

THE TOWN OF
Windermere



Agenda

Agenda

Long Range Planning Committee

Chair: Roger Gatlin

Vice Chair: John Fitzgibbon

Secretary/Treasurer: George Dubois

George Roat

Molly Rose

Lloyd Woosley

Council Liaison: Chris Sapp

24 September 2020

6:00 PM

Zoom:

[https://zoom.us/j/93496577776?pwd=Q2FhNTYyVXlTZVltNXpWRGh
aeWF2QT09](https://zoom.us/j/93496577776?pwd=Q2FhNTYyVXlTZVltNXpWRGh
aeWF2QT09)

Meeting ID: 934 9657 7776

Passcode: 304823

One tap mobile

+16465588656,,93496577776# US (New York)

+13017158592,,93496577776# US (Germantown)

PLEASE TURN OFF ALL CELL PHONES AND PAGERS

PLEASE NOTE: IN ACCORDANCE WITH F.S. 286.26: Person with disabilities needing assistance to participate in any such proceeding should contact the Office of the Town Clerk at least 48 hours beforehand at (407) 876-2563

Pursuant to Resolution No. 2005-12 adopted on December 13, 2005, the following Civility Code shall govern all proceedings before the Town of Windermere Town Council:

1. All electronic devices, including cell phones and pagers, shall be either turned off or otherwise silenced.
2. Prolonged conversations shall be conducted outside Council meeting hall.
3. Whistling, heckling, gesturing, loud conversations, or other disruptive behavior is prohibited.
4. Only those individuals who have signed the speaker list and/or who have been recognized by the Mayor (or Chair) may address comments to the Council.
5. Comments at public hearings shall be limited to the subject being considered by the Council.
6. Comments at Open Forums shall be directed to Town issues.
7. All public comments shall avoid personal attacks and abusive language
8. No person attending a Town Council meeting is to harass, annoy, or otherwise disturb any other person in the room.

Any member of the public whose behavior is disruptive and violates the Town of Windermere Civility Code is subject to removal from the Town Council meeting by an officer and such other actions as may be appropriate. **PLEASE NOTE:** IN ACCORDANCE WITH F.S. 286.0105: Any person who desires to appeal any decision at this meeting will need a record of this proceeding. For this, such person may need to ensure that a verbatim record of such proceeding is made which includes the testimony and evidence upon which the appeal is to be based.

AGENDA

1. **THE MEETING IS CALLED TO ORDER BY THE CHAIRMAN**
2. **OPEN FORUM/PUBLIC COMMENT (3 Minute Limit):**
3. **Approval of Minutes from June 25, 2020 (Attached)**
4. **Discussion Items:**
 - a. **Signage**
 - i. **Sign design contractor – attached proposal from Kimley-Horn**
 - b. **Update on Ward Trail/Pedestrian Bridge**
 - i. **Timing and phasing**
 - c. **Water Concept Plan (attached – no action needed)**
 - d. **Butler Street Concept Review (attached)**
5. **ADJOURN**

June 25th, 2020 LRP
Proposed Minutes

In attendance: Roger Gatlin, Molly Rose, Lloyd Woosley, John Fitzgibbon, George Roat, TM Robert Smith and TC liaison Chris Sapp
Meeting called to order at 6:05 pm

Motion to approve the minutes from March 26th meeting by Molly Rose, second John Fitzgibbon Approved 5-0

The first order of business was to discuss the RFQ form for General Outdoor and Informational Municipal Signage Services.

TM to circulate a complete RFQ form to LRP for comment prior to submittal to TC.

The next discussion item was Phase One of the Multi use trail, to be known as the Ward Trail, this is the section from North Ave to Park Ave.

TM made a presentation of the conceptual plan which would if implemented serve as the model for the entire trail system as it is currently contemplated.

After a comprehensive discussion a Motion was made by Molly Rose to approve the conceptual plan as proposed, seconded by Lloyd Woosley Approved 5-0

Public comment was heard from Emily Pruitt of 136 Oakdale St.

Ms. Pruitt expressed her concern regarding the impact of the Multi use trail on the community and requested information on how best to stay informed about this issue.

The meeting adjourned at 7:02 pm

Diane Edwards

Subject: FW: 9/24 LRP Meeting

From: Chris Sapp <csapp@town.windermere.fl.us>

Sent: Monday, September 21, 2020 9:37 AM

To: Robert Smith <rsmith@town.windermere.fl.us>; Diane Edwards <dedwards@town.windermere.fl.us>; Roger Gatlin <roger.gatlin@gmail.com>

Subject: Re: 9/24 LRP Meeting

re: Sign Design Contractor

LRP Members,

The Town has a large number of projects lined up that will require signage, including Town Facilities and the Ward Trail. There are also signs that were tabled over the years that will be revisited (eg gateway and event signs) and, we may explore updating some areas like public notice signs which are currently step stakes.

With so many needs in the near future it would be a more streamlined approach to find a company that has the capabilities to design, engineer and source signage for individual projects. This company would use current design applications currently used in Town and guidelines set forth in the branding package by York Branding and the Downtown Masterplan by Canin and Associates. They would be called upon for specific IPOs.

Subsequent to the LRP June 25, 2020 meeting, I conferred with PW Director, Scott Brown, to create an RFQ for the purposes laid out above. Mr. Brown suggested that we reach out to vendors currently under master contracts with the Town as they have been vetted and have strong familiarity. The two natural candidates were our planning firm, Wade Trim, and engineering firm, Kimerly Horn.

Wade Trim respectfully declined the solicitation as their department handling this type of work is not local and assumed that be a preference. Kimerly Horn does have a local department and have included the attached packet.

I am asking LRP to make comment and/or recommend for Town Council to add signage design services to the scope of the master service agreement between KHA and the Town of Windermere.

Regards,

Chris

Chris Sapp



August 27, 2020

Scott Brown
Public Works Director
Town of Windermere
614 Main Street
Windermere, FL 34786

**RE: *Signage and Wayfinding Planning and Design
Example Projects***

Dear Mr. Brown:

This package of graphics demonstrates our ability to plan and design various wayfinding and guide signs. We are excited to work with the Town on upgrading and installing new signage and features.

We are ready to perform this work under our existing Continuing Engineering Services Agreement with the Town dated May 15, 2019, under RFQ #2019-02. As we move forward and determine a specific scope of services, we can perform services for single or multiple locations through Individual Project Orders.

Example projects that demonstrate capabilities of our project team are attached. The work shown in the attachments was performed by staff who reside in the Orlando office, and represent a variety of potential signage and monument designs. We are prepared to help with planning, design, and implementation phases.

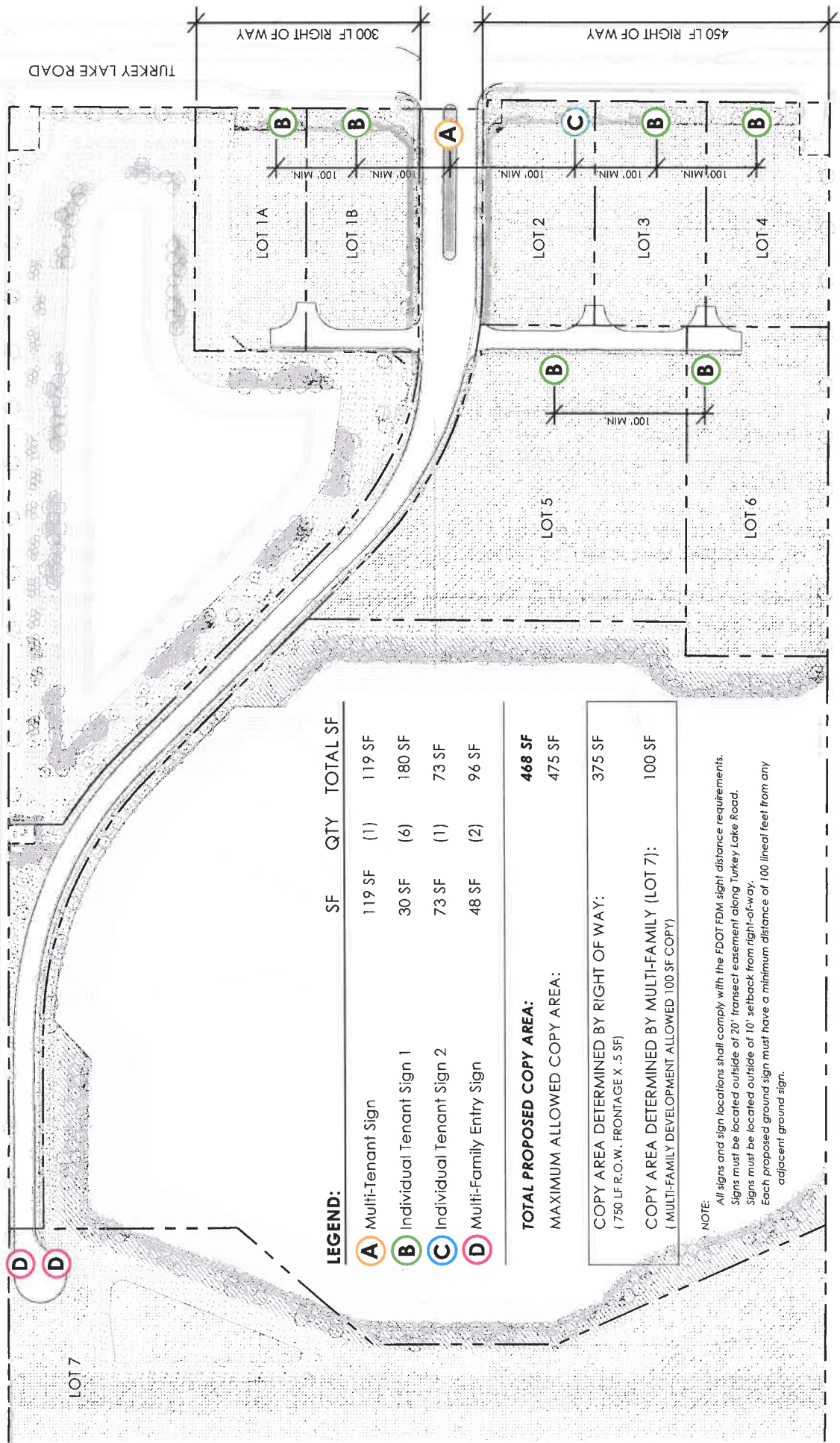
The following example documents are attached:

- Master Signage Plan for Sand Lake Vista in Orange County, FL
- Monument and Signage Guidelines for Belgate in Charlotte, NC
- Wayfinding Signage Report from Kissimmee, FL

Thanks for this opportunity, and please let us know if more information is desired,

Sincerely,

Mike Woodward, P.E.
Project Manager



LEGEND:

	SF	QTY	TOTAL SF
A Multi-Tenant Sign	119 SF	(1)	119 SF
B Individual Tenant Sign 1	30 SF	(6)	180 SF
C Individual Tenant Sign 2	73 SF	(1)	73 SF
D Multi-Family Entry Sign	48 SF	(2)	96 SF

TOTAL PROPOSED COPY AREA:
468 SF
 MAXIMUM ALLOWED COPY AREA:
 475 SF

COPY AREA DETERMINED BY RIGHT OF WAY:
 (750 LF R.O.W. FRONTAGE X .5 SF) 375 SF

COPY AREA DETERMINED BY MULTI-FAMILY (LOT 7):
 (MULTI-FAMILY DEVELOPMENT ALLOWED 100 SF COPY) 100 SF

NOTE:
 All signs and sign locations shall comply with the FDOT FDM sight distance requirements.
 Signs must be located outside of 20' transect easement along Turkey Lake Road.
 Signs must be located outside of 10' setback from right-of-way.
 Each proposed ground sign must have a minimum distance of 100 lineal feet from any adjacent ground sign.



MULTI-TENANT SIGN

Scale: 1/4" = 1'-0"
 Above concept generated and provided by Dix, Hile + Partners

NOTE: All signs and sign locations shall comply with the FDOT FDM sight distance requirements.

Sign must be located outside of 20' transect easement along Turkey Lake Road.

Sign must be located outside of 10' setback from right-of-way.

Each proposed ground sign must have a minimum distance of 100 lineal feet from any adjacent ground sign.

KEY:

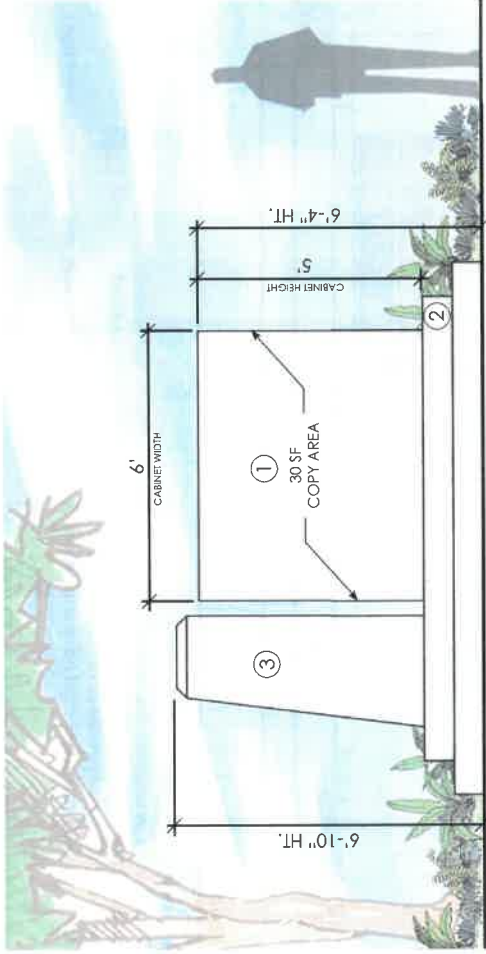
- ① Multi-family signage, back-lit channel letters - 18" letters shown: "AZUL", 5" letters shown: "SAND LAKE VISTA"
- ② Tenant panel signage 13"x96"; back lit letters (white) on dark bronze panel cabinet, 8" letters shown, final copy tenants TBD
- ③ Signage cabinet; 12'-6" x 9'-6", light / fine sand finish background
- ④ Adjacent masonry column accessory structure, light / fine sand finish
- ⑤ Stepped stucco monument base, light / fine sand finish

NUMBER OF SIGNS:	1 SIGN
COPY AREA PER EACH SIGN:	119 SF
TOTAL COPY AREA:	119 SF TOTAL

Requested Waivers:

"A waiver is requested from Orange County Code Section 31.5-67(l) minimum allowable copy area for each individual tenant on a multi-tenant ground sign to allow for 8.66 SF of minimum provided copy area per individual tenant sign in lieu of 12 SF of minimum provided copy area per individual tenant sign allowed through existing Orange County Code. This waiver is requested due to the spatial constraints of providing individual tenant signs for each of the seven (7) individual parcels within the allowable sign face area while also displaying the anchoring multi-family development parcel branding element in an aesthetically pleasing hierarchical arrangement.

"A waiver is requested from Orange County Code Section 31.5-67(b) maximum height of any ground sign. To allow for a height of 15 feet in lieu of 12 feet allowed through existing Orange County Code. This waiver is requested due to the proposed ground sign consistently matching the colors and surface treatments of the proposed building elevations in the approved Lot 7 Development Plan DP-18-05-142. The proposed anchoring multi-tenant sign, the proposed multi-family development gateway signs, and the proposed multi-family buildings provide consistent color and surface treatment throughout the development. Moreover, these three elements create a connected multi-layered entry experience and design.



KEY:

- ① Pre-fabricated signage cabinet, light / fine sand-like finish, mounted on base foundation, internally illuminated cabinet or back lit channel letters, 30 SF copy area per sign face
- ② Stepped stucco monument base, light / fine sand-like finish
- ③ Masonry column accessory structure, light / fine sand-like finish

NUMBER OF SIGNS:	6 SIGNS
COPY AREA PER EACH SIGN:	30 SF
TOTAL COPY AREA:	180 SF TOTAL

Requested Waivers:

Lot 5 Sign
 "A waiver is requested from Orange County Code Section 31.5-15(1) Maximum Allowable Copy Area to allow for one ground sign located on Lot 5 consisting of 30 SF copy area in lieu of 65F allowed through existing Orange County Code. This waiver is requested due to Lot 5 containing no right of way frontage for typical calculation of allowable copy area. The 30 SF of copy area proposed for Lot 5 is borrowed from the overall site's maximum allowable copy area total. Moreover, the ground sign addition to Lot 5 will not add any copy beyond the existing allowable copy area on site, while providing a ground sign opportunity for Lot 5."

Lot 6 Sign
 "A waiver is requested from Orange County Code Section 31.5-15(1) Maximum Allowable Copy Area to allow for one ground sign to be located on Lot 6 consisting of 30 SF copy area in lieu of 65F allowed through existing Orange County Code. This waiver is requested due to Lot 6 containing no right of way frontage for typical calculation of allowable copy area. The 30 SF of copy area proposed for Lot 6 is borrowed from the overall site's maximum allowable copy area total. Moreover, the ground sign addition to Lot 6 will not add any copy beyond the existing maximum allowable copy area on site, while providing a ground sign opportunity for Lot 6."

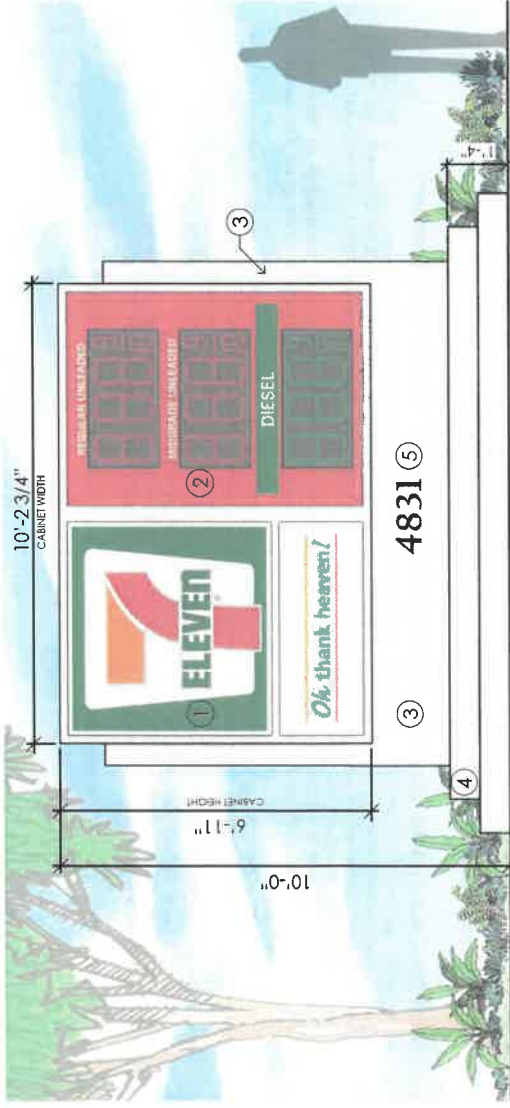
TENANT PARCEL SIGNAGE 1

Scale: 3/8" = 1'-0"
 NOTE: All signs and sign locations shall comply with the FDOT FDM sight distance requirements. Sign must be located outside of 20' transect easement along Turkey Lake Road. Sign must be located outside of 10' setback from right-of-way. Each proposed ground sign must have a minimum distance of 100 lineal feet from any adjacent ground sign.

Orange County Sec. 31.5-67 - Ground Signs

- The maximum height of any ground sign in a commercial, industrial or agricultural district shall be twelve (12) feet, except that a monument-style ground sign may be a maximum of fifteen (15) feet in height
- A maximum number of one (1) ground sign may be permitted per parcel, provided that any pole signs and ground signs on the parcel shall be separated by a distance of not less than one hundred (100) feet.
- The minimum setbacks for any ground sign shall be ten (10) feet from any right-of-way line, ten (10) feet from any side property line, ten (10) feet from the rear property line and twenty (20) feet from any residential district where no right-of-way exists between the sign and the residential district.
- The maximum allowable copy area of any ground sign on a parcel in a commercial, industrial or agricultural district shall be one hundred twenty (120) square feet per sign face. If a sign on a commercial, industrial, agricultural, or professional-office parcel is located within one hundred (100) feet of a residential district and no right-of-way exists between the sign and the residential district, the maximum allowable copy area shall be thirty-two (32) square feet per sign face.
- The minimum allowable copy area for each individual tenant on a multi-tenant ground sign shall be twelve (12) square feet per sign face.
- A ground sign shall not be erected on unimproved property.

REFERENCE SECTION 31.5-67 OF THE ORANGE COUNTY, FL CODE FOR COMPLETE CODE SECTION



KEY:

- ① Pre-fabricated signage cabinet, light / fine sand-like finish background, internally illuminated cabinet, mounted within aluminum support structure
- ② Pre-fabricated signage cabinet with green and red LED illuminated digits, light / fine sand-like finish background, mounted within aluminum support structure, internally illuminated cabinet
- ③ Aluminum structural support system, light /fine sand-like finish
- ④ Stepped stucco monument base, light / fine sand-like finish
- ⑤ Address numbers, 7" ht. lettering, black, pin mounted

NUMBER OF SIGNS:	1 SIGN
COPY AREA PER EACH SIGN:	73 SF
TOTAL COPY AREA:	73 SF TOTAL

TENANT PARCEL SIGNAGE 2

Scale: 3/8" = 1'-0"

NOTE: All signs and sign locations shall comply with the FDOT FDM sight distance requirements.

Sign must be located outside of 20' setback easement along Turkey Lake Road.

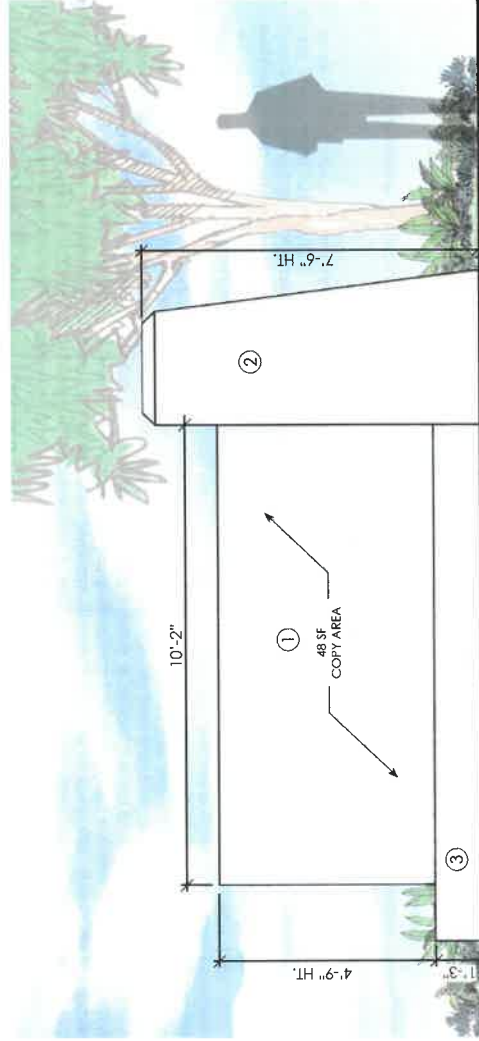
Sign must be located outside of 10' setback from right-of-way.

Each proposed ground sign must have a minimum distance of 100 lineal feet from any adjacent ground sign.

Orange County Sec. 31.5-142 - Gasoline Stations

- Location of signs. Signs shall conform to all setback requirements of the county's land development code, and other applicable laws, and shall be designed and located on the premises of the gas station so that passing motorists are effectively apprised of the current and correct price of the gasoline sold on the premises.
- Sign size. Signs shall conform to maximum sign area and dimension requirements of the county's land development code, except as provided in paragraph (5) of this part, and other applicable laws. Each of the numerals constituting the dollars and cents price per gallon of fuel shall be at least fourteen (14) inches tall and eight and one-half (8½) inches wide. This part does not apply to the size of numerals constituting fractions of a penny.
- Visibility. Such a sign shall be placed at no less than a 45-degree angle to the primary roadway frontage, unless the sign is located at intersecting streets on a corner lot. The sign shall be kept free from vegetation and other obstructions that effectively block the view of the sign from the adjacent street or roadway. The numerals constituting the price of gasoline shall sharply contrast with the background color of the sign so that a passing motorist of average visual acuity is effectively apprised of the price of the gasoline sold on the premises. If the gasoline price is not camouflaged or effectively hidden from passing motorists, the gasoline pricing shall be separate and distinct from the other material so that the gasoline price is not camouflaged or effectively hidden from passing motorists.
- Illumination. Such a sign shall be illuminated in a manner that makes the sign visible at night to a person of average visual acuity.
- Sign area variance. Unless a sign is deemed conforming per subsection (d), below, a gas station that, as of the date of adoption of this ordinance [section] (February 7, 2012), exceeds its maximum allowable sign area, or would exceed its maximum allowable sign area if in compliance with this section, may exceed such restrictions to the minimum extent necessary to comply with the minimum requirements of this section. A sign installed pursuant to this section is hereby deemed to be a legally existing nonconforming structure; however, such sign shall be brought into compliance with subsection 31.5-98(b) of this section when a structural improvement to the station's total sign package is undertaken that results in the replacement of the sign or signs.

REFERENCE SECTION 31.5-142 OF THE ORANGE COUNTY, FL CODE FOR COMPLETE CODE SECTION



KEY:

- ① Pre-fabricated signage cabinet or masonry structure with light / fine sand-like finish, sign may be ground lit or back lit channel letters, 48 SF copy area per sign face
- ② Masonry column accessory structure, light / fine sand-like finish
- ③ Stucco monument base, light / fine sand like finish

NUMBER OF SIGNS:	2 SIGNS
COPY AREA PER EACH SIGN:	48 SF
TOTAL COPY AREA:	96 SF TOTAL

MULTI-FAMILY ENTRY SIGNAGE

Scale: 3/8" = 1'-0"

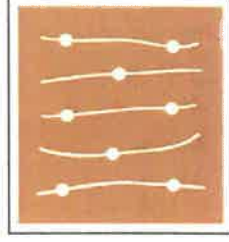
NOTE: All signs and sign locations shall comply with the FDOT FDM sight distance requirements.

Each proposed ground sign must have a minimum distance of 100 lined feet from any adjacent ground sign.

Orange County Sec. 31.5-73 - Signs Identifying Multi-Family Development

- Signs stating only the name of an approved residential, commercial, or industrial subdivision, mobile home park, or multifamily development may be erected within the approved subdivision, mobile home park or multifamily development.
- Such a sign shall be only a ground sign or a wall sign (facia sign), and, subject to subsections (c) through (e), such a sign shall satisfy the standards for ground signs and wall signs.
- Any such sign which is the primary sign shall be located only at the main entrance or on the median of the main entrance.
- Additional such signs which are secondary signs shall be located only at a secondary entrance or on the median of a secondary entrance.
- The maximum allowable copy area of the primary identification sign for a residential subdivision, mobile home park, or multifamily development shall be one hundred (100) square feet, and the maximum allowable copy area of any secondary sign shall be forty-eight (48) square feet. The maximum allowable copy area of the primary identification sign for a commercial or industrial subdivision shall be one hundred fifty (150) square feet, and the maximum allowable copy area of any secondary sign shall be one hundred (100) square feet.
- Any such sign which is a ground sign shall be subject to the height requirements of section 31.5-67(b) and (c). Any such sign which is a wall sign shall be subject to the extension requirement of section 31.5-72(e).

REFERENCE SECTION 31.5-73 OF THE ORANGE COUNTY, FL CODE FOR COMPLETE CODE SECTION



BEL GATE

ARCHITECTURAL GUIDELINES FOR OVERALL DEVELOPMENT AND IDENTIFICATION SIGNAGE

Existing Zoning: CC
Rezoning Petition Number: 2008-059

Approved by
The City of Charlotte, November 12, 2008

▲ Revised February 4, 2014
▲ Revised February 22, 2016



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Landmark Development Monument – 3, 3.1, 3.2

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16' Multi-Tenant Monument Sign – 5, 5.1

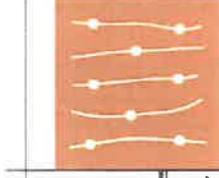
Appendix A – 6, 6.1, 6.2

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REVISIONS

1 2,04,2014 - City of Charlotte Submittal
Revised Sheets: 1, 2.1, 3, 3.1, 3.2, 4.1, 4.2

2 2,22,2016 - City of Charlotte Submittal
Revised Sheets: TOC, 1



OVERALL BELGATE MONUMENT LOCATION PLAN

Description:

The purpose of the sign location plan is to illustrate the proposed monument sign locations and their types for the Belgate Development. All monuments shown on this plan are illustrated within the next chapters.

All monument locations are in their respected areas and shall be subject to move or be adjusted within the general location.

Each monument shown is color-coded by street front locations on City Blvd, IKEA Blvd., Shopping Center Drive & Brookside Lane.

SIGN 1D: POTENTIAL FUTURE DEVELOPMENT LANDMARK DEVELOPMENT MONUMENT DESIGN TO BE DETERMINED. ARCHITECTURAL STYLE AND MATERIALS TO MATCH OVERALL LANDMARK DEVELOPMENT AND TENANT MONUMENTS.

PROPOSED LOCATION FOR SECONDARY LANDMARK DEVELOPMENT MONUMENT WALLS (4 LOW WALL MONUMENTS.) SEE CHAPTER 2 & 4 "MONUMENT WALL LOCATION PLAN" & "LANDMARK DEVELOPMENT MONUMENT WALL".

SIGN C1: PROPOSED LOCATION FOR 16' TENANT MONUMENT SIGN 1 LOCATION ON SHOPPING CENTER DRIVE. SEE CHAPTER 5 "16' TENANT MONUMENT SIGN".
POTENTIAL LOCATION FOR SIGNS 1B AS SHOWN

SIGNS 1B, 2B & 3B: PROPOSED LOCATION FOR 16' TENANT MONUMENT SIGN 3 LOCATIONS ON IKEA BLVD. SEE CHAPTER 5 & 5.1 "16' TENANT MONUMENT SIGN".
POTENTIAL LOCATION FOR SIGN 1B AS SHOWN
POTENTIAL LOCATION FOR SIGN 2B ON PARCEL C1
POTENTIAL LOCATION FOR SIGN 3B ON PARCEL B6

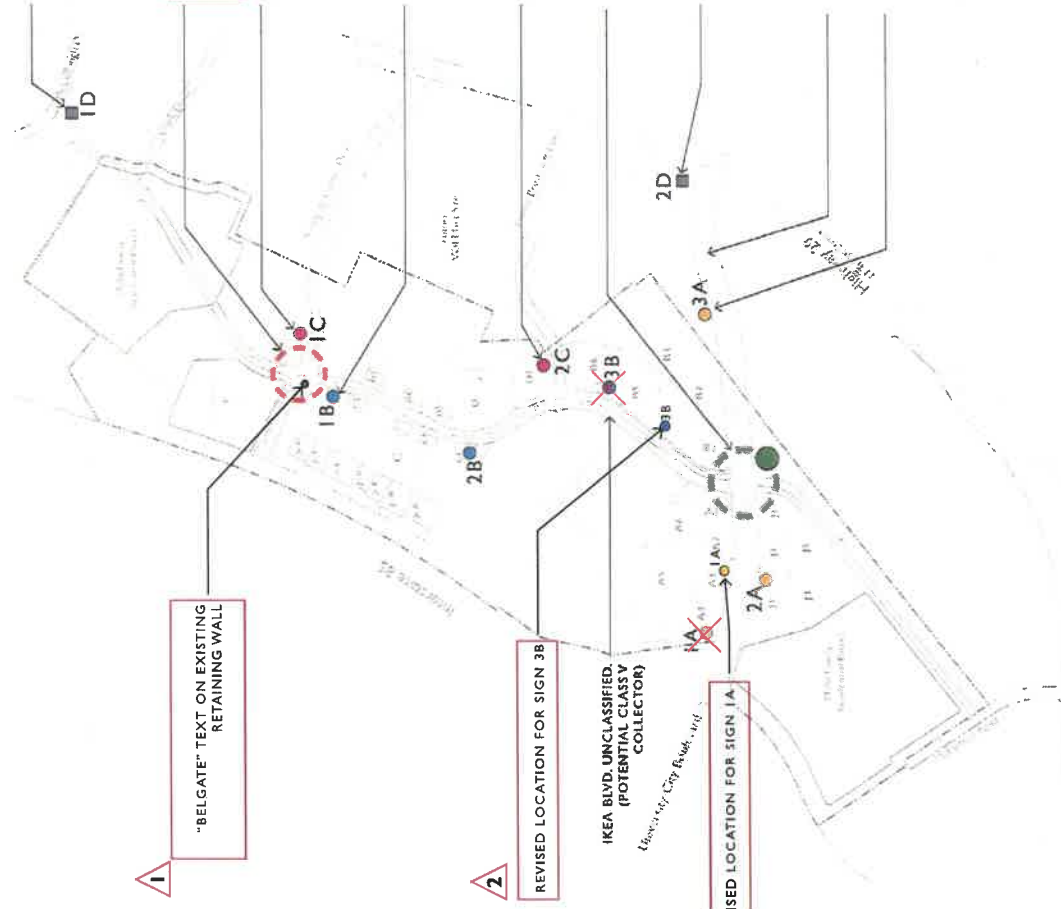
SIGN 2C: PROPOSED LOCATION FOR 16' TENANT MONUMENT SIGN 1 LOCATION ON FUTURE BROOKSIDE LANE. SEE CHAPTER 5 "16' TENANT MONUMENT SIGN".
POTENTIAL LOCATION FOR SIGN 2C ON PARCEL D1

PROPOSED LOCATION FOR LANDMARK DEVELOPMENT MONUMENT & SECONDARY MONUMENT SIGN (1 MONUMENT MONUMENT & 3 LOW WALL MONUMENTS.) SEE CHAPTER 2, 4 & 5 "MONUMENT WALL LOCATION PLAN", "LANDMARK DEVELOPMENT MONUMENT SIGN" & "LANDMARK DEVELOPMENT MONUMENT WALL".

SIGN 2D: POTENTIAL FUTURE DEVELOPMENT LANDMARK DEVELOPMENT MONUMENT DESIGN TO BE DETERMINED. ARCHITECTURAL STYLE AND MATERIALS TO MATCH OVERALL LANDMARK DEVELOPMENT AND TENANT MONUMENTS.

CITY BLVD. CLASS III. (MAJOR ARTERIAL)

SIGNS 1A, 2A & 3A: PROPOSED LOCATION FOR 16' TENANT MONUMENT SIGN 2 LOCATIONS ON CITY BLVD. SEE CHAPTER 5 & 5.1. "16' TENANT MONUMENT SIGN".
POTENTIAL LOCATION FOR SIGN 1A AS SHOWN OR ON PARCEL A3
POTENTIAL LOCATION FOR SIGN 2A ON PARCEL J3
POTENTIAL LOCATION FOR SIGN 3A AS SHOWN OR ON PARCEL B1 OR B2



Notes:

Location of previously approved low monument walls and development signage to remain. Sign modifications based only on revised sheets 4.1 and 4.2.

REVISIONS

- 1 2.04.2014 - City of Charlotte Submittal
- 2 2.22.2016 - City of Charlotte Submittal

CHAPTER



BELGATE

LANDMARK DEVELOPMENT MONUMENT WALL LOCATION PLAN CITY BLVD. & IKEA BLVD.

Description:

The purpose of the landmark development monument and wall location plan is to illustrate and create an overall entrance gateway with the use of monuments, walls, and landscaping. The landmark development monument and walls are illustrated in Chapter 3 & 4. Elevations and plan views are provided within these chapters.

This plan illustrates the gateway vision for the intersection of City Blvd. and IKEA Blvd.

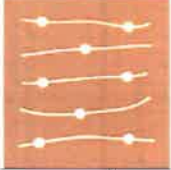
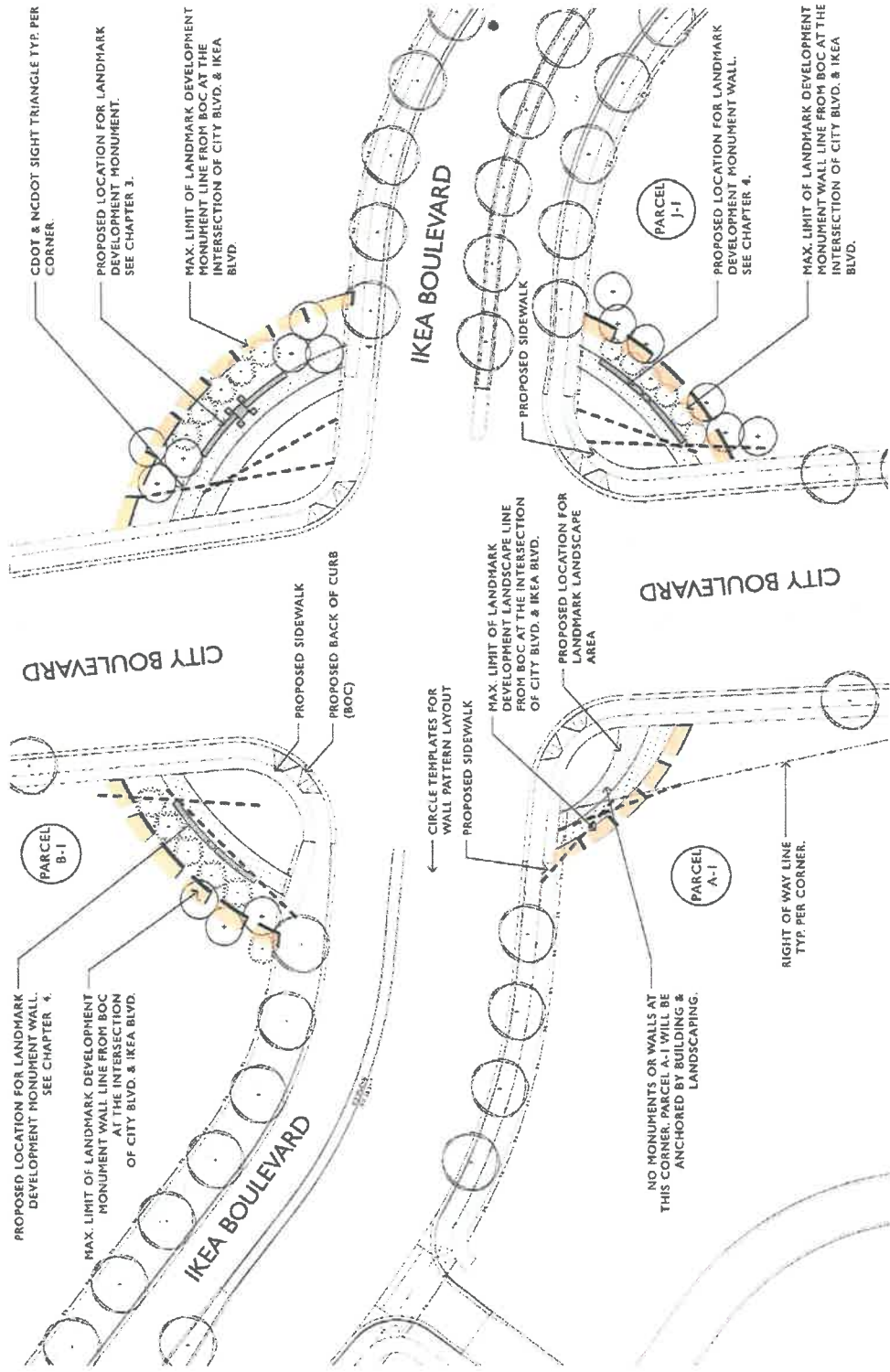
Notes:

Monuments wall and planting area locations may vary to be modified within the limit of landmark development monument line from BOC as shown on this plan.

