ORANGE COUNTY GOVERNMENT FLORIDA

Interoffice Memorandum

AGENDA ITEM

DATE: October 31, 2022

TO: Mayor Jerry L. Demings
-AND-
County Commissioners

FROM: Jon V. Weiss, P.E., Director
Planning, Environmental, and Development Services Department

CONTACT PERSON: **Renzo Nastasi, AICP, Manager**
Transportation Planning
(407) 836-8072

SUBJECT: November 29, 2022 – Work Session
New Independence Parkway Preliminary Design Study (PDS)

The Orange County Transportation Planning Division has completed the New Independence Parkway Preliminary Design Study (PDS).

The study was predicated by the Board's approval of the Town Center West Road Network Agreement on September 1, 2020. The study objective analyzed the suitability of an extension of New Independence Parkway from west of Avalon Road to the Lake County line and ultimately providing a link between US 27 in Lake County and SR 429 in west Orange County. The study addresses features such as documenting existing corridor characteristics, developing future traffic volumes and alternative alignments, safety and speed management, stormwater capacity needs, and community engagement. The New Independence Parkway PDS is approximately one mile in length.

At the November 29, 2022 work session, staff will present the New Independence Parkway background, study analysis, and recommendations. A public hearing will be held before the Board at a later date.

This item is for informational purposes only; no action is required by the Board.

JVW/RN/ip/ep
Attachment

c: Joseph C. Kunkel, P.E., Director, Public Works Department
Diana Almodovar, P.E., Deputy Director, Public Works Department
Brian Sanders, Assistant Manager, Transportation Planning Division
Blanche Hardy, P.G., Assistant Project Manager, Transportation Planning Division
Ian Phyars, Planner III, Transportation Planning Division

NEW INDEPENDENCE PARKWAY EXTENSION
(WELLNESS WAY)

PRELIMINARY DESIGN STUDY

ORANGE COUNTY GOVERNMENT
FLORIDA

August 2022

KCG KELLY, COLLINS & GENTRY, INC.
ENGINEERING / PLANNING

1700 North Orange Avenue, Suite 400, Orlando, Florida 32804 PH: 407/ 898-7858 ~ Fax: 407/ 898-1488

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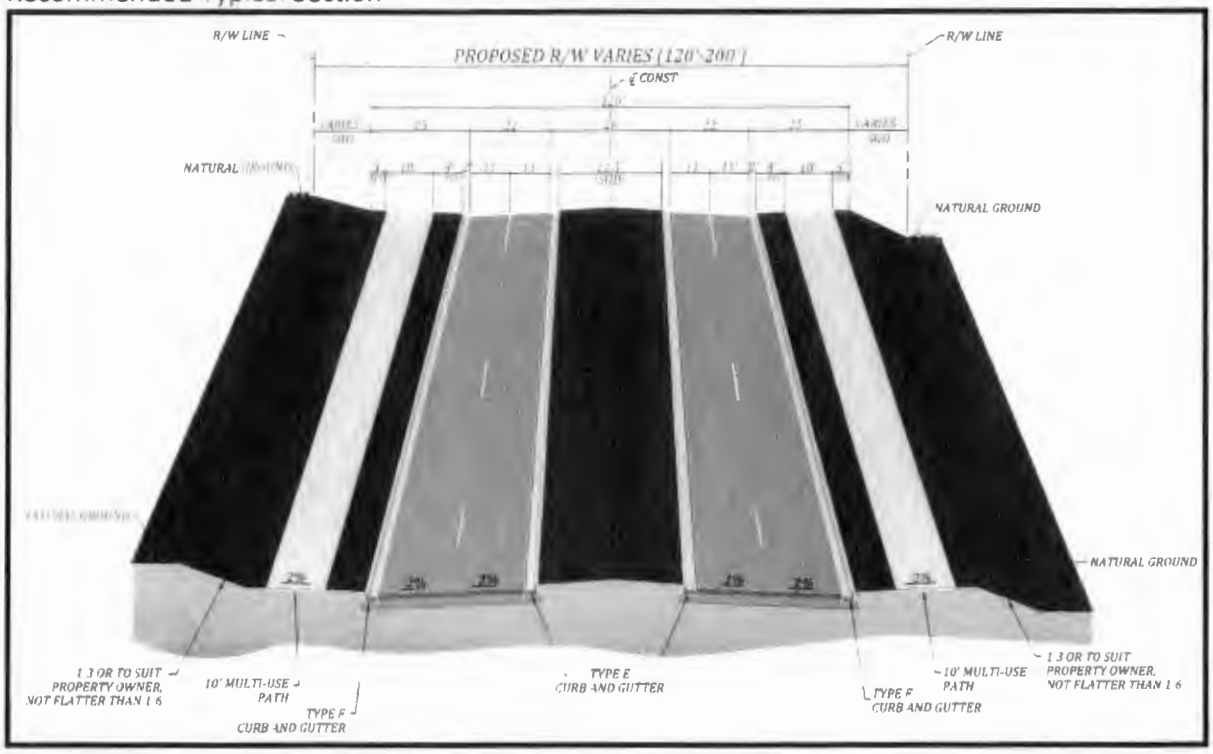
EXECUTIVE SUMMARY

Orange County commissioned this Preliminary Design Study (PDS) for the New Independence Parkway extension between Avalon Road (CR 545) and the Orange / Lake County Line to the west.

The results of the PDS support the addition of a new four-lane divided facility within the project limits to provide connectivity between the planned Wellness Way in Lake County and the existing New Independence Parkway to the east which connects to SR 429 (Western Beltway). A summary of the Recommended Typical Section and Alignment features are discussed below. Detailed information and results of the PDS effort are contained within the report following this Executive Summary.

Recommended Typical Section



The recommended Typical Section consists of the following elements:

- Two 11-foot wide Travel Lanes in each direction separated by a 26-foot wide Raised Median
- FDOT - Type F Curb & Gutter adjacent to the outside lanes
- FDOT - Type E Curb & Gutter adjacent to the inside lanes
- Urban stormwater collection system with closed drainage and stormwater treatment ponds

- 10-foot wide Multi-Use Paths located outside the travel lanes on both north and south sides near R/W Lines to accommodate predicted cyclist use
- 8-foot wide (or variable width) Utility Strips/Parkway between curb and gutter and Multi-Use Path
- 5-foot wide grass strip between Multi-Use Path and the R/W line
- Nominal proposed R/W width is 120 feet
- Permanent Slope Easements and Temporary Construction Easements will be required to build and maintain the roadway section due to significant rolling terrain

Alignment

The preferred horizontal alignment is dominated by fixed endpoints at the Begin Project as well as the End Project where the proposed roadway will tie to other facilities either under design (at the east end) or planned (at the west end). The horizontal alignment consists of two sets of reverse curves designed for the 45 mile an hour Design Speed. There are three median breaks within the project limits: the western most being for a proposed north-south roadway known as Valencia Parkway; a median break for the intersection of Golden Apple Drive (part of the Wincey Groves subdivision); and a third median break is provided where Wincey Groves Road provides access to residents of the subdivision.

The vertical alignment is also fixed at both the east and west ends of the project alignment. It was a desired by the project team to use the combination of vertical and horizontal alignments in harmony with the existing terrain to the extent practicable to provide a smooth, flowing alignment – while also not encouraging higher operating speeds on a facility with nearly unlimited sight distance. The vertical alignment will be refined during final design to provide a completed facility that "fits the landscape", but also safely checks driver's speeds by managing curve lengths and K values.

Conclusions & Recommendations

The results of this study support the western extension of New Independence Parkway between Avalon Road (CR 545) and the Orange / Lake County Line. This Orange County extension will connect to a planned Lake County roadway know as Wellness Way. Together these two segments will provide a significant east-west roadway in this region which will provide a strategic connection between to US 27 in Lake County and SR 429 (Western Beltway) in Orange County.

This project concept and facility location has garnered support from numerous transportation planning agencies, both counties and numerous property owners affected by the alignment. The roadway is consistent with the major long range

transportation plans within this area including Orange County Horizon's West Sector Plan, the Lake-Sumter Long Range Transportation Needs Plan and the CFX Long Range Plan.

The New Independence Parkway Extension Project will provide a well-planned transportation facility that balances local access, connectivity and mobility requirements for vehicles, pedestrians, and cyclists.

It is recommended this facility as depicted in the Recommended Concept Plans move into the Final Design Phase to include environmental permitting, R/W acquisition and construction document preparation.

ORANGE COUNTY GOVERNMENT
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SECTION 1 – INTRODUCTION

KCG

1.0 INTRODUCTION

1.1 Purpose

This report documents the findings of the Preliminary Design Study (PDS) performed for the Orange County Planning, Environmental and Development Services Department by KCG Engineering. The study objective was to analyze the suitability of a new east-west roadway linking US 27 in Lake County with SR 429 in Orange County near the Horizon's West Hamlin Groves Community at New Independence Parkway. The study addresses features such as the existing corridor characteristics, developing future /projected traffic volumes and suitable alternatives, and recommend possible roadway improvements for the proposed facility in western Orange County.

The portion of the proposed east-west facility addressed in this PDS is limited to the Orange County segment beginning at the Orange/Lake County Line and end just west of the New Independence Parkway / Avalon Road (CR 545) intersection. Figure 1.1 shows the study area and project location.

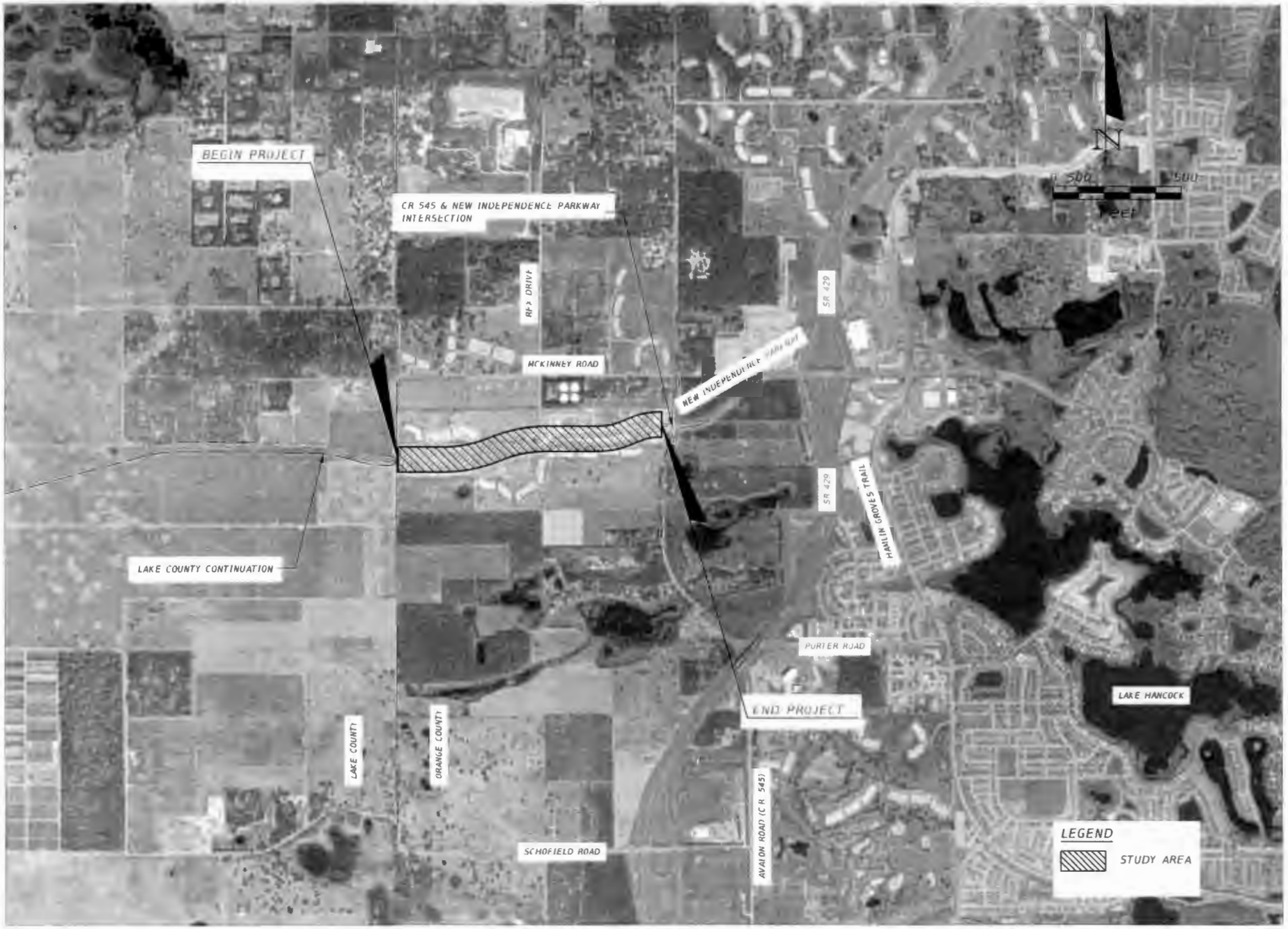
This study will document safety, improvement cost, alternative analysis, long range planning and environmental considerations. This report describes alternative road design concepts which provide acceptable transportation service while minimizing social, economic and environmental impacts along the corridor to the extent possible. Description and documentation of the analysis of alternative alignments and the resultant recommendations, including the preferred alignment are included in this report.

Section 2 explores the need for the facility and discusses capacity requirements, safety and transportation plans consistency, as well as social/economic factors which have an impact on the proposed road.

Section 3 of this report describes the existing corridor, land use, cultural features, natural features, utilities, permitting requirements and social characteristics of the project area.

Section 4 is a traffic analysis of the proposed facility which takes into account both existing and future facilities in the study area, adjacent traffic conditions and evaluates the goal of providing the needed Level of Service anticipated for the new facility.

Sections 5 identifies the design criteria applied to this roadway.



NEW INDEPENDENCE PARKWAY EXTENSION PDS

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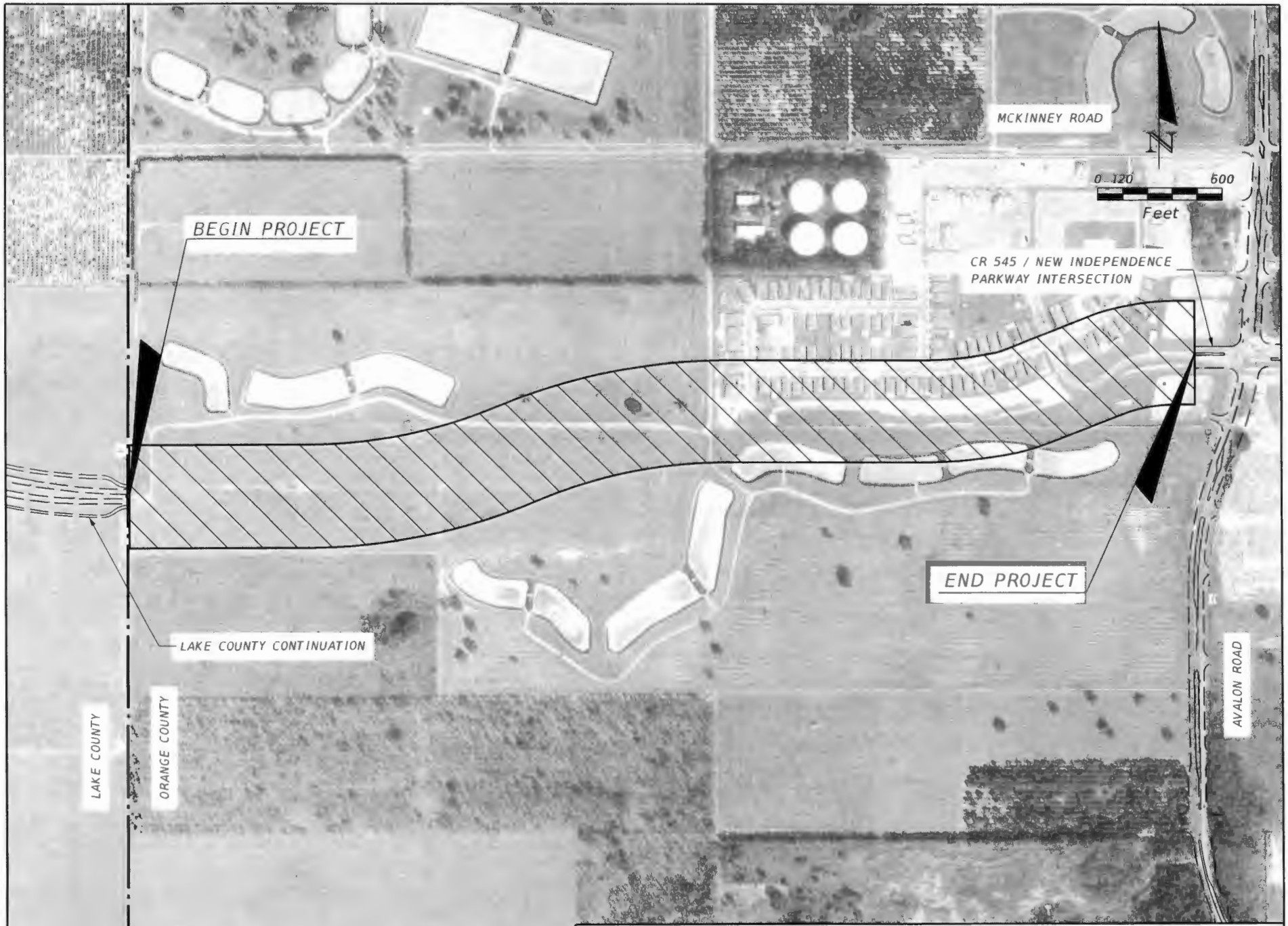
PROJECT STUDY AREA

FIGURE 1.1



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PROJECT LIMITS

FIGURE 1.2

Section 6 describes the analysis of the proposed New Independence Parkway corridor within the study limits and the development and evaluation of design alternatives.

Section 7 contains a description of the recommended roadway improvements.

Included in the Appendix are the Preliminary Engineering Plans and various supporting reports. The full Traffic Report includes the detailed analysis of existing (where applicable) and future traffic conditions. It also presents the supporting documentation for the traffic service recommendations. Also included are the Report of Roadway Soil Survey and the Report of Hazardous Materials and Petroleum Evaluation which present information pertaining the subsurface characteristics within the project limits. The Environmental Assessment is also included in its entirety which discusses the various environmental issues encountered along the project and presents recommendations which were incorporated in the project study.

1.2 Project Description

The project consists of the development of a Preliminary Design Study (PDS) for the extension of New Independence Parkway / Wellness Way from approximately 600' west of County Avalon Road (County Road 545) to the Orange/Lake County line. The study will address issue associated with extending a new alignment west approximately 1 mile as a four-lane divided roadway with a sidewalk and a multipurpose path within the study area. Lake County is developing a similar roadway form the county line west to US 27.

ORANGE COUNTY GOVERNMENT FLORIDA

SECTION 2 – NEED FOR IMPROVEMENT

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2.0 NEED FOR IMPROVEMENT

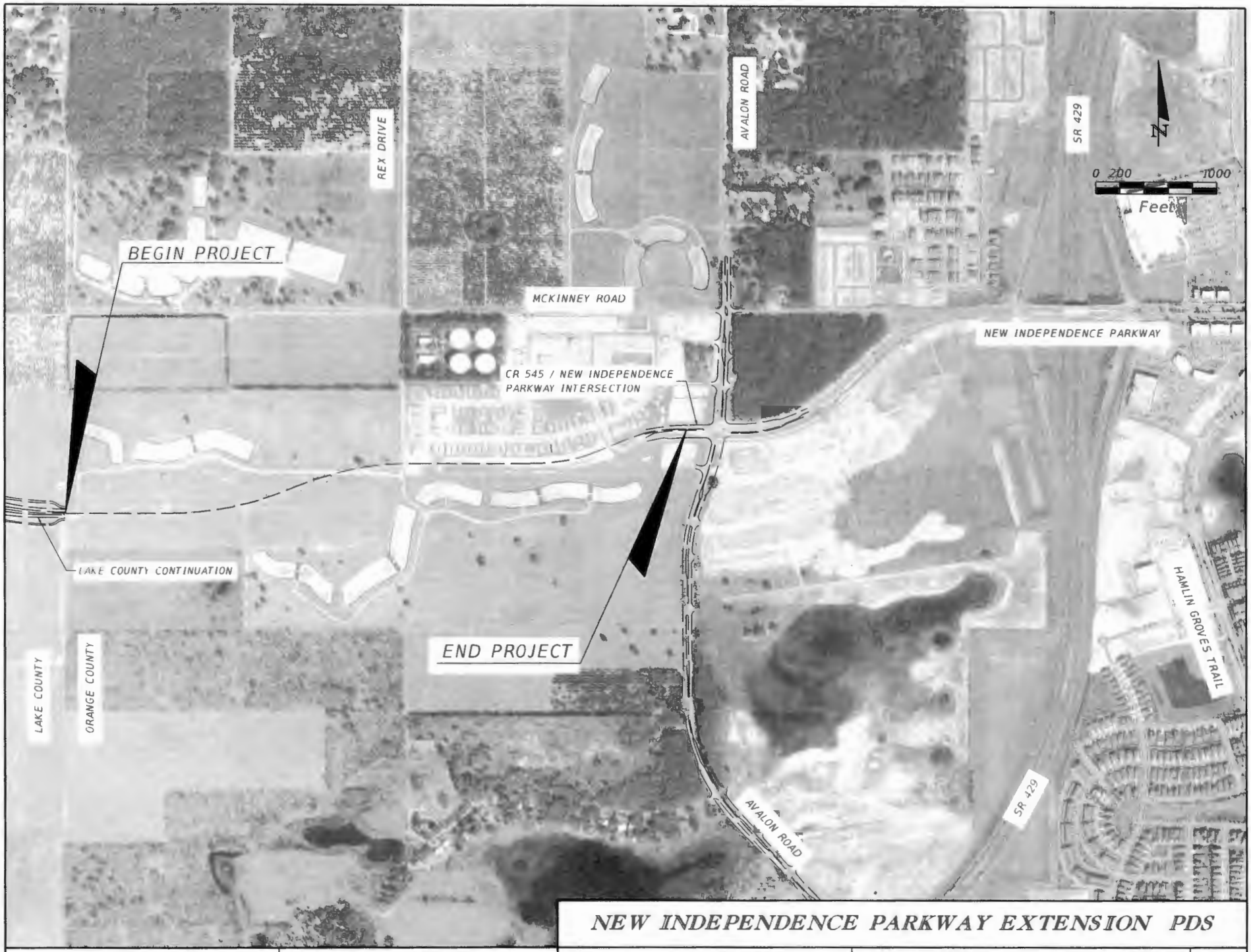
The New Independence Parkway Improvement Project is needed for several reasons. For nearly a decade an east-west Roadway connecting US 27 with State Route 429 (Western Beltway) at the New Independence Parkway Interchange has been contemplated to provide a needed connection between these two major north-south Principal Arterials. The addition of such a facility will improve transportation circulation in this region of Central Florida. The project is the result of a focused effort to provide economic development, transportation improvements, and forward-looking land planning efforts conducted in this region.

Numerous stakeholders, both public and private, support the construction of such a facility. The idea is to improve regional connectivity and area traffic circulation, address future traffic demands and provide adjacent property access along the corridor and connections to US 27 and SR 429. This facility will also increase economic development and improve job growth in the region and significantly reduce travel times. The only other east-west facilities in this region are State Road 50 to the north and US 192 to the south. There is an additional proposed roadway parallel facility approximately a mile to the south aligning with the Schofield Interchange at SR 429. This parallel roadway is envisioned as a toll facility.

The NIP improvements are also consistent with the goals, objectives, and policies of the 2000-2020 Orange County Comprehensive Policy Plan. Lastly, the extension of NIP will help meet and improve the social and economic demands of the area. This section of the report presents the findings relative to these areas and a review of the recommendations presented by local comprehensive planning efforts.

2.1 Capacity Issues

There is presently no facility where the proposed NIP is envisioned, and therefore, no measurable "existing deficiencies", however, the proposed facility will serve to divert trips off adjacent parallel facilities which will relieve congestion on those roadways and provide transportation connections to existing and future developments such as the expansion of Hamlin Groves at the east project terminus and other existing and proposed developments within Lake County. Reducing congestion and traffic volumes on those adjacent facilities will also improve traffic safety and increase local traffic circulation as a result of reduced traffic volumes.



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PROJECT LOCATION MAP

FIGURE 2.1

2.2 Safety Issues

The existing and forecasted population growth in Lake County to the west will continue to add trips to the two parallel facilities noted earlier (SR 50 and US 192). Increased traffic on these facilities will strain them and likely lead to additional crashes on both facilities. SR 50 & US 192 continue to experience significant levels of congestion with existing traffic volumes. These conditions will only worsen.

Our region is also experiencing significant increases in vehicular crashes as well as pedestrian injuries and fatalities. It is predictable that the increased congestion will contribute to additional crashes. A decrease in traffic volumes on these parallel facilities will be provided by NIP. Reduced volumes typically lead to an associated reduction in accidents and improved safety for both vehicles and pedestrians.

2.3 Transportation Plan Consistency

The extension of NIP to the west is consistent with the goals, objectives and policies of the adopted 2000-2020 Orange County Comprehensive Policy Plan. The four-lane proposed roadway is included in the Orange County comprehensive transportation plant long-range transportation plan as noted in the 2035 plan. The project is also identified in the Central Florida Expressway Authority (CFX) 2035 Master Plan as well as a parallel facility approximately 1 mile to the south.

The Lake Sumter Metropolitan Planning Organization has identified the proposed project as an Emerging Regionally Significant Corridor.

