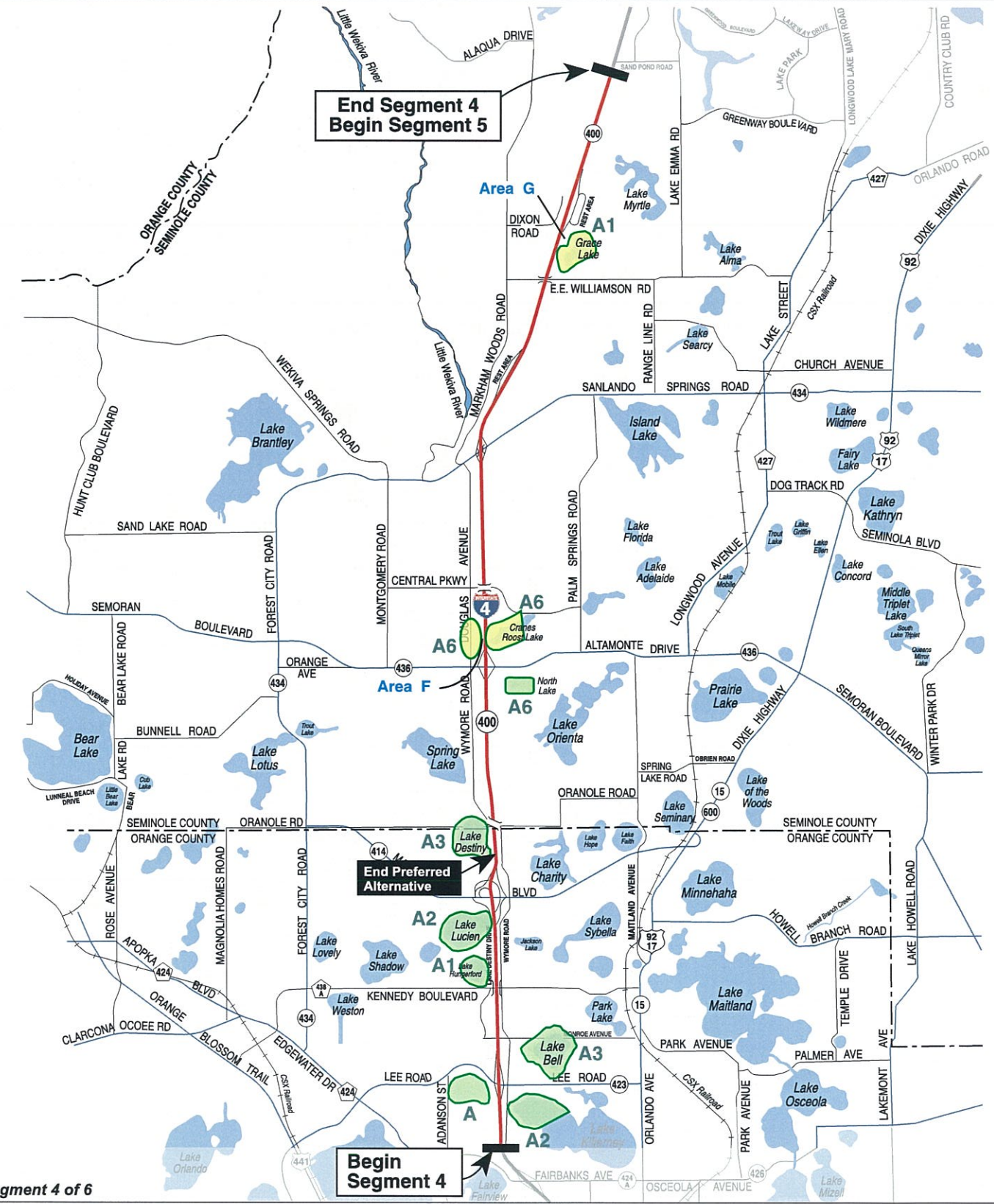
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Segment 3 of 6



- A Floodplain and Zone Designation
- A Potential Floodplain Impact
- Area X Designation for floodplains proposed to be impacted by future improvements



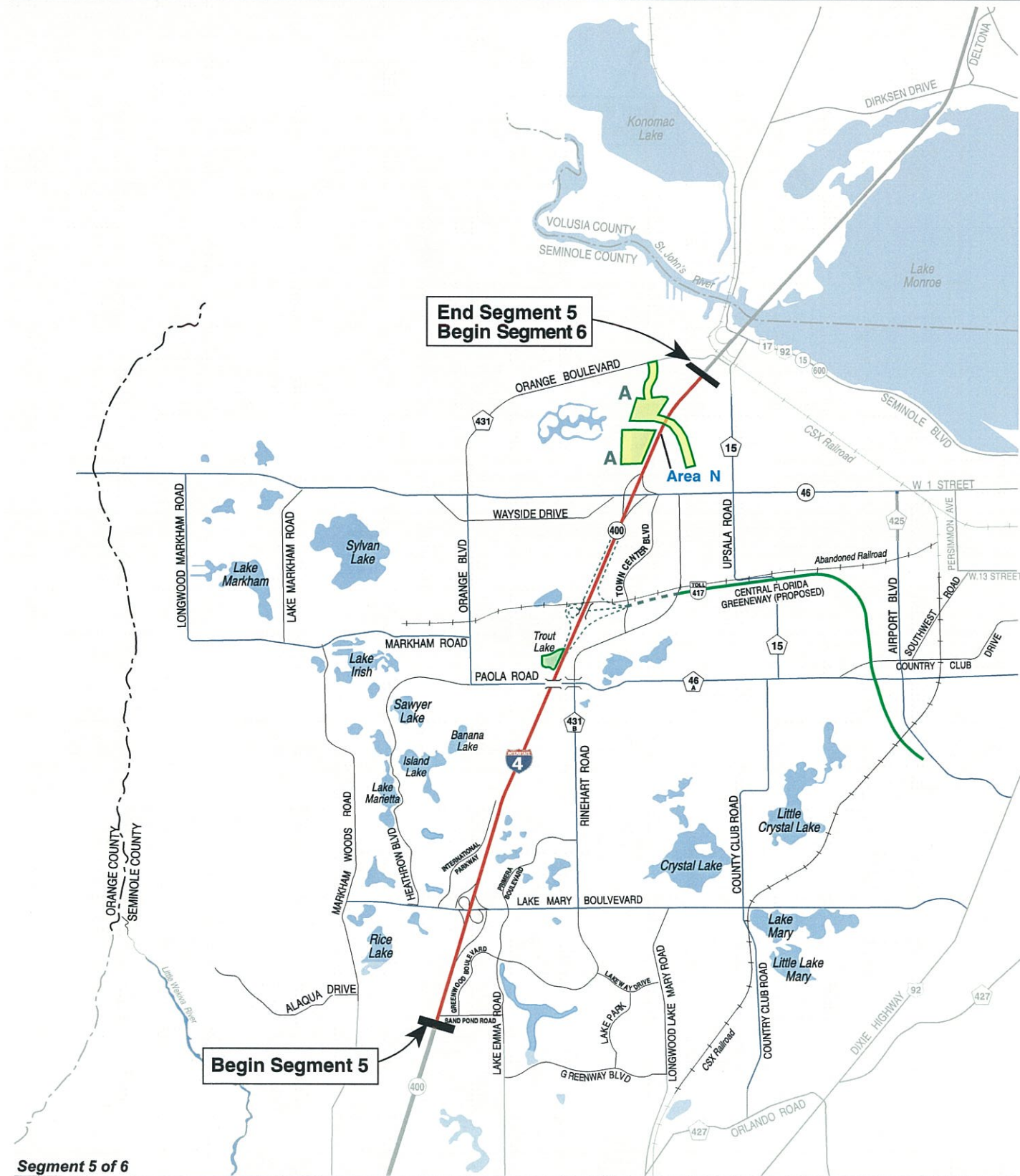
Segment 4 of 6



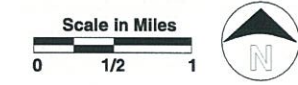
- A Floodplain and Zone Designation
- A Potential Floodplain Impact
- Area X Designation for floodplains proposed to be impacted by future improvements

I-4 PD&E Study - Section 2

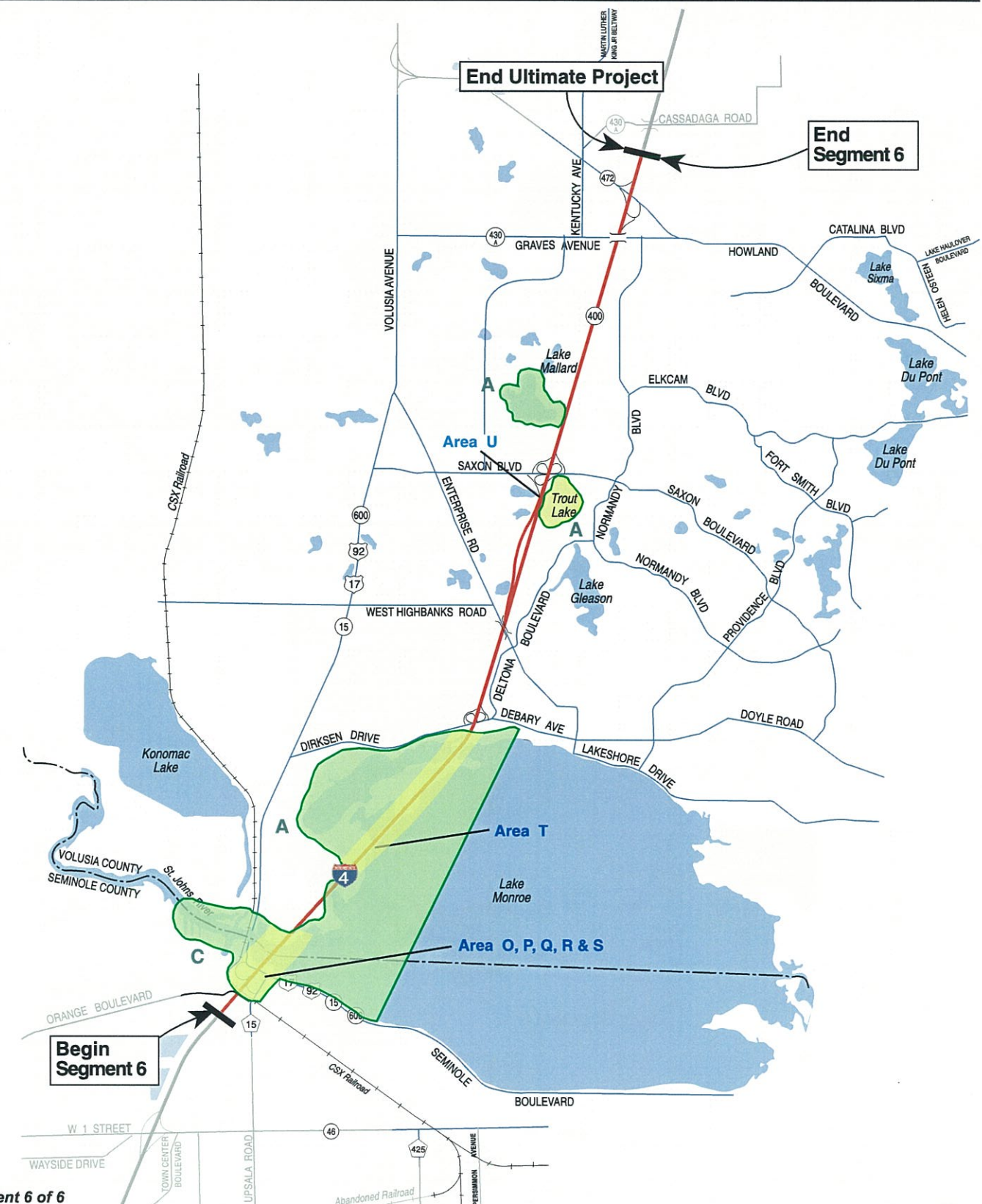
Figure 9.14.8.1 Potentially Affected Base Floodplains & Floodways



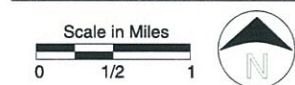
Segment 5 of 6



- A Floodplain and Zone Designation
- A Potential Floodplain Impact
- Area X Designation for floodplains proposed to be impacted by future improvements



Segment 6 of 6



- A Floodplain and Zone Designation
- A Potential Floodplain Impact
- Area X Designation for floodplains proposed to be impacted by future improvements

Figure 9.14.8.1 Potentially Affected Base Floodplains & Floodways

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existing fill adjacent to I-4, the displaced volume can be compensated, and additional available floodplain can potentially be added. This may reduce the severity of the existing flooding at this site.

- ◆ **Impact Area G** - Approximately 6.03 ac-ft of displaced volume is anticipated at this floodplain associated with Grace Lake, as a result of the proposed improvements. Compensation is to be provided in Pond CP-1. This compensation is not designed to improve the historic flooding on the west side of I-4, but will maintain the current high water elevation for a 100-year storm event.
- ◆ **Impact Area N** - The amount of displaced 100-year volume at this site is approximately 0.26 ac-ft and is insignificant. No separate floodplain compensation/mitigation is proposed.

9.14.8.4 Segment 6 - US 17-92 to SR 472

There are seven impact areas anticipated within this segment. Their impacts and proposed mitigation are described below. Figure 9.14.8.1 identifies the location of each impact area and corresponds to the impact area designation provided in Section 4.4.3.

- ◆ **Impact Areas O, P, Q, R, S, and T** - These six impact areas are located at the I-4/US 17-92 interchange and adjacent to I-4 through the Lake Monroe floodplain and total approximately 289.17 ac-ft in impact volume. This displaced volume increases the static Lake Monroe floodplain elevation by 0.018 feet over the total floodplain area and is considered insignificant. Since the St. Johns River is a FEMA-regulated floodway, a FEMA permit will be required for the construction of the new bridges during final design. During the course of this permitting, it will be demonstrated, through a surface profile analysis of the river, that the construction of these improvements will not adversely affect the surrounding environment. Several techniques are proposed to further minimize the impacts of this project: retaining walls, bridges and enclosed stormsewer systems. Additionally, cross culverts will be installed, by jack and bore, through the Lake Monroe causeway to restore the hydroperiod of the wetlands and floodplain on the west side of I-4. These culverts will be placed such that a free flow flushing may occur. Coordination with all regulatory agencies has been ongoing and should continue concerning the location, size and most effective inverts for the installation of these cross culverts.
- ◆ **Impact Area U** - The approximate impact to this floodplain associated with Trout Lake is 2.85 ac-ft. In an effort to minimize these impacts, it is proposed to provide shoulder gutter and a closed stormsewer system. Compensation for this minimal impact is to be provided in the proposed retention ponds within the I-4/Saxon Boulevard interchange since there is excess volume available in these ponds according to the preliminary design. The implementation of this scheme is not proposed to eliminate the cyclic flooding problem as discussed in Section 4.4.3.

9.14.9 Water Resources

9.14.9.1 Groundwater

The effect of the project on area groundwater resources will be minimal. Construction of the Ultimate project or *Preferred Alternative* should not affect groundwater recharge rates within the project area since the additional impervious area that will be constructed is adjacent to the existing roadway. The Ultimate project and *Preferred Alternative* will adhere to all State requirements for providing stormwater treatment and attenuation per the Section 40C-4.302 FAC and local agencies if more stringent. The proposed I-4 stormwater management systems will be maintained to remain in compliance with state and local agencies' permitting requirements.

Groundwater resources of the Ultimate and *Preferred Alternative* project area will be protected according to the requirements of the U.S. Environmental Protection Agency (EPA) and the local and state agencies having jurisdiction. Surface runoff discharges to groundwater will be avoided, since stormwater management systems will be constructed to provide the required stormwater treatment and attenuation. Prior to design and construction activities, further coordination with FDEP will be initiated to develop action plans with respect to existing interceptor wells, bridge pilings, borings, stormwater ponds, and other related construction activities. FDOT is also committed to repairing and/or replacing any interceptor wells damaged and/or disturbed due to construction activities.

Management practices that describe spill response procedures and methods to minimize the potential for impacts due to spills will be developed during design and further finalized in construction in accordance with requirements and regulations of EPA and the local and state agencies having jurisdiction. The EPA requires a National Pollutant Discharge Elimination System (NPDES) General Permit for construction activities that are greater than five acres of land disturbance. Construction of the Ultimate project and *Preferred Alternative* will adhere to these permit requirements by establishing Best Management Practices (BMPs) and implementing a stormwater management plan.

9.14.9.2 Surface Water

The Ultimate improvements and *Preferred Alternative* are not anticipated to have any significant long-term effect on the water quality of surface waters within the project area. The Ultimate project and *Preferred Alternative* will include the construction of stormwater management systems that will provide water quality treatment and attenuation for the additional and existing impervious areas within the project area per local and state agencies. The water quality impacts in relation to surface waters will be temporary and associated with construction. BMPs will be maintained in accordance with Section 40C-4.301 and 4.302 FAC and will be used to minimize water quality impacts during construction and achieve a no-net effect on water quality in the system.

Avoidance, minimization and compensation measures will be evaluated during the design phase of the project to avoid surface and groundwater quality impacts. A stormwater management plan will be established and implemented during construction in accordance with the EPA NPDES General Permit for construction projects greater than five acres of land disturbance. As required by local and state agencies, the stormwater management systems, such as stormwater ponds, are required to be constructed initially, and may serve as sedimentation basins during construction if necessary.

9.14.9.3 Water Quality

This Ultimate project and *Preferred Alternative* will not have any significant long-term effect on the quality of surface waters and groundwater within the project area. Short-term, construction-related impacts will be minimized to the maximum degree possible through the use of BMPs, control of surface water runoff and strict adherence to FDOT's *Standard Specifications for Road and Bridge Construction*.

It is anticipated that the Ultimate project or *Preferred Alternative* will not have any drinking water quality impacts within the project area. There are two public drinking water supply wells in close proximity of the I-4 project area in Seminole County. Seminole County constructed both public supply wells following the initial construction of I-4.

The county is currently in the process of adopting a well head protection plan, which would require a 1,640.5-foot buffer around the drinking water supply wells. Neither of the wells meet the required buffer, but should be grandfathered by the county once the plan has been adopted. Coordination will be required during design and construction between FDOT, the contractor and Seminole County to ensure that the Ultimate project will not impact the existing drinking water supply wells. It is recommended that the wells be identified on the construction plans and in the specification documents to ensure that the contractor is aware of the situation.

There are no drinking water supply wells within the Preferred Alternative project area.

9.14.9.4 Outstanding Florida Waters (OFW)

No impacts are anticipated to the OFWs located near the I-4 Ultimate project or *Preferred Alternative* study area. No OFWs occur within the I-4 Ultimate project study area. The nearest OFW is the Wekiva River, which is 2.75 miles to the west of I-4 within Segment 5 at Lake Mary Boulevard.

No impacts are anticipated to the Wekiva River System, as defined in Section 369.303(10) FAC, and consisting of the Wekiva River, the Little Wekiva River, Black Water Creek, Rock Springs Run and Seminole Creek.

The eastern boundary of the Wekiva River Protection Area (as defined in Section 369.303(9) FAC) is Markham Woods Road just north of SR 434 (Sanlando Springs Road) within Segment 4. No construction activity will occur west of this boundary in the protection area.

9.14.9.5 Wild and Scenic Rivers

No impacts are anticipated to the Wild and Scenic Rivers located near the I-4 Ultimate project or *Preferred Alternative* study area. No Wild and Scenic Rivers occur within the I-4 project study area. The nearest Wild and Scenic River is the Wekiva River, which is 2.75 miles to the west of I-4 within Segment 5 at Lake Mary Boulevard.

No impacts are anticipated to the Wekiva River System, as defined in Section 369.303(10) FAC, and consisting of the Wekiva River, the Little Wekiva River, Black Water Creek, Rock Springs Run and Seminole Creek.

The eastern boundary of the Wekiva River Protection Area (as defined in Section 369.303(9) FAC) is Markham Woods Road north of SR 434 (Sanlando Springs Road) within Segment 4. No construction activity will occur west of this boundary in this protection area.

9.14.9.6 Aquatic Preserves

No impacts are anticipated to the Aquatic Preserves located near the I-4 Ultimate project or *Preferred Alternative* study area. No Aquatic Preserves occur within the I-4 Ultimate project study area. The nearest Aquatic Preserve is the Wekiva River, which is 2.75 miles to the west of I-4 within Segment 5 at Lake Mary Boulevard.

No impacts are anticipated to the Wekiva River System, as defined in Section 369.303(10) FAC, and consisting of the Wekiva River, the Little Wekiva River, Black Water Creek, Rock Springs Run and Seminole Creek.

The eastern boundary of the Wekiva River Protection Area (as defined in Section 369.303(9) FAC) is Markham Woods Road north of SR 434 (Sanlando Springs Road) within Segment 4. No construction activity will occur west of this boundary in this protection area.

9.14.9.7 Coastal Zone Consistency

Under Florida Statute 380, the FDEP is charged with establishing a Coastal Zone Management Program (CZMP) in accordance with Title 15, CFR 930. Section 307 of the Coastal Zone Management Act (CZMA) requires all federal agencies to review activities that directly affect the coastal zone in order to develop consistency determinations. These consistency determinations will be used to determine if proposed federal activities are consistent, to the maximum extent practicable, with Florida's CZMP, which was approved on October 1, 1981.

The Office of Planning and Budget, Office of the Governor has determined that the Ultimate project and *Preferred Alternative* is consistent with the Florida CZMP (as per advance notification response letter dated July 12, 1996).

9.14.10 Contamination

Data pertaining to potential sources of contamination identified in the *Contamination Screening Evaluation Report* (May 1999) conducted for I-4 and SR 408 were reviewed for the Ultimate project study area. A total of 255

sites were identified within the Ultimate project study area, of which 123 were rated "Low" or were far enough from the alignment to not be of concern to the project. Twenty-nine sites were given a risk rating of "Medium" and 103 have been assigned a rating of "High" for having potential petroleum or hazardous material contamination.

Based on the proposed alignment at this phase of the Ultimate project, the proposed improvements could require partial or total right-of-way acquisition of 25 medium or high rated sites. Table 9.14.10.1 presents a breakdown of these 25 impacted sites and the type of potential contamination involvement. The impacts to the sites are summarized in Table 9.14.10.2. Changes in the alignment made during the design phase of the project may affect the number of property acquisitions and will be subject to reevaluation.

Table 9.14.10.1 - Potential Impacted Contamination Sites by Risk Rating and Type

| Site Rating | Contamination Type | | | Total |
|------------------------------|--------------------|---------------------|-----------|-----------|
| | Petroleum | Hazardous Materials | Both | |
| <i>Ultimate Project</i> | | | | |
| Medium | 1 | 0 | 0 | 1 |
| High | 8 | 1 | 15 | 24 |
| Total | 9 | 1 | 15 | 25 |
| <i>Preferred Alternative</i> | | | | |
| <i>Medium</i> | <i>1</i> | <i>0</i> | <i>0</i> | <i>1</i> |
| <i>High</i> | <i>6</i> | <i>0</i> | <i>13</i> | <i>19</i> |
| Total | 7 | 0 | 13 | 21 |

All impacts associated with the Preferred Alternative are shown in *Bold Italics*.

The Preferred Alternative could require partial or total right-of-way acquisition of 21 of the 25 medium or high rated site potentially impacted by the Ultimate project. Table 9.14.10.1 presents a breakdown of these 21 impacted sites and the type of potential contamination involvement.

Figure 9.14.10.1 shows the locations of all impacted sites rated medium and high relative to the Ultimate project and *Preferred Alternative*. For all sites within the 600-foot corridor rated no or low for potential contamination, it is recommended that the data accumulated in the project files be revisited prior to project right-of-way acquisition and construction and include an updated review of agency files and the public record to determine if there has been any significant change in status since the report was prepared. This is a safeguard in case these sites become medium or high rated sites. For those sites rated medium and high, a further review of records should be conducted to determine the status of any contamination assessments or remedial actions taking place at those sites.

The findings of the contamination screening and evaluation are based on preliminary information only and are not intended to replace more detailed studies such as individual site assessments and subsurface soil and groundwater investigations. Potential contamination sites may extend beyond those identified in this report because of limited historical and regulatory information, illegal dumping practices and a lack of compliance with storage tank registration and

hazardous waste generator programs. Finally, the identification of a site in this report does not indicate necessarily that the site contains contamination, but only that there is the potential for contamination to occur.

Results of this evaluation were utilized in the selection of the *Preferred Alternative*. When the *Preferred Alternative* nears implementation, an assessment will be performed to the degree necessary to determine levels of contamination and, if necessary, evaluate the options to remediate along with the associated costs. Resolution of problems associated with contamination will be coordinated with the appropriate regulatory agencies and, prior to right-of-way acquisition, appropriate action will be taken, where applicable. Additional analysis and testing may be conducted during final design, once the precise construction methods are defined.