All monuments, walls, and landscaping are shown behind the existing and proposed ROW and right distance lines.

The red dashed line represents the landmark development monument, walls, and landscape limits from BOC. The monuments, walls, and landscape area may be adjusted to be closer to the monument wall location line from NCDOT and EDOT to accommodate potential development within the areas illustrated. (See Chapter 3-3.2 for landmark development monument plan and elevation details.)

(See Chapter 4 for landmark development wall plan and elevation detail.)



**LANDMARK DEVELOPMENT
MONUMENT WALL LOCATION PLAN
IKEA BLVD. & SHOPPING CENTER DR.**

Description:

The purpose of the landmark development monument wall location plan is to illustrate and create an overall entrance gateway with the use of walls and landscaping. The landmark development monument walls are illustrated in Chapter 4. Elevations and plan views are provided within this chapter.

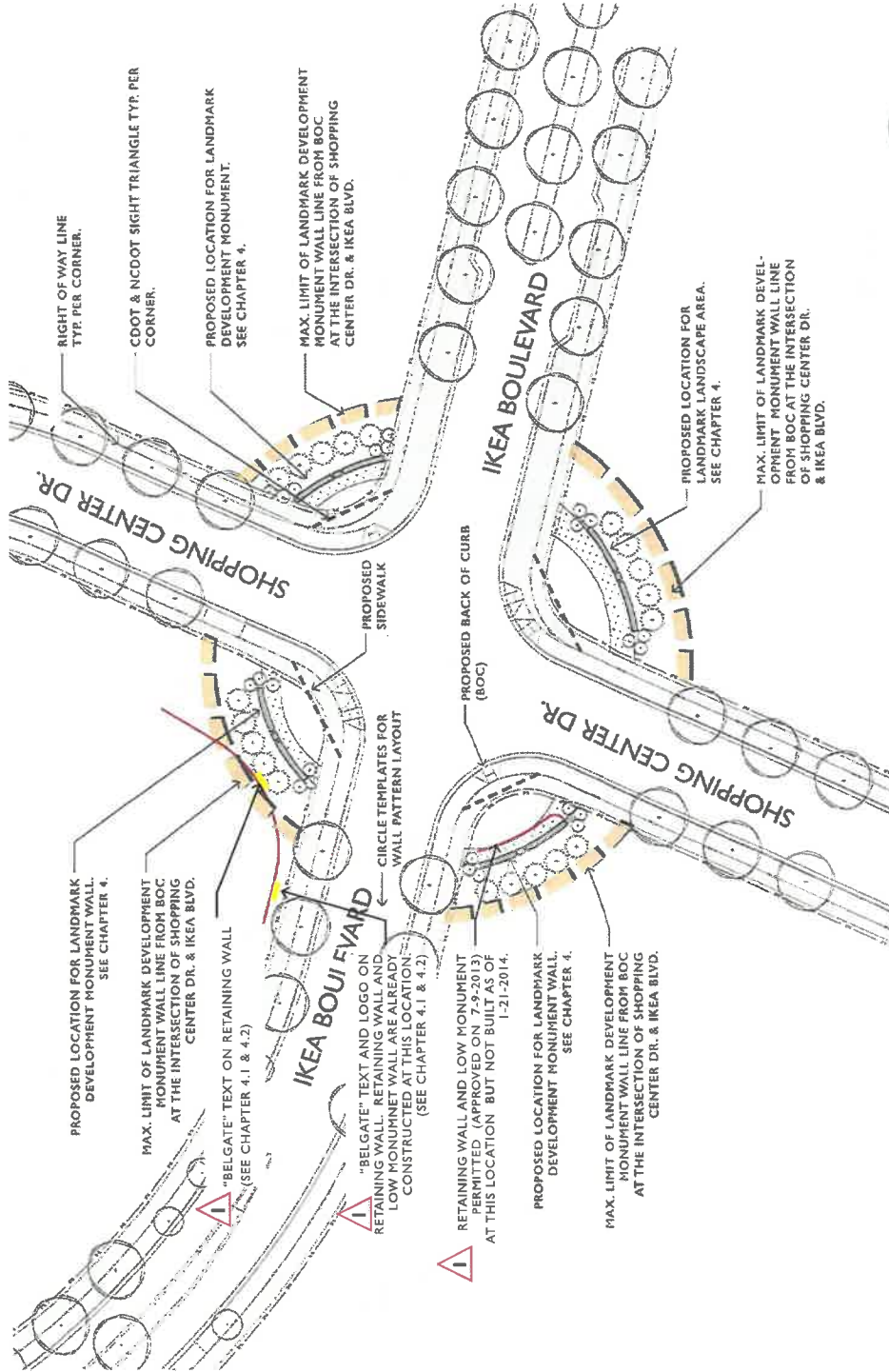
This plan illustrates the gateway vision for the intersection of Shopping Center Dr. and IKEA Blvd.

Notes:

Walls and planting area locations may vary or be modified within the max. limit of landmark development monument line from BOC as shown on this plan.

All walls and landscaping are shown behind the existing and proposed ROW and sight distance lines.

The red dashed line represents the landmark development monument, walls and landscape limits from BOC. The monuments, walls and landscape area may be adjusted to be closer to the BOC, and/or within the sight triangle upon approval from NCDOT and CDOT to accommodate potential development within the area illustrated. (See Chapter 4 for landmark development wall plan and elevation detail.)



REVISIONS

1 2.04.2014 - City of Charlotte Submittal

CHAPTER

2.1

BELGATE

Description:

Elevation

The purpose of the landmark development monument elevation is to illustrate a gateway element at the intersections of City Blvd. and IKEA Blvd. One landmark development monument will be located at the southeast intersection corner of City Blvd. and IKEA Blvd.

The walls will be built on a radius as shown on the adjacent monument wall location plan. (See Chapter 2 plan view).

The proposed materials for the landmark development monument will match that of the multi-tenant monuments and the architecture of the overall development. Lighting shown is schematic, subject to change.

Size Allowed = 30' Max. Height

Size Proposed = 30' Max. Height

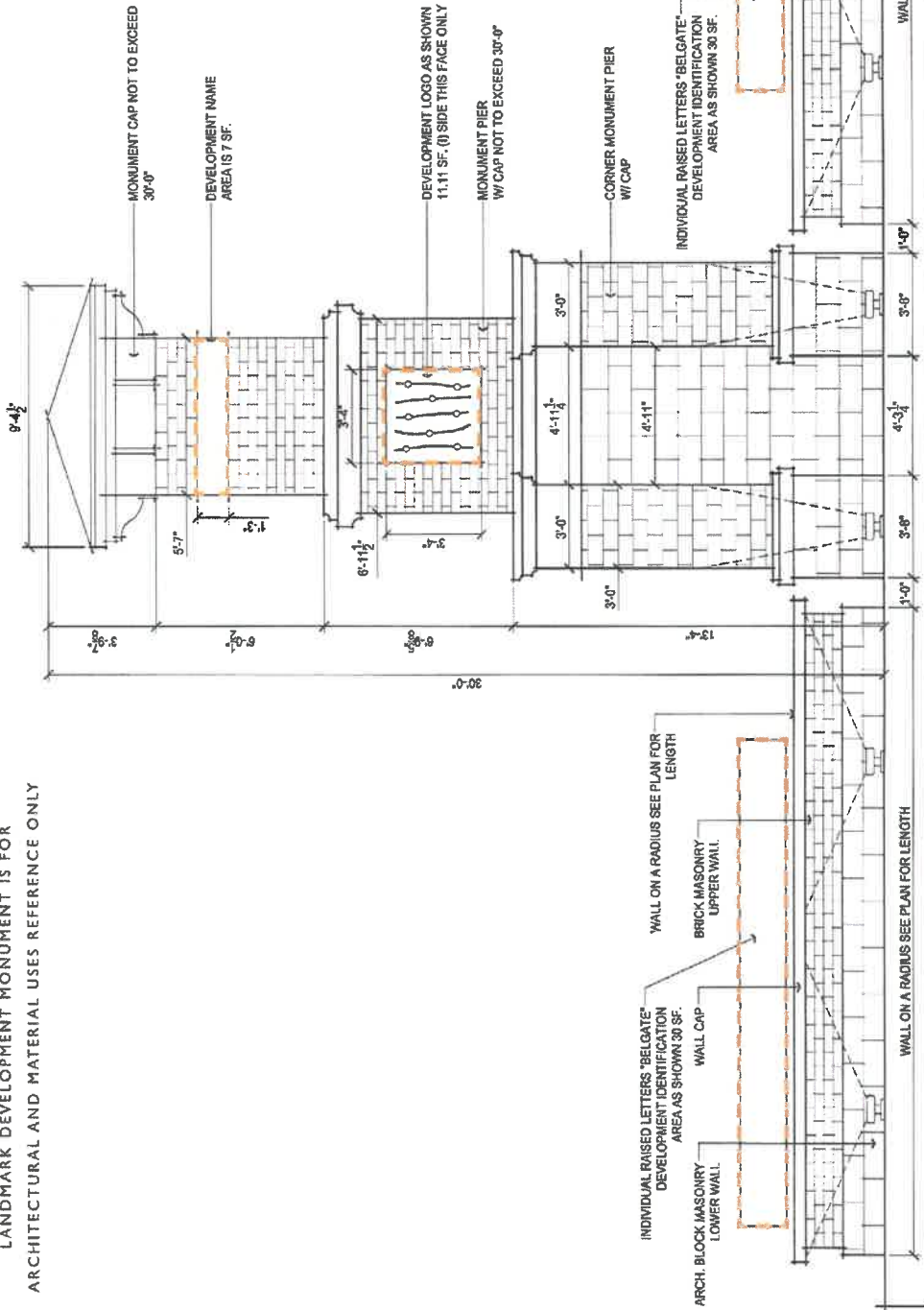
Notes:

The elevation is schematic in nature and the general design and size of the sign shown may change.

The orange dashed line represents area for copy of development identification, including lettering and logos for the "Belgate" development.

(See Chapter 2 for general location).

(See Chapter 3.1 for elevation and plan detail.)



ELEVATION "A"

ARCHITECTURAL GUIDELINES FOR OVERALL DEVELOPMENT AND IDENTIFICATION SIGNAGE

LANDMARK DEVELOPMENT MONUMENT SIGN

Description:

Plan

The purpose of the landmark development monument plan is to illustrate a gateway element at the intersections of City Blvd. and IKEA Blvd.

One landmark development monument will be located at the southeast intersection corner of City Blvd. and IKEA Blvd.

The detached walls will project out equally on either side of the landmark development monument with a decorative cap. "Belgate" raised above the cap in individual letters.

The proposed materials for the landmark development monument will match that of the multi-tenant monuments and the architecture of the overall development. Lighting shown is schematic, subject to change.

Size Allowed = 30' Max. Height

Size Proposed = 30' Max. Height

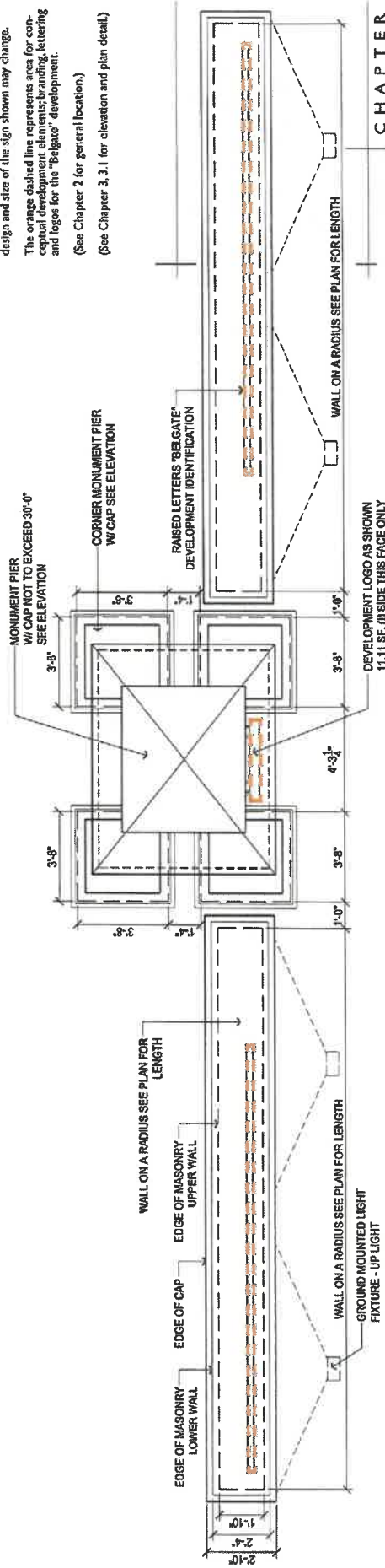
Notes:

The plan is schematic in nature and the general design and size of the sign shown may change.

The orange dashed lines represents area for construction details including flashing, lettering and logos for the "Belgate" development.

(See Chapter 2 for general location.)

(See Chapter 3.1 for elevation and plan detail.)



CHAPTER

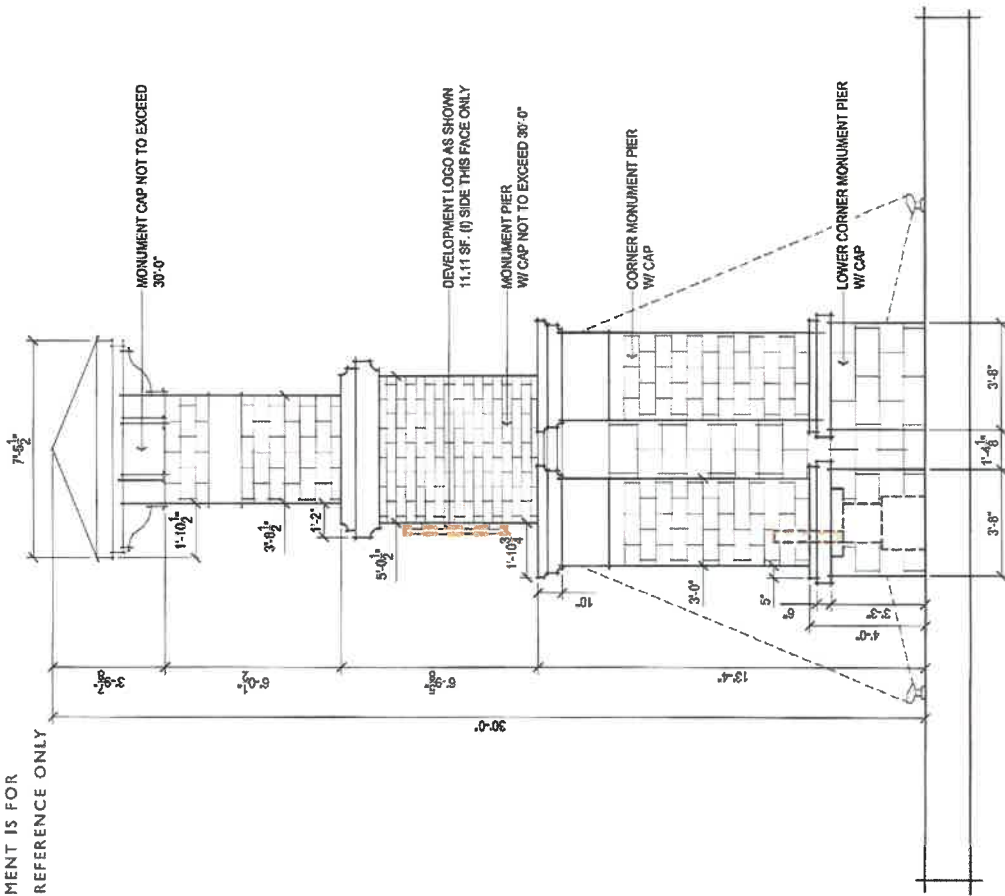
3.1

BELGATE

LANDMARK DEVELOPMENT MONUMENT IS ALREADY CONSTRUCTED THIS SHEET IS FOR REFERENCE ONLY



LANDMARK DEVELOPMENT MONUMENT IS FOR ARCHITECTURAL AND MATERIAL USES REFERENCE ONLY



TYP. SECTION "A"

LANDMARK DEVELOPMENT MONUMENT SIGN

Description:

Side Elevation

The purpose of the landmark development monument side elevation is to illustrate a gateway element at the intersections of City Blvd. and IKEA Blvd.

One landmark development monument will be located at the northeast intersection corner of City Blvd. and IKEA Blvd.

The detached walls will project out equally on either side of the landmark development monument with the development name, "Belgate" raised above the cap in individual letters.

The proposed materials for the landmark development monument are to match that of the multi-tenant monuments and the architecture of the area at development. Lighting shown is schematic, subject to change.

Size Allowed = 30' Max. Height

Size Proposed = 30' Max. Height

Notes:

The side elevation is schematic in nature and the general design and size of the sign shown may change.

The orange dashed line represents area for conceptual development elements; branding, lettering and logos for the "Belgate" development

(See Chapter 2 for general location)

(See Chapter 3.3.1 for elevation and plan detail)

CHAPTER

3.2

BELGATE

LANDMARK DEVELOPMENT MONUMENT IS ALREADY CONSTRUCTED THIS SHEET IS FOR REFERENCE ONLY

LANDMARK DEVELOPMENT MONUMENT IS FOR ARCHITECTURAL AND MATERIAL USES REFERENCE ONLY

LANDMARK DEVELOPMENT MONUMENT WALLS

Description:

Elevation, Plan, Section

The purpose of the landmark development monument walls are to assist with the identification of the Belgate development and create "Gateway" elements at the intersections of City Blvd. and IKEA Blvd.

Three landmark monument wall structures will be located at the intersections of IKEA Blvd. & City Blvd. (See Chapter 2), and four landmark monument wall structures will be located at the intersection of Shopping Center Dr. and IKEA Blvd. (See Chapter 2 & 2.1 plan view).

The development monument walls proposed at the southeast corner of the City Blvd. and IKEA Blvd. intersection will correspond with the landmark development monument sign at this location (See Chapter 3, 3.1, 3.2.)

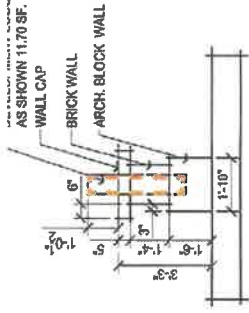
The walls will be built on a radius as shown on the development monument wall location plan. (See Chapter 2 & 2.1 plan view)

The proposed materials for the development monument walls are to match that of the landmark development monuments, tenant monuments and the architecture of the overall development. Lighting shown is schematic, subject to change.

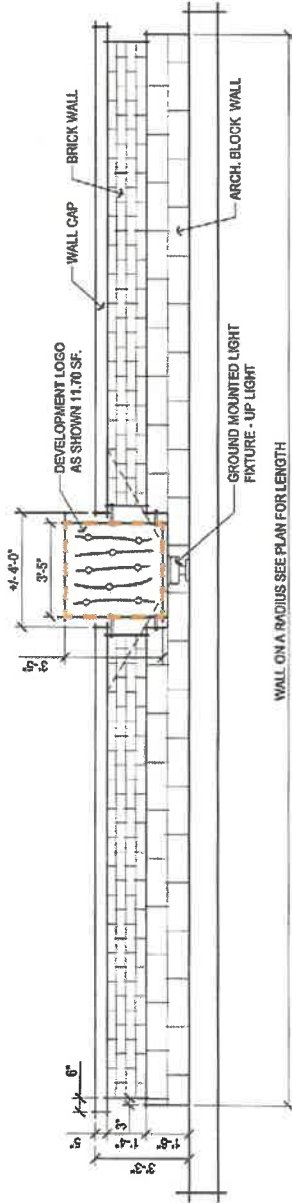
Notes:

The plans, elevations, sections, and locations of the walls are schematic in nature and the general design and size of the walls shown may change.

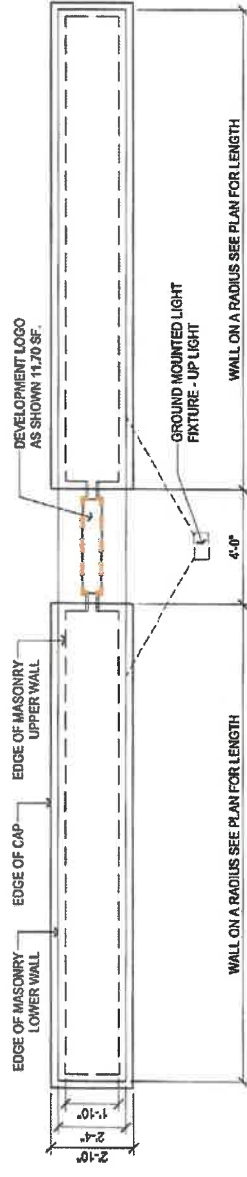
The orange dashed line represents area for conceptual development elements, branding, lettering and logos for the "Belgate" development. (See Chapter 2 & 3 for general location.)



TYP. SECTION "A"



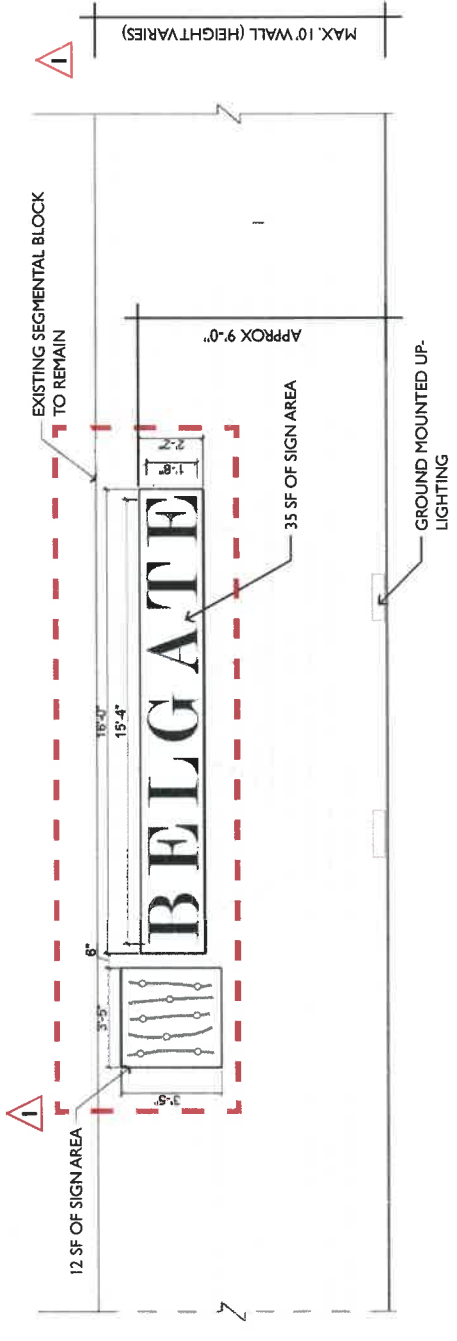
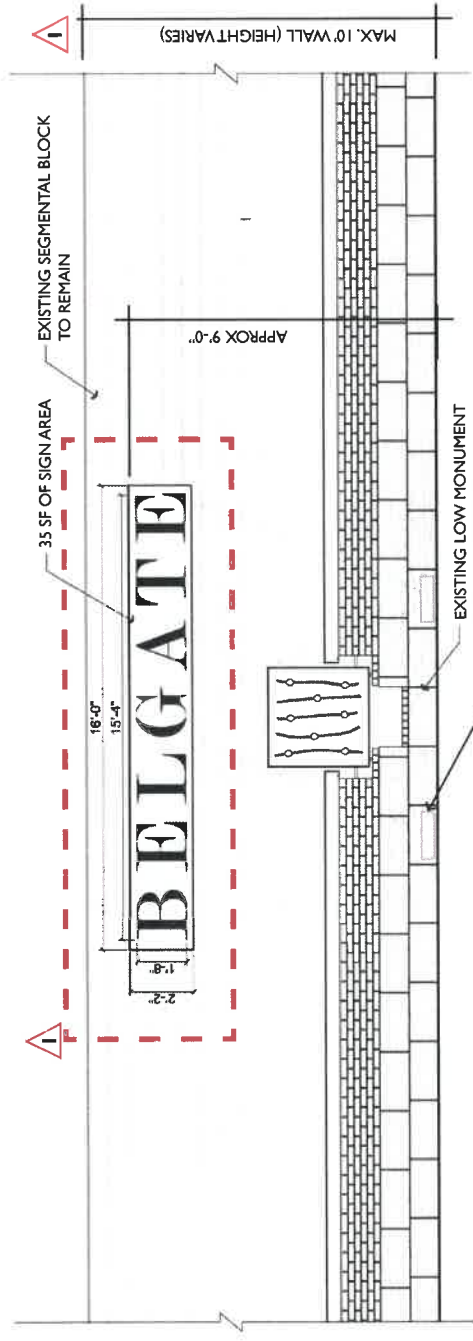
ELEVATION "A"



PLAN "A"

DEVELOPMENT MONUMENT WALL IS ALREADY CONSTRUCTED IN LOCATION SHOWN ON SHEET 2.1 AND APPROVED FOR THE REMAINING LOCATIONS SHOWN ON SHEET 2.1. THIS SHEET IS FOR REFERENCE ONLY





RETAINING WALL SIGNAGE



Notes:

The images to the left are for illustrative purposes only. The low monument wall and retaining wall shown have already been constructed. The "Belgate" lettering shown shall be black and match the existing lettering within the development including font, color, and material. Lettering and logo will be pin mounted to the existing retaining walls based on shop drawings provided by the sign manufacturer and approval by the landscape architect and owner prior to construction.

REVISIONS



2,04,2014 - City of Charlotte Submittal



CHAPTER

4.1

RETAINING WALL SIGNAGE



Notes:

The images to the left are for illustrative purposes only. The low monument wall and retaining wall shown have already been constructed. The "Belgate" lettering shown shall be black and match the existing lettering within the development including font, color, and material. Lettering and logo will be pin mounted to the existing retaining walls based on shop drawings provided by the sign manufacturer and approval by the landscape architect and owner prior to construction.

REVISIONS



2.04.2014 - City of Charlotte Submittal

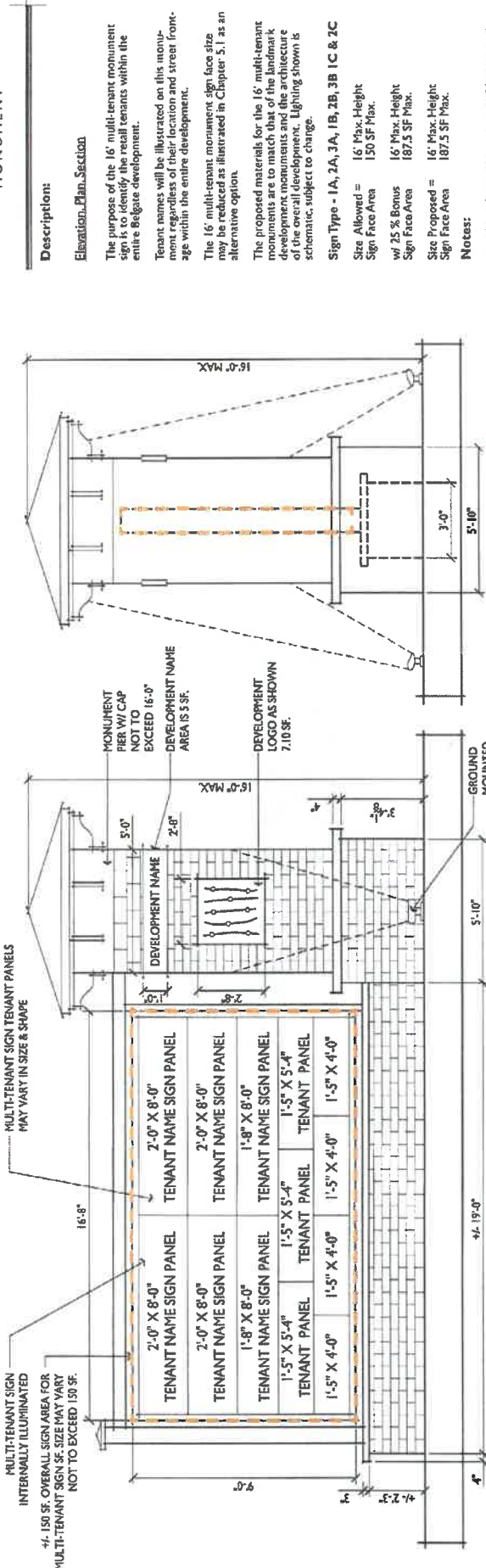
CHAPTER



4.2

BELGATE

16' MULTI-TENANT MONUMENT



Description:
Elevation, Plan, Section
 The purpose of the 16' multi-tenant monument sign is to identify the retail tenants within the entire Belgate development.
 Tenant names will be illustrated on this monument regardless of their location and street frontage within the entire development.
 The 16' multi-tenant monument sign face size may be reduced as illustrated in Chapter 5.1 as an alternative option.
 The proposed materials for the 16' multi-tenant monuments are to match that of the landmark development monuments and the architecture of the overall development. Lighting shown is schematic, subject to change.
Sign Type - 1A, 2A, 3A, 1B, 2B, 3B 1C & 2C
 Size Allowed = 16' Max. Height
 Sign Face Area 150 SF Max.
 w/ 25 % Bonus
 Sign Face Area 187.5 SF Max.
 Size Proposed = 16' Max. Height
 Sign Face Area 187.5 SF Max.

Notes:
 The plans, elevations, sections and locations of the 16' tenant sign are schematic in nature and the general design and size of the sign shown may change.
 The orange dashed line shown illustrates the sign face area.
 (See Chapter 1, 1A, 2A, 3A, 1B, 2B, & 3B, 1C & 2C for general locations.)

PLANNED DEVELOPMENT SIGN FLEXIBILITY OPTION APPROVAL

DATE 1/12/08

APPROVED [Signature]

1 MULTI-TENANT MONUMENT IS ALREADY CONSTRUCTED THIS SHEET IS FOR REFERENCE ONLY

16' MULTI-TENANT MONUMENT (OPTIONAL)

Description:

Elevation, Plan, Section (Optional)

The purpose of the 16' multi-tenant monument sign is to identify the retail tenants within the entire Belgate development.

Tenant names will be illustrated on this monument regardless of their location and street frontage within the entire development.

The 16' multi-tenant monument sign face size may be enlarged as illustrated in Chapter 5 as an alternative option.

The proposed materials for the 16' multi-tenant monuments are to match that of the landmark development materials for the entire Belgate development. Lighting shown is schematic, subject to change.

Sign Type - 1A, 2A, 3A, 1B, 2B, 3B, 1C & 2C

Size Allowed = 16' Max. Height
150 SF Max.

w/ 25% Bonus Sign Face Area
16' Max. Height
187.5 SF Max.

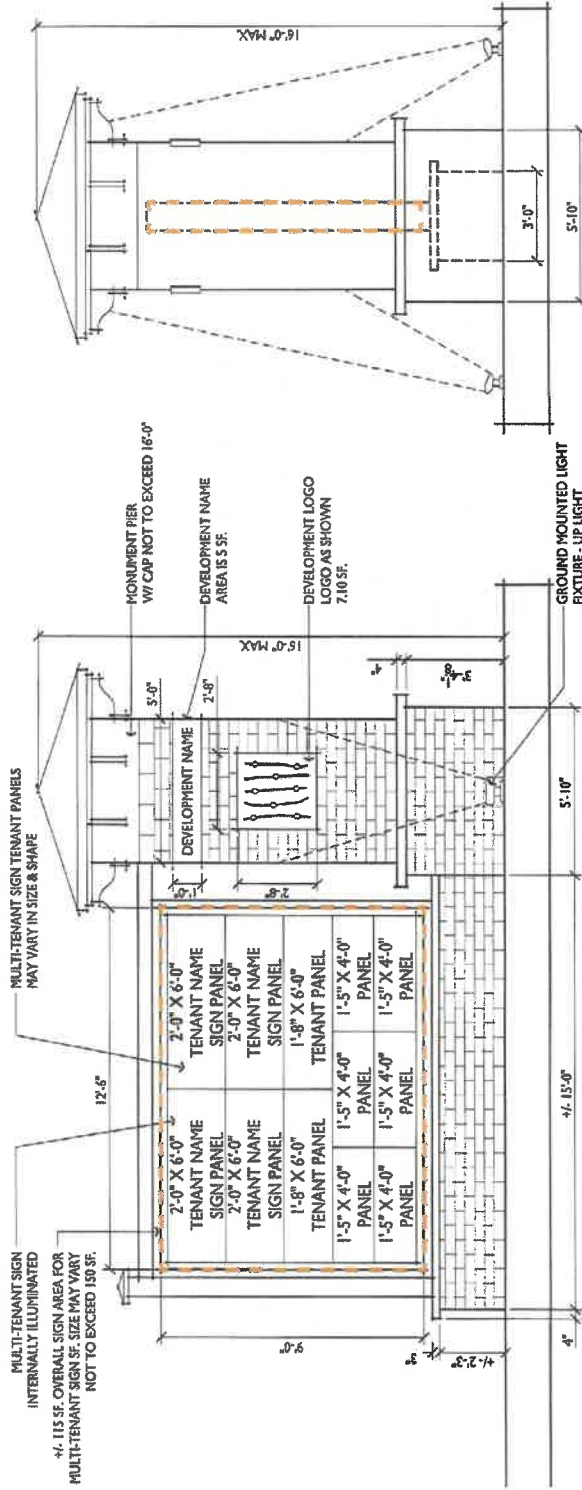
Size Proposed = 16' Max. Height
Sign Face Area
100 to 187.5 SF Max.

Notes:

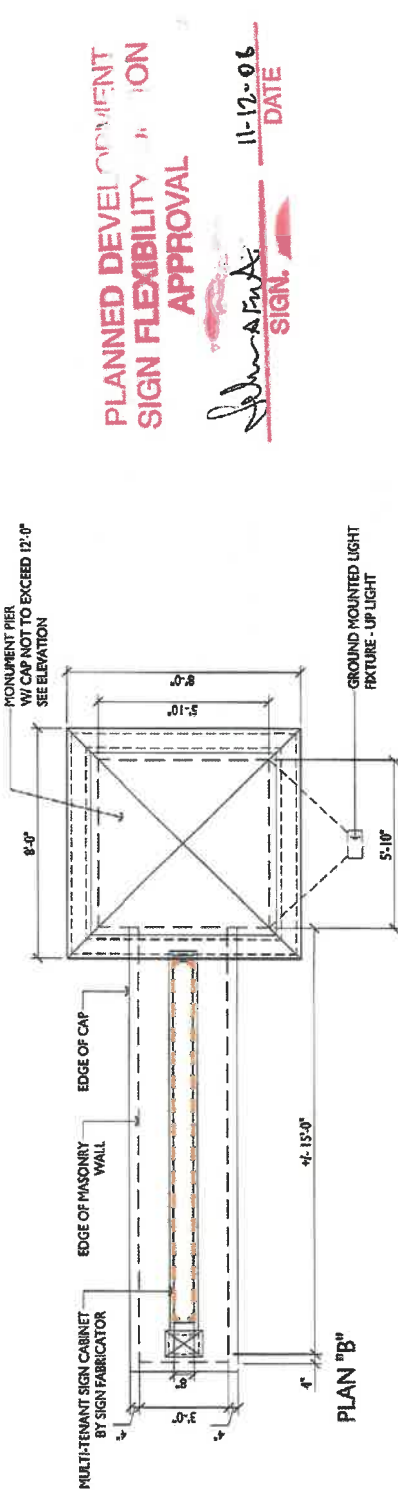
The plans, elevations, sections, and locations of the 16' tenant sign are schematic in nature and the general design and size of the sign shown may change.

The orange dashed line shown illustrates the sign face area.

(See Chapter 1, 1A, 2A, 3A, 1B, 2B, & 3B, 1C & 2C for general locations.)



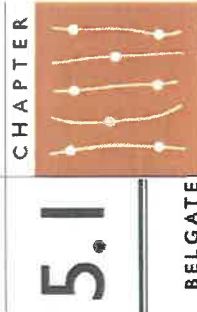
ELEVATION "B"



PLAN "B"

PLANNED DEVELOPMENT SIGN FLEXIBILITY APPROVAL

John A. Fink
SIGN. DATE 11-12-06



1 MULTI-TENANT MONUMENT IS ALREADY CONSTRUCTED
THIS SHEET IS FOR REFERENCE ONLY

Section 13.110. Creation of Special Sign Regulations.

(1) Sign Districts

For the purposes of establishing, enhancing, preserving, and developing the character, quality, and property values of areas of unique character and special development potential, districts which signs are regulated by special provisions may be established subject to the following conditions:

- (a) As a prerequisite to the establishment of such a special sign district, it must be determined that the modified rules established for said district shall:
 - i. Preserve and enhance the special character of the particular area.
 - ii. Not contravene the intent of these regulations.
 - iii. Cause no disturbance to neighboring property lying outside the proposed district.
- (b) Without changing the basic structure of these regulations, the modified rules for special sign districts may impose sign regulations, which are in addition to or more stringent than those provided for elsewhere in these regulations.
- (c) Districts for which special sign regulations may be imposed may include, but shall not be limited to the following:
 - i. Historic Overlay Districts Reserved.
 - ii. Neighborhood Mixed Use Overlay District Reserved.
 - iii. Billboard Free Overlay District.

No outdoor advertising sign shall be allowed in this district regardless of zoning classification.

(2) Planned Development Flexibility Option

For the purpose of providing flexibility and incentives for coordinated, well designed signs systems for large scale development, special provisions varying the standards of these regulations may be approved by the Charlotte-Mecklenburg Planning Commission staff subject to the following:

- (a) The development is a planned residential, nonresidential, or mixed use development, 36 acres or greater in size or 150 units for multi-family developments; a hospital or other large scale institutional complex; a large scale cultural, civic, or recreational facility; or a similar large scale development.

- (b) A Poster Sign Program that includes the following information in booklet form is submitted:
 - i. Detailed designs of all proposed signs including the size, height, copy, materials, and colors of such signs.
 - ii. Proposed locations and number of proposed signs.
 - iii. Sign Illumination Plans.
 - iv. Plans for landscaping or architectural features to be used in conjunction with such plans.