Metroplan Orlando has noted the facility as a significant east-west highway for connectivity within the region. The lack of regional connectivity poses challenges for freight companies and shippers. The proposed project would provide a significant east-west relief route to the parallel facilities: SR 50 to the north and US 192 to the south.

2.4 Social & Economic Issues

The absence of an east-west connection between US 27 and SR 429 and the presence of large undeveloped tracts of land have served to segregate citizens along the US 27 corridor and the Horizons' West areas within Orange County. The Horizon's West Development is a burgeoning community with significant existing and proposed service for area homeowners, including food,

entertainment and education. It is also becoming an employment hub with several large enterprises being brought into the area. This community will continue to thrive and draw people to the area, as well as provide needed services for residents outside Horizons West. The planned community will serve the increasing population moving into the Central Florida Area, which is still one of the fastest growing regions in the country. Additionally, the major employment areas of the Disney and theme park and tourist corridors to the south served by SR 429 will continue to spur growth and elevate the economic potential of the area.

Lake County also has planned developments in this area as identified in their Southeast Lake Sector Plan. There are well over 10,000 acres of undeveloped land within the immediate area, particularly south of the Wellness Way corridor.

ORANGE COUNTY GOVERNMENT FLORIDA

SECTION 3 – EXISTING CONDITIONS

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3.0 EXISTING CONDITIONS

This section of the report describes physical, cultural, and social characteristics of the New Independence Parkway (NIP) Extension corridor. These descriptions are based on data collection including field investigations, review of maps and right-of-way maps, previous reports, and contact with utility owners. Aerial photography served as the basis for plotting much of the data necessary for the engineering and environmental analysis, alternative corridor, and design studies.

3.1 Existing Corridor Characteristics

3.1.1 Right-of-Way

Orange County Tax Maps were used initially to establish the existing ownership and ownership interests of the areas expected to be affected by the proposed roadway. There are two primary property interests within the study area: Water Conserv II (WC II) and the Wincey Groves Homeowners. WC II is the largest reuse project of its kind and is a collaboration between the City of Orlando, Orange County and The Agricultural Community. It is located on the southeast corner of Rex Drive and McKinney Road. Wincey Groves will be the newest home community to develop just north of the New Independence Parkway Extension. The offices and plant facility are just north of the study corridor, and immediately west of the new Wincey Groves Subdivision at 17498 McKinney Road.

The Wincey Groves is a planned unit community of single-family homes built primarily in the 2020 – 2021 timeframe. A portion of land, 120 feet wide, has been identified by the underlying property owner as reserved for the future NIP extension. The width of reserved (future) right of way expands to over 150 feet closer to the Avalon Road intersection in order to accommodate extra turn lanes.

3.1.2 Utilities

There are a number of existing utilities within the project corridor and adjacent areas. The primary utilities are associated with the WC II to connect their various RIB sites. Fortunately, these lines are all pressure flow and not of great diameter (in the event they must be

relocated due to underground conflict(s). There also exists several underground utilities near the east end of the project that provide utility service tot eh Wincey Subdivision. A depiction of the existing utilities is provided on Figure 3.1.2.

The following utility companies were identified and notified of the proposed project:

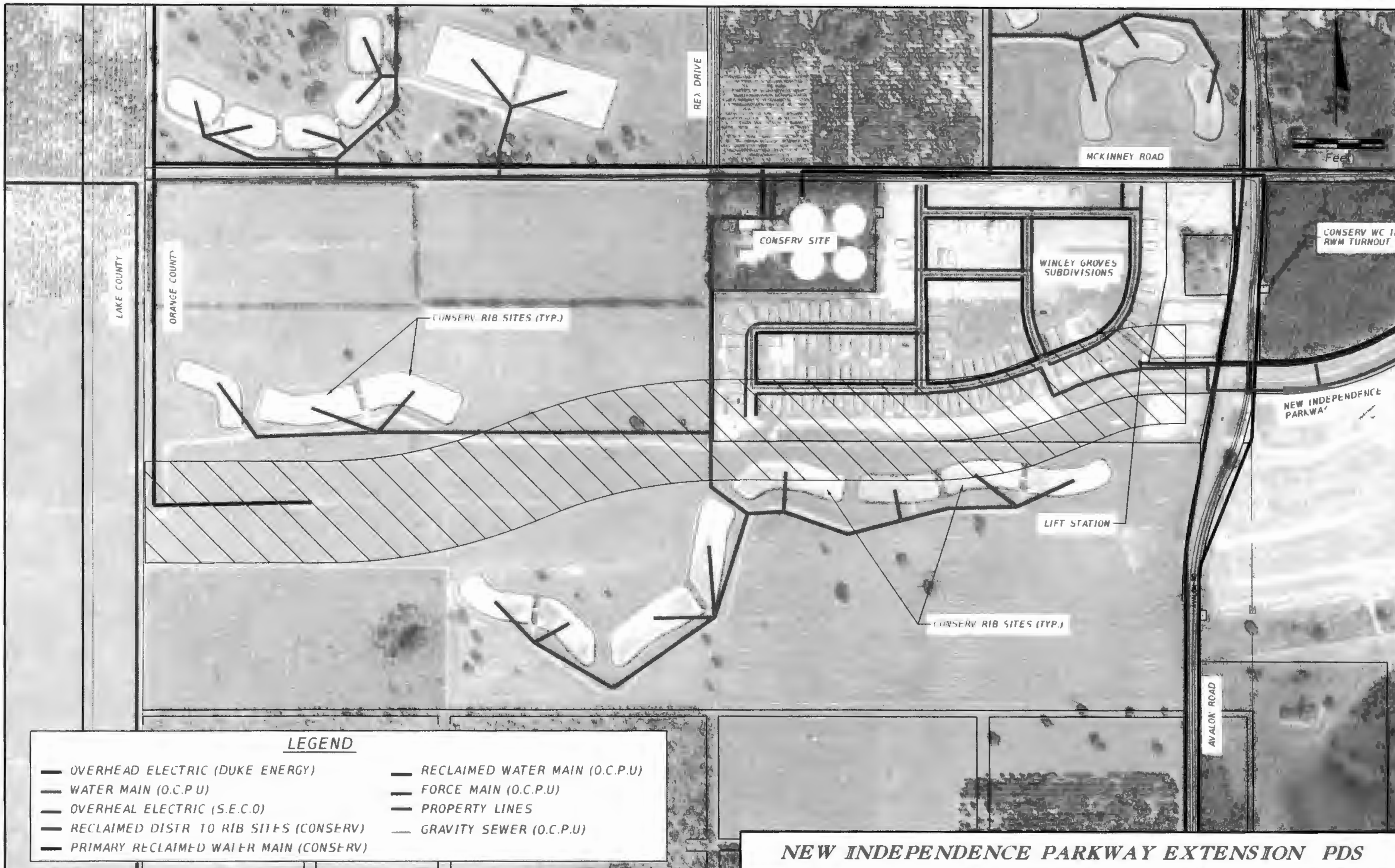
- Charter Communications
- Century Link
- Duke Energy
- Orange County Utilities
- SECO Energy
- Smart City Telecom
- Water Conserv II

3.1.3 Transportation Network Improvements

The following improvements to the surrounding transportation system will be included in the development of the study project.

Roadway Planned Improvements include:

- OC RCA: CR 545 (Avalon Road) – from US 192 to New Hartzog Road
- OC PDS: CR 545 (Avalon Road) and Flemings Road – from Water Springs Boulevard to South of New Hartzog Road, approximately 2.6 mi) and Flemings Road from east of 545 to the west County line, approximately 1 mile
- OC PDS: CR 545 (Avalon Road) - Segment 1: Old YMCA Road to Schofield Road, Segment 2: 1600 N. Marina Bay Drive to Old YMCA Road, Segment 3: 1300 N Flamingo Crossings to 1600 S. Marina Bay Drive, Segment 4: 3000 S Flamingo Crossings to 1300 N. Flamingo Crossings
- OC PDS: CR 545 (Avalon Road) – from Schofield Road to McKinney Road within the Horizon West Special Planning Area (approximately 1.8 miles)
- CR 545 (Avalon Road) – from South of Old YMCA Rd to North of Old YMCA Rd
- CR 545 (Avalon Road) – from South of Seidel Rd to South of Old YMCA Rd



NEW INDEPENDENCE PARKWAY EXTENSION PDS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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EXISTING UTILITIES

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- CR 545 (Avalon Road) – from North of Water Springs Blvd. to South of Seidel Road
- CR 545 (Avalon Road) – from Florida Turnpike to SR 50
- Lake Orange Expressway – from US 27 to SR 429 at Schofield I/C) – Design 2022
- Design Project: US 27 (SR 25) – from Lake Louisa Rd to Cluster Oak Drive (FPID: 447098-1)
- Design project: US 27 (SR 25) – from US 192 to Greater Groves/Golden Eagle (FPID: 437056-1)
- OC RCA: Roadway concept analysis for Tiny Road from Tilden Road to the Bridgewater Middle School southern property line (approximately 2 miles)

3.2 Existing Environmental Characteristics

3.2.1 Existing Uses

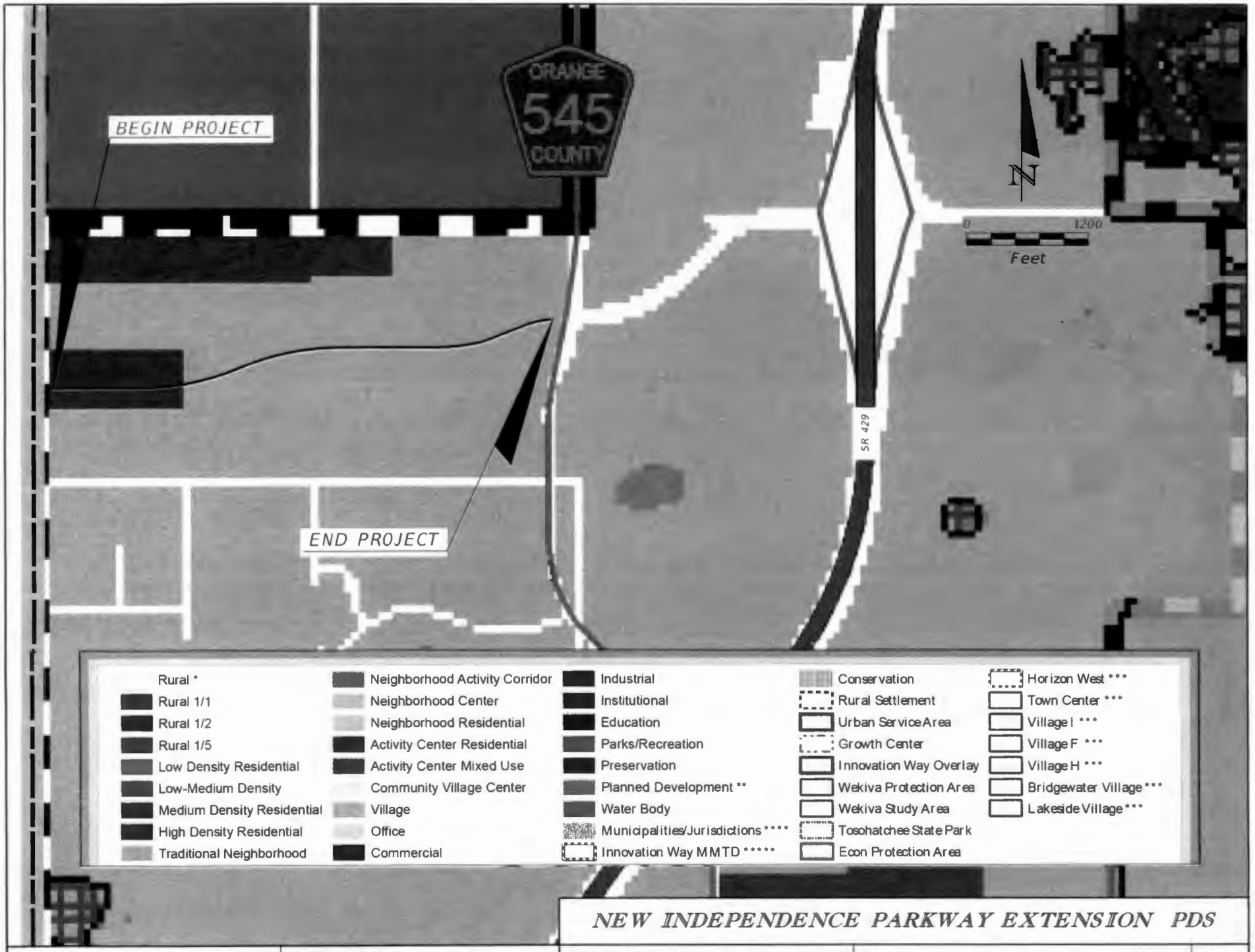
The New Independence Parkway extension is within unincorporated Orange County and abuts the Lake County line. The land uses adjacent to the study corridor can generally be described as an urban mixed-use district and includes, open space, residential, and retail centers. Residential areas include Wincey Groves, Hamlin West, and Silver Leaf. Adjacent to the New Independence Parkway extension is a reclaimed water facility operated by WC II. The Rapid Infiltration Basins (RIBs) system serves as an irrigation source for agricultural and provides valuable recharge to Florida's aquifer.

3.2.2 Future Land Use and Zoning

Development of vacant properties and redevelopment of developed properties which abut the corridor are regulated by Orange County future land use, zoning ordinances, and land development regulations.

The Orange County Future Land Use (FLU) category which abuts the corridor is Horizon West Village - Town Center (see Figure 3.2.2).

Orange County Comprehensive Plan – Future Land Use Element
Orange County uses a Village Land Use Classification to define the long-range planning vision for West Orange County created through the Horizon West planning process. The Village land use classification has been designed to provide an alternative to sprawl; create a better



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FUTURE LAND USE

FIGURE 3.2.2

jobs/housing balance between the large concentration of employment in the tourism industry and the surrounding land uses; create a land use pattern that will reduce reliance on the automobile by allowing a greater variety of land uses closer to work and home. The intent is to replace piecemeal planning that reacts to development on a project-by-project basis with a long-range vision that uses the Village to transition from rural to urban use through a specific planning process that uses a creative design approach to address regional, environmental, transportation, and housing issues. More specifically, development within the Horizon West Town Center requires processing a Planned Development/Unified Neighborhood Plan (PD/UNP) or Conceptual Regulating Plan (CRP) and a Planned Development / Regulating Plan (PD/RP).

The properties abutting the corridor are within an existing Planned Development or A-1, Agriculture, zoning district; or open space (WC II). A-1 is a holding zone for future development, requiring rezoning to planned development, consistent with the Horizon West Village Town Center Future Land Use.

With respect to the PD zoning, the purpose and intent of Horizon West Town Center planned development is as follows:

A.) To concentrate commercial development in the Town Center rather than in radial, strip, isolated, or ribbon development patterns, providing commercial service and civic support uses within one-half-mile walking distance of residential, office, and employment uses.

B.) To create a compact urban mixed-use development, within the Traditional Town Center Core and Corporate Neighborhood Center, supported by a diverse mix of uses that provides necessary employment, commercial, housing and lifestyle opportunities for current and future residents of Horizon West.

C.) To plan employment (office) areas in conjunction with residential and retail areas, creating integrated, mixed-use neighborhood units.

D.) To develop an interconnected system of local streets, regional and local transit routes, bicycle trails and routes, and pedestrian walkways.

Related to the following:

a. Town Center development should recognize the importance of the automobile but strive to minimize its adverse impacts and maximize pedestrian safety and walkability.

b. Town Center should promote a balanced transportation system that provides freedom to choose alternative and energy-efficient transportation modes.
c. Town Center developments shall have direct access to the interchanges of the SR 429 "Western Beltway" providing convenient connection to the Central Florida Region.
d. Town Center developments should encourage and accommodate linkage with the regional transit system.
e. Town Center should provide a connected, integrated system of collector streets, local streets, pedestrian walkways, bike paths and recreational trails.

Land Use Districts:

Urban Residential District - The Urban Residential District reflects the character and quality of a traditional neighborhood, and includes a mix of attached and detached housing, civic uses, neighborhood parks and recreational facilities. A limited number of sites appropriate for neighborhood scale commercial and office use may be included within this district to provide close-to-home opportunities for neighborhood residents to purchase convenience goods and services. The typical street and block pattern is fully interconnected to accommodate pedestrians, bicyclists, and motor vehicles, linked to the trail system of the Town Center.

Retail/Wholesale District - The Retail/Wholesale District is intended to accommodate regional retail business, personal services, office, warehouse, and warehouse showroom uses for the Horizon West area. Transit stops and on-site parking for such stops will be incorporated in the planning for these district parcels. Attached residential uses may be allowed either as an ancillary use within buildings where the primary use is office, retail, or hotel, or as a freestanding use on a site whose location was approved as part of the original approval of a PD/UNP or by substantial change request.

Traditional Town Center Core District - The Traditional Town Center Core District will serve as the civic and retail heart of Horizon West and the surrounding area. It is intended to be a vital, mixed-use center that contains a variety of residential, retail, office, hotel, civic and entertainment uses. The district will be designed as the primary pedestrian-oriented activity center of the entire Town Center Specific Area Plan. The Traditional Town Center Core District Street and block system will be a grid or

modified grid design, reminiscent of traditional community downtown centers, providing convenient pedestrian and vehicular access throughout the town Center. Alleys, Lanes and Standard Street types should be allowed to provide access to parking and service areas. Building fronts will have a primary orientation to streets and parks. Civic spaces and public buildings will be encouraged, designed and located as focal points throughout the Traditional Town Center Core.

Open Space District - These districts are interspersed throughout the Town Center. As depicted on the Town Center Plan, several of the designated areas encompass the WC II lands, the existing Orange County Golf Center, and two (2) former landfill sites. Other designated areas serve as a common thread that links adjacent Land Use Districts, neighborhoods, land uses and residents together, creating community character, image, and identity. In addition, Open Space Districts may include public elementary schools and other types of civic uses (such as libraries and churches) pursuant to locational, site and building design criteria included in the Town Center Code.

3.2.3 Cultural Facilities and Community Services

Aerial searches and field reviews of the project limits and surrounding areas were conducted to identify existing facilities which could be impacted by the project or that should be considered during project development. These facilities are identified on Figures 3.2.3(a-d).

Medical Facilities and Fire & Rescue:
Orlando Health Horizon West Hospital is located at the intersection of Porter Road and Avalon Road. The six story, 228,000 square foot facility includes physicians in cardiovascular care, emergency care, and minimally invasive and robotic surgery. Primary care and outpatient specialty services are provided in the adjacent medical pavilion. The next hospital, Advent Health-Winter Garden is approx. 7 miles north on SR 429.

There is also a family medical facility, Winter Garden Health and Wellness, located at 15820 Shaddock Dr. in Winter Garden.

Orange County Fire Department Station No. 44 is located southeast of the Avalon Road and Porter Road intersection (south of the Orlando Health Horizon West Hospital) at 16990 Porter Road.

Educational Facilities:
Educational facilities within the surrounding area consist of the following: Three childcare centers (The Goddard School of Winter Garden, Amazing Explorers Academy Hamlin, and Kiddie Academy of Winter Garden), a private preschool (KLA Schools of Horizon West), three elementary schools (Keene's Crossing, Summerlake, and Independence), one middle school (Bridgewater), one high school (Windermere), and a private Christian school (Foundation Academy).

Religious Institutions:
Nine religious institutions are located in and around the vicinity of the project. They include Horizon West Community Church, First Baptist Horizon West, Discovery Church, Citrus Church-United Methodist, Forever Free Church, The Grove Bible Chapel, Windermere Seventh-Day Adventist Church, and Windermere Musallah.

Parks, Community Centers, and Cemeteries:
There are five parks within the study area: Summer Port Park, Shoshonei Park, Deputy Scott Pine Community Park, and Summerlake Community Park. Horizon West Regional Park, a 215 acre site, is currently being developed by Orange County.

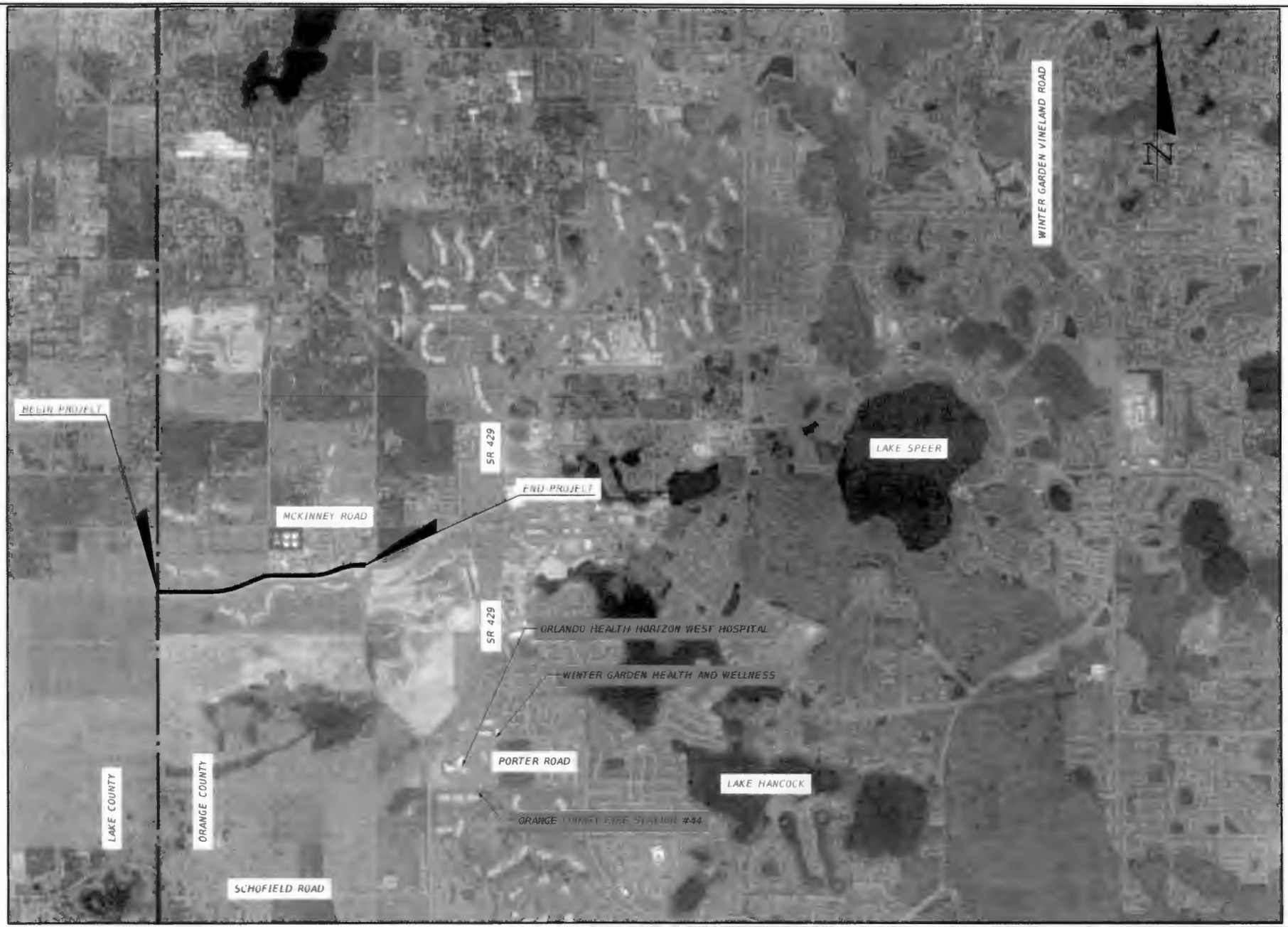
The closest Veterans of Foreign Wars building (VFW) is located in Winter Garden approximately 10 miles northeast of the study area.

Cemeteries: There is one cemetery within the study area, Winter Garden Cemetery, located at 13636 Lake Butler Blvd in Winter Garden.

