

EXHIBIT A
SCOPE OF SERVICES
PHASE 1
TROPIC ISLE NEIGHBORHOOD

Revised January 30, 2020

I. PROJECT DESCRIPTION

The Tropic Isle Neighborhood Area is located immediately east of Federal Highway, bordered by Linton Blvd on the north, Intracoastal Water Way (ICWW) on the east, and C-15 Canal on the south. The City of Delray Beach (City) would like to invest in infrastructure improvements in the Tropic Isle Neighborhood Area. These improvements include roadway paving, stormwater management, water main, sanitary sewer and lighting improvements and potential conversion of overhead utilities to underground.

Figure 1 illustrates the Neighborhood Area and shows the limits of the project. The area includes a total of approximately 5.75 miles of roadways.

The neighborhood streets are built on muck and loosely consolidated soils that have caused the pavements to deteriorate over the years. The City completed a street evaluation study of a majority, but not all the neighborhood streets. The study recommended avoiding disturbance of existing muck soils and maintaining existing roadway elevations. The neighborhood borders the ICWW and is susceptible to flooding from high tides and projected sea level rise. The City considered high tides and 30 year sea level rise projection when they recently updated the stormwater master plan. The updated master plan recommended raising the roads and converting the stormwater system to a pump system in the future. This study will reevaluate pavement solutions that will consider the stormwater master plan update recommendations of raising of roadways and potential disturbance of muck soils. The study will also revise the stormwater flood analysis model to base it on actual survey and finished floor elevations rather than LIDAR information and assumed finished floor elevations.

Given the breadth of components covered, the need to identify a clear scope of the required improvements and the infrastructure that may have already been upgraded, it is essential to complete the project in the following phases:

- Phase 1- Basis of Design Report or Programming and Implementation Plan
- Phase 2- Design Phase
- Phase 3- Post Design Phase (Construction Phase)

The following project components will be included in Phase 1 of the Project:

- Data Collection

- Topographic survey and R/W determination
- Geotechnical engineering
- Targeted limited Subsurface Utility Exploration (SUE)
- Roadway pavement section concept design
- Development of conceptual roadway profile and evaluation of conceptual grading impacts on driveways
- Existing gravity sanitary sewer replacement limits
- Existing water main replacement/upgrade limits. Upgrade any existing 4" watermains to 6" watermains for fire protection
- Limits of replacement of force main segments along Spanish Tr and Florida Blvd.
- Assume addition of approximately 36 fire hydrants to meet current fire protection standards
- Identification of stormwater flooding targeted level of service
- Identification of Stormwater system piping upgrade limits and outfall locations to be fitted with insertion check valves. It is understood that piping improvements should consider the installation of future pump stations identified in the master plan
- Overhead to Underground Utility Conversion Feasibility
- Identification of potential Landscaping/Irrigation Impacts
- Street Lighting- Identification of areas to be considered for enhanced lighting and initial coordination with FPL
- Public outreach
- Alternatives analysis to include opinions of cost, schedule, and evaluation of impacts
- Development of abbreviated Basis of Design Report (BDR)

This scope of services includes the tasks required to complete Phase 1 (BDR / Programming and Implementation Plan). A main objective of the BDR is to determine, based upon existing condition assessments and community outreach, how to allocate CRA funds to maximize long term infrastructure investment in the Tropic Isle Neighborhood.

II. SCOPE OF SERVICES

Phase 1- BDR / Programming and Implementation Plan

1. Early Coordination and Data Collection: Obtain and review the following information, some of which is provided by the City for use in design:

- Original street evaluation and stormwater master plan update
- Street Improvement As-builts/Record Drawings

- Available utility As-builts/Record Drawings
- Available Water, Sewer, Master Plans and Atlas data
- Force Main Risk Factor report
- Aerial Photography
- Right-of-Way (ROW), Geographical Information System (GIS) and property data
- Topographic survey and available plat information
- Any other available studies or documents relevant to the project area provided by the City.