- (c) It is determined that the proposed signs shall meet the following criteria:
 - i. All signs are coordinated in terms of design features.
 - ii. The maximum size of detached signs is not varied by more than 25%.
 - iii. The number of detached signs along a street frontage does not exceed 3.
 - iv. The maximum height of a detached sign does not exceed 12 feet except when located along a Class II or III street, the height does not exceed 15 feet.
 - v. Multi-information directional signs are no greater than 16 square feet and are located in the interior of a development. Notwithstanding the foregoing, the maximum sign area of multi-information directional signs serving a regional mall, a shopping center, an office complex or a mixed use development containing over 500,000 square feet of gross building area and located within the interior of the development shall be 57 square feet per side, and the maximum height of such signs shall be 14 feet. (Petition No. 2005-67 § 13.110(2)(iv), 06/2005)
 - vi. Changeable copy highlighting special events on signs for cultural, civic, or recreational facilities shall not exceed 25% of the sign face area of a sign.
 - vii. Notwithstanding the terms of Section 13.110(2)(b)(ii) and subject to the sign criteria set out below, a regional mall, a shopping center, an office complex or a mixed use development containing over 500,000 square feet of gross building area may have detached signs identifying the pedestrian entrances into the building(s) and guiding pedestrians to streets. Such signs shall not be considered to be detached signs along a street frontage for the purposes of Section 13.110(2)(iii), and such signs shall not count towards the maximum of 3 detached signs along a street frontage. (Petition No. 2005-67 § 13.110(2)(v), 06/2005)

- (d) Each sign must be located a minimum of 400 feet from any public street.
- (e) Each sign must be located within the relevant building's curb line.

- (c) Each sign must be located within 150 feet of the pedestrian entrance it identifies.
- (d) The maximum height of each sign shall be 18 feet, and the maximum sign area shall be 70 square feet per side.

(3) Off-Premises Directional Development Signs

For the purposes of directing traffic from Class II or III streets (major or minor thoroughfares) to developments located on Class IV or V streets (collectors or local streets) and not having direct access or visibility from the Class II or III streets, and to ensure that visual clutter is minimized, off-premises directional signs may be permitted subject to the following:

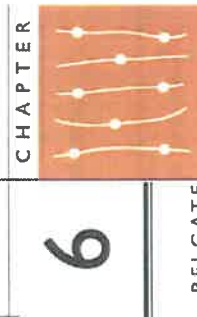
- (a) Application Requirements: The applicant for a directional sign permit shall submit complete and accurate information to Neighborhood Development including:
 - i. A form statement prepared by Neighborhood Development and signed by the owner of the parcel of property upon which the sign shall be located, consenting to and authorizing the location of the sign on the premises and the right of authorized City Officials or a designee to enter the property to remove a sign which is in violation of these regulations. (Petition No. 2005-78, § 13.110(3)(a)(i), 06/2005)
 - ii. A sketch showing the location of the proposed sign and manifesting that the sign's erection would be in compliance with the local requirements contained herein.
 - iii. Two blueprints or in-ink drawings to scale of the plans and specifications of the sign to be erected. Such plans shall include but not be limited to details of the design, dimensions and material of the proposed sign.
 - iv. A letter from either the City's Department of Transportation or the North Carolina Department of Transportation, whichever agency has jurisdiction over the road on which the sign is to be located, verifying that the sign will not be in violation of any local or State regulations at its proposed location.
 - v. Acknowledgment by the applicant that he/she shall be responsible for the cost of removal of a sign for any reasons stated in (f) herein, and that if the County removes the sign the permit holder has the duty to retrieve the sign after which time the County may dispose of such sign.
 - vi. If the sign is proposed in a historic district, approval of such a sign by the Historic District Commission shall be required prior to obtaining a sign permit.

- (b) Inspection and conditional approval: If Neighborhood Development is satisfied that the applicant has submitted complete and accurate information as required in these provisions, then Neighborhood Development shall notify the applicant that he/she has partially satisfied the requirements of these provisions. The following information for the issuance of the permit if not already submitted with (a) above: (Petition No. 2005-78, § 13.110(3)(b), 06/2005)
 - i. A hold harmless/indemnification statement as described below in (f).
 - ii. A cash bond or cash deposit as described in (f).

- (c) Use of directional sign: The person to whom the permit is issued is solely and exclusively responsible for the usage and maintenance of the directional sign and shall make the sign available for use by any eligible user. Matters of interpretation such as whether proposed copy is allowed by the provisions of this section shall be a proper matter for the Zoning Administrator and/or Zoning Board of Adjustment. The permit holder shall allow development to be identified on the sign subject to the following:
 - i. The development is a unified commercial, residential, or institutional use under single ownership or management that has a minimum of 50 parking spaces and/or 50 units of residential dwelling.
 - ii. The entrance that reasonably identifies the development is located no further than one and one half miles along streets from the intersection of the Class II or III Street with the Class IV or V Street.
 - iii. The development does not have direct access or visibility from any Class II or III Streets.
 - iv. The development does not have an identification sign located on a Class II or III Street nor does it have identification on another off-site directional sign. Only one sign per development shall be permitted.

- (d) Location and Orientation of Directional Sign: The sign shall be located in any zoning district only at the intersection of a Class II, III, or IV Street with a Class V or VI Street as defined in the adopted Comprehensive Street Classification System Manual. The sign face(s) shall be oriented toward the traffic flow on the Class IV or V Street, which is generally perpendicular to the Class II, III, or IV Street. This sign shall be located on the side of the Class II, III, IV Street closest to the development(s) identified on the sign. No portion of any sign shall be situated in such a way as to violate any public ordinances or regulations regarding sign distance obstructions of vision at street intersections, nor shall any sign be located closer than 11 feet from the pavement edge of any public street (however the Charlotte Department of Transportation, County Engineering or N.C. Dept. of Transportation may require that the sign be located further than 11 feet from the edge of pavement).

- (e) Spacing Requirements: No sign shall be located closer than 500 feet to any other similar directional sign on the same side of the street. There shall be no more than two signs erected at any intersection. In addition, no directional sign shall be located closer than 20 linear feet to any on-premises sign(s).
- (f) Design of Directional Sign: A directional sign shall be constructed as a
 - i. Design of Directional Sign: A directional sign shall be constructed as a



THIS SHEET IS FOR REFERENCE ONLY

ground mounted sign designed to accommodate up to 4 panels of equal size for one to 4 separate and distinct development names. It shall be designed in accordance with the requirements stated below.

- i. Maximum Size and Height:
 - Maximum structure width: 7 feet
 - Maximum sign face size: 20 sq. feet
- Maximum panel size: On streets with a speed limit of less than 45 miles/hour: 10 sq. feet. On streets with a speed limit of 45 miles/hour or greater: 15 sq. feet.
- Maximum height: 6 feet if landscaping is planted at base of sign; otherwise 4-11/2 feet. (Petition No. 2003-010, §13.110(10), 2-17-03)

ii. Construction of Sign (Petition No. 2005-78, §13.110(9)(i), 06/20/05) The signs shall be constructed of all-weather grade A wood or of aluminum having a minimum thickness of .090 with the overall depth of the sign frame no less than 3 inches. Copy on wood signs shall be either routed or sandblasted into the face panels. Copy on aluminum signs shall be either routed into the sign or shall be made of vinyl having a minimum five-year durability rating. To implement the requirements for the aesthetic appearance and uniformity of directional signs, Neighborhood Developments shall have the authority to prepare diagrams illustrating the requirements stated above and, further, to adopt any necessary details within the scope of the requirements, hereby, to achieve standard-sized, directional signs.

iii. Permitted Copy Only the name, type, and/or logo under which a development is known or designated and a directional arrow shall be permitted on a sign. The name of the owner or developer or information related to availability of units, space, goods, or services shall not be permitted as copy on a sign.

iv. Lighting Sign: shall not be lighted in residential districts.

(g) Maintenance: All signs shall be maintained in accordance with Section 13.104(3) herein.

(h) Replacing of board and removal of sign: If Neighborhood Development determines that there is a violation of these provisions, a copy of the board shall be turned to the permit holder. If the violation is corrected and there has been no further violation of Neighborhood Development by the Board of Adjustment or by any Court, then the Neighborhood Development shall have the authority to engage an independent contractor to remove the sign and pay for the removal of such sign from the board. The sign may be renewed for any of the following reasons: (Petition No. 2005-78, §13.110(9)(i), 06/20/05)

- i. A failure to maintain a sign in accordance with (g) above.
 - ii. The failure to erect the sign within the location shown on the survey.
 - iii. The revocation of the permit for any violation of Section 13.110(3).
 - iv. Any other violation of this section.
- (i) Bond and Indemnification: Neighborhood Development shall have the authority to set an amount for a cash bond double the estimated reasonable cost for the removal, the transporting, and the possible storage of a directional sign. Bonds shall be refunded to a permit holder when the permit holder removes the sign. The applicant shall sign a hold harmless/indemnification statement on behalf of the City to hold the City harmless from any claim or dispute between the permit holder and a person seeking to have use of the directional sign when the dispute or legal matter in no way pertains to the City's Zoning Ordinance provisions. (Petition No. 2005-78, §13.110(9)(i), 06/20/05)
- (j) Trees: The permit holder shall not destroy or trim any tree in the public right-of-way nor install a sign in such a manner to impact significant trees on trees in the public domain.

- (4) Off-Premises Identification Signs.
- For the purpose of providing flexibility when a shopping center is located on a Class V or VI street and not visible from a Class II, III, or IV street, an applicant may obtain a permit for an off-premises identification sign subject to the following:
- (a) An applicant for an off-premises identification sign must comply with the application requirements specified in subdivision 13.110(3)(b), and in addition, provide a statement that the subject property being identified would not be visible from the nearest Class II, III, or IV street.
 - (b) An approved off-premises identification sign shall be erected instead of (and not in addition to) both an applicant's on-premises identification or business sign and any off-premises directional sign permissible under the provisions herein.

(c) A proposed off-premises sign shall comply with all the requirements in subdivision 13.110(3)(b) through (i) with the following exception:

- i. Size of Center Eligible for Use of Sign
The minimum size of a shopping center eligible for the use of an off-premises identification sign shall be 25,000 square feet, and the center must contain five or more businesses.
- ii. Design of Sign
Maximum Size and Height:
The maximum size and height of a sign shall be the same as would be permitted if the sign were located on the premises being identified.
- Permitted Copy:
Only the name and/or logo of the shopping center and/or names of individual establishments within the shopping center shall be permitted on the sign face(s). No advertising shall be permitted.
- Construction of Sign:
Copy on aluminum signs shall be either routed into the sign or shall be made of vinyl or plastic having a minimum five-year durability rating.

Lighting:
Signs shall not be lighted by any method when located in a single family residential district. When located in other districts, signs may be lighted, but only by internal sources.

(5) Landmark Signs
When revised sign regulations were adopted on February 1, 1988, changes were made which caused many signs to be nonconforming and subject to an eight-year amortization. Some of these nonconforming signs may have special significance to a section of the community or to the entire City. Therefore, the Zoning Administrator may designate certain signs as "landmark signs" which will permit them to remain and not be subject to the eight-year amortization.

(a) Application
Any person may apply for designation of an existing on-premise sign as a landmark sign. Such application shall be submitted to and on a form determined by the Zoning Administrator. Applications for landmark sign designation must be made no later than one (1) year from the adoption date of this amendment. (EDITOR'S NOTE: This amendment was adopted by City Council February 19, 1996)

- (b) Criteria
The Zoning Administrator may designate an existing on-premises sign as a landmark sign if it meets the following criteria:
- (1) The sign is an on-premises sign, which meets at least three (3) of the following:
 - (a) It was expressly designed for the business, institution, or other establishments at that location; or
 - (b) It bears a national or local emblem, logo, or other graphic that is unique to the property or the establishment; or
 - (c) It is a remnant of an advertising program that is no longer used by the parent company; or
 - (d) The sign exhibits unique or rare characteristics that enhance the streetscape or identity of a neighborhood; or
 - (e) The sign contributes to the historical or cultural character of the streetscape or the community at large.
 - (2) The sign was erected at least 15 years prior to the adoption date of this amendment.
 - (3) The sign complies with the appropriate provisions of the North Carolina State Building and Electrical Codes. If any portion of the sign is permitted to remain on or over a public right-of-way, a City or State approved encroachment agreement is executed.

(c) Designation
(4) The Zoning Administrator shall have the authority to approve or to disapprove the designation of landmark signs based upon the criteria stated above. At the time of the filing of a landmark sign designation application, the applicant must file all necessary information in order for the Zoning Administrator to determine if the sign meets the criteria. The Zoning Administrator has the authority to request whatever other information is necessary in order to make a decision. The burden of proof for meeting the criteria is upon the applicant. In approving or disapproving a landmark sign application, the Zoning Administrator shall state the reasons in writing. An

See Charlotte Zoning Code:
Section 13.110. Creation of Special Sign Regulations

NOTE:
FOR REFERENCE ONLY.



See Charlotte Zoning Code:

Section 13.110. Creation of Special Sign Regulations

Section 13.102. Definitions

NOTE:
FOR REFERENCE ONLY.

Definitions:

Sign
Any object, device, or structure, or part thereof, oriented outdoors, which is used to advertise, identify, display, direct, or attract attention to an object, person, institution, organization, business, product, service, area, or location by any means, including words, letters, or figures, symbols, numbers, colors, illustrations, pictorial representations, or any combination of any such means, or any combination of any such means, or any combination of any such means, including the use of light or other means.

Sign Face Area
The area within a single, continuous perimeter enclosing the extreme limits of characters, lettering, logo, illustration, or ornaments, together with any material or color forming an integral part of the display or to differentiate the sign from the background on which it is placed. Structural supports bearing no sign copy shall not be included in the sign area. If a sign is attached to an entrance wall or fence, only that portion of that wall or fence onto which the sign face or letters are placed shall be calculated in the sign area.

Only one side of a sign shall be included in the calculation. The area of a Business Sign, which is occupied by the address, shall not be included in any area for calculation, except where the address is also the name of the business or institution owning or occupying the premises. The address area would be identified by a single continuous perimeter enclosing the extreme limits of the address with numbers at least four (4) inches in height or one (1) inch in height for every ten feet of distance between the displayed number and the terminus of the adjacent roadway, whichever is greater. Maximum number size will not exceed 1.5 times the required size and not exceed thirty (30) inches total. (Petition No. 2003-009, § 13.102(S), 2-17-03)

Outparcel
A parcel of land associated with a shopping center or multi-tenant property development, which is designated on an approved site plan as a location for a free standing structure with an intended use such as, but not limited to banks, saving and loans, dry cleaners, service stations, vehicle repair garages, offices, restaurants, retail establishments, or combination of uses thereof and adjoins the shopping center or multi-tenant property development or the parking and service street associated with it on any side, other than the side fronting the public right-of-way.

Planned Development
A tract of land under single, corporation, partnership, or association ownership, planned and developed as an integral unit in a single development operation or a definitely programmed series of development operations and according to an approved

Detached Sign
Any sign that is not affixed or attached to a building and is securely and permanently mounted in the ground.

Ground Mounted Sign
A sign which extends from the ground or which has a support which places the bottom thereof less than 2 feet from the ground.

Identification Sign
A sign which displays only the name, address, and/or crest, or insignia, trademark, occupation or profession of an occupant or the name of any building on the premises.

On-Premises Sign
A sign that directs attention to a business commodity, service, or establishment conducted, sold, or offered on the premises on which the sign is erected.

Directional Development Sign: Off-Premises
A sign used to direct traffic from Class II or III streets to unified developments such as residential subdivisions, garments or condominium projects, shopping centers, office/business/ industrial parks, and/or churches that are located on Class IV or V streets.

Directional Development Sign: On-Premises
A sign used to direct traffic from Class II or III streets to unified developments such as residential subdivisions, apartments or condominium projects, shopping centers, office/business/ industrial parks, and/or churches that are located on Class IV or V streets.

Pole Sign
A detached sign erected and maintained on a freestanding frame, mast, or pole and not attached to any building but not including ground-mounted signs.

approval of the Zoning Administrator's decision to show on the face of the decision.

(2) If the sign being considered for landmark designation is associated with a designated local landmark or in an established Historic District, the Zoning Administrator shall receive a recommendation from the appropriate Charlotte-Hicklen Historic Landmark Commission or the Historic District Commission before making a decision.

(3) After a sign is designated as a landmark sign it shall be maintained in its original condition, shape and size, except for minor changes required for structural enhancements or changes required to comply with minimum Electrical or Building Codes, or to remove portions from a public right-of-way. Where original materials are unavailable, substitute materials, which are as near as possible to the original material may be used.

(4) Once designated as a landmark sign, it shall be considered to be in compliance with any zoning regulation and will be exempt from any notification provisions of Section 13.112, if the sign is moved on the premises, it shall be subject to the location standards of this ordinance. The Zoning Administrator will then issue a certificate to the applicant stating that the sign has been duly designated as a landmark sign.

(5) While a designated landmark sign shall be deemed to be in compliance with the zoning regulations, this Section 13.110 is not intended to prevent Neighborhood Development from enforcing the zoning ordinance if the Zoning Administrator or another City agency determines that there is a violation of any provisions, or the intent and purposes of any provisions of the zoning ordinance. (Petition No. 2005-79 § 13.110(F)(5), 06/20/05)

(6) On-Premises, Planned Development Identification Signs in Medium for the purpose of providing alternative, safe, and attractive locations for planned development identification signs in divided entrance medians of streets providing direct access to the development, the following standards apply:

1. The location of the identification sign must be in a median of a Class V or lever public or private street directly serving as an entrance to the planned development. For the purpose of this sign provision, a planned development shall include planned residential, non-residential, or mixed use developments that include a public or private street as a part of its development.

2. Free-stand sign locations in a median of a Class V or lever public street, a right-of-way easement agreement, must be first signed by the Charlotte Department of Transportation (CDOT). Contact CDOT for information concerning the contractual and liability insurance coverage requirements. Through the right-of-way easement process CDOT will review the sign location and design to determine whether the sign can be installed constructed in a manner that will not adversely affect public safety.

3. The location of sign must not conflict with required intersection sight triangles sight distance from driveways or other sight distance requirements as determined by CDOT.

4. Type of Sign Permitted: Ground mounted identification.

5. Maximum Number: 1 per street front; where a sign is permitted, 2 separate sign faces may be used in conjunction with a wall, fence or other architectural feature.

6. Maximum Size: 24 square feet

7. Maximum Height: 4 feet

8. Permitted Illumination: Illuminated

9. Location: In median of planned development access street a minimum of 5 feet from intersecting street right-of-way

10. The owner(s) of the planned development will be responsible for maintenance of the sign and any accompanying lighting and landscaping.



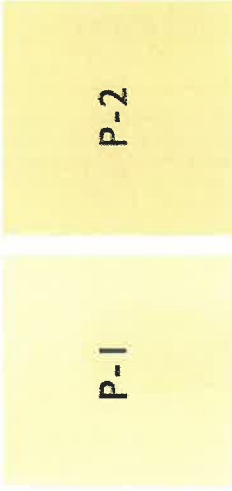
The Purpose of the Appendix is to illustrate the options, alternatives and variations of materials proposed for the monuments. These materials are in conjunction of proposed material for the entire development including, but not limited to the proposed buildings and monuments.

Monument materials are for reference only and may or may not be used in combinations or in whole.

All materials proposed are coordinated with proposed architecture located throughout the development.

Materials as shown are not limited to this pallet only and other coordinating materials may be added to compliment materials shown.

FOR REFERENCE ONLY. MATERIALS SHOWN ARE NOT LIMITED AS ADDITIONAL MATERIALS BE INCORPORATED OR SUBTRACTED.

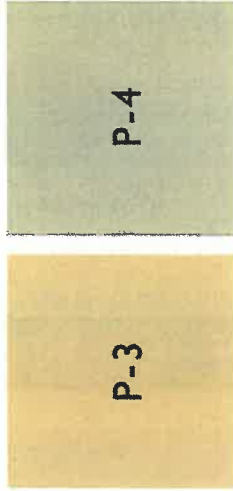


SHERWIN WILLIAMS PAINT COLORS OVER STUCCO

P-1 PAPER LANTERN: SW 7676

P-2 TOASTED PINE NUT: SW 7686

COLORS AS SHOWN MAY VARY DUE TO ELECTRONIC FILE & PRINTING



SHERWIN WILLIAMS PAINT COLORS OVER STUCCO

P-3 LIGONIER TAN: SW 7717

P-4 SANDERLING: SW7513

COLORS AS SHOWN MAY VARY DUE TO ELECTRONIC FILE & PRINTING



TRENWYTH PRAIRIE STONE LIMESTONE ROCK-FACE OR EQUAL



TRENWYTH PRAIRIE STONE LIMESTONE CHISEL FACE OR EQUAL



DUFFERIN STONE CHAMBYLly BEIGE



TRI-STATE BRICK LIGHT GRAY VELOUR



HANSON BRICK, CAROLINA COLLECTION OLD SAVANNAH (COLUMBIA 2)



TRENWYTH PRAIRIE STONE LIMESTONE GROUND-FACE OR EQUAL

MATERIAL NOTE:

Additional potential materials such as powder coated boxed aluminum logo elements, post, rails and stand alone lettering shall be incorporated within each monument design.

ARCHITECTURAL GUIDELINES FOR OVERALL DEVELOPMENT AND IDENTIFICATION SIGNAGE



City of Kissimmee



*Community
Redevelopment Agency*

DESIGN DEVELOPMENT

S I G N A G E

Wayfinding

Historic District

Gateway Feature

This wayfinding design development study includes gateway signage, vehicular directional signage, pedestrian directional signage, map kiosk, parking identity signage, and historic district signage. The overall purpose is to identify and lead visitors and residents to their destinations and various points of interest in downtown Kissimmee. The sign designs in the study are a design development guide providing typical sign type sizes, colors, font styles, and other detail. Prior to fabrication sign manufacturers will need to provide shop drawings which show detail and engineering specifications to ensure safe installation.

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Wayfinding

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Gateway Feature

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Design Intent

Wayfinding signs should make a strong and consistent visual statement representing the character and image of downtown Kissimmee.

Signage should be bold and recognizable without confusing images or clutter. A limited color palette contributes to greater readability and clarity of message.

The wayfinding signage system is meant to provide visitors guidance and information on various destinations within the downtown area as well as leave a lasting impression of quality, history and community.

In addition the wayfinding signage system should be cost effective and easily constructed so the system can be implemented and maintained at a reasonable expense.

Objectives of a Wayfinding System

- 1) Clearly define primary routes and entrance points to downtown, for both vehicles and pedestrians.
- 2) Enable users to locate public parking adjacent to or in proximity of their intended destination
- 3) Create a hierarchy of directional information
 - a. Citywide Level
 - b. Individual Key Destinations within the City
 - c. District Destinations
 - d. Direct Vehicles to Parking
 - e. Direct Pedestrians to Destinations

Sign Family

The following components of the sign system were designed individually for optimal functionality while complementing each other in form and finish to create a unified sign family

City Gateways: Signs and structures distinguishing city edges or entry portals

Vehicular Directional: Signs serving to direct vehicular traffic to key destinations within and beyond the city

Retail Directional: Directional signage specifically to guide pedestrians to retail and dining establishments.

Map Kiosks: Signs and maps intended to orient and direct pedestrians throughout the city. Could also provide historic information if lactated at a site of special interest.

Historic District Signs: Identification signs for designated historic districts within the city.

Parking Signs: Identification and directional signs for parking which help make facilities easier to locate.

WAYFINDING

Vehicular Directional

Retail Directional

Map Kiosk

Parking Indicator

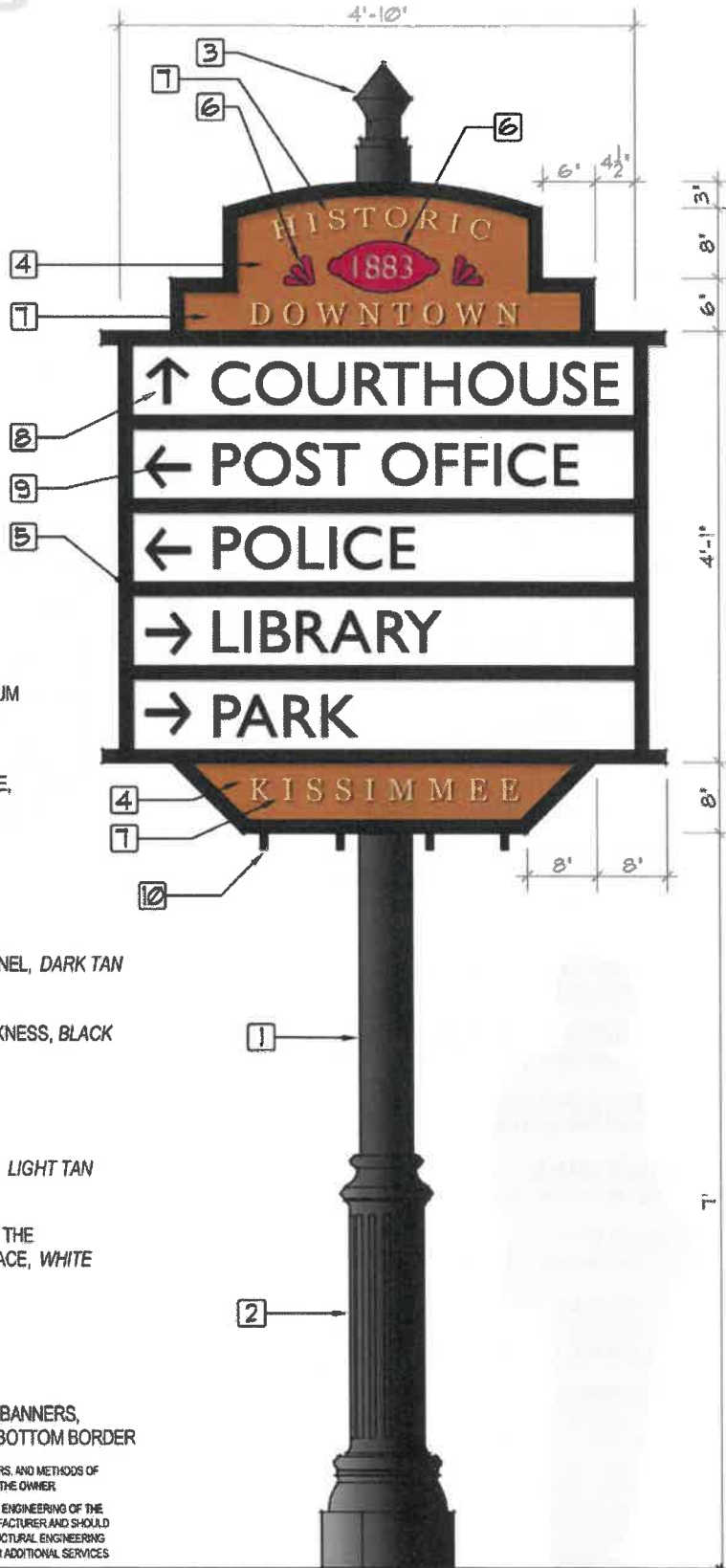
W-1.0 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- WHITE,**
PANTONE 7499 C
- DARK TAN,**
PANTONE 146 C
- LIGHT TAN,**
PANTONE 146 C at 50%
- RED,**
PANTONE 1805 C

REFER TO APPENDIX A-1.0 FOR
 ALTERNATIVE COLOR PALETTES, FINAL
 COLORS TO BE CHOSEN BY OWNER

W-1.0 SIGN SPECIFICATIONS

- 1** SIGN POLE TYPE 1
 BEACON PRODUCTS - 6" SMOOTH ALUMINUM
 SHAFT, OR APPROVED EQUAL, *BLACK*
- 2** SIGN POLE BASE
 BEACON PRODUCTS - CONWAY POLE BASE,
 OR APPROVED EQUAL, *BLACK*
- 3** DECORATIVE POLE FINIAL
 BEACON PRODUCTS - PYRAMID,
 OR APPROVED EQUAL, *BLACK*
- 4** SINGLE FACED ALUMINUM SIGN PANEL
 ALL ALUMINUM CONSTRUCTION SOLID PANEL, *DARK TAN*
- 5** RAISED ALUMINUM BORDER
 APPLIED TUBULAR BAR STOCK, 1 1/2" THICKNESS, *BLACK*
- 6** RAISED GRAPHIC
 CAST ALUMINUM, *RED*
- 7** RAISED TEXT
 CAST ALUMINUM, FONT TYPE - 'GEORGIA', *LIGHT TAN*
- 8** MODULAR ALUMINUM PANELS
 REMOVABLE SIGN BLADES, FASTENED TO THE
 BACK PANEL, APPLIED REFLECTIVE SURFACE, *WHITE*
- 9** DIRECTIONAL TEXT AND ARROWS
 APPLIED FLAT TO THE MODULAR PANELS,
 FONT TYPE - 'GILL SANS MT', *BLACK*
- 10** BANNER HOOKS
 DESIGNED TO SUPPORT SPECIAL EVENT BANNERS,
 EQUALLY SPACED AND ANCHORED INTO BOTTOM BORDER



FINAL DESIGN, SHOP DRAWINGS, MATERIAL SELECTION, SIZES, COLORS, AND METHODS OF
 CONSTRUCTION SHOULD BE COORDINATED WITH AND APPROVED BY THE OWNER

THIS DRAWING REPRESENTS DESIGN CONCEPTS ONLY. STRUCTURAL ENGINEERING OF THE
 COMPONENTS SHOWN ARE THE RESPONSIBILITY OF THE SIGN MANUFACTURER AND SHOULD
 ADHERE TO ALL GOVERNING STANDARDS AND PUBLIC SAFETY. STRUCTURAL ENGINEERING
 SERVICES CAN BE PROVIDED BY KIMLEY-HORN AND ASSOCIATES FOR ADDITIONAL SERVICES

W-2.0 COLOR SPECIFICATIONS

1 BLACK,
 PANTONE PROCESS BLACK C

2 WHITE,
 PANTONE 7499 C

3 DARK TAN,
 PANTONE 146 C

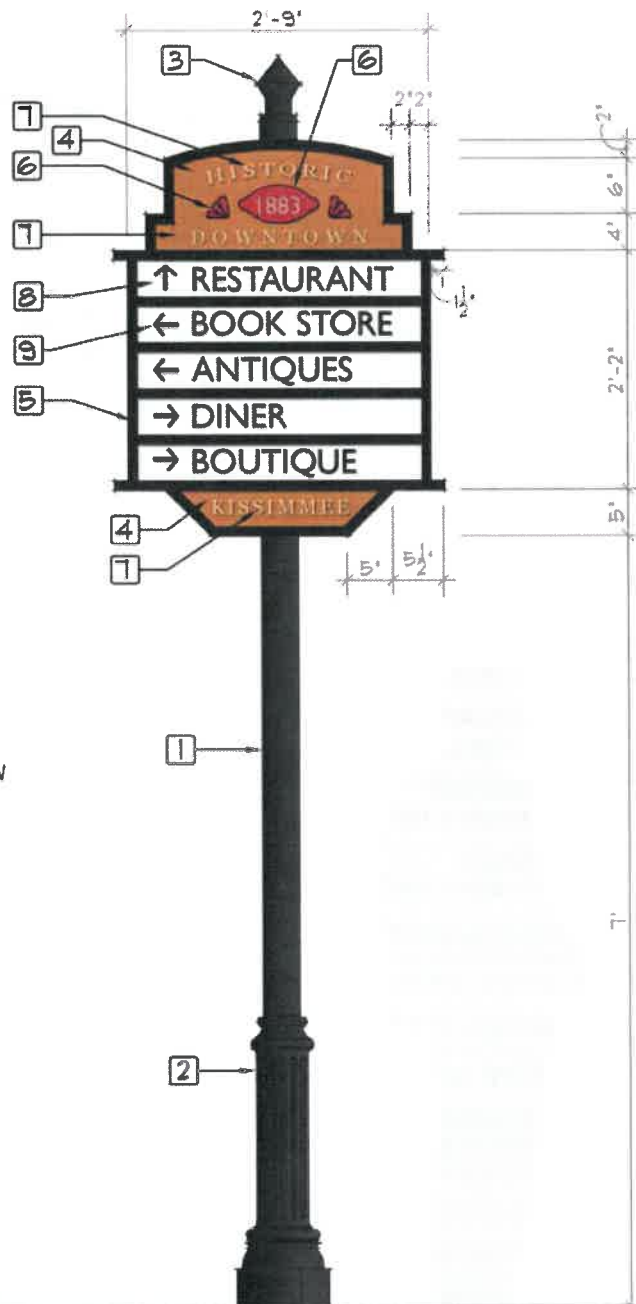
4 LIGHT TAN,
 PANTONE 146 C at 50%

5 RED,
 PANTONE 1805 C

REFER TO APPENDIX A-1.0 FOR
 ALTERNATIVE COLOR PALETTES. FINAL
 COLORS TO BE CHOSEN BY OWNER

W-2.0 SIGN SPECIFICATIONS

- 1** SIGN POLE TYPE 2
 BEACON PRODUCTS - 4" SMOOTH ALUMINUM
 SHAFT, OR APPROVED EQUAL, BLACK
- 2** SIGN POLE BASE
 BEACON PRODUCTS - CONWAY POLE BASE,
 OR APPROVED EQUAL, BLACK
- 3** DECORATIVE POLE FINIAL
 BEACON PRODUCTS - PYRAMID,
 OR APPROVED EQUAL, BLACK
- 4** DOUBLE FACED ALUMINUM SIGN PANEL
 ALL ALUMINUM CONSTRUCTION SOLID PANEL, DARK TAN
- 5** RAISED ALUMINUM BORDER
 APPLIED TUBULAR BAR STOCK, 1" THICKNESS, BLACK
- 6** RAISED GRAPHIC
 CAST ALUMINUM, RED
- 7** RAISED TEXT
 CAST ALUMINUM, FONT TYPE - 'GEORGIA', LIGHT TAN
- 8** MODULAR ALUMINUM PANELS
 REMOVABLE SIGN BLADES, FASTENED TO THE
 BACK PANEL, APPLIED REFLECTIVE SURFACE, WHITE
- 9** DIRECTIONAL TEXT AND ARROWS
 APPLIED FLAT TO THE MODULAR PANELS,
 FONT TYPE - 'GILL SANS MT', BLACK



FINAL DESIGN SHOP DRAWINGS MATERIAL SELECTION SIZES COLORS AND METHODS OF
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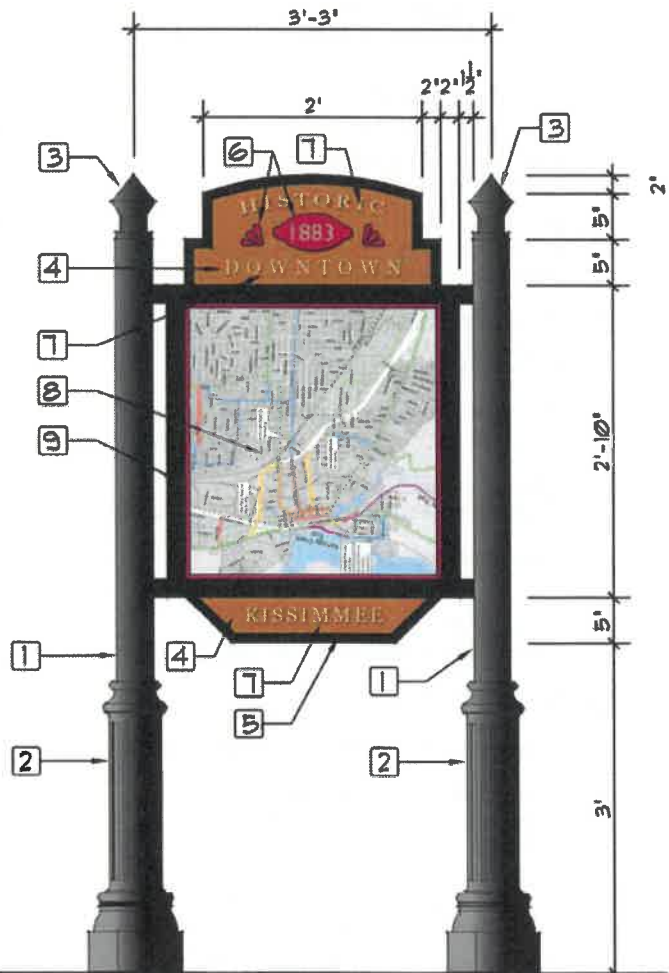
W-3.0 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- WHITE,**
PANTONE 7499 C
- DARK TAN,**
PANTONE 146 C
- LIGHT TAN,**
PANTONE 146 C at 50%
- RED,**
PANTONE 1805 C

REFER TO APPENDIX A-1.0 FOR
 ALTERNATIVE COLOR PALETTES. FINAL
 COLORS TO BE CHOSEN BY OWNER

W-3.0 SIGN SPECIFICATIONS

- 1** SIGN POLE TYPE 2
BEACON PRODUCTS - 4" SMOOTH ALUMINUM
SHAFT, OR APPROVED EQUAL, **BLACK**
- 2** SIGN POLE BASE
BEACON PRODUCTS - CONWAY POLE BASE,
OR APPROVED EQUAL, **BLACK**
- 3** DECORATIVE POLE FINIAL
BEACON PRODUCTS - PYRAMID,
OR APPROVED EQUAL, **BLACK**
- 4** SINGLE FACED ALUMINUM SIGN PANEL
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **DARK TAN**
- 5** RAISED ALUMINUM BORDER
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **BLACK**
- 6** RAISED GRAPHIC
CAST ALUMINUM, **RED**
- 7** RAISED TEXT
CAST ALUMINUM, FONT TYPE - 'GEORGIA', **LIGHT TAN**
- 8** DOUBLE SIDED DISPLAY CASE
CLEAR PROTECTIVE COVER, STAINLESS LOCKS,
FULL PIANO HINGE
- 9** DISPLAY CASE BORDER
ALUMINUM CONSTRUCTION, 2" THICK, **BLACK**



