Craven Thompson
& Associates, Inc.
Project Management
Engineering
Landscape Architecture
Surveying & Planning
53 NW 53rd Street, Fort Lauderdale, FL 33309
Phone: (954) 739-6400

PREPARED FOR

City of HOLLYWOOD FLORIDA

REQUEST FOR QUALIFICATIONS • RFQ NO. 17-1325

PROFESSIONAL SERVICES AGREEMENT FOR ENGINEERING CONSULTING SERVICES

(INFRASTRUCTURE PROJECT: WATER, SEWER, REUSE AND STORMWATER)

JUNE 12TH, 2017

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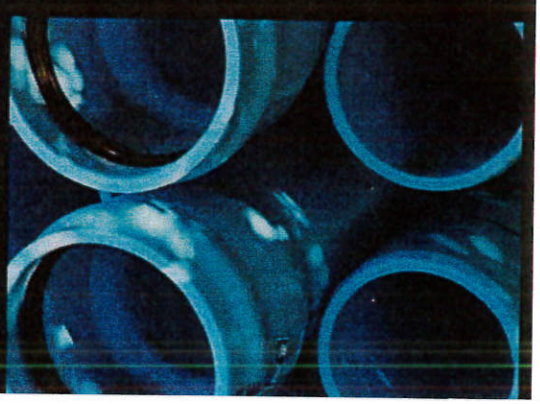

LETTER OF TRANSMITTAL

June 12, 2017

Office of the City Clerk
City of Hollywood
P.O. Box 229045
Hollywood, Florida 33022-9045

RE: PROFESSIONAL SERVICES AGREEMENTS FOR GENERAL ENGINEERING CONSULTING SERVICES, PROJECT NO. 17-1325

Dear Selection Committee Members:

In response to the **City of Hollywood's** request for seeking professional engineering consultants to provide *"Professional Services Agreements for General Engineering Consulting Services"*, **Craven Thompson and Associates, Inc.** (CTA) is pleased to submit this Statement of Qualifications (SOQ). We have provided similar services to past municipal clients. CTA is very familiar with all water, re-use water, sewer, and stormwater/drainage engineering design methods used in the South Florida region, and more particularly Broward County.

Over the years, we have provided civil and environmental engineering, surveying, G.I.S., landscape architecture and construction management services to numerous municipalities and governmental agencies including the City of Hollywood, the City of Dania Beach, the City of Hallandale Beach, the City of Sunrise, the City of Plantation, the City of Weston, the City of Lauderdale Lakes, the City of Fort Lauderdale, the City of Pompano Beach, the City of Oakland Park, the City of Coconut Creek, the City of Coral Springs, the City of Deerfield Beach, the City of Lauderhill, the City of Miramar, the City of Margate, the City of Lake Worth, the City of Palm Beach Gardens, the City of Delray Beach, the City of Greenacres, the City of Miami Gardens, the City of Miami Springs, the City of North Miami, the City of North Miami Beach, the City of Miami Beach, the City of Aventura, the Town of Lauderdale-by-the-Sea, the Town of Davie, the Town of Lake Park, Broward County Highway Construction and Engineering Division, Broward County Water and Wastewater Services, School Board of Broward County, Port Everglades, Central Broward Water Control District, Tindall Hammock Irrigation and Soil Conservation District, and the Tri-County Commuter Rail Authority. We have a successful track record in providing infrastructure design, permitting and construction related services to numerous municipalities and governmental agencies.

We are currently working on two major watermain replacement projects for the City of Hollywood, and have recently completed Lift Station E-2, and the John U. Lloyd Watermain projects.

Authorized Representative of Firm and Project Manager/Client Contact for the Contract

Patrick J. Gibney, P.E., Vice President, Engineering
Craven Thompson & Associates, Inc.
3563 NW 53rd Street
Fort Lauderdale, Florida 33309
Phone: (954) 739-6400
Email: pgibney@craventhompson.com

LETTER OF TRANSMITTAL

CTA is a Fort Lauderdale based eighty-two (82) person corporation that has been in business for fifty-five (55) years. Based on the scope of services set forth in the Request for Qualifications, CTA has assembled a team of experienced engineering professionals well-suited to provide the City with the best possible service. Through that experience, CTA has developed the knowledge and expertise necessary to provide comprehensive and accurate engineering consulting services for the City.

We sincerely appreciate the opportunity of providing this response to the City of Hollywood and hope to continue to build upon the relationship we have with the City and staff.

Sincerely,

CRAVEN THOMPSON & ASSOCIATES, INC.

