

APPENDIX G

ACCESS MANAGEMENT ANALYSIS

ACCESS MANAGEMENT ANALYSIS

I-95 / Ellis Road Interchange and
Ellis Road from I-95 to Wickham Road (CR 509)
Project Development & Environment Study

Brevard County, Florida

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1.1 Existing Access Management

Existing Ellis Road from John Rodes Boulevard to Wickham Road is classified as an urban minor arterial and has a posted speed limit of 35 mph. The proposed design is a four-lane roadway that will become a SIS facility and increase the posted speed limit to at least 45 mph.

Two access scenarios, Class 3 and Class 5, were examined as part of this PD&E Study. Either access management class can be applied to the 45 mph or 50 mph alignment alternatives examined in the previous sections of this chapter. However, Class 5 is more conducive to the 45 mph design speed, while the Class 3 classification is more conducive to the higher 50 mph design speed and meets the requirements for SIS roadways.

Table 1.1 contains a summary of access management criteria according to the FDOT Plans Preparation Manual (PPM), Volume I, Table 1.8.2. The connection spacing in Table 1.1 is based on the posted speed limit rather than the design speed, according to Florida Statute 14-97.

Table 1.1 - Access Management Standards for Arterial Roadways

| Access Class | Speed Limit (mph) | Median Type | Connection Spacing | Median Spacing | | Signal Spacing |
|--------------|-------------------|-------------|--------------------|----------------|-------|----------------|
| | | | | Directional | Full | |
| 3 | ≤45 | Restrictive | 440 | 1,320 | 2,640 | 2,640 |
| 3 | >45 | Restrictive | 660 | 1,320 | 2,640 | 2,640 |
| | | | | | | |
| 5 | ≤45 | Restrictive | 245 | 660 | 1,320 | 1,320 |
| 5 | >45 | Restrictive | 440 | 660 | 2,640 | 2,640 |

Note: All dimensions shown in feet.

Figures 1.1A through D and 1.2A through D, located at the end of this report, display the implementation of the two access classes described in Table 1.1.



1.2 Class 3 Access Management

1.2.1 Median Openings

Full median openings are evaluated at the two interchange ramp locations along with the major north south roads (John Rodes Boulevard and Wickham Road). Between John Rodes Boulevard and Wickham Road, spacing is adequate for full median openings at both East Drive and Technology Drive. Table 1.2 displays a summary of the Class 3 median locations and related distances to adjacent median openings for this scenario. Figures 1.1A through D display the access management configuration assuming a full median opening at East Drive. Class 3 full median openings are shown as a brown square “F”, while Class 3 directional median openings are shown as a circular “D”.

Greenboro Drive provides a major access to a residential community of roughly 150 houses and two apartment complexes. For the minor sideroads located between John Rodes Boulevard and just west of Wickham Road, East Drive and Greenboro Drive have the highest number of projected left turn movements along the project corridor for vehicles emanating from the sideroad. For these reasons a full median opening at Greenboro Drive is also evaluated and is depicted in Table 1.3, which summarizes the Class 3 median locations and related distances to adjacent median openings. Figures 1.2A through D display the access management configuration assuming a full median opening at Greenboro Drive.

An important point to note is that both the full and directional median opening spacing for Class 3 access management is independent of the posted speed.

Traffic volumes on the mainline and sideroads were obtained from the *Final Design Technical Traffic Memorandum*, which was reviewed and approved by the District in March of 2011. The traffic volumes on the sideroads were used in determining the optimal locations for full median openings.



Table 1.2 – Class 3 Median Openings (Full Median Opening at East Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|-----------------------|------|
| John Rodes Blvd. | 100+25 | Full | | 33% | Empire | |
| | | | 1,063 | | | |
| American Print | 110+88 | WB Split Directional | | 8% | Stan Dr. | 1 |
| | | | 691 | | | |
| Empire | 117+79 | EB Split Directional | | 33% | John Rodes Blvd. | 1 |
| | | | 729 | | | |
| Stan Dr. | 125+08 | Directional | | -16% | East Dr. | 2 |
| | | | 1,115 | | | |
| East Dr. | 136+23 | Full | | -16% | Stan Dr. | 3 |
| | | | 426 | | | |
| Greenboro Dr. | 140+49 | None | | N/A | | 4 |
| | | | 426 | | | |
| Distribution Dr. West | 144+75 | None | | N/A | | 4 |
| | | | 577 | | | |
| Distribution Dr. East | 150+52 | Directional | | -5% | Technology Dr. | 5 |
| | | | 1,252 | | | |
| Technology Dr. East | 163+04 | Full | | -5% | Distribution Dr. East | 5 |
| | | | 1,165 | | | |
| Shinn Ave. | 174+69 | WB Split Directional | | 10% | Wickham Rd. | 6 |
| | | | 483 | | | |
| Lake Ibis Dr. | 179+52 | EB Split Directional | | 25% | Technology Dr. East | 6 |
| | | | 973 | | | |
| Wickham Rd. | 189+25 | Full | | -1% | Technology Dr. | |

For an arterial roadway, Class 3 is the most restrictive type of access management. The results of Class 3 along Ellis Road are listed in the following notes to Table 1.2:

1. A split directional median opening at these two locations allows left turn movements into two business entrances (American Print, and Empire Electric) while meeting



Class 3 directional median opening spacing. This configuration also minimizes U-turn movements from John Rodes Boulevard and Stan Drive. For a standard directional median opening to meet Class 3 spacing, the opening would have to be placed between the two business entrances and would provide only U-turn movements. Also with a standard directional median opening, vehicles wishing to turn left to enter the two businesses would perform U-turn movements at John Rodes Boulevard and Stan Drive.

2. Placing a directional median opening at Stan Drive would require a design variation to the Class 3 standards. Stan Drive is 1,117' from the full median opening at East Drive, making the distance 15% under the required 1,320'. This design variation is being recommended because Stan Drive is the main access to 26 buildings of which several have multiple businesses.
3. The sum of the projected left turn movements for both the AM and PM peak hours for East Drive were 887, justifying the full median opening.
4. No left turn movements can be made at Greenboro Drive and Distribution Drive (west) due to the full median opening at Technology Drive.
5. The distance between a directional median opening at Distribution Drive (east) and a full median opening at Technology Drive (1,252') is within 10% of the required distance (1,320'). Therefore, no design variation is required.
6. A split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive while meeting Class 3 criteria.



Table 1.3 – Class 3 Median Openings (Full Median Opening at Greenboro Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|---------------------|------|
| John Rodes Blvd. | 100+25 | Full | | 33% | Empire | |
| | | | 1,063 | | | |
| American Print | 110+88 | WB Split Directional | | 8% | Stan Dr | 1 |
| | | | 691 | | | |
| Empire | 117+79 | EB Split Directional | | 33% | John Rodes Blvd | 1 |
| | | | 729 | | | |
| Stan Dr. | 125+08 | Directional | | 8% | American Print | 2 |
| | | | 1,115 | | | |
| East Dr. | 136+23 | None | | N/A | | 3 |
| | | | 426 | | | |
| Greenboro Dr. | 140+49 | Full | | 17% | Stan Dr | 4 |
| | | | 426 | | | |
| Distribution Dr. West | 144+75 | None | | N/A | | 5 |
| | | | 577 | | | |
| Distribution Dr. East | 150+52 | None | | N/A | | 5 |
| | | | 1,252 | | | |
| Technology Dr. | 163+04 | Directional | | 25% | Lake Ibis Dr | 6 |
| | | | 1,165 | | | |
| Shinn Ave. | 174+69 | WB Split Directional | | 10% | Wickham Rd | 7 |
| | | | 483 | | | |
| Lake Ibis Dr. | 179+52 | EB Split Directional | | 25% | Technology Dr. East | 7 |
| | | | 973 | | | |
| Wickham Rd. | 189+25 | Full | | 99% | Technology Dr. East | |