3.2.4 Archaeological and Historic Features

Cultural History

The project area lies within the East and Central Lakes cultural region. The majority of the identified sites in this region date to the Archaic (7,500 to 1,000 B.C.) or St. Johns (500 B.C. to A.D. 1565) periods. Early to Middle Archaic sites are defined by lithic artifacts consisting of fragments (debitage) from toolmaking, and large, stemmed points identified as Florida Archaic Stemmed points. During the Late Archaic (2,000 to 1,000 B.C.), slab-constructed orange ceramics tempered with plant fibers appear in the artifact assemblage. St. Johns sites are marked by the presence of distinctive chalky ware ceramics whose paste contains microscopic sponge spicules (Milanich and Fairbanks



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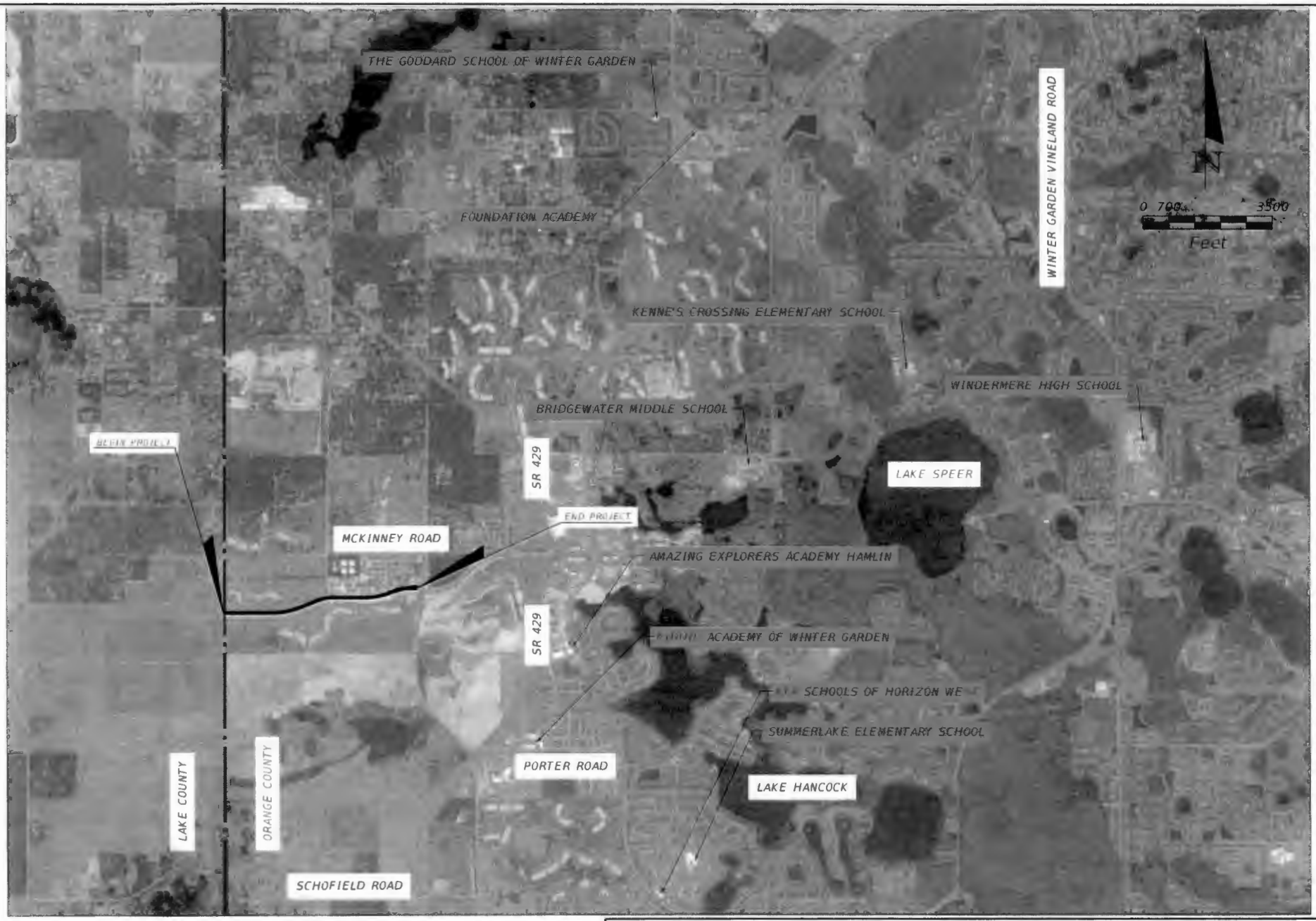
FIRE & RESCUE AND MEDICAL FACILITIES

FIGURE 3.2.3a



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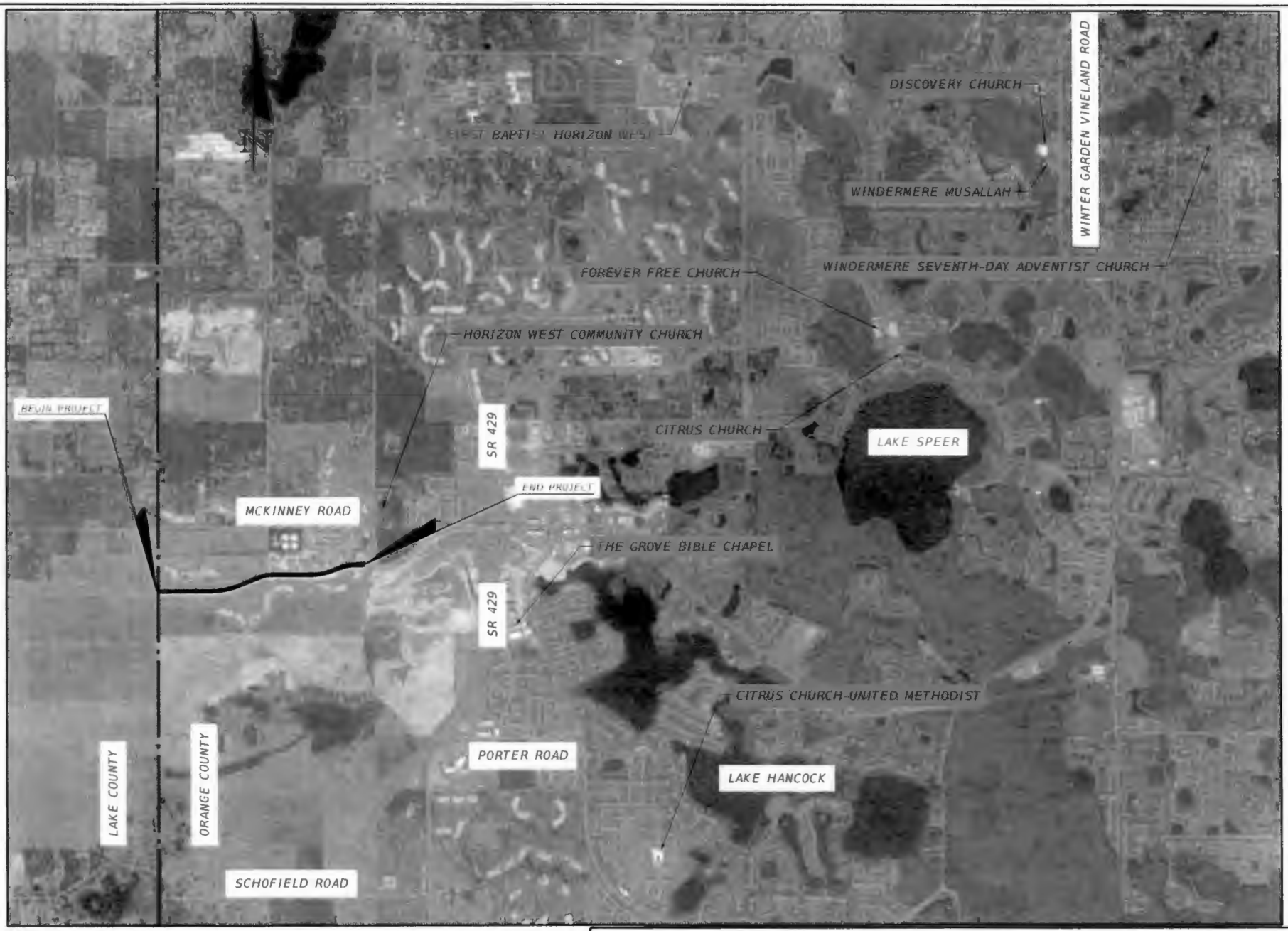
EDUCATIONAL FACILITIES

FIGURE 3.2.3b



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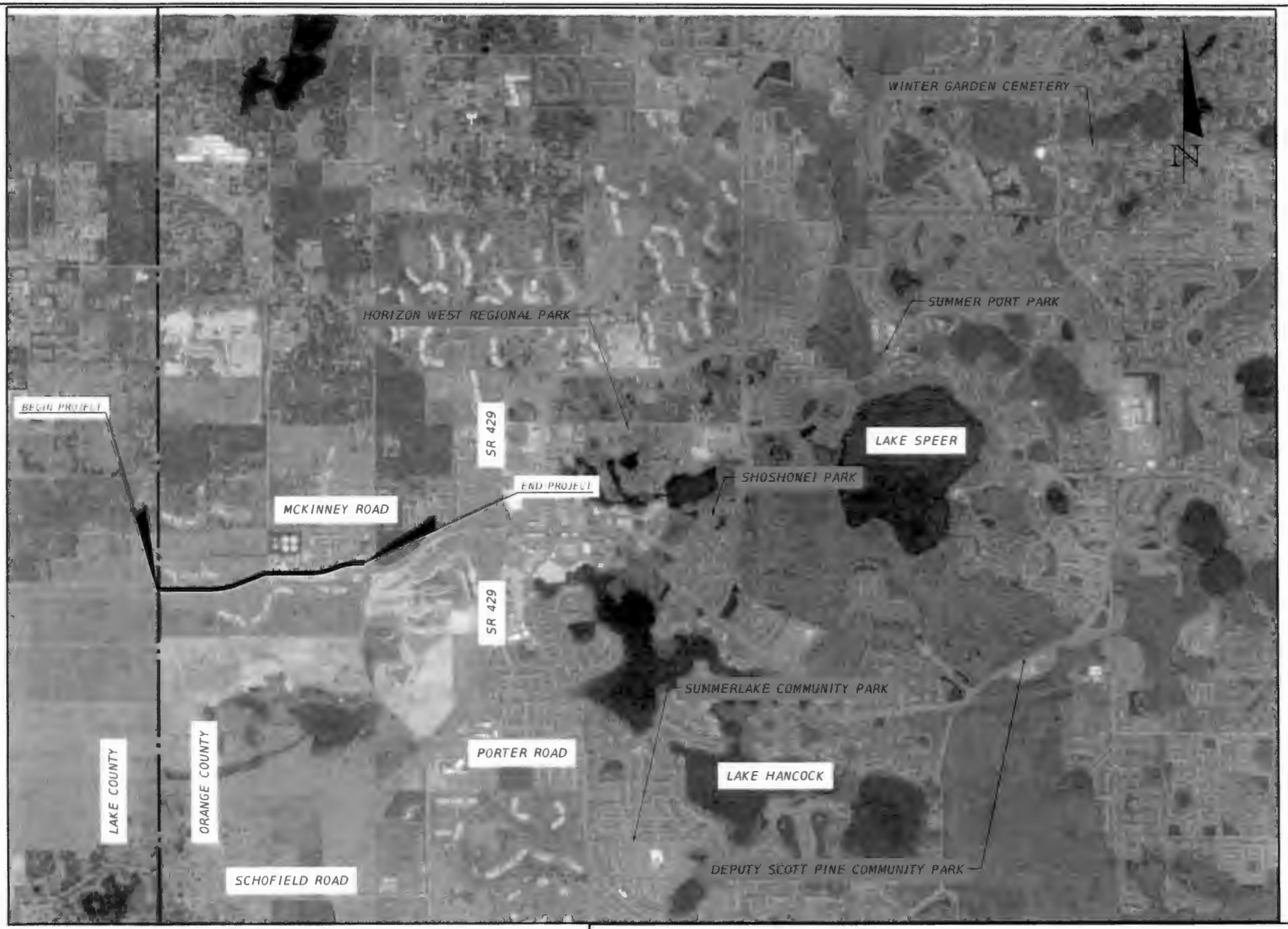
RELIGIOUS INSTITUTIONS

FIGURE 3.2.3c



NEW INDEPENDENCE PARKWAY EXTENSION PDS

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COMMUNITY CENTERS, PARKS, AND CEMETERIES

FIGURE 3.2.3d

1980). Most of the prehistoric sites in this region are small campsites associated with reliable water sources.

Historically this part of Florida was settled relatively late. After the Treaty of Moultrie Creek in 1823, the Seminole were forced into a reservation which included the Central Lakes area. During the Second Seminole War of 1835 to 1842, military forts were built in the region, including Fort Maitland and Fort Gatlin near Lake Apopka. The Armed Occupation Act of 1842 at the end of the war led to increased settlement of this area by Euro-Americans. The original U.S. land surveys for this area do not show any activity in the project vicinity, although the road from Lake Monroe to Tampa is shown about a mile to the south (Whitner 1848).

The initial settlement focused primarily on cattle. Citrus cultivation began in the 1870's and increased extensively in the latter years of the 19th century as railroads were built in the area. The north half of Section 19 and the north half of the southwest quarter of the section were deeded to George E. Gibson in 1884 (FDEP 2020), but it is unknown whether or not Gibson did anything with his property. He also owned part of adjacent Section 18 (FDEP 2020).

According to a previous survey of the road alternatives, most of this area was part of the citrus groves of Hi-Acres Grove, Inc. by the 1930s. By the mid-20th century, the project area had been cleared at least once and appeared to be in agriculture. Freezes in the 1980s led to Hi-Acres selling land in the area, much of it to the City of Orlando for the WC II Project (Keel 2016). More recently the area north of the east half of the Area of Potential Effect (APE) has been developed, and there are roads and stormwater retention ponds to the south and north of the both the east and west halves. The project corridor is open cleared field and is being used for water infiltration/aquifer recharge by WC II.

Results and Recommendations

The APE is owned by Orange County and/or the City of Orlando, primarily as part of the WC II area. The east half borders Hamlin Retail Partners (OCPA 2022). Most of this portion has been previously cleared for the development north of the APE. The eastern end is already paved (New Independence Parkway), providing access from the development to CR 545 (Avalon Road). Based on the USGS topographic map, the entire project area was in citrus agriculture as recently as 1980. Today most of the APE runs through pasture, but

there is a graded road and several WC II Rapid Infiltration Basins (RIBs) to the south and north. Installation of these RIBs may have impacted the APE during their construction.

There are no previously recorded cultural resources within the project APE. The existing development on the northeast side of the APE was previously surveyed but no cultural resources were recorded (ACI 2015). The 2016 survey of the road alternatives (Keel 2016) found no cultural resources within the preferred alternative. CR 545 and the portion of McKinney Road east of CR 545 have also been surveyed with no cultural resources in proximity to the APE (FMSF 2022). The closest identified cultural resources are over a half mile away close to Lake Ingram and associated wetlands.

The walkover examinations completed in 2020 and again in 2021 for the current review identified no evidence of cultural resources.

Although the APE is distant from major water sources such as Lake Ingram and its wetlands, there are depressions closer which might provide intermittent water sources. Based on the very well-drained soils and the possible intermittent water sources, the corridor APE has at best a medium potential for archaeological sites, although these sites are likely to be small and possibly disturbed by previous land use. Subsurface testing completed in 2016 did not recover any evidence of cultural resources (Keel 2016). There are no known historic activities other than agriculture. The complete Cultural Resources Review document prepared for the project can be found in PDS Report Appendix 1.

In the opinion of the project archaeologists (Commonwealth Heritage Group), the proposed road will not impact any cultural resources listed on or eligible for the National Register of Historic Places. No further research is recommended prior to construction.

3.2.5 Wetlands and Surface Waters

There are no wetlands or surface waters within the study corridor.

There are multiple WC II Rapid Infiltration Basins (RIBs) on the north side of the western half of the project and RIBs to the south on the eastern half. These RIBs are used by WC II to discharge treated effluent from wastewater treatment plants located in the Orlando area and pumped to these sites. The soils in this area were identified

as high recharge / fast percolation rates suitable for use as infiltration batteries. These areas were purchased, developed, and reserved to act as groundwater recharge basins to aid the recovery of our drinking water aquifer. The effluent is pumped into the various pods where they quickly disappear underground. No permanent pooling occurs beyond the pumping operations, and WC II is vigilant to make sure no vegetation sprouts within the basins. No project impacts to these basins will be allowed, nor are any impacts planned.

3.2.6 Floodplains

The Federal Emergency Management Agency (FEMA) has developed Flood Insurance Rate Maps (FIRM) for the project area. FIRM Panel No. 12095C0375F (unincorporated Orange County, Florida) contains the entire project limits. As seen in Figure 3.2.6, the blue lines depict the 100 Year Floodplain Limit which show the nearest limit is approximately ½ mile to the south around Lake Ingram. No areas of the project are within Zone A (Floodplain).

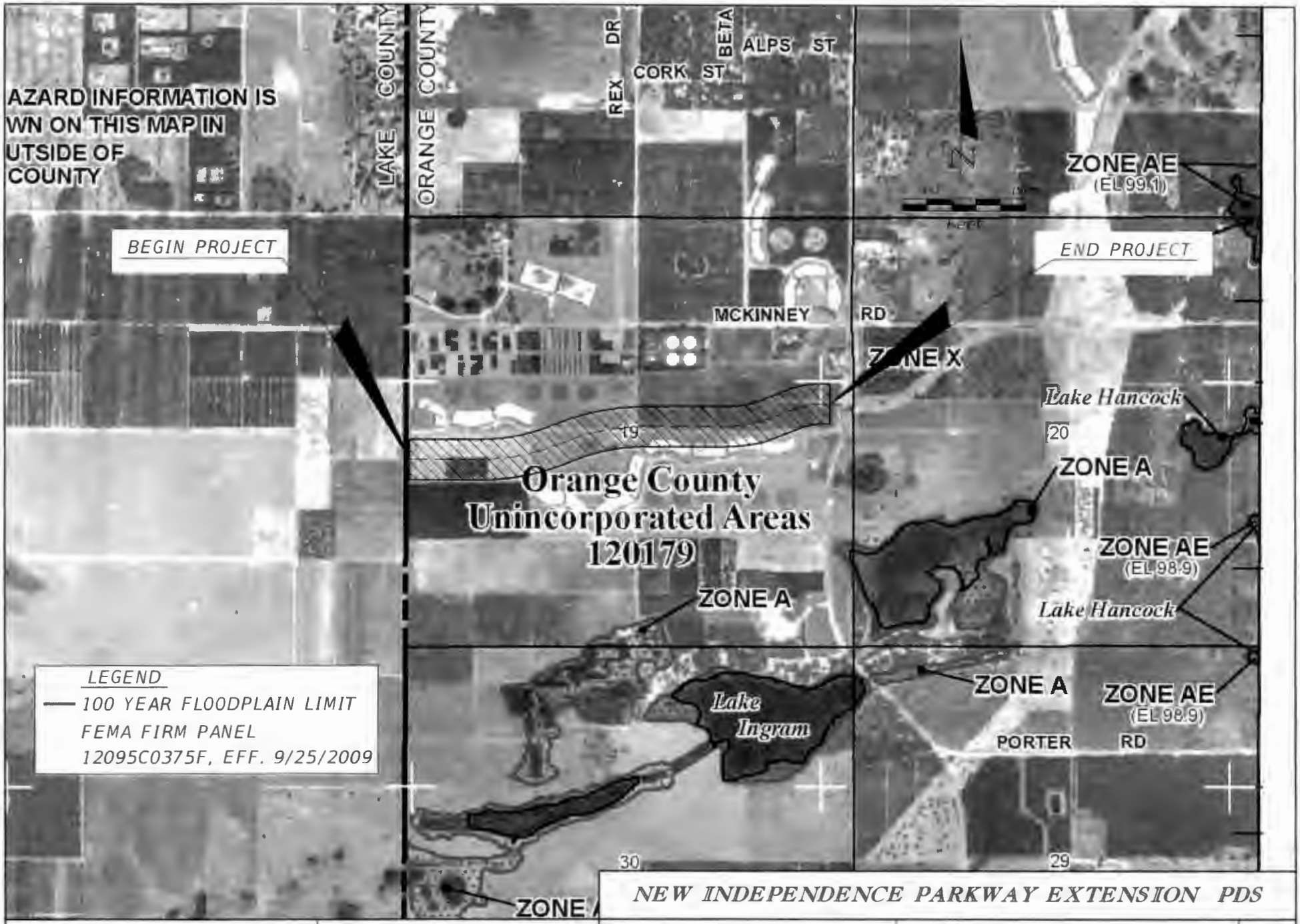
3.2.7 Environmental Land Use Types / Vegetative Communities

The project corridor currently supports two land use types / vegetative communities. The upland land use type / vegetative communities on the site are classified as Open Land (221) and Disturbed Land (740). There are no wetlands present. This area was mapped using the Florida Land Use, Cover and Forms Classification System, Level III (FLUCFCS, FDOT, 1999). The following provides a brief description of the land use types / vegetative community identified on the site:

Uplands:

221 – Open Land
A wide open grassy space dominates the western half of the site. It would best be classified as Open Land (211) FLUCFCS code. Vegetative species identified include live oak (Quercus virginiana), bahiagrass (Paspalum notatum), dogfennel (Eupatorium capillifolium), and Spanish needles (Bidens alba).

740 – Disturbed Land
Near a residential neighborhood is a section of barren land that covers the majority of the eastern half of the property. It would best be classified as the Disturbed Land (740) FLUCFCS code. Vegetative



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100 YEAR FLOODPLAIN

FIGURE 3.2.6

species identified include live oak (Quercus virginiana), Brazillian pepper (Schinus terebinthifolia), caesar weed (Urena lobata), cabbage palm (Sabal palmetto), dogfennel (Eupatorium capillifolium), passion flower (Passiflora sp.), cogon grass (Imperata cylindrica), bahiagrass (Paspalum notatum), rosary pea (Abrus precatorius), muscadine vine (Vitis rotundifolia), blackberry (Rubus pensilvanicus), rose natal grass (Melinis repens), and Spanish needle (Bidens alba).

3.2.8 Protected Species – Flora & Fauna

Using methodologies outlined in the Florida's Fragile Wildlife (Wood, 2001); Measuring and Monitoring Biological Diversity Standard Methods for Mammals (Wilson, et al., 1996); Wildlife Methodology Guidelines (1988); and Florida Fish and Wildlife Conservation Commission's Gopher Tortoise Permitting Guidelines (revised April 2013); an assessment for "listed" floral and faunal species was conducted at the site in January 2022. This assessment, which covered approximately 90% of the subject site's developable area, included both direct observations and indirect evidence, such as tracks, burrows, tree markings and birdcalls that indicated the presence of species observed. The assessment focused on species that are "listed" by the Florida Fish and Wildlife Conservation Commission's (FFWCC's) Official Lists - Florida's Endangered Species, Threatened Species and Species of Special Concern (June 2021) that have the potential to occur in Orange County. No plant species "listed" by either the state or federal agencies were identified on the subject site during the assessments conducted.

The following is a list of those wildlife species identified by direct observation and / or indirect evidence observed during the field evaluation of the project corridor:

<u>Reptiles and Amphibians:</u>
Black Racer *(Coluber constrictor)*
*Gopher Tortoise ***(gopherus polyphemus)***

<u>Birds:</u>
Black Vulture *(Coragyps atratus)*
Blue Jay *(Cyanocitta cristata)*
Northern Mockingbird *(Mimus polyglottos)*
Mourning Dove *(Zenaida macroura)*
Red-bellied woodpecker*(Melanerpes carolinus)*

Mammals:
Common Raccoon *(Procyon lotor)*
Eastern Cottontail Rabbit*(Sylvilagus floridanus)*

* Identified species is listed in the FFWCC's Official Lists - Florida's Endangered Species, Threatened Species and Species of Special Concern (June 2021).

Gopher Tortoise (Gopherus polyphemus)
State Listed as "Threatened" by FFWCC

Currently the gopher tortoise (Gopherus polyphemus) is classified as a "Category 2 Candidate Species" by USFWS, and as of September 2007 is now classified as "Threatened" by FFWCC. The basis of the "Threatened" classification by the FFWCC for the gopher tortoise is due to habitat loss and destruction of burrows. Gopher tortoises are commonly found in areas with well-drained soils associated with the pine flatwoods, pastures and abandoned orange groves. Several other protected species have a possibility of occurring in this area, as they are gopher tortoise commensal species. However, none of these commensal species were observed during the survey.

The project area was surveyed for the existence of gopher tortoises through the use of pedestrian transects. The survey covered approximately 90% of the suitable habitat present within the subject property boundaries. A combined twelve active / inactive gopher tortoise burrows were observed and recorded using GPS technology. Based on these twelve potentially occupied burrows, it is estimated that approximately eight may be occupied. This number is based on the factored occupation rate of 0.614 (Auffenburg-Franz). Therefore, for the purpose of estimating costs associated with the subject project, as many as eight gopher tortoises are estimated to occupy these burrows.

Resolution of the gopher tortoise issue will be required by FFWCC via the permitting process prior to the proposed construction activities.

Bald Eagle (Haliaeetus leucocephalus)
State protected by F.A.C. 68A-16.002 and federally protected by both the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940)

No Bald Eagles were observed within the subject site during the wildlife survey and there is no habitat within the 660-foot recommended protective buffer zone suitable to support eagle nesting. As such, there should be no constraints by the Bald Eagle Management Guidelines issued by the USFWS pertaining to the development of the project.

Wood Stork (Mycteria americana)
Federally Listed as "Endangered" by USFWS

The subject site is shown to be located within a Wood Stork Nesting Colony Core Foraging Area. Wood Storks typically nest colonially in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). The Wood Stork (Mycteria americana) is listed as "Endangered" by the USFWS.

Based on a review of available databases, there is no record of a Wood Stork rookery on or within close proximity to the project. No Wood Storks were observed within the subject site during the wildlife survey and there is no habitat to support this species. As such, there should be no constraints pertaining to the development of the project.

USFWS Consultation Areas

The US Fish and Wildlife Service (USFWS) has established "consultation areas" for certain listed species. Generally, these consultation areas only become an issue if USFWS consultation is required, which is usually associated with permitting through the US Army Corps of Engineers. The reader should be aware that species presence and need for additional review are often determined to be unnecessary early in the permit review process due to lack of appropriate habitat or other conditions. However, the USFWS makes the final determination.

Consultation areas are typically regional in size, often spanning multiple counties where the species in question is known to exist. Consultation areas by themselves do not indicate the presence of a listed species. They only indicate an area where there is a potential for a listed species to occur and that additional review might be necessary to confirm or rule-out the presence of the species. The additional review typically includes the application of species-specific criteria to rule-out or confirm the presence of the species in question. Such criteria might consist of a simple review for critical habitat types. In other cases, the review might include the need for species-specific surveys using established methodologies that have been approved by

the USFWS. The following paragraphs include a list of the USFWS Consultations Areas associated with the subject site. Also included, is a brief description of the respective species habitat and potential for additional review:

Florida Scrub-Jay (Aphelocoma coerulescens)
Federally Listed as "Threatened" by USFWS

Currently the Florida Scrub-Jay is listed as threatened by the USFWS. Florida Scrub Jays are largely restricted to scattered, often small and isolated patches of sand pine scrub, xeric oak, scrubby flatwoods, and scrubby coastal stands in peninsular Florida (Woolfenden 1978a, Fitzpatrick et al. 1991).