9.14.11 Construction Impacts

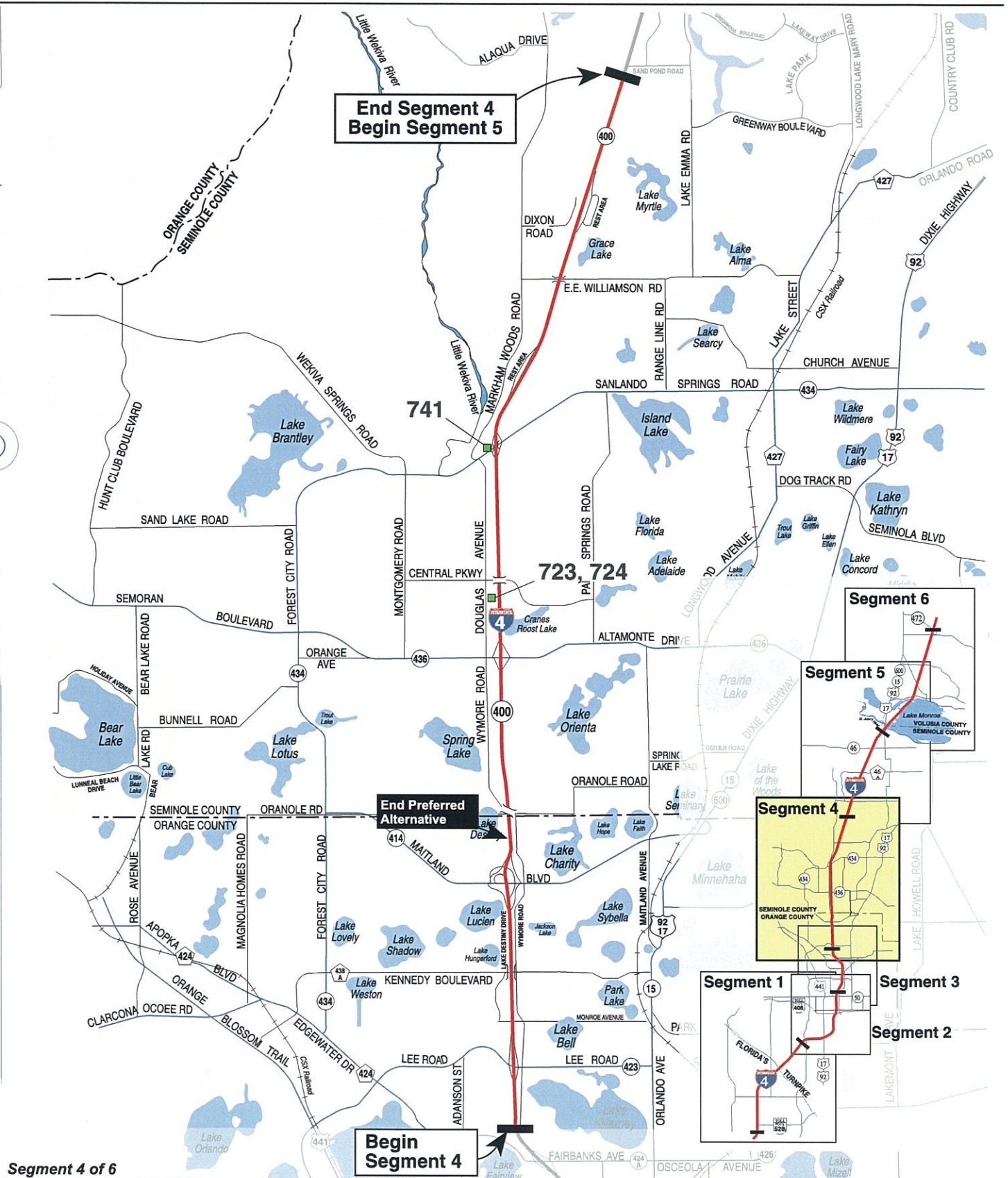
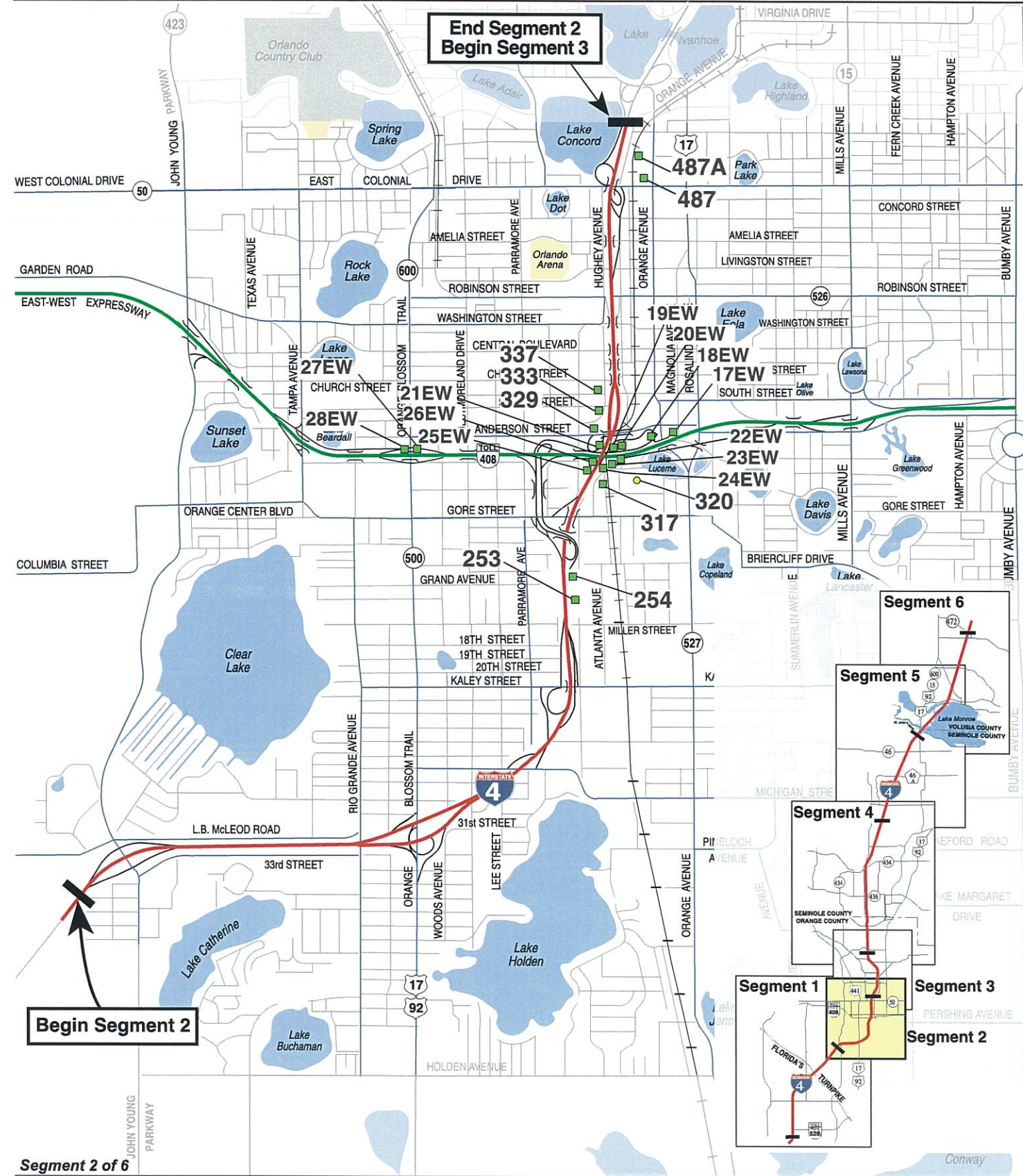
The construction activities for the Ultimate project and *Preferred Alternative* will result in temporary air, noise, water quality, traffic flow and visual impacts for those residents, businesses and travelers within the vicinity of the construction areas of the project. In addition, consideration of construction staging needs, disposal of materials, and required borrow material are important.

The level, type and degree of construction impacts will vary as a function of several key characteristics including:

- ◆ The type of construction: demolition, excavation, fill, bridge structures, utilities, pavement, etc.
- ◆ Location of construction activities including staging areas, material storage, contractor administration areas, etc.
- ◆ The proximity of sensitive land uses to construction: residential, commercial, hospitals, schools, churches, etc.
- ◆ The traffic volumes in and around the construction site: traffic control complexities, safety, project phasing.
- ◆ The location of haul routes, borrow sites, fabrication yards, asphalt plants, disposal areas.

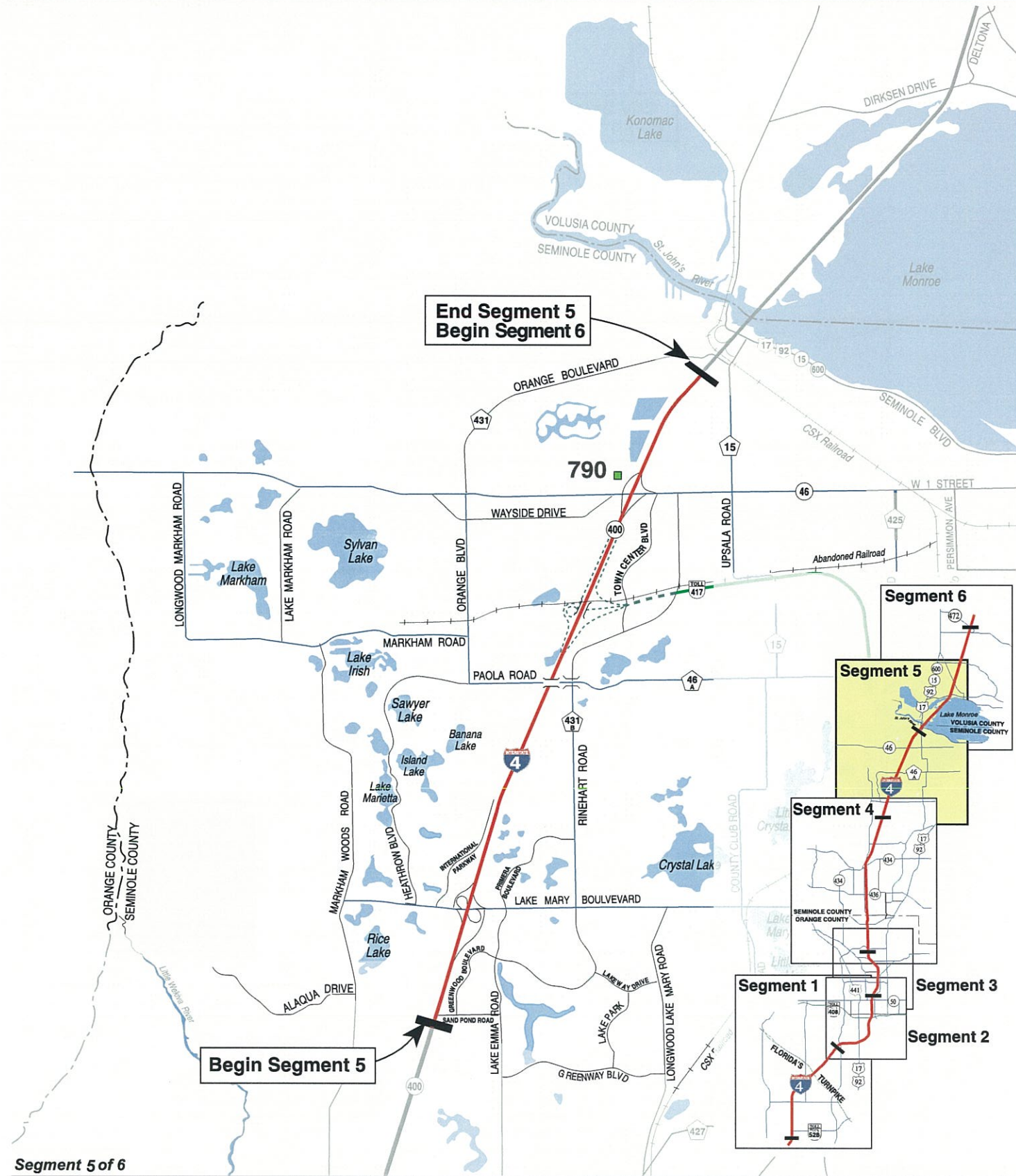
Given the factors involved with construction impacts it is not possible to provide specific detail of the exact location, level and extent of impacts. Clearly, with a project as large as the Ultimate improvements, it is expected that construction impacts will be extensive and spread throughout the entire project area.

Several areas along the project will be especially impacted by the construction of the Ultimate project. Approximately 225 neighborhoods and subdivisions exist within ½ mile of I-4 from SR 528 to SR 472. Eighty-eight of these neighborhoods will be potentially affected by the Ultimate project. Special care will be provided to avoid unreasonable impacts to these neighborhoods. In general, the most complex construction with the greatest extent of sensitive adjacent land uses is located in Segments 2 and 3 incorporating downtown Orlando and the numerous neighborhoods in the area. Construction impacts related to hazardous materials may result from activities occurring in proximity



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Figure 9.14.10.1 Impacted Contamination Sites



Segment 5 of 6

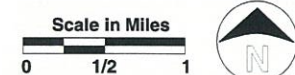


Figure 9.14.10.1 Impacted Contamination Sites

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Table 9.14.10.2 - Summary of Potential Contamination Site Impacts

| Contamination Site No. | Name | Address | Site Rating | Hazardous (H) or Petroleum (P) | Nature of Potential Contamination | Type of Impact Full (F) or Partial (P) |
|------------------------|-------------------------------------|---|-------------|--------------------------------|-----------------------------------|--|
| 17EW | Former Residence | NW quadrant of Lucerne Cir/ Rosalind Ave | High | H/P | UST | P |
| 18EW | Former Residence | NW quadrant of Lucerne Cir/ S Orange Ave | High | H/P | UST | F |
| 19EW | Former Residence | NW quadrant of Lucerne Cir/ S Orange Ave | High | H/P | UST | F |
| 20EW | Former Foam Rubber Warehouse | SW quadrant of Anderson St/ Garland Ave | High | H/P | UST | F |
| 21EW | Former Cleaners | NW quadrant Grace Rd/CSX | High | H/P | UST | F |
| 22EW | Former Texas Oil Co. | NW quadrant Grace Rd/CSX | High | H/P | UST | P |
| 23EW | Former City Pipe Yard | Across from CSX/Carter St | High | H/P | UST | F |
| 24EW | Former Cleaners | NW quadrant of America St/ | High | H/P | UST | F |
| 25EW | Former Brake Shoe Bonding Plant | North of Atlanta Ave/ America St | High | H/P | UST | F |
| 26EW | Former Cleaners | North of Carter St/west of Hughey Ave | High | H/P | UST | F |
| 27EW | Former Gas Station | Under SR 408, east of Orange Blossom Tr | High | H/P | UST | F |
| 28EW | Former Gas Station | Under SR 408, west of Orange Blossom Tr | High | H/P | UST | F |
| 253 | Schroeder Services | 520 Indiana St | High | P | UST | P |
| 254 | Salano, Daniel | 521 Indiana St | High | P | LUST | P |
| 317 | Mishalanie/Phil | 718 S Hughey Ave | High | P | UST | F |
| 320 | Mid Florida Pools & Repairs | 714 Franklin Ln | Medium | P | UST | P |
| 329 | Florida Terrazzo Inc. | 440 S Hughey Ave | High | P | UST | F |
| 333 | Orlando Refinishers | 300 W South St | High | P | LUST | P |
| 337 | Lindberg Heat Treating Co. | 316 S Hughey St | High | H/P | UST | P |
| 487 | Uptown Orlando | 700 N Orange Ave | High | P | LUST | P |
| 487A | Northern Orlando Downtown Site | NE quadrant of Orange Ave & Colonial Dr (SR 50) | High | H/P | - | - |
| 723 | Altamonte Springs Operations Center | 607 Douglas Ave | High | H | - | P |
| 724 | Florida Power Corp. | 607 Douglas Ave | High | P | UST | P |
| 741 | Exxon #5252 | 2010 SR 434 | High | H/P | LUST | F |
| 790 | Amoco#60331 - ACA#089 | 4800 SR 46 West | High | P | LUST | F |

All impacts associated with the Preferred Alternative are shown in *bold italics*. There are no potential contamination site impacts within Segments 1 and 6.

UST = Underground storage tank
LUST = Leaking underground storage tank

to generators of those materials, removal or excavation around underground storage tanks and activities occurring in proximity to spill sites. The risk of adverse impacts resulting from these sources is low, provided that safe work practices are followed.

Construction activities for the Ultimate project and *Preferred Alternative* will create air quality impacts for residents, businesses, and travelers within the immediate vicinity of the project. Air quality impacts will be temporary and will primarily be in the form of exhaust emissions from trucks and construction equipment as well as fugitive dust from construction sites. Almost all of the trucks and other equipment involved in construction activities will be diesel-powered. Overall, construction vehicle emissions will not be significant as compared with the emissions from automobile traffic in the area. Detours and other delays in traffic during construction typically result in local increases in vehicle emissions. These impacts will be minimized by adherence to all state and local regulations and to FDOT *Standard Specifications for Road and Bridge Construction*.

Project construction activities would have short-term noise and vibration effects on receptors in the immediate vicinity of the construction site. Effects on community noise and vibration levels during construction include noise and vibration from construction equipment and noise from construction vehicles and delivery vehicles traveling to and from the site.

All construction work will follow noise provisions contained with FDOT *Standard Specifications for Road and Bridge Construction*. In addition, a construction

noise and vibration abatement plan may be developed during the design stages of project segments that are located near noise sensitive areas. This plan would be included in the contract specification and implemented before construction began. The plan may include specific noise and vibration level restrictions and limitations on time for construction activities.

To control ground vibration levels, the construction contract specifications may limit the use of types of equipment permitted and the allowable levels of vibration. Activities associated with construction, with the exception of pile driving footings, are not usually high vibration generators. Vibration control measures will include those contained in FDOT *Standard Specifications for Road and Bridge Construction*.

Water quality impacts during construction will range from moderate to none depending on what time of year the project is under construction. Qualitative short-term construction impacts to water quality by the proposed improvements are anticipated and listed below. None of the impacts listed will be permanent and all will be kept to a minimum using BMPs in accordance with local, state, and federal standards.

- Turbidity - Minor to Minor
- Sedimentation - Minor
- Chemical Pollutants - Minor
- Biota - Minor

Direct effects on water quality construction may include pollution from existing contaminated facilities and spills or discharges. Avoidance and minimization of

these contaminated sites was performed during the PD&E process. In areas where avoidance is not feasible, the site will be evaluated and remediated in design, if necessary, prior to roadway construction in accordance with local, state, and federal standards. Proper BMPs and proper planning will be implemented to help prevent such occurrences.

Water quality degradation as a result of stormwater run-off is not anticipated. Implementation of the proposed stormwater management systems within the Ultimate project area will provide an improvement to the water quality of the surrounding surface water bodies. This is because the majority of the Ultimate project currently does not receive any stormwater treatment, and the Interstate was constructed before any state or local regulatory requirements were established for stormwater treatment.

Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with FDOT *Standard Specifications for Road and Bridge Construction* and through the use of BMPs.

Visual effects of Interstate reconstruction, as seen from adjacent and nearby properties, may include the presence and movement of heavy machinery, extensive deposition of fill material, dust from embankment and haul road areas, maintenance of traffic lanes adjacent to or nearer to the right-of-way line than existing lanes, lights associated with night time operations, temporary traffic signs, use of silt control devices, and excavation of future ponds.

Adequate lighting of the work area at night is important for both quality and safety. However, temporary lighting and flashing safety lights associated with nighttime roadway construction can be a nuisance. Properly illuminating the work area can create excessive glare, which can be hazardous for motorists and annoying to nearby residents.

The primary requirement for highway construction lighting is to facilitate the performance of construction related tasks in the work zone. Correct lighting should enable a work crew to observe and effectively control various equipment and processes. Unfortunately, excessive contrast and or brightness within the immediate surroundings can be glaring, uncomfortable, and hazardous to motorists. High brightness, such as from head-on views of lamps, can be simply annoying or temporarily "blinding."

Simply ensuring that field personnel have an awareness of the subject can eliminate many visual and lighting problems. Construction staff must pay close attention to the location of the lights and the direction of the aim. In open areas, luminaries should be positioned at the highest possible locations to minimize glare. Fixtures should be aimed down, where possible. Good awareness training of the contractor's workforce and inspectors is vital to minimize impacts.

Construction activities will require subsurface excavation in many locations along the proposed right-of-way. Although all efforts will be made to identify contamination sites prior to construction, undiscovered contaminated soils and/or groundwater still may be encountered during construction within both existing and proposed right-of-way.

Additionally, construction activities can involve the use of hazardous materials. If these materials were handled, used, or stored improperly, or accidentally spilled, they could result in adverse impacts to both human health and the environment.

A Health and Safety Plan will be developed by a qualified health and safety specialist (Certified Industrial Hygienist) to guide construction activities and potential hazards that have been identified.

A Certified Hazardous Materials Specialist will prepare a Hazardous Materials Management Plan for construction activities. This plan will address the proper storage, handling, and use of hazardous materials required during construction, as well as emergency response procedures for any hazardous material spills.

Maintenance of traffic and sequence of construction will be planned and scheduled so as to minimize traffic delays throughout the project. Signs will be used as appropriate to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction-related activities which could excessively inconvenience the community so that motorists, residents, and business persons can plan travel routes in advance.

A sign providing the name, address, and telephone of a Department contact person will be displayed on-site to assist the public in obtaining immediate answers to questions and logging complaints about project activity.

9.15 UTILITY IMPACTS

Thirty-seven utility companies have utilities located within the Ultimate study area. Table 9.15.1 summarizes the major utilities potentially impacted by the Ultimate project and *Preferred Alternative*. For more information regarding existing utilities and location plan sheets, refer to the I-4 PD&E Study - Section 2 *Utility Impact Report* (September 1998) and the Existing Utility Plans submitted with this report.

The utility companies identified in Table 9.15.1 were contacted for a determination of cost of relocation. However, the utility companies declined to give this information. The cost of the relocation of the impacted utilities will be determined during design.

Most utility companies have technologies to alter facilities without inconveniences to the customers. However, to the extent feasible, mitigation measures for utility disruptions will include:

- ◆ Maintaining utility connections in temporary locations,
- ◆ Minimizing the time without service,
- ◆ Installing alternative or new service before disconnecting the existing service, and
- ◆ Allowing service disruption only during periods of non-usage or minimum usage.

9.16 TRAFFIC CONTROL PLAN

A detailed set of Conceptual Maintenance of Traffic Plans have been prepared for this project and are summarized in the *Constructability Assessment*, submitted separately. During construction, traffic must be accommodated. Detours will be kept to a minimum, ramp access will be maintained and the construction of temporary bridges will be avoided wherever possible. In addition, three lanes in each direction will be provided during the peak hours throughout the duration of the construction.

A Traffic Control Plan will be developed and implemented in consultation with local jurisdictions and FDOT. Measures to be considered for implementation in the Traffic Control Plan will include, but not be limited to:

- ◆ Advance public notification to motorists of the nature, extent, and duration of any street closing and possible detour routes, if needed.
- ◆ Detour signing placed in advance at strategic locations to notify motorists of alternative routing.
- ◆ Use of ITS, warning signs, and marking.
- ◆ Construction during off-peak times, whenever feasible, to minimize disruption to access driveways and business entrances.
- ◆ Maintenance of at least one entrance at all times where there are multiple entrances to property.
- ◆ Coordination of construction activities with other proposed roadway improvements in the area.
- ◆ Concurrent utility relocations whenever possible to minimize disruptions.
- ◆ Inclusion of measures within the construction contract specifications and plans to encourage responsible construction practices by contractors to avoid or minimize impacts.

It should also be noted that school and transit bus routing modifications might be necessary during construction. Public announcements will be made well in advance of the re-routings to minimize any inconveniences.

9.17 PUBLIC INVOLVEMENT PROGRAM

Proactive community involvement is an integral part of any successful community project. The public involvement program (PIP) process is developed to ensure that important community concerns and technical issues are identified early in the project. The purpose of this program is to establish and maintain communication with the public at-large and individuals and agencies concerned with the project and its potential impacts. To ensure open communication and agency and public input, FDOT has provided an Advance Notification (AN) package to State and Federal agencies and other interested parties defining the project, and describing anticipated issues and impacts.

The FDOT has carried out the scoping process as required by the Council of Environmental Quality Guidelines in order to:

- ◆ Expedite the project development processes,
- ◆ Eliminate unnecessary work, and

- ◆ Provide a substantial issue identification/problem solving effort.

Finally, in an effort to resolve all issues identified, FDOT has conducted an extensive interagency coordination and consultation effort and public participation process. This section details FDOT's program to fully identify, address and resolve all project-related issues identified through the public involvement program process.

9.17.1 Scoping Process

Scoping is a process designed to encourage the active participation of agencies, jurisdictions and the public early in the decision-making process. Scoping is intended to provide the opportunity to identify issues and concerns, define the alternatives to be examined in the study and identify the impacts to be considered. The objectives of the scoping process include the following:

- ◆ Ensure the participation of affected Federal, State and local agencies, and other interested persons;
- ◆ Determine scope, significance of issues and the degree of analysis required;
- ◆ Identify and eliminate issues determined to be insignificant;
- ◆ Allocate assignments among agencies;
- ◆ Identify related environmental documents being prepared;
- ◆ Identify other environmental review and consultation requirements;
- ◆ Identify permits, licenses and entitlements necessary; and
- ◆ Indicate the relationship between the timing of the preparation of environmental analyses and the agency's planning and decision-making schedule.

Scoping for the Ultimate project began in May 1996 with the issuance of the AN for the project. Scoping continued throughout the project with a Class of Action Determination, Notice of Intent (NOI), Scoping Meeting and various meetings with agencies and local jurisdictions affected by the Ultimate project. A summary of tasks performed as part of the scoping process is discussed in the following sections. Meetings with agencies and local jurisdictions are discussed in Section 9.17.2.3.

9.17.1.1 Advance Notification

AN is the means through which Federal, State and local agencies are informed of proposed actions by FDOT. It also gives notice of FDOT's intent to apply for federal aid on a project. The AN process provides for early involvement of Federal, State and local agencies in the project development phase and allows them to share information and/or concerns for a proposed action. This process is required by the President's Executive Order 12372 and the Governor's Executive Order 93-194.

On May 10, 1996, a notification package was sent, in accordance with FHWA requirements, to initiate coordination with government agencies and the general public to advise them that an environmental document would be prepared for proposed I-4 highway improvements through Orange, Seminole and Volusia Counties.