PATRICK J. GIBNEY, P.E.
Vice President, Engineering

PJG/tg

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ARCHITECTURAL AND ENGINEERING SERVICES
QUALIFICATION STATEMENT
AND SUBMITTAL QUESTIONNAIRE

PROJECT NAME: **GENERAL ENGINEERING CONSULTANT SERVICES - Infrastructure Projects**

PROJECT NO.: **17-1324**

1. FIRM NAME & OFFICE LOCATION (Mailing Address and Street Address)

Name: Craven, Thompson & Associates, Inc.

Mailing Address:
Street/PO Box 3563 NW 53rd Street
City Fort Lauderdale State Florida Zip 33309

Physical Address (if different from above):
Street same as above
City _____ State _____ Zip _____

Phone (954) 739 - 6400 Ext _____ Fax (954) 739 - 6409

Primary E-Mail Address: pgibney@craventhompson.com

Web Site Address: www.craventhompson.com

Contacts:
1. Name: Patrick J. Gibney, P.E. Title: Vice President, Engineering
2. Name: Thomas M. McDonald Title: President

2. TYPE OF ORGANIZATION

A. Check One:

☑ Corporation (complete Section B and G)
☐ Sole Proprietorship (complete Section D)
☐ Other (complete Section F and G
☐ Partnership (complete Section C and G)
☐ Joint Venture (complete Section E and G

B. If a Corporation, State incorporated:

Date of Incorporation: January 1, 1962

State in which Incorporated: Florida

If an out-of-state corporation that is currently authorized to do business in the State of Florida, give the date of such authorization: N/A

Name and Titles of Principal Officers	Date Elected
Thomas M. McDonald, President	January 1, 1986
Patrick J. Gibney, P.E., Vice Pres., Engineering	February 19, 2014
Richard D. Pryce, P.S.M., Vice Pres., Survey & GIS	January 14, 2008
Joseph D. Handley, Vice Pres., Planning & LA	February 22, 1995

C. If a Partnership, State formed:

Date of Partnership: N/A

Type of Partnership (General or Limited):

Names and Addresses of Partners:

D. If Joint Venture, State formed:

Date of Joint Ventureship: N/A

Names and Addresses of Joint Venturers:

E. If a Sole Proprietorship, State created:

Name and Address of Sole Proprietor:

N/A

F. **If other than above, please describe:**

N/A

G. **Related Parent Company, Divisions, and Subsidiaries:**
(Attach additional information on other office locations, if appropriate)

Branch Office (Office will open beginning of July 2017)

4723 W. Atlantic Avenue

Delray Beach, Florida 33445

Phone: (561) 688-5010

Please attach the following:

a. Corporate Organization Chart
b. Resumes of Principal Staff
c. Corporate Family Tree
d. Company Brochure/Annual Report

The above items are provided in this submittal.

3. EMPLOYEES AND PERSONNEL Provide a separate listing for personnel at the corporate (national) level, with the state (Florida) level and for the local office.

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Administrative	2			2
Project Management				
Engineers	29	17	4	8
Design/Drafting	2			2
Landscape Architects / Planning	6	2	2	2

Permanent Office Staff	Number	Avg. Years With Firm		
		1-5	5-10	10+
Clerical /Technicians	8	1	1	6
Procurement				
Project Control and Estimating				
Construction Management / Inspection	6	2	2	2
Surveyors	29	18	1	10

Local Office Location:
3563 NW 53rd Street, Fort Lauderdale, Florida

Personnel in Organization by Discipline.

Discipline	Engineers		Designers
	Reg	Total	Total
Civil	19	29	1
Sanitary	10	29	1
Structural	0	0	0
Mechanical	0	0	0
HVAC	0	0	0
Process	0	0	0
Electrical	0	0	0
Instrumentation	0	0	0
Industrial	0	0	0

Discipline (*Procurement*)	**Personnel**
Capital Equipment Buyers	0
Subcontract Administrators	0
Bulk Material Buyers	0
Inspection/Expediting	0
Clerical/Technical Support	2

Discipline (*Construction Management*)	**Personnel**
Field Superintendents	0
Home Office Management	0
Planners (Site, City, Community)	1
Architects	0
Other	6

Maximum Man-Hours Available Per Year: 37,440 Hrs.

Current Estimated Man-Hours Per Year: 16,848 Hrs.