No Scrub Jays were observed on the subject site during the cursory survey. A formal Scrub-Jay survey may be required by the USFWS to determine if Scrub Jays exist on the subject property.

Sand Skink (Neoseps reynoldsi)
Federally Listed as "Threatened" by USFWS

The subject site falls within the Sand Skink Consultation Area for the United States Fish and Wildlife Service (USFWS). The sand skink is listed as "Threatened" by the USFWS.

The results of the pedestrian survey in January of 2022 show no evidence (i.e. sinusoidal tracks) that indicate the presence of the sand skink. However, the site is within the USFWS Sand Skink Consultation Area, contains suitable well drained soil types, and is above the 80-foot elevation requirement. Due to these factors, it is advisable to conduct a formal sand skink survey, as it may be required by federal, state, and/or local government permitting agencies.

Everglade Snail Kite (Rostrhamus sociabilis)
Federally Listed as "Endangered" by USFWS

The subject site falls within the USFWS Consultation Area for the Everglade Snail Kite. Currently the Snail Kite is listed as "Endangered" by the USFWS.

No Snail Kites were observed within the subject site during the wildlife survey conducted. There is no Everglade Snail Kite habitat within the subject property, therefore no further action is required.

The complete Environmental Assessment Report prepared for the project can be found in PDS Report Appendix 2.

3.2.9 Soil Survey & Geotechnical Data

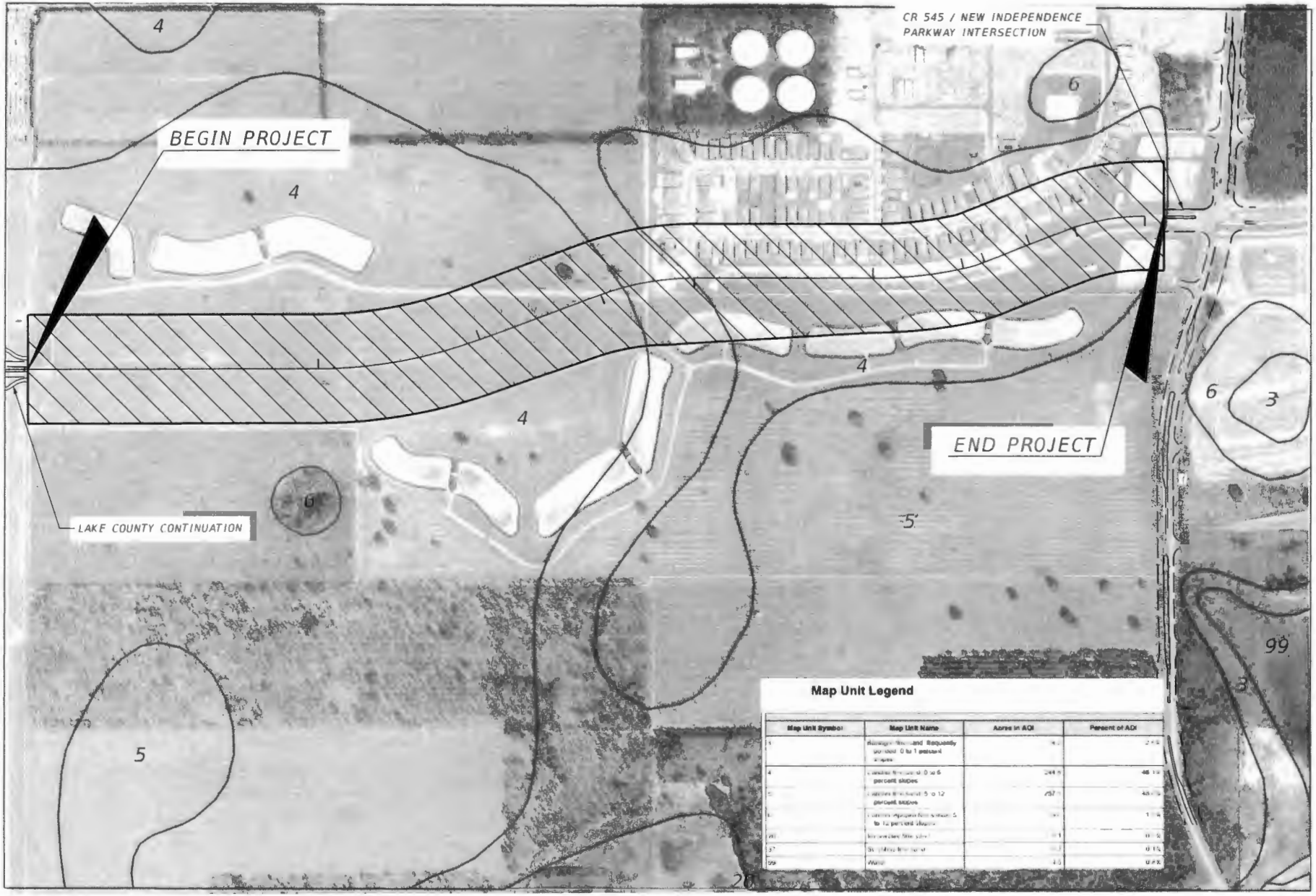
The groundwater hydrogeology of Central Florida can be described in terms of the nature and relationship of three basic geologic strata. The near surface sand stratum is fairly permeable and comprises the water table (unconfined) aquifer. The soils in this area are generally Type A soils and the water table in this area is at a depth of greater than 80 inches (6.7 feet) below the natural surface. The actual depth to groundwater however, may vary from that described in the Soil Survey. This will depend on many factors including the presence of drainage swales, ditches, irrigation and potable water wells, and other changes in hydrogeological conditions subsequent to the publication of the Soil Survey.

Based on a review of published topographic maps, the Soil Conservation Service (SCS) Soil Survey of Orange County, Florida and the USGS Quadrangle map, the study area generally slopes from north to south. The ground elevation appears to range from approximately +180 feet NGVD at the western limit to approximately +200 feet NGVD near the mid-point to approximately +185 feet NGVD at the eastern limit.

The SCS Soil Survey is a generally reliable and comprehensive published source of information regarding near-surface soil and groundwater conditions. The SCS Soil Survey of Orange County, Florida was reviewed for information regarding near surface soil conditions within the project area and is depicted in Figure 3.2.9. The following soils, which are mapped in the SCS Soil Survey within the study area, are presented in the table below.

USDA Map Symbol	Description	Depth to Groundwater
# 4	Candler fine sand, 0 to 5 % slopes	> 80"
# 5	Candler fine sand, 5 to 12 % slopes	>80"

The following presents a brief description of the soil types mapped for the project corridor:



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SOIL SURVEY

FIGURE
3.2.9

Candler fine sand, 0 to 5 percent slopes is a nearly level to gently sloping, excessively drained soil found on the uplands. The surface layer of this soil type generally consists of very dark grayish brown fine sand about 5 inches thick. The seasonal high water table for this soil type is at a depth of more than 80 inches. Permeability of this soil type is rapid in the surface and subsurface layers and is rapid to moderately rapid in the subsoil.

Candler fine sand, 5 to 12 percent slopes is a sloping to strongly sloping, excessively drained soil found on the uplands. The surface layer of this soil type generally consists of dark grayish brown fine sand about 4 inches thick. The seasonal high water table for this soil type is at a depth of more than 80 inches. Permeability of this soil type is rapid in the surface and subsurface layers and is rapid to moderately rapid in the subsoil.

Given the nature of the existing undeveloped corridor, a comprehensive Soil Survey - which is usually performed during the final design phase of a roadway project - was conducted in late 2021 and early 2022. The detailed results of that field and laboratory work are contained in the Soil Survey Report found in the PDS Report Appendix 3. Summary findings applicable to this study include:

Typical Soil Boring Profile

The soil conditions encountered in the roadway and pond borings are shown on the Report of Auger Borings for Roadway and Report of Auger Borings for Ponds sheets found within the Soil Survey Report. The soil survey encountered three generalized soil strata within the survey limits to the maximum depths explored in the borings. In general, the soil stratification, based on visual examination is as follows:

Stratum No.	Description	AASHTO Classif.
1	Orangish-brown & grayish-brown to dk brown fine sand to fine sand w/ silt	A-3
2	Orangish-brown silty fine sand	A-2-4
3	Orangish-brown clayey fine sand	A-2-6

The roadway borings typically encountered Stratum 1 soils within the explored depths of the borings. Stratum 2 soils were encountered in a few of the roadway borings, typically below a depth of about 10 feet.

The pond borings typically encountered Stratum 1 soils to the termination depth of 20 feet. Stratum 3 soil was encountered in a single pond boring (PB-1) at depth of about 18 feet to the boring termination depth of 20 feet.

Based on results of the roadway borings and anticipated proposed grades, the minimum separation of 2 feet is anticipated to be easily achieved throughout the project alignment.

Pond Borings

In general, borings performed at the 3 stormwater pond alternatives encountered Stratum 1 (A-3) soils to the termination depth of 20 feet. Stratum 3 (A-2-6) soils were encountered at one boring (PB-1) at a depth of about 18 feet to the boring termination depth of 20 feet.

A summary of the recommended pond parameters is presented in the Soil Survey Report found in the PDS Appendix 3 (see Table 4 inside the Soil Survey Report Appendix).

Embankment Use

The material from Stratum 1 (A-3) and Stratum 2 (A-2-4) can be classified as Select and used as roadway embankment in accordance with FDOT Standard Plans Index 120-001 of the Standard Plans for Road Construction. Material from Stratum 2 (A-2-4) may retain excess moisture and may be difficult to dry and compact. The borings performed along the proposed roadway alignment primarily encountered Stratum 1 soils to depths of about 5 to 10 feet. Stratum 3 (A-2-6) is Plastic material and if encountered during construction, should be removed in accordance with Standard Plans Index 120-002.

If other plastic and / or organic material is encountered along the project alignment or ponds during construction, these materials should be removed / utilized in accordance with FDOT Standard Plans Indices 120-001 and 120-002.

LBR Testing

Laboratory testing of the three bulk soil samples indicated design LBR values of 30 (FDOT Mean method) and 34 (FDOT 90% method). Modification of the in-situ soil to achieve a minimum LBR of 40 (typical) will therefore be required of the contractor.

Permeability Testing

Laboratory permeability testing was performed on soil samples obtained from the stormwater pond option areas. The theoretical

vertical unsaturated and theoretical horizontal saturated permeability rates both ranged from 7 to 9 feet per day. Given these rates and the depth to estimated seasonal high groundwater, we expect the pond(s) to operate as dry retention facilities with quick recovery.

Corrosion Series Testing

A series of six corrosion tests were performed on soil samples obtained along the project alignment from the proposed roadway and pond areas. These results indicate that the subsurface environment ranges from slightly to extremely aggressive (pH = 4.9) for use in selection of an appropriate class of concrete or steel; in accordance with FDOT Standards.

Results of all testing (LBR, Permeability & Corrosion) are presented in their respective tables, as well as the results of the field borings are found within the Soil Survey Report (see PDS Report Appendix 3).

3.2.10 Contamination / Hazardous Material Sites

A desk top review of the FDEP database "Maps Direct" and Environmental Database Report (EDR) was completed to identify reported contamination located near the referenced project. The available database was reviewed as part of the Contamination Screening Evaluation Report (CSER) development in general accordance with the FDOT Project Development and Environment (PD&E) Manual dated July 1, 2020.

The field site visit was conducted on December 22, 2021 to assist in the determination of risks associated with past activities and from potential sources of contamination. A total of six potential risk sites were identified based on site characteristics and / or operations observed during the field reconnaissance and review of available historical data. Below is a summary of the CSER findings. The full details are included in PDS Report Appendix 4.

Low Risk – Historical Citrus Grove Areas, Risk for the Overall Area within 0.25 mile Radius of Proposed Corridor: Risk Site (General)

Historical aerials indicate the presence of citrus groves from at least 1954 to 2017. The citrus groves are no longer present. Although pesticide and herbicide application are generally applied in accordance with manufacturer recommendations, many products contain arsenic which tend to accumulate in certain soil conditions, potentially creating risk by binding with the soils, or potentially infiltrating into the

groundwater. Soil chemistry is complex in relation to arsenic accumulation in soil or if arsenic has a potential to release or leach to the groundwater from potential past long-term use of pesticides, herbicides and related heavy metal components contained in agricultural products.

Based on review of the historical aerials and site reconnaissance, no obvious indication of the presence of pump houses, sheds and mix/load areas were apparent. In addition, the soil conditions listed as Candler soil type is a very sandy soil and not prone to absorbing arsenic or other agricultural based pesticides and herbicides contaminants. Therefore, the historical citrus grove area uses are considered Low Risk sites.

Low Risk – Former University of Florida - Research Facility: Risk Site 1
This former UF facility was used for as a field agricultural research facility. No specific historical information was found addressing the specific research activities performed on-site. The facility is no longer present and no visual soil staining was found during the site inspection. This site is regarded a Low Risk site.

Low Risk – Avalon Road Disaster Debris Management Site: Risk Site 2
The WC II facility located approximate 844 feet south of the ROW extension was formerly used for a temporary hurricane debris storage area. No additional information was available. Typically, these sites are used to store disaster wood and related storm debris and is regarded a Low Risk site.

Low Risk – Haines City Citrus Growers Association Avalon: Risk Site 3
The facility registered a 1,000-gallon aboveground storage tank (AST) with no reported discharge or regulatory issues. This site is located 945 feet northeast of the proposed ROW and is regarded a Low Risk.

Low Risk – Winter Garden Citrus Growers Association (aka Wincey Groves): Risk Site 4
A registered facility with a 10,000-gallon AST reported a fuel oil discharge on June 9, 2010, and July 19, 2015. A Source Removal Report dated June 2019 documents the removal of all soil impact and FDEP issued a Site Rehabilitation Completion Order (SRCO) in 2019. The site has been redeveloped into single family housing and is regarded a Low Risk site.

Low Risk – Water Conserv II: Risk Site 5
The site has a single active 6,000 gallon unleaded AST on-site. No Discharges have been reported. This site is considered a low risk.

Each identified potential sites appear to present Low Risk for contaminant impacts based on potential construction activities. No Medium or High Risk sites were identified within the project corridor, and no other petroleum impacts or other contamination sites were identified within the study limits. No further action is required.

In accordance with Orange County Risk Management requirements, the following action items and conditions are incorporated as follows.

- Historical Citrus Grove Areas, Section 7.0: An empty gas can and a 55-gallon drum of hydraulic oil at about 25 percent full was discovered near adjacent to these barriers. Refer to Exhibit 3B, Photographs 16, 17, and 18.

  Action Required: The 55-gallon drum and gasoline container must be removed from the site and the area re-inspected for potential impacts prior to the right of way acquisition or transfer.

- Existing or New Fuel Tank Facilities:

  Action Required: All existing and any new fuel facilities installed after February 3, 2022 located within a 1/4 -mile of the proposed right of way fuel discharge data shall be updated and monitored for potential discharges prior to road construction activities.

- Winter Garden Citrus Growers Association (aka Wincey Groves), Section 7.0: Winter Garden Citrus had a source removal in 2019 and was given a SRCO by FDEP (2019).

  Action Required: In the event construction dewatering is required or occurs within the vicinity of the former Winter Haven Citrus Growers Association site discharge location, dewatering effluent should be monitored for residual petroleum impacts.

In accordance with 2020 FDOT PE&E Manual, this CSER will expire on February 3, 2025 corresponding to the original draft CSER issuance date.

In addition, the CSER meets the FDOT 2020 PD&E manual requirements and does not the American Society of Testing Materials (ASTM) E1527 Phase I Environmental Site Assessment Standards.

3.2.11 Environmental Permit Coordination

Preliminary coordination has been initiated with several regulatory agencies, including:

- Orange County Environmental Protection Division
- South Florida Water Management District
- US Army Corps of Engineers

Orange County Environmental Protection Division

Conservation land is to be determined within the project area. There are no wetlands nor wetland impacts within the project corridor.

South Florida Water Management District

An environmental resource permit is to be determined. There are no wetlands nor wetland impacts within the project corridor.

US Army Corps of Engineers

There are no wetlands nor wetland impacts within the project corridor.

3.2.12 Existing Permits

At the time of this report, the following stormwater permits exist within the vicinity of the proposed corridor. These permits include:

- Hamlin West ERP No. 48-100701-P Mass Grading Overall, located in the east side of Avalon Road (CR 545) from SR 429 to McKinney Road.
- New Independence Parkway West ERP No. 48-100844-P. The project includes widening New Independence Parkway from 2 lanes to 4-lanes divided between SR 429 and Avalon Road.
- Hamlin Southwest Subdivision ERP No. 48-103252-P, located at the northeast corner of Avalon Road and Porter Road.
- Horizon Health Campus.
- Orange County National Golf ERP No. 48-00885-P located on the east side of Avalon Road (CR 545) south of SR 429.
- Porter Road Widening ERP No. 48-02176-P between CR545 and Hamlin Groves Trail. The project includes the widening of Porter Road from 2 lanes to 4-lanes divided.

- Schofield Class III Landfill ERP 48-00639-S located at the southwest quadrant of Schofield Road and Avalon Road (CR 545).
- Silverleaf Phase 1 Infrastructure & Phase 2 & 3 Mass Grading ERP 48-104132-P located on the west side of Avalon Road (CR 545) from Schofield Road to the Northern Entrance Road and from the Lake/Orange County line to Avalon Road (CR 545).
- Site 89 Elementary School ERP 48-104590-P.
- Site 132-M-W-4 Middle School ERP 48-104721-P.
- West Orange C&D Landfill ERP 48-016125-009-EM for the Orange County C&D Disposal Facility located in the northwest quadrant of the Schofield Road and Avalon Road (CR 545) intersection.

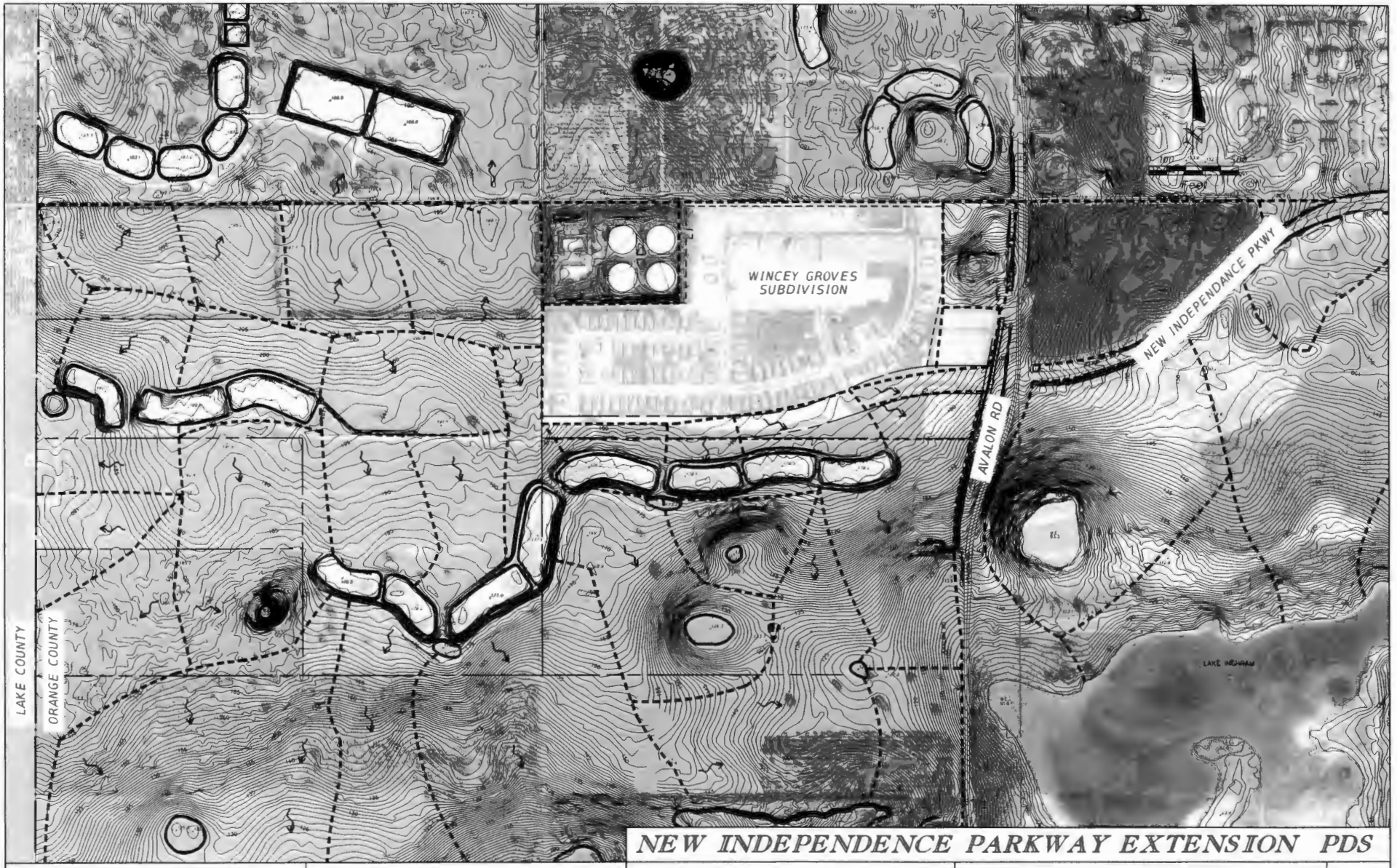
3.3 Existing Hydrology

This section of the report describes the existing hydrologic conditions of the project corridor. These descriptions are based on data collection including field investigations, review of maps and survey information, and previous reports and permits. Existing Orange County LIDAR information served as the basis for plotting much of the data necessary for the engineering, analysis, and design studies.

3.3.1 Drainage Basins

The limits of the corridor analysis are located within the jurisdiction of South Florida Water Management District (SFWMD). The corridor is within the Lake Ingram watershed, which is part of the Reedy Creek Basin, however, it is not in the RCID boundary or jurisdiction. The Lake Ingram watershed is a closed land-locked basin that receives stormwater runoff from land that is primarily vacant with agricultural activities. Extensive residential and commercial development is also occurring in the area as part of the Horizon West Development. The project corridor contains a considerable degree of topographic relief with the site and surrounding area discharging towards Lake Ingram along with several self-contained interconnected depressional surface water areas (see Figure 3.3.1).

WC II has several Rapid Infiltration Basins (RIBs) located in the vicinity of the project corridor and several deep wells. The RIBs are used for recharge of Florida's aquifer through the discharge of reclaimed water to the RIBs. Levels measured in the wells follow water levels in Lake Ingram very closely. This implies that Lake Ingram is well connected to the Floridan Aquifer and that lake levels are strongly influenced by pressure in the Floridan.



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EXISTING / PRE DEVELOPMENT
DRAINAGE BASINS

FIGURE
3.3.1

The Orange County Comprehensive Plan includes FLU 4.5.7 and FLU 4.5.8. FLU 4.5.7 requires that an analysis be completed to ensure that appropriate water recharge of the Floridan Aquifer can be maintained. The analysis must demonstrate that the recharge characteristics of water entering the soil in the post-development condition is comparable to that in the pre-development condition. FLU 4.5.8 requires an evaluation of the development impacts on listed plants and wildlife and wildlife habitats. If there are impacts to these natural resources, an evaluation of the impacts will be completed, and mitigation will be recommended.

3.3.2 Existing Roadway Drainage

The project corridor is within an undeveloped area. There is an existing unpaved access road for WC II maintenance, however existing drainage flows freely across the existing corridor. A paved roadway connection from the Wincey Groves Subdivision to Avalon Road (CR 545) exists at the east end of the project corridor. This 2-lane road was included with the Wincey Groves Subdivision construction and will likely need to be replaced with the new roadway. Drainage from this existing road flows into a stormwater collection system via curb inlets on the south side of the road, into a shallow dry retention pond and ultimately discharges to the existing roadside drainage swales on Avalon Road (CR 545).

3.3.3 Existing Cross Drains

There are no existing cross drains along the alignment. Existing drainage patterns allow any overland water to flow freely across the existing terrain.

ORANGE COUNTY GOVERNMENT
FLORIDA

SECTION 4 – TRAFFIC

KCG

4.0 TRAFFIC ANALYSIS

4.1 Existing Traffic Conditions

This section summarizes the existing conditions traffic data from previous studies (including traffic counts along Avalon Road, peak to daily ratio (K), directional split (D), and truck (T) factors). A review of previous studies and data related to the study segment and intersection was conducted. Following is a summary of the relevant data collected from those studies.

4.1.1 Previous Studies – Data Collection

The 2017 Avalon Road Design Traffic Report by VHB was refenced to collect the following traffic characteristics, as based on the procedures outlined in the FDOT's Project Traffic Forecasting (PTF) Handbook (January 2014). The following table presents the factors that were selected for use and are referenced in this DTTM:

Segment	Recommended Design Characteristics			
	K-Factor	D-Factor	T-Factor	DHT-Factor
Mainline Characteristics				
Avalon Road	9.0%	60.0%	7.0%	5.0%
Side Street Characteristics				
All side streets	9.0%	60.0%	2.0%	1.0%

The 2021 CR 545 (Avalon Road) at West Town Center PDS by TMC was also referenced to collect traffic count data including measured volume and turning movement counts, in addition to available FTO historical traffic count data. This information was supplemented by field counts collected by VHB in late 2020. Those counts and the other data was adjusted for base year conditions.