Table 9.15.1 - Major I-4 Utilities

| Utility Type, Owner | Sheet | Location | Size | Material | Impact | Approximate Station |
|--------------------------------------|-------|---|---------|----------|----------|---------------------|
| Segment 1 | | | | | | |
| Electric, FPC | 1 | Aerial, runs west along back parking lot of Convention Center, then north along I-4 right-of-way to Mile Post 72.7, then crosses over I-4 right-of-way at Mile Post 72.4. | 795 ft | AL | Possible | 775 |
| Telephone, BellSouth | 1A | Buried, runs north along International Drive from Westwood Boulevard to Hawaiian Court. | N/A | FOC | Possible | BL 234 |
| Cable TV, CVI | 1, 2 | Aerial, runs north along Turkey Lake Road right-of-way from Central Florida Parkway to Wallace Road with buried segments near SR 528, Mile Post 72.5 and Mile Post 73.2. | 40 inch | FOC | Possible | 715-770 |
| Electric, FPC | 2 | Buried, runs north along the east I-4 right-of-way from Mile Post 72.7 to 100 feet south of Sand Lake Road west, then crosses under I-4 right-of-way to Turkey Lake Road. | 1000 ft | KCM | Possible | 770-825 |
| Electric, FPC | 3 | Aerial, runs west from International Drive over I-4 right-of-way then north to Turkey Lake Road. | 795 ft | AL | Possible | 863 |
| Cable TV, Time Warner Communications | 3 | Aerial, runs from International Drive toward I-4, then runs south along access road east of ramp and then east. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 5 | Aerial, crosses over Kirkman Road at Mile Post 75.3, then north along Grand National Drive west, then crosses over I-4 right-of-way at Mile Post 76 and along I-4 right-of-way to Kirkman Road and north. | N/A | FOC | Possible | 965 |
| Electric, OUC | 5 | Buried, runs west along Oak Ridge Road then north under I-4 right-of-way at Mile Post 75.9. | 115 KV | N/A | Possible | 969 |
| Electric, OUC | 5 | Buried, runs under Kirkman Road to feed median, then crosses under the northbound I-4 on-ramp, then crosses under I-4 right-of-way at Mile Post 75.8. | 115 KV | N/A | Possible | 936-965 |
| Electric, OUC | 5 | Buried, runs under Kirkman Road to feed median, then crosses under the northbound I-4 on-ramp, then crosses under I-4 right-of-way at Mile Post 75.8. | 115 KV | N/A | Possible | 936-965 |
| Electric, FPC | 6 | Aerial, runs northeast along I-4 right-of-way then over I-4 right-of-way, to run northwest along west Turnpike right-of-way. | 230 KV | WXD | Possible | 990 |
| Electric, FPC | 6 | Aerial, runs northwest along west Turnpike right-of-way over I-4 right-of-way. | 69 KV | WR | Possible | 990 |
| Cable TV, Time Warner Communications | 6 | Buried, runs north along Vineland Road under I-4 right-of-way to American Boulevard; Aerial, runs east from American Boulevard. | N/A | FOC | Possible | 1028 |
| Cable TV, Time Warner Communications | 6 | Buried, runs north under Vineland Road from the Florida Turnpike to Mile Post 76.7. Aerial from Mile Post 76.7 to L.B. McLeod Road. | N/A | FOC | | |
| Segments 2 and 3 | | | | | | |
| Electric, OUC | 9 | Buried, runs south under I-4 right-of-way from L.B. McLeod Road to 33rd Street west. Splits and runs west 4000 feet along 33rd Street and east to Rio Grande Road west. Aerial at Rio Grande west. | N/A | N/A | Possible | 1108 |
| Cable TV, Time Warner Communications | 8 | Aerial, runs southeast at Mile Post 78.3 from Vineland Road over I-4 right-of-way and connects to power line along I-4 right-of-way. | N/A | FOC | Possible | 1139 |
| Cable TV, Time Warner Communications | 8 | Buried, runs east along L.B. McLeod Road Aerial at Surfside Road and continues east. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 8 | Aerial, runs south along Clear Way, then east along Surfside Road to L.B. McLeod Road, then to Rio Grande Road, then north. | N/A | FOC | Possible | 15 |
| Electric, OUC | 9 | Aerial, runs south along Nashville Road over I-4 right-of-way and continues south. | N/A | N/A | Possible | 24 |
| Electric, OUC | 9 | Aerial, runs south along Nashville Road over I-4 right-of-way and then both 300 feet east and 300 feet west along 33rd Street. | N/A | N/A | Possible | 24 |
| Cable TV, Time Warner Communications | 9 | Buried, runs east along L.B. McLeod Road from station 1150 to Rio Grande Avenue, then north along Rio Grande Avenue. | N/A | FOC | Possible | 1150-16 |
| Cable TV, Time Warner Communications | 10 | Buried, runs east along Michigan Street under I-4 right-of-way and continues east. | N/A | FOC | Possible | 59 |
| Cable TV, Time Warner Communications | 10 | Buried, runs north-south along Westmoreland Drive from I-4 right-of-way, north of I-4. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 10 | Aerial, runs south along Westmoreland Drive to I-4 right-of-way, south of I-4. | N/A | FOC | | |
| Telephone, BellSouth | 10 | Aerial, runs east along 29th Street to I-4 right-of-way. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 11 | Aerial, runs east along 19th Street to west I-4 right-of-way. | N/A | FOC | Possible | 89 |
| Cable TV, Time Warner Communications | 11 | Aerial, runs east along 18th Street to I-4 right-of-way. | N/A | FOC | Possible | 93 |
| Electric, OUC | 11 | Aerial, runs east along 18th Street from Parramore Avenue to within 100 feet of I-4 right-of-way. East from I-4 right-of-way along 18th Street to Division Avenue. | N/A | N/A | Possible | 93 |
| Electric, OUC | 11 | Aerial, runs east along Miller Street over I-4 right-of-way and continues east. | N/A | N/A | Possible | 96 |
| Electric, OUC | 11 | Substation east of I-4. | N/A | N/A | Possible | 138 |
| Railroad, CSXT | 11 | Runs north - south under SR 408 right-of-way, 100 feet from I-4 right-of-way. | N/A | N/A | Possible | 650 |
| Cable TV, Time Warner Communications | 11 | Aerial, runs east along 20th Street to I-4 right-of-way. | N/A | FOC | Possible | 89+50 |
| Telecommunications, LDDS | 11 | Buried, runs east-west along SR 408 south right-of-way. | N/A | FOC | Possible | E/W 625-648 |
| Telephone, AT&T | 11 | Buried, runs east-west along SR 408 north right-of-way. | N/A | FOC | Possible | E/W 625-648 |
| Telephone, World Communication | 11 | Buried, runs east-west along SR 408 north right-of-way. | N/A | FOC | Possible | E/W 625-648 |
| Telephone, World Communication | 11 | Buried, runs east-west along SR 408 south right-of-way. | N/A | FOC | Possible | E/W 625-648 |
| Cable TV, Time Warner Communications | 11 | Aerial, runs east along Miller Street to I-4 right-of-way. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 11 | Aerial, runs east along Conroy Street from Parramore Street to Avondale Avenue. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 11 | Buried, runs east along Indiana Street from Parramore Street to Avondale Avenue. | N/A | FOC | | |
| Telecommunications, LDDS | 11 | Buried, runs along south side of SR 408 from Sunset Drive to Parramore Avenue. | N/A | FOC | Possible | E/W 560-623+70 |
| Telephone, AT&T | 11 | Buried, runs along north side of SR 408 from Church Street to McFall Avenue. | N/A | FOC | Possible | E/W 560-623+70 |
| Telephone, World Communication | 11 | Buried, runs along north side of SR 408 from Church Street to McFall Avenue and crosses SR 408 at Tampa Avenue toll plaza. | N/A | FOC | Possible | E/W 560-623+70 |
| Telephone, World Communication | 11 | Buried, runs along south side of SR 408 from Sunset Drive to Parramore Avenue. | N/A | FOC | Possible | E/W 560-623+70 |
| Telephone, BellSouth | 11 | Buried, runs north along Tampa Avenue from Carter Street to west South Street. | N/A | FOC | Possible | E/W 576 |
| Telephone, AT&T | 11 | Buried, runs east along north side SR 408 right-of-way from Garland Avenue to Liberty Avenue. | N/A | FOC | Possible | E/W 659-676 |
| Telecommunications, LDDS | 11 | Buried, runs east along south side SR 408 from Garland Avenue to Rosalind Avenue. | N/A | FOC | Possible | E/W 659-715 |
| Telephone, World Communication | 11 | Buried, runs east along north side SR 408 right-of-way from Garland Avenue to Mills Avenue. | N/A | FOC | Possible | E/W 659-715 |
| Telephone, World Communication | 11 | Buried, runs east along south side SR 408 right-of-way from Garland Avenue to Mills Avenue. | N/A | FOC | Possible | E/W 659-715 |
| Telephone, BellSouth | 11 | Buried, runs southeast from the south end of Garland Avenue, under SR 408 right-of-way to Lucien Circle. | N/A | FOC | Possible | E/W 675 |
| Telephone, BellSouth | 11 | Buried, runs south along CSXT Railroad from Pine Street to Anderson Street. | N/A | FOC | | |
| Telephone, BellSouth | 11 | Aerial, runs north along Rosalind Avenue from South Street to Pine Street. | N/A | FOC | | |
| Telephone, BellSouth | 11 | Buried, runs east along South Street from Rosalind Avenue to 150 ft east of Delaney Avenue. | N/A | FOC | | |
| Telephone, AT&T | 11 | Buried, runs east and follows SR 408 ramp to Delaney Avenue. | N/A | FOC | Possible | E/W 645-671 |

All impacts associated with the Preferred Alternative are shown in **bold italics**. BL indicates the station corresponds to stationing associated with SR 528 mainline. E/W indicates the station corresponds to stationing associated with SR 408 mainline.

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Table 9.15.1 - Major I-4 Utilities, Cont.

| Utility Type, Owner | Sheet | Location | Size | Material | Impact | Approximate Station |
|--------------------------------------|--------|---|------|----------|----------|---------------------|
| <i>Segments 2 and 3 (Cont.)</i> | | | | | | |
| Telephone, World Communication | 11 | Buried, runs east along north side SR 408 right-of-way from Mills Avenue to Primrose Drive. | N/A | FOC | Possible | E/W 715-750 |
| Telephone, World Communication | 11 | Buried, runs east along south side SR 408 right-of-way from Mills Avenue to Primrose Drive. | N/A | FOC | Possible | E/W 715-750 |
| Telephone, MCI | 11, 12 | Buried, runs north along CSXT Railroad right-of-way to Concord Street then east. | N/A | FOC | Possible | E/W 650 |
| Electric, OUC | 12 | Substation east of I-4. | N/A | N/A | Possible | 180 |
| Railroad, Florida Central | 12 | Runs west 200 ft south and parallel to Pitman Road from CSXT Railroad under I-4 right-of-way and continues west. | N/A | N/A | Possible | 180 |
| Telephone, BellSouth | 12 | Buried, runs north along Garland Avenue from the SR 408 right-of-way to South Street. | N/A | FOC | Possible | 142-152 |
| Telephone, World Communication | 12 | Buried, runs east-west along the east SR 408 right-of-way. | N/A | FOC | Possible | E/W 645-670 |
| Telephone, MCI | 12 | Buried, runs north under SR 408 right-of-way, along CSXT Railroad to Concord Street. | N/A | FOC | Possible | E/W 651 |
| Cable TV, Time Warner Communications | 12, 13 | Buried, runs west along Amelia Street from CSXT Railroad to Garland Avenue, then north on Garland Avenue to Concord Street. | N/A | FOC | Possible | 192-198 |
| Cable TV, Time Warner Communications | 13 | Buried, runs east - west along Concord Street under I-4 right-of-way and continues east and west. | N/A | FOC | Possible | 198 |
| Cable TV, Time Warner Communications | 13 | Buried, runs along Concord Street under I-4 right-of-way and continues east and west. | N/A | FOC | Possible | 198 |
| Cable TV, Time Warner Communications | 13 | Buried runs west along Ivanhoe Boulevard under I-4 right-of-way from Orange Avenue and continues east and west. | N/A | FOC | Possible | 231 |
| Cable TV, Time Warner Communications | 13 | Buried, runs along Ivanhoe Boulevard between Chamber of Commerce and Gateway Center. | N/A | FOC | | |
| Railroad, CSXT | 13 | Runs north - south along Gertrude Avenue parallel to east I-4 right-of-way from SR 408 right-of-way to Orange Avenue. | N/A | N/A | | |
| Telephone, BellSouth | 13 | Buried, runs east along Concord Street from CSXT Railroad. | N/A | FOC | | |
| Telephone, BellSouth | 13 | Buried, runs east along Concord Street from CSXT Railroad. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 14 | Aerial, runs south along north Shore Terrace from New Hampshire Street to Ivanhoe Boulevard. | N/A | FOC | Possible | 255 |
| Electric, OUC | 14 | Aerial, runs east-west along Ivanhoe Boulevard over I-4 right-of-way to north Shore Lane. | N/A | N/A | Possible | 257 |
| Cable TV, Time Warner Communications | 14 | Buried, runs east - west along New Hampshire Street under I-4 right-of-way and continues east and west. | N/A | FOC | Possible | 264 |
| Telephone, BellSouth | 14 | Buried, runs east - west along New Hampshire Street under I-4 right-of-way and continues east and west. | N/A | FOC | Possible | 264 |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east - west along Vanderbilt Street to I-4 right-of-way and continues. | N/A | FOC | Possible | 267 |
| Cable TV, Time Warner Communications | 14 | Buried, runs east along Smith Street from Formosa Avenue to west I-4 right-of-way. | N/A | FOC | Possible | 280 |
| Telephone, BellSouth | 14 | Aerial, runs west along Rollins Street from Formosa Avenue to west I-4 right-of-way then east from east I-4 right-of-way to Dade Avenue. | N/A | FOC | Possible | 287 |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east along Winter Park Street from Formosa Avenue to west I-4 right-of-way. | N/A | FOC | Possible | 290 |
| Telephone, AT&T | 14 | Buried, runs east - west along Winter Park Street under I-4 right-of-way and continues east and west. | N/A | FOC | Possible | 290 |
| Telephone, AT&T | 14 | Buried, runs from the east along Ivanhoe Boulevard to east I-4 right-of-way, then north along I-4 right-of-way to New Hampshire Street. | N/A | FOC | Possible | 250-264 |
| Cable TV, Time Warner Communications | 14 | Buried, runs north along Cornell Avenue from New Hampshire Street to Princeton Street. | N/A | FOC | Possible | 264-276 |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east - west along Yale Street to east I-4 right-of-way, then from west I-4 right-of-way and continues. | N/A | FOC | Possible | 270+50 |
| Cable TV, Time Warner Communications | 14 | Buried, runs east along Orlando Street from Formosa Avenue to west I-4 right-of-way. | N/A | FOC | Possible | 283+50 |
| Telephone, AT&T | 14 | Buried, runs north-south along Dade Avenue from Evans Street to the Oaks Apartments, then east to Orange Avenue. | N/A | FOC | Possible | 300-315 |
| Electric, OUC | 14 | Aerial, runs east - west along Hazel Street over I-4 right-of-way and continues east. Then north and south along west I-4 right-of-way and north & south along Dade Avenue. | N/A | N/A | Possible | 303, 300-315 |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east - west along Hazel Street to west I-4 right-of-way then north along I-4 right-of-way to Massey Pelham Road. | N/A | FOC | Possible | 303-313 |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east along King Street to west I-4 right-of-way. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 14 | Aerial, runs east along Evans Street to east I-4 right-of-way, continues to Dade Avenue | N/A | FOC | | |
| Cable TV, Time Warner Communications | 14 | Buried, runs east from Formosa Street to west I-4 right-of-way then west along Massey Pelham Place Road. | N/A | FOC | | |
| Cable TV, Time Warner Communications | 14 | Buried, runs east from Formosa Avenue to west I-4 right-of-way along Orlando Street. | N/A | FOC | | |
| Telephone, AT&T | 15 | Aerial, runs east - west along Dartmouth Road over I-4 right-of-way and continues. | N/A | FOC | Possible | 321 |
| Cable TV, Time Warner Communications | 15 | Buried, runs east along Harmon Road from Formosa Avenue to I-4 right-of-way. | N/A | FOC | Possible | 330 |
| Cable TV, Time Warner Communications | 15 | Aerial, runs east-west along Minnesota Avenue from west I-4 right-of-way to the west. | N/A | FOC | Possible | 346 |
| Cable TV, Time Warner Communications | 15 | Aerial, runs east-west along Crander Avenue from west I-4 right-of-way to the west. | N/A | FOC | Possible | 351 |
| Cable TV, Time Warner Communications | 15 | Buried, runs west along Fairbanks Avenue from Formosa Ave, under I-4 and continues west. | N/A | FOC | Possible | 365 |
| Cable TV, Time Warner Communications | 15 | Aerial, runs north along Formosa Avenue from Par Avenue to Michigan Avenue. | N/A | FOC | Possible | 316-341 |
| Cable TV, Time Warner Communications | 15 | Aerial, runs east-west along Oglesby Avenue from west I-4 right-of-way to the west. | N/A | FOC | Possible | 356+50 |
| <i>Segments 4 and 5</i> | | | | | | |
| Cable TV, Time Warner Communications | 16 | Aerial, runs east - west along Fairbanks Avenue over I-4 right-of-way and continues. | N/A | FOC | Possible | 365 |
| Cable TV, Time Warner Communications | 16 | Buried, runs north along Allen Avenue from east I-4 right-of-way to Wellington Boulevard. | N/A | FOC | Possible | 367 |
| Electric, FPC | 16 | Aerial, runs east - west along Franklin Road over I-4 right-of-way and continues west. | N/A | N/A | Possible | 397 |
| Data, Time Warner Communications | 16 | Aerial, runs east - west at Station 409 under I-4 right-of-way and continues. | N/A | FOC | Possible | 409 |
| Electric, FPC | 16 | Aerial Runs from Lake Killarney over I-4 right-of-way to Courtyard Street. | 12KV | N/A | Possible | 409 |

All impacts associated with the Preferred Alternative are shown in ***Bold Italics***. BL indicates the station corresponds to stationing associated with SR 528 mainline. E/W indicates the station corresponds to stationing associated with SR 408 mainline.

I-4 PD&E Study - Section 2

Table 9.15.1 - Major I-4 Utilities, Cont.

| Utility Type, Owner | Sheet | Location | Size | Material | Impact | Approximate Station |
|--------------------------------------|-------|---|-------------|----------|----------|---------------------|
| Segments 4 and 5 (Cont.) | | | | | | |
| Electric, FPC | 16 | Aerial, runs east - west along Lee Road over I-4 right-of-way and continues to Wymore Road west then north to Kennedy Boulevard. | N/A | N/A | Possible | 416 |
| Electric, FPC | 16 | Aerial, runs east - west along Fairbanks Avenue over I-4 right-of-way and continues to Wymore; then buried, runs north along Wymore Road from Fairbanks to Lee Road. | 69KV | N/A | Possible | 365, 382 |
| Cable TV, Time Warner Communications | 17 | Buried, runs east - west along Kennedy Boulevard under I-4 right-of-way and south along Wymore Road. | N/A | FOC | Possible | 2143 |
| Electric, FPC | 17 | Aerial, runs east - west along Kennedy Boulevard over I-4 right-of-way and continues. | 69KV | N/A | Possible | 2143 |
| Data, Time Warner Communications | 17 | Buried, runs east - west along Kennedy Boulevard from Gabriel Avenue to east I-4 right-of-way, then north along Wymore Road. | N/A | FOC | Possible | 2143-2160 |
| Electric, FPC | 18 | Aerial, runs east from Lucien Way over I-4 right-of-way and continues east to substation at Mile Post 89.1 (3-phase). | 69KV | N/A | Possible | 2169 |
| Electric, FPC | 18 | Aerial, runs east from Lucien Way over I-4 right-of-way to substation at Mile Post 89.1. (2-phase). | 12KV | N/A | Possible | 2169 |
| Substation, FPC | 18 | Power substation east of I-4. | N/A | N/A | Possible | 2169 |
| Cable TV, Time Warner Communications | 18 | Buried, runs from west I-4 right-of-way to east I-4 right-of-way at Station 2177. | N/A | FOC | Possible | 2177 |
| Data, Time Warner Communications | 18 | Buried, runs north-south along Maitland Boulevard under I-4 right-of-way, 1100 feet south of Maitland Boulevard and continues north and south along Wymore Road. | N/A | FOC | Possible | 2190 |
| Cable TV, Time Warner Communications | 18 | Buried, runs north along Wymore Road from Station 2160 to Sandspur Road, then east along Sandspur Road. | N/A | FOC | Possible | 2160-2183 |
| Electric, FPC | 18 | Aerial, runs north along Wymore Road from Station 2160 to Substation, and continues north along Wymore Road under Maitland Boulevard to Station 2215. | 69KV | N/A | Possible | 2160-2215 |
| Electric, FPC | 20 | Aerial, runs east - west along SR 436 over I-4 right-of-way and continues. (south side) | 12KV | N/A | Possible | 2301 |
| Electric, FPC | 20 | Aerial, runs east - west along SR 436 over I-4 right-of-way and continues. (north side) | 12KV | N/A | Possible | 2303 |
| Cable TV, Time Warner Communications | 21 | Aerial, runs east - west along Altamonte Commerce Boulevard then crosses over I-4 right-of-way to Raymond Avenue runs north along Douglas Avenue to SR 434. | N/A | FOC | Possible | 2345 |
| Electric, FPC | 21 | Aerial, runs east - west along Altamonte Commerce Boulevard then crosses over I-4 right-of-way to Raymond Avenue Branches off south to Camera #43. | 12KV | N/A | Possible | 2345 |
| Electric, FPC | 21 | Aerial, runs northeast from Central Parkway over I-4 right-of-way and continues northeast. | 230KV | N/A | Possible | 2349 |
| Electric, FPC | 22 | Aerial, runs west 500 feet south of SR 434, from Raymond Street over I-4 right-of-way and continues southwest to Douglas Avenue. | 12KV | N/A | Possible | 2401 |
| Water Plant, Sanlando Utilities | 24 | Water Treatment Plant east of I-4. | N/A | N/A | Possible | 2470 |
| Electric, FPC | 24 | Aerial, runs east - west along EE Williamson Road over I-4 right-of-way and continues. | 12KV | N/A | Possible | 2495 |
| Electric, FPC | 24 | Aerial, runs north 2200 feet along east I-4 right-of-way from EE Williamson Road, then crosses west over I-4 right-of-way. | 12KV | N/A | Possible | 2496-2518 |
| Electric, FPC | 25 | Aerial, runs east - west at Mile Post 96.4, crosses over I-4 right-of-way and continues. | 230KV | N/A | Possible | 2566 |
| Cable TV, TCI | 26 | Buried, runs east - west along Sandpond Road under I-4 right-of-way and continues. | N/A | FOC | Possible | 2605 |
| Electric, FPC | 27 | Buried, runs east - west along Lake Mary Boulevard under I-4 right-of-way and continues. | 1000 | KCM | Possible | 2661 |
| Electric, FPC | 27 | Buried, runs east at Mile Post 98.6 under I-4 right-of-way from International Parkway to east side of I-4 right-of-way. Aerial, runs north along poles for 3500 feet. | 1000 | KCM | Possible | 2678 |
| Water Plant, Seminole County | 27 | Water Treatment Plant west of I-4. | N/A | N/A | Possible | 2688 |
| Wastewater Plant, Seminole County | 27 | Wastewater Treatment Plant west of I-4. | N/A | N/A | Possible | 2689 |
| Electric, FPC | 30 | Aerial, runs northeast along back parking lot of Seminole Towne Center under I-4 right-of-way at Mile Post 102.2 and continues north to Oregon Avenue. | 115KV | N/A | Possible | 2867 |
| Cable TV, Time Warner Communications | 31 | Aerial, runs north - east along Wayside Drive to Oregon Avenue for 200 feet, then crosses under I-4 right-of-way to SR 46 and continues east. | N/A | FOC | Possible | 2880 |
| Segment 6 | | | | | | |
| Electric, FPC | 32 | Aerial, runs north along easement and crosses over I-4 right-of-way at Mile Post 103.5 and continues north. | 230KV | N/A | Possible | 2934 |
| Electric, FPC | 32 | Aerial, runs north along easement and crosses over I-4 right-of-way at Mile Post 103.5 and continues north. | 115KV | N/A | Possible | 2934 |
| Telephone, BellSouth | 32 | Buried, runs east along Orange Boulevard and crosses under I-4 right-of-way and continues to Upsala Road. | N/A | FOC | Possible | 2955 |
| Telephone, BellSouth | 32 | Buried, runs east along Orange Boulevard and crosses under I-4 right-of-way and continues to Upsala Road. | N/A | FOC | Possible | 2955 |
| Railroad, CSXT | 32 | Parallel to Orange Boulevard and crosses I-4 and continues northwest and east. | N/A | N/A | Possible | 2957 |
| Electric, FPL | 32 | Aerial, runs north along Upsala Road then crosses under I-4 right-of-way at Station 2970, continues north under US 17-92 right-of-way and St. Johns River. | 115KV | N/A | Possible | 2970 |
| Telephone, AT&T | 32 | Buried, runs north along Upsala Road, then crosses under I-4 right-of-way at Station 2970 and continues north under US 17-92 right-of-way and St. Johns River. | 2 inch Duct | FOC/ | | |
| Electric, FPC | 36 | Aerial, runs east - west 300 feet north of and parallel to Dirksen-DeBary Road right-of-way over I-4 right-of-way and continues. | 12KV | N/A | Possible | 3161 |
| Electric, FPC | 36 | Aerial, runs east - west 350 feet north of and parallel to Dirksen-DeBary Road right-of-way over I-4 right-of-way and continues. | 115KV | N/A | Possible | 3162 |
| Electric, FPC | 36 | Aerial, runs east - west 400 feet north of and parallel to Dirksen-DeBary Road right-of-way over I-4 right-of-way and continues. | 230KV | N/A | Possible | 3163 |
| Electric, FPC | 38 | Aerial, runs east - west along Saxon Boulevard over I-4 right-of-way and continues. | 69KV | N/A | Possible | 3306 |
| Electric, FPL | 38 | Aerial, runs east - west parallel to and 300 feet north of Saxon Boulevard right-of-way over I-4 right-of-way and continues. | 115KV | N/A | Possible | 3310 |
| Electric, FPL | 38 | Aerial, runs east - west parallel to and 300 feet north of Saxon Boulevard right-of-way over I-4 right-of-way and continues. | 115KV | N/A | Possible | 3310 |
| Electric, FPC | 38 | Aerial, runs east at Mile Post 110.1 over I-4 right-of-way, then north along I-4 right-of-way to Saxon Boulevard and continues east. | 12KV | N/A | Possible | 3283-3305 |
| Electric, FPL | 40 | Aerial, runs east - west in easement at Mile Post 111.9 over I-4 right-of-way and continues. | 115KV | N/A | Possible | 3378-3420 |
| Electric, FPC | 40 | Aerial, runs east in easement at Mile Post 111.9 over I-4 right-of-way and continues north to Graves Avenue. | 115KV | N/A | Possible | 3378-3420 |

All impacts associated with the Preferred Alternative are shown in ***Bold Italics***. BL indicates the station corresponds to stationing associated with SR 528 mainline. E/W indicates the station corresponds to stationing associated with SR 408 mainline.

I-4 PD&E Study - Section 2

The AN was distributed to Federal and State agencies and included a description of the Ultimate project, explanation of the need for the Ultimate project, potential alternatives and potential effects of the Ultimate project. A mailing list was included of the agencies to which the notification package was sent, including Federal, State and local agencies with a stake or interest in the Ultimate project.

9.17.1.2 Class of Action Determination

In January 1997, FDOT, in consultation with FHWA, prepared a Class of Action Determination (COA). The COA was prepared in accordance with FDOT's *PD&E Manual, Part 1, Chapter 3*. A copy of the COA is included in the *I-4 PD&E Study - Section 2 Scoping Summary Report* (September 1997).

9.17.1.3 Notice of Intent

The NOI to prepare an environmental impact statement was forwarded to FHWA by FDOT in February 1997. The NOI was executed by FHWA and appeared in the *Federal Register*, Vol. 62, No. 44, on Thursday, March 6, 1997. A copy of the NOI is included in the *I-4 PD&E Study - Section 2 Scoping Summary Report* (September 1997).

9.17.1.4 Scoping Meeting

A public scoping meeting for the Ultimate project was held for members of Federal, State and local agencies, local jurisdictions and interested parties. The meeting was held on April 15 and 16, 1997, from 8:00 AM to 4:00 PM at the Eastmonte Park Recreation & Civic Center, 830 Magnolia Drive, Altamonte Springs, Florida.

Approximately 50 individuals attended on April 15, 1997, and 20 individuals attended on April 16, 1997.

9.17.2 Public Involvement Program

The PIP was developed in March 1997, at the beginning of the I-4 PD&E study process. The plan identifies the objectives, strategies and various plan elements of the public involvement program developed for the Ultimate project. The program is in compliance with FDOT's *PD&E Manual* and incorporates all requirements of FHPM 7-7-1 and F.S. 339.155. The purpose of the program is to help ensure that the appropriate input from all concerned citizens, agencies, private groups and governmental entities is obtained and incorporated into the project development process. This public involvement program focuses on achieving public awareness and community interaction throughout the entire project development process. A major goal of the program is to promote understanding and support for the project and the study process.

The FDOT established a single, coordinated PIP for the three highway PD&E studies and the Light Rail Transit study. The public involvement action plan for all four of the projects consisted of the elements outlined below.

- ◆ Enter into dialogue with greater Orlando area and surrounding communities to build consensus for the need to improve and expand I-

4, providing a solid transportation base.

- ◆ Educate potential users of I-4 about the benefits of HOV lanes.
- ◆ Demonstrate to the community that HOV lanes will insure the continued economic viability of Central Florida.
- ◆ Demonstrate how HOV lanes will enhance mobility by reducing congestion and sustaining Central Florida's quality of life.
- ◆ Identify concerned public.
- ◆ Provide an outlet that maintains easy access and opportunity for the public to become involved and interact with technical consultants and Department representatives, generating consensus building for the proposed improvements to I-4.

Public participation for the I-4 PD&E Study - Section 2 was accomplished through the use of the following techniques:

- ◆ Public Information Office
- ◆ Study Sponsors and Advisory Groups
- ◆ Community Participation
- ◆ Information Elements

Descriptions of the four information techniques are summarized in the following sections.

9.17.2.1 Public Information Office

Throughout the PD&E study process, FDOT's intent is to provide a coordinated public involvement program that would deliver consistent information to the public regarding the three on-going PD&E Studies along 73 miles of the I-4 corridor.

In November 1996, the I-4 Public Involvement Office was established at 370 Whooping Loop, Suite 1154, Altamonte Springs, Florida. The office, centrally located along the I-4 corridor, provides the latest project information to visitors as well as a fully trained staff to help answer specific questions. Informational displays, presentational boards, project design plans, technical reports, and handouts are available for review at the office Monday through Friday from 8:00 AM to 5:00 PM. The 24-hour toll free number (1-888-797-1616) provides easy access to project information for all interested parties.

