March 2016

Coast to Coast Trail - Orange County Gap

Alternatives and Strategies Report

FDOT Financial Project ID No.: 436433-1-22-01

Table of Contents

1 Introduction

1.1 Overview of the Project

In March 2015, the Florida Department of Transportation (FDOT) District Five commenced a Corridor Planning and Concept Development Study for the Orange County Gap of the Coast to Coast Trail.

This study will create a set of alignments, evaluate them, and ultimately select one to close this "gap" of the Coast to Coast Trail. All stakeholders for this project (Orange and Seminole Counties, the City of Orlando, Duke Energy, Central Florida Expressway Authority, LYNX, Florida Central Railroad, MetroPlan Orlando, the Florida Greenways and Trails Foundation, and the Florida Department of Environmental Protection's Office of Greenways and Trails) have representatives that serve on the Project Visioning Team (PVT) which meets regularly throughout the project in order to provide feedback at key points throughout the project.

1.2 Overview of the Coast to Coast Connector Trail

In fiscal year 2015, FDOT received budget authority to complete $15.5 million in regional trail projects related to the Coast to Coast Trail, a facility intended for long-distance, non-motorized travel. FDOT, the Florida Office of Greenways and Trails (OGT), and other state and regional agencies are working to fill several gaps to complete a continuous 275-mile multiuse trail that will provide a path between St. Petersburg on the west coast of Florida, and the Titusville area on the east coast. Approximately 75 percent of the trail is either funded for construction or already constructed.

The Coast to Coast Trail traverses a variety of environments including urban streetscapes, suburban neighborhoods, and natural areas, providing a diverse range of experiences to its users. The Coast to Coast Trail not only connects communities but also establishes a pathway between regionally-significant trails. The Fred Marquis Pinellas Trail, the South Lake Trail, the West Orange Trail, and the Seminole Wekiva Trail are all linked with the Coast to Coast Trail.

1.3 Overview of the Orange County Gap of the Coast to Coast Trail

The Orange County Gap of the Coast to Coast Trail is approximately 3.9 miles in length and is located in northwest Orange County. The gap, illustrated in Figure 1.3-1, begins at the intersection of Hiawassee Road/Clarcona-Ocoee Road and terminates at the intersection of US 441/SR 414. The Study Area for this project is defined by a buffer of 500 feet (1,000 feet on either side in the case of the environmental evaluation).

As can be seen in the figure, while most of the alignment along the corridor is set, three different alternatives were identified to connect the part of the trail along Clarcona-Ocoee Road to the portion along Beggs Road. These three alternatives are the focus of this report.

Path: \\vhb\proj\Orlando\61872.08 C2C Trail - OC Gap\GIS\Project\Study Area Map2.mxd

Coast To Coast CONNECTOR

Apopka

Seminole County

Orange County

Orlando

Beggs Rd

Clarcona-Ocoee Rd

Lakeville Rd

N Hiawassee Rd

N Pine Hills Rd

414

441

424

435

431

Index Map

Lake County

Volusia County

Seminole County

Brevard County

Orange County

Osceola County

Polk County

Legend

- Proposed Alignment
- Alternative 1
- Alternative 1A
- Alternative 2
- Existing Trails
- Project Study Area (500 Ft Buffer)
- FCEN Railroad
- Major Roadways
- Local Roadways
- County Boundaries
- Water Bodies
- Cities
- US Route
- State Road
- County Road

Source:
ESRI, FDOT, FGDL, FRA, Seminole County GIS, Seminole County Property Appraiser, Orange County Property Appraiser.

Project Title Coast to Coast Trail - Orange County Gap

Figure # 1.3-1

Map Title Study Area Map

Date February 2016

FDOT

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0 0.125 0.25 0.5 Miles

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1.4 Purpose of this Report

The purpose of this report is to define and evaluate three alternative alignments in order to select the preferred alternative that will connect the portion of the trail along Clarcona-Ocoee Road with the portion along Beggs Road.

Chapter 2 of this report will present the three alternatives, Chapter 3 will present the evaluation methodology and evaluation measures, and Chapter 4 will present the results of the evaluation, ultimately identifying the preferred alternative. Chapter 5 summarizes the findings for this report and identifies the next steps for the project.

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Definition of the Alternatives

2.1 Introduction

This chapter defines the three trail alternatives that were developed for evaluation of a preferred alignment.

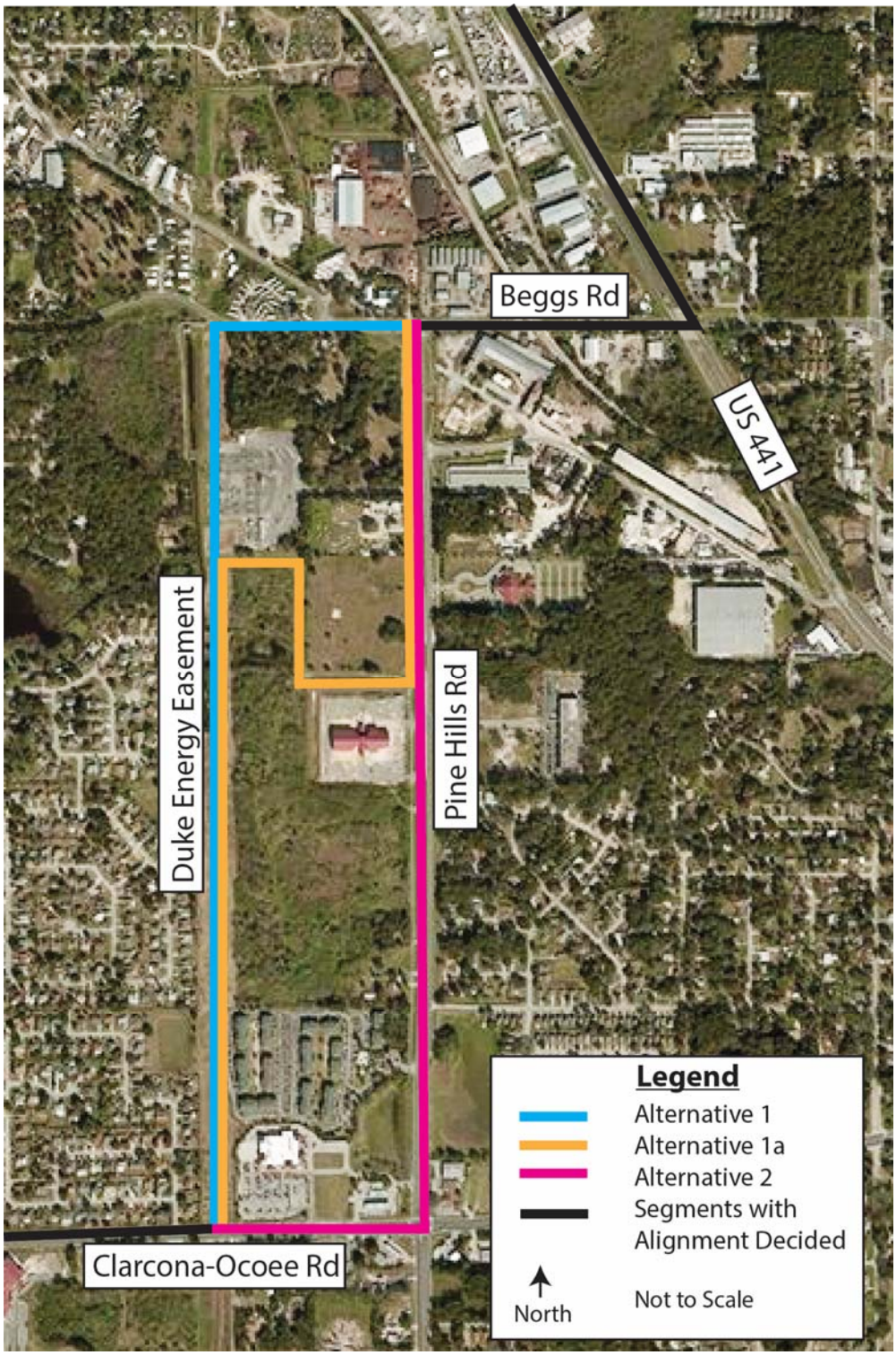
2.2 The Alternatives

As mentioned in Section 1.3, three alternatives were developed to connect the portion of the trail along Clarcona-Ocoee Road to the portion along Beggs Road. These alternatives were developed using data from the Existing Conditions Report and are as follows:

- Alternative 1: This alternative utilizes the Duke Energy Easement that runs north-south between Clarcona-Ocoee Road and Beggs Road.
- Alternative 1a: This alternative utilizes the Duke Energy Easement from Clarcona-Ocoee Road to the drainage canal (south of the substation located in the easement). The trail then follows the canal east to Pine Hills Road, where it then continues north to Beggs Road.
- Alternative 2: This alternative utilizes Pine Hills Road to connect the portion of the trail between Clarcona-Ocoee Road and Beggs Road.