The final AADT and turning movement count figures, as well as the associated raw data, are provided in detail within the DTTM Report found in PDS Report Appendix 5. The Base Year (2020) AADT's are presented in the table below:

Roadway	Segment	Base Year 2020 AADT
CR 545 (Avalon Road)	South of Schofield Road	14,000
	Schofield Road to Porter Road	8,000
	Porter Road to New Independence Pkwy	9,000
	New Independence Pkwy to McKinney Rd	13,000
	North of McKinney Road	10,000
Schofield Road	West of Avalon Road	7,000
Porter Road	East of Avalon Road	4,000
New Independence Pkwy	East of Avalon Road	7,000
McKinney Road	East of Avalon Road	700

4.1.2 Florida Traffic Online (FTO)

The following traffic data was reported in the year 2020 FTO for Avalon Road south of Old YMCA Road, which is the only traffic count station that is near the study area.

- K-Factor – 9%
- D- Factor – 53%
- T factor – 6.6%

4.1.3 Recommended Design Traffic Factors

Based on comparison of design traffic factors from both the VHB and TMC reports, FTO, proposed land uses near the study area, and engineering judgment, the following factors were recommended:

- K-Factor – 9%
- D- Factor – 54%
- T factor – 8%
- DHT Factor – 2%

At NIP & Future Valencia Pkwy	Recommended 2045 AADT (Valencia Parkway 2- Lanes)	Recommended 2045 AADT (Valencia Parkway 4- Lanes)	Recommended 2047 AADT
Wellness Way (West Leg)	43,264	43,495	43,900
New Independence Pkwy (East Leg)	35,584	35,183	35,500
Valencia Parkway (South Leg)	10,411	12,455	12,600

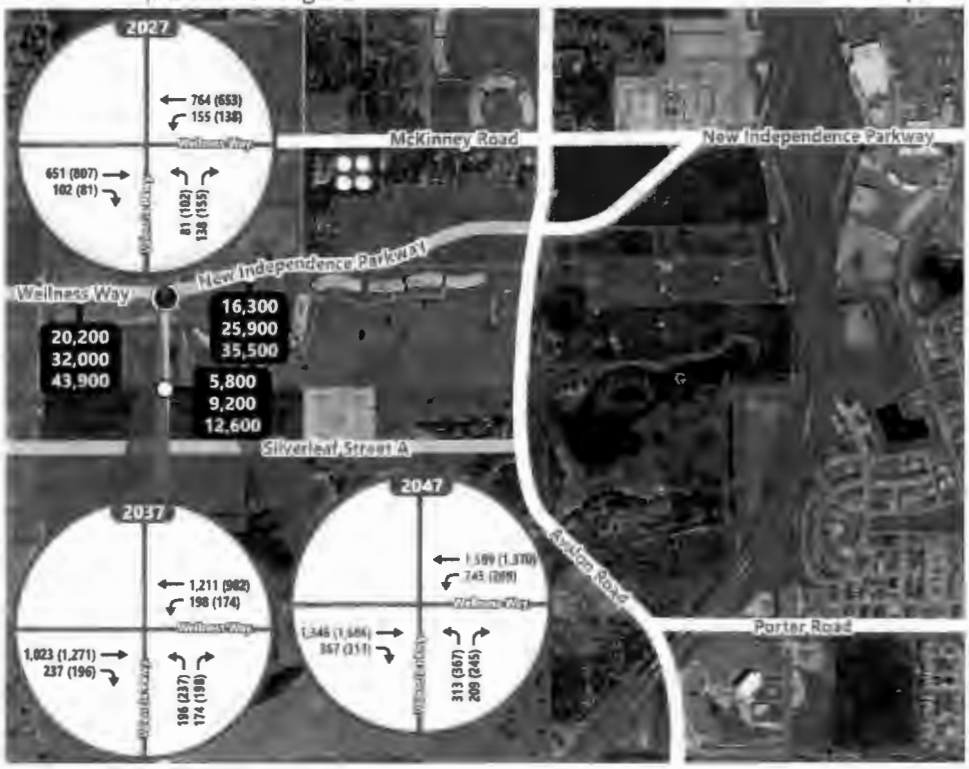
The Design Year 2047 AADT's were obtained by using the Bureau of Economic and Business Research (BEBR) Low (0.50%) linear growth to the model based 2045 AADT's shown above. The Opening Year (2027) and Mid-Design Year (2037) AADT's were estimated based on AADT's on New Independence Parkway from the West Town Center PDS, June 2021. Those AADT's are presented below:

4.2 Future Traffic Forecasts

The future traffic volumes (AADT) for the New Independence Parkway Extension are as follows: (west of Valencia node/east of Valencia node)

- Opening Year (2027) = 20,200 / 16,300
- Mid-Design Year (2037) = 32,000 / 25,900
- Design Year (2047) = 43,900 / 35,500

Below is a portion of Figure 2 found in Section 4 of the VHB DTTM Report.



The complete Design Traffic Technical Memorandum (DTTM) is found in Appendix 5.

ORANGE COUNTY GOVERNMENT
FLORIDA

SECTION 5 – DESIGN CRITERIA

KCG

5.0 DESIGN CRITERIA

5.1 DESIGN CRITERIA

Roadway design criteria has been established for each design element. The design criteria used for the preliminary design of the New Independence Parkway Extension PDS was developed from several sources including the FDOT Design Manual (FDM), the FDOT Standard Plans and the Manual on Uniform Traffic Control Devices. In addition, Orange County's design standards were also adhered to. Specific design criteria to be used for the development of the proposed improvements are shown below:

DESIGN ELEMENT	CRITERIA	SOURCE
Design Speed	45 mph	Study by KCG
Roadway Classification	Urban Arterial	Scope
Access Management	Class 5	FDOT RCI Database
Context Classification	C3R/C3C	FDM Table 200.4.1
Connection Spacing	245 ft.	FDM Table 201.4.2
Median Opening Spacing Directional	660 ft.	FDM Table 201.4.2
Median Opening Spacing Full	1320 ft.	FDM Table 201.4.2
Signal Spacing	1320 ft.	FDM Table 201.4.2
Design Vehicle	WB-62FL	FDM Section 201.6
A. Typical Section		
Number of Lanes	4	Scope
Desirable Lane Widths	11 ft.	FDM Table 210.2.1
Minimum Lane Widths	11 ft. (R/W and existing conditions are stringent controls)	FDM Table 210.2.1
Minimum Sidewalk Width	6 ft.	FDM Table 222.2.1
Minimum Median Width	22 ft.	FDM Table 210.3.1
Cross Slope		
Inside Lane	0.02	FDM Figure 210.2.1
Outside Lane	0.03	FDM Figure 210.2.1
Border (from lip of gutter)	14 ft.	FDM Table 210.7.1

Roadside Slopes		
Front Slope	1:2 or to suit property owner, not flatter than 1:6 / Height of Fill: 0-6ft	FDM Table 215.2.3
Back Slope	1:2 or to suit property owner, not flatter than 1:6 / Height of Fill: All	FDM Table 215.2.3
Transverse Slope	1:4 / Height of Fill: All	FDM Section 215.2.3
Driveway Grades		
Commercial	10%	FDM Figure 214.4.4
Residential	28%	
Max Breakover	14%	
B. Horizontal Geometry		
Maximum Deflection (no curve)	1°00'00"	FDM Section 210.8.1
Maximum Deflection Through Intersection	3°00'00"	FDM Table 212.7.1
Minimum Stopping Sight Distance	360 ft.	FDM Table 210.11.1
Desirable Length of Horizontal Curve	675 ft.	FDM Table 210.8.1
Minimum Length of Horizontal Curve	400 ft.	FDM Table 210.8.1
Maximum Superelevation	5%	FDM Section 210.9.1
On Tangent	80%	FDM Section 210.9.1
Within Curve	20%	FDM Section 210.9.1
Superelevation Transition Slope Rate	d = 1:150	FDM Table 210.9.3
Minimum SET Length	75 ft.	FDM Table 210.9.3

C. Vertical Geometry		
Maximum Grade	6%	FDM Table 210.10.1
Minimum Grade	0.30%	FDM Section 210.10.1.1
Minimum Distance Between VPI's	250 ft.	FDM Section 210.10.1.1
Maximum Change in Grade (w/o VC)	0.70%	FDM Table 210.10.2
Minimum Crest Vertical Curve	K=98	FDM Table 210.10.3
Minimum Length (3V)	135 ft.	FDM Table 210.10.4
Minimum Sag Vertical Curve	K=79	FDM Table 210.10.3
Minimum Length (3V)	135 ft.	FDM Table 210.10.4
Base Clearance Above Est. Seasonal High	1 ft.	FDM Section 210.10.3
D. Turn Lanes & Queue Length		
Queue Length Minimum	100 ft.	FDM Section 212.14.2
Total Decel Distance	L = 185 ft.	FDM Exhibit 212-1
Clearance Distance	L1 = 85 ft.	FDM Exhibit 212-1
Brake to Stop Distance	L2 = 100 ft.	FDM Exhibit 212-1
Taper Length (Single Left)	Δ = 50 ft.	FDM Exhibit 212-1
Taper Length (Dual Left)	Δ = 100 ft.	FDM Exhibit 212-1
E. Roadway Clearance and Offsets		
Vertical Clearance for OH Sign Structures	17 ft. 6 in.	FDM Section 210.10.3
Vertical Clearance Signals	17 ft. 6 in.	FDM Section 210.10.3
Light Pole Offset	4 ft. from face of curb	FDM Table 215.2.2
Utility Offset	4 ft. from face of curb	FDM Table 215.2.2
Signal Pole Offset	4 ft. from face of curb	FDM Table 215.2.2
Trees Offset	4 ft. from face of curb	FDM Table 215.2.2
Clearance to Drop-Off	22 ft. from traveled way	FDM Figure 215.3.3
Other Obstacles Offset	4 ft. from face of curb	FDM Table 215.2.2
NOTES:		
(1) FDOT Design Manual, 2022	(2) FDOT Standard Plans for Road & Bridge Construction 2022-23	

ORANGE COUNTY GOVERNMENT FLORIDA

SECTION 6 – IMPROVEMENT ALTERNATIVES

KCG

6.0 IMPROVEMENT ALTERNATIVES DEVELOPMENT AND ANALYSIS

6.1 Alternative Typical Sections

Two primary alternative typical sections were considered during the course of this study. Both alternatives provide two lanes in each direction as well as a raised median, closed drainage system with curb and gutter and accommodates for both pedestrian and cyclist needs.

These typical section options were heavily influenced by the fact that the Roadway Agreement had established a nominal right-of-way width that varies between 120 feet and 200 feet for the proposed facility. Likewise, coordination with Lake County to the west, and more significantly, reflecting Orange County's recently widened New Independence Parkway facility to the east, affected our typical section evaluation.

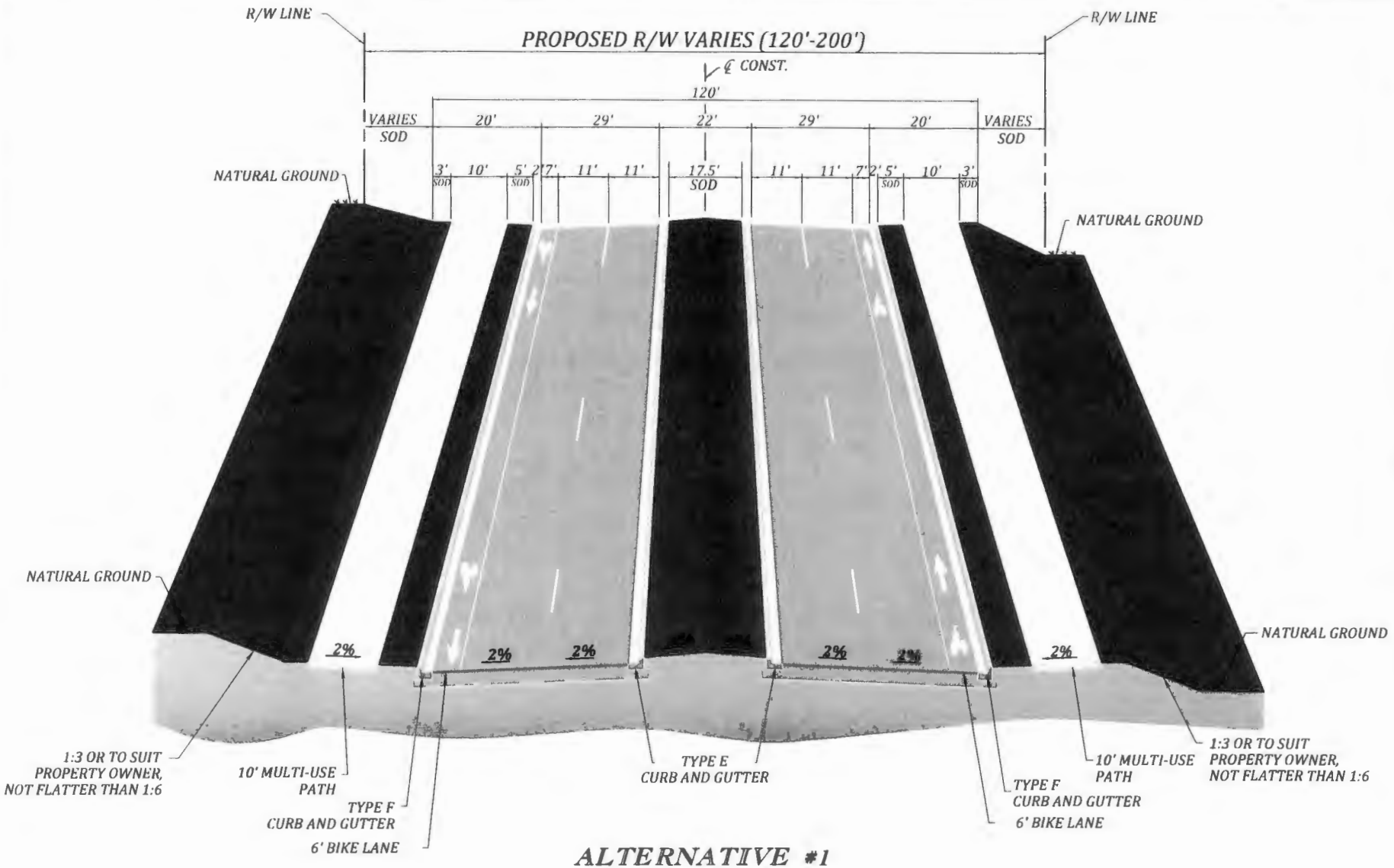
The primary difference between the two alternatives is based on accommodating cyclists. Typical Section Alternative #1 (see Figure 6.1a) shows on-street bike lanes in both directions and Alternative #2 (see Figure 6.1b) accommodates the cyclist on 10-foot-wide multi-use paths located on both the north and south sides of the proposed roadway.

It should be noted that the typical section in Lake County accommodates on-street bike lanes, whereas the recently constructed section of New Independence Parkway east of Avalon accommodates cyclists on 10-foot-wide multi-use paths.

Typical Section Alternative #1 uses 11-foot lanes in each direction and Typical Section Alternative #2 uses 11-foot lanes in each direction. Both alternatives employee a raised median with Type E curb and gutter adjacent to the inside lanes and Type F curb and gutter on the outside of the travel way.

6.2 Access Management Determination

The study team coordinated with the county regarding access management options. It was determined that there will be full median openings at both connections to the Wincey Groves subdivision with no other median openings to the west. This decision was based primarily on the fact that all land west of Wincey in WC II property and the only future proposed connection would be the planned Valencia Parkway to be constructed by others. Since the precise



ALTERNATIVE #1
TYPICAL SECTION
11-FT LANES W/ ON-STREET BIKE LANES

NEW INDEPENDENCE PARKWAY EXTENSION PDS

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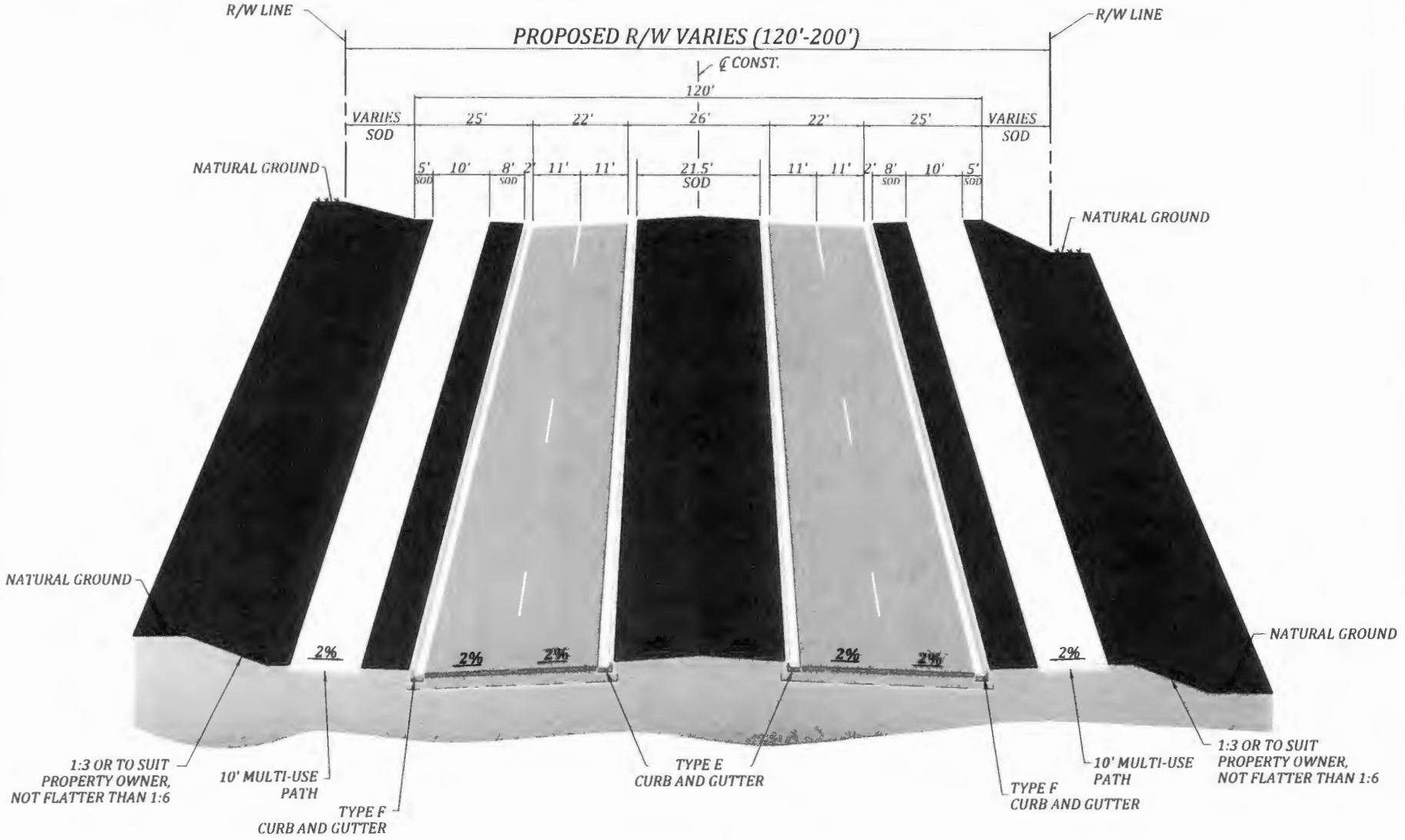
ENGINEERING / PLANNING

ORANGE COUNTY
PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT

TYPICAL SECTION (1)

FIGURE 6.1a



ALTERNATIVE #2
TYPICAL SECTION
11-FT LANES & NO BIKE LANES

NEW INDEPENDENCE PARKWAY EXTENSION PDS

KCG KELLY, COLLINS & GENTRY, INC. ENGINEERING / PLANNING	ORANGE COUNTY PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT	TYPICAL SECTION	FIGURE 6.1b

location of that future intersection has not been determined and will be heavily influenced by the presence of a deep depression located approximately 500 feet south of the roadway alignment on a parcel of undeveloped private property. For this reason, the planning and design of the New Independence Parkway Extension has taken into account a range of viable intersection locations for a 400-to-600-foot stretch along the alignment. The range of locations of a future Valencia Parkway intersection is shown by the shaded rectangle, along with an insert below that shows the intersection lane configuration seen on Figures 6.3a, 6.3b and 6.3c.

Since the timing of the extension of New Independence Parkway to the west into Lake County is uncertain, it has been decided that once the new road is constructed, that public access should not be allowed west of the westerly Wincey Groves intersection. Restricting public access by means of a physical fence / barrier will reduce trespassing, illegal dumping, loitering, etc. and other undesirable activity.

6.3 Develop Alternative Alignment Improvement Concepts

Development of the various alignment alternatives was restricted to the fact that both ends of the project are constrained. The west end or "Begin Project" was established previously by leadership with both Lake County and Orange County during a previous Wellness Way Project. The east end is fixed at the existing Avalon Road / New Independence Parkway intersection. Additionally, the roughly eastern half of the project alignment was established previously - whereby the southern 150 feet of the original "Wincey Groves parcel" was dedicated by the previous property owner for the alignment of The New Independence Parkway Extension.

That being the case, only slight variations in the alignment were possible. The three alternatives developed and analyzed consist of:

Alternative Alignment A:
This alignment (see Figure 6.3a) replicates the alignment previously developed by the earlier study and referenced in the Roadway Agreement.

Alignment Alternative B:
This alignment shown in Figure 6.3b applies different curvature which takes advantage of the existing terrain with respect to the horizontal curvature and associated superelevations for the 45 miles per hour design speed. This alignment also avoids a large Live Oak due west of the Wincey Groves subdivision.

The horizontal curvature consists of two back-to-back curves of radius 2,083' and radius 1,206' respectively. The first curve allows the typical section to remain at normal crown while the radius of the second curve is superelevated at reverse crown, at 2%. The purpose for superelevating the easterly curve is to better fit the split profile we have developed south of the Wincey Groves Subdivision.

Alternative Alignment C:
Figure 6.3c shows the alignment option that introduces a tangent section of nearly 460' between the two curves by varying the horizontal curves east and west of the tangent section. This alignment also avoids the loss of the aforementioned large Live Oaks.

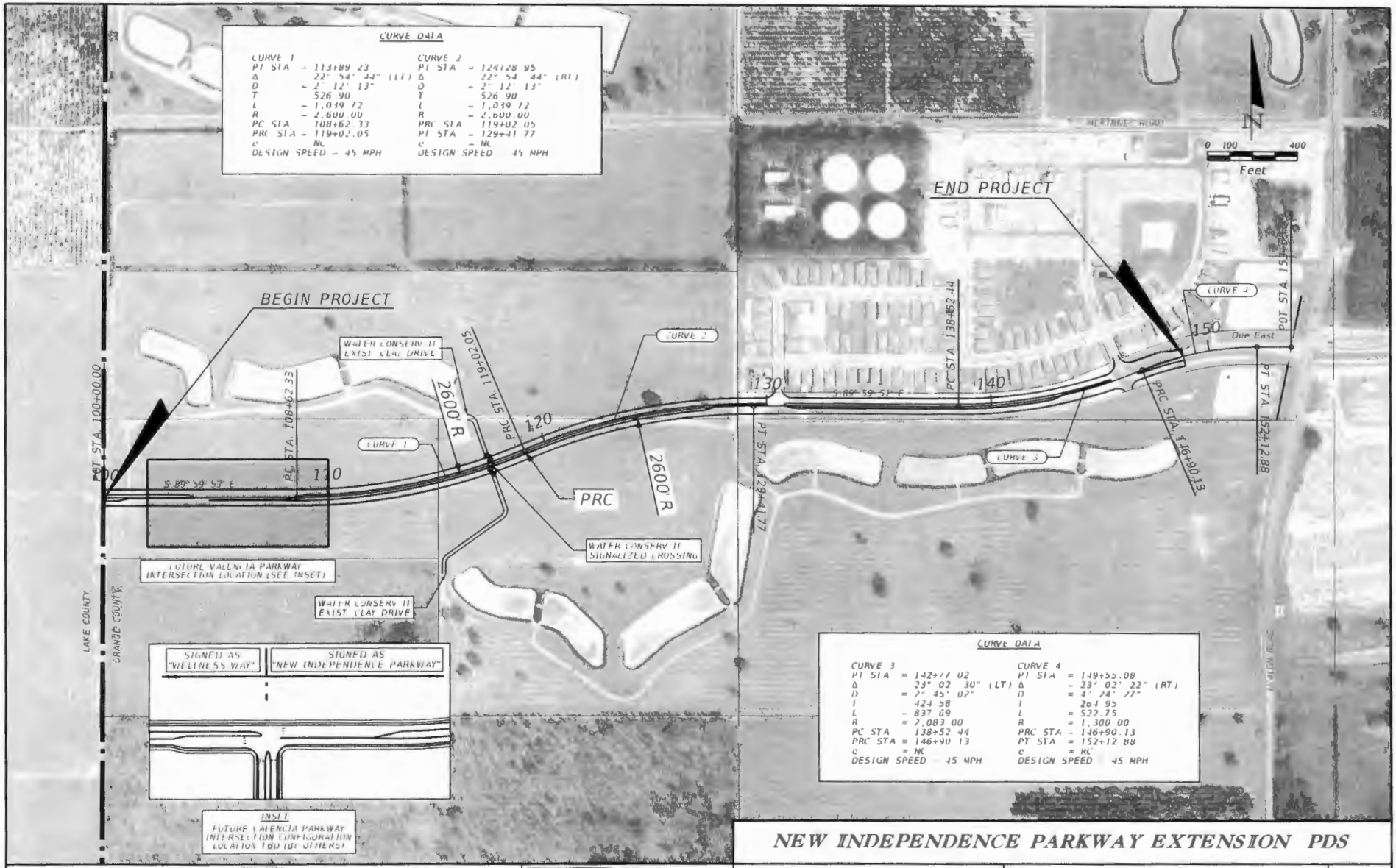
These horizontal curves of 2,083' radius and 1200' radius allow a superelevation of normal crown on the westerly curve and reverse crown for the easterly curve.