The results of Class 3 Access Management in median openings with a full median opening at Greenboro Drive are listed in the following notes to Table 1.3:



1. A split directional median opening at these two locations allows left turn movements into two business entrances (American Print, and Empire Electric) while meeting Class 3 directional median opening spacing. This configuration also minimizes U-turn movements from John Rodes Boulevard and Stan Drive. For a standard directional median opening to meet Class 3 spacing, the opening would have to be placed between the two business entrances and would provide only U-turn movements. Also with a standard directional median opening, vehicles wishing to turn left to enter the two businesses would perform U-turn movements at John Rodes Boulevard and Stan Drive.
2. A directional median opening at Stan Road meets Class 3 criteria.
3. East Road has no left turn access due to its close proximity to the full median opening at Greenboro Drive.
4. Greenboro Drive is one of two major access roads to a residential neighborhood and two apartment complexes. Therefore, Greenboro Drive has a full median opening.
5. Distribution Drive (west and east) has no left turn access due to its close proximity to the full median opening at Greenboro Drive.
6. Technology Drive (East) has a directional median opening.
7. A split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive while meeting Class 3 criteria.



1.3 Class 5 Access Management

1.3.1 Median Openings

The full median opening, signal, and connection spacing for Class 5 access management are dependent on the posted speed limit, while the directional opening is not. The following nomenclature is used on Figures 1.1A through D and Figures 1.2A through D

- Full median openings with speed limits greater than 45 mph are shown as a dark blue square “F”
- Full median openings with speed limits less than 45 mph are shown as a light blue square “F”
- Directional median openings are shown as a dark blue circular “D”

The minimum distance between a full and a directional median openings or between two directional openings is 660’. For posted speeds greater than 45 mph, the minimum distance between full median openings is 2,640’ (see Table 1.5). For posted speeds of 45 mph or less the minimum distance between full median openings is 1,320’.

Full median openings are evaluated at the two interchange ramp locations along with the major north south roads (John Rodes Boulevard and Wickham Road) and at both East Drive and Technology Drive East. For a posted speed greater than 45 mph, Table 1.4 displays a summary of the Class 5 median locations and related distances to adjacent median openings for this scenario. Table 1.6 provides similar information for a posted speed less than or equal to 45 mph.

As discussed previously, Greenboro Drive provides a major access to a residential community of roughly 150 houses and two apartment complexes, with the most projected left turn movements beside East Drive. For a full median opening at Greenboro Drive and a posted speed greater than 45 mph, Table 1.5 displays a summary of the Class 5 median locations and related distances to adjacent median openings for this scenario. Table 1.7 provides similar information for a speed limit less than or equal to 45 mph.



Table 1.4 - Class 5 Median Openings - Speed Limit > 45 mph (Full Median Opening at East Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|-----------------------|------|
| John Rodes Blvd | 100+25 | Full | | 36% | East Dr. | |
| | | | 1,063 | | | |
| American Print | 110+88 | Directional | | 5% | Empire | 1 |
| | | | 691 | | | |
| Empire | 117+79 | Directional | | 5% | American Print | 1 |
| | | | 729 | | | |
| Stan Dr. | 125+08 | Directional | | 10% | Empire | 2 |
| | | | 1,115 | | | |
| East Dr. | 136+23 | Full | | 29% | Distribution Dr. West | 3 |
| | | | 426 | | | |
| Greenboro Dr. | 140+49 | None | | | | 4 |
| | | | 426 | | | |
| Distribution Dr. West | 144+75 | Directional | | 44% | Ferguson Water | 5 |
| | | | 577 | | | |
| Distribution Dr. East | 150+52 | None | | | | |
| | | | 376 | | | |
| Ferguson Water | 154+28 | Directional | | 33% | Technology Dr. | 5 |
| | | | 876 | | | |
| Technology Dr. | 163+04 | Full | | -1% | Wickham Rd. | 6 |
| | | | 1,165 | | | |
| Shinn Ave | 174+69 | WB Split Directional | | 121% | Wickham Rd. | 7 |
| | | | 483 | | | |
| Lake Ibis Dr. | 179+52 | EB Split Directional | | 150% | Technology Dr. | 7 |
| | | | 973 | | | |
| Wickham Rd. | 189+25 | Full | | -1% | Technology Dr. | |

Class 5 criteria with a posted speed limit greater than 45 mph is less stringent than Class 3. The results of a Class 5 classification with a posted speed limit greater than 45 mph are listed in the following notes to Table 1.5:



1. Each business entrance (Empire Electric and American Print) receives its own directional median opening.
2. A directional median opening at Stan Drive meets class 5 criteria.
3. The sum of the projected left turn movements for both the AM and PM peak hours for East Drive were 887, justifying the full median opening.
4. No left turn movements can be made at Greenboro Drive due to the full median opening at East Drive.
5. There is enough space for two directional median openings between East Drive and Technology Drive. These are placed at Distribution Drive (West) and a business entrance (Ferguson Water Works).
6. The distance from a full median opening at Technology Drive (East) to a full median opening at Wickham Road (2,621') is less than 10% of the required distance (2,640'). Therefore, no design variation is required.
7. An EB / WB split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive, respectively, while meeting Class 3 criteria.



Table 1.5 - Class 5 Median Openings - Speed Limit > 45 mph (Full Median Opening at Greenboro Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|-----------------------|------|
| John Rodes Blvd | 100+25 | Full | 1,063 | 52% | Greenboro Dr. | |
| American Print | 110+88 | Directional | 691 | 5% | Empire | 1 |
| Empire | 117+79 | Directional | 729 | 5% | American Print | 1 |
| Stan Dr. | 125+08 | Directional | 773 | 10% | Empire | 2 |
| Mid-Block | 132+81 | Directional | 342 | 117% | Stan Dr. | |
| East Dr. | 136+23 | None | 426 | | | 3 |
| Greenboro Dr. | 140+49 | Full | 426 | 52% | Distribution Dr. Esst | 4 |
| Distribution Dr. West | 144+75 | None | 577 | | | |
| Distribution Dr. East | 150+52 | Directional | 376 | 52% | Greenboro Dr. | 5 |
| Ferguson Water | 154+28 | None | 876 | | | |
| Technology Dr. | 163+04 | Directional | 1,165 | 90% | Distribution Dr. Esst | 6 |
| Shinn Ave | 174+69 | WB Split Directional | 483 | 121% | Wickham Rd. | 7 |
| Lake Ibis Dr. | 179+52 | EB Split Directional | 973 | 150% | Technology Dr. | 7 |
| Wickham Rd. | 189+25 | Full | | 85% | Technology Dr. | |



The results for Class 5 > 45 mph, with a full median opening at Greenboro Drive are listed in the following notes to Table 1.5:

1. Each business entrance (Empire Electric and American Print) receives its own directional median opening.
2. A directional median opening at Stan Drive meets Class 5 criteria.
3. No left turn movements can be made at East Drive due to the full median opening at Greenboro Drive.
4. Greenboro Drive is one of two major access roads to a residential neighborhood and two apartment complexes. Therefore, Greenboro Drive has a full median opening;
5. Distribution Drive (East) receives a directional median opening.
6. Technology Drive receives a directional median opening.
7. An EB / WB split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive, respectively, while meeting Class 3 criteria.