4. FINANCIAL INFORMATION

See Appendix 3 - Financial Report

A. Attach a copy of current audited income statement and balance sheet.

5. WORK EXPERIENCE:

A. Types of Services Provided (Check Yes or No)

	Yes	No		Yes	No
Feasibility Studies	☑	☐	Stress Analysis*	☐	☑
Drawings Preparation of	☑	☐	Pipeline	☑	☐
Specifications Construction Mgmt.	☑	☐	Surveying	☑	☐
Services Process Problem	☐	☑	Direct Hire Field Construction	☐	☑
Analysis Energy Conservation	☐	☑	Detailed Instrumentation &	☐	☑
Studies Soil and Foundation	☐	☑	Control Process Design	☐	☑
Studies Foundation Design	☐	☑	Equipment Design	☐	☑
Structural Design	☐	☑	Detailed Electrical	☐	☑
Testing Capability	☐	☑	Detailed Piping Design	☑	☐
Detailed Mechanical	☐	☑	Construction Management	☑	☐

Procurement ☐ ☑ Inspection/Expediting ☑ ☐

B. Drafting Method Utilized:

*Manual ☐ Computer ☑ If Computer, What Program: **A list of computer programs are included in this Section.**

C. Please attach summaries for projects, related to the type of work to be awarded as a result of this submittal, completed by your firms including:

1) Location of project and client
2) Description of project
3) Your scope of involvement in project
4) Contract type (e.g. reimbursable/fixed fee/fixed price)
5) Approximate value of contract
6) Duration of work
7) Project Manager Utilized

Please note: Summaries of Projects are included in Section 4 - Summary of Experience

6. EXPERIENCE WITH THE CITY OF HOLLYWOOD

A. Most Recent City of Hollywood Work Experience: (Date/Location/Description)

Most Recent City of Hollywood Work Experience is included in this Section.

B. Current City of Hollywood Engineering services agreement, if any: (Agreement Number/Expiration Date/Location/Description)

Professional Services Agreement for General Engineering

Consultant Services, Water and Sewer Infrastructure Projects

City Project No. 08-1214A, Expiration date - September 9, 2017.

7. SUBCONTRACTED SERVICES:

List Subcontractor/ Sub-consultant firms expected to be utilized, and their portion of the work below:

Name of Firm	Area of work to be Performed under this agreement
Aerial Cartographics of America, Inc.	Aerial LiDAR
Tierra South Florida, Inc.	Geotechnical Engineering

Also, provide resumes of individuals from these firms whom the Subcontractors shall utilize for completion of the construction.

Identify those subcontractors that are Minority/Women's Business Enterprises and repeat required information in "Minority/Woman Business Participation", below for said Subcontractors. (THIS REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

8. BUSINESS SIZE AND CLASSIFICATION

A. Size (check one)

☑ Small
A domestic concern that normally employs less than 500 persons, or as defined by section 3 of the Small Business Act.

☐ Large
A domestic concern which, including domestic and foreign divisions and affiliates, normally employs 500 or more persons, is independently or publicly owned or controlled and operated and

which may be a division of another domestic or foreign concern.

B. Classification (check where applicable; may be more than one)

☐ Foreign:
A concern which is not incorporated in the United States or an unincorporated concern having its principal place of business outside the United States.

☐ Minority:
A business, at least 50% of which is owned by minority group members, or, in case of publicly owned businesses, at least 51% of the stock of which is owned by minority group members. For the purpose of this definition, minority group members are Black-Americans, Hispanic-Americans, American-Orientals, American-Indians, American-Eskimos, and American-Aleuts.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Women:
A business that is at least 51% owned and controlled by a woman or women.
(THE REQUIREMENT FOR M/WBE INFORMATION IS VOLUNTARY)

☐ Nonprofit:
A business or organization that has received nonprofit status under IRS Regulation 501C3.

☐ Sheltered:
A sheltered workshop or other equivalent business basically employing the handicapped.

Please indicate in the space below how your firm complies with the definitions selected above.
The firm of Craven, Thompson & Associates, Inc. does not comply with any of the definitions above.

9. PROFESSIONAL ENGINEER'S LICENSE:

Respondent must hold a valid State of Florida Professional Engineer's License to be considered a qualified bidder.

State of Florida Professional Engineer's License No.: 271

Date: Expires February 28, 2019

Primary Classification: Engineering

10. QUALIFICATION FORM PREPARED BY:

Name (print or type): Patrick J. Gibney, P.E.