Project team members created the Trans4mation Station in April of 1997. A mobile public information office designed to take the message to the public, the Trans4mation Station is a modified 34-foot recreational vehicle with a customized exterior emblazoned with the project logo and toll-free phone number. The vehicle is equipped with a mobile office, project video, interchangeable displays, handouts, design plans and other project information. The Trans4mation Station has made appearances throughout the entire project corridor to homeowners groups, special interest groups, shopping centers, festivals and other locations along the I-4 corridor. Through March 2002, the Trans4mation Station has made over 400 appearances with over 21,000 visitors. This outreach is especially noteworthy, given that each visitor is provided an opportunity to

speaking one-on-one with a Public Involvement Specialist regarding their own interests and concerns, learning first hand about the proposed improvements.

9.17.2.2 Study Sponsors and Advisory Groups

As part of the PIP for the Ultimate I-4 corridor, the Project Advisory Group (PAG) and the Environmental Advisory Committee (EAC) were revived from the I-4 MMMP efforts and expanded to provide technical input to the project teams. In addition, the College Park Neighborhood Association Interstate Four Technical Committee, the I-4/SR 408 Interchange Technical Committee, the Urban Design Guidelines Committee and the Cultural Resources Committee (CRC) were formed for the project to address neighborhood, community, aesthetic and historic resource concerns. The study sponsors and advisory groups met on several occasions throughout the project development process.

Project Advisory Group (PAG)

A PAG generally consisting of technical representatives of local governments, METROPLAN ORLANDO, Volusia County MPO, transit providers, State agencies and special interest groups met frequently during the I-4 PD&E Study. The focus of this group was to provide input, review and study results, and to aid in the formulation of study recommendations from a regional perspective. Additionally, meetings were held with the individual agencies and municipalities to discuss in detail the proposed impacts within their jurisdictions and to receive input. Table 9.17.2.2.1 lists the PAG Meetings.

The PAG met throughout the study process at key milestones and before workshops. Each meeting was held at the old PBS&J building, 1560 Orange Avenue, Basement Level Conference Room, Winter Park.

Table 9.17.2.2.1 - PAG Meetings

| Meeting Date | Itinerary |
|-------------------|--|
| December 4, 1996 | Review I-4 MMMP/LRT. |
| March 5, 1997 | General overview of project and PD&E process. |
| April 30, 1997 | Section 2 Scoping Meeting results. |
| September 3, 1997 | Discuss impacts of LRT/I-4. |
| January 13, 1998 | Review I-4 Improvements, I-4/SR 408 interchange, downtown access, HOV only access. |
| February 11, 1998 | Review I-4 Improvements, noise study, urban design guidelines. |
| July 28, 1998 | Review project information prior to Workshop. |
| January 20, 1999 | Project Status Update. |
| April 6, 1999 | Project Status Update. |
| January 20, 2000 | Project Status Update/Review I-4 Six Laning information prior to public hearing. |
| June 6, 2001 | Review Project Information prior to Public Hearing. |

Environmental Advisory Committee (EAC)

The EAC performed a similar role to the PAG with regard to providing input, review and guidance during the PD&E study process, but with focus on the environmental aspects of the study. The EAC consisted of representatives from local, State and Federal permitting agencies as well as environmental interest groups such as 1000 Friends of Florida, the Florida Audubon Society and the Sierra Club.

Near the conclusion of the I-4 MMMP project, the EAC issued a report entitled *Community and Environmental Planning Report Interstate 4 - Road Expansion Project (June 1996)*. This report summarizes specific community and environmental planning issues identified by the committee during its review of the I-4 MMMP. It also develops general recommendations to resolve these issues.

Realizing the tremendous contribution of the EAC to the success of the I-4 MMMP, FDOT continued the participation of the committee through the PD&E process. An initial meeting was held with the participants of the EAC to review the PD&E study sections and address initial environmental concerns of the committee. As a result of this meeting, the FDOT committed to reviewing the *Community & Environmental Planning Report* and to provide responses to the environmental planning issues and recommendations set forth in that document. These responses were documented in the *Response to Comments Environmental Advisory Committee Community & Environmental Planning Report (May 1997)*.

Numerous meetings have been conducted with the EAC throughout the I-4 studies to discuss impacts and determine environmental concerns of the committee. A summary of the issues discussed at the meetings is presented in the project files. Meetings with the EAC held to discuss issues within the project study limits are listed in Table 9.17.2.2.2.

Table 9.17.2.2.2 - EAC Meetings

| Meeting Date | Itinerary |
|--------------------|--|
| November 7, 1996 | Reviewed I-4 MMMP and introduced PD&E study project team |
| January 17, 1997 | Met with South Florida Water Management District to discuss potential concerns |
| January 22, 1997 | Met with U.S. Army Corps of Engineers to discuss potential concerns |
| January 24, 1997 | Met with St. Johns River Water Management District and FDEP to discuss potential concerns. |
| July 28, 1997 | Reviewed Environmental Report prepared by EAC. |
| December 12, 1997 | Discussed potential Little Wekiva/Crane's Roost Park Impacts |
| December 16, 1997 | Discussed potential impacts to Orlando Historic Resources |
| January 9, 1998 | Discussed potential Orlando Area Impacts |
| January 16, 1998 | Discussed potential impacts to Lake Monroe |
| January 23, 1998 | Discussed potential impact to Shingle Creek |
| September 29, 1999 | Provided a project status update |

College Park Neighborhood Association (CPNA) Interstate Four Technical Committee

During the PD&E Study, information regarding the proposed improvements has been distributed through the public involvement program to the neighborhoods and residents living along the I-4 corridor. Interest has been generated by the information provided, and many neighborhoods have requested additional presentations to keep residents informed.

The College Park Neighborhood Association (CPNA) is a very active and involved group of residents. Many of the College Park residents live directly adjacent to or very near to the I-4 corridor. The College Park community is unique in terms of its history and the cohesiveness of its residents. A few members of the CPNA volunteered their time to form the CPNA Interstate Four Technical

Committee. This Committee met numerous times in addition to the regular Association meetings to research and discuss I-4 and the proposed improvements.

The CPNA Interstate Four Technical Committee consists of 14 members from the College Park neighborhood. In addition to the I-4 presentations at the CPNA meetings, the Committee met separately with project team members to discuss the project.

The CPNA and its Interstate Four Technical Committee has communicated their position on the project. Correspondence with the CPNA Interstate Four Technical Committee is included in the project files.

A list of meetings held with College Park residents is provided in Table 9.17.2.2.3.

Table 9.17.2.2.3 - College Park Meetings

| Meeting Date | Itinerary |
|--------------------|---|
| July 7, 1997 | CPNA - Review concepts and discuss potential impacts |
| January 5, 1998 | CPNA - Review concepts and discuss potential impacts |
| March 2, 1998 | CPNA - Review concepts and discuss potential impacts |
| July 1, 1998 | CPNA Interstate 4 Technical Committee - Review neighborhood issues |
| August 10, 1998 | CPNA Interstate 4 Technical Committee - Review neighborhood issues |
| September 4, 1998 | Bill Jennings of the CPNA Interstate 4 Technical Committee - Review potential impacts |
| September 14, 1998 | CPNA - Review concepts and discuss potential impacts |
| October 5, 1998 | CPNA - Review concepts and discuss potential impacts |
| January 23, 1999 | CPNA Historic Assessment Meeting - Review potential impacts to historic resources |
| February 2, 1999 | CPNA Resident - Review potential impacts |
| February 9, 1999 | CPNA Resident - Review potential impacts |
| February 9, 1999 | CPNA Resident - Review potential impacts |
| March 13, 1999 | CPNA Resident - Review potential impacts |
| May 18, 1999 | CPNA - Review concepts and discuss potential impacts |
| January 10, 2000 | CPNA - Provide update on the Interim Reversible Express Lane |
| October 16, 2000 | CPNA - Provide overview of section 106 and the Historic Preservation Policy |

I-4/SR 408 Interchange Technical Committee

The I-4/SR 408 Interchange Technical Committee was formed to assist the project team in the development of alternatives at the I-4/SR 408 interchange.

This committee included representatives from the following local agencies:

- ◆ City of Orlando
- ◆ Parramore Heritage Redevelopment Foundation
- ◆ FDOT
- ◆ OOCEA
- ◆ Orange County
- ◆ Orlando Downtown Development Board
- ◆ Orlando Housing Authority
- ◆ Project Consultants

The I-4/SR 408 Interchange Technical Committee met on several occasions to review and discuss the alternatives developed by the project team. Table 9.17.2.2.4 lists the meetings held with the I-4/SR 408 Interchange Technical Committee.

Table 9.17.2.2.4 - I-4/SR 408 Meetings

| Meeting Date | Itinerary |
|--------------------|--|
| March 12, 1999 | Reviewed potential impacts and Hope VI revitalization program |
| April 2, 1999 | Reviewed proposed alternative concepts 1A and 2A. |
| April 30, 1999 | Reviewed proposed alternative and discussed potential impacts. |
| May 13, 1999 | Reviewed two alternatives for the interchange and discussed impacts. |
| August 9, 1999 | Reviewed revised alternatives and discussed impacts. |
| September 1, 1999 | Reviewed revised alternatives and discussed Preferred Alternative. |
| September 10, 1999 | Reviewed refined alternatives and potential impacts. |
| October 13, 1999 | Reviewed refined alternatives and potential impacts. |
| November 15, 1999 | Reviewed refined alternatives and potential impacts. |
| December 10, 1999 | Reviewed refined alternatives with OOCEA |
| December 13, 1999 | Reviewed refined alternatives with City of Orlando staff. |
| June 6, 2000 | Reviewed refined alternatives to determine support for design concept. |

Urban Design Committee

An Urban Design Committee was formed early in the project development process to discuss potential aesthetic enhancements to the Ultimate corridor. The Urban Design Committee developed possible locations of gateways to communities, and techniques to soften structures along the corridor and enhance the aesthetics of stormwater retention ponds. Representatives from local agencies were involved in the Urban Design Committee.

The Urban Design Committee met on several occasions to develop Urban Design Guidelines for the project. Table 9.17.2.2.5 lists the meetings for the Urban Design Committee.

Table 9.17.2.2.5 - Urban Design Committee Meetings

| Meeting Date | Itinerary |
|-------------------|--|
| April 22, 1997 | Informed members of the scope and purpose of Urban Design Guidelines |
| April 23, 1998 | Status of PD&E Study and discussion of candidate levels of treatment |
| September 2, 1998 | Meeting to discuss gateways in Seminole County |
| October 12, 1999 | Review of Draft Urban Design Guidelines |

Once the Urban Design Guidelines were developed for the project, a number of workshops were held with the community to present the proposed aesthetic enhancements along the I-4 corridor. The workshops are discussed in Section 9.17.2.3

Cultural Resources Committee

A Cultural Resources Committee (CRC) was formed to review potentially adverse effects to cultural and historic/Section 4(f) resources within the project study area. The focus of the CRC is to provide input on the various I-4 alternatives relative to cultural resources. The CRC input helped determine the Preferred Alternative for the I-4 project. Representatives of the following agencies were involved in forming the CRC:

- ◆ Commissioner - District 6
- ◆ Commissioner Elect - District 6
- ◆ FDOT - District 5
- ◆ Federal Highway Administration
- ◆ Carter Street Neighborhood Association
- ◆ City of Orlando Neighborhood Association
- ◆ Griffin Park Neighborhood Association
- ◆ Lake Cherokee Neighborhood Association
- ◆ College Park Neighborhood Association
- ◆ Orange County Historical Museum
- ◆ Orlando Downtown Development Board
- ◆ Orlando Historic Preservation Office
- ◆ Orlando Housing Authority
- ◆ Parramore Heritage Development Board
- ◆ State Historic Preservation Office/Division of Historic Resources
- ◆ Wilson, Leavitt & Small, PA
- ◆ Project Consultants

The CRC met on numerous occasions to review potential impacts to historically significant sites associated with the project. Table 9.17.2.2.6 lists the meetings for the CRC.

Table 9.17.2.2.6 -CRC Meetings

| CRC Meeting Date | Agenda |
|--------------------|---|
| March 28, 2000 | Discussed primary goals for Section 106 and 4(f) issues |
| May 2, 2000 | Discussed NEPA process and Draft EIS, interchange alternatives and reviewed potential impacts to historically significant sites |
| June 21, 2000 | Focused on range and types of potential effects to historic properties |
| March 8, 2001 | Discussed determination of effect for historic properties |
| June 21, 2001 | Discussed determination of effect for historic properties |
| September 13, 2001 | Discussed adverse effects, mitigation measures, and Section 4(f) issues |
| December 3, 2001 | Discussed the elements and stipulations of the Memorandum of Agreement (MOA) |
| January 23, 2002 | Discussed historic resources, mitigation options, and the elements and stipulations of the MOA |
| March 12, 2002 | Discussed Parramore/College Park Survey, MOA |
| April 30, 2002 | Renewed College Park/Peachtree Rd Survey, update of meetings with SHPO |
| July 9, 2002 | Discussed revised MOA and NRHP nominations for College Park and Holden-Parramore areas. |

The CRC will continue to meet through the DEIS and FEIS phase of project development.

9.17.2.3 Community Participation

The success of the I-4 PD&E Study Public Involvement Program hinged on the continual exchange of information between the project team and the public. The public is composed of several groups including citizens who live and work along the corridor, civic groups, neighborhood and homeowner associations, environmental groups, business interests, government agencies and elected/appointed officials. Efforts have included a series of public information workshops, focus group meetings with local interests and local government briefings. Additionally, hundreds of meetings with property owners, homeowners groups, special interest groups and businesses along the corridor have been conducted. A brief summary of these meetings is provided in the following section.

Project Alternatives Public Workshop

The Project Alternatives Public Workshops were held on August 18, 19 and 20, 1998. In order to provide easy access to meeting locations along the 43-mile Ultimate project corridor, a series of three consecutive meetings were held, one in each county, at the Expo Center in Orange County, Lake Mary Elementary School in Seminole County and Enterprise Elementary School in Volusia County.

In preparation for these workshops, a notification mailing was sent to 5,981 property owners and approximately 2,000 other interested parties, as well as *FourCast* (Issue 5), the project's quarterly newsletter. Notices were placed in the following six regional news publications: *Orlando Sentinel*, *Orlando Times*, *Orlando Business Journal*, *LaPrensa*, *Central Florida Advocate* and *Seminole Herald*. Flyers were distributed to local libraries, community centers and governmental buildings.

Approximately 800 people attended the three-day event with approximately 170 written comment forms received. Responses to the comments were prepared and mailed to each inquiry. Copies of these comment forms and responses are provided in the project file. The comments generally addressed the areas of concern (some comments addressed more than one concern) outlined in Table 9.17.2.3.1.

The format for each workshop was an informal, open house format to encourage the exchange of information between the public and the project team. The same information was presented at each location.

A detailed summary of the alternatives workshop is presented in the *I-4 PD&E Study - Section 2 Project Alternatives Workshop (Volumes I and II)*.

Local Government/Elected Officials Briefing

Through February 2002, members of the project team attended over 200 meetings with the local MPO's, local and elected officials, appointed boards and the staff of city and county governments. These meetings were conducted in addition to the PAG meetings. These meetings allowed for a focused discussion of issues and concerns related to the specific jurisdictions. In each case, a presentation of the current project status and issues was given, followed by a question and answer period.

Neighborhood Meetings

Extensive outreach has been conducted to meet with the existing neighborhoods along the project corridor. Through February 2002 over 95 meetings have been held with the citizens along the I-4 corridor. These meetings provided an overview of the project process and status, while focusing on the potential project impacts adjacent to the attendee's neighborhoods.

Table 9.17.2.3.1 - Project Alternatives Public Workshop Comments

| Area of Concern | Number of Comments |
|---|--------------------|
| Total written comment forms received | 170 |
| Add to mailing list only. | 9 |
| Request Trans4mation Station appearance | 18 |
| Request plan sheets. | 46 |
| Comments regarding Retention Ponds | |
| - Relocate the pond somewhere else. | |
| (Orange County) | 17 |
| (Seminole County) | 6 |
| (Volusia County) | 2 |
| - Provide increased aesthetics around ponds. | |
| (Orange County) | 3 |
| (Seminole County) | 2 |
| Provide Noise Barriers along Corridor | |
| (Orange County) | 9 |
| (Seminole County) | 12 |
| (Volusia County) | 29 |
| (No Address Provided) | 1 |
| Comments regarding High Occupancy Vehicle Lanes (HOV) | |
| - Against Installation | |
| (Orange County) | 7 |
| (Seminole County) | 4 |
| - Support Installation | |
| (Seminole County) | 2 |
| - Modify HOV proposal | |
| (Seminole County) | 3 |
| (Volusia County) | 1 |
| (No Address Provided) | 1 |
| Comments regarding the Typical Sections | |
| Alternative C | N/A |
| Alternative F' support | |
| (Orange County) | 1 |
| Request for Additional Information on Right-of-Way Acquisition | |
| (Orange County) | 4 |
| Request for additional informational about impacts to their residential parcel | |
| | 7 |

Environmental Justice

As directed by Executive Order 12898 (Environmental Justice), extensive outreach has been conducted to identify and meet with low income and minority neighborhoods and social service agencies/groups that provide services to low income and minority persons. At the meetings, the project team reviewed project information and potential impacts, and received input. Through February 2002, over 25 small group meetings have been conducted along the I-4 corridor.

Special Interest Groups

A number of meetings have been conducted with special interest groups that may be impacted by the proposed improvements. These special interest groups include social services agencies/groups, schools, hospitals and churches. Meetings were held to review project information and potential impacts and to receive input. Through February 2002, over 55 small group meetings have been conducted along the I-4 corridor.

Speakers Bureau

Throughout the PD&E process, key staff members have been available to interested community and civic groups for presentations about the study process, transportation needs and the proposed improvements. Through February 2002, over 20 presentations have been conducted to date with groups such as the East Orlando Kiwanis Club, American Business Women Association, DeLand Rotary Club, Sierra Club, Florida Bar Association and the Maitland Men's Club.

Urban Design / Noise / Historic Workshops

Extensive outreach has been focused on providing information to the residents, property owners and other interested parties regarding potential noise impacts, historic properties and urban design criteria. Over 810 people attended a series of six workshops held during January and February 1999. The meetings were held at the locations shown in Table 9.17.2.3.2.

Table 9.17.2.3.2 - Urban Design / Noise / Historic Meetings

| Meeting Date | Itinerary |
|-------------------|--|
| January 12, 1999 | Country Village Mobile Home Park, 2252 Hollowridge Drive, Orange City, Volusia County |
| January 13, 1999 | Beardall Senior Center, Lake Cherokee, 800 S. Delaney Avenue, Orlando, Orange County |
| January 20, 1999 | Rock Lake Middle School, North Ridge HOA, et. al., 250 Slade Drive, Longwood, Seminole County |
| February 1, 1999 | First Baptist Church, College Park, 1914 Edgewater Drive, College Park, Orange County |
| February 8, 1999 | Neighborhood Alliance Church, Markham Woods HOA, 301 Markham Woods Road, Longwood, Seminole County |
| February 16, 1999 | Eatonville City Hall, 307 Kennedy Blvd, Eatonville, Orange County |

The workshops consisted of an informal open house with displays of the study criteria and results, as well as a formal presentation of the information. A review of the methodology and results of the noise study was provided including noise abatement criteria and potential noise wall locations along the project study corridor. The proposed criteria for the aesthetic elements along the corridor as defined in the Urban Design Guidelines for the project were also reviewed.

A review of the location of historic districts and properties identified adjacent or near the project boundaries were reviewed and discussed with interested parties.

In addition to the notices sent out to the interested parties and the article in *FourCast* announcing the meetings, this series of workshops generated eight television news interviews with over 32 airings of the broadcasts.

Section 106

Throughout the project development process, the project team has informed the public on the potential impacts to historic and archaeological properties. Project team historians and archaeologists were on-hand to answer questions at the project scoping meeting, College Park Workshop, Project Alternatives Public Workshops, Urban Design / Noise / Historic Workshops and the Public Hearing. In addition, the project team historians and archaeologists met several times with local, state, and federal agencies to discuss potential impacts to historic and archaeological properties. The project team also briefed neighborhoods of potential impacts to historic resources.

At the onset of the project, potential impacts to historic resources were presented to the public in accordance with the 1986 Section 106 and its implementing regulations and procedures (36 CFR, Part 800). At the meetings, a flowchart illustrating the four basic steps of the Section 106 process was displayed. A video was presented at the Urban Design / Noise / Historic Workshops that reviewed the Section 106 process for historic places.

In June 1999, the project's Section 106 public involvement coordination was revised to reflect the procedures outlined in the revised Section 106 process. As part of the new process, a CRC was created to involve a broad spectrum of interested parties including Federally recognized Native American tribes. Information regarding the CRC was previously presented in this section.

9.17.2.4 Information Elements

The PIP was designed to inform the public and provide an opportunity for the public to express their ideas and concerns about the scope and impact of the study. Activities included newsletters, working with the media, a project information booth and billboards, a project web site and an educational outreach program.

Newsletters

FourCast, the project newsletter, was published throughout the study effort, providing opportunities for the public to learn about project progress and about upcoming meetings. Through March 2002, 14 issues of *FourCast* have been published. A total of over 100,000 copies of *FourCast* have been distributed to the public through direct mail, as handouts at meetings, in the Trans4mation Station and the project office.

The newsletter was sent to the project mailing list, which includes the following groups:

- ◆ Elected officials-local, state and federal delegations;
- ◆ Neighborhood associations;
- ◆ Media;
- ◆ Property owners whose property lies, in whole or part, within 300 feet on either side of the centerline of each project alternative;
- ◆ Project Advisory Group;
- ◆ Urban Design Group;
- ◆ Environmental Justice Group;
- ◆ Environmental interest groups;
- ◆ Civic and professional associations;
- ◆ Schools within the project area;
- ◆ Major employers, public and private groups, organizations, and agencies or businesses requesting to be placed on the mailing list for the duration of the study; and
- ◆ Other interested parties.

Media

Project information was disseminated through the local print and broadcast media. Information was in the form of news releases and news stories generated either through the project office or unilaterally by individual media outlets. Media contacts were made prior to important public meetings and at key milestones, as well as when requested by the media or FDOT.

- ◆ **Newspapers** - Display advertisements were placed in local community and metropolitan newspapers with the largest circulation in the project area. The newspapers included *Orlando Sentinel*, *Orlando Business Journal*, *Sanford Herald*, *Central Florida Advocate*, *La Prensa* and *Orlando Times*.
Project team members were interviewed by and provided information to reporters during the project's evolution. Copies of newspaper articles are included in the project files.
- ◆ **Radio and Television Stations**- In addition to the local area newspapers, local radio and television stations were provided project news releases. The radio and television stations included:
Radio - WHTQ, WMMO, WDBO, WTKS, WAJL and WUCF.
Television - WFTV Channel 9, WKMG Channel 6, WKCF Channel 18, WESH Channel 2, WOFL Channel 35, WMFE Channel 24, WACX Channel 55, Central Florida News Channel 13, Orange County TV (closed circuit) and WCEU Channel 15 Daytona Beach.

Through March 2002, the public involvement team has been interviewed on numerous occasions by television reporters with over 60 news clips being aired on noon and evening news broadcasts. Please refer to Table 9.17.2.4.1 for specific dates and stations.

Table 9.17.2.4.1 - Television News Broadcasts

| Station | Channel | Date | Time | Station | Channel | Date | Time |
|---------|---------|-----------|----------|---------|---------|------------|----------|
| WFTV | CH-9 | 8/11/1998 | 6:00 PM | WKCF | CH-18 | 2/11/1999 | 10:00 PM |
| NEWS | CH-13 | 8/18/1998 | NOON | WKMG | CH-6 | 2/11/1999 | 6:00 PM |
| WESH | CH-2 | 8/18/1998 | 4:00 PM | WKMG | CH-6 | 2/12/1999 | 5:00 PM |
| WFTV | CH-9 | 8/18/1998 | NOON | WFTV | CH-9 | 2/12/1999 | 5:00 PM |
| WFTV | CH-9 | 8/18/1998 | 5:00 PM | WKCF | CH-18 | 2/16/1999 | 10:00 PM |
| WKMG | CH-6 | 8/20/1998 | NOON | WKMG | CH-6 | 2/16/1999 | 11:00 PM |
| WFTV | CH-9 | 8/20/1998 | NOON | NEWS | CH-13 | 5/3/1999 | NOON |
| WESH | CH-2 | 1/12/1999 | NOON | NEWS | CH-13 | 5/3/1999 | 11:00 PM |
| WKCF | CH-18 | 1/18/1999 | 10:00 PM | WESH | CH-2 | 5/3/1999 | NOON |
| WESH | CH-2 | 1/18/1999 | NOON | WESH | CH-2 | 5/3/1999 | 6:00 PM |
| WOFL | CH-35 | 1/18/1999 | 10:00 PM | WKMG | CH-6 | 5/3/1999 | NOON |
| WKMG | CH-6 | 1/18/1999 | 6:00 PM | WKMG | CH-6 | 5/3/1999 | 5:00 PM |
| WKMG | CH-6 | 1/18/1999 | 11:00 PM | WFTV | CH-9 | 5/3/1999 | NOON |
| WFTV | CH-9 | 1/18/1999 | 6:00 PM | WFTV | CH-9 | 5/3/1999 | 5:30 PM |
| WFTV | CH-9 | 1/19/1999 | 11:00 PM | WFTV | CH-9 | 5/4/1999 | NOON |
| NEWS | CH-13 | 1/20/1999 | 11:00 PM | WFTV | CH-9 | 5/4/1999 | 11:00 PM |
| WESH | CH-2 | 1/20/1999 | 11:00 PM | WFTV | CH-9 | 12/14/1999 | 6:00 PM |
| WOFL | CH-35 | 1/20/1999 | 10:00 PM | WESH | CH-2 | 12/15/1999 | 6:00 PM |
| WKMG | CH-6 | 1/20/1999 | 5:00 PM | WESH | CH-2 | 12/15/1999 | 11:00 PM |
| WKMG | CH-6 | 1/20/1999 | 11:00 PM | WKMG | CH-6 | 12/15/1999 | 6:00 PM |
| WESH | CH-2 | 1/21/1999 | 5:30 AM | WFTV | CH-9 | 12/15/1999 | 6:00 PM |
| WESH | CH-2 | 1/21/1999 | NOON | WKCF | CH-18 | 1/25/2000 | 10:00 PM |
| WESH | CH-2 | 1/28/1999 | NOON | WESH | CH-2 | 1/25/2000 | 4:30 PM |
| WKCF | CH-18 | 2/1/1999 | 10:00 PM | WKMG | CH-6 | 1/25/2000 | 11:00 PM |
| WESH | CH-2 | 2/1/1999 | NOON | WFTV | CH-9 | 1/25/2000 | 5:30 PM |
| WOFL | CH-35 | 2/1/1999 | 10:00 PM | WFTV | CH-9 | 1/25/2000 | 11:00 PM |
| WKMG | CH-6 | 2/1/1999 | 11:00 PM | WKMG | CH-6 | 1/25/2000 | 6:00 PM |
| WFTV | CH-9 | 2/1/1999 | NOON | NEWS | CH-13 | 1/25/2000 | NOON |
| WESH | CH-2 | 2/2/1999 | NOON | WKCF | CH-18 | 1/25/2000 | 10:00PM |
| WESH | CH-2 | 2/3/1999 | 6:00 PM | WOFL | CH-35 | 1/25/2000 | 11:00PM |
| WKCF | CH-18 | 2/8/1999 | 10:00 PM | WFTV | CH-9 | 6/26/2001 | 11:00PM |
| WESH | CH-2 | 2/8/1999 | 6:00 PM | NEWS | CH-13 | 6/26/2001 | NOON |
| WKMG | CH-6 | 2/8/1999 | 11:00 PM | | | | |

Additionally, speaking opportunities, such as community affairs and business talk shows, were pursued. The project team participated in 12 radio and five television talk show interviews. Selective broadcast stations, including the Orange County closed circuit broadcasts, also were utilized to disseminate project information.