Table 1.6 - Class 5 Median Openings - Speed Limit ≤ 45 mph (Full Median Opening at East Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|----------------------|------|
| John Rodes Blvd | 100+25 | Full | | 61% | American Print | |
| | | | 1,063 | | | |
| American Print | 110+88 | Directional | | 5% | Empire | 1 |
| | | | 691 | | | |
| Empire | 117+79 | Directional | | 5% | American Print | 1 |
| | | | 729 | | | |
| Stan Dr. | 125+08 | Full | | -16% | East Dr. | 2 |
| | | | 1,115 | | | |
| East Dr. | 136+23 | Full | | -16% | Stan Dr. | 3 |
| | | | 426 | | | |
| Greenboro Dr. | 140+49 | None | | | | 4 |
| | | | 426 | | | |
| Distribution Dr. West | 144+75 | None | | | | 4 |
| | | | 577 | | | |
| Distribution Dr. East | 150+52 | Full | | -5% | Technology Dr. | 5 |
| | | | 376 | | | |
| Ferguson Water | 154+28 | None | | | | |
| | | | 876 | | | |
| Technology Dr. East | 163+04 | Full | | -5% | Distribution Dr East | 6 |
| | | | 1,165 | | | |
| Shinn Ave. | 174+69 | WB Split Directional | | 121% | Wickham Rd. | 7 |
| | | | 483 | | | |
| Lake Ibis Dr. | 179+52 | EB Split Directional | | 150% | Technology Dr. East | 7 |
| | | | 973 | | | |
| Wickham Rd. | 189+25 | Full | | 99% | Technology Dr. East | |

Class 5 criteria with a posted speed limit 45 mph or less is the most accommodating for the existing intersections and entrances within the project limits. The results of Class 5, 45 mph or less, classification are listed in the following notes to Table 1.6:



1. Each business entrance (Empire Electric and American Print) receives its own directional median opening.
2. Placing a full median opening at Stan Drive would require a design variation to the Class 5 standards for a posted speed of 45 mph or less. Stan Drive is 1,115' from the full median opening at East Drive making it 16% under the required 1,320'. This design variation is being recommended because Stan Drive is the main access to 26 buildings of which several have multiple businesses.
3. The sum of the projected left turn movements for both the AM and PM peak hours for East Drive were 887, justifying the full median opening.
4. No left turn access is allowed at Greenboro Drive and Distribution Drive (west) due to the full median opening at East Drive.
5. The distance between a full median opening at Distribution Drive (East) and a full median opening at Technology Drive (East) (1,252') is within 10% of the required distance (1,320'). Therefore, no design variation is required.
6. Technology Drive receives a full median opening.
7. An EB / WB split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive, respectively, while meeting Class 3 criteria.



Table 1.7 - Class 5 Median Openings - Speed Limit ≤ 45 mph (Full Median Opening at Greenboro Drive)

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To | Note |
|-----------------------|---------|----------------------|--------------|--------------------------|-----------------------|------|
| John Rodes Blvd | 100+25 | Full | | 61% | American Print | |
| | | | 1,063 | | | |
| American Print | 110+88 | Directional | | 5% | Empire | 1 |
| | | | 691 | | | |
| Empire | 117+79 | Directional | | 5% | American Print | 1 |
| | | | 729 | | | |
| Stan Dr. | 125+08 | Full | | 17% | Greenboro Dr. | 2 |
| | | | 773 | | | |
| Mid-Block | 132+81 | Directional | | 117% | Stan Dr. | |
| | | | 342 | | | |
| East Dr. | 136+23 | None | | | | 3 |
| | | | 426 | | | |
| Greenboro Dr. | 140+49 | Full | | 17% | Stan Dr. | 4 |
| | | | 426 | | | |
| Distribution Dr. West | 144+75 | None | | | | |
| | | | 577 | | | |
| Distribution Dr. East | 150+52 | Directional | | 52% | Greenboro Dr. | 5 |
| | | | 376 | | | |
| Ferguson Water | 154+28 | None | | | | |
| | | | 876 | | | |
| Technology Dr. East | 163+04 | Full | | 90% | Distribution Dr. East | 6 |
| | | | 1,165 | | | |
| Shinn Ave | 174+69 | WB Split Directional | | 121% | Wickham Rd. | 7 |
| | | | 483 | | | |
| Lake Ibis Dr. | 179+52 | EB Split Directional | | 150% | Technology Dr. | 7 |
| | | | 973 | | | |
| Wickham Rd. | 189+25 | Full | | 99% | Technology Dr. | |



The results of Class 5, 45 mph or less, classification with a full median opening at Greenboro Drive are listed in the following notes to Table 1.7:

1. Each business entrance (Empire Electric and American Print) receives its own directional median opening.
2. Stan Drive receives a full median opening.
3. No left turn movements can be made at East Drive due to the full median opening at Greenboro Drive.
4. Greenboro Drive is one of two major access roads to a residential neighborhood and two apartment complexes. Therefore, Greenboro Drive has a full median opening.
5. Distribution Drive (East) receives a directional median opening.
6. Technology Drive receives a full median opening.
7. An EB / WB split directional median opening allows left hand turn movements onto Shinn Avenue and Lake Ibis Drive, respectively, while meeting Class 3 criteria.



1.3.2 Comparison of Median Openings Based On Access Management Classification

Class 5 Access Management is more permissive than Class 3 and accommodates several intersections and existing entrances that would require a median closure or relocation under Class 3. Of the two Class 5 categories, the criteria for entrances and median openings for posted speed limits less than 45 mph is the most accommodating. Regarding the accommodation of existing side roads, the quarter-mile versus half-mile spacing for full openings has significant implications. Table 1.8 summarizes these issues.

Table 1.8 – Access Management Classification Comparison

| Feature | Full Median Opening at East Drive | | | Full Median Opening at Greenboro Drive | | |
|-----------------------|-----------------------------------|----------------------|----------------------|--|----------------------|----------------------|
| | Class 3 | Class 5 > 45 | Class 5 ≤ 45 | Class 3 | Class 5 > 45 | Class 5 ≤ 45 |
| John Rodes Blvd | Full | Full | Full | Full | Full | Full |
| American Print | WB Split Directional | Directional | Directional | WB Split Directional | Directional | Directional |
| Empire Electrical | EB Split Directional | Directional | Directional | EB Split Directional | Directional | Directional |
| Stan Dr. | Directional* | Directional | Full* | Directional | Directional | Full |
| East Dr. | Full | Full | Full | None | None | None |
| Greenboro Dr. | None | None | None | Full | Full | Full |
| Distribution Dr. West | None | Directional | None | None | None | None |
| Distribution Dr. East | Directional | None | Full | None | Directional | Directional |
| Ferguson Water | None | Directional | None | None | None | None |
| Technology Dr. East | Full | Full | Full | Directional | Directional | Full |
| Shinn Ave | WB Split Directional | WB Split Directional | WB Split Directional | WB Split Directional | WB Split Directional | WB Split Directional |
| Lake Ibis Dr. | EB Split Directional | EB Split Directional | EB Split Directional | EB Split Directional | EB Split Directional | EB Split Directional |
| Wickham Rd. | Full | Full | Full | Full | Full | Full |



Effect of Access Management Class on Interchange

Due to the configuration of the interchange, the ramp intersections are located less than 1,000' apart. Given the modified diamond design of the ramps, achieving a 2,640' spacing, which is the required Class 3 distance between full median openings, between the ramp intersections is not feasible. In fact, the position of the ramp intersections does not allow the Class 5 requirement of 1,320' between full median openings to be met. A design variation will be required for the distance between the ramp intersections, regardless of which access management class is selected.