2. Design Survey Services: Provide Topographic survey. Consultant to coordinate with survey subconsultant regarding CAD files and to set up base map files for the entire project.

- a) Provide a topographic survey for streets (approximate length of 5.7 miles).
- b) Provide cross sections up to 50' intervals, up to 20' past right of way lines
- c) Obtain finished floor elevations
- d) Obtain driveway profiles
- e) Establish right of way from plat information
- f) Obtain drainage structure inverts
- g) Locate water meters
- h) Locate above ground utilities within right of way

If after completion of Phase 1 it is discovered that additional survey is needed, it will be included in Phase 2.

3. Geotechnical Services: Due to the addition of new streets to the scope and to evaluate utility construction in muck soils, additional geotechnical testing is required. Provide the services of a geotechnical engineer to perform subsurface testing and boring within the project area and coordinate those items as shown below:

- a) For the streets that have been added to the original evaluation scope including Florida Blvd, perform up to 7 standard penetration test (SPT) borings to an average depth of 15 feet to determine soil characteristics and ground water depths near Florida Blvd.
- b) Perform up to 6 standard penetration test (SPT) borings to an average depth of 35 feet along the eastern edge of the neighborhood within roadways to consider treatment of disturbed muck areas. Previous borings were not deep enough to consider solutions for construction in muck soils.
- c) Evaluate the data collected and provide the geotechnical engineering evaluation report, which will include the following:
 - Site Location and Exploration Plans
 - Subsurface exploration procedures
 - Thicknesses of pavement sections
 - Boring logs with field and laboratory data
 - Stratification based on visual soil classification and laboratory test results

- Groundwater levels observed during drilling
- Description of subsurface conditions
- Opinions and recommendations related to underground utility installation and new roadway construction considering utility/pavement performance (e.g. settlement) and site access limitations. Ground Modification options (such as soil mixing) and helical piles will be considered for purposes of addressing settlement of the roadways and utility lines.

It is assumed that location of existing underground utilities prior to drilling is limited to contacting Sunshine State One Call of Florida (SSOCOF).

4. Roadway Evaluation:

We will provide the following services to evaluate the roadway design required for the area and contain the results in the BDR.

- a) **Pavement Analysis:** Upon receipt of topographic survey, a visual review of all the roadways in the project area that have not been reviewed previously will be performed and the *Tropic Isle Roadway Evaluation Report dated August 2019* will be reviewed to determine the current pavement condition. The proposed roadway pavement analysis will factor in the existing muck and loose sands, location of utility excavation and recommend a typical pavement section. Develop typical pavement structure design and trench restoration details. Address muck interface standard treatment in excavated areas and the use of geotextile materials. Consider vibration impacts from construction operations. The Consultant will provide standard recommendation for each type of pavement reconstruction.
- b) **Roadway Analysis:** Typical Section and Alignment - Many of the existing streets are not centered about the right of way. Review horizontal alignment and consider offsetting the existing roadway based on location of proposed utilities and impacts to driveways. Evaluate the typical addition of sidewalks and valley gutter to the street typical section to direct stormwater to inlets and better control paving longitudinal slopes. Prepare a typical section for typical street for City review and approval.
- c) **Roadway Profiles:** We will work with our geotechnical engineer sub-consultant to advise on the feasibility of raising roadways, given the numerous lenses of organic material and loosely consolidated sands shown in original geotechnical study of the area. Based on the stormwater results and agreed upon level of service, generally analyze typical impacts of raising roadways on existing properties. It is assumed the analysis will be limited up to two elevation alternatives, one for the ultimate condition and the other for initial road reconstruction. Based upon our field visit, location of proposed utilities, muck disturbance, the pavement analysis and geotechnical evaluations, we will prepare a memorandum with exhibits recommending roadway, sidewalk, and driveway improvements.