These alternatives are presented in greater detail in Figure 2.2-1.

Figure 2.2-1: Alignment for the Three Alternatives



3 Evaluation Methodology

3.1 Introduction

This chapter provides a summary of the methodology that was used to compare the three alternatives. It also presents the evaluation measures that were used in the identification of the preferred alternative.

3.2 Methodology

Elimination of Alternative 1

As part of the screening process, Alternative 1 was not evaluated. This was because it was deemed to be infeasible to implement this alternative due to the minimum separation requirements set forth in Duke Energy's "Electric Transmission Right of Way Requirements for Shared-Use Paths/Trails" document (included as Appendix A). In the requirements, Duke Energy states that a minimum of 25 feet of separation is required between the trail and any Duke Energy facility. In the easement, there are two major pinch points where the trail cannot fit, which are identified in Figure 3.2-1. These are: 1) At the substation and 2) At the northern end of the easement.

A map depicting the entire Duke Energy Easement, along with all of Duke Energy's facilities and the required 25 foot buffer is included in Appendix B.

Figure 3.2-1: Duke Energy Buffer Pinch Points

Evaluation of the Remaining Two Alternatives

The assessment of the two remaining alternatives incorporated a comprehensive level of qualitative and quantitative evaluation measures (which are discussed in the next section). Using the results from this evaluation, the alternative that met the most evaluation measures was selected as the preferred alternative.

This evaluation utilized the concept plans developed for each alternative, which are included as Appendix C and D (Alternative 1a and 2, respectively).

3.3 The Evaluation Measures

As documented in the Purpose and Need Statement Report, there are eight guiding principles (along with accompanying objectives) that serve as a road map upon which the alternatives can be evaluated.

Also documented in the report is one or more measures of success (or evaluation measures) for each guiding principle. These evaluation measures are intended to evaluate how well each alternative meets each of the eight guiding principles.

The evaluation measures are both qualitative and quantitative in nature, depending on the data available to conduct the evaluation. In general, evaluation measures that examine cost and time were evaluated from a qualitative perspective given the limited detail on costs and uncertainty in the overall project planning/design/construction timeline. All other measures utilize quantitative data, derived from the proposed alignment of the trail alternatives.

Table 3.3-1: Evaluation Measures

GUIDING PRINCIPLE	OBJECTIVES	EVALUATION MEASURE	EVALUATION TYPE
Guiding Principle A: Collaboration			
A-1: Be generally consistent with statewide, regional, and local visions and plans.	Participation of stakeholders in PVT meetings	Number of attendees for PVT meetings	Data
A-2: Develop a structured planning process that involves stakeholders and takes into account trail corridor decisions	Provide multiple opportunities for stakeholder input throughout the study	Advertise public meetings in a timely manner to at least 75% of all households residing within the Study Area	Data
Guiding Principle B: Trail Strategies			
B-1: Be conscious of cost and minimize impacts to existing utilities	Identify potential impacts to existing utilities	Minimizes cost to mitigate for impacts to existing utilities	Qualitative
		Minimizes time needed to mitigate for impacts to existing utilities	Qualitative
B-2: Be conscious of cost and minimize need to acquire right of way	Identify potential need to acquire right of way	Minimizes cost to acquire right of way	Qualitative
		Minimizes time needed to acquire right of way	Qualitative
B-3: Minimize overall capital cost	Minimize overall capital cost	Minimizes overall capital cost	Qualitative
B-4: Be able to implement project in short timeframe	Ability to implement project in a short timeframe	Ability to implement project in a short timeframe	Qualitative

Table 3.2-1 (Continued)

GUIDING PRINCIPLE	OBJECTIVES	EVALUATION MEASURE	EVALUATION TYPE
Guiding Principle C: Maximize Potential			
C-1: Provide a safe, accessible, and high quality experience for users that provides safe crossings at intersections, connects to existing LYNX bus service, and creates a desirable environment in which to walk or cycle	Creates a safe environment in which to walk and cycle	Minimizes the number of times trail crosses the street	Data
		Maximizes miles of trail adjacent to developed/populated areas	Data
	Connectivity to local bus service	Maximizes the number of LYNX Links the trail connects to	Data
	Maximizes separation between bicyclists/pedestrians and motor vehicles	Maximizes miles of trail located at least 10 feet away from a roadway	Data
	Provides visibility at night	Maximizes miles of trail with existing lighting facilities	Data
C-2: Design with the Study Area in mind	Provide consistency in aesthetic elements	Consistency of trail with the appearance and aesthetics of the surrounding built environment	Qualitative

4 Evaluation Results

4.1 Introduction

This chapter discusses the results of the evaluation of the guiding principles and presents the recommended alternative.

4.2 Results

The two remaining alternatives were evaluated using the measures of success documented in Chapter 3.

For the measures of success that were qualitative in nature, feedback was solicited from the Project Visioning Team (PVT) in order to gain consensus on which alternative best met the given measure. This feedback was obtained during the December 10, 2015 PVT meeting by doing a "clicker" voting exercise. The results from this voting exercise for the qualitative measures of success are incorporated as part of Table 4.3-1.

As can be seen in the table, a Yes/No rating system was employed for evaluating the evaluation measures which utilized qualitative data. If a given alternative met the evaluation measure set forth, it received a "Yes". All qualitative ratings are explained in a column within the table, except for Evaluation Measure C-2 (Environmental Impact), which is discussed below.

Environmental Evaluation

This subsection summarizes the environmental assessment in used to evaluate the environmental impact associated with each alternative. Based on the results of the GIS desktop review and in consideration of the developed nature of the surrounding land uses along the proposed trail alternatives, no significant adverse impact to the natural, social, cultural or physical environment is anticipated. **As such, both Alternative 1a and Alternative 2 meet this evaluation measure.**

During the environmental assessment conducted for the corridor planning study (documented in the Existing Conditions Report), certain key environmental features were identified including potential contamination sites and historic structures adjacent to the

proposed trail. In addition, both trail alternatives occur within United States Fish and Wildlife Service (USFWS) conservation areas for the following listed species: scrub jays, snail kites, wood storks, and, Lake Wales Ridge rare plants. A more detailed environmental analysis may be required as part of the project permitting phase; however, for this corridor planning study phase, it is anticipated that a Type 1 Categorical Exclusion is the appropriate class of action based on this environmental review.

More detailed information on the environmental conditions related to the final alignment of the trail will be documented in a future tech memo (Corridor Assessment Report).

4.3 Selection of the Preferred Alternative

Table 4.3-2 converts the data presented in Table 4.3-1 into ✓'s and X's for easier comparison. For the qualitative evaluation measures, Yeses were coded as a ✓, while Nos were coded as an X. For quantitative evaluation measures, ✓'s were given to the alternative that best met the given measure (i.e., had the highest or lowest value). This table also counts up the number of ✓'s to determine which alternative best meets the given evaluation measure.

Since Alternative 2 meets more evaluation measures than Alternative 1a (9 vs. 5), Alternative 2 is the preferred alternative.

Coast to Coast Trail - Orange County Gap
Table 4.3-1: Alternatives Evaluation Results with Data

Guiding Principles Evaluation	Type	Alt 1 Duke Energy Alternative	Alt 1a Hybrid Alternative	Alt 2 Pine Hills Road Alternative	Explanation of the Qualitative Ratings
A: Collaboration					
A-1: Number of attendees for PVT meetings	Data	***Not a Differentiator***			N/A
A-2: Advertise public meetings in a timely manner to at least 75% of all households residing within the Study Area	Data				N/A
B: Trail Strategies					
B-1.a: Minimizes cost to mitigate for impacts to existing utilities	Qual	***Determined to be Infeasible***	Yes	No	The Hybrid Alternative uses a portion of the Duke Energy Easement which will result in less impact to existing utilities than using Pine Hills Road. This will result in a lower cost and less time to construct.
B-1.b: Minimizes time needed to mitigate for impacts to existing utilities	Qual		Yes	No	
B-2.a: Minimizes cost to acquire right of way	Qual		No	Yes	The right of way for the Pine Hills Road Alternative is under the control of Orange County and thus does not require acquisition of additional right of way. In addition, the Hybrid Alternative would require additional time to finalize an agreement with Duke Energy to use a portion of their easement.
B-2.b: Minimizes time needed to acquire right of way	Qual		No	Yes	
B-3: Minimizes overall capital cost	Qual		No	Yes	The Hybrid Alternative will require a bridge to cross the canal, resulting in a higher capital cost than the Pine Hills Road Alternative.
B-4: Ability to implement project in a short timeframe	Qual		No	Yes	Since the Hybrid Alternative will require negotiations with Duke Energy to use their easement and will require the design/construction of a bridge, it will take longer to implement than the Pine Hills Road Alternative.
C: Maximize Potential					
C-1.a: Minimizes the number of times trail crosses the street	Data	***Determined to be Infeasible***	0	0	N/A
C-1.b: Maximizes miles of trail adjacent to developed/populated areas	Data		3.0 miles	3.9 miles	N/A
C-1.c: Maximizes the number of LYNX Links the trail connects to	Data		1 Link 443	2 Link 9 and 443	N/A
C-1.d: Maximizes miles of trail located at least 10 feet away from a roadway	Data		1.4 miles	1.0 mile	N/A
C-1.e: Maximizes miles of trail with existing lighting facilities	Data		2.1 miles	3.0 miles	N/A
C-2: Consistency of trail with the appearance and aesthetics of the surrounding built environment	Qual		Yes	Yes	See accompanying text in report.