The distance between the eastern ramp intersection and John Rodes Boulevard is approximately 1,250'. As seen in Figure 1.1A, this distance requires a design variation for Class 3 criteria and Class 5 criteria if the posted speed is greater than 45 mph. For posted speeds of 45 mph or less, the Class 5 criteria of 1,320' between full median openings would not require a design variation.



1.4 Discussion and Recommendation of Access Management Class

As explained in detail in the Project Development Summary Report, Ellis Road and its connection to I-95 will eventually replace Eau Gallie Boulevard and New Haven Road (US 192) as the Strategic Intermodal System Connectors. Upon completion of improvements to Ellis Road and the interchange at I-95, Ellis Road will be designated as a “SIS Connector” for the Melbourne International Airport.

The Department has design criteria specific to roadways on the SIS. Since Ellis Road is to become an SIS connector roadway upon improvement, consideration is given to applying the same design criteria as for an actual SIS facility. The following excerpt is from Section 2.6.2 of the Department’s procedure entitled *Strategic Intermodal System (SIS) Highway Component Standards and Criteria (effective September 14, 2011)*:

2.6.2 Access Management Standards for Controlled Access Facilities for Planning and Design (A) Standards

The access management standards for controlled access segments of the SIS highway component shall be those contained in Access Class 2 or 3 as defined in Department *Rule Chapter 14-97, F.A.C.*

As stated in the above text, Class 2 or 3 is the access management requirement for a SIS facility. Given the urban nature of this project corridor and the comments related to access management from the Public Alternatives Meeting held on March 29, 2012, applying a Class 3 access management policy along the corridor is deemed to be too disruptive in regards to accessing existing sideroads and entrances that serve commercial establishments. A number of public comments received are related to the placement of full median openings and truck delivery access. **Class 5 access management for a posted speed of 45 mph or less** is the preferred access management designation for reconstruction and extension of Ellis Road as an SIS facility for the following reasons:

1. Class 5 is more suitable to the existing land use and location of existing sideroads and commercial developments accessed via sideroads connecting to Ellis Road.



2. Ellis Road connects to NASA Boulevard east of the project area, which features a bi-directional turn lane. This section will ultimately be part of the SIS connector to Melbourne International Airport as well as the reconstructed Ellis Road.
3. The Ellis Road improvement will be constructed and maintained by Brevard County. Therefore, the preferred Class 5 access management policy will be enforced by the County, who has not expressed a preference to a more restrictive Class 3 configuration.

The Department recognizes that the selection of a Class 5 access management policy for a posted speed of 45 mph or less is the most permissive type of access management for a controlled access facility. A design variation is required for changing the access management class from Class 5 to Class 3, which is the requirement stated in the *SIS Component Standards and Criteria*. Class 5 access management for a posted speed of 45 mph or less is proposed for the entire project corridor, including the interchange area beginning just west of I-95 and continuing to John Rodes Boulevard as well as the Ellis Road corridor.

The final preferred access management configuration is based on Table 1.6 (Class 5, 45 mph or less) assuming East Drive (as opposed to Greenboro Drive) receives a full median opening. Placing a median opening at Greenboro Drive was rejected due to the required realignment of East Drive on the north side of Ellis Road. The preferred access management configuration is based on Table 1.6 (Class 5, 45 mph or less) with the following noteworthy points:

1. A directional median opening to Empire Electric is no longer proposed, since the right-of-way impacts result in a commercial displacement.
2. Based on comments received from Downtown Produce Market and the adjoining commercial development park (Distribution Drive East and West), a full median was deemed to be necessary to this commercial complex. While the preference of some members of the business community is to locate the median opening at Distribution Drive West, this location would place a median opening too close (852') to East Drive. As a result, the full median opening at Distribution Drive East has been



chosen as the preferred full median opening location. Distribution Drive East and West are connected as a continuous roadway, so vehicles and delivery trucks wishing to turn left across Ellis Road will have a choice of using the full median opening at Distribution Drive East or making a right-hand turn and a U-turn at East Drive, the next downstream median opening.

3. A full median opening at Lake Ibis was added in lieu of a split directional opening in order to accommodate the significant number of businesses with sideroad access to Lake Ibis Drive.

The Class 5, 45 mph or less preferred access management configuration requires the following design variations:

1. A design variation is required for the for the 821' distance between the proposed full median openings ramp intersections within the interchange, as the distance is 27% over the allowable 10% variation in full median opening distance.
2. A design variation is required for the for the 1,115' distance between the proposed full median openings of Stan Drive and East Drive, as the distance is 6% over the allowable 10% variation in full median opening distance.
3. A design variation is required for the 973' distance between the proposed full median openings of Lake Ibis Drive and Wickham Road, as this distance is 16% over the allowable 10% variation in full median opening distance.

Based on the *Final Design Design Technical Traffic Memorandum* approved by the District in March of 2011, traffic signals are anticipated in the design year (2034) at the following intersections:

- Western ramp intersection
- Eastern ramp intersection
- John Rodes Boulevard
- East Drive
- Wickham Road

Table 1.10 summarizes the median openings under the preferred Class 5 configuration of 45 mph or less posted speed.