5. Stormwater Evaluation:

Meet with City staff to align project resiliency goals with the proposed project approach and identify desired outcomes. Once the topographical survey information (including roadway crown elevations and all Finished Floor Elevations) is obtained, we will use the new information to update the hydrologic model used in the City's Stormwater Master Plan (SWMP) Update, dated February 2019. We will present the results of the updated model runs and how they compare to the SWMP results in the Basis of Design Report. We will meet with City staff to agree on a level of service to be presented to City officials and the public. We will update the Capital Improvement Project Map for Problem Area 10 (Tropic Isle), which details suggested drainage pipe sizing upgrades, roadways to be raised, and conceptual pump station locations.

The recommendations given in the SWMP included: increasing drainage infrastructure pipes within Problem Area 10 to as large as 72" diameter on some streets, raising the residential roadways by 0.25' – 1', and installing 10 pump stations to combat the 30-year sea level rise condition. The Level of Service (LOS) parameter for roadways was to keep 6" or less of inundation for the 5-year 1-day event at the 30-year sea level condition. The LOS assumed for the building structures (homes) was to attempt to keep all finished floor elevations dry during the 100-year, 3-day event at the 30-year sea level condition. Eleven (11) building structures were still predicted to be crested even with the enlarged pipes and ten additional stormwater pump stations. It should be noted that finished floor elevations in the SWMP were assumed 18" above the adjacent crown of roadway and that the best LiDAR data available at the time of analysis was 2007-08 Palm Beach East 5-ft DEM. It is also understood that the stormwater pump stations will not be designed or constructed as part of this project. With the new survey information, we can refine which LOS parameters are feasible for the City, based on constructability and cost efficiency.

The following specific exhibits will be developed to describe the results of the Stormwater/Drainage Evaluation within the Basis of Design Report:

- Updated Capital Improvement Project Problem Area 10 Map
- Updated Model results for 5-year 1-day, and 100-year 3-day storm events,
- Comparison table showing SWMP results vs. updated results with topographical survey
- Updated inundation working maps for Problem Area 10 for each storm event
- Updated Finished Floor Projected Flooding and Exceedance Value working Graphic
- Update Engineer's Opinion of Construction Cost Estimate for Problem Area 10

Assumptions made related to the Stormwater/Drainage Evaluation consist of the following:

- We will not be analyzing locations for proposed stormwater pump stations at this time. We will assume conceptual locations assumed in SWMP are still adequate.
- Private seawalls / containment berms will universally need to be at a minimum elevation of 4.2 ft.-NAVD by Year 2038 to realize the full benefit of the proposed drainage pipe / roadway improvements. It is assumed that these improvements will be made by property owners by Year 2038.
- Sea Level Rise (SLR) projections have increased from the 2015 data used during SWMP Update. We will use the latest Southeast SLR Compact projections, which are 1"-2" higher.

6. Drainage System Evaluation and Coordination:

Based on the stormwater analysis results, we will develop a preliminary concept layout for the drainage system to be constructed under this project, which can be expanded / used in the future. Prior to completing the drainage analysis, we will perform a site visit to “walk the project” to identify features that could impact proposed improvements. The BDR will contain the following information relative to the drainage system:

- Initial outfall detail for insertion check valve installation.
- Preliminary typical drainage pipe/structure location concepts while considering placement of proposed water and sewer and other utilities.
- Consideration of impacts of drainage construction on maintenance of traffic and adjacent properties.
- Discussion of trench excavation and restoration design based on geotechnical engineering results related to poor soil conditions.
- An Engineer’s Opinion of Probable Construction Cost for the proposed drainage improvements.

We will conduct one (1) meeting with City Staff to discuss findings and construction options.

7. Water and Sewer Utilities Evaluation

Upon completion of the topographic survey (roadway elevations, manhole locations with rim and invert elevations, and sewer lateral cleanout locations), we will use this information to develop a replacement concept for the gravity sewer system.

The existing sanitary sewer force mains that run through the project area will be replaced in kind as needed with input from the City.