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W-4.0 COLOR SPECIFICATIONS

1 BLACK,
 PANTONE PROCESS BLACK C

2 WHITE,
 PANTONE 7499 C

3 DARK TAN,
 PANTONE 146 C

4 LIGHT TAN,
 PANTONE 146 C at 50%

5 RED,
 PANTONE 1805 C

REFER TO APPENDIX A-1.0 FOR
 ALTERNATIVE COLOR PALETTES, FINAL
 COLORS TO BE CHOSEN BY OWNER

W-4.0 SIGN SPECIFICATIONS

1 SIGN POLE TYPE 3
 BEACON PRODUCTS - 3" SMOOTH ALUMINUM
 SHAFT, OR APPROVED EQUAL, BLACK

2 SIGN POLE BASE
 BEACON PRODUCTS - CONWAY POLE BASE,
 OR APPROVED EQUAL, BLACK

3 DECORATIVE POLE FINIAL
 BEACON PRODUCTS - PYRAMID,
 OR APPROVED EQUAL, BLACK

4 SINGLE FACED ALUMINUM SIGN PANEL
 ALL ALUMINUM CONSTRUCTION SOLID PANEL, DARK TAN

5 RAISED ALUMINUM BORDER
 APPLIED TUBULAR BAR STOCK, 2" THICKNESS, BLACK

6 RAISED GRAPHIC - ARROW
 CAST ALUMINUM, RED

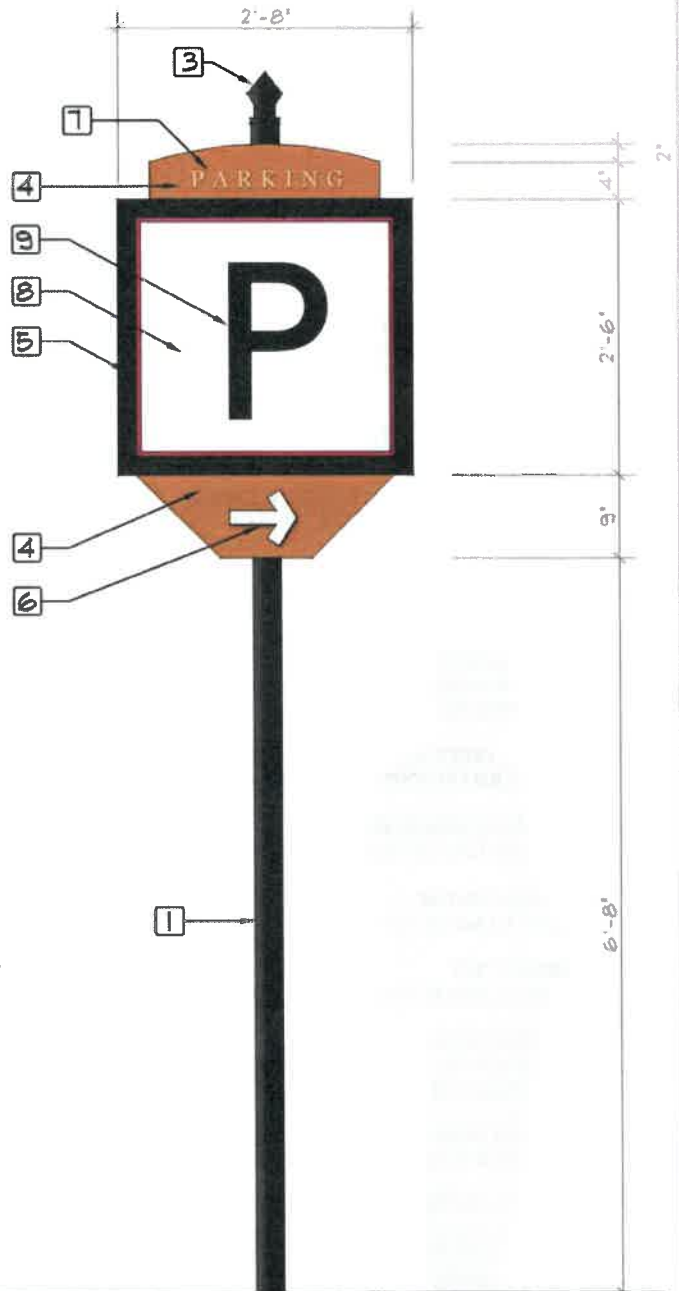
7 RAISED TEXT
 CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', LIGHT TAN

8 REFLECTIVE PANEL
 ALL ALUMINUM CONSTRUCTION, FASTENED TO THE
 BACK PANEL, APPLIED REFLECTIVE SURFACE, WHITE

9 DIRECTIONAL TEXT AND ARROWS
 APPLIED FLAT TO THE MODULAR PANELS,
 FONT TYPE - 'GILL SANS MT', BLACK

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HISTORIC DISTRICT

Courthouse District

Beaumont District

Brack District

Lakeshore District



H-1.0 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- CAJUN RED,**
SW 0008
- CLASSICAL WHITE,**
SW 02829
- SHERATON SAGE,**
SW 0014

SW COLORS SHOWN ARE BASED ON SHERWIN - WILLIAMS HISTORIC COLLECTION
 IF USING ANOTHER BRAND OF PAINT OR COATING THE SIGN MANUFACTURER IS
 RESPONSIBLE FOR MATCHING COLORS FINAL APPROVAL BY OWNER

H-1.0 SIGN SPECIFICATIONS

- 1** **SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM
SHAFT, OR APPROVED EQUAL, **BLACK**
- 2** **SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE,
OR APPROVED EQUAL, **BLACK**
- 3** **DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID,
OR APPROVED EQUAL, **BLACK**
- 4** **SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **CAJUN RED**
- 5** **RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **SHERATON SAGE**
- 6** **RAISED GRAPHIC**
CAST ALUMINUM, **CLASSICAL WHITE & SHERATON SAGE**
- 7** **RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', **CLASSICAL WHITE**
- 8** **DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER

FINAL DESIGN SHOP DRAWINGS MATERIAL SELECTION SIZES COLORS AND METHODS OF
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S I G N A G E

H-1.1
HISTORIC SIGN
OPTION ONE
BEAUMONT DISTRICT



H-1.1 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- LIBRARY PEWTER,**
SW 0038
- HUBBARD SQUASH,**
SW 0044
- TWILIGHT GRAY,**
SW 0054

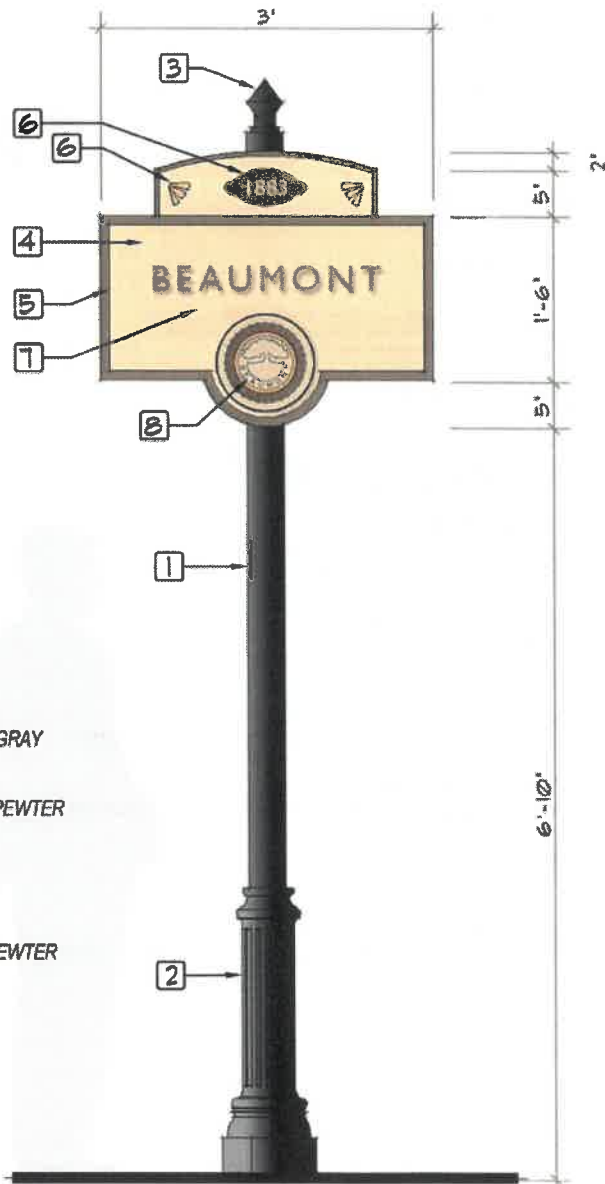
SW COLORS SHOWN ARE BASED ON SHERWIN - WILLIAMS HISTORIC COLLECTION. IF USING ANOTHER BRAND OF PAINT OR COATING, THE SIGN MANUFACTURER IS RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

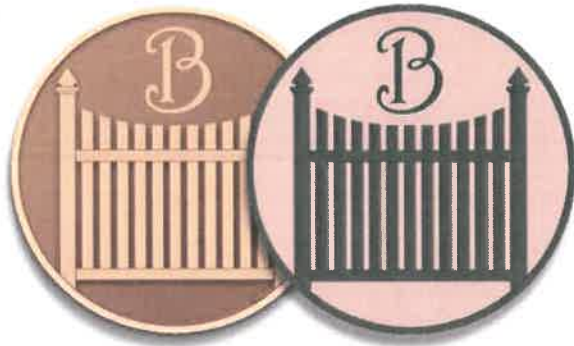
H-1.1 SIGN SPECIFICATIONS

- 1 SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM SHAFT, OR APPROVED EQUAL, **BLACK**
- 2 SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, **BLACK**
- 3 DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, **BLACK**
- 4 SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **TWILIGHT GRAY**
- 5 RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **LIBRARY PEWTER**
- 6 RAISED GRAPHIC**
CAST ALUMINUM, **HUBBARD SQUASH & LIBRARY PEWTER**
- 7 RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT, **LIBRARY PEWTER**
- 8 DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER

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H-1.2 COLOR SPECIFICATIONS

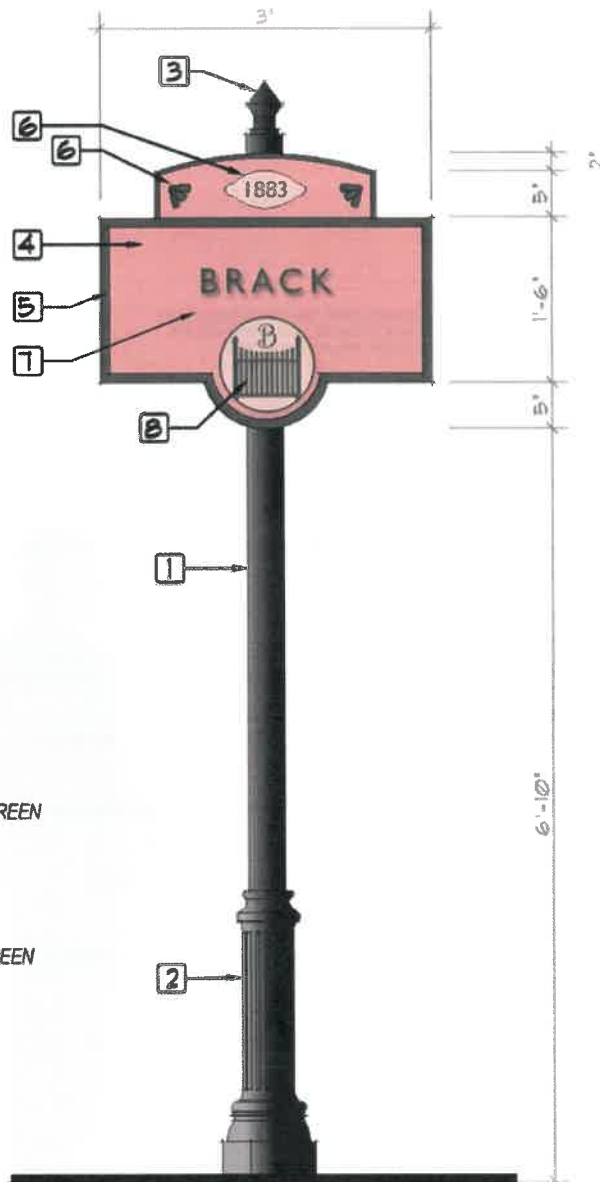
- **BLACK,**
PANTONE PROCESS BLACK C
- **ROSE TAN,**
SW 0069
- **CLASSIC SAND,**
SW 0056
- **VOGUE GREEN,**
SW 0065

SW COLORS SHOWN ARE BASED ON SHERWIN - WILLIAMS HISTORIC COLLECTION IF USING ANOTHER BRAND OF PAINT OR COATING THE SIGN MANUFACTURER IS RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

H-1.2 SIGN SPECIFICATIONS

- 1 **SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM SHAFT, OR APPROVED EQUAL, **BLACK**
- 2 **SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, **BLACK**
- 3 **DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, **BLACK**
- 4 **SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **ROSE TAN**
- 5 **RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **VOGUE GREEN**
- 6 **RAISED GRAPHIC**
CAST ALUMINUM, **CLASSIC SAND & VOGUE GREEN**
- 7 **RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', **VOGUE GREEN**
- 8 **DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER

FINAL DESIGN, SHOP DRAWINGS, MATERIAL SELECTION, SIZES, COLORS, AND METHODS OF CONSTRUCTION SHOULD BE COORDINATED WITH AND APPROVED BY THE OWNER.
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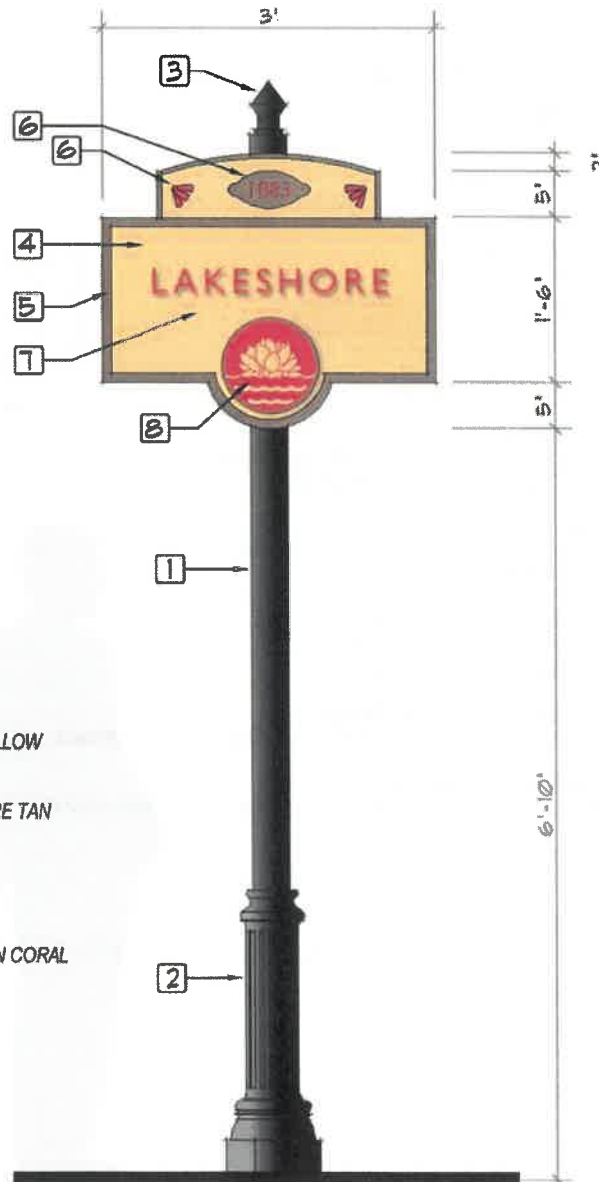
H-1.3 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
 - PEACE YELLOW,**
SW 2857
 - CARIBBEAN CORAL,**
SW 2854
 - SYCAMORE TAN,**
SW 2855
- *SW* COLORS SHOWN ARE BASED ON SHERWIN - WILLIAMS HISTORIC COLLECTION
 IF USING ANOTHER BRAND OF PAINT OR COATING, THE SIGN MANUFACTURER IS
 RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

H-1.3 SIGN SPECIFICATIONS

- 1 SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM
SHAFT, OR APPROVED EQUAL, **BLACK**
- 2 SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE,
OR APPROVED EQUAL, **BLACK**
- 3 DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID,
OR APPROVED EQUAL, **BLACK**
- 4 SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **PEACE YELLOW**
- 5 RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **SYCAMORE TAN**
- 6 RAISED GRAPHIC**
CAST ALUMINUM, **CARIBBEAN CORAL & SYCAMORE TAN**
- 7 RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', **CARIBBEAN CORAL**
- 8 DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER

FINAL DESIGN, SHOP DRAWINGS, MATERIAL SELECTION, SIZES, COLORS AND METHODS OF
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 SERVICES CAN BE PROVIDED BY KIMLEY-HORN AND ASSOCIATES FOR ADDITIONAL SERVICES





H-2.0 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- CAJUN RED,**
SW 0008
- CLASSICAL WHITE,**
SW 02829
- SHERATON SAGE,**
SW 0014

*SW COLORS SHOWN ARE BASED ON SHERWIN-WILLIAMS HISTORIC COLLECTION. IF USING ANOTHER BRAND OF PAINT OR COATING, THE SIGN MANUFACTURER IS RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

H-2.0 SIGN SPECIFICATIONS

- 1 SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM SHAFT, OR APPROVED EQUAL, *BLACK*
- 2 SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, *BLACK*
- 3 DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, *BLACK*
- 4 SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, *CAJUN RED* or *CLASSICAL WHITE*
- 5 RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, *SHERATON SAGE*
- 6 RAISED GRAPHIC**
CAST ALUMINUM, *CLASSICAL WHITE*
- 7 RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', *CAJUN RED* or *CLASSICAL WHITE*
- 8 DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER

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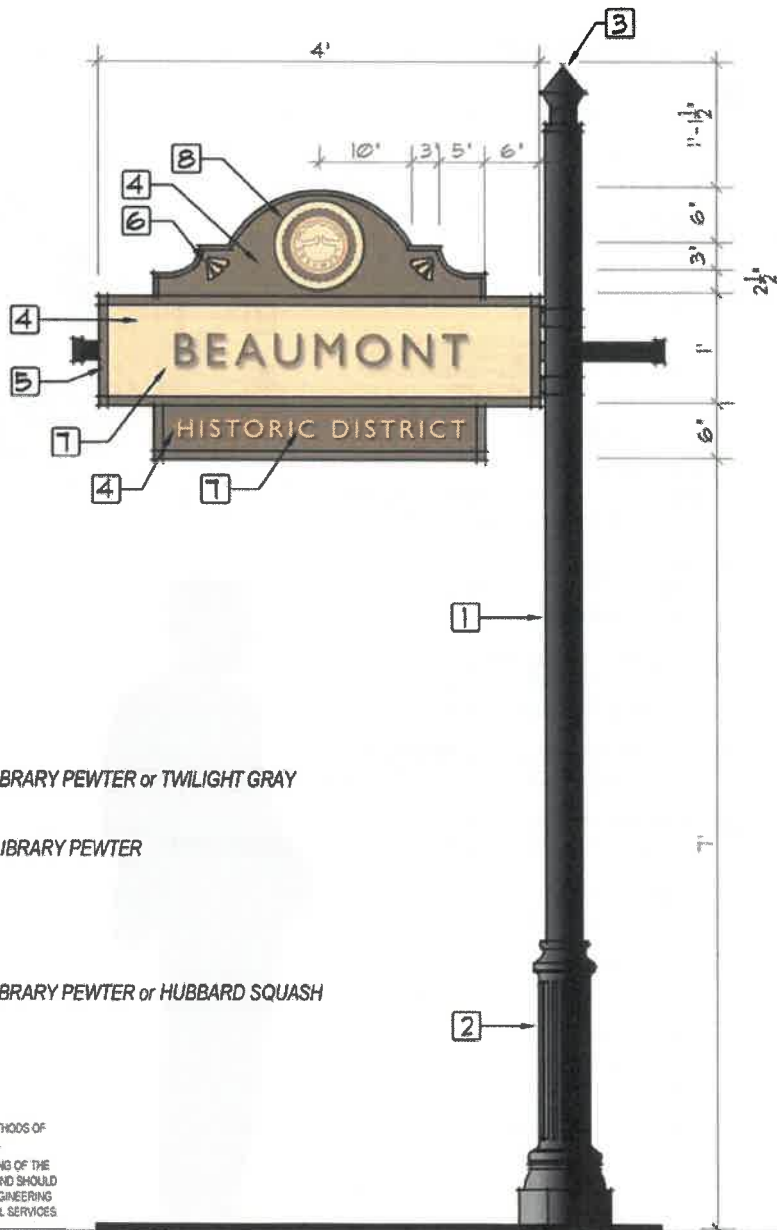
H-2.1 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- LIBRARY PEWTER,**
SW 0038
- HUBBARD SQUASH,**
SW 0044
- TWILIGHT GRAY,**
SW 0054

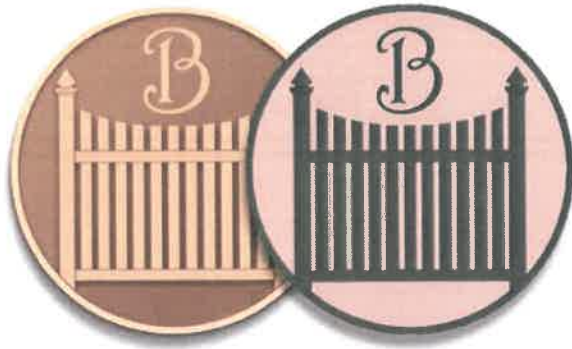
SW COLORS SHOWN ARE BASED ON SHERWIN-WILLIAMS HISTORIC COLLECTION. IF USING ANOTHER BRAND OF PAINT OR COATING, THE SIGN MANUFACTURER IS RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

H-2.1 SIGN SPECIFICATIONS

- 1** **SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM SHAFT, OR APPROVED EQUAL, *BLACK*
- 2** **SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, *BLACK*
- 3** **DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, *BLACK*
- 4** **SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, *LIBRARY PEWTER* or *TWILIGHT GRAY*
- 5** **RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, *LIBRARY PEWTER*
- 6** **RAISED GRAPHIC**
CAST ALUMINUM, *HUBBARD SQUASH*
- 7** **RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', *LIBRARY PEWTER* or *HUBBARD SQUASH*
- 8** **DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER



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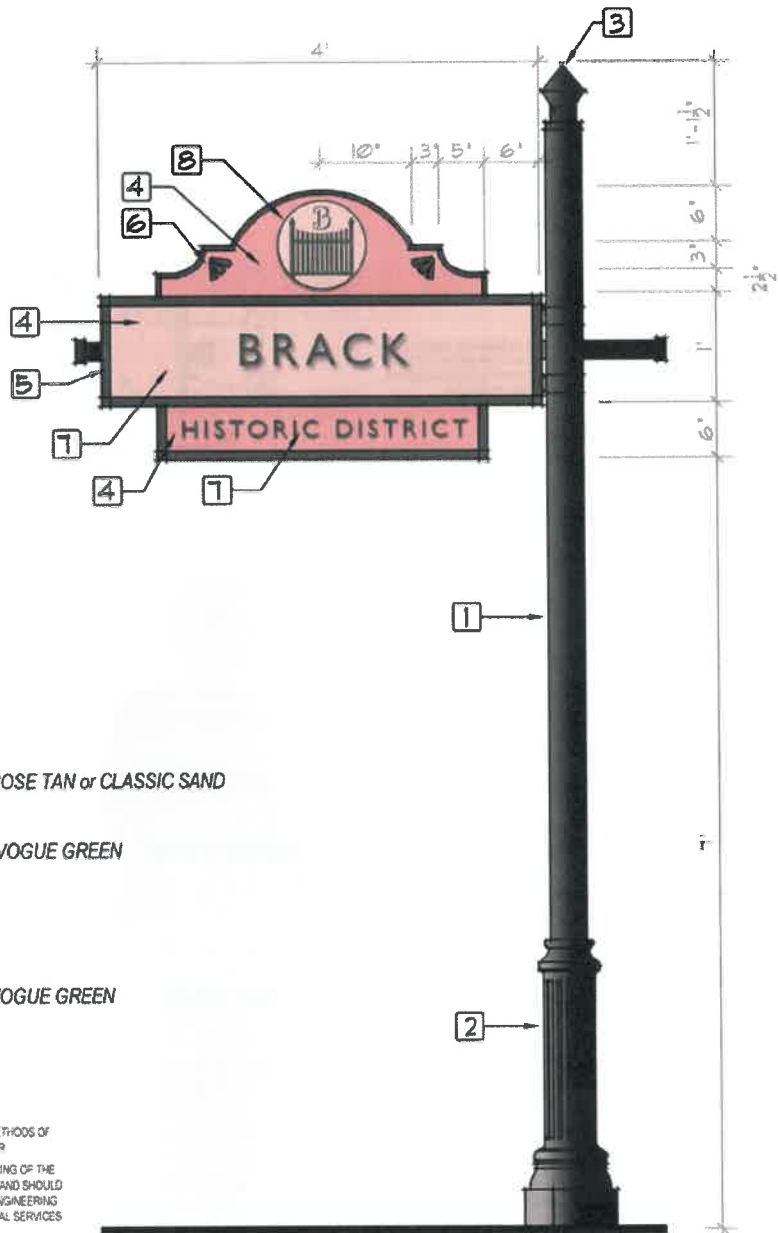
H-2.2 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- ROSE TAN,**
SW 0069
- CLASSIC SAND,**
SW 0056
- VOGUE GREEN,**
SW 0065

*SW COLORS SHOWN ARE BASED ON SHERWIN-WILLIAMS HISTORIC COLLECTION. IF USING ANOTHER BRAND OF PAINT OR COATING, THE SIGN MANUFACTURER IS RESPONSIBLE FOR MATCHING COLORS. FINAL APPROVAL BY OWNER.

H-2.2 SIGN SPECIFICATIONS

- 1 SIGN POLE TYPE 2**
BEACON PRODUCTS - 4" SMOOTH ALUMINUM SHAFT, OR APPROVED EQUAL, **BLACK**
- 2 SIGN POLE BASE**
BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, **BLACK**
- 3 DECORATIVE POLE FINIAL**
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, **BLACK**
- 4 SINGLE FACED ALUMINUM SIGN PANEL**
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **ROSE TAN** or **CLASSIC SAND**
- 5 RAISED ALUMINUM BORDER**
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **VOGUE GREEN**
- 6 RAISED GRAPHIC**
CAST ALUMINUM, **VOGUE GREEN**
- 7 RAISED TEXT**
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', **VOGUE GREEN**
- 8 DISTRICT ICON**
CAST ALUMINUM
RAISED GRAPHIC, 10" DIAMETER



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H-2.3 COLOR SPECIFICATIONS

- BLACK,**
PANTONE PROCESS BLACK C
- PEACE YELLOW,**
SW 2857
- CARIBBEAN CORAL,**
SW 2854
- SYCAMORE TAN,**
SW 2855

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BEACON PRODUCTS - CONWAY POLE BASE, OR APPROVED EQUAL, **BLACK**
- 3** DECORATIVE POLE FINIAL
BEACON PRODUCTS - PYRAMID, OR APPROVED EQUAL, **BLACK**
- 4** SINGLE FACED ALUMINUM SIGN PANEL
ALL ALUMINUM CONSTRUCTION SOLID PANEL, **CARIBBEAN CORAL** or **PEACE YELLOW**
- 5** RAISED ALUMINUM BORDER
APPLIED TUBULAR BAR STOCK, 1" THICKNESS, **SYCAMORE TAN**
- 6** RAISED GRAPHIC
CAST ALUMINUM, **PEACE YELLOW**
- 7** RAISED TEXT
CAST ALUMINUM, FONT TYPE - 'GILL SANS MT', **CARIBBEAN CORAL** or **PEACE YELLOW**
- 8** DISTRICT ICON
CAST ALUMINUM
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GATEWAY FEATURE



G-1.0 SIGN SPECIFICATIONS

- 1 KISSIMMEE SIGN**
 LASER CUT ALUMINUM WITH PASS THROUGH VISIBILITY, STRUCTURALLY ANCHORED TO COLUMN, POWDER COAT
- 2 DECORATIVE COLUMN**
 STRUCTURALLY REINFORCED Poured CONCRETE WITH BRICK VENEER AND CAST STONE CAPS. THE SIGN AND PANELS SHOULD BE LIT WITH 'LED' LIGHTS EMBEDDED INTO THE CAST STONE CAPS
- 3 RECESSED PANEL**
 CAST STONE WITH ENGRAVED LETTERS, "WELCOME" ON THE FRONT AND SIDE ELEVATIONS, NO PANEL ON THE BACK SIDE

FINAL DESIGN SHOP DRAWINGS, MATERIAL SELECTION, SIZES, COLORS, AND METHODS OF CONSTRUCTION SHOULD BE COORDINATED WITH AND APPROVED BY THE OWNER

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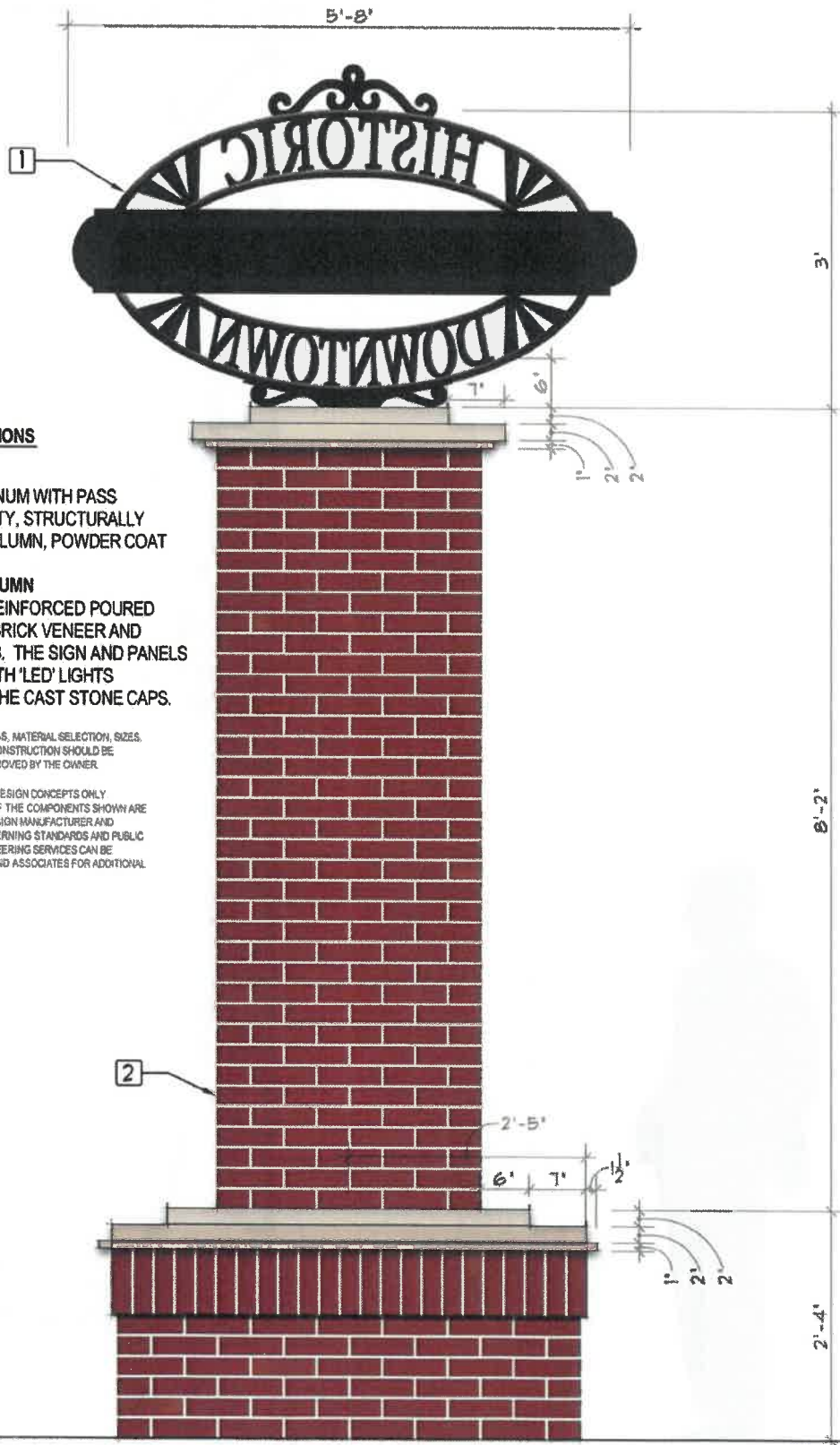
G-1.1 SIGN SPECIFICATIONS

- 1** **KISSIMMEE SIGN**
 LASER CUT ALUMINUM WITH PASS THROUGH VISIBILITY, STRUCTURALLY ANCHORED TO COLUMN, POWDER COAT
- 2** **DECORATIVE COLUMN**
 STRUCTURALLY REINFORCED POURED CONCRETE WITH BRICK VENEER AND CAST STONE CAPS. THE SIGN AND PANELS SHOULD BE LIT WITH 'LED' LIGHTS EMBEDDED INTO THE CAST STONE CAPS
- 3** **RECESSED PANEL**
 CAST STONE WITH ENGRAVED LETTERS, "WELCOME" ON THE FRONT AND SIDE ELEVATIONS, NO PANEL ON THE BACK SIDE

FINAL DESIGN SHOP DRAWINGS MATERIAL SELECTION SIZES COLORS AND METHODS OF CONSTRUCTION SHOULD BE COORDINATED WITH AND APPROVED BY THE OWNER

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G-1.3 SIGN SPECIFICATIONS

- 1** **KISSIMMEE SIGN**
 LASER CUT ALUMINUM WITH PASS THROUGH VISIBILITY, STRUCTURALLY ANCHORED TO COLUMN, POWDER COAT
- 2** **DECORATIVE COLUMN**
 STRUCTURALLY REINFORCED POURED CONCRETE WITH BRICK VENEER AND CAST STONE CAPS. THE SIGN AND PANELS SHOULD BE LIT WITH 'LED' LIGHTS EMBEDDED INTO THE CAST STONE CAPS.

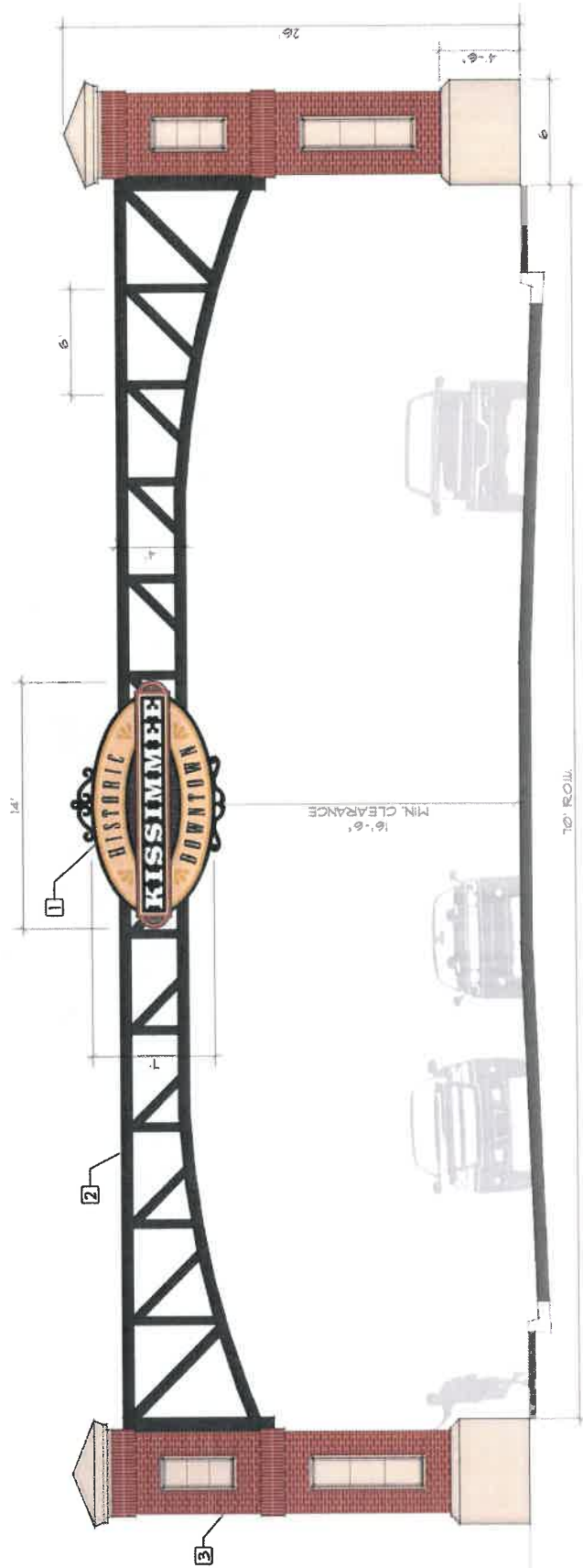
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6-2.0 SIGN SPECIFICATIONS

- 1 KISSIMMEE SIGN
 LIT SOLID PANEL WITH RAISED LETTERS OR
 LASER CUT ALUMINUM WITH PASS THROUGH VISIBILITY
- 2 STEEL SPAN
 STRUCTURALLY SUPPORTED, EXPOSED RIVETS, BOLTS, AND
 ADDITIONAL HARDWARE FOR PERIOD LOOK, POWDER COAT
- 3 DECORATIVE COLUMN
 POURED CONCRETE WITH BRICK VENEER, CAST STONE
 VENEER BASE, ACCENT PANELS, AND CAP

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 CONSTRUCTION SHOULD BE COORDINATED WITH AND APPROVED BY THE OWNER.
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 STRUCTURE SHALL BE PROVIDED BY A LICENSED PROFESSIONAL ENGINEER IN ACCORDANCE
 TO ALL GOVERNING STANDARDS AND PUBLIC SAFETY. STRUCTURAL ENGINEERING SERVICES SHALL
 BE PROVIDED BY PANELTY-PHARR AND ASSOCIATES FOR ADDITIONAL SERVICES.





Water Master Plan

Town of Windermere

August 2020

FINAL

TOWN OF WINDERMERE WATER MASTER PLAN

Revision No. 1

Final

PREPARED FOR:

**TOWN OF WINDERMERE
614 MAIN STREET
WINDERMERE, FL 34786**

AUGUST 2020



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Water Master Plan

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Appendix A. Detailed Cost Estimate

LIST OF ACRONYMS

AC	Asbestos Cement
AHJ	Authority Having Jurisdiction
Ave	Avenue
DIP	Ductile Iron Pipe
DOR	Department of Revenue
EA	Each
ed	Edition
EPS	Extended Period Simulation
ERC	Equivalent Residential Connection
ERU	Equivalent Residential Unit
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
ft	Foot
GIS	Geographic Information System
gpm	Gallons per Minute
HDPE	High Density Polyethylene
HGL	Hydraulic Grade Line
hr	Hour
LF	Linear Foot
MGD	Million Gallons per Day
N/A	Not Applicable
NFPA	National Fire Protection Association
OCU	Orange County Utilities
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
Rd	Road
ROW	Right-of-Way
SSS	Steady-State Simulation
SWFWMD	Southwest Florida Water Management District
SY	Square Yard
WSRP	Water Supply Restoration Program

Executive Summary

Existing System

Orange County Utilities (OCU) provides potable water to 41% of the parcels within the Town of Windermere. The remaining parcels are on individual private water wells. This master plan evaluates extending the system that OCU owns and operates to provide water to all parcels.