6.4 Analyze Alternative Alignment Improvement Concepts

An Alternatives Evaluation Matrix has been prepared to evaluate, document and compare the results of the evaluation analysis (see Table 6.4). The matrix is used to clearly identify the most viable improvement concept. Each of the three alternative alignments are used. The common practice of including a No-Build Option was not performed in the evaluation matrix since the No-Build Option is not feasible.

Each of the items studied under the alternative improvement concepts has been included in the matrix.

Because the alignment differences are subtle given the previously established "Begin Project" and the fact that the eastern alignment has already been established (and Right-of-Way conveyed to the County), there are few variations with which to compare the alternatives against each other.



NEW INDEPENDENCE PARKWAY EXTENSION PDS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KELLY, COLLINS & GENTRY, INC.
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ORANGE COUNTY
PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT

ALTERNATIVE ALIGNMENT (A)

SHEET NO. 6.3a

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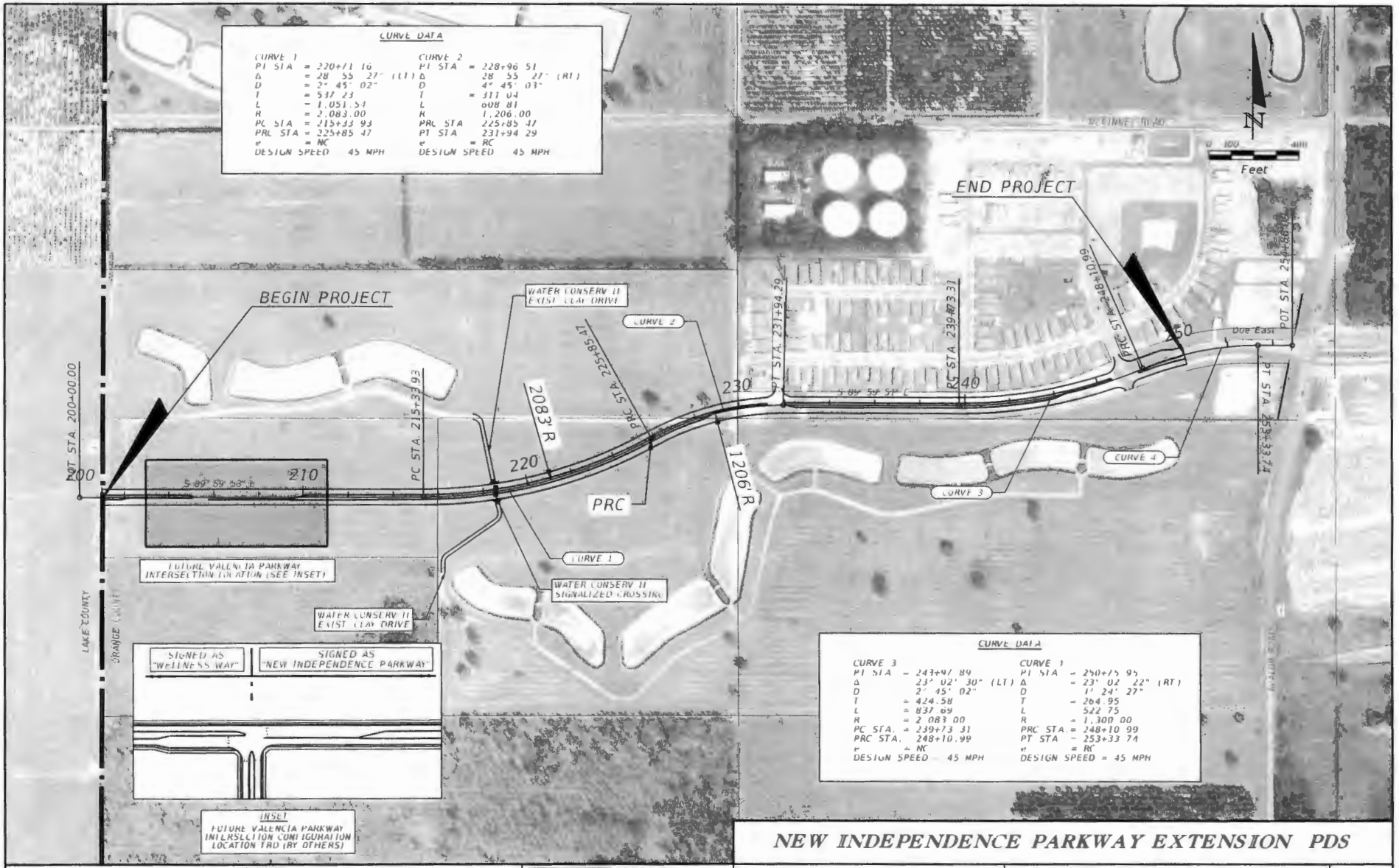

NEW INDEPENDENCE PARKWAY EXTENSION PDS

REVISIONS

DATE	DESCRIPTION	DATE	DESCRIPTION

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ORANGE COUNTY
PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT

ALTERNATIVE ALIGNMENT (B)

SHEET NO. 6.3b

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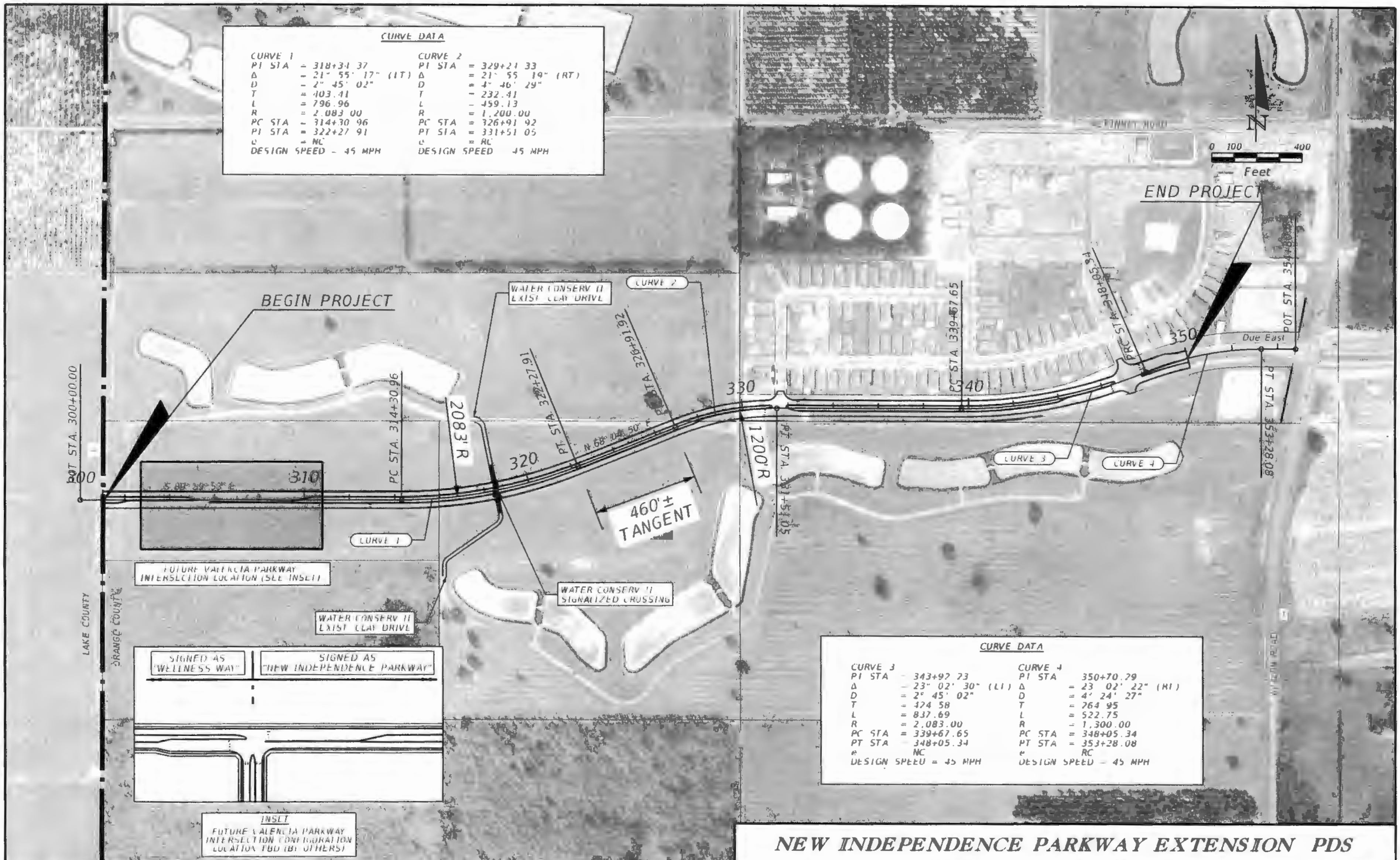

NEW INDEPENDENCE PARKWAY EXTENSION PDS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

KCG KELLY, COLLINS & GENTRY, INC.
ENGINEERING · PLANNING
1700 N. ORANGE AVE SUITE 400 ORLANDO FL 32804
407-898-7858 CERT. OF AUTHORIZATION NO. 7738
STEVEN M. KREIDT P.E. LICENSE NO. 39240

ORANGE COUNTY
Planning, Environmental and Development Services Department

ALTERNATIVE ALIGNMENT (C)

SHEET NO. 6.3c

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Table 6.4

Alternatives Comparison Matrix

	Alternative A Minimum RW = 120'	Alternative B Minimum RW = 120'	Alternative C Minimum RW = 120'
Evaluation Criteria	Replicates previous study	Two curves of 2,083' and 1,206', NC followed by RC	Two curves of 2,083' and 1,200', separated by 460' tangent. NC followed by RC
Relocations			
Number of Residential Acquisitions	0	0	0
Number of Business Acquisitions	0	0	0
Number of Parcels Impacted	2	2	2
Social, Natural, & Physical Impacts			
Social & Neighborhood	Low	Low	Low
Archaeological / Historical Sites	0	0	0
Threatened and Endangered Species	Low	Low	Low
Wetlands (acres)	0	0	0
Floodplains (acre-feet)	0	0	0
Potential High or Medium Ranked Contamination Sites	None	None	None
Estimated Costs (Present Day Costs)			
Design (15% of Construction)	$1,327,382	$1,347,670	$1,341,433
Right-of-Way Acquisition*	$659,250	$659,250	$659,250
Wetland Mitigation	$0	$0	$0
Roadway Construction	$8,849,213	$8,984,467	$8,942,890
Reimbursable Utility Relocation	$0	$0	$0
CEI (15% of Construction)	$1,327,382	$1,347,670	$1,341,433
Total Cost	$12,163,227	$12,339,058	$12,285,007

*Per Agreement: $45k/AC

6.4.1 Compensable Impacts Analysis

The study team met with the affected property owner (Water Conserv II) on multiple occasions to understand the design constraints of the new roadway and pond alternatives, receive their input and provide their review feedback for establishing alignment alternatives and pond option locations. The alignments and pond locations reflect those meetings. The presence of WC II RIB sites affected the pond location options and selection and the need to accommodate their existing RIB site infrastructure. This infrastructure consists primarily of underground water distribution mains running to and from the individual pods and their need for continued access across their property for maintenance and operation activities.

6.4.2 Cost Analysis

A detailed cost estimate was developed as part of the PDS effort. for the study. The alternative alignments present no significant measurable differences in cost, therefore all three options were ranked the same. The Engineer's Estimate of Probable Cost is presented in Table 6.4.2. The estimate includes costs for the constructed facility as well as the estimated Right-of-Way cost based on the Roadway Agreement which established a fixed cost per acre of needed property for the roadway, pond and slope easements.

6.4.3 Conceptual Drainage Analysis

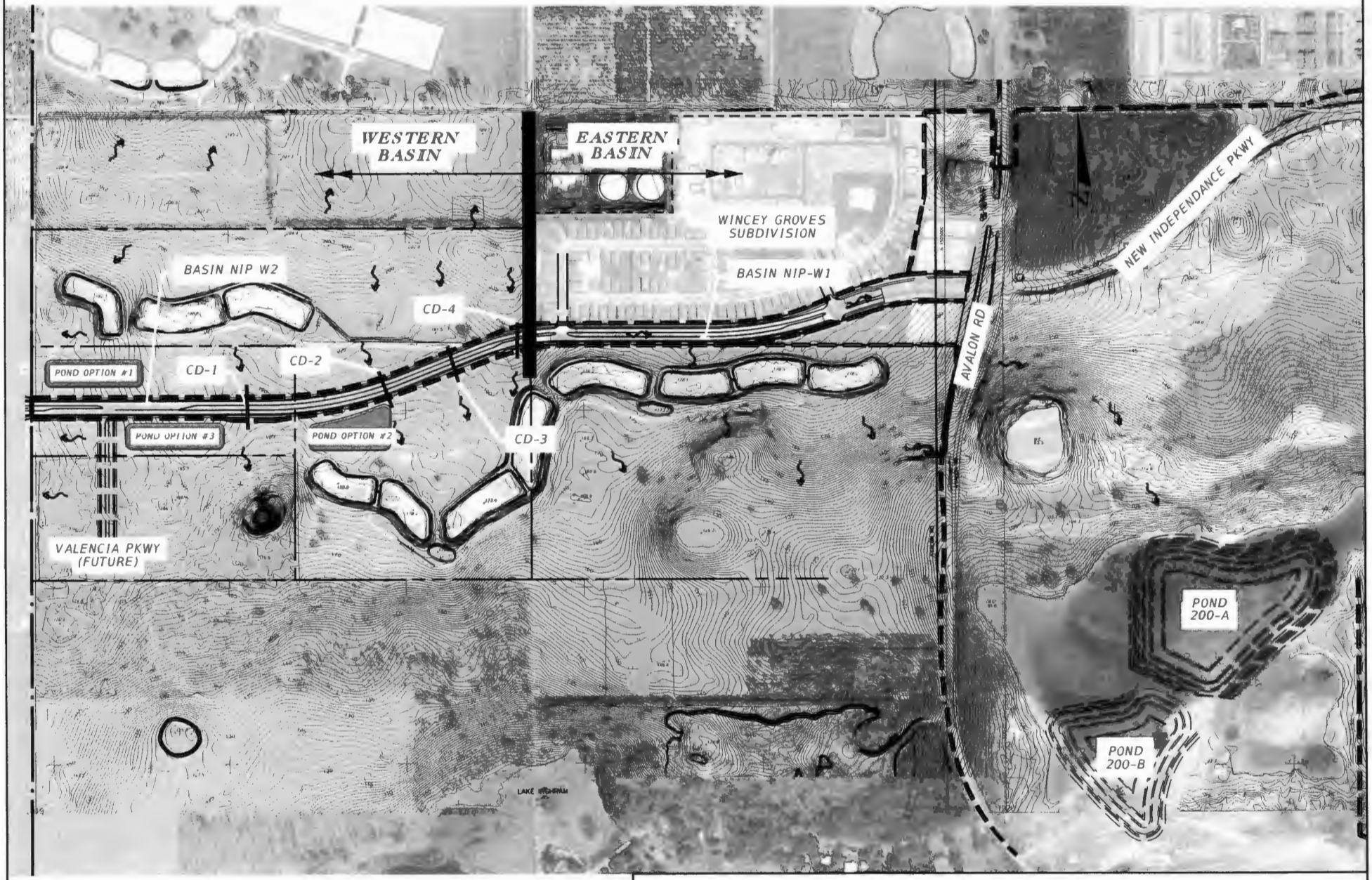
A detailed Pond Siting Report was developed for the study. Given the unique nature of this project, i.e. the fixed Begin and End Project as well as the predetermined location for the eastern half of the alignment (R/W has been dedicated for the alignment), very few options were available for development of the drainage system - both collection and treatment. The Pond Siting Report evaluated three potential pond sites for the western half of the project (Western Basin). All three ponds were located toward the western end of the project due to the lower elevations near the county line. Each of the pond alternative site locations were presented to Water Conserv II for review and coordination. The 3 pond alternatives are presented in Figure 6.4.3 and the Pond Evaluation/Comparison Matrix is found in Table 6.4.3.

ENGINEER'S ESITMATE OF PROBABLE COST
TABLE 6.4.2

	PAY ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL AMOUNT
1		**GENERAL**				
	101-1	MOBILIZATION	LS	1	10%	$673,283.62
	102-1	MAINTENANCE OF TRAFFIC	LS	1	5%	$370,305.99
					SUBTOTAL	**$1,043,589.62**
2		**ROADWAY**				
	110-1-1	CLEARING AND GRUBBING	AC	17	$15,000.00	$255,000.00
	120-1	REGULAR EXCAVATION	CY	64282	$6.32	$406,265.15
	120-6	EMBANKMENT	CY	18638	$6.12	$114,066.89
	160-4	TYPE B STABILIZATION (12") (MIN. LBR 40)	SY	38083	$6.77	$257,821.91
	285 708	OPTIONAL BASE GROUP 08 (12.0" TYPE B-12.5 ONLY) (BLACK BASE)	SY	42538	$26.49	$1,126,831.62
	334 1 53	SUPERPAVE ASPHALTIC CONCRETE (TRAFFIC C) (2 1/2") (SP-12.5)	TN	5849	$130.00	$760,370.00
	337-7-83	ASPHALTIC CONCRETE FRICTION COURSE (FC-12.5) (1.5")	TN	3509	$151.60	$531,964.40
	400-0-11	CONCRETE CLASS NS, GRAVITY WALL	CY	330	$759.37	$250,592.10
	425-1-311	INLETS, CURB, TYPE P-1, <10'	EA	38	$9,300.33	$353,412.54
	425-1-312	INLETS, CURB, TYPE P-1, >10'	EA	4	$8,500.00	$34,000.00
	425 1-321	INLETS, CURB, TYPE P-2, <10'	EA	4	$6,430.00	$25,720.00
	425 2-61	MANHOLES, P-8, <10'	EA	1	$4,877.99	$4,877.99
	425-2-62	MANHOLES, P-8, >10'	EA	2	$5,368.41	$10,736.82
	430-175-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18" S/CD	LF	2828	$89.47	$253,021.16
	430-175-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24" S/CD	LF	2743	$100.78	$276,439.54
	430-175 130	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 30" S/CD	LF	1813	$132.76	$240,693.88
	430-175-136	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 36" S/CD	LF	91	$199.46	$18,150.86
	430-175-142	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 42" S/CD	LF	91	$219.06	$19,934.46
	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	EA	8	$2,382.49	$19,059.92
	430-982-138	MITERED END SECTION, OPTIONAL ROUND, 36" CD	EA	1	$3,475.75	$3,475.75
	520-1-7	CONCRETE CURB & GUTTER, TYPE E	LF	10431	$35.48	$370,091.88
	520 1 10	CONCRETE CURB & GUTTER, TYPE F	LF	10861	$34.91	$379,157.51
	520-5 11	TRAFFIC SEPARATOR CONCRETE-TYPE I, 4' WIDE	LF	361	$114.75	$41,424.75
	522 1	CONCRETE SIDEWALK, 4" THICK (INCLUDING COMPACTION)	SY	11873	$69.86	$829,447.78
	522-2	CONCRETE SIDEWALK, 6" THICK	SY	56	$94.89	$5,313.84
	527-2	DETECTABLE WARNINGS	SF	110	$28.85	$3,173.50
	570-1-2	PERFORMANCE TURF, SOD	SY	23632	$6.00	$141,792.00
					SUBTOTAL	**$6,732,836.24**
3		**SIGNING AND AMRKING**				
	700-1-11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	6	$400.87	$2,405.22
	711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12" FOR CROSSWALK & ROUNDABOUT	LF	220	$3.15	$693.00
	711 11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24" FOR STOP LINE & CROSSWALK	LF	254	$5.33	$1,353.82
	711 11-170	THERMOPLASTIC, STD, WHITE ARROW	EA	9	$120.88	$1,087.92
	711 16 101	THERMOPLASTIC, STD-OTHER SURFACES, WHITE, SOLID, 6"	GM	2.17	$4,356.94	$9,454.56
	711-16-131	THERMOPLASTIC, STD-OTHER SURFACES, WHITE, 6" (10-30) SKIP	GM	2.04	$1,358.11	$2,770.54
	711-16-201	THERMOPLASTIC, STD-OTHER SURFACES, YELLOW, SOLID , 6"	GM	1.98	$4,360.91	$8,634.60
					SUBTOTAL	**$26,399.67**

SUBTOTAL:	**$7,776,425.86**
CONTINGENCY (15%)	**$1,166,463.88**
GRAND TOTAL	**$8,942,889.74**

Note: Unit costs provided by historical data at time of estimate and may not represent actual cost at time of construction.
SOURCE: FDOT ITEM AVERAGE UNIT COST AREA 8 (04/01/2021 - 03/31/2022) *AS GUIDE*



NEW INDEPENDENCE PARKWAY EXTENSION PDS

KELLY, COLLINS & GENTRY, INC.
ENGINEERING / PLANNING

ORANGE COUNTY
PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT

PROPOSED / POST-DEVELOPMENT DRAINAGE BASINS

FIGURE 6.4.3

Table 6.4.3			
Pond Evaluation / Comparison Matrix			
	Pond Alternative #1	**Pond Alternative #2**	**Pond Alternative #3**
Evaluation Criteria	North of New Independence Parkway	SE of Future Valencia Parkway Intersection	South of New Independence Parkway
Relocations			
Number of Residential Acquisitions	0	0	0
Number of Business Acquisitions	0	0	0
Number of Parcels Impacted	1	1	1
Social, Natural, & Physical Impacts			
Social & Neighborhood	None	None	None
Archaeological / Historical Sites	None	None	None
Threatened and Endangered Species	Low	Low	Low
Wetlands (acres)	0	0	0
Floodplains (acre-feet)	0	0	0
Potential High or Medium Ranked Contamination Sites	None	None	None
Estimated Costs (Present Day Costs)			
Design (15% of Construction)	$16,133	$19,444	$16,133
Wetland Mitigation	$0	$0	$0
Pond Construction	$107,556	$129,628	$107,556
CEI (15% of Construction)	$16,133	$19,444	$16,133
Total Cost	$139,823	$168,516	$139,823

Dry ponds were the selected method of stormwater treatment due to the existing depth to estimated seasonal high groundwater (greater than 10 feet below ground surface) and the rapid infiltration rates 7-9 feet per day). Wet stormwater ponds would require the use of expensive pond liners and therefore were not considered.

Pond Alternative #1 is a rectangular shaped pond oriented east-west located on the north side of the roadway alignment near the county line. Pond Alternative #2 is a trapezoidal shaped and located on the south side of the roadway and east of the future of Valencia Parkway intersection. Pond Alternative #3 mirrors Pond #1, but it is located on the south side of the alignment.

The soil types within all three pond alternatives are the same - with the exception of the western portion of Pond #1 where A-2-6 material was encountered. A-2-6 soils are plastic which are not suitable nor desirable for use within dry stormwater treatment ponds since the plastic characteristics significantly decrease pond percolation and recovery rates. Removal of the A-2-6 material is possible but not practical therefore, the presence of this plastic material makes Pond #1 less desirable from a geologic and infiltration perspective.

All three pond alternatives are located within hydrologically closed basins, so there is no difference in any of the three pond outfalls. Coordination with the property owner (Water CONSERV II) surfaced their preference for Pond # 3 since it is located furthest from any of their RIB sites. The Roadway Agreement established a fixed cost per acre of the WC II land for acquisition, therefore all real estate costs will be the same across all three pond alternatives. Based on input received from WC II, the geologic test results and our analysis, Pond # 3 was selected.

6.4.4 Community (social-economic) Impact Analysis

There are no residences or businesses impacted by any of the three alternative alignments, nor are there any community facilities within the project corridor. The only neighborhood found within the project limits is the Wincey Groves subdivision north of the eastern half of the alignment. Impacts to this community are the same for all three alternatives since the development was coordinated with the County previously. The requisite setbacks were established, and the needed road right-of-way was identified and conveyed to the County.

A nominal width of 120 feet was used to establish the proposed right-of-way lines for each of the three alternative alignments. There will be additional right-of-way needs / variations however due to the differing cut and fill slope requirements along the alignments. These cut and fill slopes will be protected by the purchase of additional right-of-way from Water Conserv II. There are no other factors associated with community or social-economic impacts. Other than the amount of square footage (acreage) needed for each of the three alternative alignments, their impacts will be the same.

Summary - There are no differing community or social-economic impacts for each of the three alignment alternatives. The three alternatives have differing right-of-way requirements due to the rolling terrain and cut and fill slopes. These differing right-of-way requirements are noted on the right-of-way cost estimates.

6.4.5 Wetland and/or Upland Impacts

There are no wetlands or surface waters within the study corridor. The project consists of all uplands.

Summary - There are no wetlands or surface waters within the study corridor. The project consists of all uplands.

6.4.6 Floodplain Impacts

There are no areas within the project corridor which encroach into a Floodplain (FIRM Map Zone A).

Summary - There are no floodplain encroachments for any of the alternatives.

6.4.7 Critical and Strategic Habitat Impact

There are no known US Endangered Species Act critical habitats nor FWC identified strategic habitat within the project limits and therefore no means of preserving such habitat, modifying a potential alignment alternative or propose any mitigation.

Summary – There are no known critical or strategic habitat associated with any of the alternatives.

6.4.8 Wildlife Corridor Impact

Prior to the development of the Water Conserv II Project and the residential community north of the alignment, the entire project area was in citrus agriculture as recently as 1980, accordingly, there are no known wildlife corridors within the project limits and therefore no means of preserving such corridors.

Summary – There are no known wildlife corridors associated with any of the alternatives.

6.4.9 Protected Species, Impacts

No plant species listed by either state or federal agencies were identified within the project corridor during the field assessment.