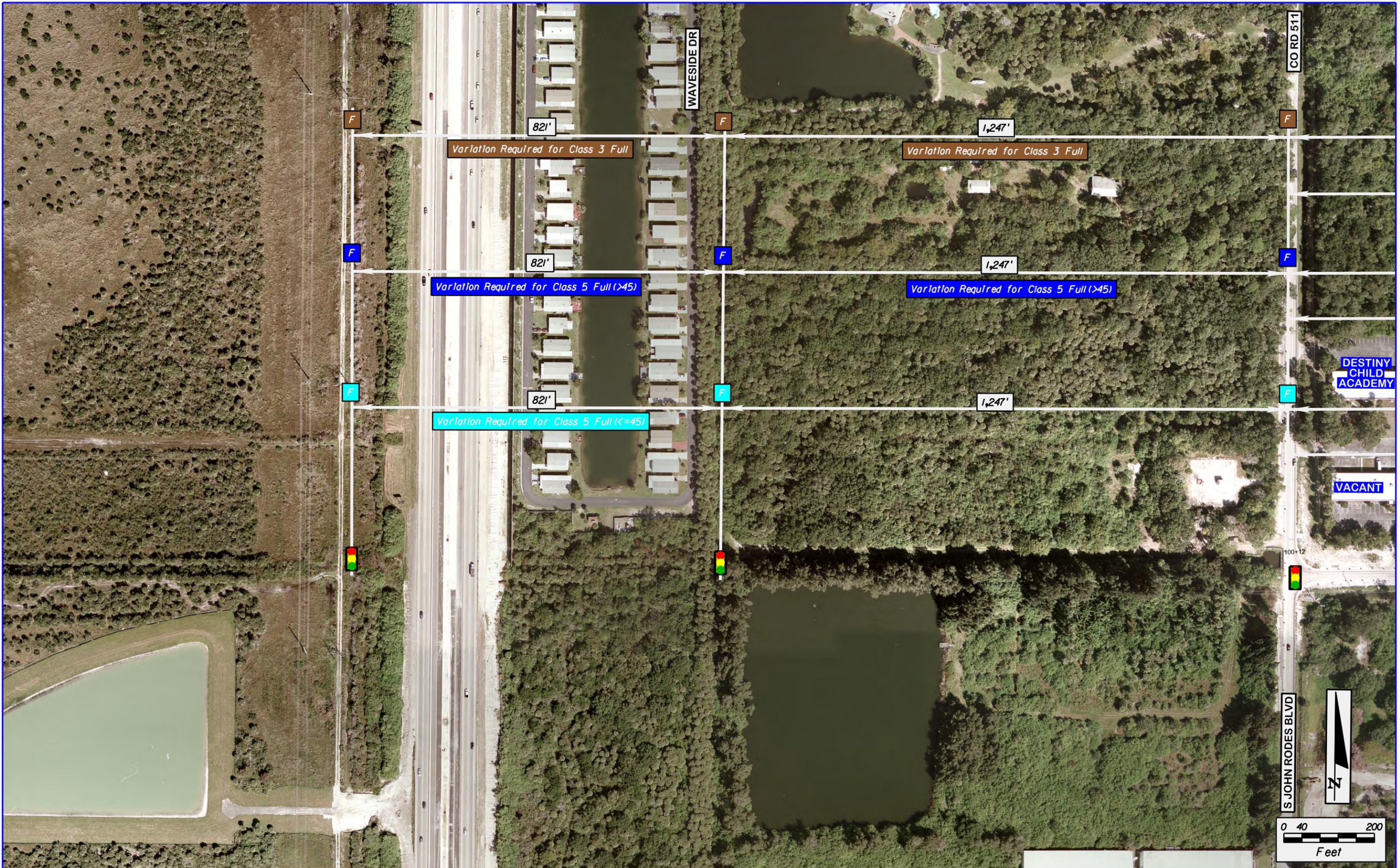


**Table 1.10 – Class 5 Median Openings 45 mph or Less
(Full and Directional – Final Preferred Configuration)**

| Feature | Station | Access | Spacing (ft) | % over/under Requirement | Feature Measured To |
|-----------------------|---------|----------------|--------------|--------------------------|-----------------------|
| John Rodes Blvd | 100+25 | Full | | 61% | American Print |
| | | | 1,063 | | |
| American Print | 110+88 | Directional | | 115% | Stan Dr. |
| | | | 691 | | |
| Empire | 117+79 | None | | | |
| | | | 729 | | |
| Stan Dr. | 125+08 | Full | | -16% | East Dr. |
| | | | 1,115 | | |
| East Dr. | 136+23 | Full | | -16% | Stan Dr. |
| | | | 426 | | |
| Greenboro Dr. | 140+49 | None | | | |
| | | | 426 | | |
| Distribution Dr. West | 144+75 | None | | | |
| | | | 577 | | |
| Distribution Dr. East | 150+52 | Full | | -5% | Technology Dr. East |
| | | | 376 | | |
| Ferguson Water | 154+28 | None | | | |
| | | | 876 | | |
| Technology Dr. East | 163+04 | Full | | -5% | Distribution Dr. East |
| | | | 1,165 | | |
| Shinn Ave. | 174+69 | WB Directional | | 121% | Wickham Rd. |
| | | | 483 | | |
| Lake Ibis Dr. | 179+52 | Full | | 25% | Technology Dr. East |
| | | | 973 | | |
| Wickham Rd. | 189+25 | Full | | -26% | Technology Dr. East |

Note: Yellow highlighting denotes changes from Table 1.6.

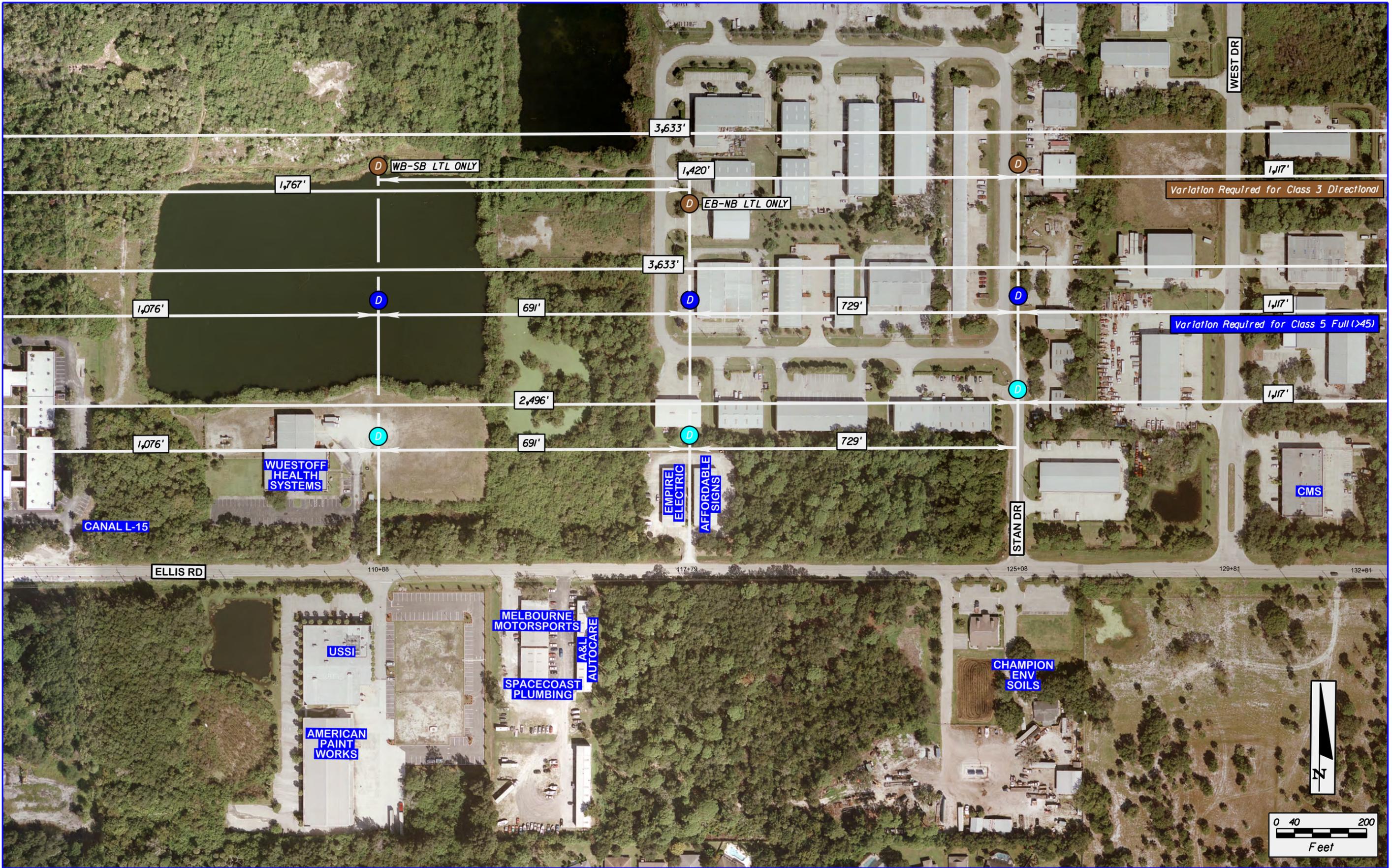




- D CLASS 3 DIRECTIONAL MEDIAN OPENING
- D CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH
- D CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH
- F CLASS 3 FULL MEDIAN OPENING
- F CLASS 5 FULL MEDIAN OPENING >45 MPH
- F CLASS 5 FULL MEDIAN OPENING <=45 MPH
- SIGNALIZED INTERSECTION

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT EAST DR.

SHEET NO.
 I.IA



| | | | | | | |
|----------|------------------------------------|----------|--|----------|--|-------------------------|
| D | CLASS 3 DIRECTIONAL MEDIAN OPENING | D | CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH | D | CLASS 5 DIRECTIONAL MEDIAN OPENING ≤45 MPH | |
| F | CLASS 3 FULL MEDIAN OPENING | F | CLASS 5 FULL MEDIAN OPENING >45 MPH | F | CLASS 5 FULL MEDIAN OPENING ≤45 MPH | SIGNALIZED INTERSECTION |

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT EAST DR.