Coast to Coast Trail - Orange County Gap
Table 4.3-2: Alternatives Evaluation Ratings Matrix

Guiding Principles Evaluation	Type	Alt 1 Duke Energy Alternative	Alt 1a Hybrid Alternative	Alt 2 Pine Hills Road Alternative
A: Collaboration				
A-1: Number of attendees for PVT meetings	Data	***Not a Differentiator***		
A-2: Advertise public meetings in a timely manner to at least 75% of all households residing within the Study Area	Data			
Number of Evaluation Measures Met				
B: Trail Strategies				
B-1.a: Minimizes cost to mitigate for impacts to existing utilities	Qual	***Determined to be Infeasible***	✓	X
B-1.b: Minimizes time needed to mitigate for impacts to existing utilities	Qual		✓	X
B-2.a: Minimizes cost to acquire right of way	Qual		X	✓
B-2.b: Minimizes time needed to acquire right of way	Qual		X	✓
B-3: Minimizes overall capital cost	Qual		X	✓
B-4: Ability to implement project in a short timeframe	Qual		X	✓
Number of Evaluation Measures Met		*N/A*	*2*	*4*
C: Maximize Potential				
C-1.a: Minimizes the number of times trail crosses the street	Data	***Determined to be Infeasible***	✓	✓
C-1.b: Maximizes miles of trail adjacent to developed/populated areas	Data		X	✓
C-1.c: Maximizes the number of LYNX Links the trail connects to	Data		X	✓
C-1.d: Maximizes miles of trail located at least 10 feet away from a roadway	Data		✓	X
C-1.e: Maximizes miles of trail with existing lighting facilities	Data		X	✓
C-2: Consistency of trail with the appearance and aesthetics of the surrounding built environment	Qual		✓	✓
Number of Evaluation Measures Met		*N/A*	3	5
OVERALL (sum of all evaluation measures met)		**N/A**	**5**	**9**

5 Conclusion and Next Steps

5.1 Conclusion

This project is aiming to close a 3.9 mile gap in Orange County as part of the larger Coast to Coast Trail. While most of the alignment to close the gap is in place, the alignment connecting the portion of the trail along Clarcona-Ocoee Road with the portion along Beggs Road was unknown. Three alternatives, utilizing the Duke Energy Easement and/or Pine Hills Road, were ultimately developed and evaluated for consideration. One of the alternatives (Alternative 1) that relied entirely on the Duke Energy Easement was eliminated from further consideration as it was deemed to be infeasible to construct according to Duke Energy's requirements for trail placement.

Based on the evaluation that was performed using the evaluation measures documented in the Purpose and Need Statement Report, it was determined that Alternative 2 (which runs along Pine Hills Road) was the preferred alternative.

5.2 Next Steps

The following are the next steps in this project:

Finalize drainage assessment along US 441
A planning-level drainage assessment along US 441 will be conducted to better understand the drainage impacts associated with the construction of a trail along this stretch of roadway. This is particularly important since this area is currently an open swale design. The completed drainage assessment will be fully incorporated in the planning-level cost estimate for this project.

Finalize alignment of trail using preferred alternative
Following internal coordination meetings with the various FDOT Units, as well as finalizing the drainage assessment along US 441, the final alignment for the trail will be developed.

Development of a final planning-level cost estimate using the preferred alternative
Once the final alignment is complete, a final planning-level cost estimate will be developed for the entire trail alignment that includes the preferred alternative.

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Appendix A:
Duke Energy Trail Guidelines

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Electric Transmission Right of Way Requirements for Shared-Use Paths/Trails

This list of Duke Energy's transmission right of way requirements for the co-location of shared-use paths/trails has been developed as a guideline to answer the most frequently asked questions. This should not be considered a comprehensive list of all requirements or factors that may need to be addressed. You should contact the Asset Protection Right of Way Specialist if you have additional questions or concerns. This list of requirements and guidelines is subject to change at any time and without notice. Duke Energy reserves all rights conveyed to it by the right of way agreement applicable to the subject property. An engineering drawing, including topographic grade changes, location of Duke Energy structures and paths/trails must be approved by an Asset Protection Specialist.

Compliance with these Duke Energy Shared-Use Path/Trails requirements, or approval of any such plans by Duke Energy, does not guarantee that other applicable requirements imposed by any local, county, state, federal or other applicable regulatory agency have been satisfied.

Definition: For purposes of this document the term "trail(s)" shall be used to refer to Multi-Use Paths or Shared-Use Paths as defined by the American Association of State Highway and Transportation Officials (AASHTO).

1. The trails must not exceed a total of 12 feet in width, regardless of the surface construction material.
2. A minimum separation of 25 feet is required between the trail and its associated easement, to any Duke Energy electrical facility. This includes, but is not limited to, poles, towers, guy anchor(s), equipment, etc. If the owner of the trail is not the current owner of the fee simple title to the lands underlying Duke Energy's easement, the trail owner shall obtain a legally sufficient easement from the current fee simple title owner and produce said easement to Duke Energy prior to commencing activities within the Duke Energy easement. In the event a private easement is not required, no portion of the trail or shoulder, or associated grading, shall be located within 25 feet of any electrical facility.
3. The owner of the trail shall be responsible for safety and liability associated with its construction or use thereof.
4. Bollards shall be installed per Duke Energy specifications, with Duke Energy locks, where the trailheads connect with roads/streets as to prevent vehicular traffic. Duke Energy may require reinforcement of the trail at specified access points along the corridor for Duke Energy heavy equipment crossings. These trail reinforcement areas shall consist of a 20-foot-long, 12-foot-wide paved area capable of supporting 80,000 pounds with pavement markings indicating "heavy equipment crossing."
5. Culverts shall be installed where the trails cross creeks, ditches, etc. These culverts shall be capable of supporting 80,000 pounds, and shall be a minimum of 20 feet wide. Signage must indicate the maximum load of the crossing at culvert approach.
6. No structures including, but not limited to, lights, signs, benches, exercise equipment, and irrigation systems shall be located within the Duke Energy easement.
7. Planting of vegetation shall adhere to the Right of Way (RW) Restrictions Guidelines for the specific Duke Energy territory. A copy of the RW Restrictions/Guidelines can be obtained from your Asset Protection Specialist.
8. Duke Energy reserves the right to close, without notice, all or a portion of the trail located within the transmission line easement, for any length of time, for construction, maintenance or emergency line operations.
9. Duke Energy will not be held responsible for any damages to the trails due to its operations or any liability based on the use of the trail. Prior to the installation of a shared-use trail, a "Trail Encroachment Agreement", which includes "hold harmless" language, shall be executed with Duke Energy. In addition, deed information of all property owners that the trail affects must be supplied to Duke Energy. Proof that the property owners have signed an easement agreement with the owner of the trail will be required, as applicable.
10. All other Duke Energy electric transmission right of way restrictions/guidelines shall apply to the installation of trails.