Title: Vice President, Engineering

Signature:

Address: 3563 NW 53rd Street, Fort Lauderdale, Florida 33309

Telephone Number: (954) 739-6400

EQUIPMENT / COMPUTERS

SOFTWARE:

Craven Thompson & Associates, Inc. (CTA) continues to update all of needed software as the new versions are available. These programs include but are not limited:

- Autodesk Civil 3D 2014 – 2017
- Autodesk Raster Design 2014 - 2017
- Autodesk 3D Max 2014 - 2017
- Autodesk Navisworks 2014-2017
- ESRI Arc GIS 10.4 & 5
- Micro Station V9 including Hydroflow,
- Hastaed Methods WaterCad / Hydroflo
- Hastaed Methods SewerCad / Hydroflo
- EPA PCSWMM Hydro
- Streamline Technologies ICPR
- Digital Systems Plotworks
- Custom designed Engineering Calculation Software
- Leica Cyclone 9.1 3D Laser Scan Software
- Leica Cloudworx 6.0/AutoCAD Scan Software
- Leica JetStream
- Global Mapper 18
- QT Modeler 8

Servers:

Our server infrastructure is running two DELL Host Servers running ESX Virtual Software. These 2 servers run 6 virtual servers running Windows 2008 R2 and Windows Server 2012 R2 server software and connect to a 112 Terabyte SAN (Storage Attached Network) device configured with RAID 6 redundancy which provides us with a high availability of file access and fault tolerance. All data is backed up Buffalo Network Attached storage device and then a Quantum Ultrium 4 SCSI tape drive with the capacity to backup up to 6.25 TB uncompressed data for monthly backup offsite storage.

Network:

Our network infrastructure consists of the latest Cisco Catalyst switches and CAT 6 network cabling with speeds up to 1 GBS.

Workstations:

Our workstations are Dell Precision line workstations all running Windows 7 Professional with either Xeon or i7 Dual and Quad Core processors with solid state hard drives and a minimum 16 Gigabytes of RAM. Production workstation utilizes a minimum 1 GB video cards with dual 24" high resolution monitors.

Plotting:

We have an in-house Ricoh MP 8140 SP high capacity wide format plotter with color scanning capability and two Hewlett Packard High Resolution 1050 Design Jet plotters.

SURVEYING DEPARTMENT RESOURCES AND EQUIPMENT:

- **CTA Vehicles**

  Eight (8) Ford F-150 Pick-ups fully equipped for Surveying Crews

  Two (2) 16-foot John Boat w/motor

- **CTA Field Data Collection GPS**

  Two (2) HydroLite-TM Hydrographic Survey System with Ohmex SonarMite echo sounder

  Six (6) Trimble R2-R8-R10 GNSS GPS Systems with Verizon CDMA MiFI Hotspots

  Trimble R9 GNSS GPS Base Station with Trimble VRS Network

  Two (2) Trimble DiNi Digital Level

  Six (6) Trimble TSC3 data collectors

- **Field Data Collection**

  Seven (7) Radios

  Five (5) Spectra Precision collectors with TDS Software

  Seven (7) Leica Total Stations

  Two (2) Trimble Robotic Instruments

  Seven (7) Leica Levels

- **3D Laser Scanning**

  Leica C10 Laser Scanner - 3D Laser High Definition Survey System

  Leica Cyclone 9.1 Scanning software

  Leica Cloudworx Pro for AutoCAD

  Leica JetStream

  Quick Terrain Modeler

  Global Mapper 18

- **Software Support**

  Autodesk: Civil 3D 2014-2017,

  Leica: Cyclone 3D Scan & Modeling, Cloudworx Pro Version for AutoCAD

  ESRI GIS: ArcGIS 10.4 & 10.5 Standard & Advanced, and Spatial & 3D Analyst extensions