Materials were also provided to local government, civic, professional and neighborhood associations for publication in their newsletters. Updated media kits were provided to a comprehensive media mailing list at project milestones. The media also were provided copies of salient information as deemed appropriate by the project media liaison.

Project Information Booth, Posters and Billboards

A project information booth was developed and includes study information and displays. The booth provides a method for distributing newsletters, comment forms and other project data. The booth was used in arenas where logistically the Trans4mation Station was unsuitable. The booth was used at art shows, farmers' markets, shopping centers, the convention center, and community buildings.

Posters promoting the project were prepared and mounted in 256 LYNX buses that travel throughout the Metropolitan Orlando area. Project calendars also were prepared and distributed to area businesses outlining where project information could be obtained.

Billboards advertising the public involvement office phone number were prepared and provided to major outdoor advertising operations in the greater Orlando area. The firms that were provided the materials included Paxon Outdoor Advertising, Universal Outdoor Advertising, 3M Multimedia Co. and Lamar Outdoor Advertising.

These billboard covers were posted periodically on a gratis, space-available basis with most postings on I-4 approach roads such as SR 50, Michigan Street, SR 408 and US 17-92.

Web Site

A web site also was created (www.trans4mation.org) and has been available since April 1998. It provides general project information, including project meeting schedules, milestones, process explanations, and other information. Through March 2002, over 22,500 interested parties have visited the web site.

Educational Outreach

A focus of the I-4 PD&E Study - Section 2 is to promote carpooling and mass transit options to the travelers in the Central Florida area. Given the long-term efforts required to complete the construction of the improvements, an element of the outreach program included an educational program to the future drivers in the Central Florida area, elementary school children. The program includes Buddy, the program mascot and educator, who helps deliver the important message that "It's Cool to Carpool." Buddy is a remote controlled, voice-operated car that meets with the third grade students in Orange, Seminole and Volusia counties delivering the message on carpooling, how it benefits the environment, eases congestion, and will make traveling on Interstate 4 quicker, safer and more fun.

Through March 2002, "Buddy and his friends" have made 122 appearances. Project team members distribute educational materials that include activity books, posters, bookmarks, decals, give-a-ways, carpool brochures and certificates for each student.

Additional appearances by Buddy within Section 2 include the following special events:

- ◆ *Transportation Day* - Holy Cross Lutheran Church Preschool/Lake Mary - January 21, 1999
- ◆ *Bring Your Kids To Work Day* - FDOT District V Office/DeLand April 22, 1999
- ◆ *Central Florida Public Safety Fair* - Cranes Roost Park - May 1, 1999
- ◆ *Central Florida Clean Air Team* - Lake Eola - May 3, 1999
- ◆ *B-BOPP for Clean Air* - Church Street Station in Downtown Orlando - September 24, 1999
- ◆ *Leadership Orlando Transportation/Conservation Session* - Orlando Airport Marriott Convention Center - January 19, 2000
- ◆ *Transportation Day* - Holy Cross Lutheran Church Preschool/Lake Mary - January 27, 2000

9.17.3 Agency Coordination

Meetings were held with various agencies to review the project and identify environmental issues. Environmental issues discussed include air, noise, wetlands, threatened and endangered species, drainage, historic sites and archaeological sites. A list of the meetings is provided on Table 9.17.3.1.

In addition to the project meetings, correspondence with various local, state, and federal agencies was initiated. Copies of the agency correspondence are provided in the project files.

9.17.4 Public Hearing

Florida Statutes mandate that a public hearing must be held on all projects that are defined as major transportation improvements and require the preparation of an EIS. A public hearing for the I-4 PD&E Study - Section 2 was held on June 26, 27, and 28, 2001. In order to provide easy access to meeting locations along the 43-mile project corridor, a series of three consecutive meetings were held at the following locations:

- Orlando Expo Center in Orange County
- Altamonte Holiday Inn in Seminole County
- Enterprise Elementary School in Volusia County

In preparation for this hearing, a notification mailing was sent to 5,104 property owners and approximately 2,444 elected and appointed officials and other interested parties. Notices were placed in the *Florida Administrative Weekly*, *Orlando Sentinel*, *Orlando Times*, *Orlando Business Journal*, *La Prensa*, *Central Florida Advocate*, and the *Seminole Herald*, as well as FourCast (Issue 13). In addition to the display ad in the local newspapers, a press release was distributed to all media forms including television and radio on June 21, 2001. The press release provided a brief description of the study and details of the public hearing, including date, time, and location.

Table 9.17.3.1 - Environmental Agency Meetings

| Meeting Date | Itinerary |
|----------------------|--|
| January 17, 1997 | SFWMD - Review the project and discuss potential environmental issues |
| January 22, 1997 | USACE - Review the project and discuss potential environmental issues |
| January 24, 1997 | SJRWMD & FDEP - Review the project and discuss potential environmental issues |
| February 11, 1998 | SHPO - Review the project and discuss potential environmental issues |
| March 24, 1998 | SJRWMD - Discuss project status and review potential environmental issues |
| April 24, 1998 | SFWMD - Discuss project status and review potential environmental issues |
| May 1, 1998 | SJRWMD - Discuss project status and review potential environmental issues |
| May 11, 1998 | SJRWMD - Discuss project status and review potential environmental issues |
| June 5, 1998 | SJRWMD - Discuss project status and review potential environmental issues |
| September 1, 1998 | SJRWMD - Discuss project status and review potential environmental issues |
| October 30, 1998 | SHPO - Discuss project status and review potential historic issues |
| January 28, 1999 | SHPO - Discuss project status and review potential historic issues |
| February 22-25, 1999 | FHWA Workshops - Review concepts and discuss potential impacts |
| March 10, 1999 | SHPO/FHWA - Discuss potential impacts to historic resources |
| June 1, 1999 | SHPO - Discuss potential impacts to historic resources |
| June 25, 1999 | SJRWMD - Discuss potential impacts to wetlands |
| July 29, 1999 | USFWS (Jacksonville) - Discuss potential impacts to T&E species |
| August 3, 1999 | SJRWMD - Discuss project status and review potential environmental issues |
| January 31, 2000 | SHPO - Discuss potential impacts to historic resources |
| March 28, 2000 | SHPO - Discuss primary goals for Section 106 and 4(f) issues |
| May 2, 2000 | SHPO - Discuss NEPA process and DEIS, interchange alternatives, and potential impacts to historically significant sites |
| June 21, 2000 | SHPO - Discuss the range and types of potential effects on historic properties |
| January 30, 2001 | SHPO - Discuss determination of effect for historic properties |
| April 16, 2001 | USACE - Discuss coordination of DEIS |
| September 17, 2001 | FDEP - Discuss review comments on DEIS concerning contamination, aquatic preserves, construction impacts, spring locations, and trail issues |
| September 19, 2001 | FHWA - Discuss review comments on DEIS and how to formulate responses |
| January 16, 2002 | FHWA - Discuss limits of preferred alternative and recommendation, update of Section 106 progress, and FEIS methodology |
| April 23, 2002 | SHPO - Discussed determination of effects |
| May 2002 | SHPO - Field reviews of College Park and Holden-Parramore |

Approximately 405 people attended the three-day event. The hearing included an informal review of the project, followed by a formal presentation. A court reporter transcribed the proceedings from the formal portion of the hearing. A copy of the transcript (for each evening) and the handout packet that was distributed at the public hearing are provided in the *Public Hearing Summary* (July 2002). In addition, the project team was available to answer questions and to hold "one on one" conversations each evening. The official public hearing record period ended August 1, 2001.

A total of 116 written comment forms were received. Responses to the comments were prepared and mailed to each inquiry. Copies of the comment forms and response letters are located in the project files. Generally, the comments received were focused in the areas of noise, cultural/historic resources, urban design guidelines, and requests for more information. The comments received are summarized in Table 9.17.4.1.

In addition to the written comments, two petitions were received with numerous signatures. The first petition was written to express concerns against the closing

Table 9.17.4.1 - Public Hearing Comments

| Area of Concern | Number of Comments |
|---|--------------------|
| Total written comment forms received | 116 |
| Request plan sheets | 17 |
| Add to mailing list only | 14 |
| Request relocation information | 1 |
| Request copy of hearing transcript | 1 |
| Comments on Communities Adjacent to the Corridor | |
| - Noise barriers in non-eligible areas | 20 |
| - Noise impacts and quality of life concerns | 18 |
| - Protect historic districts | 14 |
| - Pollution effects | 7 |
| - Eliminate neighborhood cut-through traffic | 2 |
| Comments on Study Findings | |
| - Preferences for an alternative | 18 |
| - Improve arterial roads and intersections | 10 |
| - Retain downtown Orlando access | 7 |
| - Prefer No Build Concept | 6 |
| - Eliminate tolls on existing expressways | 5 |
| - Against HOV lanes | 4 |
| - Create alternative routes | 4 |
| - Noise study | 3 |
| - Widen secondary roads | 2 |
| Comments on Mass Transit | |
| - Add extra HOV lanes instead of rail | 1 |
| - Improve mass transit | 1 |
| Comments on Urban Design Guidelines | |
| - Reduce funds for aesthetics on the St. Johns River Bridge | 2 |
| - Safety lights only for the St. Johns River Bridge | 2 |
| - Use vegetation with barrier walls | 2 |
| - Concern for graffiti on barrier walls | 1 |
| - Be consistent with local municipal guidelines | 1 |

of the Robinson Street off-ramp in downtown Orlando and maintaining the Amelia Street off-ramp. This petition was signed by 40 members of the Lake Eola Heights Historic Neighborhood Association. The second petition expressed concerns of opposition to the closing of Pinehurst Avenue where it connects to Par Street at the I-4 overpass. Approximately 50 nearby residents and members of the Calvary Assembly Church of God signed this petition.

A detailed summary of the public hearing is presented in the *Public Hearing Summary* (July 2002). The input received was used in the selection of the *Preferred Alternative* and for the final recommendation to FHWA. Upon approval from FHWA, EPA will publish a notice of availability in the Federal Register. A period of 30 days will be established and a ROD will be submitted and signed by FHWA.

9.18 VALUE ENGINEERING

Six separate Value Engineering (VE) Studies were performed in 1997 and 1998. Following are descriptions of the recommendations carried forth from those studies.

9.18.1 VE Study No. 970541, October 20-24, 1997

Typical Sections

SR 528 (Bee Line Expressway) to SR 423 (John Young Parkway)

The VE Team recommended widening the existing pavement and converting the inside lanes to a buffer separated HOV corridor. The I-4 Project Team acknowledged that implementing the Value Engineering Typical Section Alternative would be possible and would result in cost savings. However, the Project Team noted that FHWA has stated a preference for barrier separation, that simple widening of the existing facility does not address the issue of pavement cross slopes for drainage and clearances for cross roads that I-4 overpasses and that widening of the existing facility would require numerous design variations and exceptions were the existing facility does not meet current design criteria. Alternative C is the only typical section being considered in this segment.

SR 423 (John Young Parkway) to SR 414 (Maitland Boulevard)

The VE Team recommended widening the existing pavement and converting the inside lanes to a buffer separated HOV corridor. The I-4 Project Team acknowledged that implementing the Value Engineering Typical Section Alternative would be possible and would result in cost savings. However, the Project Team noted that FHWA has stated a preference for barrier separation, that simple widening of the existing facility does not address the issue of the pavement cross slopes for drainage and clearances for cross roads that I-4 overpasses, that this typical section would produce negative impacts to historic resources and raise environmental justice issues, and that widening of the existing facility would require numerous design variations and exceptions where the existing facility does not meet current design criteria. In addition, at the time of the VE Study, this typical section would possibly interfere with the proposed light rail alignment.

The VE Team suggested that if the first recommended typical section could not be implemented that a typical section that widens the existing pavement to the outside and restripes the inside lanes as HOV lanes with a barrier separation. In addition, the HOV lanes could be elevated as required. The Project Team responded that this typical section is similar to proposed Typical Section Alternatives F' and D. Simple widening of the Interstate results in the same problems discussed in the paragraph above. Alternative D was evaluated in the *TSCRTS* (January 1999).

Alternative C is the only typical section being considered throughout this segment.

SR 414 (Maitland Boulevard) to SR 472

The VE Team recommended widening the existing pavement and converting the inside lanes to a buffer separated HOV corridor. The I-4 Project Team acknowledged that implementing the Value Engineering Typical Section Alternative would be possible and would result in cost savings. However, the Project Team noted that FHWA has stated a preference for barrier separation, that simple widening of the existing facility does not address the issue of pavement cross slopes for drainage and clearances for cross roads that I-4 overpasses and that widening of the existing facility would require numerous design variations and exceptions where the existing facility does not meet current design criteria. In addition this alternative does not allow for a rail envelope. This may be a significant issue for Volusia County Officials.

Alternative C is the only Typical Section under consideration.

9.18.2 VE Study No. 970544, November 3-7, 1997**Central Florida Parkway to SR 528 (Bee Line Expressway)**

The VE Team recommended that the original SR 528 interchange concept be revised to provide adequate stopping site distance on the westbound general use on-ramp diverge to the westbound HOV lanes. The HOV movement was placed on a separate ramp and the alignment of the general-use on ramp was revised to provide adequate stopping sight distance.

9.18.3 VE Study 970545, May 4-8, 1998**SR 408 (East/West Expressway) Interchange**

The VE Team suggested that the alignment of Ramp B be modified so as not to impact a utility substation. The I-4 Project Team adjusted the ramp's alignment so the substation would not be impacted.

The VE Team recommended a shorter bridge length over Division Avenue. In response to the comment, the I-4 Project Team reduced the length of the Division Avenue bridge to 225 feet thus reducing the bridge cost by \$1.1 million.

9.18.4 VE Study 970547, July 12-17, 1998**SR 438 (Princeton Street) to SR 434 (Sanlando Springs Road)****College Park**

The VE Team suggested that a lower profile in this area would save on fill and visual impacts. At the time, the I-4 Team responded that adjustments would be made during the final design phase. Since the VE Study, public input has resulted in a reduced design speed in that area which reduced the vertical alignment in the College Park area.

SR 436

The VE Team proposed that the areas between the interchange ramps and the mainline be used for drainage purposes. The SR 436 interchange is located at the Basin CC and DD divide. The small areas within the proposed interchange ramps may be used for stormwater management but would provide only minimal storage for interchange stormwater runoff and would not considerably reduce the size of Pond CC-2. This option will be investigated further in the design phase of the project but will provide volume for interchange runoff only in Basin CC.

General

The VE Team suggested that a removable section of barrier wall every half mile would provide access for emergency vehicles. The I-4 Project Team committed to this option in the study documents and the design detail will be evaluated in the final design phase.

The VE Team recommended that the length of the bridges could be reduced from three-span to one-span by using abutments and MSE walls. All bridge replacements include abutments and MSE walls, and optimal bridge length and design will be determined during the final design phase when detailed design and survey information are available.

The VE Team suggested that precast concrete sections such as "U" sections or "double T's" could provide thinner bridge cross sections. The consideration of alternative bridge design will be evaluated during the Bridge Development Report phase of final design.

9.18.5 VE Study No. 970548, November 17-21, 1997**US 17-92 to Dirksen Drive/DeBary Avenue**

The median rail corridor was reduced to 44 feet from 64 feet as per VE recommendations.

9.18.6 VE Study No. 970550, May 18-22, 1998**US 441 (Orange Blossom Trail) to Church Street (excluding the SR 408 (East West Expressway) Interchange)**

No VE recommendations were implemented.

9.19 DRAINAGE AND HYDROLOGY

The I-4 PD&E Study - Section 2 will provide stormwater management systems for each basin to provide the adequate stormwater treatment and attenuation required by Orange County, SFWMD, SJRWMD and FDOT (refer to the *I-4 Pond Siting Report* (August 2000), Appendix A for design criteria). It will be the responsibility of FDOT to maintain the proposed stormwater management facilities unless other jurisdictional arrangements are made.

The stormwater management approach for the Ultimate project was initially a traditional one with stormwater ponds consisting of either wet detention ponds or dry retention ponds depending on the existing ground elevation. When sufficient right-of-way was not available within the basin required for a traditional or regional pond approach, minor adjustments to the standard design criteria for ponds were investigated in accordance with local and State agencies and FDOT standards (refer to the *I-4 Pond Siting Report* (August 2000), Appendix A - Calculation Methodology for further details). When these minor design adjustments did not provide an acceptable alternative, two options were considered:

- ◆ An exfiltration system design instead of a traditional stormwater pond.
- ◆ An exfiltration system design in combination with traditional stormwater ponds.

A combination stormwater alternative consisting of traditional ponds and exfiltration system was used in cases where right-of-way was available within existing or proposed I-4 for a traditional stormwater pond, but not sufficient to meet the entire basin requirements. This alternative is being recommended in some basins in lieu of total exfiltration due to the high maintenance requirements for these types of systems (refer to the *I-4 Pond Siting Report* (August 2000), Appendix A - Calculation Methodology for further details on proposed exfiltration systems).

Four alternatives were evaluated for the proposed exfiltration systems for I-4. An exfiltration system that is located within the I-4 right-of-way between the outside retaining wall and the proposed right-of-way line is the recommended alternative for I-4 exfiltration systems. This evaluation is included in the *I-4 Pond Siting Report* (August 2000).

An underdrain system has been included as part of the exfiltration system for planning purposes due to high water table elevations.

The proposed drainage scheme will incorporate the use of shoulder gutter and stormsewers to convey runoff to the water management facilities to reduce impacts to right-of-way, wetlands and floodplains. If conveyance ditches can be employed without excess impacts, they will be used where appropriate. The recommended stormwater management systems for this project consist of stormwater ponds and exfiltration systems (refer to Chapter 4 of the *I-4 Pond Siting Report* (August 2000) for further details on each basin). Table 9.19.1 summarizes the recommended stormwater management systems for the Ultimate

Table 9.19.1 - Stormwater Management Systems

| Basin | Recommended Stormwater Management | Alternatives |
|-------------------------|---|----------------------|
| Segment 1 | | |
| A | Ponds A-1, A-2, A-3, A-5, A-7 & A-9 | |
| A-1 | Ponds A-1-1 & A-1-2 | |
| B | Pond B-2 | |
| C | Pond C-2 | |
| D | Ponds D-2 & D-3 | |
| E, F | F-32, F-33, F-34 & F-35 | |
| G, H | Ponds H-3, H-4, H-5 & H-6 | |
| I | Pond I-1 | |
| J | I-4/Conroy Road Interchange Ponds | |
| K, L | I-4/John Young Parkway Interchange Ponds | |
| Segments 2 and 3 | | |
| M | Pond M-1 | |
| N | Ponds N-4 and N-5 | |
| O | Ponds O-2, O-4, O-5, and 24 inch Exfiltration | 36-inch Exfiltration |
| P/C, P/1A1, P/1A2 | Ponds P-1, P-2, P-3, P-4, P-6, P-8, P-9, P-10, P-11, P-12, P-13, and 36-inch Exfiltration | |
| P/2B1, P/2B2 | P-1, P-2, P-4, P-6, P-8, P-10, P-12 and 36 inch Exfiltration | |
| Q | 36-inch Exfiltration | |
| R | Pond R-2, R-4 and 30-inch Exfiltration | |
| S | Pond S-1 and 30-inch Exfiltration | |
| T | Pond T-2 | 36-inch Exfiltration |
| U | Pond U-2 | 36-inch Exfiltration |
| V | Ponds V-1 & 2 | 36-inch Exfiltration |
| W/C | Ponds W-1-C, W-2 & W-3-C | 36-inch Exfiltration |
| W/F' | Ponds W-1-F & W-2 | 36-inch Exfiltration |
| X/C&F' | Pond X-2 | 36-inch Exfiltration |
| Y/C | Pond Y-2-C and 36-inch Exfiltration | 36-inch Exfiltration |
| Y/F' | Pond Y-1 and 24-inch Exfiltration | 36-inch Exfiltration |
| Z/C&F' | 42-inch Exfiltration | |
| Segments 4 and 5 | | |
| AA | Ponds AA-5 & AA-1 | |
| BB | Ponds BB-3, BB-4, BB-5, BB-6, BB-7, BB-8, BB-9 & BB-10 | |
| CC | Pond CC-2 | |
| DD | Pond DD-1 | |
| EE | Pond EE-2 | |
| FF | Ponds FF-3 & FF-4 | |
| GG | Pond GG-1 | |
| HH | Ponds HH-2 & HH-3 | |
| II | Pond II-1A | |
| JJ | Pond JJ-1 | |
| KK | Pond KK-2 | |
| LL | Ponds LL-1 & LL-2 | |
| MM | Pond MM-2 | |
| Segment 6 | | |
| QQ | Ponds QQ-3 & QQ-5 | |
| RR | Ponds RR-2 & RR-3 | |
| SS | Ponds SS-2 & SS-3 | |
| TT | Ponds TT-3, 4, 5 & 8 | |
| UU | Pond UU-2 | |
| VV | Pond VV-2 & VV-3 | |

project and the *Preferred Alternative*. For the locations of stormwater ponds, refer to the Preliminary Concept Plans submitted with this report.

The stormwater management for basins NN, OO and PP is being provided for under the FDOT I-4 Six-Laning project from Lake Mary Boulevard to US 17-92 (FDOT WPI No. 5148847 & SPN 77160-1404). A separate PD&E Study and Categorical Exclusion (CE) has been completed for this referenced I-4 six-laning project.

9.20 BRIDGE ANALYSIS

Of the 101 mainline bridges along the Ultimate project corridor, nine bridges will be widened and 92 will be replaced during construction of the Ultimate improvements. *Of the 72 mainline bridges along the Preferred Alternative, two bridges will be widened and 70 will be replaced during construction of the Preferred Alternative.* Detailed conceptual bridge plans and bridge typical sections are included in the structure Plans, submitted with this report. In addition, the dimensions, span information, structural depth and bridge type are listed in Table 9.20.1 for the I-4 mainline, ramp and crossroad bridges. Table 9.20.2 summarizes the bridge data for SR 408.

A *Bridge Development Report* (BDR) will be prepared for each structure during the final design phase of this project.

9.21 SPECIAL FEATURES

9.21.1 Segment 1 - SR 528 to John Young Parkway

Retaining walls will be used throughout Segment 1 along both the mainline and ramps in order to minimize right-of-way impacts.

The results of the noise study analysis indicate that noise barrier walls are reasonable and feasible east of I-4 just south of SR 528 (Bee Line Expressway). A detailed analysis can be found in the *Noise Impact Report* (August 2000) and the Noise Study Plans.

9.21.2 Segments 2 & 3 - John Young Parkway to Lee Road

Retaining walls will be used throughout Segments 2 and 3 for both the Ultimate project and *Preferred Alternative* along both the mainline and ramps in order to minimize right-of-way impacts.

The results of the noise study analysis indicate that noise barrier walls are reasonable and feasible on the west side of I-4 from Kaley Street to SR 408 (East/West Expressway). This includes the Griffin Park neighborhood that is surrounded by the I-4/SR 408 (East/West Expressway) interchange. Noise barriers are also reasonable and feasible along the northside of SR 408 (East/West Expressway) from approximately Tampa Avenue to I-4 and along both sides of SR 408 (East/West Expressway) from approximately Delaney Avenue to west of Bumby Avenue.

The College Park neighborhood north of downtown Orlando also meets the feasibility requirements for noise barrier walls. From Lake Ivanhoe

to SR 426 (Fairbanks Avenue), noise barriers are reasonable and feasible along both sides of I-4. A detailed analysis can be found in the Noise Impact Report (August 2000) and the Noise Study Plans.

In an established urban region such as the Orlando metropolitan area, the use of retention/detention ponds for stormwater treatment is often cost prohibitive due to right-of-way acquisition. Exfiltration trenches provide an alternative to the stormwater retention/detention ponds typically used in a roadway project. The Kaley Street/Michigan Street interchange and the segment from SR 438 (Princeton Street) to SR 423 (Lee Road) include the option exists to use exfiltration trenches for stormwater treatment along the Interstate mainline.

9.21.3 Segments 4 & 5 - Lee Road to US 17-92

Retaining walls will be used throughout Segments 4 and 5 for both the Ultimate project and *Preferred Alternative* along both the mainline and ramps in order to minimize right-of-way impacts.

The results of the noise study analysis indicate that noise barrier walls are reasonable and feasible west of I-4 from the Wymore Road overpass to SR 436 and east of I-4 from SR 434 (Sanlando Springs Road) to E.E. Williamson Road. A detailed analysis can be found in the Noise Impact Report (August 2000) and the Noise Study Plans.

9.21.4 Segment 6 - US 17-92 to SR 472

Retaining walls will be used throughout Segment 6 along both the mainline and ramps in order to minimize right-of-way impacts.

The results of the noise study analysis indicate that noise barrier walls are reasonable and feasible east of I-4 from Enterprise Road to Trout Lake south of Saxon Boulevard and west of I-4 from north of Rhode Island Avenue to Graves Avenue. A detailed analysis can be found in the *Noise Impact Report* (August 2000) and the Noise Study Plans.

9.22 AESTHETICS AND LANDSCAPING

The Orlando metropolitan area is set in a region with rich natural features, including an abundance of lakes and extensive tree canopy. The built environment of the region is often blended with the natural environment. Examples of this can be seen in and around downtown Orlando and Cranes Roost Lake and the surrounding development in the city of Altamonte Springs. Cultural aspects along the project corridor such as the neighborhoods of Parramore and Griffin Park and the Town of Eatonville are an integral part of the character of the region as well.

Reconstruction of I-4 will likely require high embankments and, due to right-of-way limitations, extensive retaining walls. These elements will become significant visual elements of the roadway system as viewed from adjacent land uses. Special attention will be necessary to visually integrate these features into the roadway system and surrounding communities. Reduction in the perceived height of walls and embankments can be reduced using terracing, landscaping, texture, color and lighting.