We hope this is useful information. If you have additional questions or plan any activity not mentioned above, please contact:

Duke Energy Representative _____ **Phone Number** _____

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Appendix B: Maps Depicting 25 Foot Buffer around Duke Energy Facilities

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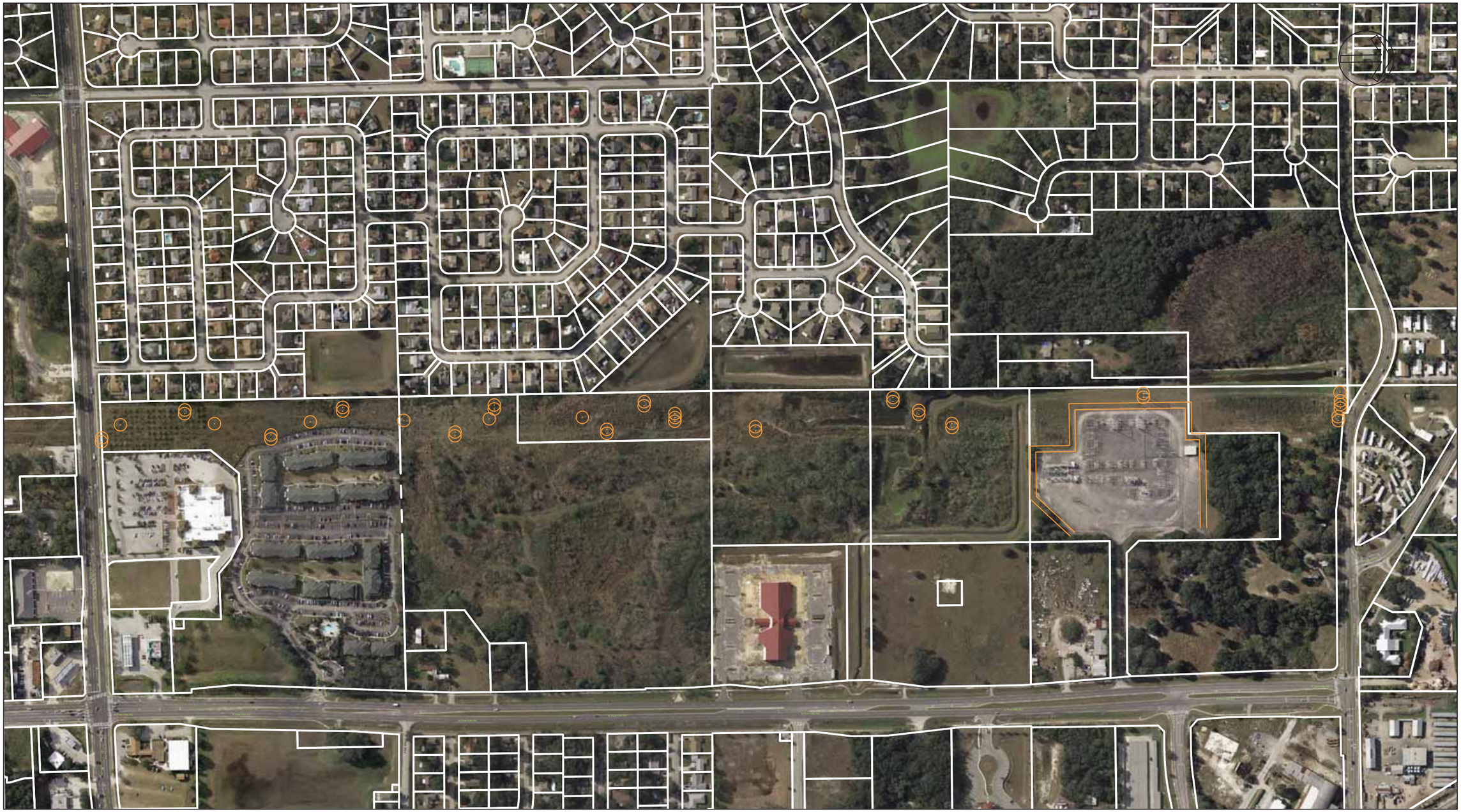

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Coast To Coast CONNECTOR

COAST TO COAST TRAIL
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MATCHLINE SHEET 26

Red Bone Ln

Clarcona-Ocoee Rd

MATCHLINE SHEET 8

MATCHLINE SHEET 10

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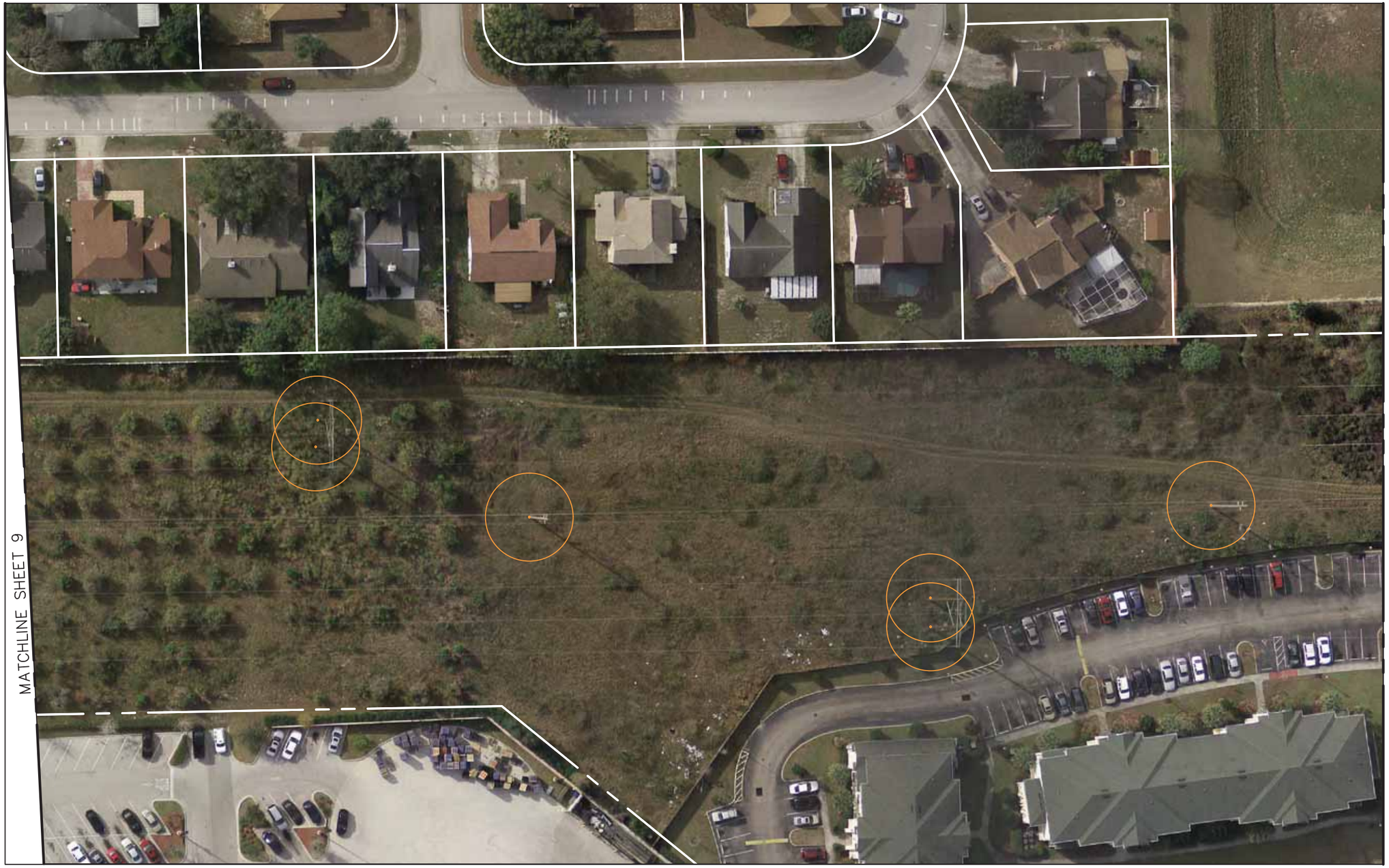