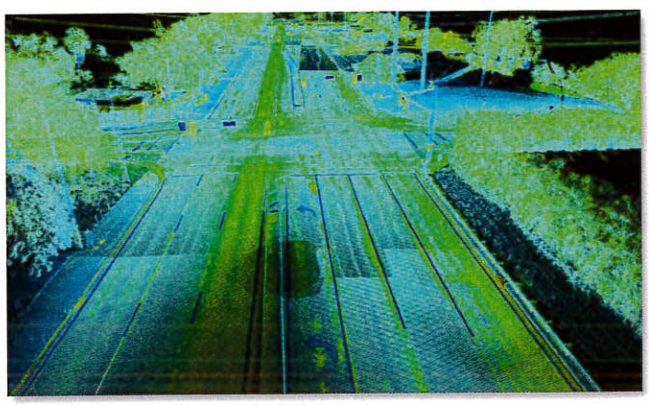
SECTION 1 – SUBMITTAL QUESTIONNAIRE

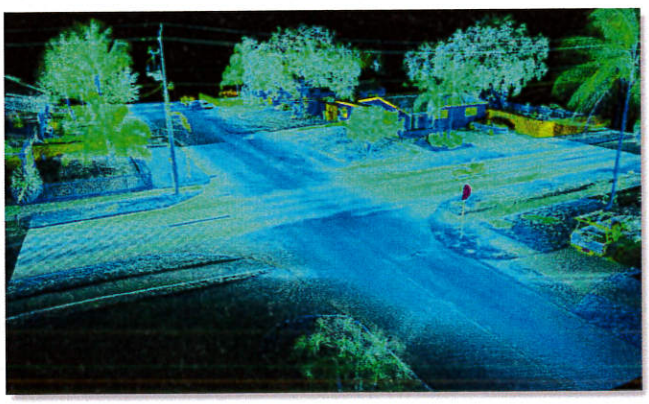
PROJECT NAME	**Watermain Replacement Program - Survey (from Davie Road Ext to Sheridan St & University Drive to North 72nd Avenue, Hollywood, Florida – City of Hollywood Project No. 5129**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, Florida 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
SURVEYING SERVICES	2016
SERVICES PROVIDED	Engineering, Surveying & Mapping
PROJECT SUMMARY	Replacement of nearly 17 miles of Existing Water Main

The project consists of approximately 500 acres of existing developed area in western Hollywood, where Craven Thompson & Associates is performing mobile Lidar surveying, engineering design, permitting, bidding and limited construction engineering and inspection to construct approximately 88,664 linear feet of water main replacement. The replacement consists of new 4", 6", 8" and 12" diameter water mains throughout the neighborhood including replacement of existing rear yard water services to the front yards and reconnection to the building. CTA will coordinate with the lot owners where the services are located and the best location to install the services at the front. This Project was also phased and coordinated with Broward County in order to install approximately 7,000 linear feet of water main in Dave Road Extension before Broward County proposed improvements to the Roadway were constructed. This project also includes the installation of new fire hydrants, relocated services, right-of-way restoration, and the restoration of affected areas on private property.

PROJECT NAME	**Watermain Replacement Program (from Taft Street to Charleston & N. 66th Avenue to North 72nd Avenue, Hollywood, Florida, City of Hollywood Project No. 5117**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
DESIGN SERVICES	2014 - 2015
ESTIMATED CONSTRUCTION COMPLETION	2017
CTA CONTRACT AMOUNT	$988,724.00
CONSTRUCTION COST	$11,500,000.00
PROJECT SUMMARY	

The project consists of approximately 750 acres of existing developed area, where CTA is performing mobile Lidar surveying, design, permitting, bidding and limited construction engineering and inspection to construct approximately 7,080 linear feet of new 4" diameter water main, 34,015 linear feet of new 8" diameter water main, 15,655 linear feet of new 12" diameter water main, 5,200 linear feet of new 16" diameter water main, and the relocation to the front of the lots of services located in the rear yards. CTA is coordinating with the lot owners. This project also includes the installation of new fire hydrants, relocated services, right-of-way restoration, and the restoration of affected areas on private property