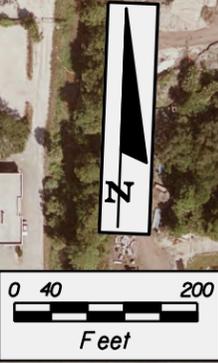
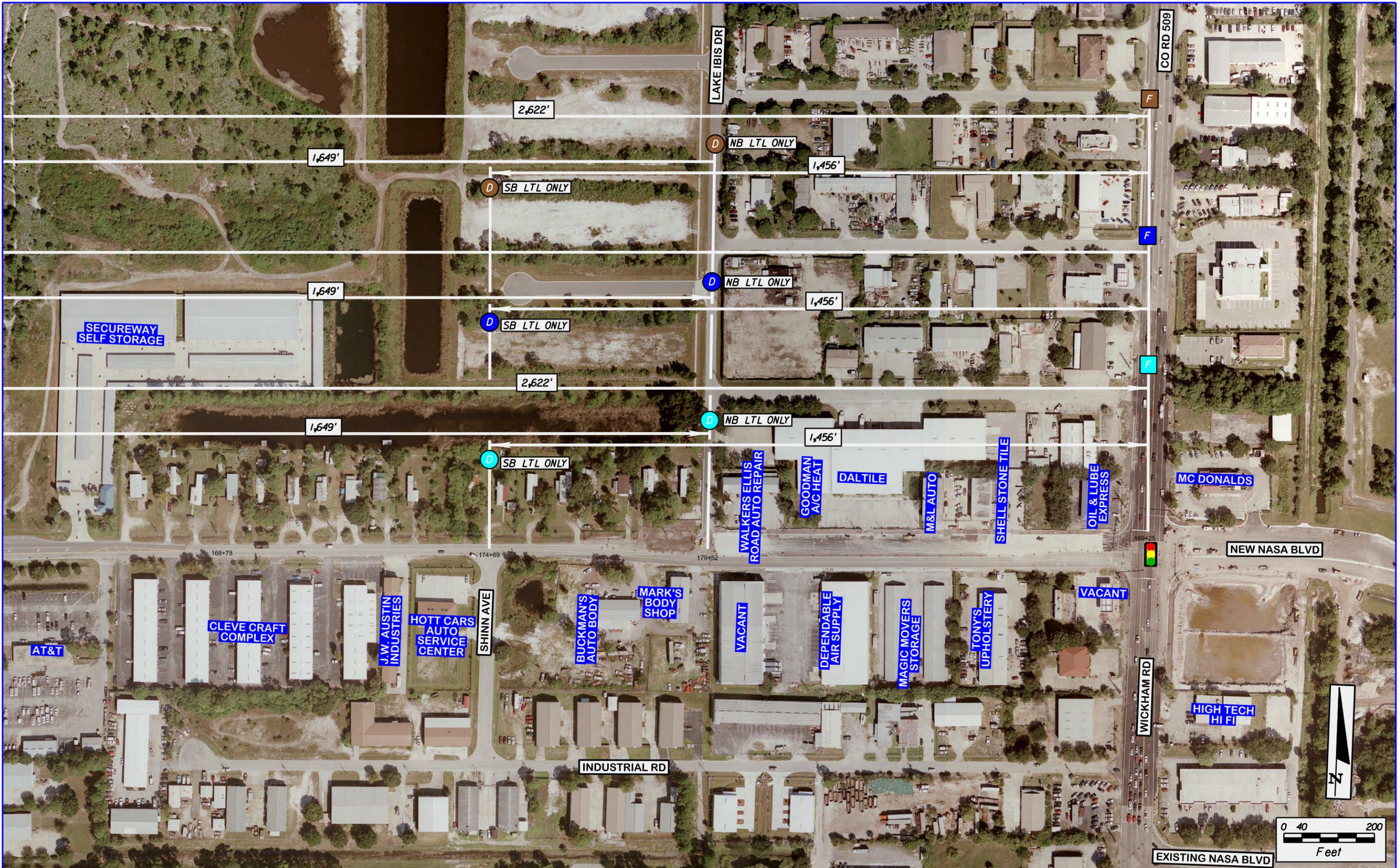
SHEET NO.
 1.1B



| | | | | | | |
|----------|------------------------------------|----------|--|----------|---|-------------------------|
| D | CLASS 3 DIRECTIONAL MEDIAN OPENING | D | CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH | D | CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH | |
| F | CLASS 3 FULL MEDIAN OPENING | F | CLASS 5 FULL MEDIAN OPENING >45 MPH | F | CLASS 5 FULL MEDIAN OPENING <=45 MPH | SIGNALIZED INTERSECTION |

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT EAST DR.

SHEET NO.
 I.IC



D CLASS 3 DIRECTIONAL MEDIAN OPENING
F CLASS 3 FULL MEDIAN OPENING

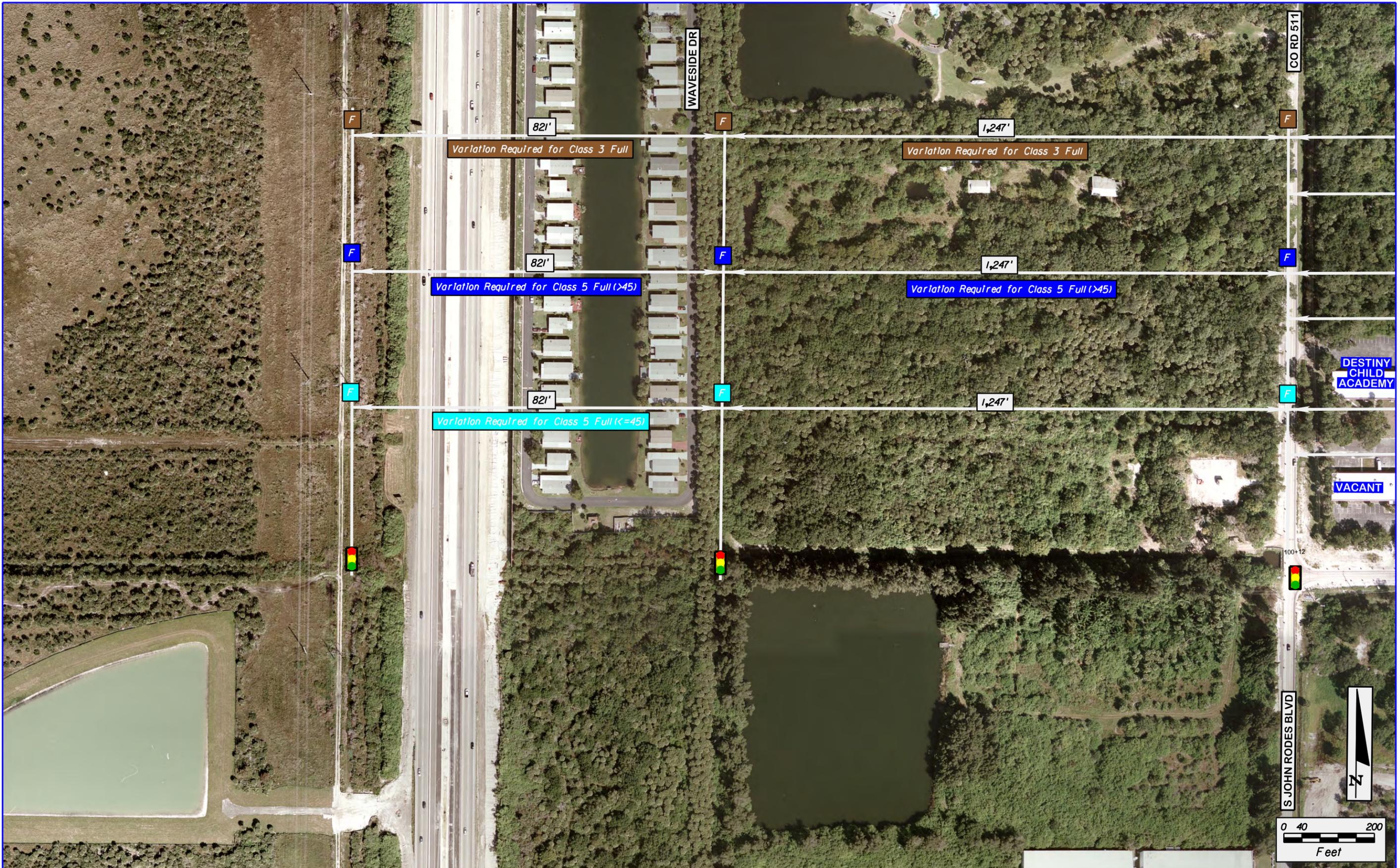
D CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH
F CLASS 5 FULL MEDIAN OPENING >45 MPH

D CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH
F CLASS 5 FULL MEDIAN OPENING <=45 MPH

SIGNALIZED INTERSECTION

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT EAST DR.

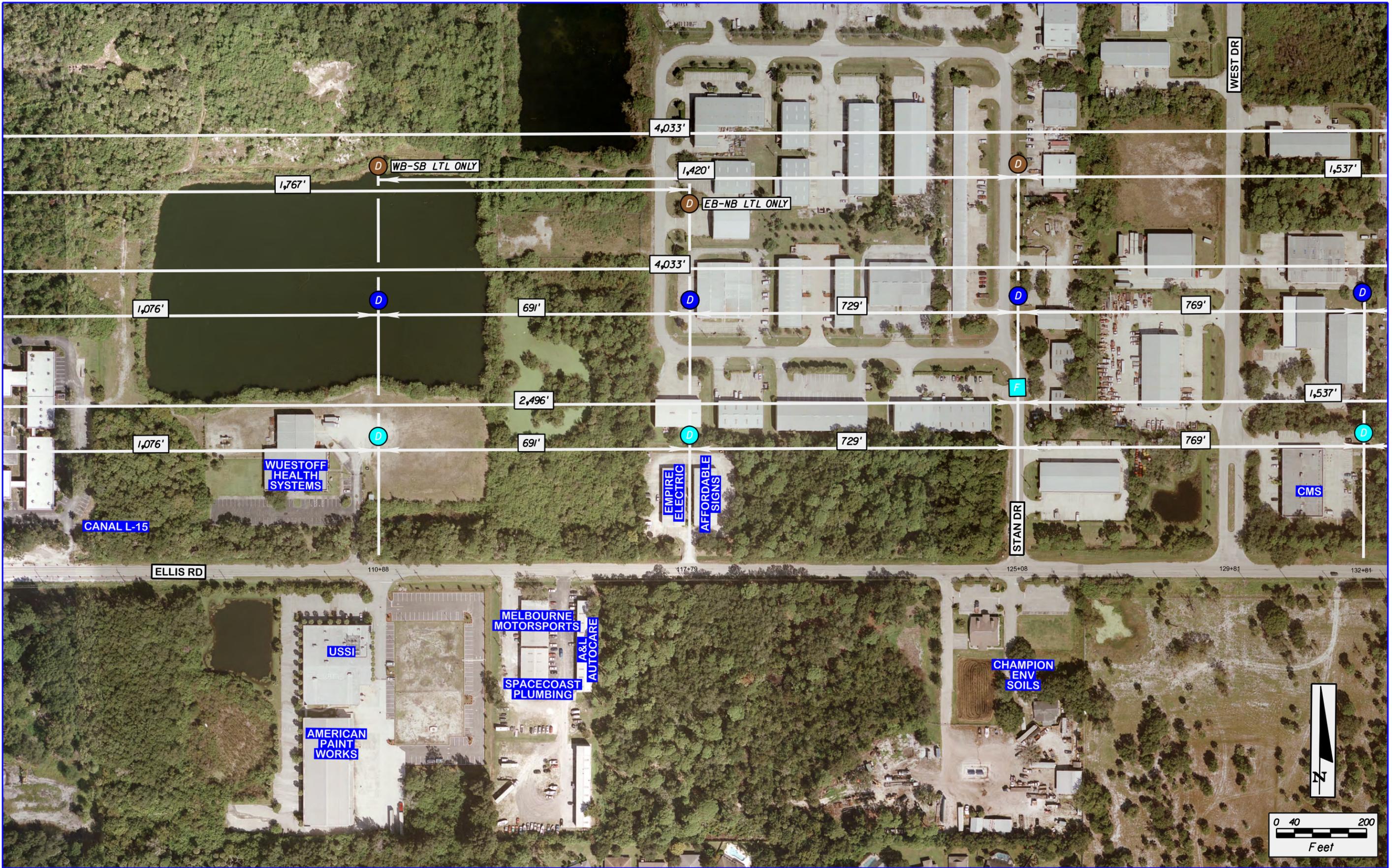
SHEET NO.
 I.ID



- D CLASS 3 DIRECTIONAL MEDIAN OPENING
- D CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH
- D CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH
- F CLASS 3 FULL MEDIAN OPENING
- F CLASS 5 FULL MEDIAN OPENING >45 MPH
- F CLASS 5 FULL MEDIAN OPENING <=45 MPH
- SIGNALIZED INTERSECTION

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT GREENBORO DR.