The drivers for this project are safety, environmental protection, and reliability. This project will improve safety by providing a monitored, safe drinking water supply and by improving fire protection capabilities. This project will protect the environment by reducing the number of wells around the Town's Outstanding Florida Waterbodies. This project will improve reliability by providing a pressurized system that does not require electricity to operate residential well pumps.

System Extension

The existing system backbone throughout the town is sized properly to allow water main extensions to connect the remaining parcels. The four existing OCU connection points at the Town limits have enough capacity to meet the demands of the Town. When the adjacent unincorporated areas of Isleworth, Chaine Du Lac, and Four Corners are evaluated along with the demands within the Town, no additional water capacity improvements are required.

Fire Flow Concerns

While some areas of the town are equipped with fire hydrants, a large portion of the town does not have fire hydrants. In addition, some of the existing hydrants do not have the available fire flow for the large homes in the town. As part of this master plan, it is proposed that a few specific water mains be replaced with larger diameter pipes to provide increased available fire flow where it is needed. The water main extension proposed in this master plan includes locations for additional fire hydrants to serve every parcel.

Project Funding

The overall construction cost of the project is anticipated to be approximately \$10,281,000. This master plan has divided the construction into three phases, which can be completed in any order. Several options are available to help the Town pay for these projects. Part of the funding process will be to meet and work with Orange County Utilities as they are the owners and operators of the system.

1.0 INTRODUCTION

1.1 BACKGROUND

One of the goals in the Town of Windermere’s Comprehensive plan is, “An adequate supply of safe potable water shall be provided and steps taken to improve and protect sources of potable water in the Windermere area.” This goal is supported by Objective 5.1, Provision of Potable Water, which includes several polices including Policy 5.1.4 that states: “In Fiscal Year 2019, the Town plans to develop a potable water master plan to evaluate the feasibility of extending potable water services throughout the Town.”

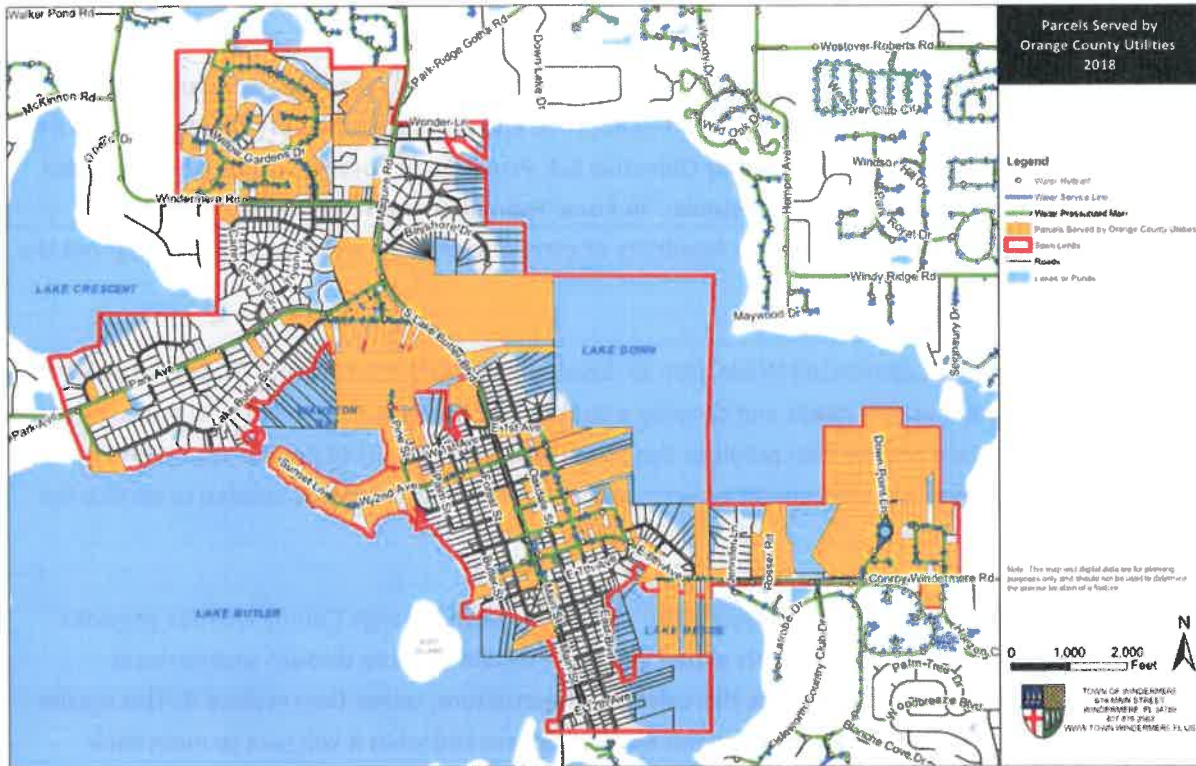
The Town of Windermere contracted Wade Trim to develop a Water System Master Plan to evaluate the Town’s long-term water supply needs and develop a strategy for meeting its water supply goals. As a result, the Water System Master Plan provides the Town with a 10-year list of Capital Improvement Projects addressing renewal/replacement projects and expansion improvements needed to service the entire town.

The Town does not desire to initiate its own water utility. Currently, Orange County Utilities provides potable water to 41% of the 1,392 parcels within the Town of Windermere through an interlocal agreement. The Town wishes to leverage this existing infrastructure, rather than replace it. This master plan is intended for the Town to understand the existing system and what it will take to meet their desired level of service. Some modifications to the modeling analysis and proposed infrastructure will be required during final design to meet Orange County Utilities’ standards.

The primary issue is that the provision of potable water is not uniform throughout the town and most areas of the town still rely on private potable water wells. Generally, previous extensions of potable water from Orange County Utilities into the town were on a case-by-case basis for specific properties and paid by the private property owners. The areas shown in orange in Exhibit 1.1 are currently served by Orange County Utilities.

The town is primarily built-out. Most new development within the town is the redevelopment of infill lots. The most significant opportunity for future population growth for the Town is through future annexation opportunities into adjacent unincorporated areas. Many of these adjacent unincorporated areas are already served by Orange County Utilities. There are two new subdivisions within the Town that were approved by the Town in the last five years: Estancia at Windermere and Lake Down Reserve. Both new subdivisions are already served by central potable water from Orange County Utilities.

Exhibit 1-1 Existing OCU System in Windermere and Surrounding Area



As with any large-scale engineering project, there are technical challenges to overcome with the extension of potable water lines throughout the town. Two of the most significant challenges are how to fund the construction of the potable water lines and installation of the potable water lines in dirt-surfaced roads.

It is assumed that the Town will be responsible for the cost of the design and construction of the new potable water lines and then turn over the system to Orange County Utilities for operation and maintenance. Under this arrangement, the Town will need to identify and secure funding for the design and capital cost of the construction of the system.

Most of the local town roads are not paved. The design and construction of the potable water lines must be sensitive to the impacts on the dirt-surfaced roads. The impacts to dirt-surfaced roads will be closely coordinated with the Town to assure that the impact to the dirt-surfaced roads meet the needs of the residents of the Town.

1.2 LOCATION

The Town of Windermere is in west Orange County, Florida located between Lake Butler and Lake Down within the Butler Chain of Lakes, which are listed as Outstanding Florida Waters. Due to this designation by the Florida Department of Environmental Protection, the Butler Chain of Lakes Waters have special restrictions on any new activities that would lower water quality or otherwise degrade the body of water. These waters have been noted as "worthy of special protection because of their natural attributes."

1.3 HISTORY

Windermere was established in 1889 as a residential development and chartered 36-years later in 1925. The Windermere Improvement Company was formed in 1920, which built homes and planted citrus trees in the area. In 1930 the town had 181 residents, by 1970 the town had 894 residents. When Walt Disney World was being constructed in the 1960's and 1970's, several of the company's top executives lived in Windermere.

The 2010 Census population of the town was 2,462. An increase of 149 from the 2000 census. The estimated population as of April 1, 2020 was 3,024 (University of Florida Bureau of Economic and Business Research).

1.4 SERVICE AREA

The existing potable water service area extends to the limits of the Town of Windermere as shown in Exhibit 1-1. The town is primarily residential with a few municipal buildings, a few stores, offices, and restaurants primarily in the downtown area along Main Street.

The town is bordered by the high-end golf course community of Isleworth that shares the Windermere postal address but is not incorporated into the Town.

The Town is within the South Florida Water Management District (SFWMD), although the majority of Orange County falls within the Saint Johns River Water Management District.

1.4.1 Existing Wells

Though there have been few complaints about the quality of the water from the existing private well owners, there have been incidental reports of wells testing positive for fecal coliform. Fecal coliform is an organism that indicates biological contamination, which could include E. coli, a bacterium that can cause illness in humans. Wells that test positive for fecal coliform should first be retested, then disinfected. Water should be boiled prior to use until the well is tested and proven to be disinfected.

Another potential health concern in private wells is nitrate, although there have been no reports of high nitrate levels in Windermere's groundwater. Nitrogen is converted to nitrate by bacteria. Nitrate is also

found in fertilizers, human and animal wastes, and other contaminants such as pesticides. Nitrate is a health concern primarily to infants younger than six months. When formula is made with high-nitrate water or breastfeeding mothers drink high-nitrate water it can produce a dangerous illness known as blue-baby syndrome. High nitrate levels cannot be treated by boiling well water.

The Florida Department of Health recommends testing private wells for bacteria and nitrate at least once a year. <http://www.floridahealth.gov/environmental-health/private-well-testing/index.html> The Orange County Florida Department of Health's program requires residents to properly collect their own samples and bring them to the County's lab. They will test a water sample for coliform bacteria for \$22.00, testing for nitrate is \$91.00. Alternately, the Florida Department of Health publishes a list of certified private labs here: <https://fldeploc.dep.state.fl.us/aams/index.asp>

The Water Supply Restoration Program (WSRP) provides no-cost testing of some private wells. The program prioritizes areas around reported contamination sites that have not yet been investigated and areas for which the longest time has elapsed since they were investigated. The DOH submits water well samples to the Department of Environmental Protection Laboratory in Tallahassee for analysis. For more information on this program and the application: <https://floridadep.gov/wra/water-supply-restoration/content/private-well-water-sampling>

1.5 BENEFITS OF EXTENDING THE OCU DISTRIBUTION SYSTEM

There are several reasons the Town is interested in extending Orange County Utilities potable water throughout the service area. The benefits can be categorized as pertaining to safety, environment, and reliability.

1.5.1 Safety

The first issue related to safety is the quality of the drinking water. Orange County Utilities maintains high standards for their potable water, which is tested and regulated. Private wells are not regulated, tested, and maintained to the same standards as public water supply systems. Many owners of residential wells do not follow the guidance of the Florida Department of Health to test their water annually. Due to this potential for individual well qualities to vary, Orange County authorized a study to identify subdivisions and neighborhoods served by private wells in the OCU service area that are a priority for water distribution system replacement and retrofit due to the potential adverse impacts on public health (PBS&J/CH2M JV, 2001). Windermere was noted as one of those areas.

The second safety concern regarding the potable water service in Windermere is the availability of water for firefighting. There are many homes in the Town that are not within the recommended 1,000 feet from a hydrant or do not have sufficient flow available at nearby hydrants based on the size of the home. These homes will need to be serviced by water tanker firetrucks, which limits firefighting effectiveness. The water that firetrucks have on-board is intended to protect firefighters during the

extraction of residents and is not intended to extinguish home fires. The expansion of the water system would include the installation of fire hydrants and adequate water supply to fight fires.

1.5.2 Environmental

The protected nature of the Butler Chain of Lakes as Outstanding Florida Waters requires special consideration. Replacing the private wells with central water will reduce potential draw-down of lake levels from local pumping, restoring the natural balance of the hydrology in the area around Windermere.

Drinking water wells extend from the ground surface down into the drinking water aquifer. These well shafts penetrate the confining layers, serving as potential means of contamination. When potable wells are removed and properly abandoned, it will eliminate potential points of penetration for contaminants into local groundwater from the surface.

1.5.3 Reliability

Individual potable wells rely on electrical power to pump groundwater for residential use. Water from Orange County Utilities will be provided under pressure at all times regardless of the availability of power in the Town of Windermere. Orange County Utilities is required to have backup power generation at their treatment and pumping sites to maintain continuous pressure. During power outages, such as those after major storms, water will continue to be available.

1.6 GOALS AND OBJECTIVES

This water master plan is consistent with the Goals, Objectives, and Policies of the Town's Comprehensive Plan. In addition, as part of the project the Town has established several goals for the development of their system. Some of those goals affect the initial planning and some will need to be considered as this plan is implemented.

1.6.1 Fair and Equitable Funding

As funding of the project is discussed and options are weighed, it needs to be noted that the water mains that are currently in place have already been funded by the existing users. Although the environmental and safety benefits will be felt by the entire town, these users have already funded a portion of the network to gain the reliability benefits. If costs are spread regardless of who already has service, those with existing service will in-effect be paying an unequal share. It should be noted that even though there are currently hydrants in place, this program will improve the availability of fire flow to many parcels that already have service.

1.6.2 Maintain the Beauty and Charm of the Town

Windermere is proud of the character they have intentionally nurtured for their town. The Town has an old-fashioned charm with many unpaved streets and mature trees overhanging the rights-of-way. It is imperative that as the detailed designs are developed and constructed, that the Town's character be

maintained. Individual trees need to be noted on the designs with plans provided to protect them including their root structures. The implementation of the construction must be done in a manner that does not overwhelm the Town. The work hours, amount of road closures, and open trench lengths should be limited to reduce the impact to the residents as work is being conducted.

2.0 WATER SUPPLY ANALYSIS

2.1 INTERLOCAL AGREEMENT WITH ORANGE COUNTY UTILITIES

There is an existing interlocal agreement between the Town and Orange County (Orange County/Town of Windermere Interlocal Water Service Agreement, dated January 29, 1990), that provides for the extension of Orange County Utilities potable water service into the town. This interlocal agreement specifically addresses the previous extension of potable water along Second Avenue. It also provides for connection of other properties within the Town to existing potable water mains and for the extension of potable water lines to other properties within the town.

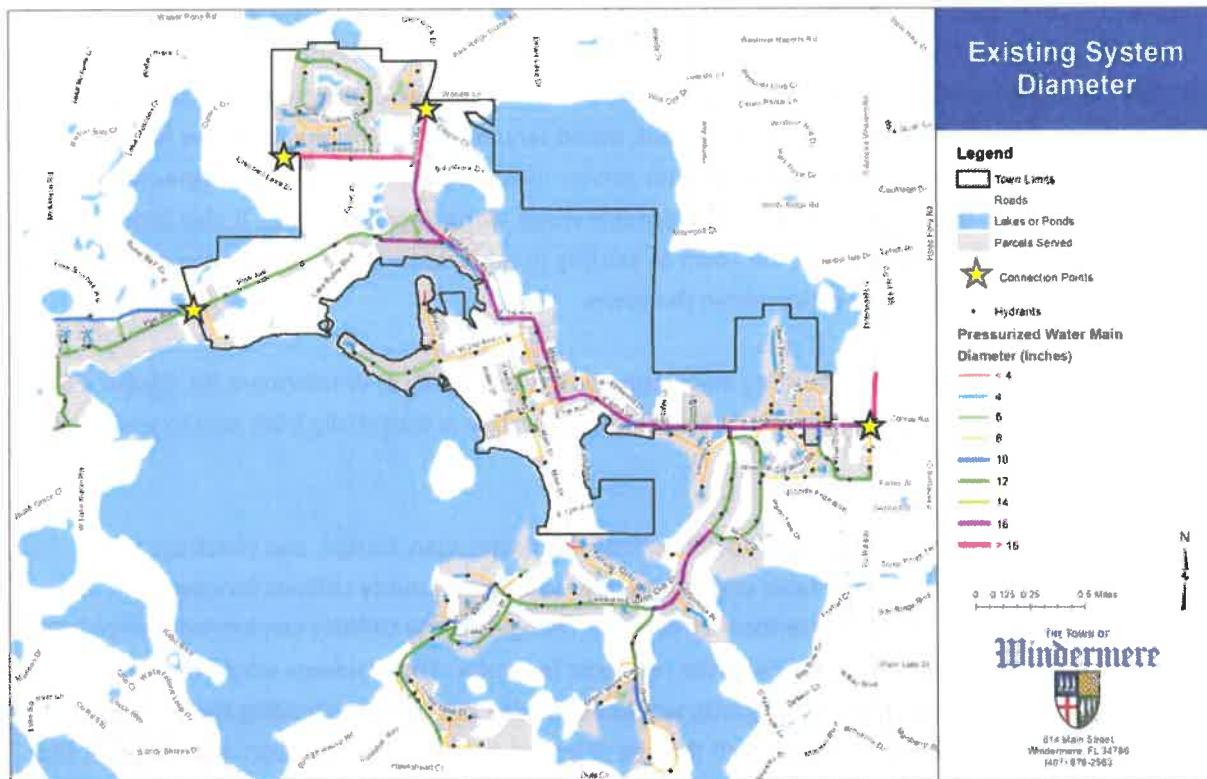
The Town is serviced through four existing connection points on Park Ave, Windermere Rd, Maguire Rd, and Conroy Windermere Rd. The flow of the potable water system is essentially from east to west across the town.

The interlocal agreement supports the plan of the Town to master plan, design, and construct the potable water lines and turn the potable water lines over to Orange County Utilities for operation and maintenance. Alternately, per the interlocal agreement, Orange County Utilities can extend service into an existing area with a petition from 67% of the residents for water. The residents would reach out to OCU's capital improvements group; that group would determine the cost of extending the potable system to the residents. The residents would then be assessed a fee for the extension of the line. At that point it would be up to the residents to accept this fee in order to gain service.

2.2 DISTRIBUTION/TRANSMISSION SYSTEM

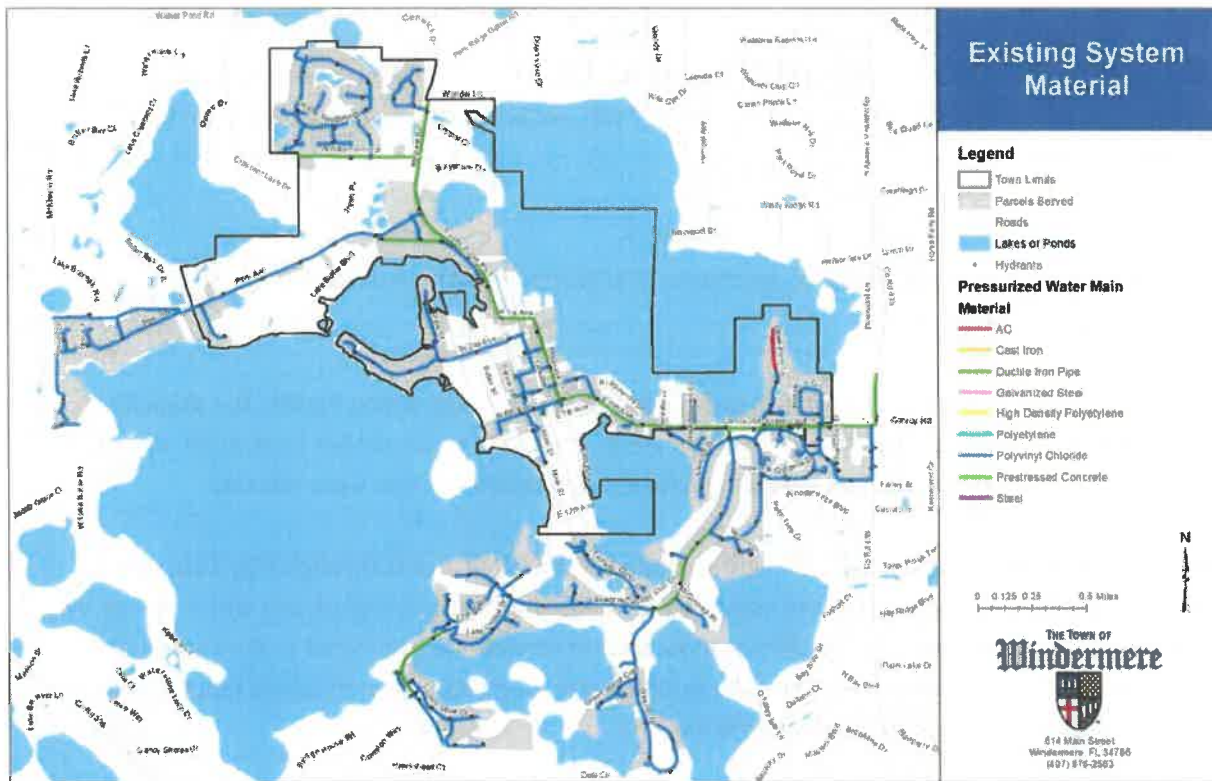
The existing water distribution system in Windermere is equipped with a 16-inch water main that flows through OCU's connection point at Conroy Road to the connection points at Park Ave, Windermere Rd, and Maguire Rd as shown in Exhibit 2-1. This 16-inch main serves as the main supply trunk from which the rest of the system branches off. Most of the water distribution system throughout the Town consists of 8-inch and 12-inch diameter pipe. According to Orange County Utilities, the existing water distribution system appears to be in good condition and did not report any history of breaks in the area.

Exhibit 2-1 Existing OCU System in Windermere and Surrounding Area



OCU’s existing distribution system within the Town is made up of a variety of materials. The system is primarily PVC with some sections of larger pipe being Ductile Iron Pipe and one section of asbestos cement (AC) pipe along Down Point Lane. AC pipe is safe and does not require replacement due to the nature of the pipe. The only dangers associated with AC pipe are when it is uncovered and cut for repairs or modification. In those cases, special procedures (including wetting the pipe when cutting and using respirators) need to be followed to protect construction staff by preventing asbestos fibers from become airborne and inhaled.

Exhibit 2-2 Existing OCU System Materials



Orange County Code Section 37-4 notes only that “All new development in the county’s water service area that is within the county’s urban service area or functional equivalent, as provided for in the Orange County Comprehensive Policy Plan, must connect to the water system in accordance with this chapter.” There is no existing regulatory requirement to connect to a potable water system once it becomes available.

The Town’s Land Development Code in Section 6.04.01(d) requires any new residential or commercial development to connect to the County’s potable water system once it is available. Existing development is not required to connect as long as they have a previously permitted potable water well.

It is unlikely that any new permits for residential wells or well modifications would be issued by the South Florida Water Management District once potable water is available throughout the Town. OCU’s participation in the development of the water system will be contingent on a certain level of participation and will require connection once the line is available. It is possible that funding agencies will require connection to the potable water lines as a condition for funding.

2.3 LAND USE AND DEMAND PLANNING

2.3.1 Orange County Utilities Master Plan

Wade Trim reviewed the 2006 update to Orange County Utility's 2002 Master Plan. Windermere is identified as part of the West Water Service Area. It was not noted as a priority subdivision for retrofitting private wells.

2.3.2 OCU Water Connection Methodology

When determining parcels that are connected to OCU Water lines, three different sets of data were compared and crosschecked.

First, the GIS data (ESRI shapefile format) provided by OCU was entered into ArcGIS. The shapefile provided by OCU showed where the pressurized water mains and water service lines within the town currently exist. All parcels that had a water service line connected to them were selected.

Next, a shapefile containing points that corresponded with OCU accounts through May 2018 was entered. Parcels associated with these points were added to the selection of parcels with water service lines. There were many parcels that did not show a water service line connected to the parcel but had an account with OCU. The issue was brought to OCU's attention and OCU staff stated that the account data included the most accurate, up-to-date data.

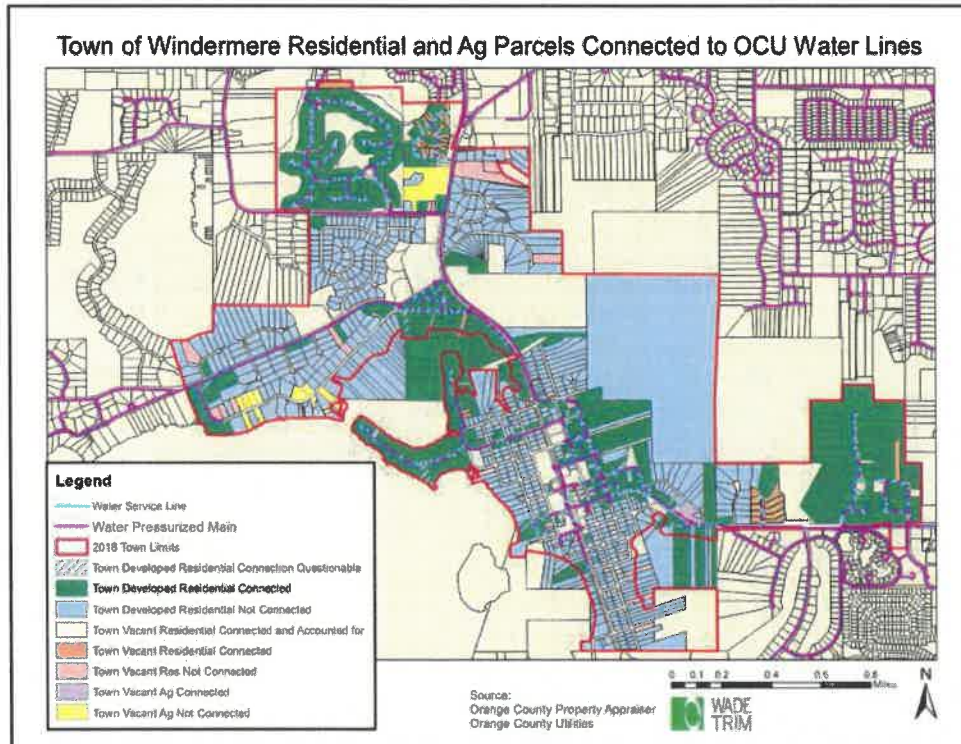
An additional data set that includes accounts opened since May 2018 was provided by OCU in May 2019. Upon receiving the additional data, it was entered into ArcGIS and cross-referenced to the prior two data sets (GIS water line data and May 2018 OCU account data).

It was determined that any parcel that showed a water service line connected to it, any parcel that had an account with OCU from the May 2018 data set, or any parcels that had an account with OCU from the May 2019 data set are connected to OCU's water system.

In comparing the three data sets, there were a handful of parcels that were "questionable" because they either showed having a water service line connection or previously had an account based on the May 2018 account data set but did not show having an OCU account based on the May 2019 account data set received from OCU. These may be attributed to rental properties or properties without someone living there, water service may exist but is not active. "Questionable" parcels were kept categorized as connected to OCU water and identified as "questionable" in the data set.

Once it was determined which parcels had OCU water connections, the parcels were then categorized as either residential or agricultural and whether they were developed or vacant. All nonresidential or non-agricultural parcels (i.e. commercial, office, public facilities, etc.) were then categorized by their Florida Department of Revenue (DOR) code and whether they were connected or not connected to OCU water.

Exhibit 2-3 Parcels Connected to OCU Water



2.3.3 Reclaimed Water Availability and Irrigation

Current reclaimed water is available along Conroy-Windermere Road from Apopka-Vineland Rd to Down Reserve Ct. and into the new subdivision, Down Reserve. This line also provides reclaimed water for Isleworth. The flow projections in this master plan assume that the residents will continue to use shallow groundwater wells for irrigation, rather than potable water.

Exhibit 2-4 Down Reserve and Isleworth Reclaimed Water Lines



2.3.4 Adjacent Area OCU Connections

Part of the project scope was to ensure that the expansion of the Town’s water service would not limit the ability of adjacent areas to receive potable water. Water mains through Windermere should be sized to allow for the ultimate build-out of the potable water system in areas directly adjacent to the Town limits.

The most recent GIS data for water pressurized main and water service line connections that run to adjacent areas were entered into ArcGIS. All parcels that had a water service line connected to it were selected.

Once the initial determination was made for which parcels had water connections, the parcels were then categorized as either residential or agricultural and whether they were developed or vacant.

Nonresidential or non-agricultural parcels (i.e. commercial, office, public facilities, etc.) were then categorized by their Florida DOR code and whether they were connected or not connected to OCU water.

Finally, it was assumed that all parcels within these areas that were developed and had a water pressurized main running in front of them were connected to OCU water.

Exhibit 2-5 Isleworth Parcels Connected to OCU Water

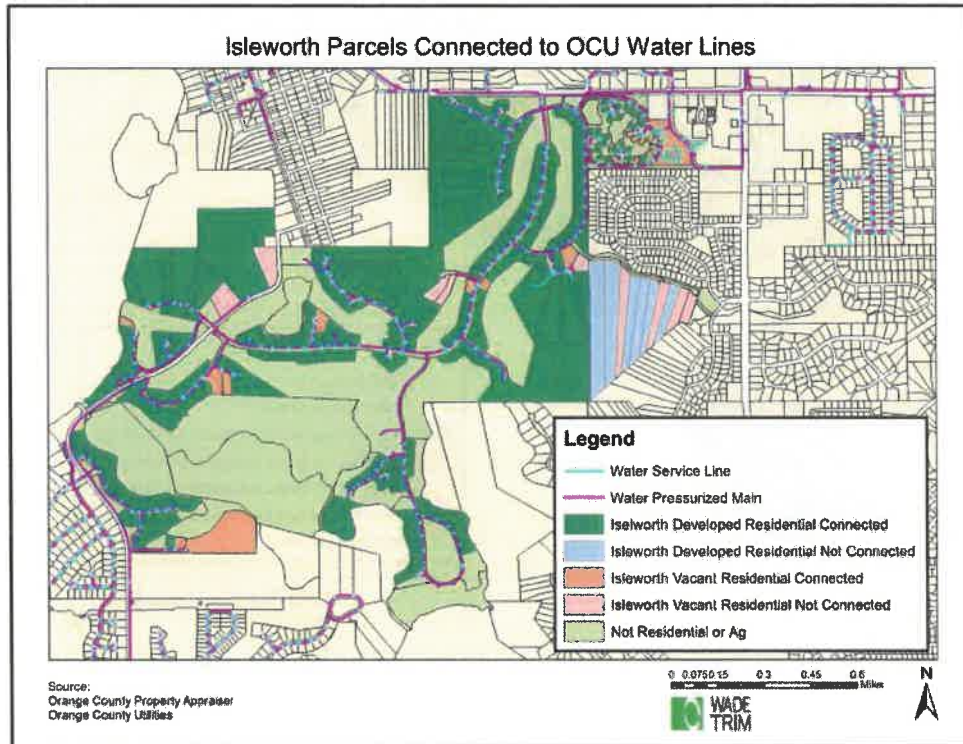


Exhibit 2-6 Four Corners Parcels Connected to OCU Water

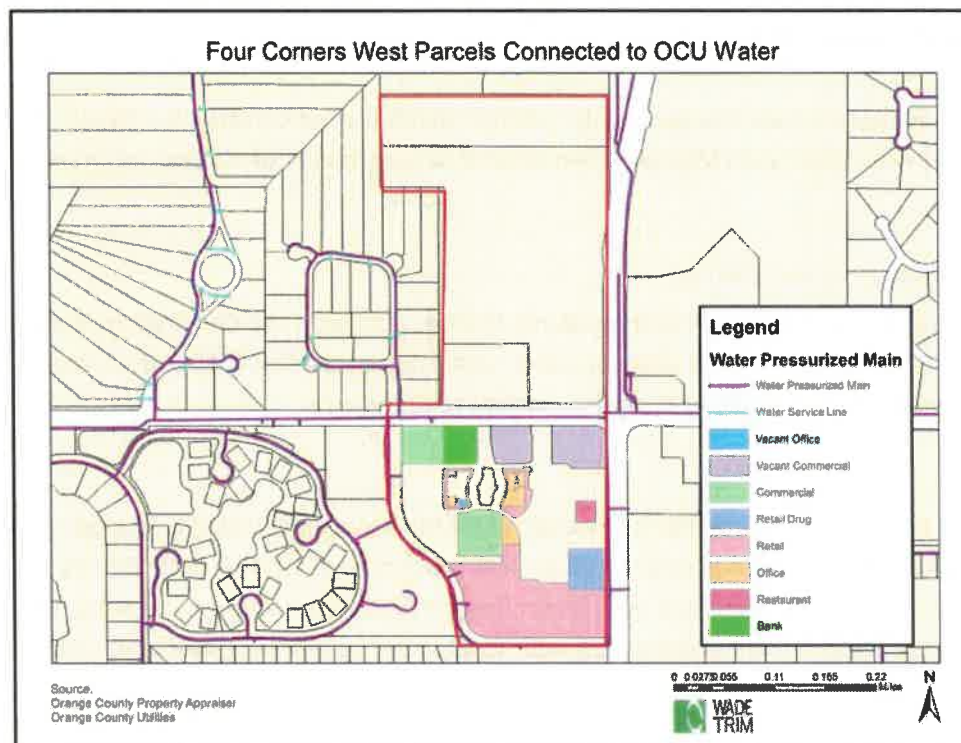
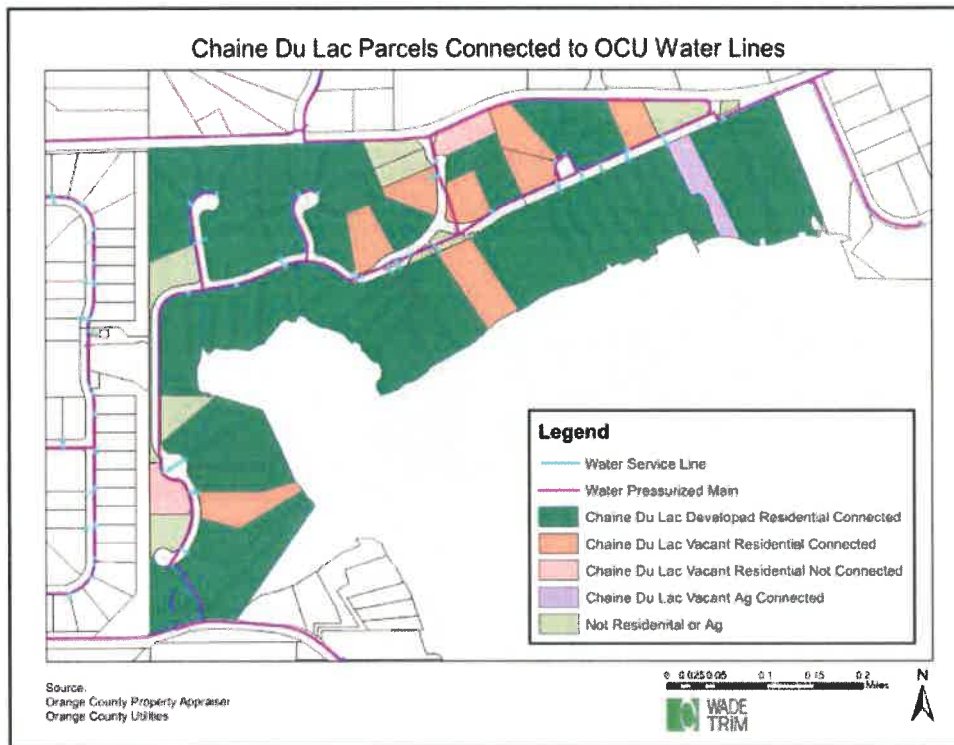


Exhibit 2-7 Chaine Du Lac Parcels Connected to OCU Water



2.4 DESIGN CRITERIA

The following section documents the design criteria that will guide the development of the capital improvement program in this document as well as the criteria that will need to be followed for the ultimate detailed design of the system.

The design guidelines include Orange County Utilities' Standards and Construction Specifications Manual, FDOT Accommodation Manual, Town Level of Service Standards, Ocoee and Orange County Fire Departments.

2.4.1 Orange County Utilities

All designs shall be per the current Orange County Utilities Standards and Construction Specifications Manual. Specifically, Section 2210 addresses water main design. Section 3210 address materials of construction. See the standards for complete, current requirements.

System Flow:

Section 2210 requires that water mains be designed for the estimated build out. Average daily water flow shall be calculated by referencing the equivalent residential connection (ERC) flow rates as outlined in Appendix E, "ERC/ERU Design Factors." Water flow rates shall be based on a maximum day to average day peaking factor of 2.0 and a peak hour to average day peaking factor of 4.0. Although the

OCU Masterplan indicates the West Service Area has a 3.5 peaking factor, a 4.0 peaking factor will be used.

Fire flow requirements shall be determined in accordance with applicable County/City fire codes and subdivision regulations. Where fire flow requirements exceed the anticipated available fire flow from the central water system, on-site fire protection system or other County/City fire department approved mitigation measures shall be utilized. The OCU Masterplan indicates 500 gpm for low density residential, 2,000 gpm for Commercial/Industrial/High Density, 6,000 gpm residential, and 9,000 gpm Fire flow master plan.

Calculations shall show that the water mains will have sufficient hydraulic capacity to transport the greater of peak hourly flows or the combination of maximum daily flows and fire flows while meeting the requirements of this Section and FDEP.

System Pressure:

The system shall be designed to maintain a minimum pressure of 20 psi at all points in the distribution system under all conditions of flow. The design pressure in the distribution system should be approximately 45 psi, but in no case less than 35 psi on the upstream side of a meter. For excessive pressures, pressure-reducing provisions may be required.

System Layout:

Typically, water mains in Windermere will be located in rights-of-way. Section 2210 requires mains to have a consistent alignment relative to the centerline of the road. The standard requires a minimum cover of 30 inches within local roadways or within an easement, which will typically be the case for Windermere's system.

In Windermere, since reclaimed water is not provided, 6-inch mains are required in cul-de-sacs. In areas of the Town where looping is not practical, 8-inch mains are required. Mains will be sized to not exceed 8 feet per second under fire plus max day flow condition. Any pipes greater than 12 inches will be ductile iron, less than or equal to 12-inch will be either PVC or ductile iron.

Where water age is a concern, Orange County Utilities prefers to loop the system where possible. Where dead-end lines prevent this, they have used both automatic and manual blow-offs. This is not the preferred solution due to the water loss but is acceptable.

Hydrants shall be placed on the same side of the roadway as the water mains and shall be placed at 500-foot intervals in commercial areas. Hydrant spacing for single-family residential and other areas shall be 1,000-foot intervals. Fire hydrants shall be connected to a 6-inch water main or greater.

Sufficient gate valves shall be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves shall be located no more than 500 feet apart in commercial areas and no more than 1,000 feet in all other areas. Valves shall be spaced to isolate a maximum of 40 single-family residential lots. A minimum of two valves per tee shall be required to isolate and maintain adequate service. Valves shall be placed at phase lines and located at the end of all water main extensions except at cul-de-sacs.

Provisions shall be made to remove air at high points in water mains where elevation changes exceed five feet. Automatic air release valves shall be located at high points in water mains for pipe systems greater than 12 inches in diameter.