During the field review a number of active and inactive gopher tortoise burrows were observed within the project corridor. A final count will be needed during the permitting phase of final design. Since each of the alternatives are variations with no significant footprint changes, there are no ranking variations between them. As the project moves into final design, coordination with the appropriate regulatory agencies will be conducted to identify permitability of the facility.

Summary – There are no protected species (flora or fauna) that would affect the ranking of any of the alternatives.

6.4.10 Archaeological and Historic Feature Impact

The project corridor had previously been cleared for the development of the Water Conserv II installation on the western half, and the Wincey Groves development on eastern half. Prior to this, the entire project area was in citrus agriculture as recently as 1980. There are no known historic activities other than agriculture. There are no previously recorded cultural resources within the project area other than the Lake Ingram area over a half mile away.

Walkover examinations completed in 2020 and again in 2021 for the current review identified no evidence of cultural resources.

Summary – There are no archaeological or historic features associated with any of the alternatives.

6.4.11 Contaminated Sites Impacted

The Level 1 - Contamination Screening Evaluation Report (CSER) conducted for this PDS evaluated potential for contamination that may influence or impact the proposed alternatives for the roadway and pond(s). The CSER included consideration of potential contamination impacts along the study corridor and determination of the current contamination potential risk level (No, Low, Medium, High) for likelihood to impact any future construction activities.

A total of six potential risk sites were identified based on-site characteristics and / or operations observed during the field reconnaissance and review of available historical data. The six sites consisted of five specific locations and one general area (the historical citrus grove area - removed circa 2017 - through which the project traverses). Historical citrus grove area uses are considered Low Risk sites. Citrus grove area uses are generally considered to be Low Risk sites, unless observable or documented spills, contamination, etc. are present or have been reported. No such indications were encountered; therefore, this area is also considered Low Risk.

Each of the five specific locations, as well as the old grove present Low Risk for contaminant impacts. No Medium or High Risk sites were identified within the corridor study area.

Summary – There are no potential contaminated sites associated with any of the alternatives.

6.4.12 Geotechnical Analysis

The geotechnical investigation identified the two stratum materials encountered in the roadway borings as A-3 (primarily) and A-2-4. Both can be classified as Select and used as embankment material in accordance with standard guidelines. The A-2-4 material *may* retain excess moisture and may require additional effort to dry and compact.

All six pond borings (two borings in each of the three pond alternative sites) encountered A-3 soils to the boring termination depth of 20 feet. The exception was for Pond #1 (boring PB-1) where the lowest 2

feet (depth 18-20 feet) encountered a lens of A-2-6 material. The A-2-6 material is Plastic which is not suitable nor desirable for use within a dry stormwater treatment pond since the plastic characteristic negatively affects pond percolation and recovery rates.
Presence of the A-2-6 (plastic) material must be considered during the pond siting evaluation. Options include modify the pond design (i.e., pro-rating permeability rates across the pond footprint), remove the A-2-6 material within the pond footprint, or eliminate the subject pond alternative from consideration. Since the pond borings were terminated at 20 feet, the thickness of the plastic material is unknown.

The soils investigation determined very favorable groundwater tables depths for roadway and pond construction of 10 feet or more below the existing surface. Accordingly, neither the profile nor pavement design will be affected by expected seasonal high groundwater conditions. Results from the evaluation indicate the existing soils encountered can support the proposed roadway typical pavement section, and excavated material from the mainline and pond is suitable for use in roadway construction.

Summary – There are no geotechnical conditions which would affect any of the roadway alternatives. Pond Alternative #1 is negatively impacted by the presence of plastic material in the western half and should be ranked accordingly.

ORANGE COUNTY GOVERNMENT FLORIDA

SECTION 7 – PRELIMINARY DESIGN ANALYSIS

KCG

7.0 PRELIMINARY DESIGN ANALYSIS

7.1 General

The PDS recommendations for a 4-lane divided roadway with accompanying accommodations for both cyclists and pedestrians are consistent with the proposed Wellness Way coming from Lake County and are based on the Design Year 2047 Traffic. Given the nature of the corridor (the adjacent properties are primarily owned and controlled by Orange County and the City of Orlando by way of Water Conserv II), protecting the functional utility of the roadway should be straightforward. Controlling access to the roadway and providing limited median openings should be possible since only the future Valencia Parkway connection is programmed between the Orange / Lake County Line and the Wincey Subdivision.

7.2 Design Criteria

DESIGN ELEMENT	CRITERIA	SOURCE
Design Speed	45 mph	Study by KCG
Roadway Classification	Urban Arterial	Scope
Access Management	Class 5	FDOT RCI Database
Context Classification	C3R/C3C	FDM Table 200.4.1
Connection Spacing	245 ft.	FDM Table 201.4.2
Median Opening Spacing Directional	660 ft.	FDM Table 201.4.2
Median Opening Spacing Full	1320 ft.	FDM Table 201.4.2
Signal Spacing	1320 ft.	FDM Table 201.4.2
Typical Section		
Number of Lanes	4	Scope
Desirable Lane Widths	11 ft.	FDM Table 210.2.1
Minimum Lane Widths	11 ft. (R/W and existing conditions are stringent controls)	FDM Table 210.2.1
Minimum Sidewalk Width	6 ft.	FDM Table 222.1.1
Minimum Median Width	22 ft.	FDM Table 210.3.1
Number of Lanes	4	Scope

Cross Slope		
Inside Lane	0.02	FDM Figure 210.2.1
Outside Lane	0.03	FDM Figure 210.2.1
Border (from lip of gutter)	14 ft.	FDM Table 210.7.1
Roadside Slopes		
Front Slope	1:2 or to suit property owner, not flatter than 1:6	FDM Table 215.2.3
Back Slope	1:2 or to suit property owner, not flatter than 1:6	FDM Table 215.2.3
Transverse Slope	1:4	FDM Section 215.2.3
Driveway Grades		
Commercial	10%	FDM Figure 214.4.4
Residential	28%	
Max Breakover	14%	
Horizontal Geometry		
Maximum Deflection (no curve)	1°00'00"	FDM Section 210.8.1
Maximum Deflection Through Intersection	3°00'00"	FDM Table 212.7.1
Minimum Stopping Sight Distance	360 ft.	FDM Table 210.11.1
Desirable Length of Horizontal Curve	675 ft.	FDM Table 210.8.1
Minimum Length of Horizontal Curve	400 ft.	FDM Table 210.8.1
Maximum Superelevation	5%	FDM Section 210.9.1
On Tangent	80%	FDM Section 210.9.1
Within Curve	20%	FDM Section 210.9.1
Superelevation Transition Slope Rate	d = 1:150	FDM Table 210.9.3
Minimum SET Length	75 ft.	FDM Table 210.9.3

Vertical Geometry		
Maximum Grade	6%	FDM Table 210.10.1
Minimum Grade	0.30%	FDM Section 210.10.1.1
Minimum Distance Between VPI's	250 ft.	FDM Section 210.10.1.1
Maximum Change in Grade (w/o VC)	0.70%	FDM Table 210.10.2
Minimum Crest Vertical Curve	K=98	FDM Table 210.10.3
Minimum Length (3V)	135 ft.	FDM Table 210.10.4
Minimum Sag Vertical Curve	K=79	FDM Table 210.10.3
Minimum Length (3V)	135 ft.	FDM Table 210.10.4
Base Clearance Above Est. Seasonal High	1 ft.	FDM Section 210.10.3
Turn Lanes & Queue Length		
Queue Length Minimum	100 ft.	FDM Section 212.14.2
Total Decel Distance	L = 185 ft.	FDM Exhibit 212-1
Clearance Distance	L1 = 85 ft.	FDM Exhibit 212-1
Brake to Stop Distance	L2 = 100 ft.	FDM Exhibit 212-1
Taper Length (Single Left)	Δ = 50 ft.	FDM Exhibit 212-1
Taper Length (Dual Left)	Δ = 100 ft.	FDM Exhibit 212-1
Roadway Clearance and Offsets		
Vertical Clearance for OH Sign Structures	17 ft. 6 in.	FDM Section 210.10.3
Vertical Clearance Signals	17 ft. 6 in.	FDM Section 210.10.3
Light Pole Offset	4 ft. from face of curb	FDM Table 215.2.2
Utility Offset	4 ft. from face of curb	FDM Table 215.2.2
Signal Pole Offset	4 ft. from face of curb	FDM Table 215.2.2
Trees Offset	4 ft. from face of curb	FDM Table 215.2.2
Clearance to Drop-Off	22 ft. from traveled way	FDM Figure 215.3.3
Other Obstacles Offset	4 ft. from face of curb	FDM Table 215.2.2
NOTES:		
(1) FDOT Design Manual, 2022	(2) FDOT Standard Plans for Road & Bridge Construction 2022-23	

7.3 Typical Section

The recommended typical section is a four-lane divided urban section which includes four, 11-foot through lanes, a 26-foot raised median and 10-foot multi-use paths on both sides of the roadway. This typical section, shown in Figure 7.3, requires a minimum of 120 feet of Right-of-Way.

The four-lane urban typical cross section includes the following:

- Four travel lanes at 11-feet
- Type F Curb & Gutter (outside lanes) w/ closed drainage collection system
- 26-foot raised median with Type E Curb and Gutter (Type F adjacent to Wincey Subdivision)
- 8-foot-wide sodded Utility Strip behind outside curb
- 25-foot Border Width
- 10-foot Multi-use Path on both sides
- 120-foot Right-of-Way width (minimum)

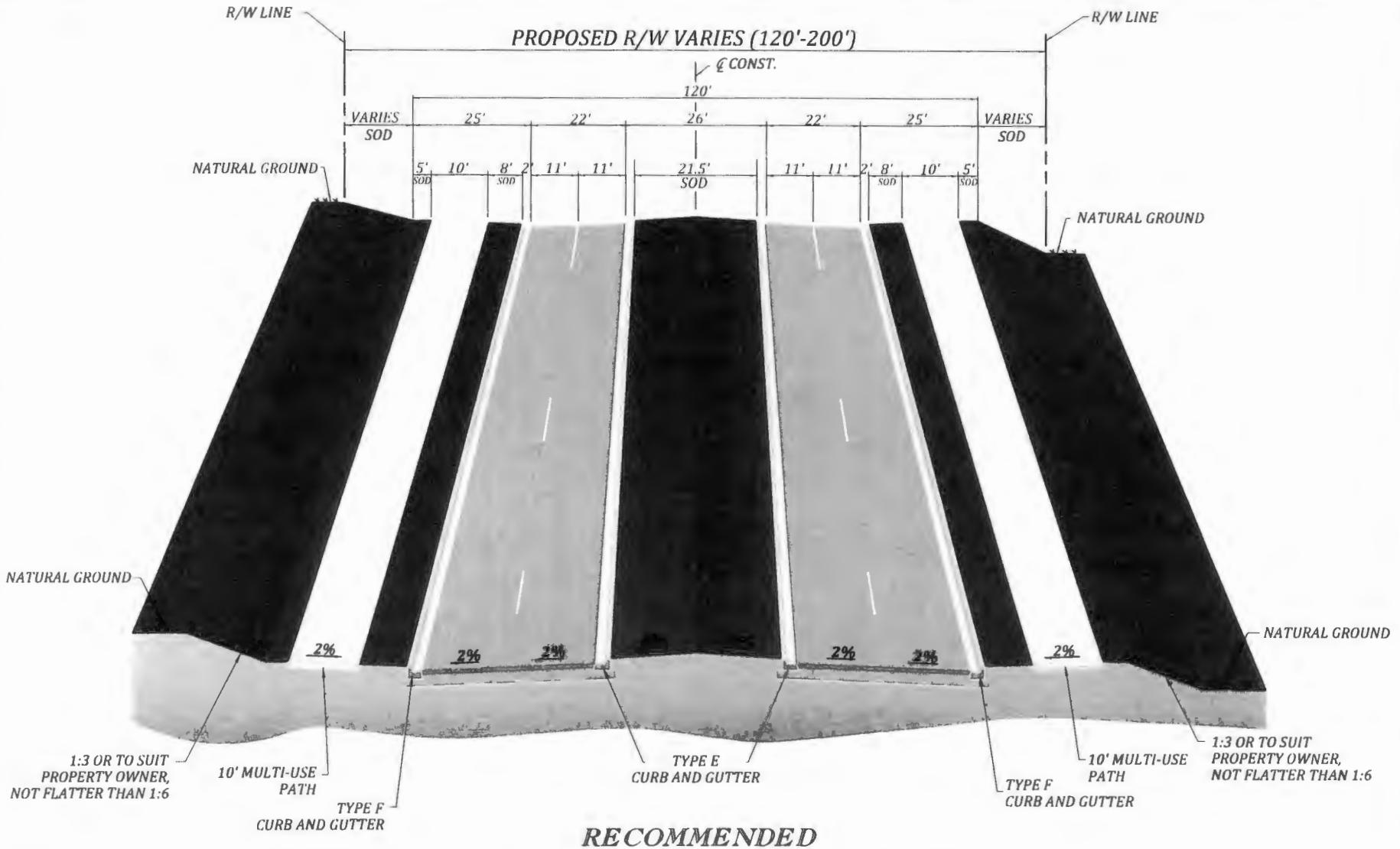
Slope easements are expected and will be required where field conditions do not allow for tie-in to existing grades within the proposed right-of-way.

7.4 Intersection Requirements

Two minor side streets require median openings and left turn storage lanes (Golden Apple Drive and Wincey Groves Road). Neither of these intersections require signalization, nor do they require dedicated right turn lanes although they may be considered during final design. A future signalized intersection is anticipated for the addition of Valencia Parkway at some point in the future. The design of New Independence Parkway Extension has made provisions for that future roadway connection (by others). A median opening for the future Valencia Parkway intersection will be constructed by the New Independence Parkway Extension.

7.5 Alignment

The recommended alignment is shown on the Recommended Improvements (Plan Sheets) which are included at the end of this Section.



RECOMMENDED
TYPICAL SECTION
11-FT LANES w/ BIKES ON PATHS

NEW INDEPENDENCE PARKWAY EXTENSION PDS

KCG KELLY, COLLINS & GENTRY, INC. ENGINEERING / PLANNING	ORANGE COUNTY PLANNING, ENVIRONMENTAL AND DEVELOPMENT SERVICES DEPARTMENT	RECOMMENDED TYPICAL SECTION	FIGURE 7.3

7.6 Stormwater Management

An urban roadway typical section with curb and gutter will be used to direct surface stormwater runoff to curb inlets. The piped collection system will convey the runoff to stormwater management facilities (ponds) for water quality treatment and peak flow attenuation. Analysis of the roadway drainage indicates the need for one new stormwater facility for the western portion of the project, with the eastern portion being conveyed to a master stormwater treatment system east of Avalon Road within the Hamlin Development. The west system will consist of a single dry pond located on the south side of New Independence Parkway Extension, just east of the county line.

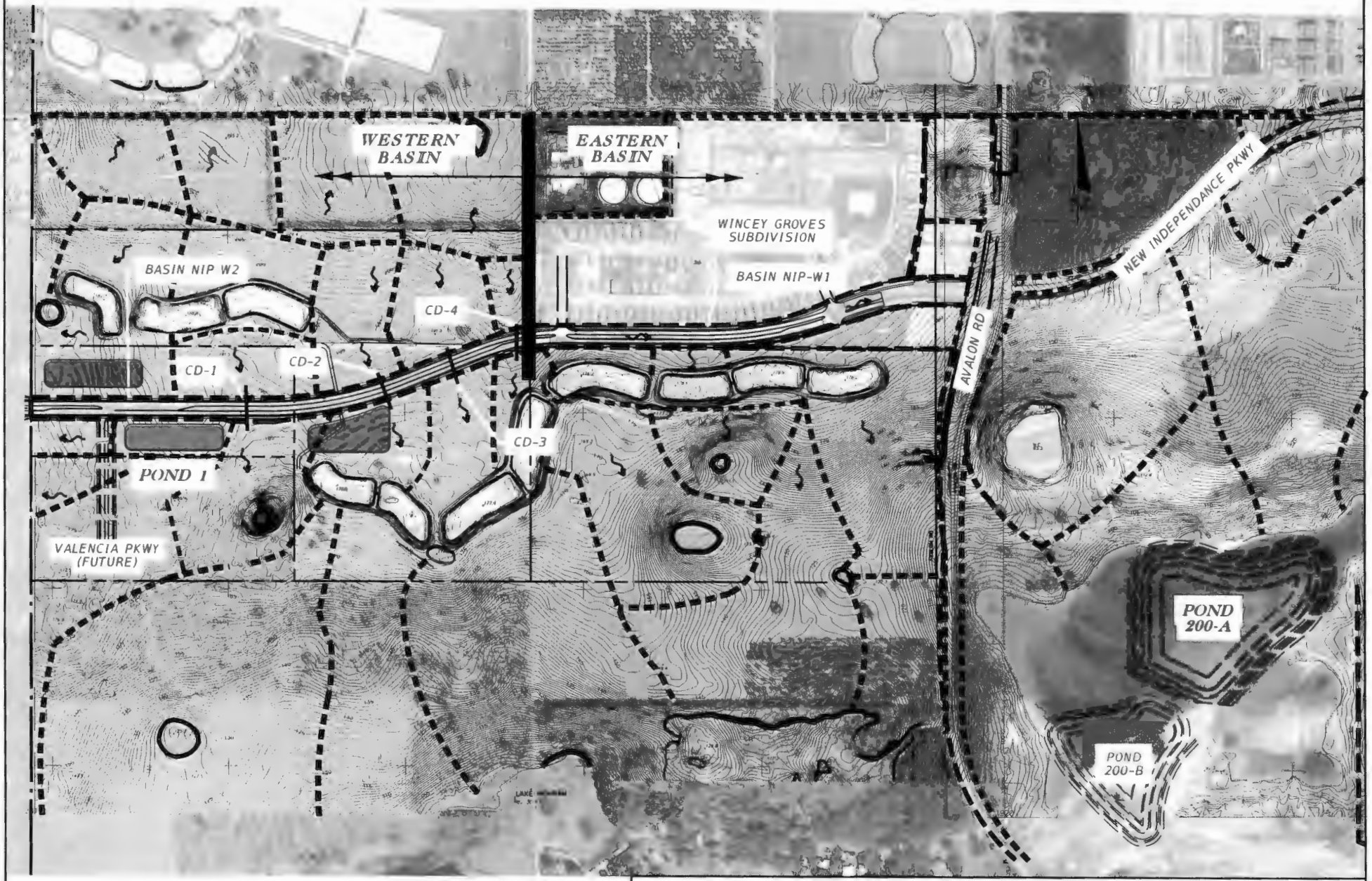
Western Basin - Pond 1 (Sta. 700+00 to 730+50)
Pond 1 will provide water quality and attenuation and is landlocked on the north side of New Independence Parkway Extension. The pond location is based on proposed profile of the roadway (i.e., topography) and available land, as well as the limits of the eastern portion of New Independence Parkway Extension as identified below.

Eastern Basin - Pond 2 (Sta. 730+50 to 750+50)
Pond 2 is designated "Hamlin West Pond 200-A" was designed and permitted through the Hamlin West Mass Grading Project. The drainage basin of the pond includes Basin OS NIP-W, which captures the eastern portion of New Independence Parkway Extension from the western limits of the Wincey Groves Subdivision (Sta. 730+50) to Avalon Road (CR 545). The design of Pond 200-A assumed 70% impervious area in Basin OS NIP-W for retention requirements. The table below contains the recommended pond site information for both basins.

Pond Designation	Basin Limits (Sta)		Total Basin Area	WQ Volume Required	Pond Area
	Begin	End	ac	ac-ft	ac
Pond 1	700+00	730+50	8.18	4.09	2.3
Pond 200-A[1]	730+50	750+50	7.56	3.94	18.84[2]

1. Basin OS NIP-W as defined in Hamlin West Mass Grading Permit #48-100278-P
2. Pond Tract Area total

Figure 7.6 identifies both the eastern and western basins along with their respective stormwater treatment pond locations. The figure also shows the approximate locations of the four proposed cross drains needed to maintain hydraulic connection between the north side of New Independence Parkway Extension and the south side.



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RECOMMENDED STORMWATER TREATMENT & CROSS DRAINS

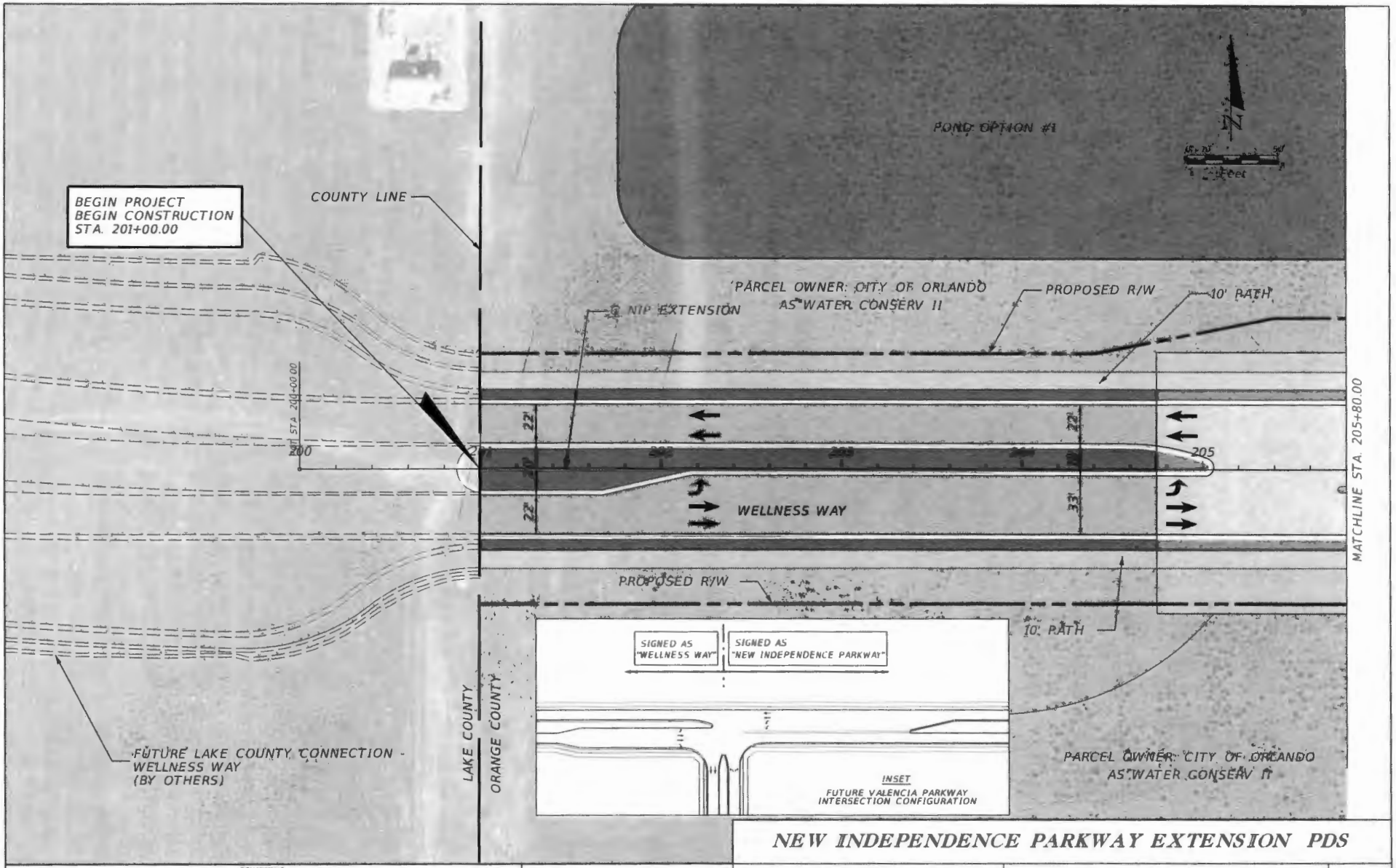
FIGURE 7.6

7.7 Conclusion

The New Independence Parkway Extension (Wellness Way) PDS evaluated the need for improvements to the corridor and analyzed potential solutions suitable to address the growing demands on the transportation network due to increased traffic volumes. As part of the PDS study effort, a public involvement program was undertaken. As a result of input received during project development, the vertical alignment of the roadway was lowered, and a split profile typical section was applied to provide greater vertical separation between the new roadway and the homes within Wincey Groves abutting the project. Mathematically, lowering the noise source further below the 6' high concrete privacy wall will reduce the decibels for the ground floor units to some degree.

The extension of New Independence Parkway West to the Orange / Lake County line as a four-lane divided urban section with the improvements identified in this PDS Re[port is recommended. Construction of the roadway is supported by numerous factors including the advancement of Lake County's section to the west. We advocate moving into final design with the recommended alignment.

Following this section are Concept Plans depicting the Recommended Alignment.