The existing water distribution system and water mains that run throughout the project area will be replaced. The proposed new mains will consider (coordinated with proposed gravity sewer) associated construction techniques for their replacement. Hydraulic system modeling is not anticipated.

The following will be performed/developed to describe the results of the Water and Sewer Utilities Evaluation within the Basis of Design Report;

- Upon completion of the survey, perform a site visit to “walk the project” to become familiar with the neighborhood.
- Identify constructible options for both water and sewer main replacement.
- .
- Conduct one (1) meeting with City Staff to discuss site visit findings and construction options.
- Prepare an Engineer’s Opinion of Probable Construction Cost for the water and sewer main replacement.

8. Overhead to Underground Utility Conversion Feasibility:

It is understood that the City would like to evaluate the feasibility related to conversion of overhead utilities to an underground location to assist the City in deciding whether or not these improvements should be included in the overall project. The goals of the Feasibility Assessment process are as follows:

- Data collection of existing utility infrastructure.
- Evaluation of the need for easements. It is understood the City prefers to locate the equipment in right of way to the greatest extent practical.
- Development of an order of magnitude opinion of probable cost for proposed undergrounding.

Kimley-Horn will perform a visual review of existing overhead lines within the project limits and document the approximate number of miles of overhead facilities that exist. Kimley-Horn will compile the data collected from survey to create a GIS base map showing the approximate locations of existing overhead infrastructure throughout the project area.

Using survey information collected for the project, we will evaluate existing right of way widths and the need for above and below grade equipment necessary for the conversion and determine if sufficient right of way exists for equipment placement or if easements will be needed to support the conversion.

Kimley-Horn will develop a conceptual 'order of magnitude' opinion of probable construction cost with input from utility owners for the overhead to underground conversion to be included in the Basis of Design Report. Costs will be provided in current dollars and based upon historical information for similar projects available to Kimley-Horn. The conceptual opinion of probable construction cost for the project may most closely resemble an AACE International Class 5 (Screening or feasibility) cost estimate.

Kimley-Horn will prepare a brief summary of the feasibility assessment for inclusion into the Basis of Design Report. We anticipate that the document will contain the GIS base map if developed during the assessment approximating the locations of existing overhead utilities, the opinion of probable costs developed and a brief summary of the next steps, should the City decide to proceed with a conversion project. We will attend one meeting with the City to discuss the findings.

9. Deleted Landscape, Hardscape, and Irrigation:

10. Street Lighting:

We will coordinate with the City on use of decorative LED street lights by FPL to replace existing sporadic street lighting located on FPL power poles. The City will decide to either supplement the existing lighting that is on FPL wood poles or replace it with new FPL lighting if the overhead utilities are converted to underground. The monthly cost of lighting will be included as an amendment to the City's franchise agreement with FPL, however, up front costs to FPL will be required.

11. DELETED Project Phasing Plan:

- 12. DELETED Traffic Management Plan:**
- 13. DELETED Spoil Management Plan:**
- 14. DELETED Permitting Requirements:**

15. Opinion of Probable Construction Cost:

We will prepare a comprehensive conceptual opinion of probable construction cost (OPC) for the draft BDR and update the OPC for the final BDR.

16. Community Outreach:

We will prepare an outreach plan for Phase 1. This plan will be expanded for subsequent phases to provide a uniform process to the public throughout all phases of the project. It is anticipated that the public involvement process will be continuous in subsequent phases due to the anticipated construction impact on access to residents' homes. The outreach plan will initially focus on understanding community needs and issues, developing trust and communication approach. The plan will engage members of the public focusing on civic and homeowner associations (HOA) consisting of:

- Tropic Isle Civic Association
- Tropic Harbor Homeowner Association
- Tropic Bay Condominiums Homeowner Association

We will submit the plan for the City's review. We will consider selection of HOA liaisons for streamlining the coordination process. We will attend one combined meeting with the HOA boards to describe the alternatives for the various aspects of the project. . We anticipate attending some of the HOA's regular meetings during Phase 2 to provide them with project updates without formal presentations. We anticipate regular coordination with public liaisons to keep lines of communication open during Phase 2.