Table 9.20.1 - I-4 Mainline Bridges

| Description of Location | Bridge Plans Sheet Numbers | Roadway Plans Sheet Numbers | New Replacement or Widening | Number of Lanes | | Bridge Width (ft) | Bridge Length (ft) | Number of Spans | Possible Bridge | Structural Depth (ft) | Possible Typical Section | Deck Area (ft ²) | Approximate Potential Span Lengths (ft) |
|---|----------------------------|-----------------------------|-----------------------------|-----------------|-----|-------------------|--------------------|-----------------|---------------------|-----------------------|--------------------------|------------------------------|---|
| | | | | GUL | HOV | | | | | | | | |
| Bee Line over I-4 | | | | | | | | | | | | | |
| Ramp HOV A over Ramp F/I-4 EB/HOV Ramp D | 1 | 1 | New | 1 | | 30 | 1210 | 5 | SPG, SBG | 9.25 | C1, C2 | 36,300 | 210,275,275,270,180 |
| Ramp HOV B over Ramp D, F/I-4 EB | 2 | | New | 1 | | 30 | 1080 | 6 | SPG, SBG | 7.50 | C1, C2 | 32,400 | 151,217,217,138,203,154 |
| Ramp C over Ramp D | 3 | | New | 2 | | 51 | 171 | 1 | SPG, SBG | 8.50 | G1, G2 | 8,721 | 171 |
| Ramp HOV C over I-4 | 4 | | New | 1 | | 30 | 464 | 3 | SPG, SBG | 6.80 | C1, C2 | 13,920 | 135,194,135 |
| Ramp B over I-4/Ramp F/HOV Ramp C, D | 5,6 | | New | 2 | | 51 | 1381 | 7 | SPG, SBG | 9.79 | G1, G2 | 70,431 | 135,220,216,135,181,243,243 |
| Ramp F over I-4/HOV Ramp A, D | 7 | | New | 2 | | 51 | 1218 | 6 | SPG, SBG | 8.00 | G1, G2 | 62,118 | 164,236,240,197,223,158 |
| Ramp HOV D over I-4/HOV Ramp D | 8 | | New | 1 | | 30 | 932 | 5 | SPG, SBG | 8.08 | C1, C2 | 27,960 | 203,167,240,161,161 |
| Bee Line Expressway over International Drive | | | | | | | | | | | | | |
| Eastbound | 9 | 2 | Replacement | 4 | 1 | 108 | 185 | 1 | SPG | 9.06 | | 19,980 | 185 |
| Westbound | 9 | | Replacement | 4 | 1 | 108 | 185 | 1 | SPG | 9.06 | | 19,980 | 185 |
| I-4 over Sand Lake Road (SR 482) | 10 | 4, 4A | Widening | 7 | 2 | 64 | 161 | 1 | SPG | 8.08 | | 10,304 | 161 |
| Ramp D over Sand Lake Rd (SR 482) | 10 | | New | 1 | | 30 | 161 | 1 | SPG | 8.08 | | 4,828 | 161 |
| Kirkman | | | | | | | | | | | | | |
| Ramp A over Kirkman Northbound | | 6 | New | 2 | | 46 | 2400 | 12 | SPG, SBG | 9.83 | G1, G2 | 110,400 | - |
| Ramp D over Kirkman Southbound | | 6 | New | 2 | | 46 | 1214 | 6 | SPG, SBG | 8.75 | D1, D2 | 55,844 | - |
| Ramp C over Ramp D | | 5 | New | 1 | | 40 | 164 | 1 | SPG, SBG | 11.99 | | 6,560 | 164 |
| Northbound Kirkman over I-4 | | 6 | Replacement | 2 | | 69 | 1968 | 9 | SPG, SBG | 9.83 | | 135,792 | - |
| Southbound Kirkman over I-4 | | 6 | Replacement | 2 | | 46 | 1781 | 8 | SPG, SBG | 10.00 | | 81,926 | - |
| Ramp H - HOV Access over Eastbound I-4 | | 6 | New | | 2 | 66.0 | 328 | 1 | SPG, SBG | 12.50 | | 21,648 | 328 |
| Ramp H - HOV Access over Westbound I-4 | | 6 | New | | 2 | 66.0 | 230 | 1 | SPG, SBG | 8.58 | | 15,180 | 230 |
| Turnpike | | | | | | | | | | | | | |
| Ramp A | 16 | 7 | Replacement | 2 | | 51 | 270 | 2 | AASHTO Type V | 6.25 | | 13,770 | 135,135 |
| I-4 over Tropical Trail | | | | | | | | | | | | | |
| Eastbound | 17 | 7 | Replacement | 4 | 1 | 109 | 80 | 1 | AASHTO Type IV | 5.50 | | 8,720 | 80 |
| Westbound | 17 | | Replacement | 4 | 1 | 109 | 80 | 1 | AASHTO Type IV | 5.50 | | 8,720 | 80 |
| I-4 over Shingle Creek | | | | | | | | | | | | | |
| Eastbound | 18 | 8 | Widening | 4 | 1 | 57 | 171 | 3 | AASHTO Type III | 4.75 | | 9,747 | 3@57 |
| Westbound | 18 | | Widening | 4 | 1 | 67 | 171 | 3 | AASHTO Type III | 4.75 | | 11,457 | 3@57 |
| I-4 over Rio Grande Ave. | | | | | | | | | | | | | |
| EB GUL | 19 | | Replacement | 3 | | 63 | 125 | 1 | AASHTO Type V | 6.25 | | 7,875 | 125 |
| WB GUL & HOV | 19 | | Replacement | 4 | 1 | 150 | 125 | 1 | AASHTO Type V | 6.25 | | 18,750 | 125 |
| EB HOV | 19 | | Replacement | | 1 | 37 | 125 | 1 | AASHTO Type V | 6.25 | | 4,625 | 125 |
| Ramp B over Rio Grande Ave. | 19 | 10 | Replacement | 2 | | 43 | 125 | 1 | AASHTO Type V | 6.25 | | 5,375 | 125 |
| I-4 over Orange Blossom Trail | 20 | 10,11 | Replacement | 9 | 2 | 296 | 399 | 3 | FBT, AASHTO Type VI | 7.00 | | 118,104 | 133,133,133 |
| I-4 over Westmoreland Drive | 21 | 11 | Replacement | 9 | 2 | 230 | 119 | 1 | AASHTO Type V | 6.25 | | 27,370 | 119 |
| Kaley / Michigan | | | | | | | | | | | | | |
| I-4 over Michigan Street | 22 | 11 | Replacement | 9 | 2 | 230 | 500 | 2 | SPG | 9.70 | | 115,000 | 250,250 |
| I-4 over Kaley Street | 23 | | Replacement | 11 | 2 | 266 | 220 | 2 | AASHTO Type V | 6.25 | | 58,520 | 110,110 |
| Ramp D over Lake Angel | 24,24A | | New | 2 | | 43 | 1280 | 9 | SPG | 5.60 | | 55,040 | 120,4@130,170,170,170,130 |
| WB I-4/Ramp A over Lake Angel | 24 | | New | 5 | 1 | 141 | 670 | 5 | FBT, AASHTO Type VI | 7.00 | | 94,470 | 5@134 |
| Ramp F1, A, D over Lake Angel | 24 | | New | 1 | | 30 | 670 | 5 | FBT, AASHTO Type VI | 7.00 | C3 | 20,100 | 5@134 |
| Ramp C over Ramp F2 | 24,24A | | New | 1 | | 30 | 790 | 4 | SPG, SBG | 8.00 | | 23,700 | 200,200,200,190 |

I-4 PD&E Study - Section 2

Table 9.20.1 - I-4 Mainline Bridges, Cont.

| Description Of Location | Bridge Plans Sheet Numbers | Roadway Plans Sheet Numbers | New Replacement or Widening | Number Of Lanes | | Bridge Width (ft) | Bridge Length (ft) | Number Of Spans | Possible Bridge | Structural Depth (ft) | Possible Typical Section | Deck Area (ft ²) | Aproximate Potential Span Lengths (ft) |
|--|----------------------------|-----------------------------|-----------------------------|-----------------|-----|-------------------|--------------------|-----------------|------------------------|-----------------------|--------------------------|------------------------------|---|
| | | | | GUL | HOV | | | | | | | | |
| I-4 over Gore Street | 26 | 13 | Replacement | 6 | 2 | 194 | 140 | 1 | FBT, AASHTO Type VI | 7.50 | A1 | 27,160 | 140 |
| I-4 over Division Ave. | 27 | 13 | Replacement | 6 | 2 | 194 | 280 | 2 | AASHTO Type V | 6.50 | A2 | 54,320 | 150,150 |
| I-4 over South Street | | 13 | | | | | | | | | | | |
| EB | 64 | | Replacement | 4 | 1 | 130 | 200 | 1 | SPG,SPG | 8.50 | | 26,000 | 200 |
| WB | 64 | | Replacement | 4 | 1 | 130 | 200 | 1 | SPG,SPG | 8.50 | | 26,000 | 200 |
| I-4 over Church St., Central Blvd., Washington St. | 65,66 | 13,14 | Replacement | 8 | 4 | 276 | 1570 | 16 | FBT,AASHTO V | 6.50,11.75 | | 433,320 | 70,120,95,65,105,110,95,110,85,120,85,120, 120, 120, 110, 110 |
| I-4 over Robinson Street | 67 | 14 | Replacement | 10 | 2 | 245 | 225 | 2 | FUB,FBT, AASHTO Type V | 6.50 | | 55,125 | 115,110 |
| I-4 over Livingston Street | 68 | 14 | Replacement | 8 | 2 | 222 | 110 | 1 | FUB,FBT, AASHTO Type V | 6.50 | | 24,420 | 110 |
| Ramp A over Livingston | 68 | 14 | New | 1 | | 30 | 115 | 1 | AASHTO Type V | 6.25 | C3 | 3,450 | 115 |
| Ramp B over Livingston | 68 | 14 | New | 1 | | 30 | 115 | 1 | AASHTO Type V | 6.25 | C3 | 3,450 | 115 |
| I-4 over Amelia Street | 69 | 14 | Replacement | 7 | 2 | 217 | 120 | 1 | FUB,FBT, AASHTO Type V | 6.50 | | 26,040 | 120 |
| Ramp B over Amelia Street | 69 | 14 | New | 1 | | 30 | 140 | 1 | FBT, AASHTO Type VI | 7.00 | C3 | 4,200 | 140 |
| I-4 over Colonial Drive (SR 50) | 70 | 17 | Replacement | 6 | 1 | 194 | 575 | 3 | SPG, SBG | 8.50 | | 111,550 | 160,255,160 |
| Ramps D & E (SR 50) over Lake Concord | 71,72 | 17 | New | 3 | | 62 | 1420 | 11 | FBT, AASHTO Type VI | 7.00 | | 88,324 | 8@135,145,125,70 |
| I-4 over Legion Place & Ivanhoe Blvd. | | 17 | | | | | | | | | | | |
| Eastbound GUL, EB/WB HOV | 73 | | Replacement | 4 | 2 | 147 | 267 | 2 | FBT, AASHTO Type VI | 7.00 | | 39,249 | 133,134 |
| Westbound GUL | 73,74 | | Replacement | 4 | | 73 | 800 | 5 | SPG | 6.60 | | 58,400 | 160,200,200,120,120 |
| I-4 over Ramp A1 | 73 | | Replacement | | 1 | 75 | 180 | 2 | AASHTO Beams | 7.00 | | 13,500 | 133,134 |
| I-4 over Lake Ivanhoe Boat Pass | | 17 | | | | | | | | | | | |
| Eastbound GUL | 74,75 | | Replacement | 4 | | 72 | 371 | 2 | SPG, SBG | 8.66 | | 26,712 | 150,221 |
| Westbound GUL & EB/WB HOV | 74,75 | | Replacement | 4 | 1 | 198 | 230 | 1 | SPG, SBG | 11.00 | | 45,540 | 230 |
| Ramp A | 74,75 | 17 | New | 1 | | 30 | 1300 | 9 | SPG, SBG | 11.00 | C3 | 39,000 | 5@133,132,132,150,221 |
| Ramp B | 73,74 | 17 | New | 1 | | 30 | 984 | 7 | FBT, AASHTO Type VI | 7.00 | C1, C2 | 29,520 | 4@141,3@140 |
| Ramp B1 | 73,74 | 17 | New | | 1 | 30 | 670 | 5 | SPG, SBG | 7.00 | | 20,100 | 150,140,140,120,120 |
| WB I-4 over North Shore Ter. (14.5 Vertical Clearance) | 75 | 18 | New | 4 | | 73 | 308 | 2 | SPG, SBG | 6.42 | See Section | 22,484 | 154,154 |
| I-4 over New Hampshire Street (14.5 Vertical Clearance) | 76 | 18 | Replacement | 8 | 2 | 218 | 69 | 1 | AASHTO Type III | 4.75 | | 15,042 | 69 |
| I-4 over Princeton Street (14.5 Vertical Clearance) | 77 | 18 | Replacement | 6 | 2 | 194 | 148 | 1 | FBT, AASHTO Type VI | 7.50 | A1 | 28,712 | 148 |
| I-4 over Winter Park Street (14.5 Vertical Clearance) | 78 | 18 | Replacement | 8 | 2 | 218 | 69 | 1 | AASHTO Type III | 4.75 | | 15,042 | 69 |
| I-4 over Par Street (14.5 Vertical Clearance) | 79 | 19 | Replacement | 8 | 2 | 218 | 101 | 1 | AASHTO Type IV | 6.25 | | 22,018 | 101 |
| I-4 over Formosa Ave. & Minnesota Ave. (14.5 Vertical Clearance) | 80 | 19 | Replacement | 8 | 2 | 218 | 708 | 3 | SPG, SBG | 9.25 | | 154,344 | 236,236,236 |
| I-4 over Fairbanks Ave. (15.5 Vertical Clearance) | 82 | 19 | Replacement | 6 | 2 | 194 | 192 | 1 | SPG | 9.42 | A2 | 37,248 | 192 |
| I-4 over Riddle Dr. (14.5 Vertical Clearance) | 83 | 20 | New | 8 | 2 | 218 | 79 | 1 | AASHTO Type V | 5.50 | | 17,222 | 79 |
| I-4 over Wymore Road (14.5 Vertical Clearance) | 83 | 20 | Replacement | 8 | 2 | 218 | 470 | 3 | SPG, SBG | 7.50 | | 102,460 | 140,200,130 |
| I-4 over Lee Road | 84 | 20 | Replacement | 6 | 2 | 194 | 181 | 1 | SPG, SBG | 8.92 | A2 | 35,114 | 181 |
| I-4 over Kennedy Blvd. | 85 | 21 | Replacement | 8 | 2 | 239 | 117 | 1 | AASHTO Type V | 6.25 | | 27,963 | 117 |
| Maitland Blvd. (SR 414) over I-4 | | 22 | | | | | | | | | See Elev. | | |
| Eastbound | 86,87 | | Replacement | 5 | | 89 | 1639 | 9 | SPG, SBG | 9.25 | | 145,871 | 200,200,190,160,160,180,170,170,209 |
| Westbound | 88 | | Replacement | 5 | | 89 | 340 | 2 | SPG, SBG | 7.09 | | 30,260 | 175,165 |
| Maitland Blvd. (SR 414) over Wymore Road | | 22 | | | | | | | | | | | |
| Westbound | 89 | | Replacement | 4 | | 77 | 82 | 1 | SPG, SBG | 6.00 | See Elev. | 6,314 | 82 |
| Ramp D to Eastbound SR 414 | 86 | 22 | New | 1 | | 30 | 200 | 1 | SPG, SBG | 9.70 | C1, C2 | 6,000 | 200 |
| Ramp B1 over Wymore Road | 90 | 22 | New | 1 | | 30 | 82 | 1 | SPG, SBG | 5.00 | C1, C2 | 2,460 | 82 |
| Ramp C over SR 414 | 91 | 22 | New | 1 | | 30 | 990 | 5 | SPG, SBG | 9.58 | C1, C2 | 29,700 | 210,4@195 |
| Wymore Road over I-4 | 92 | 23 | Replacement | 2 | | 75 | 340 | 2 | SPG, SBG | 7.26 | See Elev. | 25,500 | 180,160 |
| Semorán Blvd. (SR 436) over I-4 | 93 | 24 | Replacement | 10 | | 265 | 210 | 2 | SPG, SBG | 5.50 | See Elev. | 55,650 | 105,105 |
| EB GUL over Cranes Roost Lake | 94 | 24 | New | 5 | | 95 | 945 | 7 | FBT, AASHTO Type VI | 7.00 | | 89,775 | 7@135 |
| Ramp C over Cranes Roost Lake | 94 | 24 | New | 2 | | 47 | 275 | 2 | FBT, AASHTO Type VI | 7.00 | | 12,925 | 138,137 |
| WB GUL (Ramp D) | 94 | 24 | New | 2 | | 47 | 535 | 4 | FBT, AASHTO Type VI | 7.00 | | 25,145 | 3@134,133 |

Table 9.20.1 - I-4 Mainline Bridges, Cont.

| Description of Location | Bridge Plans Sheet Numbers | Roadway Plans Sheet Numbers | New Replacement or Widening | Number of Lanes | | Bridge Width (ft) | Bridge Length (ft) | Number of Spans | Possible Bridge | Structural Depth (ft) | Possible Typical Section | Deck Area (sq. ft.) | Approximate Potential Span Lengths (ft.) |
|---|----------------------------|-----------------------------|-----------------------------|-----------------|-----|-------------------|--------------------|-----------------|---------------------|-----------------------|--------------------------|---------------------|--|
| | | | | GUL | FOV | | | | | | | | |
| Central Parkway over I-4 | | 25 | | | | | | | | | See Elev. | | |
| Central over I-4 | 95 | | Replacement | 5 | | 96 | 340 | 2 | SPG, SBG | 7.00 | | 32,640 | 170,170 |
| I-4 over Sanlando Springs Road (SR 434) Alt. 1 | | 26 | | | | | | | | | B4 | | |
| Eastbound | 96 | | Replacement | 3 | 1 | 97 | 205 | 1 | SPG | 9.92 | | 19,885 | 205 |
| Westbound | 96 | | Replacement | 3 | 1 | 97 | 205 | 1 | SPG | 9.92 | | 19,885 | 205 |
| I-4 over Sanlando Springs Road (SR 434) Alt. 2 | | 26A | | | | | | | | | | | |
| Eastbound | 97 | | Replacement | 3 | 1 | 97 | 205 | 1 | SPG | 9.92 | | 19,885 | 205 |
| Westbound | 97 | | Replacement | 4 | 1 | 109 | 205 | 1 | SPG | 9.92 | | 22,345 | 205 |
| E.E. Williamson Road over I-4 | 98 | 28 | Replacement | 2 | | 52 | 292 | 2 | FBT, AASHTO Type VI | 7.00 | See Elev. | 15,184 | 146,146 |
| Lake Mary Blvd. over I-4 | 99 | 31 | Replacement | 9 | | 205 | 375 | 2 | SPG, SBG | 7.60 | See Elev. | 76,875 | 187,188 |
| Eastbound I-4 over Abandon Railroad (Greenway) | 100 | 33 | Replacement | 3 | 1 | 97 | 128 | 1 | FBT, AASHTO Type VI | 7.00 | B2 | 12,416 | 128 |
| Westbound I-4 over Abandon Railroad (Greenway) | 100 | 33 | Replacement | 3 | 1 | 97 | 128 | 1 | FBT, AASHTO Type VI | 7.00 | B2 | 12,416 | 128 |
| I-4 over SR 46 | | 35 | | | | | | | | | | | |
| Eastbound | 101 | | Widening | 2 | | 33 | 162 | 1 | SPG | 8.00 | | 5,346 | 162 |
| Westbound | 101 | | Widening | 3 | | 45 | 162 | 1 | SPG | 8.00 | | 7,290 | 162 |
| Ramp D1 | 101 | | New | 1 | | 30 | 162 | 1 | SPG | 8.00 | | 4,860 | 162 |
| I-4 over Orange Blvd. & CSX RR | | 36 | | | | | | | | | | | |
| Eastbound | 102 | | Widening | 1 | | 34 | 244 | 2 | SPG | 6.00 | | 8,296 | 122,122 |
| Westbound | 102 | | Widening | 1 | | 34 | 278 | 2 | SPG | 6.00 | | 9,452 | 139,139 |
| Ramp B over Orange Blvd. & CSX RR | 103 | 36 | New | 1 | | 30 | 312 | 2 | SPG | 6.50 | | 9,360 | 156,156 |
| Ramp B over Ramp C | 103 | 36 | New | 1 | | 30 | 98 | 1 | AASHTO Type IV | 5.50 | | 2,940 | 98 |
| Ramp B over US 17-92 | 104 | 36 | New | 1 | | 33 | 1220 | 6 | SPG, SBG | 8.30 | | 40,260 | 2@210,4@200 |
| I-4 over St. Johns River & US 17-92 | | 36, 37 | | | | | | | | | | | |
| Eastbound | | | Widening | | 1 | | | | | | | | |
| First 9 Spans | 108, 109 | | | | | 36 | 1278 | 9 | FBT, AASHTO Type VI | 7.50 | | 46,008 | 9@142 |
| Next 1 Spans | 109 | | | | | 36 | 230 | 1 | FBT, AASHTO Type VI | 7.50 | | 8,280 | 230 |
| Last 9 Spans | 109, 110 | | | | | 36 | 1278 | 9 | FBT, AASHTO Type VI | 7.50 | | 46,008 | 9@142 |
| Westbound | | | Widening | | 1 | | | | | | | | |
| First 9 Spans | 108, 109 | | | | | 36 | 1278 | 9 | FBT, AASHTO Type VI | 7.50 | | 46,008 | 9@142 |
| Next 1 Spans | 109 | | | | | 36 | 230 | 1 | FBT, AASHTO Type VI | 7.50 | | 8,280 | 230 |
| Last 9 Spans | 109, 110 | | | | | 36 | 1278 | 9 | FBT, AASHTO Type VI | 7.50 | | 46,008 | 9@142 |
| I-4 over Padgett Creek (Debary) | | 39 | | | | | | | | | | | |
| Eastbound | 111 | | Replacement | 3 | 1 | 97 | 150 | 1 | FBT, AASHTO Type VI | 7.68 | B4 | 14,550 | 150 |
| Westbound | 111 | | Replacement | 3 | 1 | 97 | 150 | 1 | FBT, AASHTO Type VI | 7.68 | B4 | 14,550 | 150 |
| I-4 over Dirksen Dr./Debary Ave. | | 40 | | | | | | | | | | | |
| Eastbound | 112 | | Replacement | 4 | 1 | 109 | 190 | 1 | SPG | 9.26 | B4 | 20,710 | 190 |
| Westbound | 112 | | Replacement | 4 | 1 | 109 | 190 | 1 | SPG | 9.26 | B4 | 20,710 | 190 |
| Enterprise Road over I-4 | 113 | 41 | Replacement | 4 | | 91 | 554 | 3 | SPG | 9.81 | See Elev. | 50,414 | 195,135,224 |
| Park & Ride Road over I-4 | 114 | 41 | New | | 2 | 73 | 290 | 3 | SPG | 5.17 | | 21,170 | 50,120,120 |
| WB GUL Bridge over Gase Line Lake | 115 | 41 | New | 3 | | 61 | 858 | 6 | AASHTO Type V | 7.00 | | 52,338 | 6@143 |
| EB GUL of I-4 over Lake | 116 | 42 | New | 3 | | 61 | 625 | 5 | AASHTO Type V | 6.25 | | 38,125 | 5@125 |
| WB GUL of I-4 over Lake | 116 | 42 | New | 4 | | 73 | 512 | 4 | AASHTO Type V | 6.25 | | 37,376 | 4@128 |
| Saxon Blvd. over I-4 | 117 | 42 | Replacement | 6 | | 130 | 401 | 2 | SPG | 8.43 | See Elev. | 52,130 | 190,211 |
| Graves Blvd. (Howland Blvd.) over I-4 | 118 | 45 | Replacement | 2 | | 47 | 210 | 2 | AASHTO Type IV | 5.50 | See Elev. | 9,870 | 105,105 |
| SR 472 over I-4 | | 45 | | | | | | | | | See Elev. | | |
| Eastbound | 119 | | Replacement | 2 | | 57 | 222 | 2 | AASHTO Type V | 6.25 | | 12,654 | 111,111 |
| Westbound | 119 | | Replacement | 3 | | 69 | 222 | 2 | AASHTO Type V | 6.25 | | 15,318 | 111,111 |

I-4 PD&E Study - Section 2

Table 9.20.2 - SR 408 Bridges

| Description Of Location | Bridge Plans Sheet Numbers | Roadway Plans Sheet Numbers | New Replacement or Widening | Number Of Lanes | | Bridge Width (ft) | Skewed Bridge Length (ft) | Number Of Spans | Possible Bridge | Structural Depth (ft) | Possible Typical Section | Deck Area (ft ²) | Approximate Potential Span Lengths (ft) |
|--|----------------------------|-----------------------------|-----------------------------|-----------------|-----|-------------------|---------------------------|-----------------|--------------------------|-------------------------|--------------------------|------------------------------|---|
| | | | | GUB | HON | | | | | | | | |
| East West Expressway | | | | | | | | | | | | | |
| Ramp A | | 16 | | | | | | | | | | | |
| first 4 spans | 28 | | New | 2 | | 43 | 620 | 4 | SPG,SBG | 8,10 | | 26,660 | 150,150,150,170 |
| next 6 spans | 29 | | New | 2 | | 55 | 960 | 6 | SPG,SBG | 8,14,16 | | 52,800 | 165,165,150,150,160,170 |
| next 7 spans | 30 | | New | 2 | | 43 | 1140 | 7 | SPG,SBG | 8 | | 49,020 | 170,130,140,200,160,170,170 |
| last 5 spans | 31 | | New | 3 | | 55 | 640 | 5 | SPG,SBG | 8,14.5 | | 35,200 | 175,180,95,85,105 |
| Ramp A1 | 32,33 | 13 | New | 1 | | 30 | 1900 | 10 | SPG,SBG | 11.5,16 | | 57,000 | 170,255,260,140,135,190,200,170, 200,180 |
| Ramp A2 | 34,34A | 13 | New | | | 30 | 3050 | 22 | SPG,SBG | 7,11,13.5 | | 91,500 | 130,3@150,6@140,5@160,150,135, 110,115,85,95,140 |
| Ramp B | 35,36,37 | 13 | New | 1 | | 30 | 2690 | 18 | SPG,SBG | 8,10,16.5,17 | | | 125,170,100,125,95,150,80,150,155, 185,170,160,175,175,210,145,160, 160 |
| Ramp B1 | 40,41 | 13 | New | | | 43 | 2125 | 13 | SPG,SBG | 8,17 | | 91,375 | 4@185,190,160,3@170,125,150,140,130 |
| East SR 408 (over Parramore) | 42 | 13 | Widening | 3 | | 20 | 180 | 3 | AASHTO Type IV | 6 | | 3,600 | 50,80,50 |
| East SR 408 (over Ramp D) | 42 | 13 | New | 3 | | 61 | 144 | 1 | FBT,AASHTO Type VI | 7.28 | | 8,784 | 144 |
| West SR 408 (over Ramp D) | 42 | 13 | New | 3 | | 61 | 144 | 1 | FBT,AASHTO Type VI | 7.28 | | 8,784 | 144 |
| Ramp C (over Parramore, I-4) | 43,44 | 13 | New | 2 | | 49 | 1690 | 11 | SPG,SBG | 6,7.5,8.5,9 | C1, C2 | 82,810 | 150,220,110,150,135,115,180,170,175, 175, 110 |
| Ramp C (over Westmoreland) | 38,39 | 13 | New | 2 | | 43 | 1510 | 8 | SPG,SBG | 8,14,17 | C1, C2 | 64,930 | 185,200,200,175,170,200,170,210 |
| Ramp C1 (over Division) | 45 | 13 | New | 1 | | 30 | 755 | 4 | SPG,SBG | 10.5,16 | C1, C2 | 22,650 | 160,200,210,185 |
| Ramp D | 47,48,49,50,51 | 13,16 | New | 2 | | 43 | 5215 | 35 | AASHTO Type IV, SPG, SBG | 5.5,6.5,9.5,10,15,16,17 | | 224,245 | 120,120,110,65,105,105,100,100, 3@110,190,3@200,175,175,135,180, 130,135,215,210,125,190,225,220, 125, 160, 160,125,140,165,140,140 |
| Ramp D1 | 52,53 | 13 | New | 1 | | 30 | 1485 | 9 | SPG,SBG | 8.5,15.5 | C1, C2 | 44,550 | 200,130,140,140,120,185,185,190, 195 |
| Ramp E (over Gore & Division) | 54 | 13 | New | 1 | | 43 | 220 | 1 | SPG,SBG | 9.5 | | 9,460 | 220 |
| Ramp F - Anderson Street | 55,56 | 13 | Replacement | 4 | | 83 | 885 | 7 | SPG,SBG | 7 | See Sect. | 73,455 | 115,140,140,90,130,120,150 |
| Ramp F1 - East Ramp | 55 | 13 | New | 1 | | 30 | 165 | 1 | SPG, SBG | 8 | | 4,950 | 165 |
| Ramp F2 - West Ramp | 56 | 13 | New | 1 | | 49 | 975 | 6 | SPG,SBG | 11 | | 47,775 | 135,150,175,210,160,145 |
| Ramp H over I-4 | 57 | 13 | New | 1 | | 30 | 1575 | 12 | SPG,SBG | 6.5 | | 47,250 | 105,145,145,130,130,150,3@120,135, 135, 140 |
| E/W Expressway over Division/I-4 | | 13 | | | | | | | | | | | |
| Eastbound | 58 | | Replacement | 3 | | 59 | 800 | 7 | FUB,FBT | 7 | | 47,200 | 60,126,115,122,115,122,140 |
| Westbound | 58 | | Replacement | 3 | | 59 | 800 | 7 | FUB,FBT | 7 | | 47,200 | 60,126,115,122,115,122,140 |
| E/W Expressway over Tampa Ave. | | 15 | | | | | | | | | | | |
| Eastbound | 59 | | Widening | 4 | | 30 | 232 | 4 | AASHTO Type III | 6 | | 6,960 | 43,63,73,53 |
| Westbound | 59 | | Widening | 4 | | 36 | 232 | 4 | AASHTO Type III | 6 | | 8,352 | 43,63,73,53 |
| E/W Expressway over Rio Grande Ave. | | 15 | | | | | | | | | | | |
| Eastbound | 60 | | Widening | 4 | | 26 | 230 | 3 | AASHTO Type III | 7 | | 5,980 | 65,100,65 |
| Westbound | 60 | | Widening | 5 | | 38 | 220 | 3 | AASHTO Type III | 7 | | 8,360 | 80,95,45 |
| Ramp C-2 over Rio Grande Ave. | 61 | 15 | New | 1 | | 30 | 140 | 1 | SPG,SBG | 6 | | 4,200 | 140 |
| Ramp C - US 441 to Westmoreland | 38,39 | 15 | New | 2 | | 43 | 1496 | 6 | SPG, SBG | 10.9 | | 64,328 | 195,195,295,241,285,285 |
| Ramp B1 - Westmoreland to US 441 | 38,39 | 15 | New | 2 | | 43 | 1508 | 8 | SPG, SBG | 8,14.5,17 | | 64,844 | 183,200,200,175,170,190,180,210 |
| OBT Slip Ramp (WB) | 39 | 15 | New | 1 | | 30 | 175 | 1 | SPG, SBG | 8.86 | | 5,250 | 175 |
| OBT Slip Ramp (EB) | 39 | 15 | New | 1 | | 30 | 175 | 1 | SPG, SBG | 8.86 | | 5,250 | 175 |
| E/W Exit over Summerlin Ave. | 62 | 16 | New | 2 | | 43 | 210 | 3 | AASHTO Type III | 6 | | 9,030 | 70,70,70 |
| E/W Expressway over Mills Ave. | | 16 | | | | | | | | | | | |
| Eastbound | 63 | | Widening | 1 | | 33 | 246 | 4 | AASHTO Type III | 6 | | 8,118 | 62,62,61,61 |
| Westbound | 63 | | Widening | 1 | | 26 | 246 | 4 | AASHTO Type III | 6 | | 6,396 | 62,62,61,61 |

Noise barriers will be used in designated areas to mitigate adverse noise impacts. They may become a visually dominant component of the roadway system, especially where placed on retaining walls, from both the motorist's standpoint and that of the adjacent land uses. When placed on top of retaining walls in locations that have already been raised above the existing grade, the result can be a combined wall several stories in height. Therefore, noise barriers should be given careful consideration in terms of aesthetic treatment.