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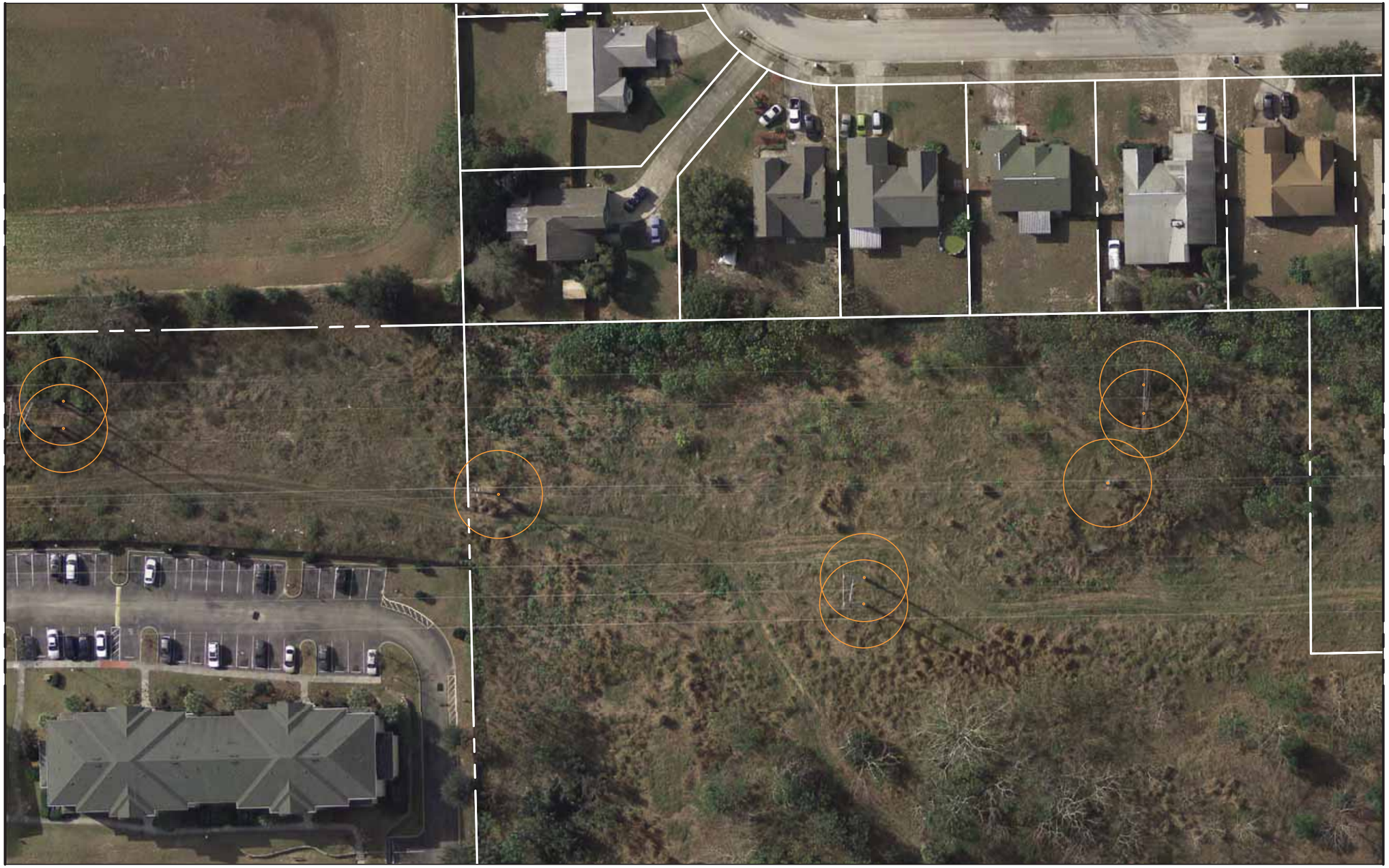

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Appendix C:
Alternative 1a Concept Plan

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MATCHLINE SHEET 8

MATCHLINE SHEET 10

Red Bone Ln

Clarcona-Ocoee Rd

10'

12'

4.5'

10'

12'

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29

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DATE	DESCRIPTION						30

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31

Appendix D:
Alternative 2 Concept Plan

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MATCHLINE SHEET 2

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1

MATCHLINE SHEET 1

MATCHLINE SHEET 3

60 0 60 120

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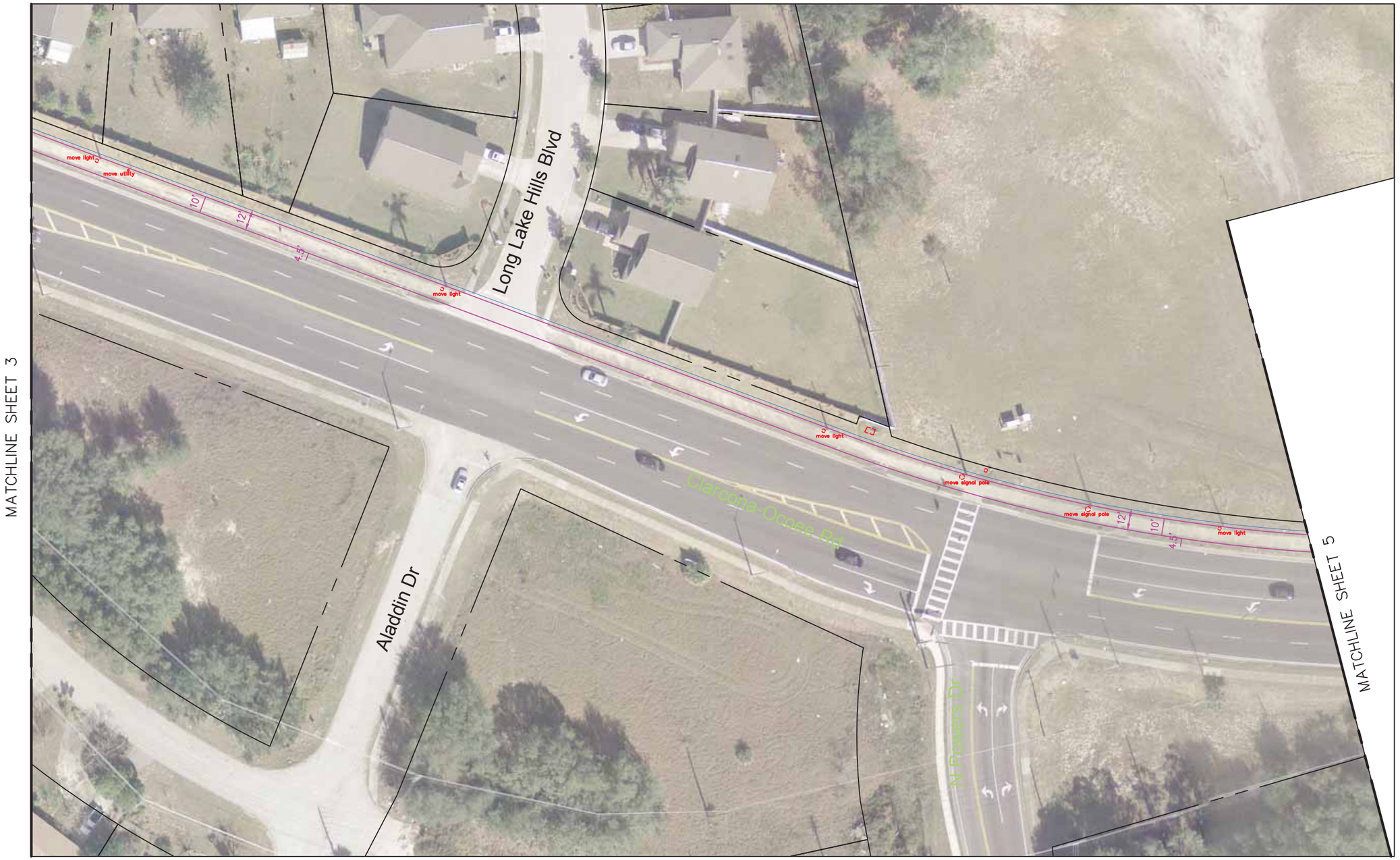
3



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SHEET NO.
4

MATCHLINE SHEET 4

MATCHLINE SHEET 6

60 0 60 120

SCALE IN FEET

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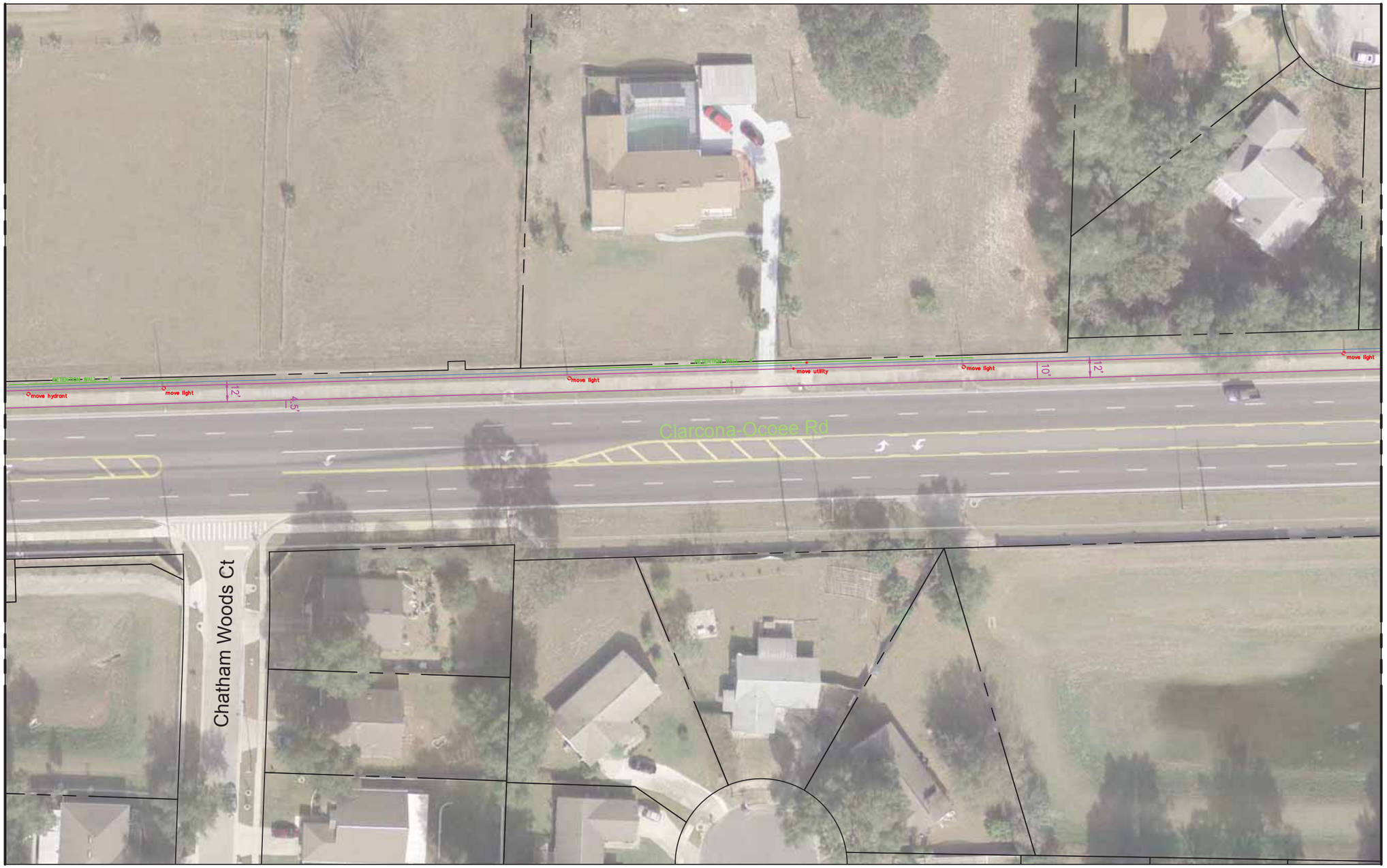
SHEET NO.