Fittings and sleeves shall be used for all changes in direction rather than deflection.

One and two-inch services shall be polyethylene tubing. Services 4-inch and larger shall be DIP from the point of connection to the existing main to the meter assembly, if the existing main is on the same side of the street as the property. If the main is on the opposite side of the street, as a minimum, the segment of pipe immediately upstream from the meter assembly shall be DIP.

Modeling Calculations:

Friction losses through mains shall be based on the Hazen and Williams or Darcy-Wiesbach formulas. In the use of Hazen and Williams formula, the value for "C" shall be 120 for ductile iron pipe and 130 for PVC and HDPE pipe. "C" values greater than 130 shall not be allowed.

2.4.2 FDOT Accommodation manual

Within roadway right-of-way, follow the requirements of the FDOT Accommodation Manual. The manual defines the requirements to work on utilities in FDOT right-of-way. These requirements include design loads for any utilities at grade, restoration of pavement, and maintenance of vegetation.

2.4.3 Ocoee Fire Department

The Town is served for fire emergencies by Ocoee Fire Department. Wade Trim contacted Shawn Sorenson, Ocoee Fire Department Fire Marshal/Division Chief. On May 9th, 2019, he stated, "We follow the Fire Flow requirements set by NFPA 1 2015 ed. which is part of the Florida Fire Prevention Code 6th ed. We also set a maximum distance between hydrants within our city at 500 ft in residential areas and 350 ft in commercial areas."

2.4.4 NFPA 1 Fire Code

The applicable portion of the latest edition of National Fire Protection Association (NFPA) 1 Fire Code is Chapter 18, "Fire Department Access and Water Supply." Several codes within Chapter 18 are of interest to this master plan.

18.4.3.1.1 States that the authority having jurisdiction (AHJ) shall be permitted to reduce the required fire flow in rural or suburban areas where the development of full fire flow is impractical.

18.4.5.1.1 States that the minimum fire flow for residential homes with a total floor area less than 5,000 square feet shall be 1,000 gpm for 1 hour.

18.4.5.1.4 States that where homes have more than 15 feet to side-yard property line they can take a 25% reduction in fire flow, where they have 25 feet, they can take a 40% reduction in fire flow. It should be noted that the side-yard setback requirements in Windermere vary depending on the size of the lot, but the largest lots (lot width of 120 feet or greater) are required to have a minimum setback of 15 feet from the side-yard property line.

18.4.5.2.1 States that homes larger than 5,000 ft² would follow a table to determine the fire flow requirements. A portion of that table is reproduced in Table 2-1 below. Included in that table is a list of the number of structures that fall into each fire flow category. Note that the largest home is approximately 28,300 square feet. This home is required to have 15-foot setback from the side yard. With a 25% reduction in required fire flow the requirement would be 2,625 gpm for 3 hours.

Fire Flow Area (ft ²)	Fire Flow (gpm), Duration (hr)	Number of Homes	Number of Non-Residential Buildings
0-5,900	1500, 2	938	12
5,901-7,900	1750, 2	125	1
7,901-9,800	2000, 2	44	2
9,801-12,600	2250, 2	13	2
12,601-15,400	2500, 2	5	4
15,401-18,400	2750, 2	4	1
18,401-21,800	3000, 3	0	0
21,801-25,900	3250, 3	0	0
25,901-29,300	3500, 3	1	2

18.5.2 States that for residences, hydrants shall not be more than 600 ft from the closest point of a building and the maximum distance between hydrants shall not be more than 800 ft. This requirement is more stringent than the Orange County Utilities requirement of 1,000 ft in residential areas, so for planning purposes, hydrants will be placed 800 ft apart.

2.5 STRATEGY TO MEET GOALS

A Town goal is to have a reasonable plan to supply all homes with good water quality and fire protection. The Town would also like to understand their ability to provide water for any future expansion. The Town would prefer the system to be looped wherever possible to provide for improved circulation and reduced water age. Where looping is not possible, automatic blow-offs can be installed, as necessary.

2.5.1 Requirement to Connect

As discussed in Section 2.2, there is no current requirement for existing structures to connect to any new water mains installed. Residents who want to keep their existing water supply wells will be able to do so. However, no new wells or replacement wells will be permitted by the South Florida Water Management District, leading to a gradual process of connection. However, to facilitate funding, the Town may decide to initiate an ordinance requiring connection when water mains become available.

2.6 COORIDATION WITH ON-GOING PROJECTS

The projects described in this document should be executed in conjunction with other Town projects in order to take advantage of cost savings. Repaving roads that are scheduled to have water lines installed should be deferred until after the lines are installed.

The Paving Index used by the Town's Public Works Department to determine which Town roads need to be improved based on pavement conditions should be cross-referenced against the list of roads that will receive new water lines. Most of the roads in the Town are dirt and not subject to the Paving Index. As decisions are made as to which phases should be executed first, the Town's Paving Index should be reviewed to identify projects that can be coordinated so that the road is only paved once.

3.0 HYDRAULIC MODEL DEVELOPMENT

3.1 DEMAND PROJECTIONS

In order to accurately model the Town’s potable water system, the first step is to determine how much water is being consumed (demands) and where in the system the demands are located. The next step is to create a digital representation of the Town’s existing pipe network and apply these demands to it. Then the digital model of the existing system needs to be confirmed against results from the actual system. Once the existing system is accurately represented, the digital pipe network can be expanded to include the anticipated future pipe system.

3.1.1 Demand Projections

Existing water demands were developed using two different methodologies and then compared for confirmation. Method 1, in Table 3-1 below, is based on meter data provided by Orange County Utilities.

Table 3-1 Existing Flow (Based on 2017 data from OCU)	
Design Flow	Demand (MGD)
Average Daily	0.17
Maximum Daily	0.34
Peak Hour	0.68

Method 2 was based on ERC estimates for each property based on the type of zoning and the size of the structure. The Town’s Level of Service Standard as established by Orange County is 350 gallons per day per equivalent residential unit. The Level of Service of 350 gallons per day per equivalent residential unit also appears in the Capital Improvements Element under Policy 1.4.1. Level of Service Standards

As shown in Table 3-2 below, the ERC estimates were confirmed by comparison to the OCU values in Table 3-1.

Table 3-2 Existing Demand Estimate (Based on estimated ERC numbers)	
Design Flow	Demand (MGD)
Average Daily	0.19
Maximum Daily	0.38
Peak Hour	0.75

The 10-year model scenario is based on providing potable water service to all parcels within the town limits. To determine the 10-year demand, the properties not currently serviced within the town limits were added into the existing demand estimates. The water usage in Table 3-3 below was based on the connection of an additional 661 residential properties and 29 non-residential properties:

Table 3-3 10-Year Demand Projections Method 2 (Based on estimated ERC numbers)	
Design Flow	Demand (MGD)
Average Daily	0.43
Maximum Daily	0.86
Peak Hour	1.72

The build-out model scenario is an evaluation of the Town completely serviced along with the adjacent areas outside the town limits. The water usage was calculated based on the connection of an additional 391 residential properties and 24 non-residential properties in Isleworth, Chaine Du Lac, and Four Corners as shown in Table 3-4.

Table 3-4 Build-out Demand Projections Method 2 (Based on estimated ERC numbers)	
Design Flow	Demand (MGD)
Average Daily	0.57
Maximum Daily	1.15
Peak Hour	2.30

3.2 MODELING SOFTWARE

Orange County Utilities has a hydraulic model for the entire County, which includes the Town of Windermere as one of their nodal points. As a basis for the preparation of the Town’s hydraulic model, actual hydraulic grade line data was obtained from OCU’s model for the four boundary connection points. For the purposes of this master plan, a new, detailed WaterGEMS model of the Town was prepared to identify piping alignments and locate hydrants for each road and neighborhood.

WaterGEMS is a comprehensive water distribution modeling application that was developed specifically to determine the hydraulic capabilities of pressure pipe systems. WaterGEMS can run from within ArcGIS, AutoCAD, and MicroStation, or as a standalone application. This software package features advanced interoperability, model building, optimization, and asset management tools. From free-flow to energy-consumption and capital-cost management, WaterGEMS helps engineers and utilities analyze, design, and optimize water distribution systems. Virtually any data source can be used with WaterGEMS to jumpstart the model-building process.

3.3 DATA COLLECTION AND EXISTING SYSTEM MODEL DEVELOPMENT

The existing model was developed based on information available in the existing GIS layers including the water main location, material, and diameter. The Model also included the location of existing hydrants. Grade elevations were determined based on information available from Google Earth®.

3.4 MODEL CALIBRATION

The results provided by computerized hydraulic models are often used in capital projects involving several million dollars. As a result, it is imperative that the results from the model bear close resemblance to the actual performance of the hydraulic system. In other words, the computer model must be accurately calibrated through a process of comparing model results to field observations. In addition, it is necessary to have an accurately calibrated model in order to determine if industry and minimum governing agency criteria are being met to protect the health, safety, and welfare of the users of the system.

Calibration is the process of fine-tuning a model until model results match field conditions to an established degree of accuracy. To be calibrated, a model must accurately simulate both observed pressure and observed flow values in a system. In general, a model is calibrated to:

- Establish model credibility
- Create a benchmark
- Establish a predictive tool
- Gain knowledge and understanding of current operation and performance
- Discover errors or unknowns in the field

While a hydraulic model may have several different uses, there are typically four basic categories for use, including Long-Range Planning, Design, Operations, and Water Quality. Depending on the intended use for the model and any subsequent results, the degree of calibration will also vary. Further, while formal calibration standards do not exist, minimum calibration criteria depending on the intended use of the model, are typically followed in this industry, as detailed in Table 3-5.

Intended Use	Level of Detail	Type of Time Simulation	# of Pressure Readings	Accuracy of Readings	# of Flow Readings	Accuracy of Flow Readings
Long-Range Planning	Low	Steady-State or EPS	10% of Nodes	± 5 psi for 100% of Readings	1% of Pipes	± 10%
Design	Moderate to High	Steady-State or EPS	5% to 2% of Nodes	± 2 psi for 90% of Readings	3% of Pipes	± 5%
Operations	Low to High	Steady-State or EPS	10% to 2% of Nodes	± 2 psi for 90% of Readings	2% of Pipes	± 5%
Water Quality	High	EPS	2% of Nodes	± 3 psi for 70% of Readings	5% of Pipes	± 2%

Existing and anticipated water usage was shared with OCU and they, in turn, provided information for their connection points for use in model calibration. The connection points listed in Table 3-6 below are shown on Exhibit 1-1.

No.	Location	Max Day + Fire Demand	Peak Hour Demand	HGL
1	Park Avenue	300 gpm	400 gpm	N/A
2	Windermere Road	2,000 gpm	1,600 gpm	N/A
3	Conroy-Windermere Road	N/A	N/A	235 ft
4	Maguire Road	N/A	N/A	235 ft

Due to the limited amount of information initially provided by OCU, hydrant data was requested to ensure the model is correctly calibrated throughout the system, not just at the areas of the connection points. OCU provided available hydrant data for 22 hydrants scattered throughout the system, including static pressures and flow data. However, the static pressure for all the hydrants was approximately 30 psi higher than what the initial model showed at these points given the pressures at the connection points listed above. Average system pressure from the initial calibration showed that maximum day and peak hour pressures should be around 50 psi (or 230-232 ft) in comparison to an average static pressure at the hydrants of 79.5 psi.

Based on the differences between the connection point pressures provided by OCU and the hydrant data, additional hydrant tests were conducted on a few indicative hydrant locations in order to determine that the hydrant data was in fact, more accurate than the connection point data. It was determined that 80 psi was reasonable in regard to average system pressure and OCU staff confirmed these results. Given this, the model was calibrated using the hydrant data rather than the initial connection point data from OCU's overall system model. Results from calibration of the model were such that model results were within ± 10 percent of field results, which is acceptable for planning purposes.

3.5 FUTURE SYSTEM MODEL DEVELOPMENT

The future system was established in the model by branching off the existing OCU main trunk lines within the Town. No new connections to OCU's system are required. The future system provides service down every street within the Town. The lines were laid out based on the design criteria in Section 2. Once the proposed pipe network was established in the modeling software, that network was evaluated at the 10- and 20-year scenarios to fine-tune the pipe size selection. The majority of the proposed system is 8-inch PVC to allow sufficient fire flows.

The proposed system at 20-years does not require changing any existing pipes or adding any pipes. The adjacent areas already have complete coverage with potable water, the 20-year scenario considers the demand in those areas as well as the area within the town limit and includes all parcels being connected to the system.

4.0 HYDRAULIC MODEL ANALYSIS

Two basic types of analyses can be conducted using a hydraulic model, Steady-State Simulation (SSS) and Extended Period Simulation (EPS).

A SSS run simulates the system at an instantaneous point in time. Distribution system boundary conditions (tank elevations, water demands, pump and valve status, etc.) are set in the model to represent initial conditions and then the model predicts pressures and flows at other points in the system under those conditions. A SSS run is most often used for the initial validation of an "unrefined" hydraulic model. Frequently, a calibrated and "refined" SSS model will be used to assess the impact of large demands, for example fire flows, under various conditions.

The second type of model analysis is an EPS, which simulates the distribution system as it changes over time. Many different factors contribute to the model output, such as water demand and supply fluctuations, booster pumps turning on and off, pressure reducing valves (PRV) becoming activated, and tank elevations changing. EPS runs can be used to assess the adequacy of booster pump stations and storage tanks over the course of a day, a week, or even months under different demand conditions.

For this study, Wade Trim conducted steady-state simulations to determine the operating behavior of the system at a specific point in time under steady-state conditions (i.e., flow rates and hydraulic grades remain constant over time) for the various scenarios discussed in this section.

In addition to steady-state analysis, a fire flow analysis was conducted to determine if the system can meet the fire flow demands while maintaining minimum pressure constraints. In WaterGEMS, fire flows are computed at each node by iteratively assigning demands and computing system pressures. If a constraint is not met, either minimum pressure or the minimum flow volume cannot be achieved, WaterGEMS automatically reduces the flow until the constraint is just met. If all constraints are exceeded, the fire flow is increased until the constraint is barely met within a tolerance.

4.1 MODEL SCENARIOS

As part of the model analysis conducted for this report, several iterations were performed looking both at present day and future conditions, as well as proposed water main extensions to parts of the town not currently served by water.

The existing and future systems were modeled using WaterGEMS to evaluate the system pressure, available fire flow, and water age. The existing system, along with two future model scenarios were developed. The first future scenario, the "10-year" includes complete build-out within the Town's borders. The second future scenario, the "20-year," includes the full build-out within both the Town and the surrounding neighborhoods of Isleworth, Chaine Du Lac, and Four Corners.

4.2 EXISTING CONDITIONS MODEL

The existing system was analyzed to identify concerns related to water supply, materials of construction, fire flow, and water age within the Town’s existing distribution system. The analysis determined that the existing system was installed with sufficient capacity to allow it to be expanded for the build-out condition discussed above. However, a few existing pipes need to be increased in size to accommodate required fire flows as discussed in Section 4.2.2 of this report. None of the existing pipes need to be increased in size due to the extension of the system into unserved areas.

4.2.1 System Pressure

OCU notes that the target minimum pressure when designing a distribution system should be approximately 45 psi, but in no case less than 35 psi on the upstream side of a meter. The existing system analysis determined that the existing system pressures are much higher than these minimum standards. The range of pressures is shown in Exhibit 4-1, the lowest pressure under max day flow scenario is 70 psi, the highest pressure is 91 psi.

The result of this analysis was that no improvements are required to provide adequate pressures for the existing system.

Exhibit 4-1 Existing System Pressures

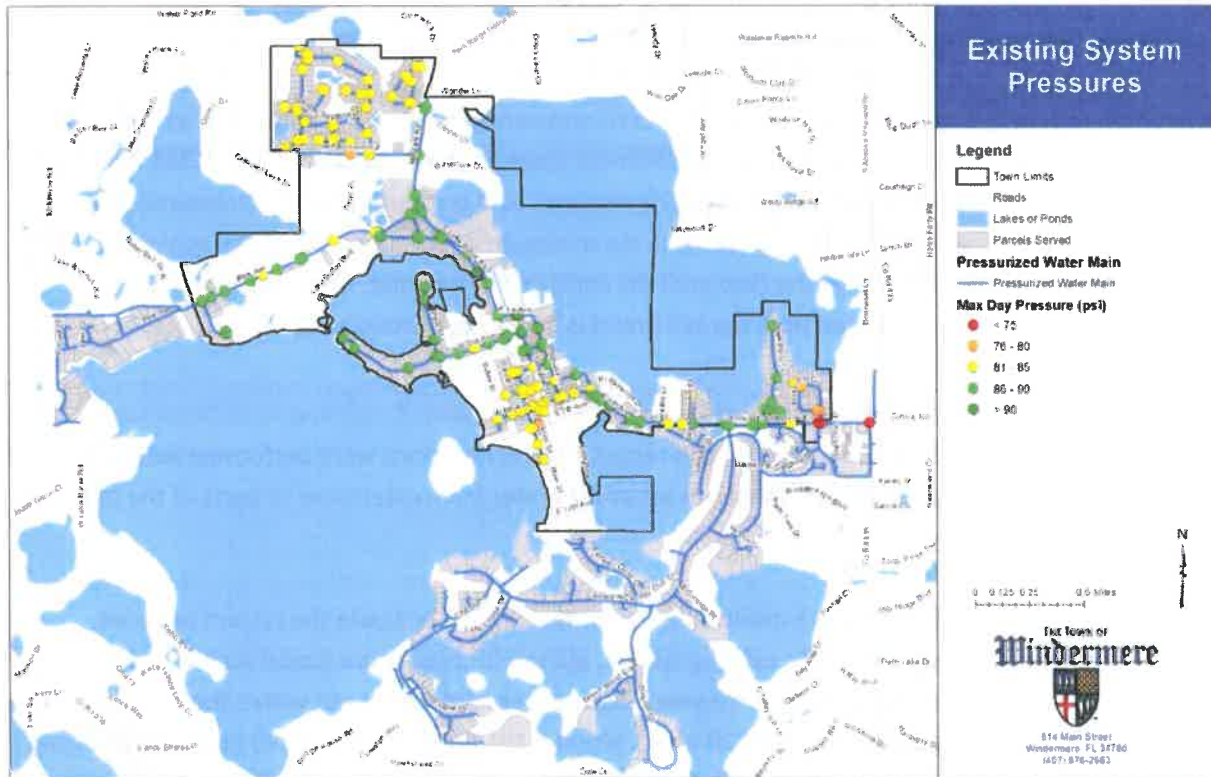


Table 4-1 below summarizes the existing system pressure analysis. As discussed, all of the existing system nodes provide the design level of pressure within the Town limits.

Table 4-1 Existing System Pressure Analysis					
Scenario	Demand (gpm)	Min System Pressure (psi)	Ave System Pressure (psi)	Max System Pressure (psi)	Nodes <35 psi
Average Day	130	70	84	90	0
Maximum Day	260	70	85	91	0
Peak Hour	523	70	85	91	0

4.2.2 Available Fire Flow

As noted previously, the required fire flow varies dramatically based on the size of the home. Within the Town, required fire flows range from 1,500 gpm to 3,500 gpm. Exhibit 4-2 shows the available fire flow at all the existing nodes. Nodes with black dots represent existing hydrant locations.

Per review of fire flow availability, many hydrants have less than the minimum 1,500 gpm required; all the hydrants have at least 1,000 gpm. Some of the water mains have less than 1,000 gpm, but these are not at hydrants. In some cases, nodes had less than 500 gpm. The low fire flow nodes are addressed as part of the expansion, either as the result of a more robust looped network, or in a few cases, replacing water mains with larger pipes to increase water availability.

Exhibit 4-2 Existing System Available Fire Flow

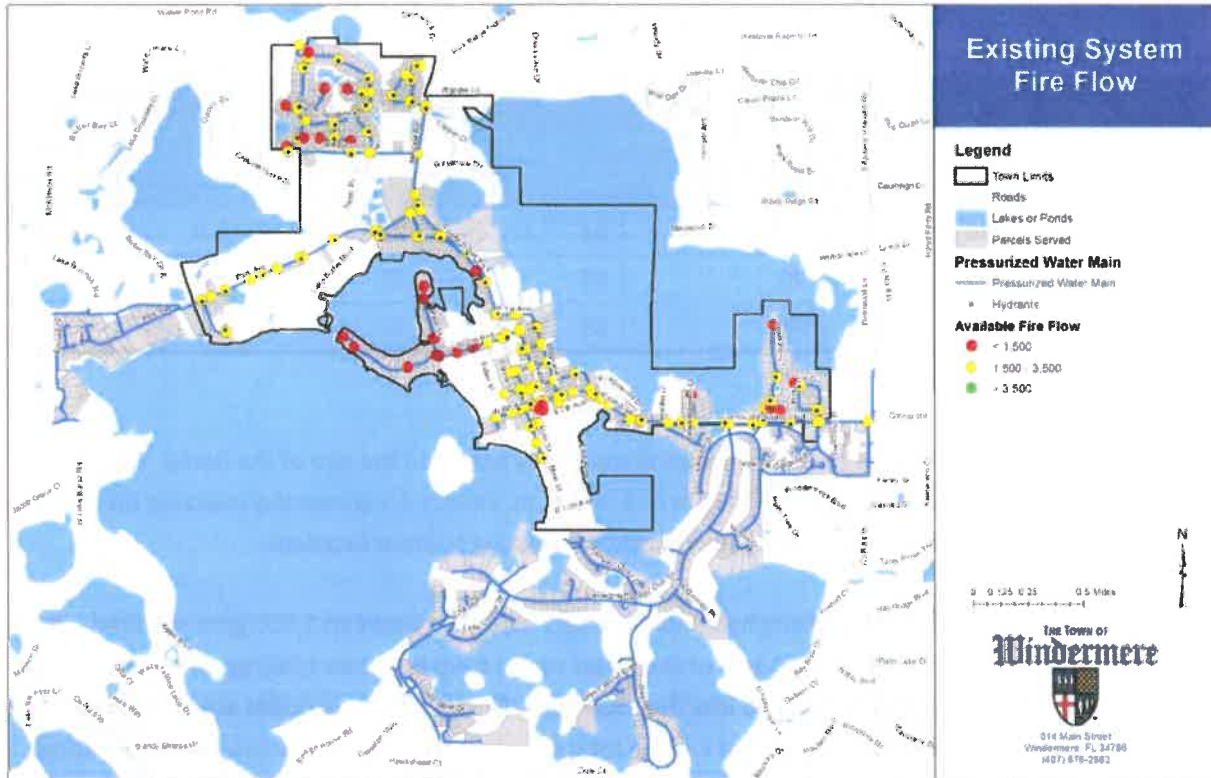


Table 4-2 below summarizes the results of the fire flow evaluation of the existing system. The evaluation concluded that 21 nodes provided available fire flow below 1,000 gpm. In some cases, these nodes were located on water main segments beyond the last required hydrant, so no changes were required. In other cases, the water mains need to be upsized as part of the expansion of the system to provide adequate fire flows.

Table 4-2 Existing System Available Fire Flow

Scenario	Min Fire Flow Available (gpm)	Ave Fire Flow Available (gpm)	Maximum Fire Flow Available (gpm)	Nodes with Fire Flow <1,000 gpm
Fire Flow	67	3,712	5,000 [max tested]	21

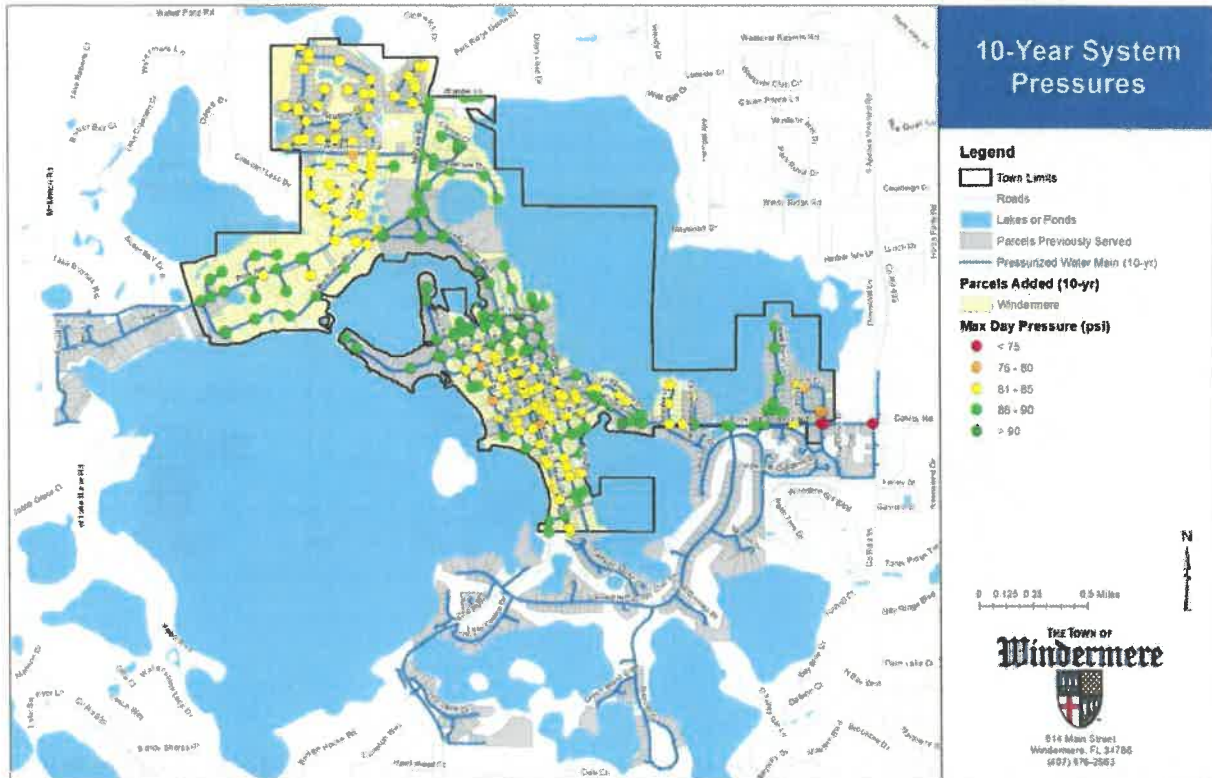
4.3 FUTURE CONDITIONS MODEL

The results of the 10- and 20-year scenarios are combined below because the piping networks are the same between the two scenarios. The only difference is that the 20-year scenario considers adjacent areas to the town (Isleworth, Chaine Du Lac, Four Corners).

4.3.1 Future Pressures

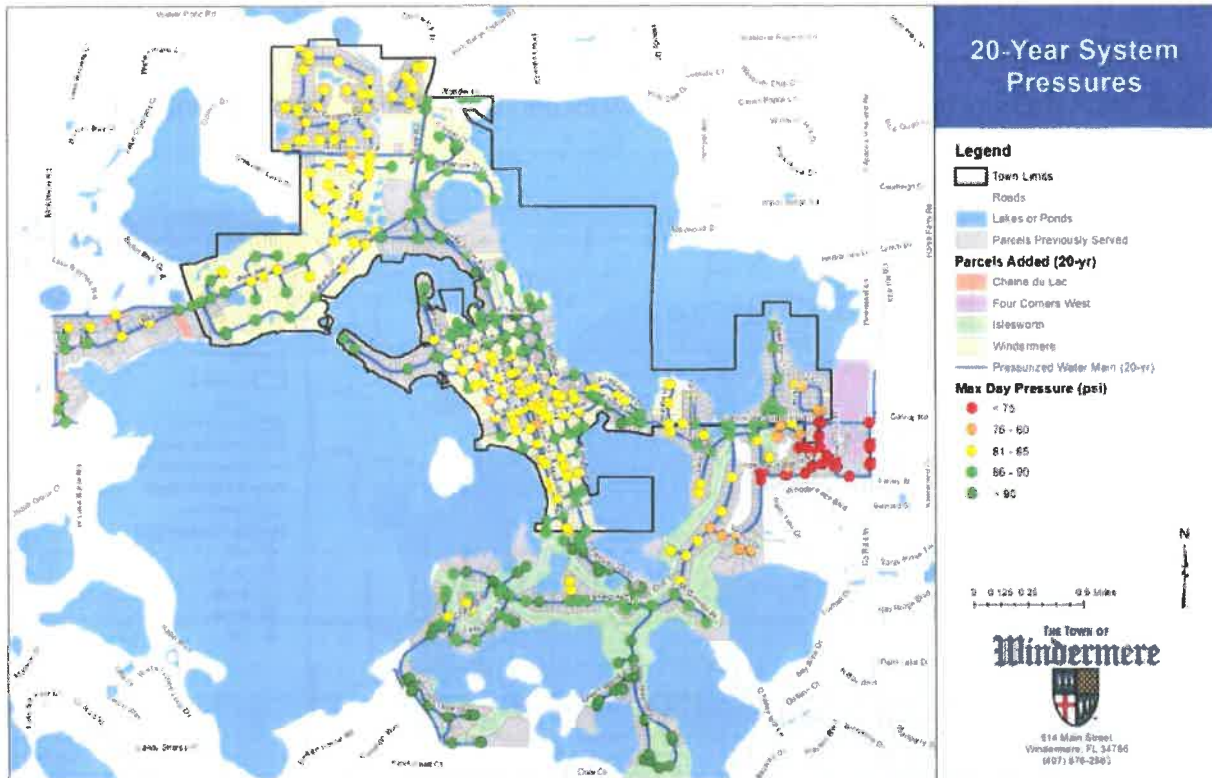
Evaluation of the 10-Year scenario determined that no modifications to the existing system are required to provide adequate pressures. As shown in Exhibit 4-3, the entire town has adequate pressures (above 35 psi). Static pressure for all nodes is greater than 70 psi during any demand condition modeled.

Exhibit 4-3 10-Year System Pressures



When the areas immediately outside the Town's limits were added to the model, it was confirmed that all nodes had greater than the required 35 psi. As shown in Exhibit 4-4, all nodes had at least 64 psi for all modeled scenarios.

Exhibit 4-4 20-Year System Pressures



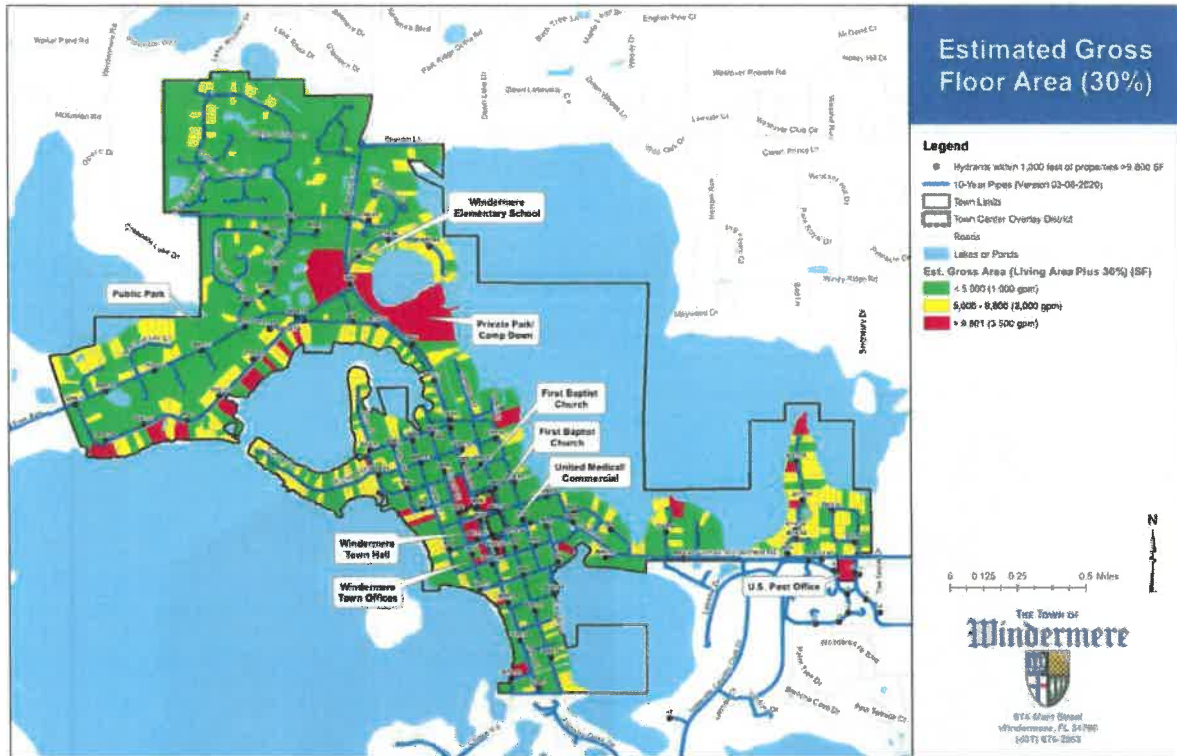
4.3.2 Future Fire Flows

As will be described in Section 5, a few lines required replacement with larger lines to allow for fire flow. With these increases, all but one street has over 2,000 gpm of flow available. This fire flow is sufficient for homes up to 9,800 square feet. Down Point Lane has 1,800 gpm available, enough for a 7,900 square foot home.

As shown in Exhibit 4-5, the future system was developed to provide sufficient fire flows even for the largest homes. Parcels with buildings larger than 9,800 square feet are shown in red. The hydrants within 1,000 feet of these large structures are shown along with their estimated fire flow. All but three areas of town have over 2,500 gpm available in each line, enough for 15,400 square foot homes. The three areas below 2,500 gpm are:

1. Sunset Lane, 1,800 gpm available (7,900 square foot homes)
2. Willow Lauren Lane, 2,000 gpm available (9,800 square foot homes)
3. Down Point Lane, 2,000 gpm available (9,800 square foot homes)

Exhibit 4-5 Proposed System Available Fire Flow



4.3.3 Future System Water Age

Water age is the time it takes for water to travel from the water treatment plant to the customer. In pipe networks, there can be areas where water can remain in pipes for extended periods of time. This can happen due to long travel distances from the source, low demand, or in dead-ends of the system. Even in a looped pipe network, if it is fed from both ends, the center can experience high water age.

Water age is an important performance indicator to utilities because excessive age can cause problems with disinfection byproducts. Disinfection byproducts are compounds that are formed from the disinfectants in the water that can have deleterious health effects.

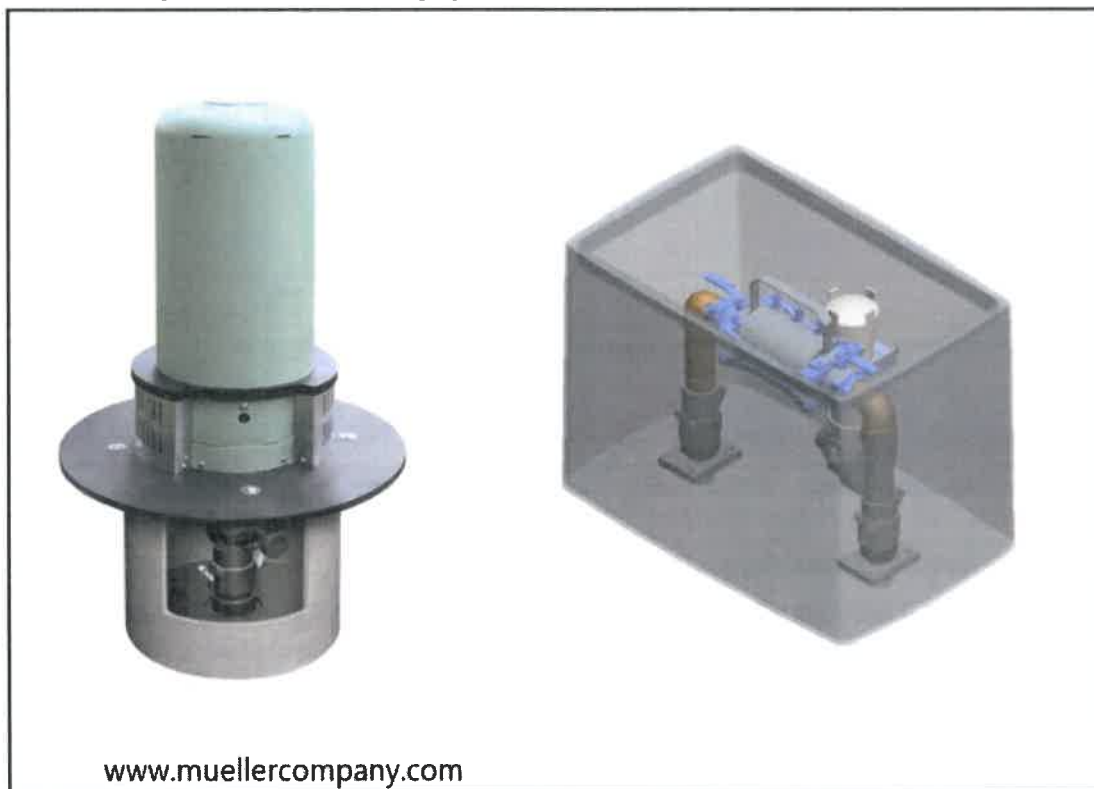
The future systems were designed to limit areas of stagnant water wherever possible; however, due to the physical constraints, completely eliminating areas of high water age was not possible. An extended simulation of the built-out system was run to identify areas of potential high water age. The model identified four areas of concern:

1. Windermere: Bayshore Drive
2. Chaine du Lac: Southwest end of Park Avenue
3. Isleworth: Louise Cove Drive & Cypress Chase Drive
4. Isleworth: Deacon Circle

The most common solution would be to install manual or automatic flushing systems. There are several variations of automatic flushing systems, they all are automatically programmed or remote controlled to

discharge water and provide dechlorination to protect the natural environment. Exhibit 4-3 shows two examples of Automatic Flushing Systems. The system on the left is primarily above grade and discharges water directly at the unit. The system on the right is below grade in a valve box and discharges the water at a remote location. The below-grade system may be the best fit for OCU's system in this area because the units can be located out of sight and the discharge lines can run to storm ponds or other water bodies.

Exhibit 4-6 Example Automatic Flushing Systems



Automatic flushing systems are beneficial in strategic locations in systems even where water age is not a factor. As part of good maintenance practice for distributions systems, operators are required to flush lines periodically. This usually requires opening fire hydrants to create high-velocity flows through lines which remove any settlement in the line. As part of the detailed design, these automatic flushing systems could be installed in locations that allow remote control of the flushing operation. By making the operation automated and easier for operators it is likely to occur more often, improving the water quality for the residents.

An emerging solution for water age that could be considered in this case would be to connect the last few homeowners' irrigation systems to the potable water supply. This method would require negotiation with Orange County Utilities as this is not a common application. Those homeowners would

need to have a separate connection to the potable system so they would not be billed for this usage. The advantage is that the water is not wasted, it is used to offset irrigation water. This irrigation would increase demands during off hours, which would serve to flush the lines. The homeowners would need to commit to regular watering all year long and would need to ensure there were no cross-connections with their home plumbing.