Since noise barriers are as much a visual impact from the roadway as from the surrounding land uses, treatment is necessary on both sides of the wall. A simpler, less detailed wall treatment with gradual transitions should be used on the system side in response to the higher speed at which aesthetic treatments will be perceived. A finer, more articulated treatment may be used on the neighborhood side. Landscaping can reduce the perceived height of walls and break the monotony of one continuous mass and should be used in situations with sufficient space, especially on the neighborhood side of the barrier.

Appropriate landscaping along the system provides visual relief to the rigid geometry of the Interstate environment. It will also help to buffer the surrounding land uses from the roadway system and will integrate the facility into adjacent neighborhoods. Plants are an integral component of aesthetic treatment, and help frame primary viewsheds, buffer undesirable views and punctuate gateways and destination points. Selected species will include hardy, drought-tolerant native or indigenous plants.

A detailed discussion of roadway aesthetics as well as project specific aesthetic treatments and renderings of representative examples can be found in the *Urban Design Guidelines* (February 2000). In addition, the Guidelines discuss a process FDOT has established to implement the use of the Guidelines during final design.

Table 9.22.1 lists potential visual impacts to areas along I-4 project corridor.

9.23 ACCESS MANAGEMENT

In 1988, FDOT adopted access management regulations to assist in providing safer and smoother traffic flow through better regulation of access on Florida's roadways. The major documents developed pertaining to access management regulations include:

- ◆ Florida Statute 335.18 - The Access Management Act
- ◆ Administrative Rule 14-96 (Regulations on Access Permitting Process)
- ◆ Administrative Rule 14-97 (Access Management Classification System and Standards)

The Ultimate improvements and *Preferred Alternative* are in conformance with the access management regulations. Specific access management issues will be addressed in the final design phase of the project.

The access modifications within the limits of the Preferred Alternative are summarized below. Due to the close proximity of the I-4/SR 408

(East/West Expressway) interchange to the Orlando CBD, access modifications will be required at the following interchange locations within this portion of the project corridor: Gore Street, Anderson Street, Hughey Avenue, Garland Avenue, South Street, Robinson Street and Amelia Street.

Gore Street - The Gore Street interchange is a partial access diamond that serves entering and exiting westbound I-4 traffic. The I-4 westbound off-ramp to Gore Street will be eliminated as part of the Preferred Alternative due to ramp spacing issues with the SR 408 (East/West Expressway) interchange. The westbound on-ramp from Gore Street is retained.

Hughey Avenue/Garland Avenue - There is no existing direct access between the Interstate and the Hughey Avenue/Garland Avenue one-way frontage pair to and from the west at the south end of downtown

Orlando. The Preferred Alternative will provide an exit for traffic traveling from eastbound I-4 to Garland Avenue and an entrance for traffic traveling from Hughey Avenue to westbound I-4. Both ramps will connect to the existing frontage roads at their respective intersections with South Street. The Garland Avenue ramp will replace the existing I-4 eastbound off-ramp to Anderson Street and the Hughey Avenue ramp will replace the I-4 westbound on-ramp from South Street.

Hughey Avenue and Garland Avenue will be realigned as part of the proposed improvements. The realignment of Hughey Avenue will result in the closing of Hughey Court at South Street. Hughey Court will become a cul-de-sac and access from South Street will be denied. The realignment of Garland Avenue affects access to parcels located south of South Street. Access to Garland Avenue will be denied and access to South Street will be via Boone Avenue.

Table 9.22.1 - Summary of Impacts to Visually Sensitive Resources

| Resource/Area | Natural Landscape Feature | Urban Landscape Feature | Summary of Visual Impact | Level of Impact |
|---|---|---|--|---|
| Segment 1 | | | | |
| SR 528 (Bee Line Expressway) | Tourist Corridor - landscaped medians, palm trees, and vegetative cover between buildings. | Traffic signals, utility poles, and billboards, I-4 | Introduction of a higher fully directional three-level interchange, replacement of vegetated sloped embankments with retaining walls, and location of roadway closer to right-of-way fence. | High - in direct vicinity of the I-4/SR 528 interchange. Low - in other areas of Segment 1 |
| Kirkman Road | Tourist Corridor - landscaped medians, palm trees, and vegetative cover between buildings. | Traffic signals, utility poles, and billboards, I-4 | Introduction of a higher partial access four-level interchange, replacement of vegetated sloped embankments with retaining walls, and location of roadway will be closer to right-of-way fence. | High - in direct vicinity of the I-4/Kirkman Road interchange. Low - in other areas of Segment 1 |
| Segment 2 and 3 | | | | |
| Orange Blossom Trail to Lee Road | Extensive commercial and residential development, including Orlando CBD. I-4 corridor - grassy median and shoulders. Downtown - grass cover, street trees, and shrubbery. | Railroad tracks and crossings, utility poles, traffic signals, parking lots, and street lights. | Roadway at a higher elevation than existing, sloped embankments replaced with retaining walls, roadway will be closer to right-of-way fence, and introduction of a higher interchange at SR 408. (Specific impacts to the SR 408 area are provided below.) | High - in area adjacent to roadway elevation increase. Otherwise moderate impacts. |
| SR 408 (East/West Expressway) | Extensive commercial and residential development, including downtown Orlando. Historic districts and resources. I-4 and SR 408 corridor - grassy shoulders. Downtown - grass cover, street trees and shrubbery. | Railroad tracks and crossings, utility poles, traffic signals, parking lots, and street lights. | Introduction of a four-level interchange, sloped embankments replaced with retaining walls, and location of roadway closer to right-of-way fence. | High - in vicinity of I-4/SR 408 interchange. |
| Lake Ivanhoe/Concord | Extensive commercial and residential development, including downtown Orlando. College Park Historic District. I-4 corridor - grassy shoulders. Downtown - grass cover, street trees and shrubbery. | Traffic signals, parking lots, and street lights. | Additional bridges over Lake Ivanhoe and Lake Concord, interstate profile is higher, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Moderate |
| Segment 4 and 5 | | | | |
| Eatonville | Suburban commercial and residential development. Residential areas - street trees, ground covers, and lakes. Eatonville Historic District. | Traffic signals, parking lots, and street lights. | No median in roadway, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Low |
| Maitland Boulevard | Suburban commercial and residential development. Residential areas - street trees, ground covers, and lakes. | Traffic signals, parking lots, and street lights. | Higher interchange elevation, no median in roadway, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Moderate |
| SR 436 | Suburban commercial and some residential development. I-4 corridor - grassy median and shoulders. Cranes Roost Lake. | Traffic signals, parking lots, and street lights. | Introduction of a bridge over Cranes Roost Lake, no median in roadway, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Low |
| SR 434 | Suburban commercial and residential development. Residential areas - street trees, ground covers, and lakes. | Traffic signals, parking lots, and street lights. | Alternative 2 introduces loop ramp in northwest quadrant of roadway, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Low |
| West of Lake Mary Boulevard to US 17-92 | Open land and residential developments. Open lands - forested lands, lakes, and wetlands. Residential areas - street trees, grass, and ponds. | Railroad tracks and crossings, utility poles, traffic signals, parking lots, and street lights. | Slightly higher roadway profiles, roadway closer to right-of-way and sloped embankments replaced with retaining walls. Introduction of a loop ramp in northwest quadrant of SR 46 interchange. | Low |
| Segment 6 | | | | |
| St. Johns River Bridge | Open land. Open lands - forested lands, lakes, and wetlands. | Railroad tracks and crossings, utility poles, traffic signals, parking lots, and street lights. | Introduction of loop ramp in northeast quadrant of US 17-92 interchange, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Low |
| Dirksen Drive/DeBary Avenue to SR 472 | Open land and residential developments. Open lands - forested lands, lakes, and wetlands. Residential areas - street trees, grass, and ponds. | Railroad tracks and crossings, utility poles, traffic signals, parking lots, and street lights. | Slightly higher roadway profiles, roadway closer to right-of-way, and sloped embankments replaced with retaining walls. | Low |

All impacts associated with the Preferred Alternative are shown in Bold Italics.

Anderson Street - The existing I-4/Anderson Street interchange is a partial access configuration that directs traffic from both directions of I-4 to Anderson Street and from Anderson Street to eastbound I-4. Anderson Street is currently one way eastbound. The Preferred Alternative will relocate Anderson Street to the south of its current alignment and allow two-way traffic on the roadway between Orange Avenue and Division Avenue. The Anderson Street interchange will be a partial diamond configuration that will allow access to eastbound I-4 from Anderson Street and to Anderson Street from westbound I-4. The existing I-4 eastbound exit to Anderson Street will be eliminated. This movement will be redirected to the Garland Avenue ramp.

South Street - The existing South Street interchange is a partial access diamond serving westbound I-4 entering and exiting traffic and eastbound traffic entering I-4, all via left-hand ramps. The interchange will be modified as part of the Preferred Alternative to a full access diamond for HOV traffic only; general use traffic will not be accommodated. South Street will become a two-way street between Division Avenue and Orange Avenue to provide access for both directions of traffic to and from the HOV lanes.

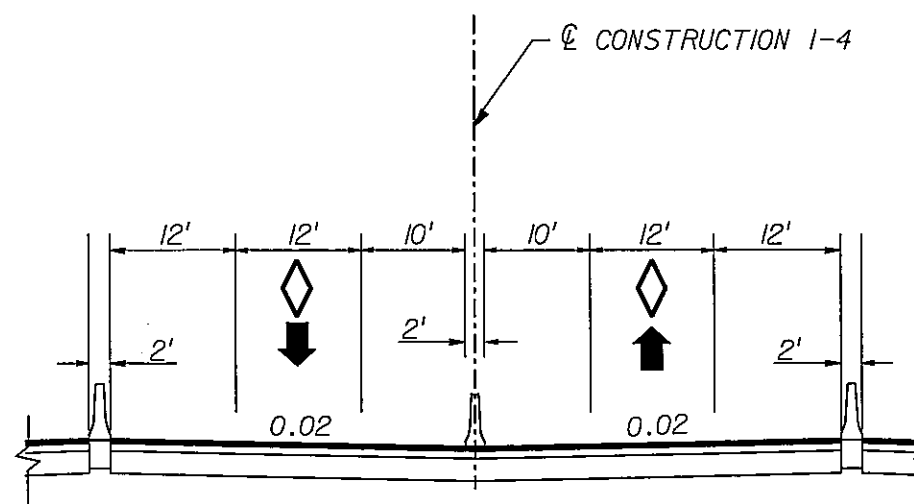
Robinson Street - The existing configuration of the Robinson Street interchange is a partial access diamond. Eastbound I-4 traffic can exit to Robinson Street and Robinson Street traffic can access westbound I-4. This interchange will be eliminated as part of the Preferred Alternatives and downtown Orlando access will be diverted to Garland Avenue, Hughey Avenue, Amelia Street and SR 50 (Colonial Drive).

Amelia Street - Existing access at Amelia Street is provided for eastbound I-4 to Amelia Street traffic, which exits onto Garland Avenue. In addition, an eastbound I-4 on-ramp is provided from Garland Avenue just north of Amelia Street. The Preferred Alternative will modify this interchange to a partial access diamond that will allow traffic to exit from eastbound I-4 to Amelia Street and enter westbound I-4 from Amelia Street.

9.24 HOV LANE ACCESS PLAN

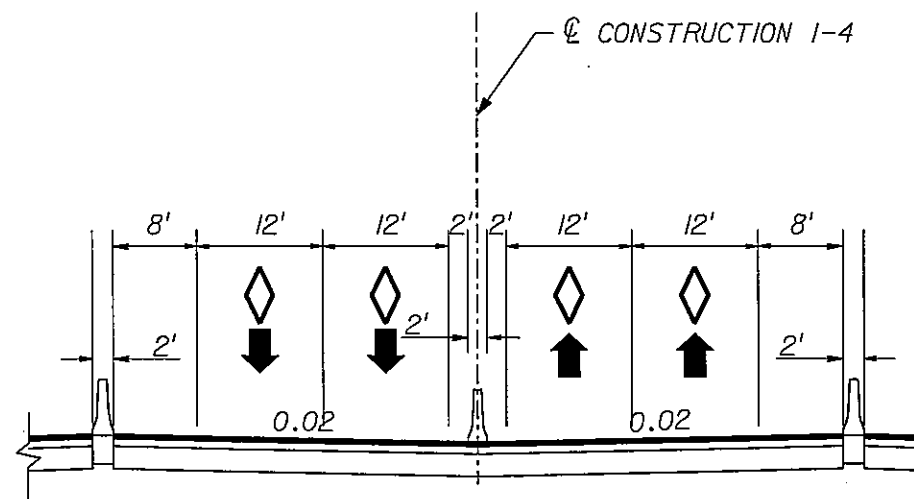
The preliminary concept plans have been developed to provide a 34-foot barrier-separated HOV corridor in each direction from the beginning of the Ultimate project to east of the proposed Rhode Island Avenue near the end of the Ultimate project. The HOV system will include slip ramps for access to and from the general use lanes and six interchanges for direct access to the surface streets.

The HOV corridor can accommodate a single HOV lane in each direction with 12-foot outside and 10-foot inside shoulders or two HOV lanes in each direction with 8-foot outside and 2-foot inside shoulders. Figure 9.24.1 illustrates the two possible HOV configurations. The advantages and disadvantages of each HOV concept are described as follows.



One HOV Lane In Each Direction

**No Rail Corridor
NTS**



Two HOV Lanes In Each Direction

**No Rail Corridor
NTS**

**Figure 9.24.1
HOV Lane Configurations**

One HOV Lane in Each Direction

Advantages

- ◆ Wider shoulders provide a refuge for crash vehicles and law enforcement.
- ◆ Greater stopping sight distance around horizontal curves allow a higher design speed.

Disadvantages

- ◆ Less capacity than two-lane option.
- ◆ Through traffic shares lane with exiting/entering traffic.

Two HOV Lanes in Each Direction

Advantages

- ◆ Greater capacity than one-lane option
- ◆ Second lane used by through traffic reduces conflict with entering/exiting traffic.

Disadvantages

- ◆ Narrow shoulders provide limited space for crash vehicles or law enforcement.
- ◆ Less stopping sight distance around horizontal vertical curves may reduce design speed.

The HOV slip ramps to and from the general use lanes will be placed in an on-off configuration so merge/diverge movements will occur in the HOV lanes. This will minimize the potential for back-ups and queuing in the HOV lanes. Figure 9.24.2 shows detailed plan views of the proposed HOV slip ramps for both the one- and two-lane facilities.

9.25 INTERCHANGE CONFIGURATIONS

All proposed interchange configurations can be seen in the Preliminary Concept Plans, submitted with this report. Descriptions of each interchange are given in Section 8.4.4 - System-to-System Interchanges and Section 8.4.5 - System-to-Service Interchanges. Detailed discussion of interchange improvements within the limits of the Preferred Alternative can be found in Section 8.7 - Preferred Alternative.

9.26 PARK & RIDE LOTS

Park & Ride facilities will play an important role in the future of multi-modal transportation along the I-4 corridor. These facilities will serve as staging areas and transfer points for various components of the overall future transportation system. LYNX, VoTran and FDOT are the primary agencies involved in the development and implementation of transit strategies involving Park & Ride facilities in the project area. Their existing and planned systems will form the basis of a proposed Park & Ride system along I-4.

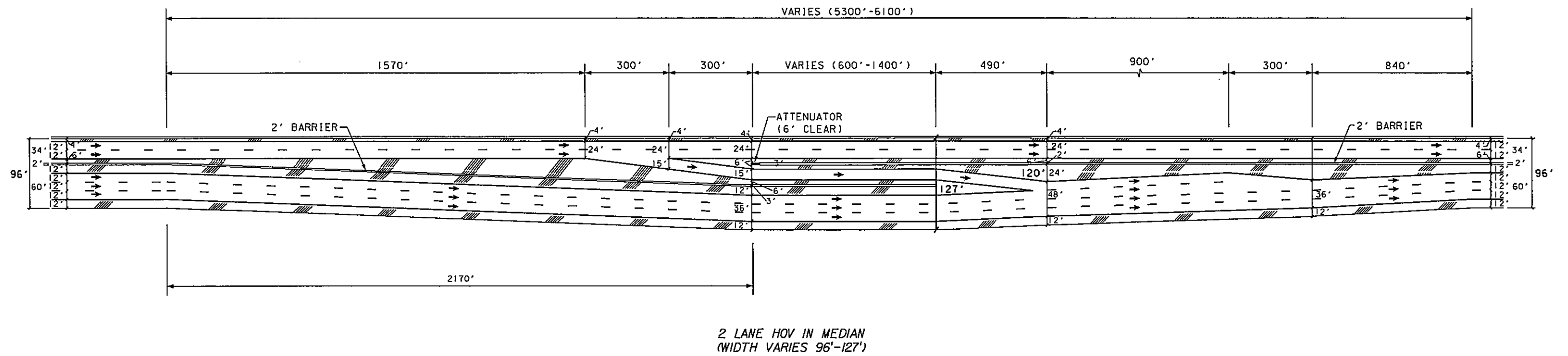
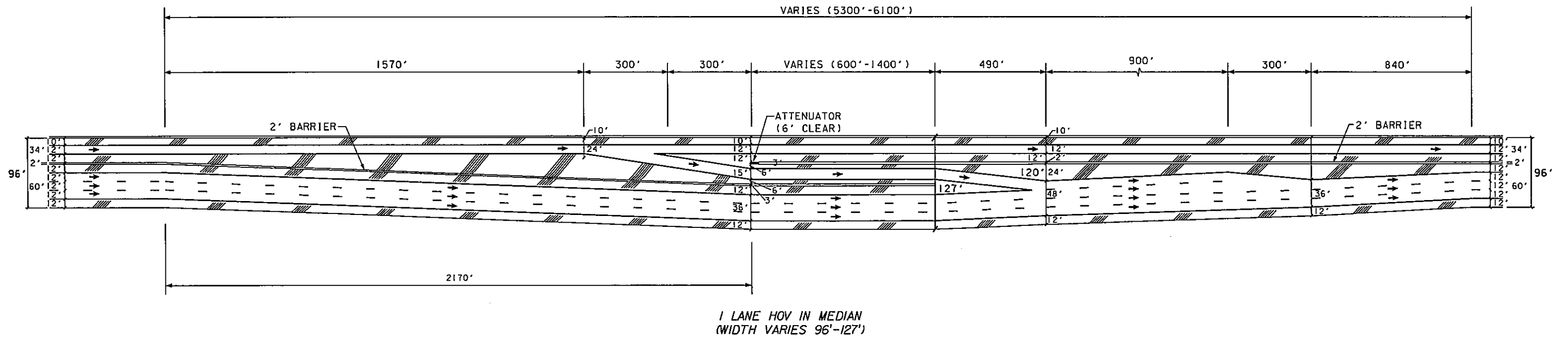


Figure 9.24.2
One & Two Lane HOV Slip Ramp Alternatives

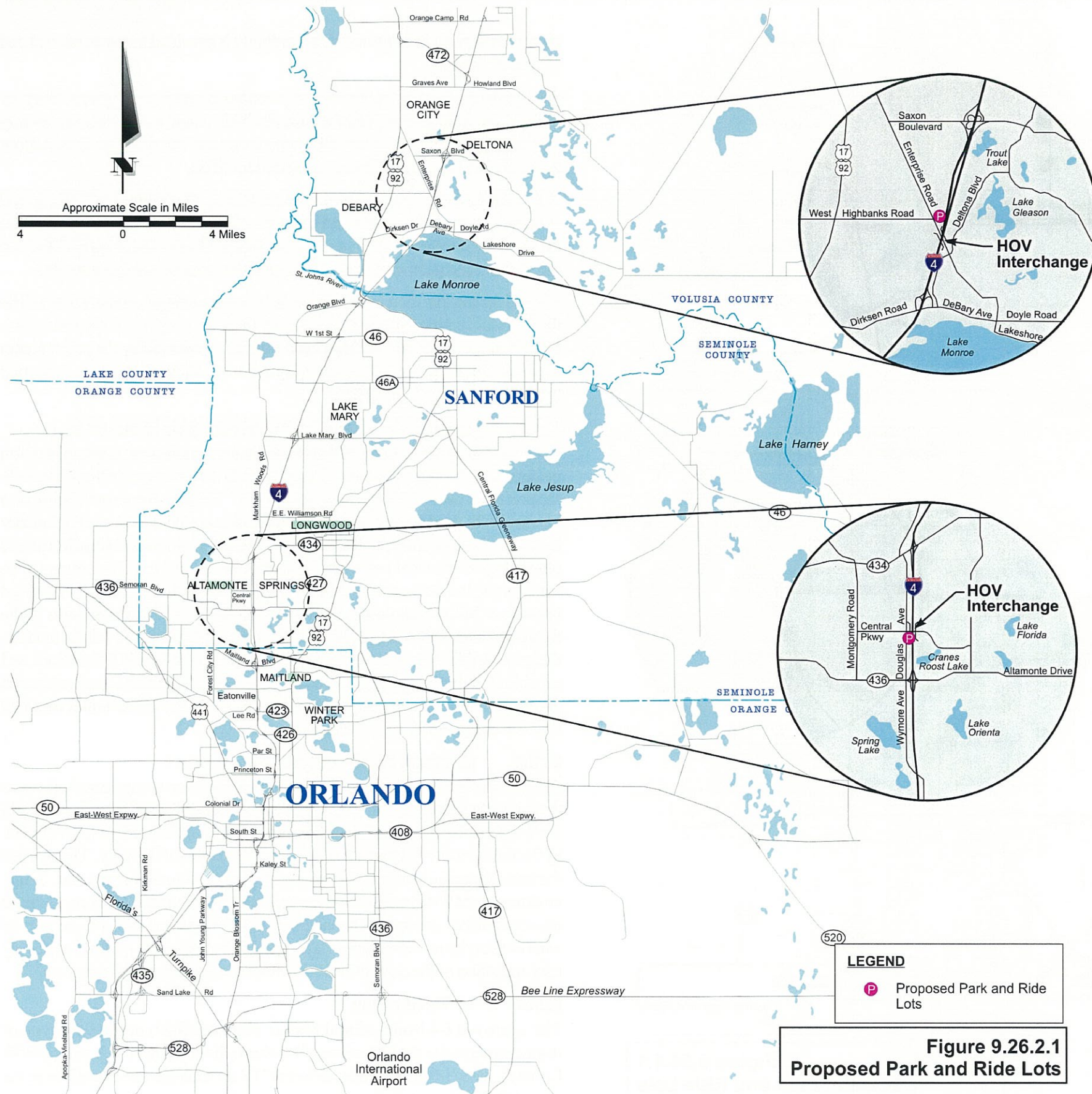


Figure 9.26.2.1
Proposed Park and Ride Lots

I-4 PD&E Study - Section 2

9.28.3 ITS Early Deployment Plan (EDP)

The EDP constituted a “planning study” whose purpose was to propose and evaluate a broad range of ITS components for the Orlando metropolitan area by means of extensive coordination with affected agencies and users. The EDP did not attempt to further detail the I-4 MMMP but rather reiterated its previous recommendations. A number of ITS improvements were recommended in the EDP for incorporation in the ultimate improvements.

9.28.4 ITS Objectives

The strategies, improvements and implementation guidelines of the I-4 ITS plan have been developed to achieve three primary objectives:

- ◆ Maximize Level of Safety,
- ◆ Optimize Effectiveness of HOV Lanes, and
- ◆ Minimize Disruption of General Use Lanes.

9.28.5 ITS Strategies

ITS strategies are intended to provide a basis for defining effective packages of ITS improvements and implementation guidelines for use in developing, detailing and evaluating specific designs of various ITS components. The strategies are directed toward enhancing SMIS and enhancing the effectiveness of the HOV lanes. A description of the two strategies is provided below.

Enhancing SMIS

An essential objective in developing the future ITS system is maintenance, and in many cases, enhancement, of the capabilities of the existing SMIS program. Mutually-supportive packages of ITS improvements are recommended in this Plan to:

- ◆ Increase utilization of the HOV lanes,
- ◆ Maintain an acceptable level of service on the HOV lanes, and
- ◆ Assist uniformed officers in enforcing the vehicle occupancy rules of the HOV lanes.