5

MATCHLINE SHEET 5



MATCHLINE SHEET 7

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6

MATCHLINE SHEET 6

MATCHLINE SHEET 8

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MATCHLINE SHEET 7

MATCHLINE SHEET 9

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SHEET NO.
8

MATCHLINE SHEET 26

MATCHLINE SHEET 8

MATCHLINE SHEET 10

Red Bone Ln

Clarcona-Ocoee Rd

10'

12'

4.5'

10'

12'

60 0 60 120

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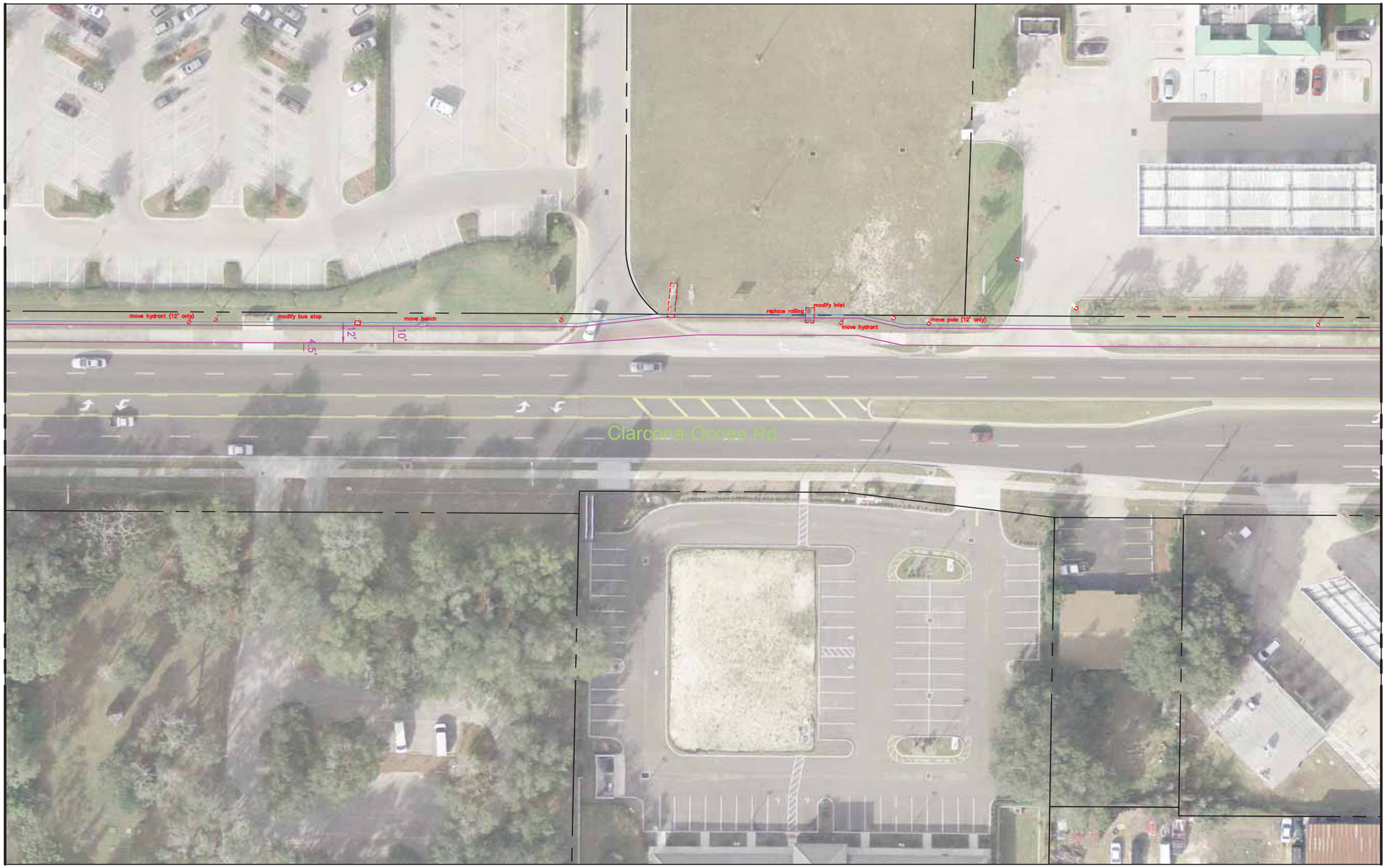
9

MATCHLINE SHEET 9



MATCHLINE SHEET 11

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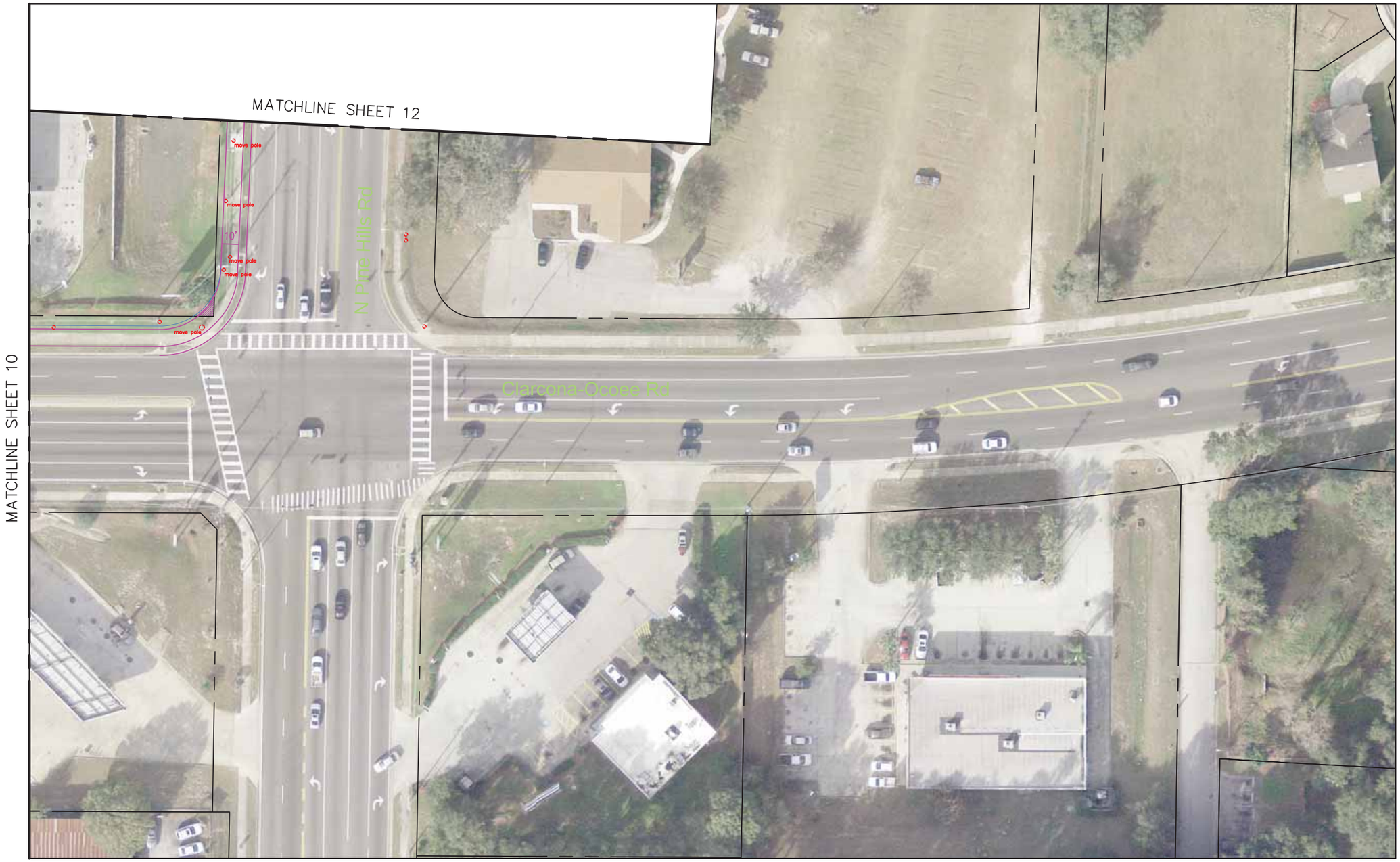
10