SHEET NO.
 1.2A



D CLASS 3 DIRECTIONAL MEDIAN OPENING

F CLASS 3 FULL MEDIAN OPENING

D CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH

F CLASS 5 FULL MEDIAN OPENING >45 MPH

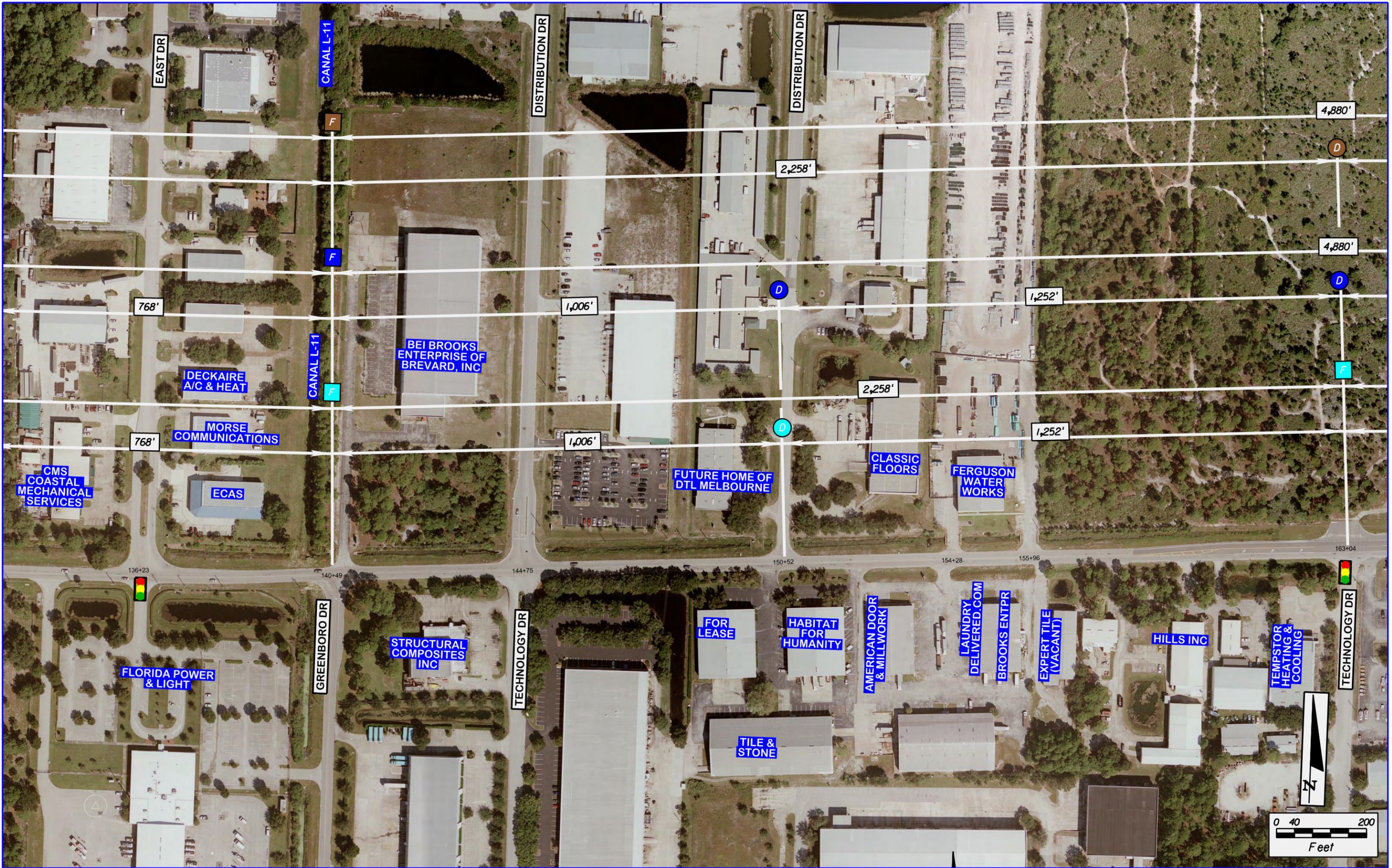
D CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH

F CLASS 5 FULL MEDIAN OPENING <=45 MPH

SIGNALIZED INTERSECTION

ELLIS RD PD&E STUDY
ACCESS MANAGEMENT ANALYSIS
FULL M. O. AT GREENBORO DR.

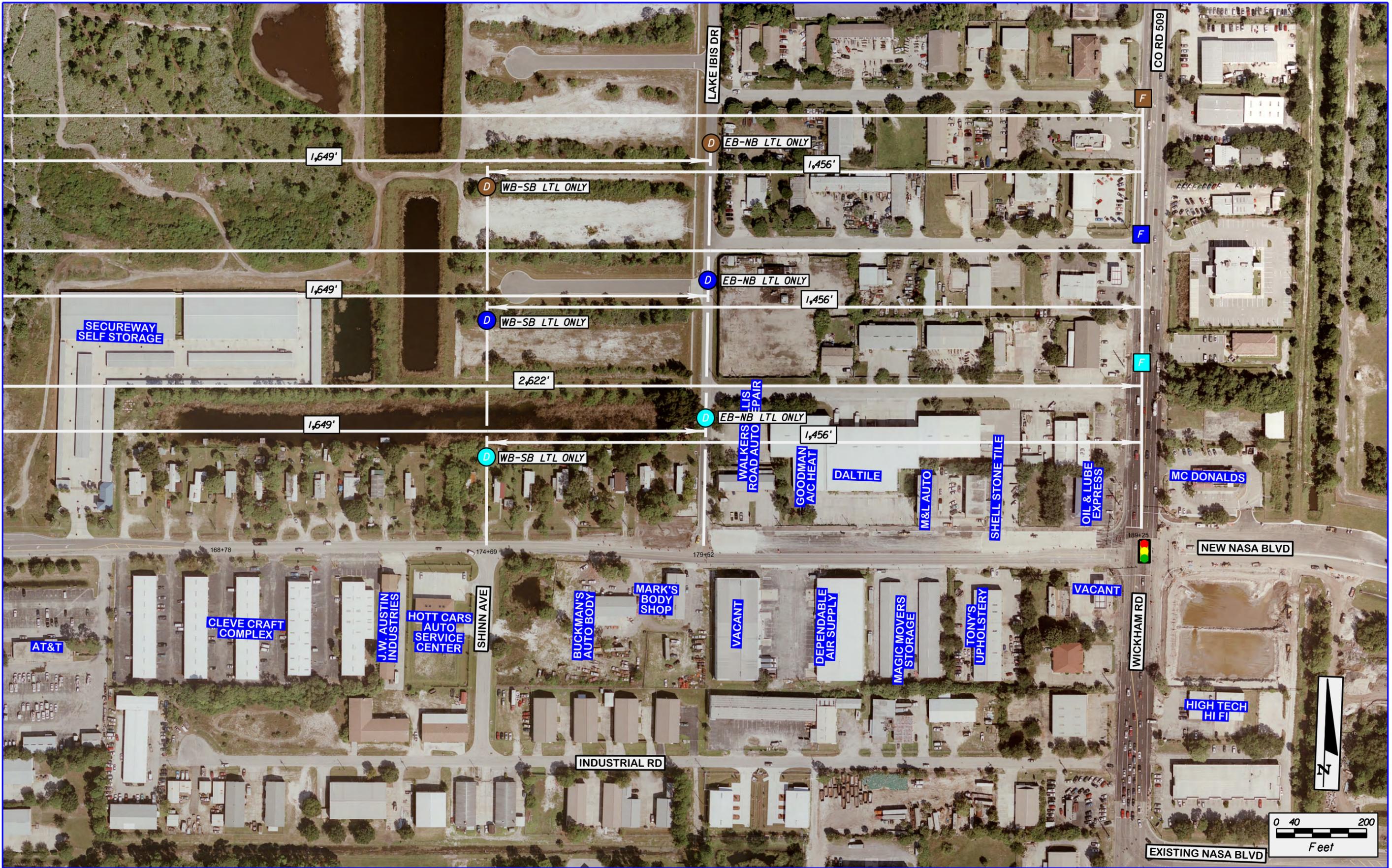
SHEET NO.
1.2B



| | | | | | |
|----------|------------------------------------|----------|--|----------|---|
| D | CLASS 3 DIRECTIONAL MEDIAN OPENING | D | CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH | D | CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH |
| F | CLASS 3 FULL MEDIAN OPENING | F | CLASS 5 FULL MEDIAN OPENING >45 MPH | F | CLASS 5 FULL MEDIAN OPENING <=45 MPH |
| | | | | | SIGNALIZED INTERSECTION |

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT GREENBORO DR.

SHEET NO.
 1.2C



D CLASS 3 DIRECTIONAL MEDIAN OPENING
F CLASS 3 FULL MEDIAN OPENING

D CLASS 5 DIRECTIONAL MEDIAN OPENING >45 MPH
F CLASS 5 FULL MEDIAN OPENING >45 MPH

D CLASS 5 DIRECTIONAL MEDIAN OPENING <=45 MPH
F CLASS 5 FULL MEDIAN OPENING <=45 MPH

SIGNALIZED INTERSECTION

ELLIS RD PD&E STUDY
 ACCESS MANAGEMENT ANALYSIS
 FULL M. O. AT GREENBORO DR.

SHEET NO.
 1.2D