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ORANGE COUNTY
PLANNING, ENVIRONMENTAL AND
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RECOMMENDED ALIGNMENT
CONCEPT PLAN (01)

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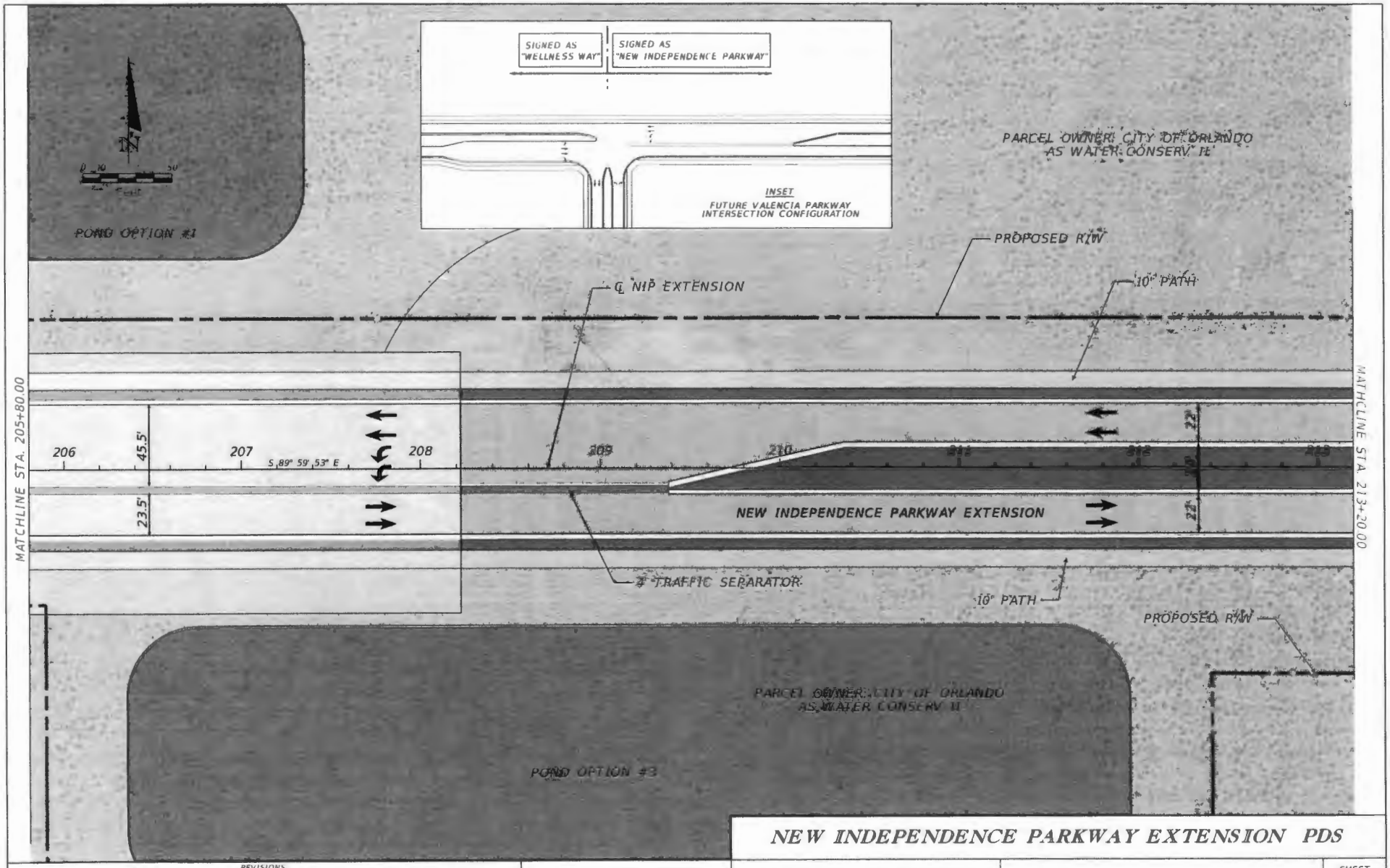

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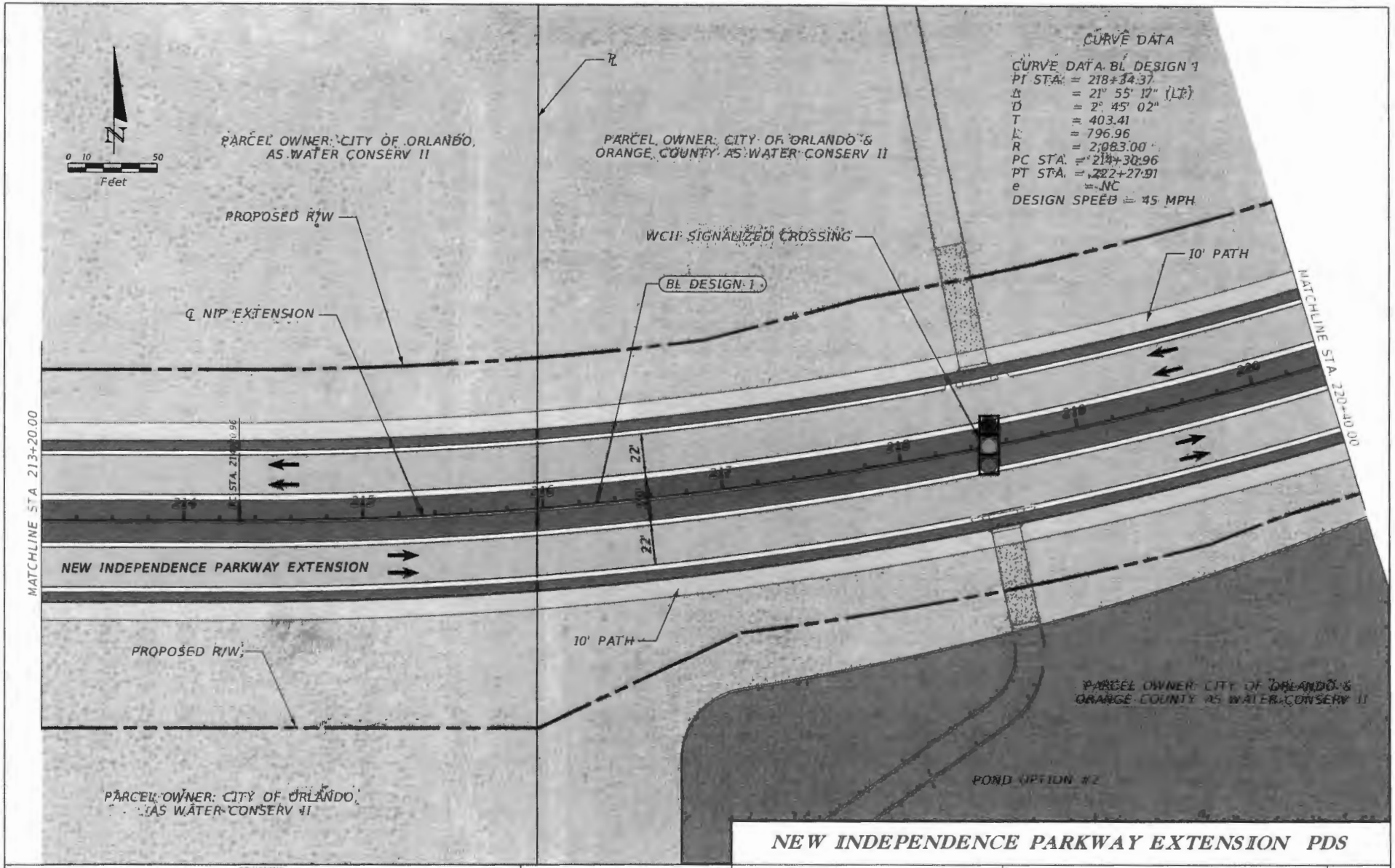

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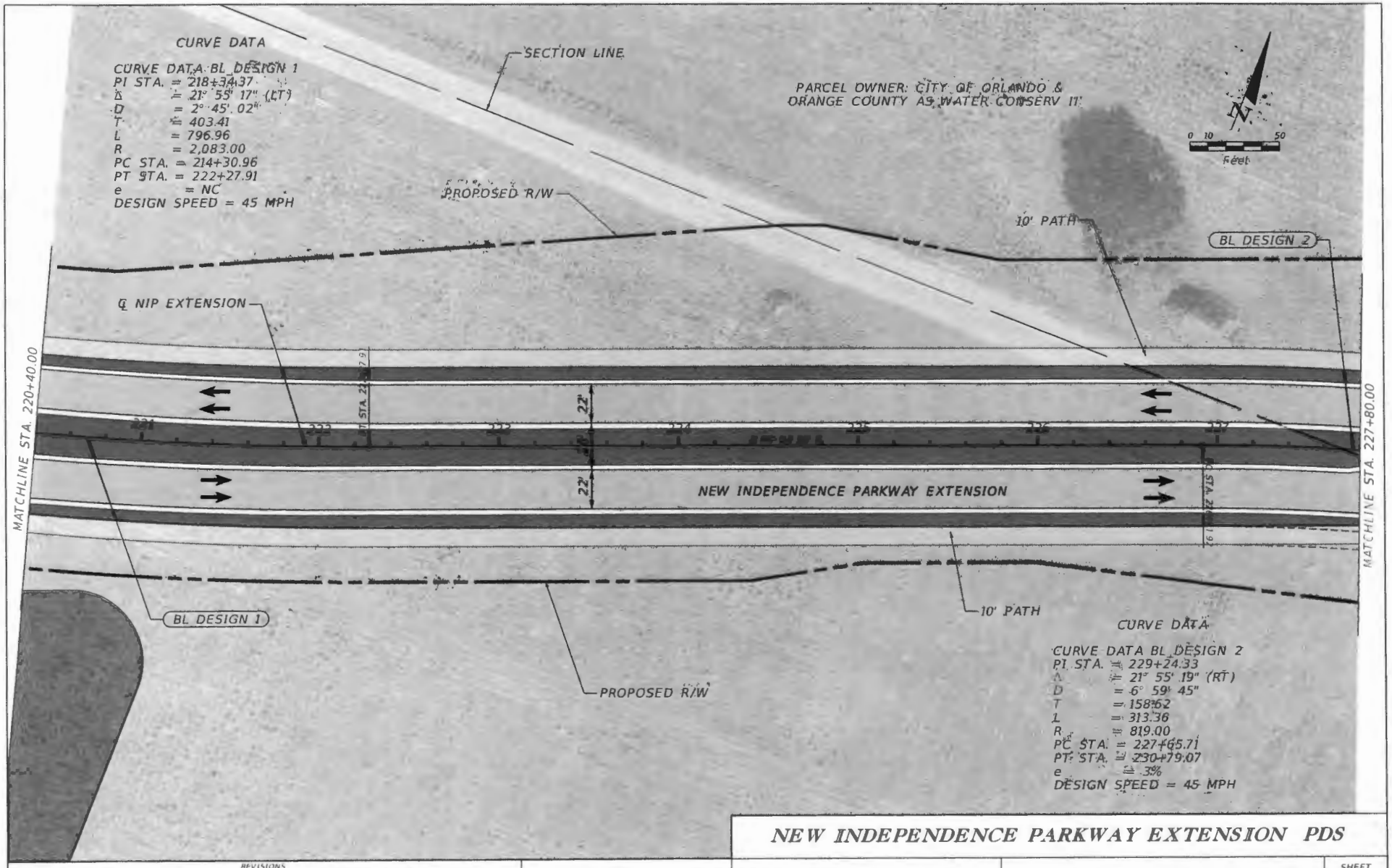

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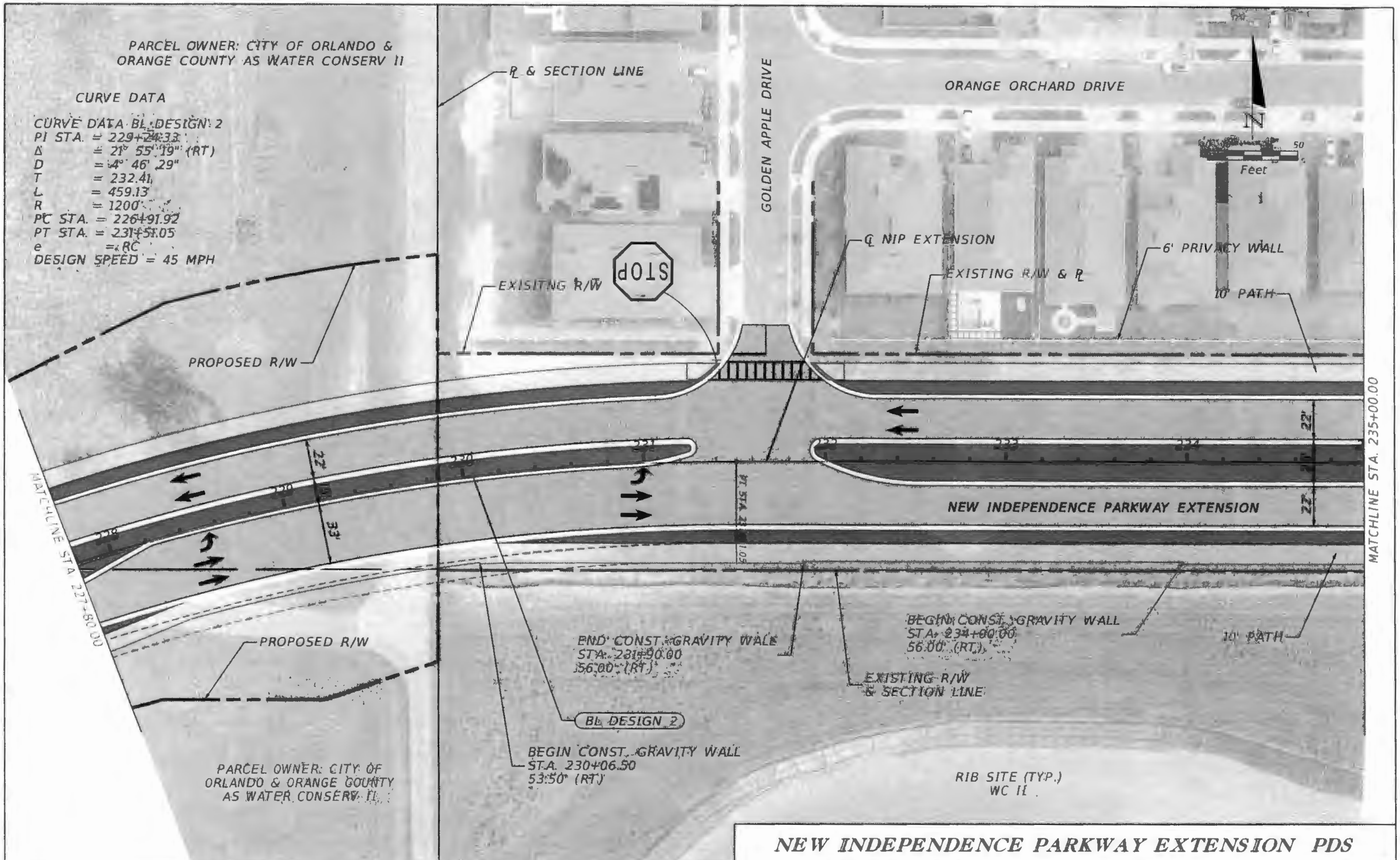

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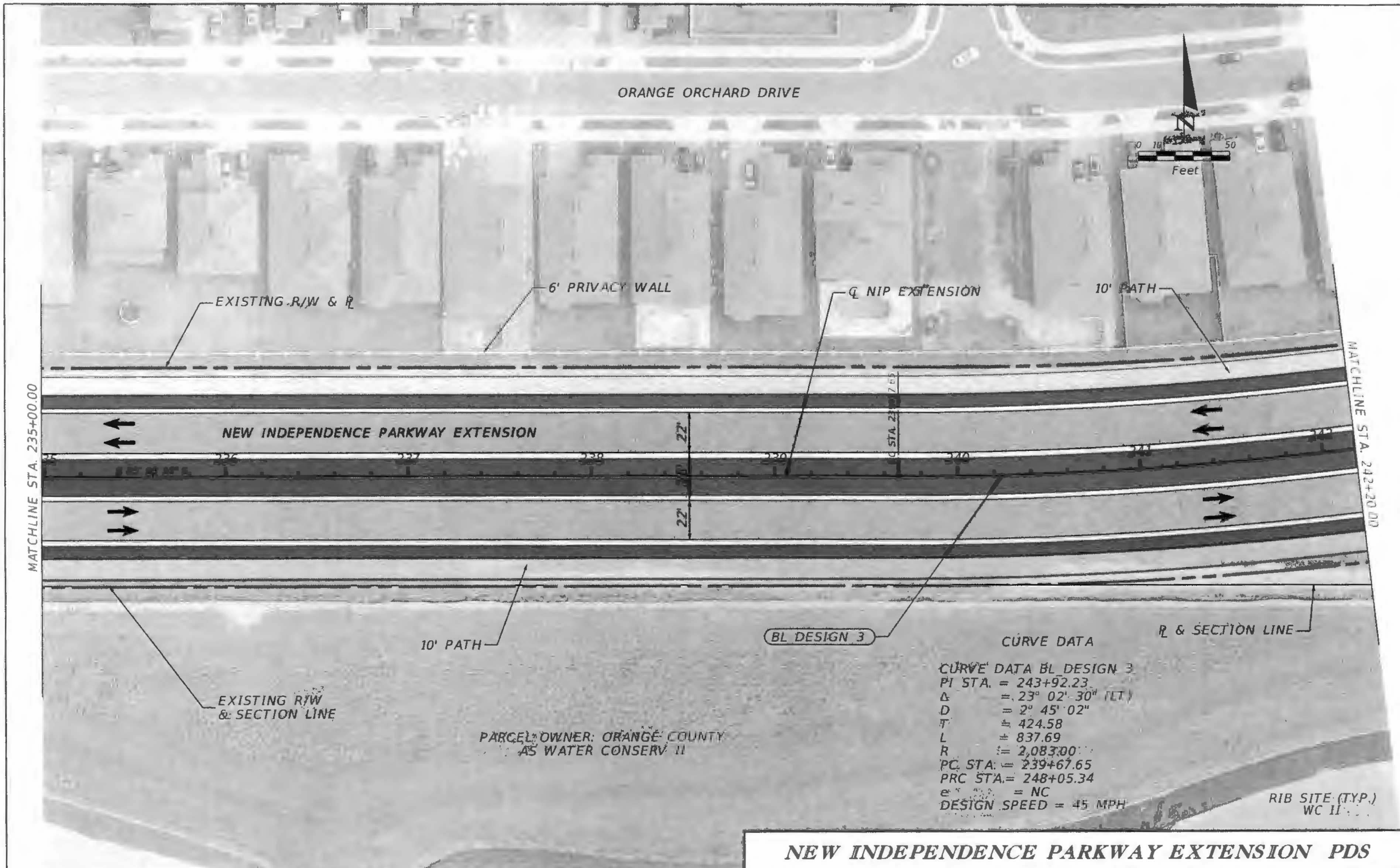

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Planning, Environmental and Development Services Department

RECOMMENDED ALIGNMENT CONCEPT PLAN (06)

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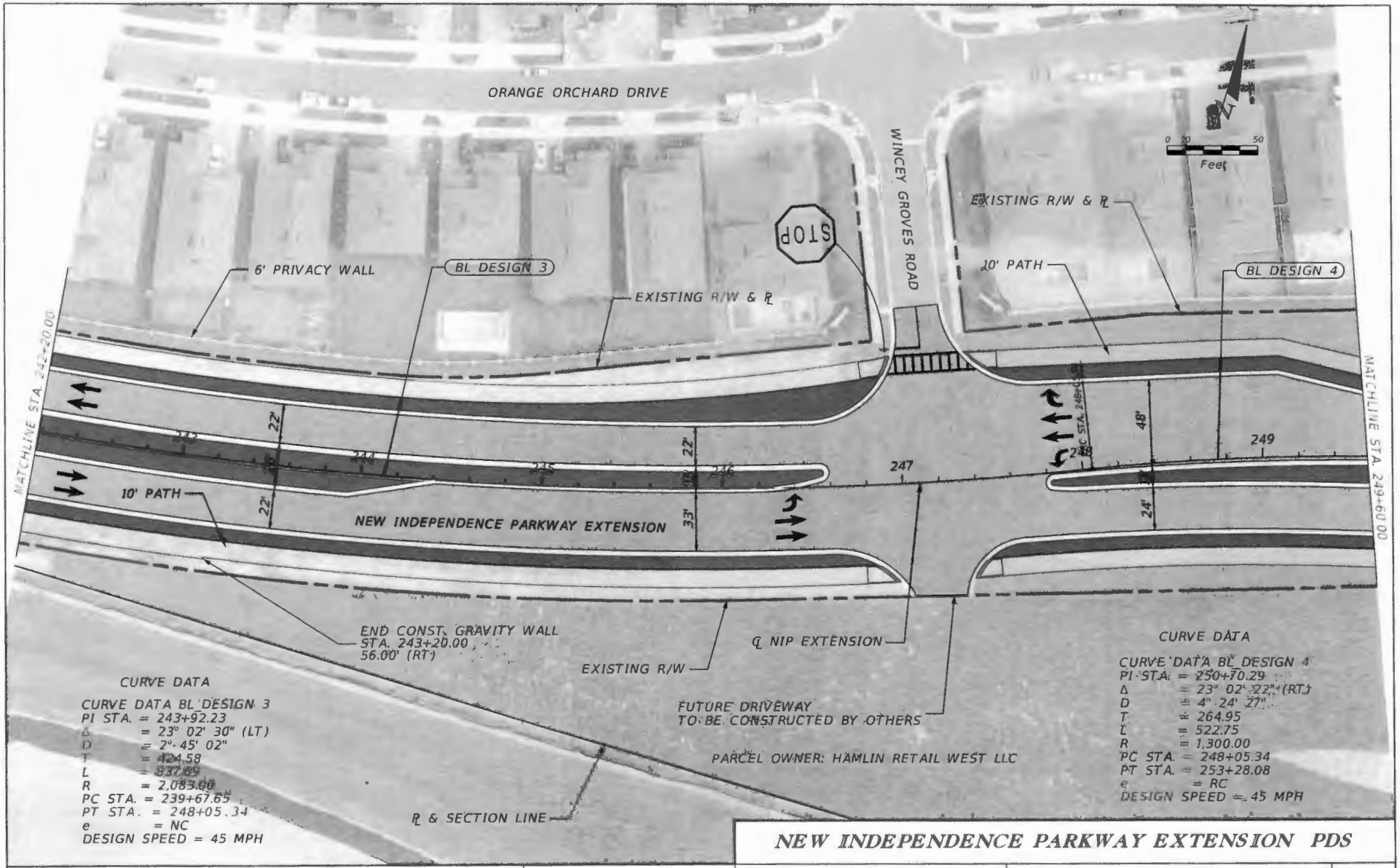

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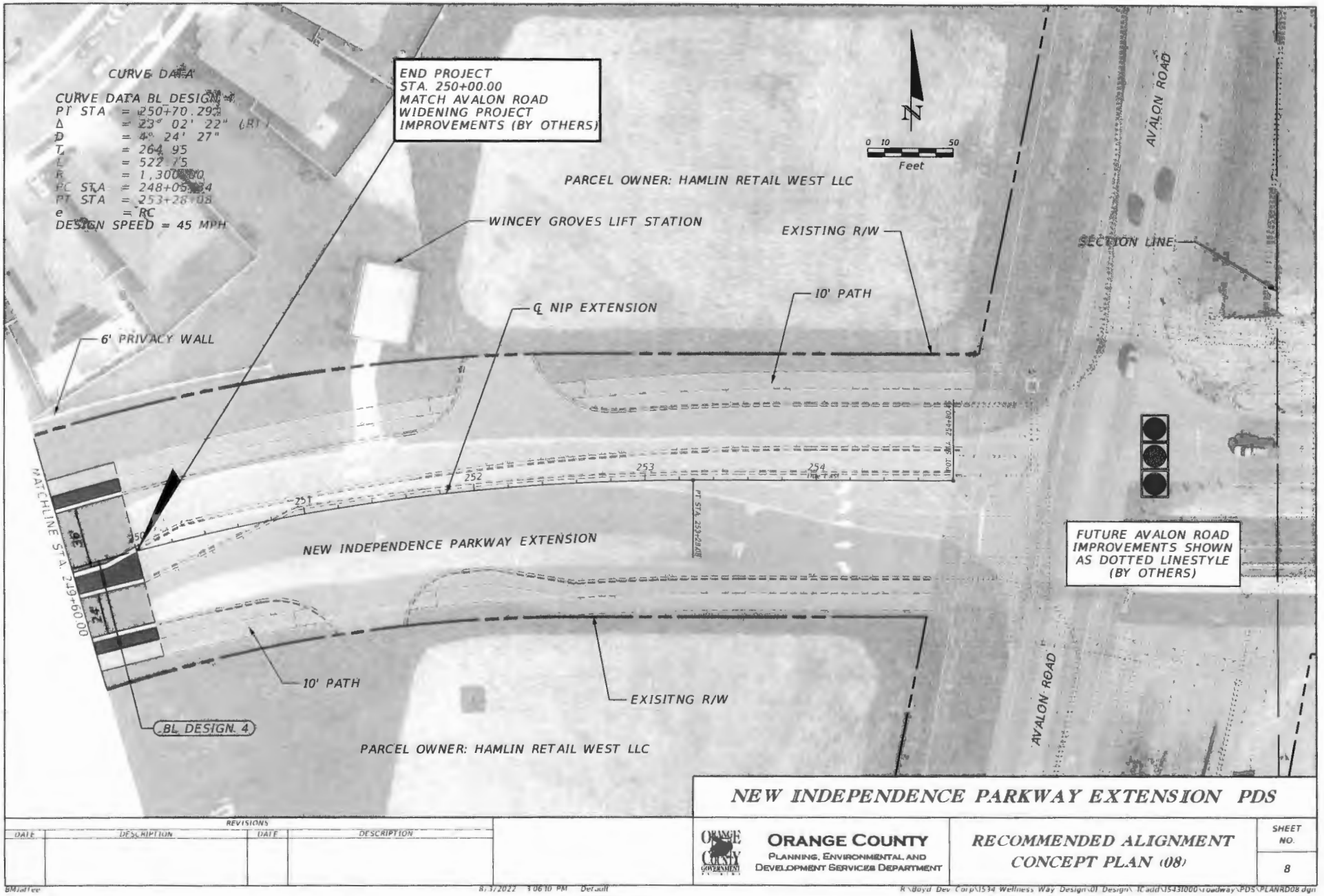

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RECOMMENDED ALIGNMENT CONCEPT PLAN (08)

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