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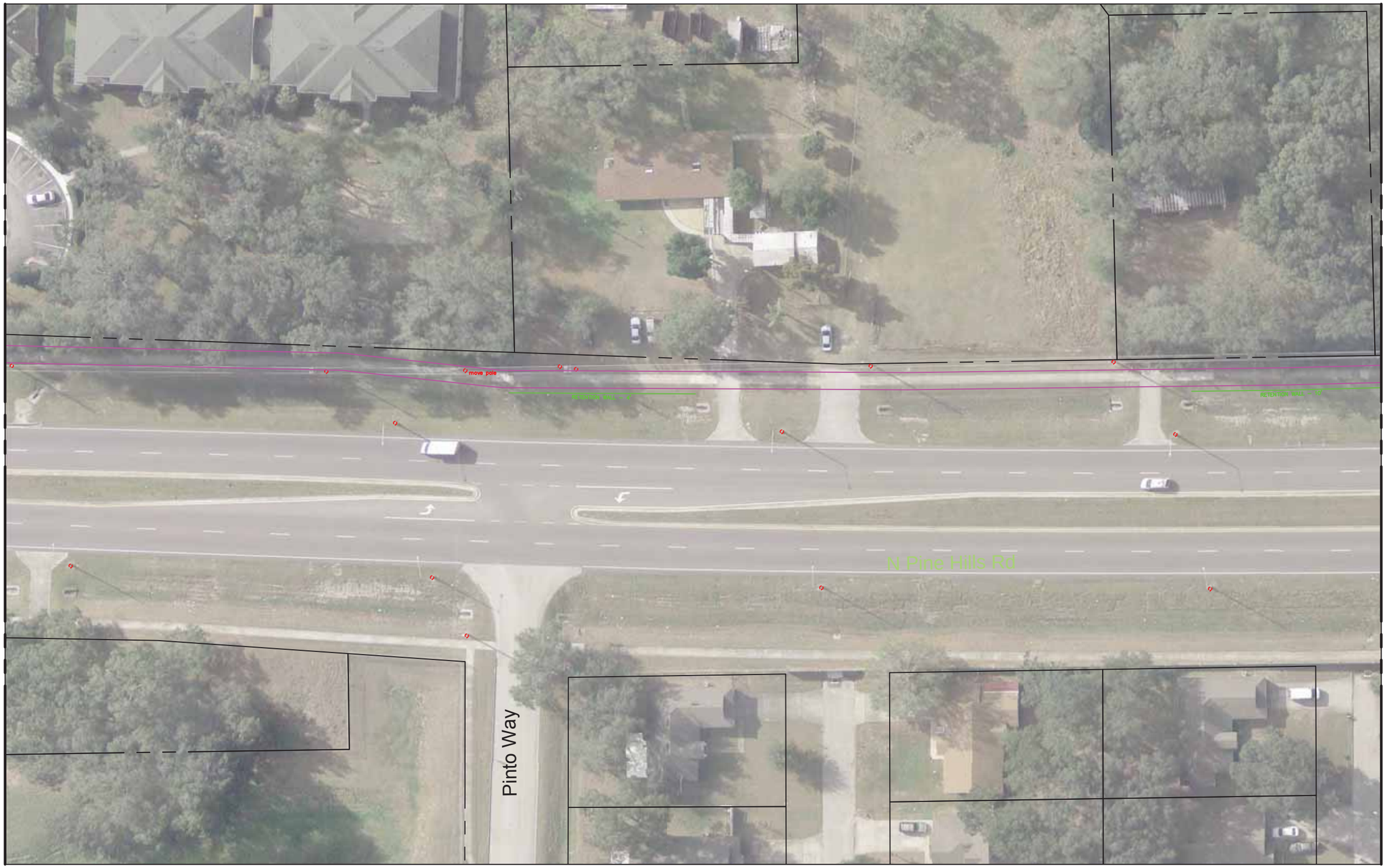
12



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13

MATCHLINE SHEET 13

MATCHLINE SHEET 15

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14

MATCHLINE SHEET 14

MATCHLINE SHEET 16

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15

MATCHLINE SHEET 15

MATCHLINE SHEET 17

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16

MATCHLINE SHEET 16

MATCHLINE SHEET 18

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MATCHLINE SHEET 32

MATCHLINE SHEET 19

MATCHLINE SHEET 17

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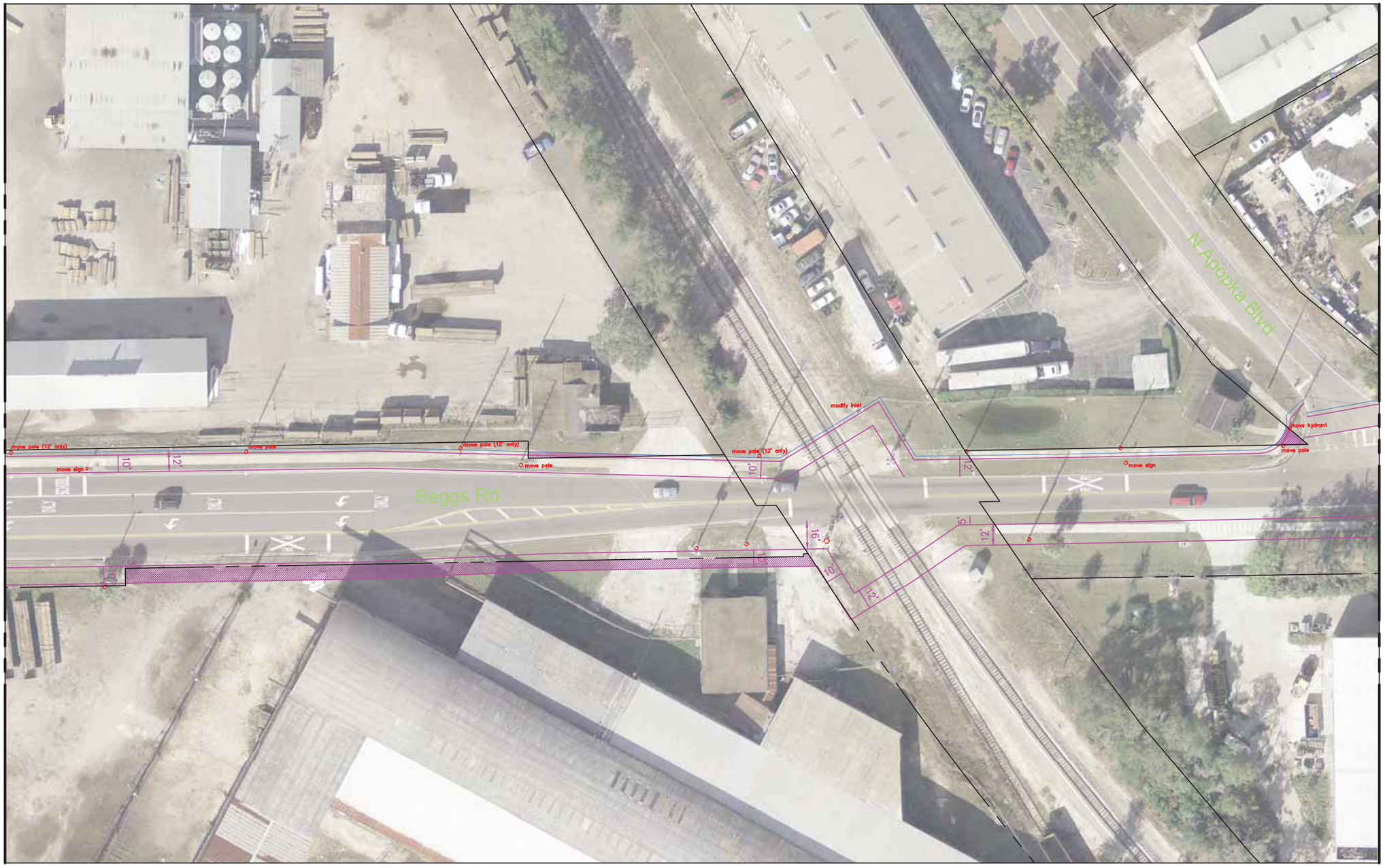
18