Our public meeting for Phase 1 will focus on the alternatives analysis phase and coordination with City staff. We will collaborate with City staff and officials to determine level of stormwater service and acceptable flooding levels. We will discuss these levels of service with the public to ensure common understanding. We will also discuss project goals, desired outcomes, priorities and a communication plan.

17. Basis of Design Report (BDR)

- a. Draft BDR:** Summarize data, analysis, opinions of cost, concepts and exhibits and recommendations in a BDR. The report will include the following sections:
 - Existing conditions
 - Roadway improvements
 - Stormwater improvements
 - Water, sewer and force main improvements
 - Overhead to Underground conversion feasibility

- Street Lighting improvements
- Conceptual Opinions of Probable Construction Cost
- Typical concept plan exhibits (showing typical street improvements)

Review the report with City staff and discuss both their review comments and community input with them.

- b. Final BDR:** Incorporate appropriate City and community comments and provide the final report.

18. Cleaning and televising sewer and drainage lines: Sewer lines will not be televised since they will be replaced. If during the study the City desires to televise some drainage lines, it will be included as additional services.

19. Subsurface Utility Exploration (SUE): SUE will not be conducted in Phase 1. If during the study the City desires to investigate a few locations of existing utility lines, it will be included as additional services.

ASSUMPTIONS

Work described herein is based upon the assumptions listed below. If conditions differ from those assumed in a manner that will affect schedule of Scope of Work, Consultant shall advise City in writing of the magnitude of the required adjustments. Changes in completion schedule or compensation to Consultant will be negotiated with City.

1. City will provide Consultant record drawings of all available existing facilities and proposed facilities. The information will be provided to Consultant within 5 calendar days of Notice to Proceed (NTP).
2. City to provide access and entry rights to all infrastructure to be surveyed.
3. It is assumed property title search and acquisition of right of way and easements is not required for this phase of the project.
4. The design is to be based on the federal, state and local codes and standards in effect at the beginning of the project. Revisions required for compliance with any subsequent changes to those regulations is considered an Additional Services Item not currently included in this Scope of Work.
5. It is assumed no pump station improvements will be completed in this project.
6. It is assumed no reclaimed main design will be included in this project.
7. It is understood that all water, sewer, and stormwater infrastructure is to be replaced. As such, no condition assessment of existing utilities will be performed.
8. Traffic calming studies are not included. Only replacement of existing traffic calming devices in place is anticipated.

ADDITIONAL SERVICES

The following services are considered additional services:

1. The Consultant shall provide design phase and construction phase services to implement the recommendations of the Final Programming and Implementation Plan / BDR as additional services to be negotiated once Phase 1 is completed.
2. Additional meetings and public outreach effort beyond that specifically identified in the scope of services may be provided as additional services.
3. Project website design.
4. SUE and pipe televising.
5. Identification of required permits
6. Development of a Transportation Management plan
7. Development of recommended project phasing
8. Develop preliminary working roadway profiles
9. Develop preliminary working roadway cross sections
10. Address landscape impacts or improvements
11. Conduct a pre-application meetings with regulatory agencies to discuss permitting requirements.

III. TIME OF PERFORMANCE

Phase 1 anticipated schedule is detailed below Notice-to-Proceed. This schedule assumes a seven-day turnaround for review comments from the City when draft materials are submitted for review.

TASK	Months from NTP
Data Collection	3
Stormwater Analysis	4
Pavement Analysis	4
Roadway Analysis	5
Public Meeting	5
Alternatives Analysis	6
Public Meeting	6
Draft BDR	7
Public Meeting	7
Final BDR	8

IV. COMPENSATION

Refer to staff hour exhibit for a summary of expected staff hours and expenses. Fees will be invoiced monthly based upon the overall percentage of services performed. All permitting, application and similar project fees will be paid directly by the City.

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Figure 1: Location of Project and Analysis