Enhancing the Effectiveness of the HOV Lanes

In addition to taking advantage of technological advancements available through time, a major objective of the future ITS program is to enhance the effectiveness of the HOV lanes being developed as part of the Ultimate project. Given the limitations of the I-4 corridor to accommodate the number of vehicles desiring to use this facility, an important objective served by ITS is to maximize the use of and the quality of travel conditions on the exclusive HOV lanes to be built in the I-4 corridor. The incorporation of these lanes in the I-4 corridor presents an important opportunity because these lanes provide the only significant

increases in the capability of the facility to move increasing numbers of people, rather than simply moving vehicles. If properly signed and managed, the HOV lanes can offer a major incentive to the formation of car pools and an accompanying reduction in the number of single-occupant vehicles attempting to use I-4 and connecting arterial highways.

9.28.6 ITS Improvement Guidelines

An ITS program has been recommended for implementation as part of the I-4 PD&E Study - Section 2. This program is composed of three major components: 1) Information Gathering, 2) Communications, and 3) Traveler Information/Traffic Management.

ITS Improvements are described in detail the *ITS Intelligent Transportation Systems Plan* (November 2000). Improvements guidelines, listings and maps detail ITS recommendations on an item by item basis. ITS improvements are quantified by plan sheets, and are costed out on an aggregate basis.

The Department has created an ITS Task Force for the I-4 corridor from Tampa to Daytona Beach. This Task Force is managed out of the Central Office and is responsible for the development of ITS for the I-4 corridor.

9.29 FUTURE RAIL SERVICE

There are several rail initiatives being proposed for the Ultimate project area. There is an approved ROD for a light rail system in portions of the City of Orlando and Orange County; commuter rail is proposed to extend from DeLand to Kissimmee and from Eustis to Orlando; high speed rail is proposed from Tampa to Orlando; and the Orange County Convention Center to Port Canaveral along SR 528 (Bee Line Expressway); and Volusia County is currently preparing a rail feasibility study to examine rail options within the County. Rail options in Volusia County may include light rail and/or commuter rail. The following paragraphs provide a summary of the proposed rail initiatives within the project area.

9.29.1 Light Rail

The Federal Transit Administration (FTA), in consultation with the Central Florida Regional Transportation Authority (locally known as LYNX), has approved a Record of Decision (ROD) for the development of light rail transit (LRT) system facilities in portions of the City of Orlando and Orange County. The project also includes the expansion of bus services to support the system. The project is known as Central Florida Light Rail Transit System (CFLRTS) project.

The limits of the light rail project corridor extend from Central Florida Parkway (just south of Sea World) through downtown Orlando to the Loch Haven/SR 438 (Princeton Street) area. The corridor is bounded by I-4 on the west and International Drive, SR 528 (Bee Line Expressway) and CSXT railroad on the east. The project corridor is approximately 16.33 miles in length.

9.29.1.1 Description of the Locally Preferred Alternative (LPA)

The LPA provides for light rail service along an alignment extending from I-4 and Central Florida Parkway near Sea World on the south through downtown Orlando to the Loch Haven/SR 438 (Princeton Street) area on the north. Access to the service would be provided from 20 stations. The total length of the alignment is 16.33 miles. The LRT project alignment and stations approved as part of the *CFLRTS Final Environmental Impact Statement* (November 1998) is shown in Figure 9.29.1 for the LPA. The LRT alignment would be double tracked along its entire length. However, if CSXT determines at some point in the future that rail operations mandate two CSXT tracks between America Street and Livingston Street, the LRT will be reduced to a single track in that general area.

The new LRT service would be provided by 70 percent low-floor articulated light rail vehicles powered by electricity distributed via an overhead contact system. The vehicles, operating in trains up to three cars in length, would run along a new double-track guideway located in a combination of exclusive, semi-exclusive and shared rights-of-way. The new LRT system would include 20 stations and a maintenance facility and storage yard for the vehicles and systems and structures requirements. In addition to the new LRT service, LYNX proposes to expand bus service in the project corridor. The expanded bus service would consist of a feeder bus system providing access to the stations along the LRT line and a background system of local and express bus routes to serve areas not accessible by the rail system.

9.29.1.2 Minimum Operating Segment (MOS) - Central Florida Parkway to Livingston Street

The initial MOS, or "Starter Line," encompasses the segment of the LPA alignment from Central Florida Parkway to Livingston Street in downtown Orlando. The MOS is 14.0 miles in length and includes 17 stations, three of which would be in downtown Orlando. Figure 9.29.2 shows the LRT alignment and station locations for the MOS. This segment is considered to represent the shortest length of the LRT alignment that is cost effective, will have a significant effect of the transportation problems in the corridor, and is financially feasible.

9.29.1.3 Expansion of Light Rail

The proposed 20 miles of light rail from Altamonte Springs to Orlando and the planned intermodal center at the Orange County Convention Center is still under development. The service would run on a 10-15 minute operating frequency. Two task forces have been set up to develop and implement the northern and southern alignments. The preliminary estimated costs are \$750 million (capital) and \$18 million (annual operation and maintenance).

A study by the Supplemental Draft Environmental Impact Statement (SDEIS) has begun that will examine the alignments developed by the Northern and Southern Stakeholders Task Force. LYNX and METROPLAN Orlando adopted the Northern Stakeholders Task Force recommendation to implement the Alden Road/I-4 alignment as the preferred alignment north of Orlando. The Southern Alignment Stakeholders Task Force is currently researching a southern alignment terminating at or near the Orange County Convention Center-to be completed by May 2002. When it is adopted by the LYNX and METROPLAN Orlando boards, it will become a part of the SDEIS effort.

A Financing Task Force will address the capital and operations/maintenance funding. The project will be positioned by September 2002 for submission as part of the re-authorization of the Federal Surface Transportation Act.

9.29.2 Commuter Rail

There are two commuter rail initiatives currently underway. The north/south commuter rail corridor and the north/west commuter rail corridor. The following contains a brief description and status of each of the commuter rail corridors.

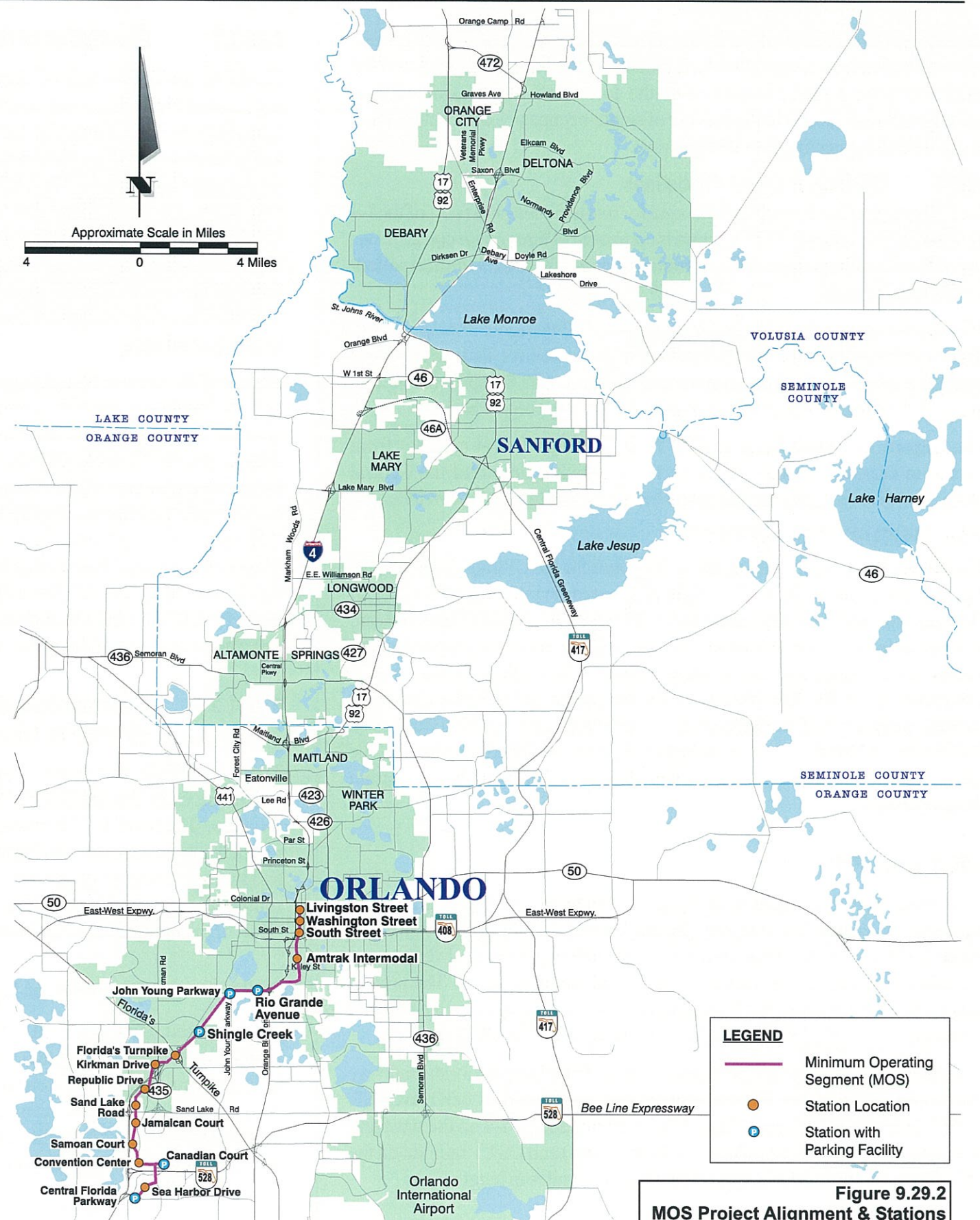
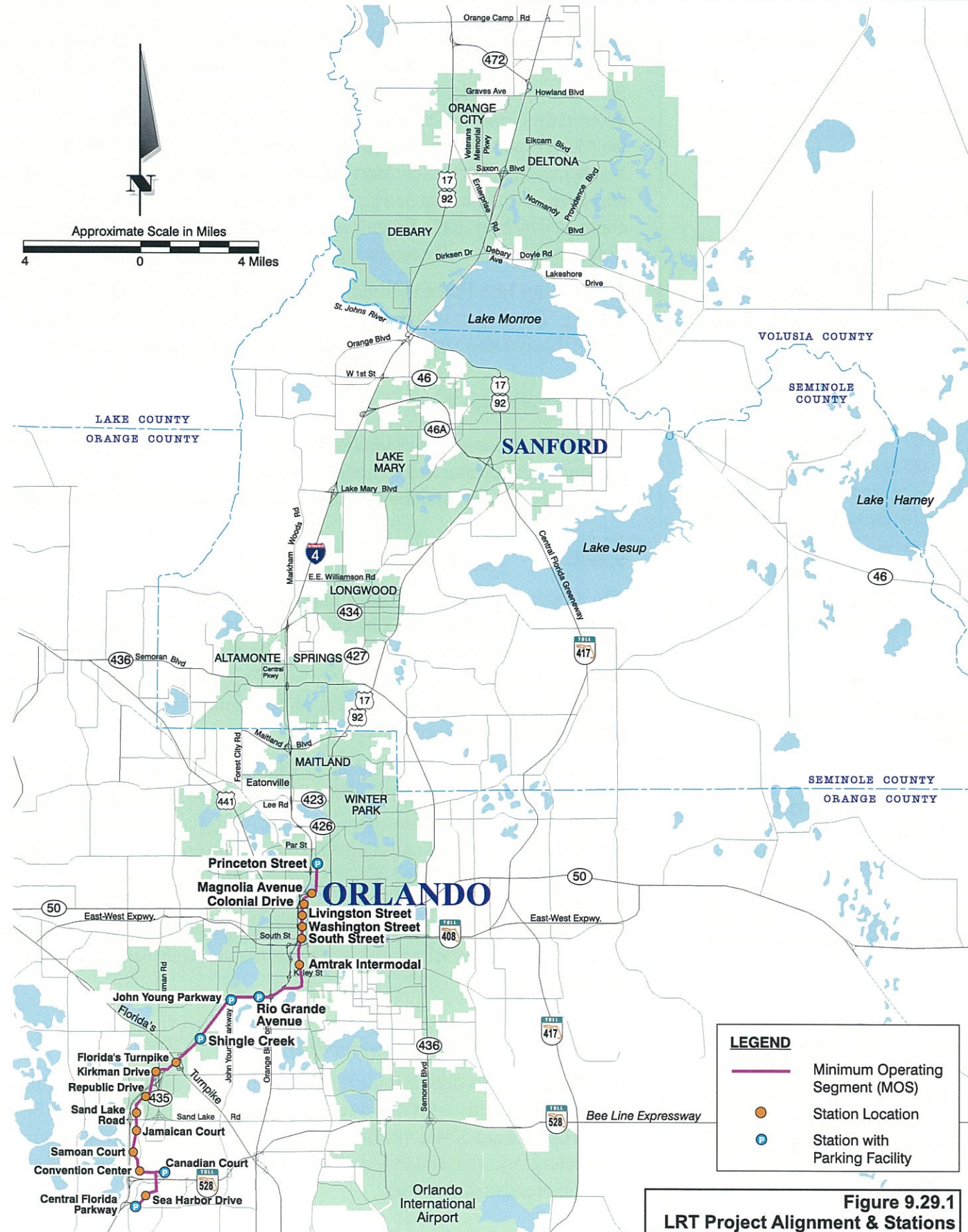
9.29.2.1 North/South Commuter Rail

The proposed project consists of approximately 55 miles of commuter rail service using existing CSXT railroad tracks between DeLand, Orlando, and Kissimmee. The optimum service plan would provide seven through-trips starting from DeLand and Kissimmee. Service would operate at a 30-minute frequency during the peak morning and afternoon commute times. LYNX was named project lead and grant recipient.

A Capacity Analysis determined that CSXT will use all current available track capacity resulting in a need for additional tracking and signaling systems for the project. A contract to perform an Alternative Analysis - documenting demand, operating requirements and capital and operating cost - will be awarded to a consultant selected by the LYNX Board of Directors at the March meeting (study should be completed by December 2002). Additionally, Representative John Mica has proposed an interim project using a single diesel-powered train on CSXT rails from DeLand or DeBary to Orlando while the original proposal moves forward.

9.29.2.2 North/West Commuter Rail

In 1999, the Florida Central Railroad (FCEN) developed a plan to run commuter rail service from Eustis to Orlando using 33 miles of existing freight rail. Service would operate at a 30-minute frequency and travel time would be 54 minutes. The preliminary estimated costs are \$64 million (capital) and \$3.5 million (annual operations and maintenance).



FDOT sponsored a feasibility study to analyze the operating plans and requirements, demand, and operating and maintenance costs. The analysis concluded that the project is not competitive for federal funding. The FCEN revised the project based on the analysis and submitted a scaled-down proposal. However, the scaled-back service was not placed on the recommended list of projects by the Transportation Outreach Program committee.

9.29.3 High Speed Rail

Florida voters passed a constitutional amendment to develop and operate high speed (125-150 mph) rail between the state's five major metropolitan areas. The coast-to-coast high speed rail system currently being proposed by FDOT would initially provide service between Tampa and Orlando via Walt Disney World, OCCC, and OIA. A High Speed Rail (HSR) Authority was created to study how to implement the system. The preliminary estimated costs are \$1.3-\$1.6 billion (capital) and \$3.5 million (annual operations and maintenance).

The HSR Authority submitted their findings to the Legislature on January 1, 2002. Based on the report and legislative actions in the spring of 2002, both PD&E studies and investment grade ridership studies are moving forward. The implementation of the HSR program in Florida is contingent on the outcome of these on-going study efforts.

9.30 INTERIM PROJECTS

Due to the immense scope of the I-4 PD&E Study - Section 2, many smaller projects within the study area have been placed on the FDOT five year and long range work programs. These projects are listed below:

- ◆ I-4 Auxiliary Lanes from Kirkman Road to Florida's Turnpike
- ◆ John Young Parkway Interchange
- ◆ Interim SR 408 (East West Expressway)/I-4 Interchange
- ◆ I-4 Interim Auxiliary Lanes from John Young Parkway to Maitland Boulevard
- ◆ I-4 Auxiliary Lanes SR 535 to SR 528
- ◆ I-4 Auxiliary Lanes from SR 528 to SR 482
- ◆ Six-Laning from Lake Mary Boulevard to US 17-92
- ◆ I-4/US 17-92 Interchange
- ◆ SR 417 (Central Florida Greene Way) Interchange
- ◆ I-4 Six-Laning and St. Johns River Bridge
- ◆ I-4 Six-Laning from Saxon Boulevard to SR 472
- ◆ I-4 Six-Laning from SR 472 to SR 44
- ◆ I-4 Six-Laning from SR 44 to I-95

All of these projects have Location Design Acceptance (if Federally funded) except the Interim SR 408/I-4 Interchange. The Interim SR 408/I-4 Interchange

improvements are included as part of this action. These projects are scheduled for completion before the construction of the proposed improvements described in this report.

I-4 Auxiliary Lanes from Kirkman Road to Florida's Turnpike

An additional lane in each direction will be constructed along the existing I-4 alignment from Kirkman Road to Florida's Turnpike. This is an interim condition and the entire roadway will be reconstructed as part of the proposed improvements. This improvement is a condition of the Conroy Road interchange approval and Construction is underway as of May 2002.

John Young Parkway Interchange

The John Young Parkway interchange will be reconstructed. The improvements involve the reconstruction of the I-4 mainline, the partial reconstruction and widening of the eastbound I-4 on/off-ramps and the westbound I-4 on-ramp. The exiting westbound I-4 off-ramp will be replaced with the construction of a new westbound I-4 off-ramp which overpasses both John Young Parkway and L.B. McLeod Road, and intersects John Young Parkway approximately 900 feet north of the L.B. McLeod intersection. The reconstructed John Young Parkway/I-4 interchange will remain as part of the ultimate improvements. This project is currently under design with construction scheduled to begin in January 2004.

Interim SR 408 (East/West Expressway) I-4 Interchange

Interim improvements to the I-4/SR 408 (East/West Expressway) interchange will consist of a new direct access ramp from westbound SR 408 (East/West Expressway) to eastbound I-4 and a new loop ramp from eastbound SR 408 (East/West Expressway) to eastbound I-4. The alternative will keep the existing westbound SR 408 (East/West Expressway) to westbound I-4 ramp and the existing eastbound SR 408 (East/West Expressway) to westbound I-4 ramp. In addition, the eastbound and westbound I-4 ramps to eastbound and westbound SR 408 (East/West Expressway) will remain the same.

The interim I-4/SR 408 (East/West Expressway) interchange will relocate Anderson Street and provide access to and from downtown Orlando from the west via ramps from Hughey Avenue and to Garland Avenue, and to and from the east at Anderson Street. The I-4 westbound off-ramp at Gore Street and the eastbound off-ramp and westbound on-ramp at Robinson Street will be eliminated with this improvement. Figure 9.30.1 presents an illustration the proposed interim I-4/SR 408 (East/West Expressway) interchange alternative. Information on the impacts and costs associated with the interim I-4/SR 408 (East/West Expressway) interchange is presented in Table 9.30.1. The project is currently under design with construction scheduled to begin in 2005.

Since the project entails constructing ramps that will be kept as part of the ultimate improvements and involves little throwaway construction, it will have little effect on the implementation of the Preferred Alternative.

Table 9.30.1 - Summary of Impacts and Costs for Interim I-4/SR 408

| Acreage | |
|---|-----------------|
| Roadway | 11.7 |
| Pond | 3.6 |
| Total | 15.3 |
| Business Impacts | |
| Total number of businesses property impacts (no. parcels) | 53 |
| -Number of property impacts due to Roadway impacts | 44 |
| -Number of property impacts due to Pond impacts | 9 |
| Number of potential business relocations (units) | 16 |
| -Number of relocations due to Roadway impacts | 14 |
| -Number of relocations due to Pond impacts | 2 |
| Number of displaced employees | 217 |
| Residential Impacts | |
| Total number of residential property impacts (no. parcels) | 9 |
| -Number of property impacts due to Roadway impacts | 7 |
| -Number of property impacts due to Pond impacts | 2 |
| Total number of potential residential relocations (units) | 9 |
| -Number of relocations due to Roadway impacts | 7 |
| -Number of relocations due to Pond impacts | 2 |
| Community Facilities Impacts | |
| Total number of facilities with impacts | 3 |
| -Number of property impacts due to Roadway impacts | 2 |
| -Number of property impacts due to Pond impacts | 1 |
| Total number of relocations | 2 |
| -Number of relocations due to Roadway impacts | 1 |
| -Number of relocations due to Pond impacts | 1 |
| Project Costs (In 2000 \$ Millions) | |
| - Preliminary Construction Costs (in 2,000 \$ Millions) | \$68.59 |
| - Right-of-Way (in 2,000 \$ Millions) | \$41.45 |
| Subtotal Construction & ROW (in 2,000 \$ Millions) | \$110.04 |
| Engineering, Legal, Administration, CEI, Post Design | |
| (27% of Preliminary Construction Cost) (in 2,000 \$ Millions) | \$18.52 |
| Total Project Costs (in 2000 \$ Millions) | \$128.56 |

I-4 Interim Auxiliary Lanes

Auxiliary lanes are under construction as of May 2002 along the existing I-4 alignment from SR 423 (John Young Parkway) to SR 414 (Maitland Boulevard). This is an interim condition and the entire roadway will be reconstructed as part of the *Preferred Alternative*. This design/build project is currently scheduled to be opened to traffic in November 2003.

I-4 Auxiliary Lanes from SR 535 to SR 528

Auxiliary Lanes will be constructed by widening the existing I-4 mainline to the outside from SR 535 to SR 528. This design/build project is under construction as of May 2002.

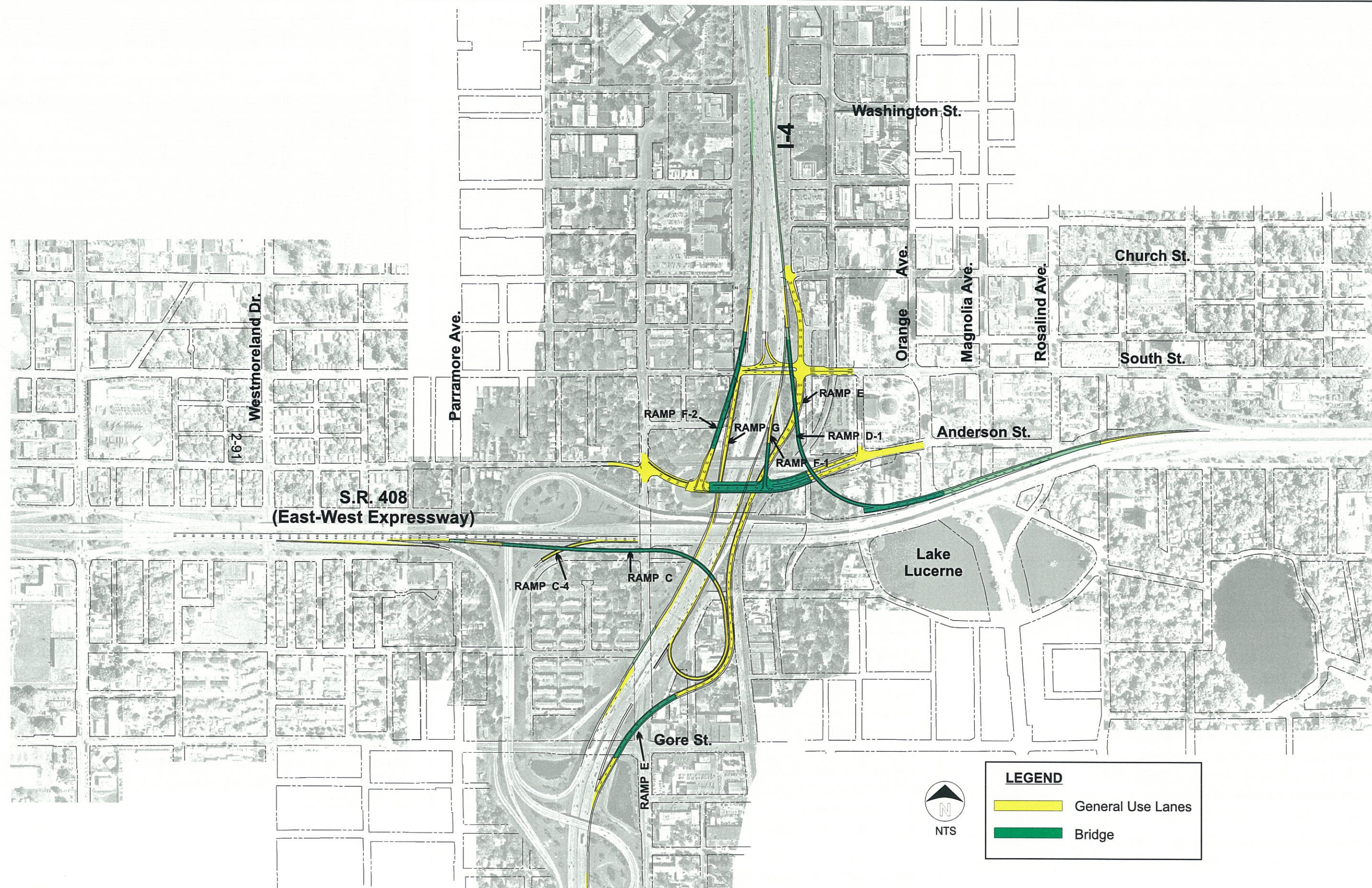


Figure 9.30.1
Interim I-4/SR 408 Interchange

I-4 PD&E Study - Section 2

I-4 Auxiliary Lanes from SR 528 to SR 482

This project provides auxiliary lanes between SR 528 (Bee Line Expressway) to SR 482 (Sand Lake Road). This outside widening project is scheduled to begin construction in the summer of 2002.

Six-Laning from Lake Mary Boulevard to US 17-92

The I-4 six-laning project in this section involves the addition of one lane in each direction on the existing alignment. This widening project is not part of the ultimate improvements. This project is currently on schedule to be let for construction in June 2002.

SR 417 (Central Florida GreeneWay) Interchange

As of May 2002, the final segment of the "missing link" of SR 417 (Central Florida GreeneWay) as well as its interchange with I-4 is under construction with the segment from US 17-92 to Rinehart Road open to traffic. All preliminary design of I-4 assumes the SR 417 (Central Florida GreeneWay) interchange as an existing condition. Construction is anticipated to be complete in the spring of 2003.

I-4 Six Laning and St. Johns River Bridge

The focus of this project is the replacement of the antiquated St. Johns River Bridge. The ultimate general use lanes and foundation for the ultimate general use lanes and HOV lanes are under construction as of May 2002. By doing so, construction in the river will only take place once, thus simplifying the permit process for the ultimate improvements. In addition, ramps from US 17-92 to I-4 and from westbound I-4 to US 17-92 are being constructed as part of this project and retained for the Ultimate project. However, the six laning of I-4 will involve widening the existing roadway to the median, which is not a part of the ultimate improvements. This project is under construction as of May 2002 and is anticipated to be open to traffic in 2004.

I-4/US 17-92 Interchange

This project completes the I-4/US 17-92 interchange at the south end of the St. Johns River bridge. The westbound on-ramp design and construction has been added to the design/build project for the St. Johns River Bridge Replacement. The eastbound off-ramp design is in the procurement process as of May 2002. The construction of the eastbound off-ramp is scheduled for FY06/07.

I-4 Six-Laning from Saxon Boulevard to SR 472

This interim project widens I-4 to the median to provide one additional lane in each direction. This project is currently in design.

I-4 Six-Laning from SR 472 to SR 44

This project involves implementation of the ultimate six-lane improvements on I-4. The project is in design as of May 2002.

I-4 Six-Laning from SR 44 to I-95

This project involves the implementation of the Ultimate six-lane improvements on I-4. The project is in design as of May 2002.