MATCHLINE SHEET 18



MATCHLINE SHEET 20

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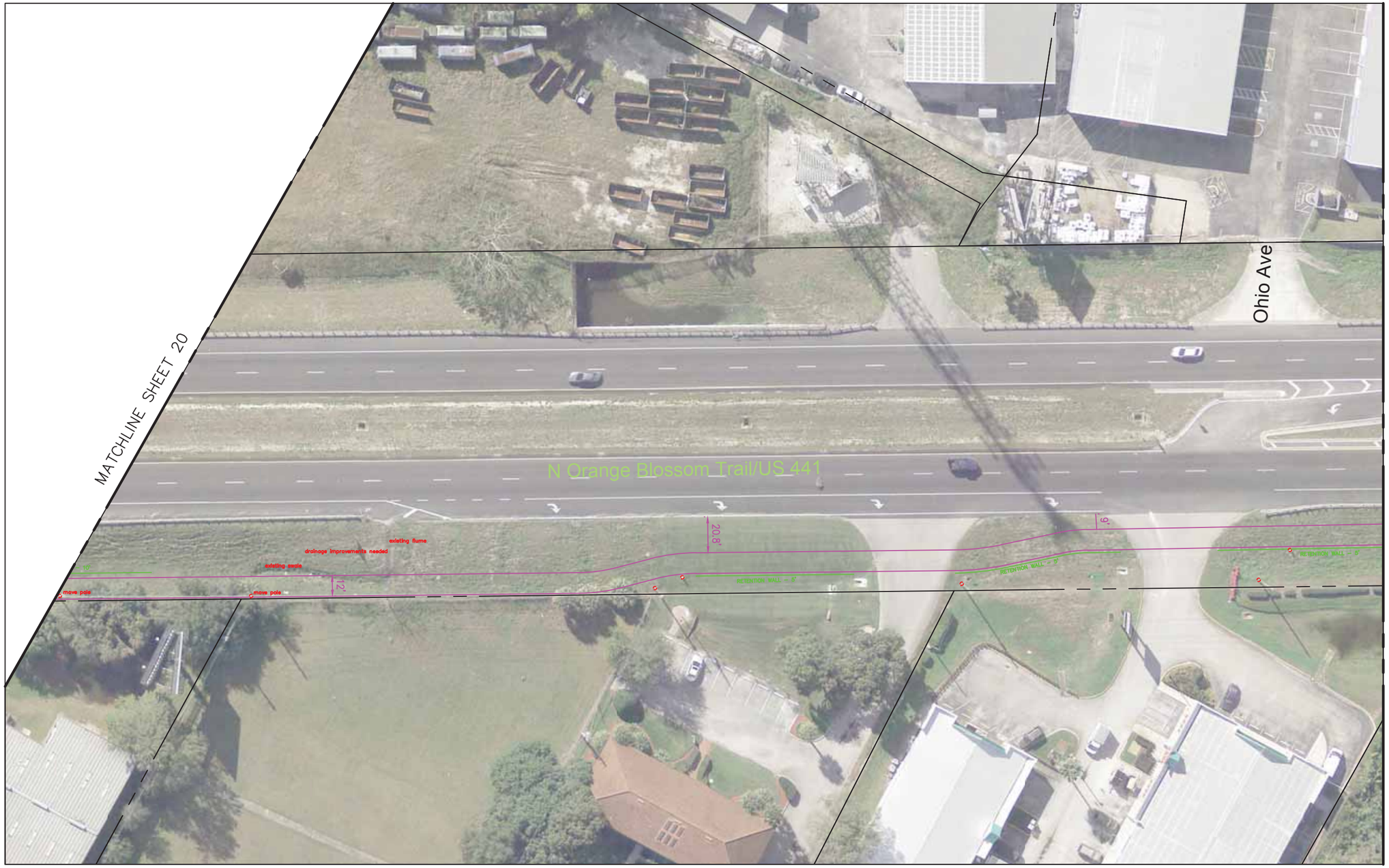

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MATCHLINE SHEET 21

MATCHLINE SHEET 23

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MATCHLINE SHEET 22

MATCHLINE SHEET 24

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23

MATCHLINE SHEET 23

MATCHLINE SHEET 25

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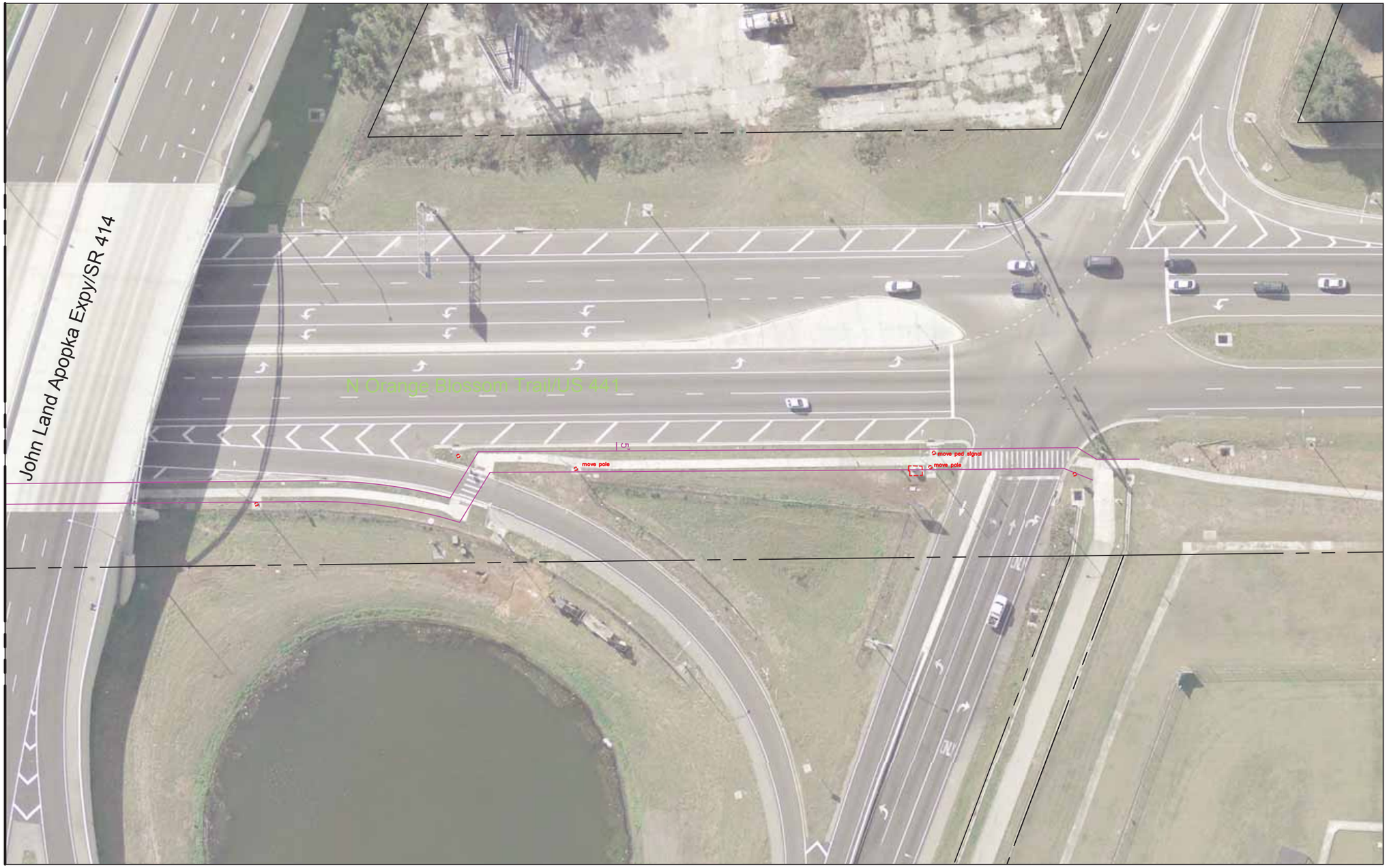
24

MATCHLINE SHEET 24



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