5.0 CAPITAL IMPROVEMENT PLAN DEVELOPMENT

5.1 RECOMMENDED IMPROVEMENTS AND PHASING PLAN

The phasing plan was developed based on three criteria. The first was that the phases large enough to attract contractors and obtain competitive bids. Larger phases also allow for some economies of scale in the bids. The second criterion was that the phases be independent of each other and prevent projects from overlapping, resulting in a single point of responsibility for each phase. This independence of phases has the added benefit of allowing the work to be conducted in any order the Town prefers. The third criterion was that the phases be relatively equal in scale.

As shown in Exhibit 5-1, the town limits were divided into three phases (North, Central, and South) which can be constructed in any order. The division between the North Phase and Central Phase is the canal crossing of Main Street/Maguire Road. The existing 16-inch water main down Main Street/Maguire Road will not require modification; therefore, no work is required across this boundary. The division between the Central Phase and South Phase is along 6th Avenue, which is serviced by an existing 8-inch main that does not require replacement.

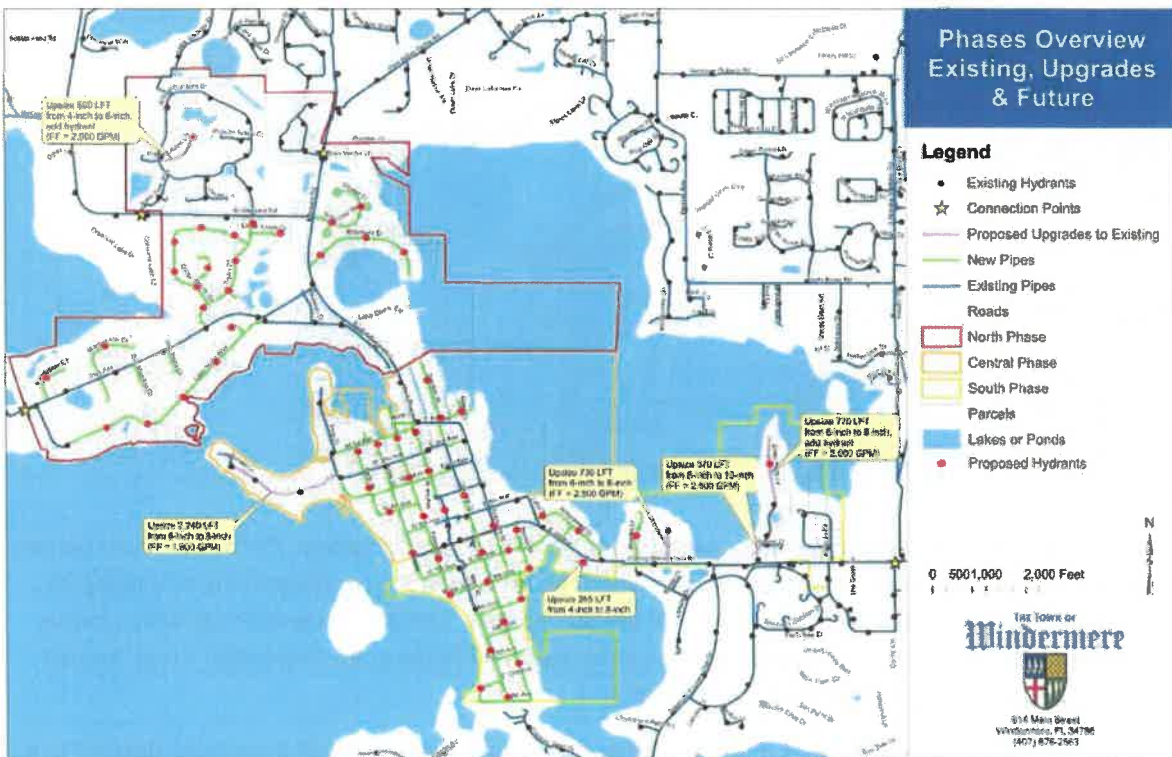
Exhibit 5-1 Division of Phases



Exhibit 5-2 below shows the approximate recommended locations of hydrants to adequately provide fire protection across the system. Final location of individual hydrants must be determined as part of the final design stage. Proposed hydrants in each phase are:

- North Phase – 23 hydrants
- Central Phase – 16 hydrants
- South Phase – 18 hydrants

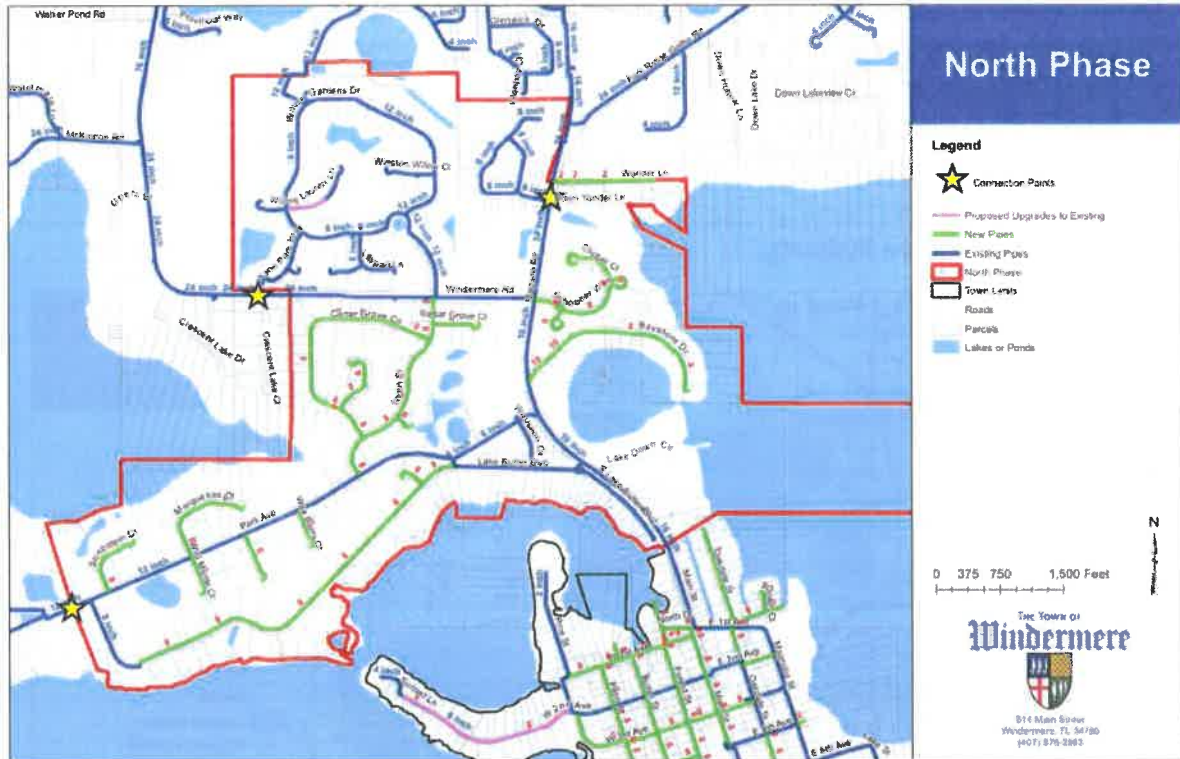
Exhibit 5-2 Proposed Future Hydrants



5.1.1 North Phase

The North Phase is predominately residences in subdivisions including the Manors, The Willows, Estancia, several smaller subdivisions such as Lake Crescent Reserve, and larger homes along Lake Butler Boulevard. As shown in Exhibit 5-2, the main arteries through the phase are in place, this will allow the work to be conducted mostly within the subdivisions.

Exhibit 5-3 North Phase



In the North Phase, 376 parcels are not currently connected to the OCU system. Of the unserved parcels, 301 parcels would have water available to them when the new lines are connected, the remaining 75 parcels already have water available to them. Of the 301 parcels, 289 are residential lots with a home; two are non-residential sites (includes recreation sites, such as Windermere Recreation Area); and 10 are miscellaneous (ROW, vacant/conservation, etc.).

To accommodate fire flows, 500 feet of 4-inch main on Willow Lauren Lane will need to be upsized to 8-inch. This increased line size will allow for a hydrant to be placed halfway down Willow Lauren Lane. In addition, the individual service lines down Wonder Lane will be replaced by one new 8-inch line to allow for a hydrant to be placed on Wonder Lane.

5.1.2 Central Phase

The Central Phase is characterized by older neighborhoods, primarily with dirt roads, and the Town Center and business district. This portion of the town has a mix of homes including original homes dating back to the 1920's, homes built during the expansion of the 1960's, and recent homes. As shown in Exhibit 5-3, the main artery along the east side of the phase is in place, the majority of the work is the in-fill of residential roads.

Exhibit 5-4 Central Phase



In the Central phase, 223 parcels are not currently served by OCU. Of the unserved parcels, 185 parcels do not have OCU water available to them current and would gain access under this plan. Of the 185 parcels, 172 are residential lots with homes; four are non-residential sites (includes recreation/public use sites); and nine are miscellaneous (ROW, vacant/conservation, etc.).

To accommodate fire flows, 2,240 feet of 6-inch water main along Sunset Lane will be replaced with 8-inch main. This is the only line that requires a size increase in the Central Phase.

Along Main Street, there are two roads as shown in Exhibit 5-4. Typically, the 40-foot wide property between the roads is associated with the properties to the west of the roads. The Town is in the process of acquiring much of this area as part of a planned multi-modal path. It is recommended that the water mains be run between the two roads in the Town’s proposed multi-modal path.

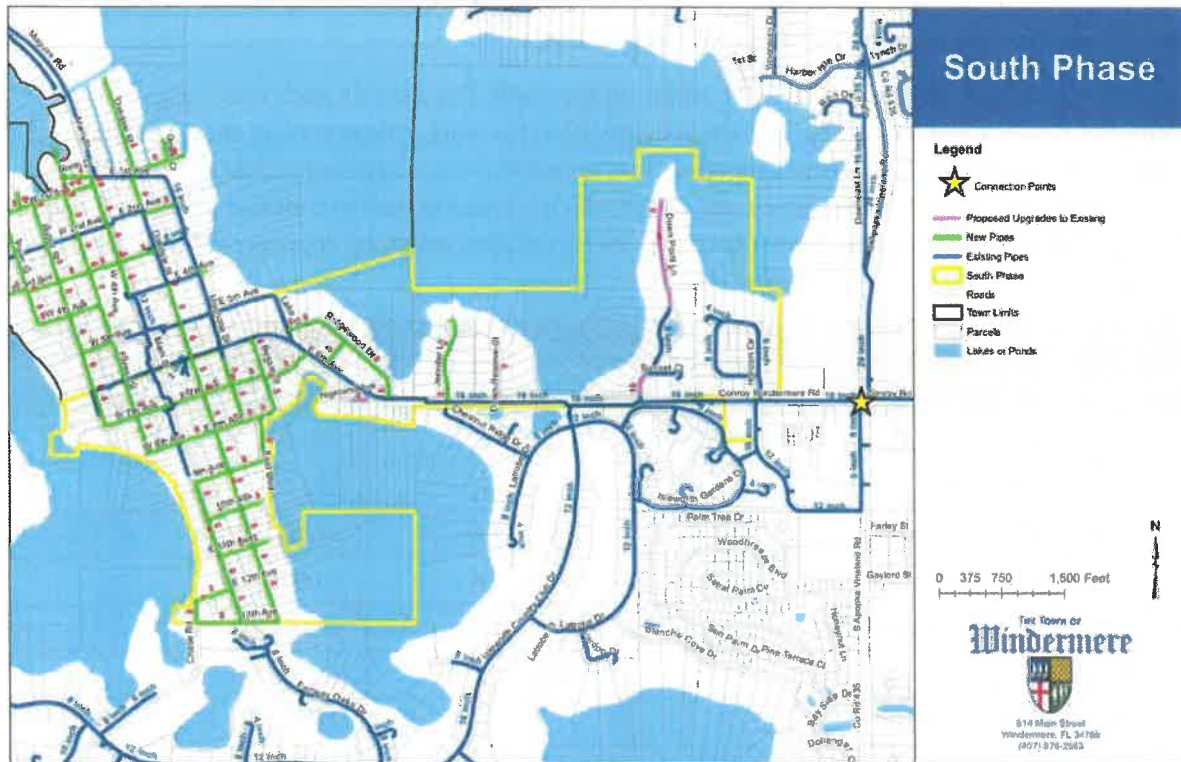
Exhibit 5-5 Main Street Property Lines



5.1.3 South Phase

The South Phase includes a mixture of older neighborhoods and developments built off Conroy-Windermere Road (E 6th Ave). As shown in Exhibit 5-5, most of the infrastructure along Conroy-Windermere Road (E 6th Ave) is already in place with the majority of the work required in the older neighborhoods along Oakdale Street and Main Street.

Exhibit 5-6 South Phase



The South Phase has a total of 241 parcels that are not connected to OCU water. Of the unconnected parcels, 208 do not currently have access to OCU water and would gain access under this project. Of the 208, 188 are residential lots with homes; three are non-residential sites (includes recreation/public uses sites), and 17 are miscellaneous (ROW, vacant/conservation, etc.).

In the South Phase, four existing line sizes need to be increased to accommodate fire flows:

- 770 feet of 6-inch line on Down Point Lane needs to be upsized to 8-inch
- 370 feet of 8-inch on Down Point Lane needs to be upsized to 10-inch
- 730 feet of 6-inch main on Down Reserve Court needs to be upsized to 8-inch
- 265 feet of 4-inch main on Highland Avenue needs to be upsized to 8-inch

5.2 DEVELOPMENT OF COSTS

The intent of this cost estimate is to develop the anticipated construction cost of the water main installation and service laterals within the public right-of-way. Additional cost will be incurred by the private property owners connecting to the potable water system. The estimated connection fee for a standard sized house (5/8-inch diameter connection) is \$1,970 plus a \$140 water meter service charge. Connection fees for demands requiring larger water meters will incur higher fees. These connection fees are charged to the property owner by OCU at time of connection to the system. Individual properties will have additional costs for plumbers to re-route their house service from the current well to the new public utility meter at the property line.

The costs developed in this master plan were developed on the phase level, the estimates cannot be broken-down into smaller portions of the work. These estimates are based on economies of scale only available when contractors can perform these large phases.

The cost estimate was developed using a bottom-up approach. The work on each street was summarized and costs were applied to each activity within the work. The unit costs shown in Table 5-1 are based on recent received bids or estimates from manufacturers, where applicable. Once the phase costs were summed, a 40% contingency was added which is industry standard for this planning level of estimate. The total estimate was then marked up 6% for inflation assuming approximately two years to the mid-point of construction and 3% per year.

Description	Unit	Unit Cost
Install 8-inch PVC WM	LF	\$60.00
Install 10-inch PVC WM	LF	\$80.00
Install Fire Hydrant Assembly	EA	\$4,000.00
Install 10-inch Isolation Gate Valve	EA	\$5,000.00
Install 8-Inch Isolation Gate Valve	EA	\$4,000.00
Install Fittings	EA	\$2,000.00
Remove Existing 4-inch WM	LF	\$20.00
Install Tapping Sleeve and Valve	EA	\$10,000.00
Pavement Resurfacing	SY	\$25.00
Blowoff Valve Assembly	EA	\$2,000.00
Automatic Flushing Device Assembly	EA	\$5,000.00
Maintenance of Traffic	LF	\$3.75
Surveying for Construction	LF	\$0.65
Video Route (Pre- and Post-Construction)	LF	\$0.20
Erosion Control	LF	\$1.00
Dewatering	LF	\$0.50
NPDES Permitting	LF	\$0.25
Final Measures (As-Builts)	LF	\$0.18
Service Connections	EA	\$2000.00

5.2.1 Cost Overview

This Engineer's Opinion of Construction Costs is provided based on available information and the engineer's experience and qualifications and represents his best judgement as a design professional familiar with the construction industry. The engineer has no control over the costs of labor, materials, equipment, or over the contractor's methods of determining prices or over competitive bidding or

market conditions. The engineer cannot and does not guarantee that proposals, bids, or construction cost will not vary from this estimate.

Table 5-2 Cost Summary provides a summary of the phase costs. The detailed breakdown of costs for each phase is included in Appendix A.

Phase	Cost
North	\$3,994,000
Central	\$3,081,000
South	\$3,206,000
Total	\$10,281,000

5.2.2 Cost Analysis

The overall costs above were broken down by cost per linear foot of added pipe and the cost per new residential connection. As shown in Table 5-3, although the North Phase has the highest overall cost, it also connects the most residential properties to new service. The North Phase also has the highest cost per linear foot due to the percentage of roads in the north phase that are paved.

Phase	Cost	New Residential Connections	Cost Per New Connection	Linear Feet	Cost Per Linear Foot
North	\$3,994,000	289	\$13,820	22,278	\$179
Central	\$3,081,000	172	\$17,913	20,428	\$151
South	\$3,206,000	188	\$17,053	21,495	\$149
Average	\$3,427,000	216	\$16,262	21,400	\$160

6.0 FUNDING ANALYSIS

6.1 REVIEW OF OPTIONS

Projects were evaluated to determine possible funding opportunities. Although the socio-economic characteristics for the Town of Windemere do not allow for competing in many funding programs targeted to areas with low household incomes, multiple funding sources were identified for consideration. Several project characteristics were considered during the analysis. The primary characteristics included regulatory/permitting, environmental affect, system age, water loss, private well conditions, existing and new services, groundwater withdrawal offset, reliability, public health, and protection of water resources.

6.2 RECOMMENDED OPTIONS

Based on the funding option analysis, the following programs were identified for further consideration and pursuit:

- State Revolving Fund (SRF) Loan Program – Drinking Water
- Legislative Process Grants (Appropriations)
- South Florida Water Management District (SFWMD) Funding
- Water Supply Restoration Program (WSRP) Funding

Funding time frames, match, and other program requirements may affect viability of funding options as the project proceeds. It is recommended that the options listed above be pursued primarily and to continue seeking additional funding opportunities as the project develops.

6.2.1 State Revolving Fund (SRF) Loan Program – Drinking Water

We recommend pursuing an SRF loan as an umbrella for the entire program. This low-interest loan can be applied to planning, design, and construction. The loans are a 10-year term for planning and design or 20-year term for construction. Once this loan is in place, any funds received from other sources could offset the loan amounts. Any funds not used under this loan would be returned to SRF without penalty, reducing the amount of the loan.

6.2.2 Legislative Process Grants (Appropriations)

The next piece of the funding puzzle are legislative grants. These funds from the state can be used for planning, design, and construction. These grants typically require some benefit to the state, the benefits to the safety and environment noted in this master plan can be used as part of the application when bringing this request to the Town's state legislators. The legislative grants process starts in the summer with funds becoming available the following summer. While this program does not have specific funding requirements, most successful pursuits leverage a 50% contribution from the applicant.

6.2.3 South Florida Water Management District (SFWMD) Funding

The SFWMD offers alternative water supply funding. This program is designed to promote source water protection and promote water conservation and efficiency. This program releases individual requests for applications typically in the February and March time period. This program requires complete designs that are ready to be constructed. The program limits funding to 50% of the total project, typical projects would be a 25% contribution from SFWMD with a 75% match from the applicant. It should be noted that it can be difficult to obtain both legislative process grants and SFWMD funding, this would likely be an alternative if legislative funding is not available.

6.2.4 Water Supply Restoration Program (WSRP) Funding

Funding is not intended to offset the Town's funding investment. This program may be leveraged to assist the residents make their connections on the private property to the potable water lines once they are in place. This program is designed to protect the public from man-made contaminants. The program targets areas around known storage tanks and areas where the use of fertilizers and pesticides has been prevalent. If a private well is tested and determined to be contaminated, the Water Supply Restoration Fund would pay to connect the homeowner to the OCU line.

6.3 FUNDING CONSTRAINTS

6.3.1 Required Coordination with Orange County Utilities

Because Orange County Utilities will ultimately own and operate the system, they will need to be an active participant in this process. Negotiations with OCU will be critical to determine what portion of the design and capital costs the Town will be required to pay and what portion OCU will be willing to fund out of their fees to rate payers.

6.3.2 Restrictions Required by the Programs

In addition to being required to qualify for the program based on the merits of the projects, several restrictions will be placed on the project to make these funding sources possible. The State Revolving Fund will require that alternatives be considered to ensure that the project is cost-effective.

7.0 SUMMARY AND RECOMMENDATIONS

7.1 SUMMARY

The Town of Windermere has a water distribution backbone through the town that will serve as the basis for providing potable water connections and fire-fighting water throughout the town. This project would provide potable water to the 59% of the parcels in the town that do not have access to Orange County Utilities water, 649 residential connections. This project would also provide 57 fire hydrants and improve the available fire flow throughout the town.

The overall construction cost of the project is anticipated to be approximately \$10,281,000. The construction cost is broken out into three phases that can be conducted in any order.

7.2 RECOMMENDATIONS

Wade Trim recommends concurrently pursuing three actions.

1. Revise Interlocal Agreement with OCU
2. Funding
3. Detailed Design

7.2.1 Negotiation with OCU

The Town, OCU, and Wade Trim met on June 1st, July 1st, and August 5th, 2020 to discuss the proposed system and the process for funding and moving forward with the project.

Orange County Utilities will be the owner and operator of this potable water distribution system. OCU provided preliminary comments on the modeling effort and preliminary design. These comments will need to get resolved before OCU will accept the Town's design and allow the system to be connected to the system. OCU suggested changes to the model and design will be done as part of the detailed design process. For example:

1. OCU suggests modeling with a lower peaking factor because a higher peaking factor pushes a system to have larger pipes with higher residence times leading to water quality issues.
2. OCU suggests fire flow should be 1,000 gpm, regardless of the size of the homes. This would reduce the size of the lines as well.
3. OCU suggests calibrating the model using the connection point pressures they provided rather than actual hydrant tests. This would tend to increase the size of the lines. This should be run as a worst-case scenario and compared to the results using actual field data.
4. OCU does not use 10-inch pipes, they require either 8-inch or 12-inch pipes. This would need to be modified in the model and be included in the final design.

OCU will collect any connection and usage fees associated with the system. Understanding how OCU will participate in the process is going to be critical in how the system is constructed.

OCU's default position would be to treat the Town as a developer. If they treat the Town as a developer, the Town will need to front all of the money to design and construct the infrastructure. This path would make many of the funding options difficult.

If OCU takes complete ownership of the project, and based on the existing interlocal agreement, OCU will require a petition from 67% of the residents. OCU would then issue a cost estimate for each resident that must be agreed in order for OCU to design and build the infrastructure. This could be done as a Municipal Services Benefit Unit administered by the Town.

A hybrid approach may be the best solution. An interlocal agreement that allows the Town to take out financing and transfer a portion of that financing over to OCU with the complete project would be advantageous. It is most likely necessary to negotiate a new interlocal agreement with the OCU for this significant project. OCU has not yet agreed to this approach, however they have not ruled it out.

7.2.2 Funding

Several of the funding sources can be used for planning and design, as well as construction. It would be in the Town's best interest to explore these options early to fully benefit from the programs. The funding options cannot be finalized until it is fully understood how OCU will participate in the project. SRF rules state that the owning and operating utility entity must apply for SRF; assurance has to be based on revenues. If Windermere constructs the project, OCU may be able to apply for a loan with an interlocal agreement in place specifying repayment and the obligations of each entity. OCU has stated they would be amenable to looking into how an interlocal agreement could address the issues with a SRF application.

7.2.3 Detailed Design

Some of the funding agencies want to see construction-ready designs. This will mean procuring a design engineer to perform a detailed design of the proposed pipe network for each phase. Due to the size of these projects, an open procurement process should be conducted to select an engineer.

August 2020

APPENDIX A. DETAILED COST ESTIMATE



ENGINEER'S OPINION OF CONSTRUCTION COST

PROJECT: Windermere Water Master Plan - North Phase

LOCATION: Town of Windermere

BASIS FOR ESTIMATE: CONCEPTUAL 30% 60% 90% FINAL

WORK:

Date: August 2020

Project No.: WND 2001.01L

All summarized values rounded up to nearest \$1,000

ITEM NO.	DESCRIPTION	AMOUNT
	Mobilization (5%)	\$ 190,000
	Willow Gardens Drive	\$ -
	Willow Lauren Lane	\$ 60,000
	Kane Park Way	\$ -
	Whaler Way	\$ 28,000
	Winston Willow Court	\$ -
	Clipper Court	\$ 70,000
	Schooner Way	\$ 182,000
	Park Ave	\$ -
	BayShore Drive	\$ 235,000
	Tryon Place	\$ 179,000
	Cedar Grove Court	\$ 55,000
	Rose Down Court	\$ 24,000
	Carter Grove Circle	\$ 266,000
	Stanton Hall Court	\$ 76,000
	Wonder Lane	\$ 103,000
	Estancia Woods Loop	\$ -
	Sunbittern Court	\$ 75,000
	Marquesas Court	\$ 109,000
	Lake Butler Blvd	\$ 409,000
	Wild Myrtle Court	\$ 43,000
	Bay Meadow Court	\$ 52,000
	Wax Berry Court	\$ 43,000
	Just-A-Mere Ct	\$ 18,000
	Service Connections	\$ 578,000
	Subtotal	\$ 2,605,000
	Contingencies (40%)	\$ 1,042,000
	Inflation (6%)	\$ 157,000
	Total Construction Cost	\$ 3,994,000

This Engineer's Opinion of Construction Costs is provided based on available information and the engineer's experience and qualifications and represents his best judgement as a design professional familiar with the construction industry. The engineer has no control over the costs of labor, materials, equipment, or over the contractor's methods of determining prices or over competitive bidding or market conditions. The engineer cannot and does not guarantee that proposals, bids or construction cost will not vary from this estimate.



ENGINEER'S OPINION OF CONSTRUCTION COST

PROJECT: Windermere Water Master Plan - Central Phase (LK Butler Waterway and N of 6th Ave)

LOCATION: Town of Windermere

BASIS FOR ESTIMATE: CONCEPTUAL 30% 60% 90% FINAL

WORK: _____ Date: August 2020

Project No.: WND 2001.01L

All summarized values rounded up to nearest \$1,000

ITEM NO.	DESCRIPTION	AMOUNT
	Mobilization (5%)	\$ 147,000
	Sunset Lane	\$ 177,000
	Oakdale Street	\$ 187,000
	Down Drive	\$ 51,000
	Down Court	\$ 23,000
	Forest Street (North of W 1st Ave)	\$ 30,000
	Forest Street (South of W 1st Ave and North of 6th Ave)	\$ 199,000
	North Drive	\$ 40,000
	W 1st Avenue	\$ 110,000
	E 2nd Avenue	\$ 36,000
	Pine Street	\$ 64,000
	W 3rd Avenue	\$ 91,000
	E 3rd Avenue	\$ 34,000
	W 4th Avenue	\$ 65,000
	W 5th Avenue	\$ 37,000
	Palm Street	\$ 106,000
	Butler Street	\$ 194,000
	Main Street Service Rd (North of 5th Ave)	\$ 164,000
	Main Street (North of 5th Ave)	\$ 57,000
	Service Connections	\$ 344,000
	Subtotal	\$ 2,009,000
	Contingencies (40%)	\$ 804,000
	Inflation (6%)	\$ 121,000
	Total Construction Cost	\$ 3,081,000

This Engineer's Opinion of Construction Costs is provided based on available information and the engineer's experience and qualifications and represents his best judgement as a design professional familiar with the construction industry. The engineer has no control over the costs of labor, materials, equipment, or over the contractor's methods of determining prices or over competitive bidding or market conditions. The engineer cannot and does not guarantee that proposals, bids or construction cost will not vary from this estimate.



ENGINEER'S OPINION OF CONSTRUCTION COST

PROJECT: Windermere Water Master Plan - South Phase (South of 6th Ave)

LOCATION: Town of Windermere

BASIS FOR ESTIMATE: CONCEPTUAL 30% 60% 90% FINAL

WORK:

Date: August 2020

Project No.: WND 2001.01L

All summarized values rounded up to nearest \$1,000

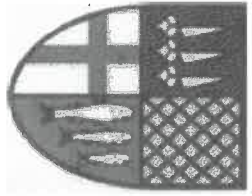
ITEM NO.	DESCRIPTION	AMOUNT
	Mobilization (5%)	\$ 160,000
	Horizon Circle	\$ -
	Down Point Lane	\$ 90,000
	Sunset Court	\$ -
	Rosser Road	\$ -
	Jennifer Lane	\$ 84,000
	Highland Ave	\$ 26,000
	Ridgewood Street	\$ 133,000
	Lee Street	\$ 39,000
	Lake Street	\$ -
	Bessie Street South of 5th Ave	\$ 89,000
	East Blvd	\$ 77,000
	Magnolia Street (South of 5th Ave)	\$ 83,000
	Oakdale Street (South of 6th Ave)	\$ 249,000
	Main Street (South of 6th Ave)	\$ 167,000
	Chase Road	\$ 68,000
	Forest Street (South of 6th Ave)	\$ 87,000
	Butler Street (South of 6th Ave)	\$ 43,000
	East 13th Ave	\$ 79,000
	East 11th Ave	\$ 55,000
	East 10th Avenue	\$ 59,000
	East 9th Avenue	\$ 43,000
	8th Avenue (East and West)	\$ 144,000
	7th Avenue (East and West)	\$ 205,000
	6th Avenue (East and West)	\$ -
	Service Connections	\$ 376,000
	Subtotal	\$ 2,196,000
	Contingencies (40%)	\$ 878,000
	Inflation (6%)	\$ 132,000
	Total Construction Cost	\$ 3,206,000

This Engineer's Opinion of Construction Costs is provided based on available information and the engineer's experience and qualifications and represents his best judgement as a design professional familiar with the construction industry. The engineer has no control over the costs of labor, materials, equipment, or over the contractor's methods of determining prices or over competitive bidding or market conditions. The engineer cannot and does not guarantee that proposals, bids or construction cost will not vary from this estimate.



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Suite D
Palm Bay, FL 32905
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DEPARTMENT OF TRANSPORTATION

CONCEPT PLANS

**BUTLER STREET & 7TH AVE.
ROADWAY & DRAINAGE IMPROVEMENTS**

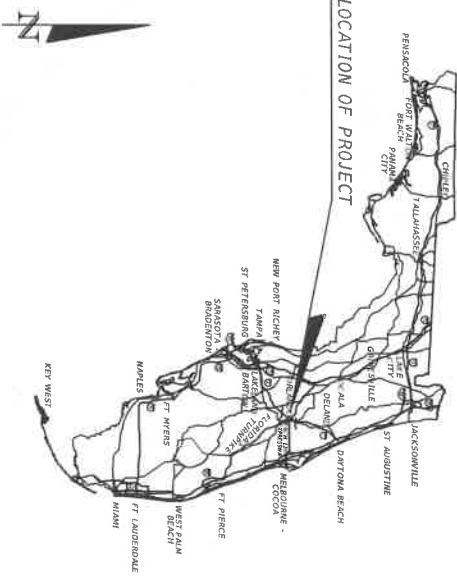
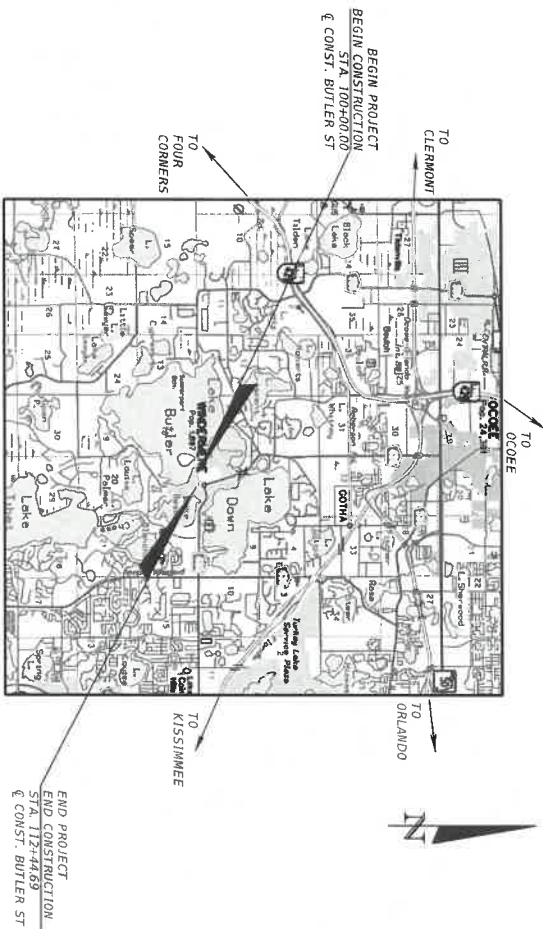
CONTRACT PLANS COMPONENTS
ROADWAY PLANS

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	DRAINAGE MAP
3-5	TYPICAL SECTION
6-8	PLAN-PROFILE SHEET
9-18	CROSS SECTIONS

GOVERNING DESIGN STANDARDS:
Florida Department of Transportation, FY2020-21 Standard Plans

GOVERNING STANDARD SPECIFICATIONS:
Florida Department of Transportation, July 2020 Standard Specifications for Road and Bridge Construction at the following website:
<http://www.dot.gov/programmanagement/implemented/SpecBooks>



PROJECT LENGTH IS BASED ON Q OF CONSTRUCTION

LENGTH OF PROJECT		
	BUTLER STREET & 7TH AVENUE	MILES
ROADWAY	1244.690	0.236
NET LENGTH OF PROJECT	1244.690	0.236

Kimley»Horn
189 SOUTH ORANGE AVENUE
SUITE 1000
ORLANDO, FLORIDA 32801
TEL: (407) 898-1511
VENDOR NO. F560885615-001
CERTIFICATE OF AUTHORIZATION NO. 696

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
	20	1

SCALE: 1"=1/4"

8/11/2020

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EXISTING DRAINAGE STRUCTURES

- ① DITCH BOTTOM INLET
TOP EL. 119.93
SE INV. EL. 117.83 18" CMP
- ② DITCH BOTTOM INLET
TOP EL. 118.64
NW INV. EL. 115.99 18" CMP
SE INV. EL. 115.41 18" CMP
- ③ DITCH BOTTOM INLET
TOP EL. 114.85
NW INV. EL. 113.15 18" CMP
SE INV. EL. 111.90 10" CLAY PIPE
- ④ MITERED END SECTION
INV. EL. 104.68 24" CMP
- ⑤ CATCH BASIN
TOP EL. 108.89
NE INV. EL. 105.77 12" CPP
SW INV. EL. 105.31 24" CPP
NW INV. EL. 104.49 6" CLAY PIPE
WEIR INV. EL. 106.82 (1.8x1.4)
- ⑥ MITERED END SECTION
INV. EL. 104.68 12" CPP
- ⑦ PIPE
INV. EL. 112.55 12" RCP
- ⑧ PIPE
INV. EL. 114.24 12" RCP

DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

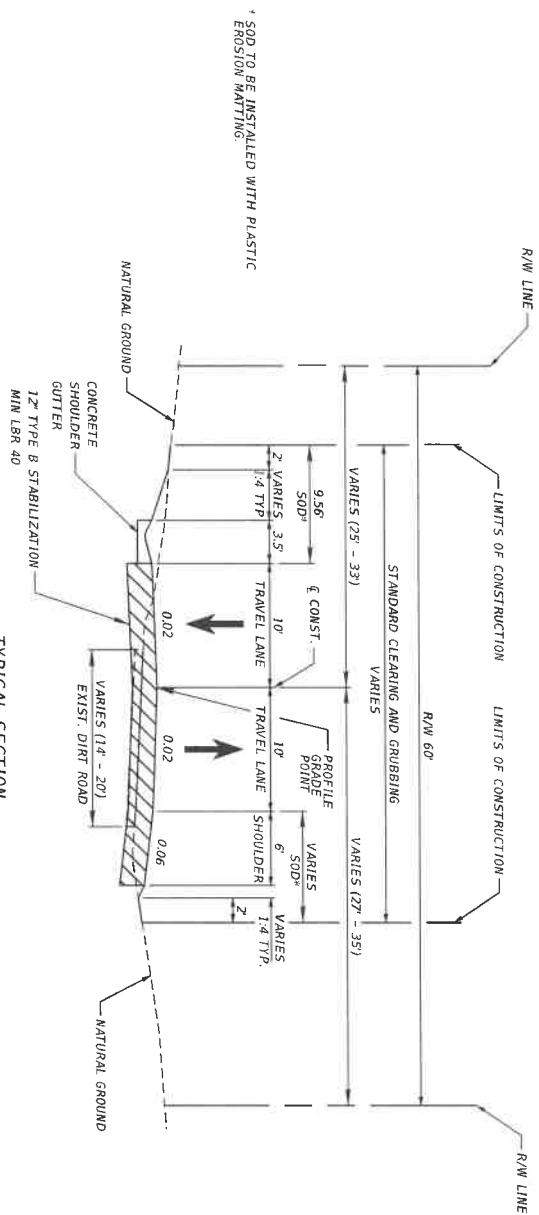
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DRAINAGE MAP

SHEET NO. 2





ST.A. 100+7.427 TO STA. 102+50.00
 (REFER TO PLAN-PROFILE (01) FOR STA. 100+00.00 TO STA. 100+7.427 - IN INTERSECTION)

N.T.S.

DESIGN SPEED = 20 MPH

NEW CONSTRUCTION

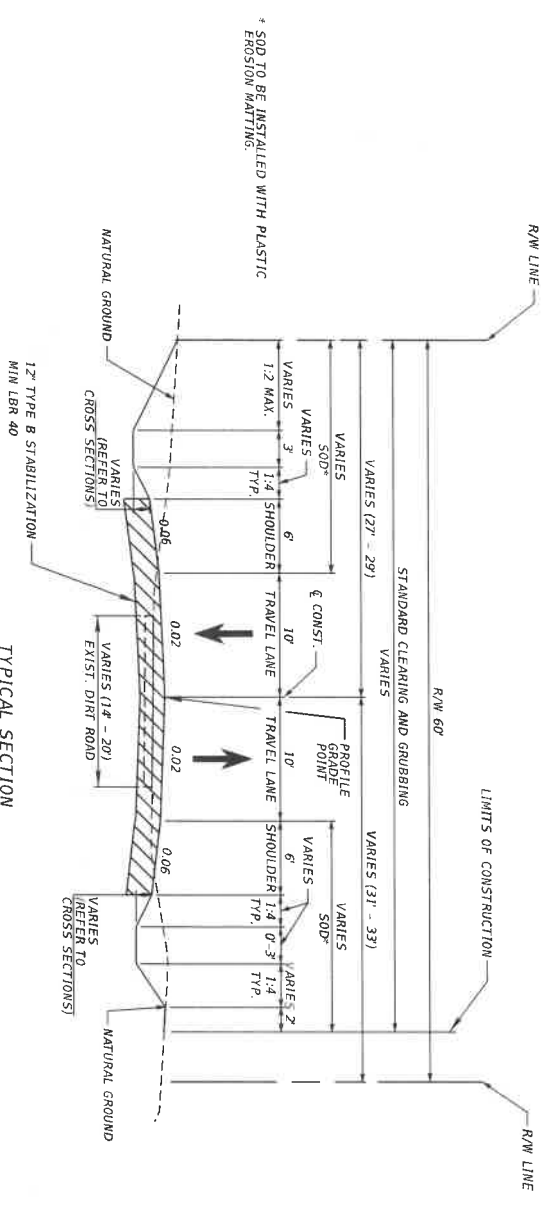
12" TYPE B STABILIZATION MIN LBR 40

BUTLER STREET

DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

<p>Kimley-Horn Certificate of Authorization No. 696 Hao T. Chai, P.E. 189 South Orange Avenue, Suite 1000 Orlando, Florida 32801</p>		<p>WSP Parsons 8171/2020 83324 JH C:\working\khs\sp\of\sean\pct\012487\95001.dgn</p>
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TYPICAL SECTION (01)	SHEET NO. 3
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N.T.S.
 DESIGN SPEED = 20 MPH
 NEW CONSTRUCTION
 12" TYPE B STABILIZATION MIN LBR 40

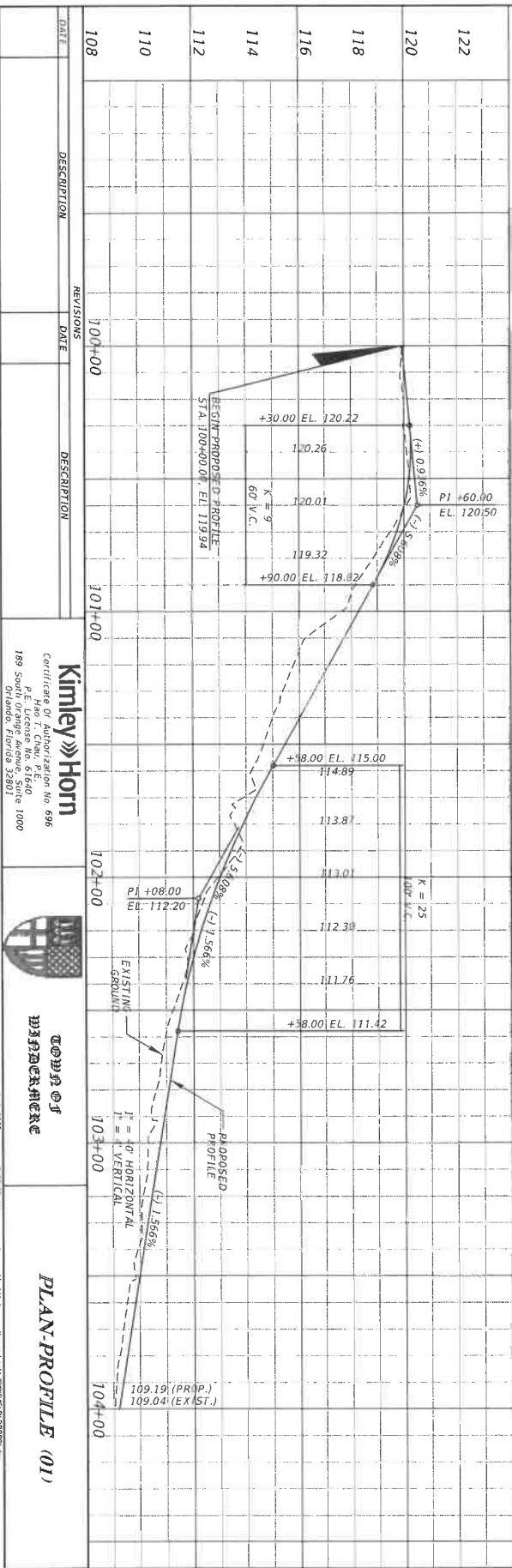
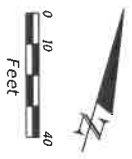
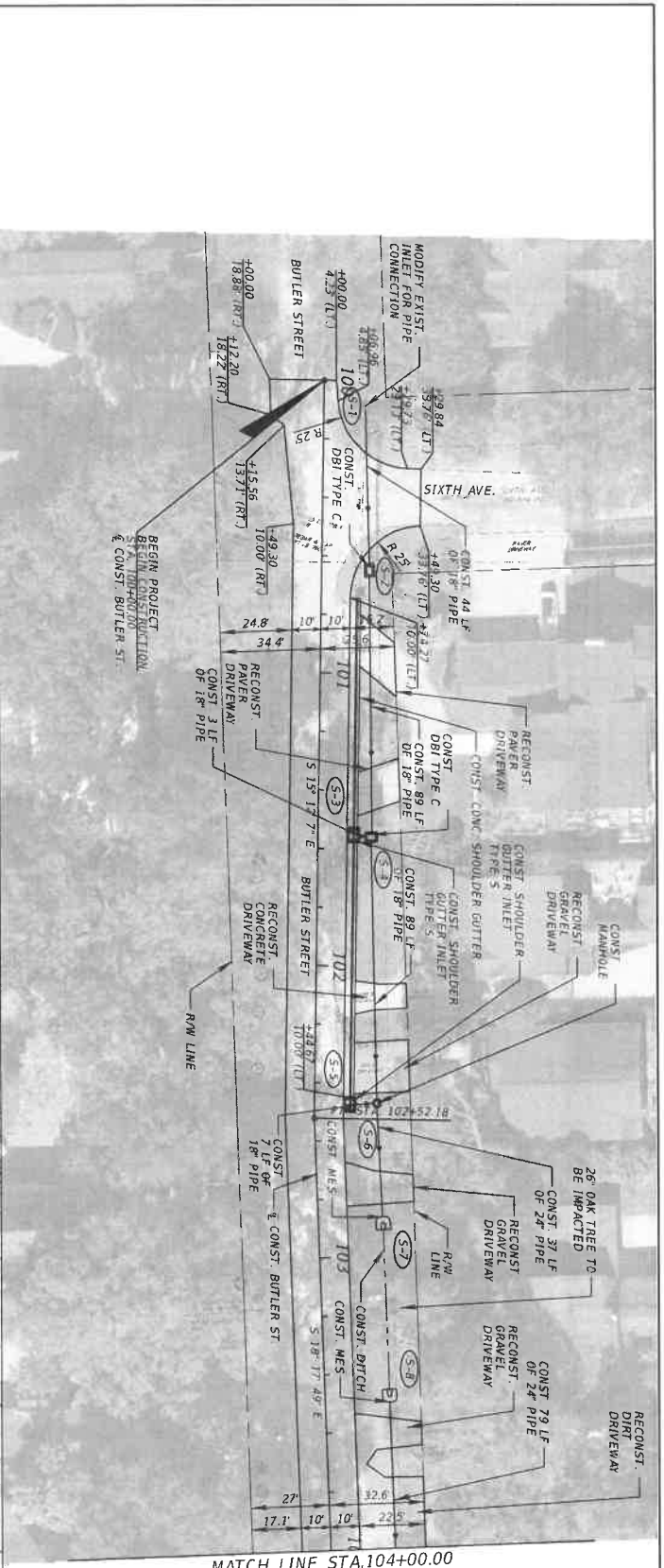
7TH AVENUE

DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

Kimley-Horn Certificate of Authorization No. 696 190 N. Canal, #1540 P.O. Box 2199 189 South Orange Avenue, Suite 1000 Orlando, Florida 32801	 FLORIDA REGISTERED PROFESSIONAL ENGINEERS	SERIAL/NO. 8/11/2020	SHEET NO. 5
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TYPICAL SECTION (03)

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DATE	DESCRIPTION	DATE	DESCRIPTION
108		101+00	
110		102+00	
112		103+00	
114		104+00	
116			
118			
120			
122			

DATE	DESCRIPTION	DATE	DESCRIPTION
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110		102+00	
112		103+00	
114		104+00	
116			
118			
120			
122			

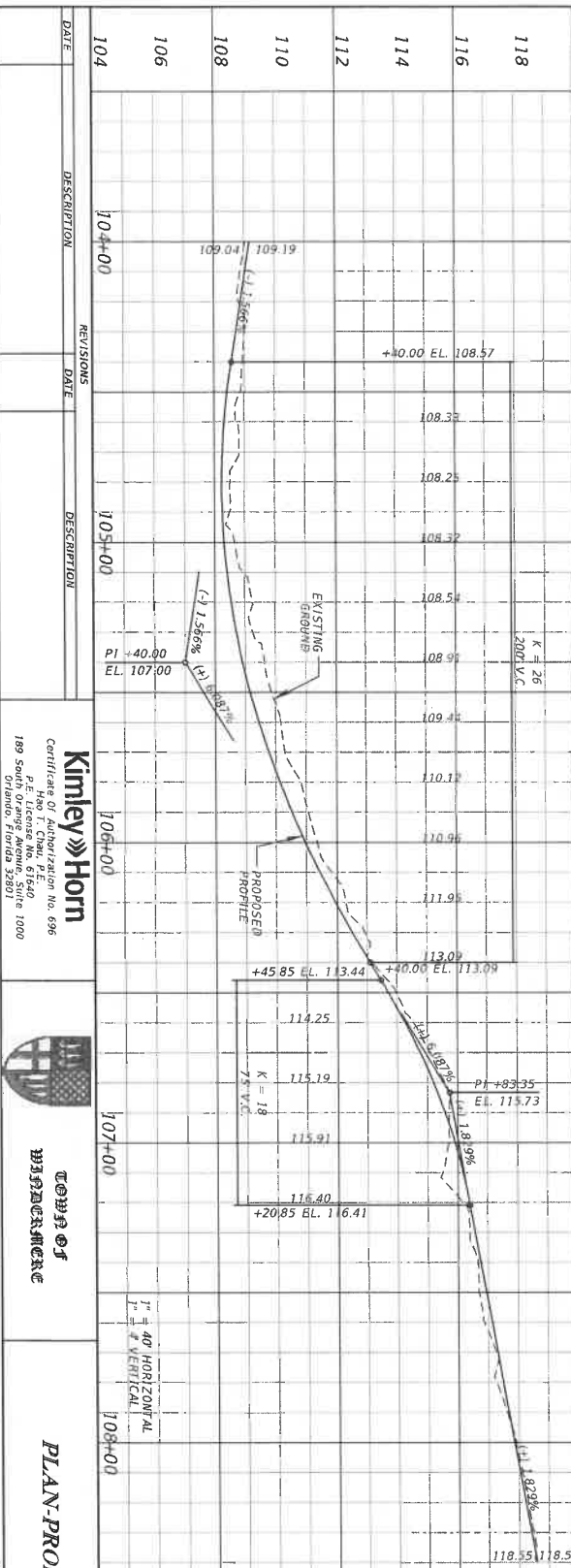
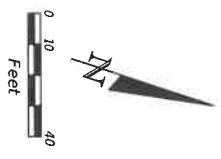
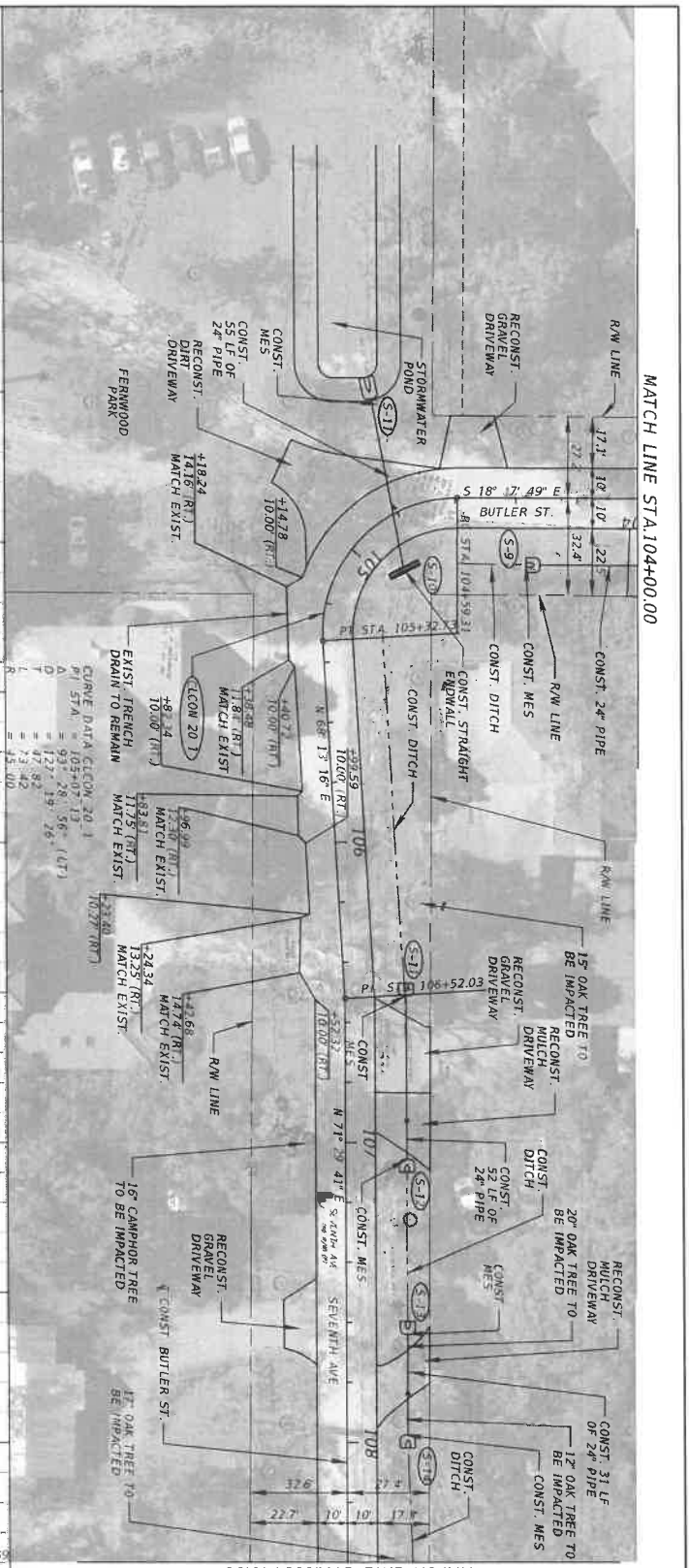
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 Orlando, Florida 32801



0/17/2020

PLAN-PROFILE (01)

SHEET NO. 6



STATION	ELEVATION (EL)	REVISIONS
104+00	107.00	
105+00	108.57	
106+00	113.09	
107+00	115.73	
108+00	116.41	

STATION	ELEVATION (EL)	REVISIONS
104+00	109.04	
105+00	109.19	
106+00	113.44	
107+00	115.91	
108+00	116.41	

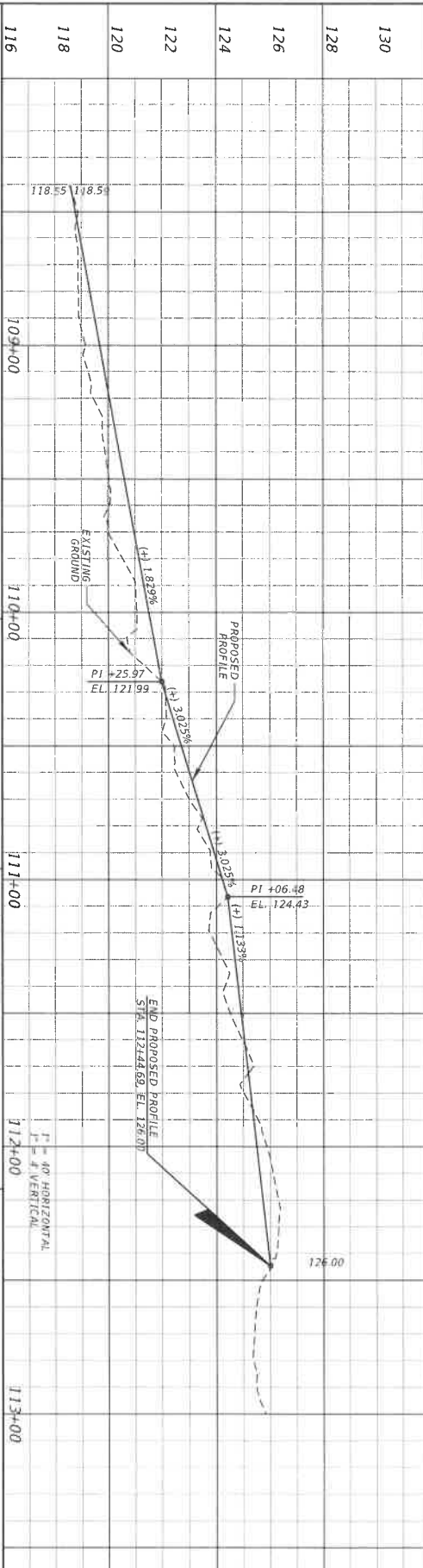
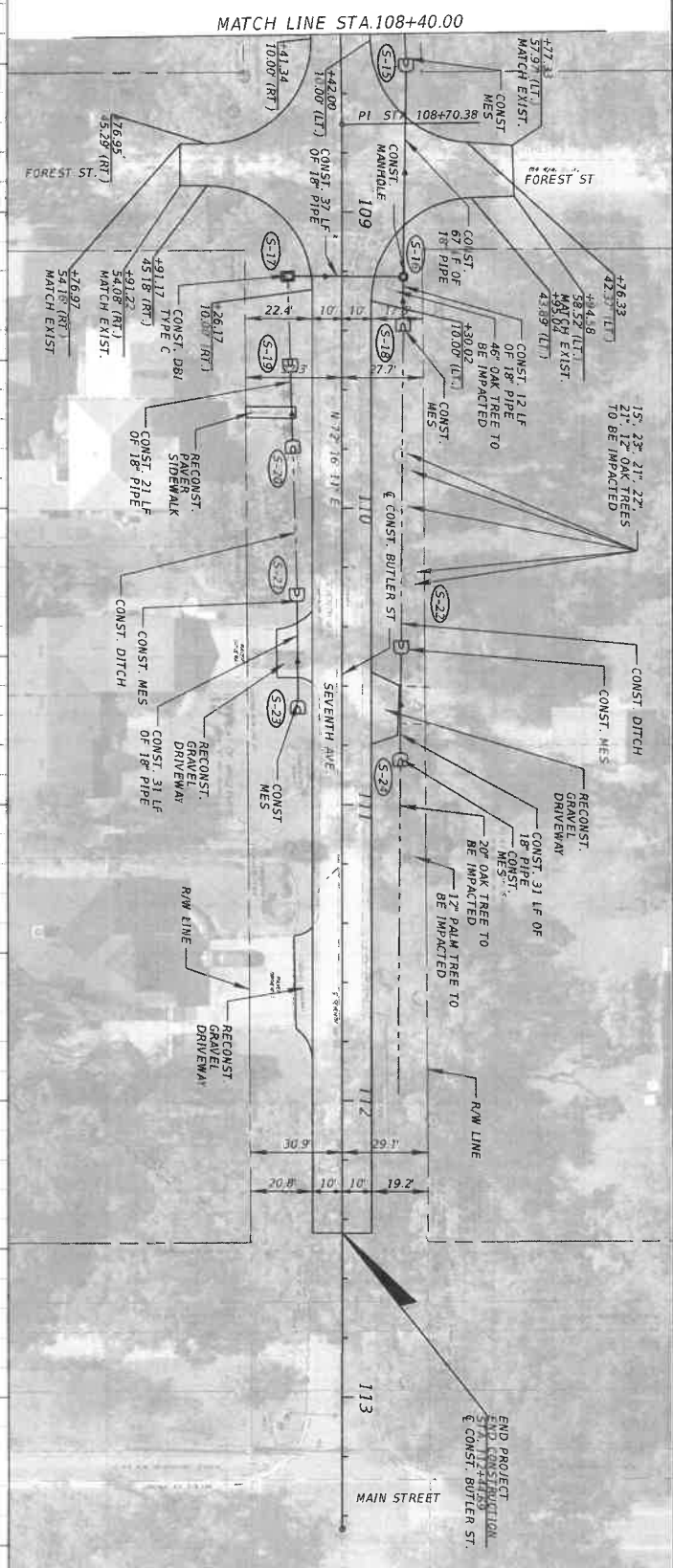
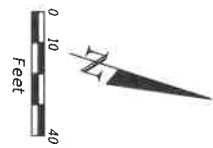
STATION	ELEVATION (EL)	REVISIONS
104+00	109.04	
105+00	109.19	
106+00	113.44	
107+00	115.91	
108+00	116.41	

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PLAN PROFILE (02)

DATE: 8/17/2020
 SHEET NO.: 7



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION
116			109+00	
118			110+00	
120			111+00	
122			112+00	
124			113+00	
126				
128				
130				

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 FLORIDA DEPARTMENT OF TRANSPORTATION

PLAN-PROFILE (03)

SHEET NO. 8



DATE	DESCRIPTION	DATE	DESCRIPTION

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 Orlando, Florida 32801



CONTRACTOR
 [Logo]

CROSS SECTIONS

100+50.00
 101+00.00
 101+50.00

BEgin PROFILE
 BEgin CONSTRICTION
 STA. 100+00.00
 I" = 10' Horizntal
 V" = 5' Vertical

SHEET NO. 9



DATE	DESCRIPTION	DATE	DESCRIPTION

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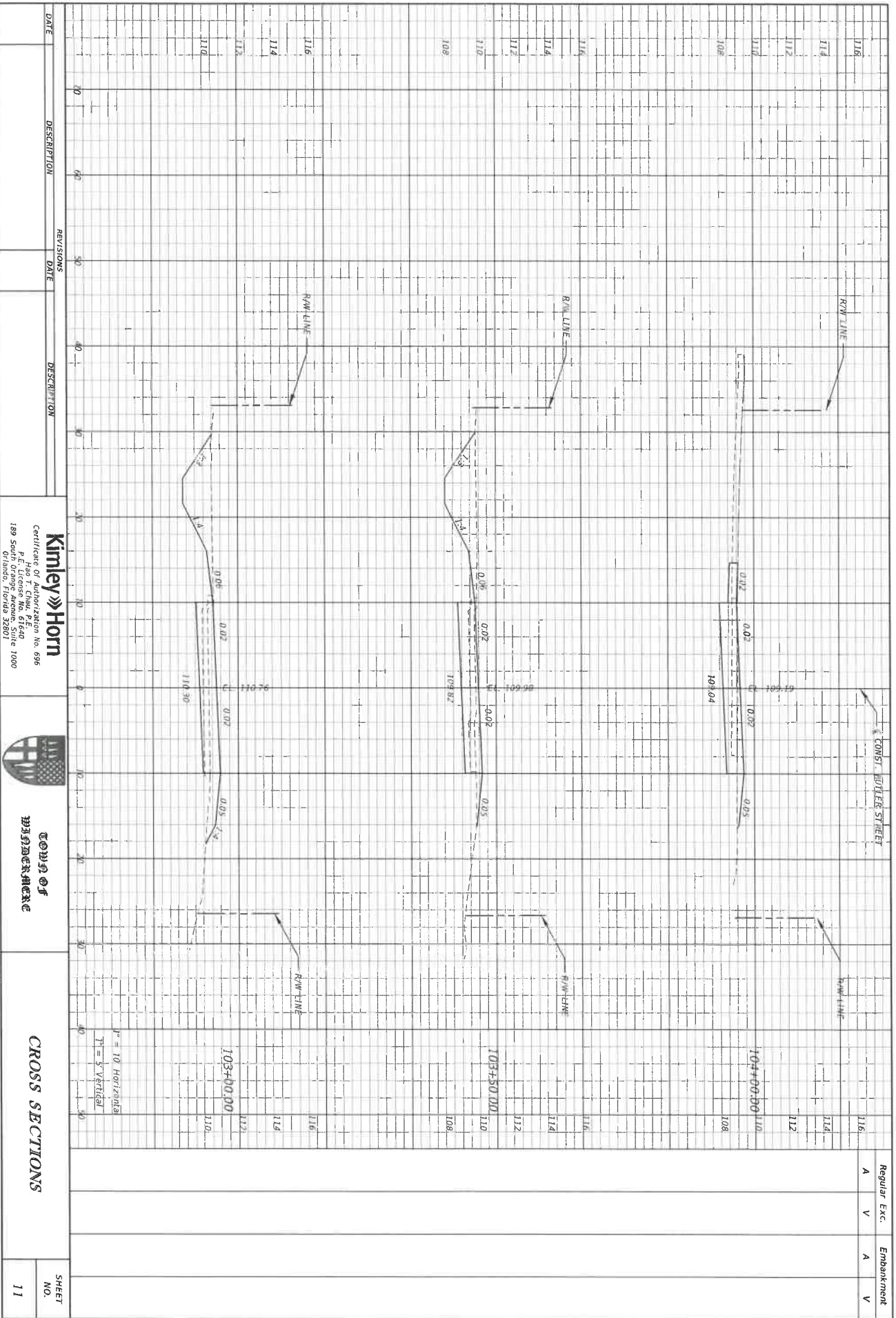
Kimley-Horn & Associates, Inc.

CROSS SECTIONS

Scale: Vertical = 1" = 5' Vertical
 Horizontal = 1" = 10' Horizontal

SHEET NO. 10

Regular	Exc.	Embankment
A	V	A
		V



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

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CROSS SECTIONS

Scale: 1"=10'

Vertical Curve Data:
 $L = 10$ Horizontal
 $T = 5$ Vertical

SHEET NO. 11

Regular Exc. Embankment

A V A V

116 116

114 114

112 112

110 110

108 108

116 116

114 114

112 112

110 110

108 108

116 116

114 114

112 112

110 110

108 108

116 116

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112 112

110 110

108 108



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

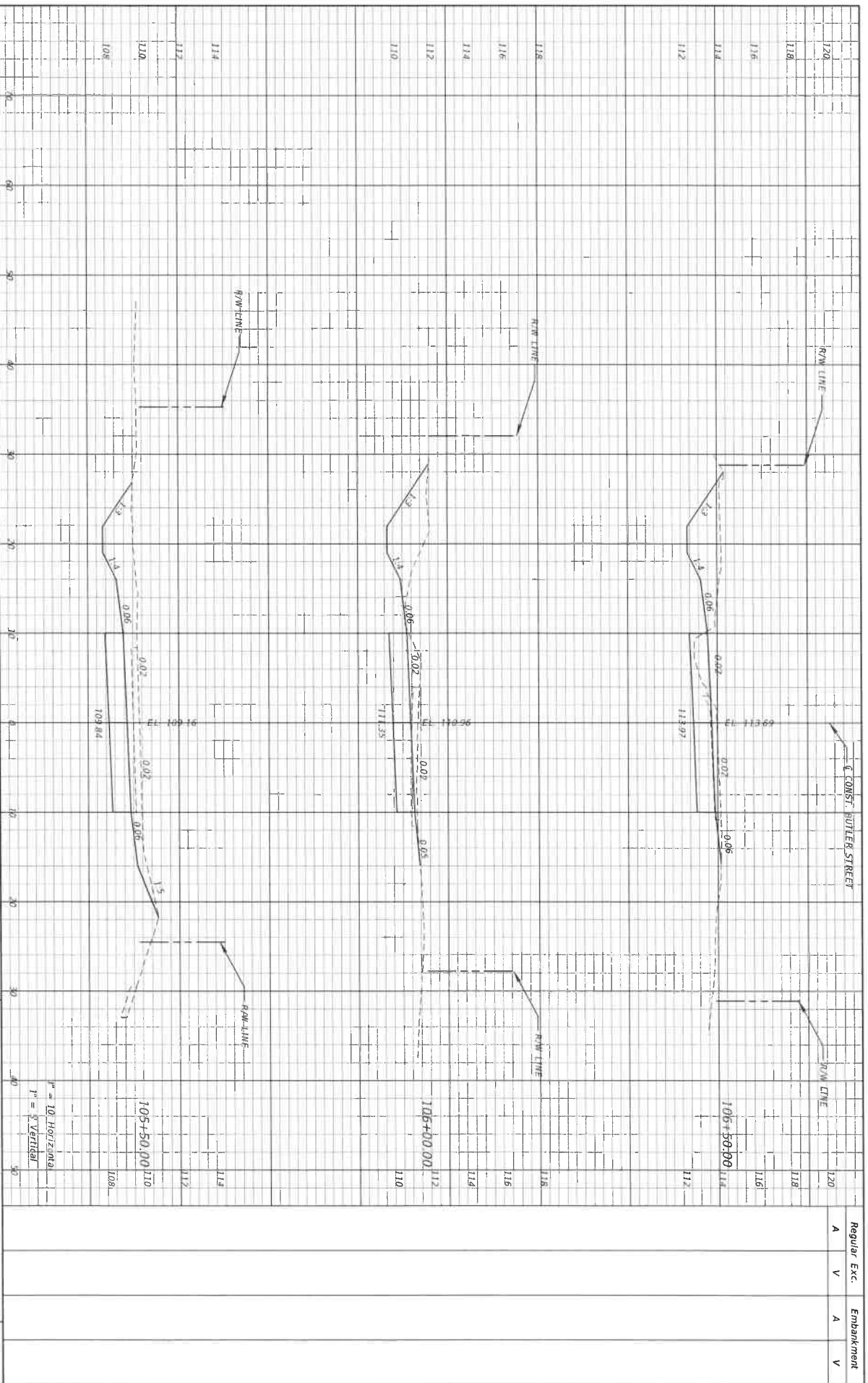
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 189 South Orange Avenue, Suite 1000
 Orlando, Florida 32801



CONSULTANTS
 8177 2020

CROSS SECTIONS
 SHEET NO. 12

Scale: 1" = 10' Horizontal
 1" = 5' Vertical



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

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 P. Hao T. Chua, P.E., 440
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COMPTON
 CONSULTING ENGINEERS

CROSS SECTIONS

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SHEET NO. 13

Regular	Exc.	Embankment
A	V	A
		V



Regular Exc. Embankment
 A V A V

DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

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CROSS SECTIONS
 SHEET NO. 14

Scale: 1" = 10' Horizontal
 1" = 5' Vertical



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

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 Hao F. Chan, P.E.
 189 South Orange Avenue, Suite 1000
 Orlando, Florida 32801



STATE OF FLORIDA

8/11/2021

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 SHEET NO. 15

Regular Exc.	Embankment
A	V
V	A
A	V



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

Kimley-Horn
 Certificate of Authorization No. 696
 P. Horn, P.E., Principal Engineer
 189 South Orange Avenue, Suite 1000
 Orlando, Florida 32801



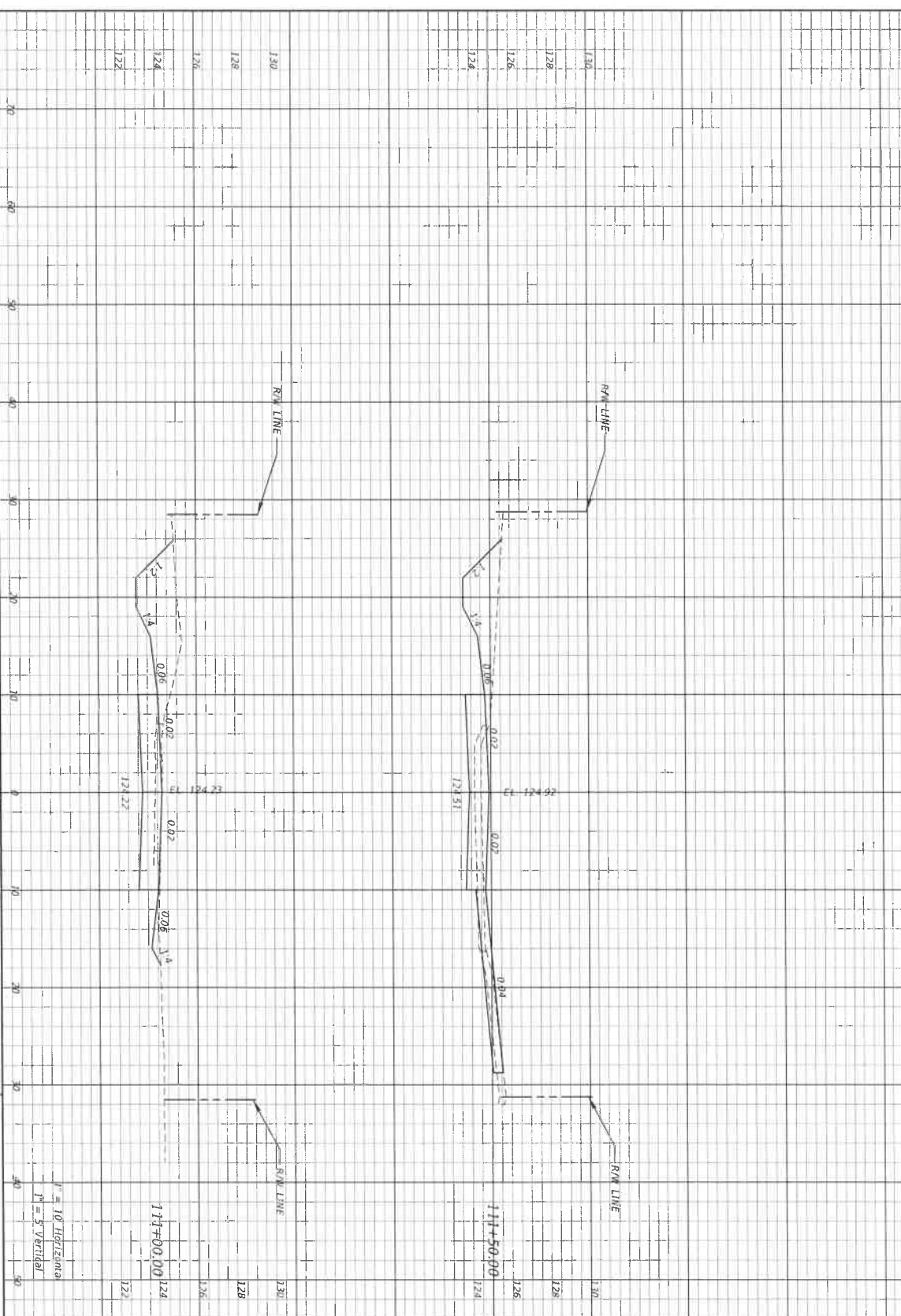
Kimley-Horn and Associates, Inc.
 ENGINEERS

CROSS SECTIONS

SHEET NO. 16

Regular Exc.	Embankment
A	V
V	A
A	V

Regular Exc. Embankment
 A V A V



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

Kimley-Horn
 Certificate of Authorization No. 696
 H. J. Chalk, P.E.
 189 South Orange Avenue, Suite 1000
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SCS ENGINEERS
 SCS ENGINEERS

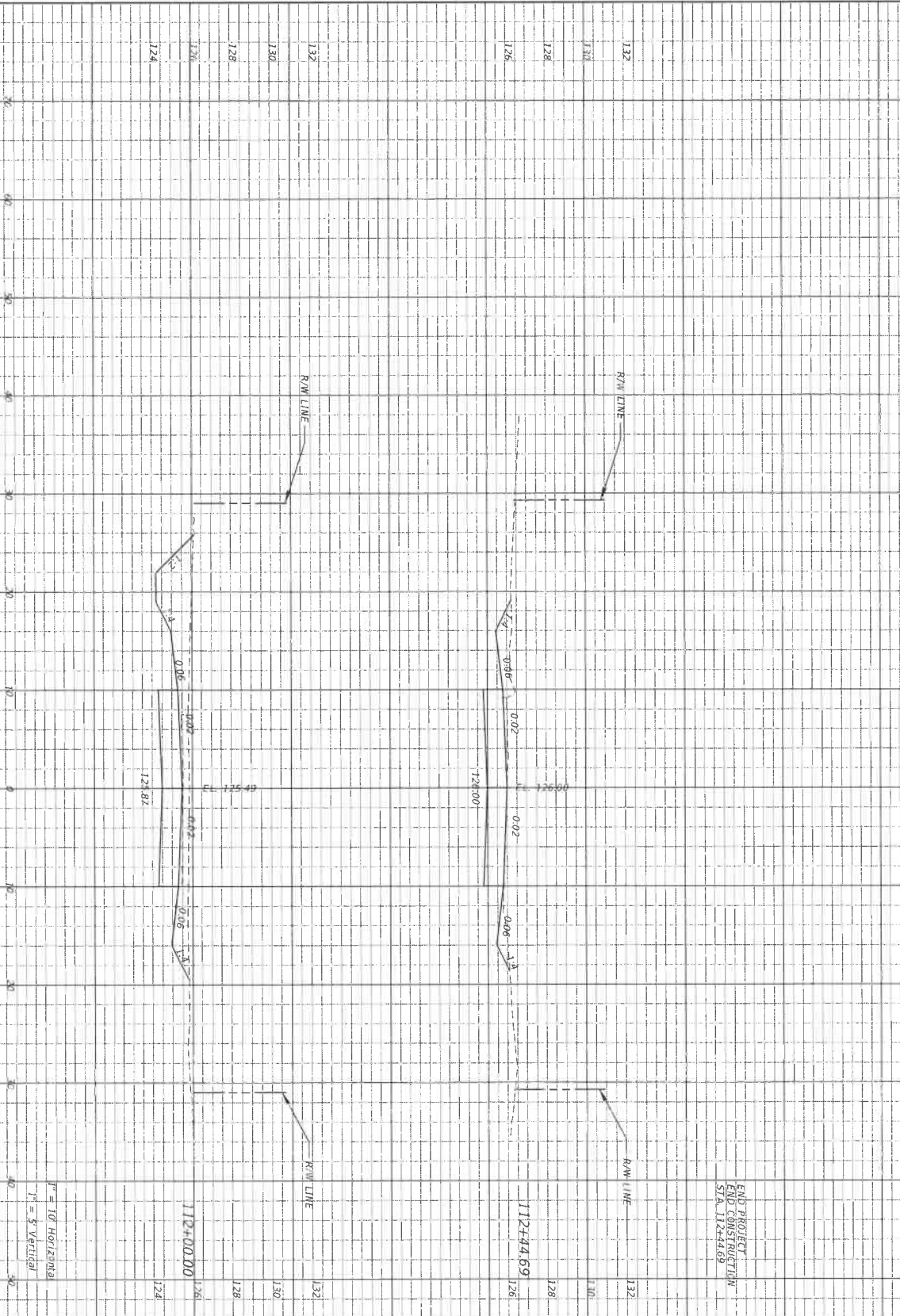
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 1" = 5' Vertical

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SHEET NO. **17**

Regular Exc. Embankment
 A V A V



DATE	DESCRIPTION	REVISIONS	DATE	DESCRIPTION

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 P. E. and C. E.
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 Orlando, Florida 32801



SCM174781
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CROSS SECTIONS