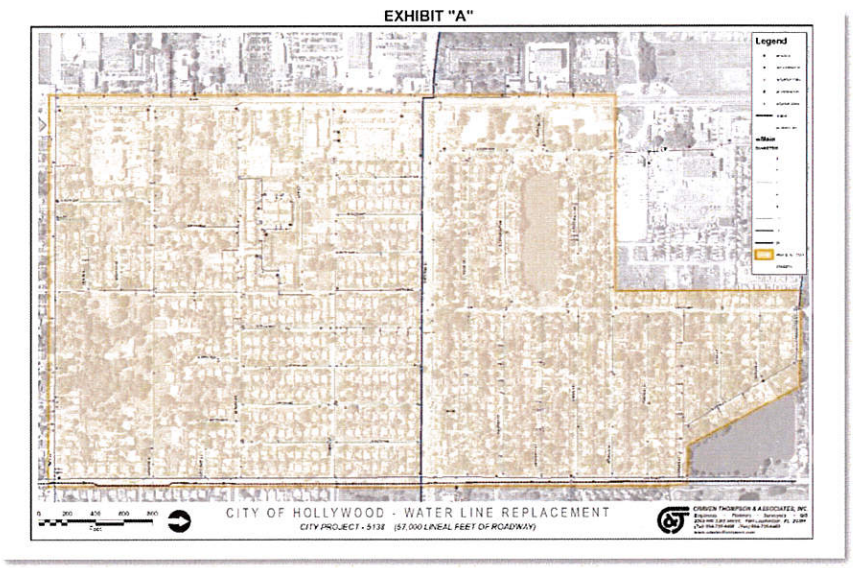


PROJECT NAME	**John U. Lloyd Water Main Replacement Project** **Hollywood, Florida, City of Hollywood Project No. 13-5118**
PROJECT ROLE	Prime Consultant
OWNER / CLIENT	Mr. Clece Aurelus, P.E. Senior Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, Florida 33020 Phone: (954) 805-3681 Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
PROJECT START DATE	Design: May 2013 Construction: November 2014
COMPLETION DATE	Design: August 2014 Construction: 2016
CONSTRUCTION COST	$149,700.00 (no additional services)
ENGINEER'S COST ESTIMATE	$2,352,035.00
CONSTRUCTION COST	$1,799,195.00
PROJECT SUMMARY	The City of Hollywood required replacement of an existing 12" diameter water main along S.R. A1A from Dania Beach Boulevard to the northern limits of John U. Lloyd State Park. The replacement consists of 8,800 linear feet of 12" diameter PVC water main, 880 linear feet of 8" water main, 3,000 linear feet of 12" diameter directional drill water main, consisting of two 12" diameter HDPE directional drills that cross beneath two canals directly connected to the Intracoastal Waterway. The pipe is located 15' – 20' below the bottom of the canals. Craven Thompson & Associates, Inc. provided the civil engineering design, permitting and construction engineering and inspection services for the project.

PROJECT NAME	**Watermain Replacement Program (between Taft Street, Charleston Street, N. 56th Avenue and State Road 7) Hollywood, Florida – City of Hollywood Project No. 16-5138**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	May 2017 - Present
CTA CONTRACT AMOUNT	$640,978.68
PROJECT SUMMARY	Water Main Replacement

Craven Thompson & Associates, Inc. (CTA) provided Consulting Services per our Professional Services Agreement for General Engineering Consulting Services in connection with the Water Main Replacement within the Project Limits defined between Taft Street, Charleston Street, N 56th Avenue and SR 7.

CTA provided survey, design, permitting, bidding and limited construction observation to replace approximately 57,000 linear feet of existing water main distribution pipe and relocate the services in the rear yards to the front yards. The replacement of services also included work on private property to reconnect the existing buildings. It is anticipated that the surveying and engineering design and permitting only will be completed within twelve (12) months from NTP. The bidding and construction will follow according to the City of Hollywood's schedule.



PROJECT NAME	**Lift Station W-14 Rehabilitation, Hollywood, Florida** **City of Hollywood Project No. 16-8063**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	June 2017 - Present
CTA CONTRACT AMOUNT	$162,785.00
CONSTRUCTION COST	$1,500,000
PROJECT SUMMARY	

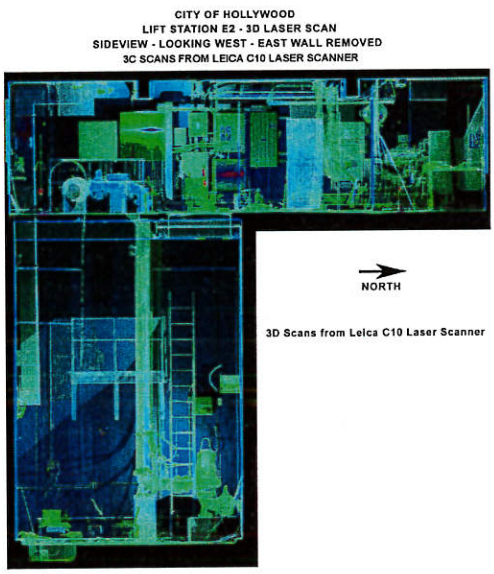
The proposed rehabilitation for sanitary sewer Lift Station W14 includes modifying the existing stations by replacing the existing pumps based on a wastewater system analysis, replacing internal piping to the Station wall including valves and fittings, rehabilitating the existing concrete floor, walls, ceiling, vaults, wet well, dry well, exterior vault, access hatch and concrete pillars, replace electrical meter and main, replace motor control panels and rewire new pumps, new RTU, new SCADA, rewire and replace branch wiring outlets and fixtures, generator with double wall tank with leak detection, etc. The W14 station is a regional station that conveys a significant portion of the sanitary flows from the western portions of Hollywood.

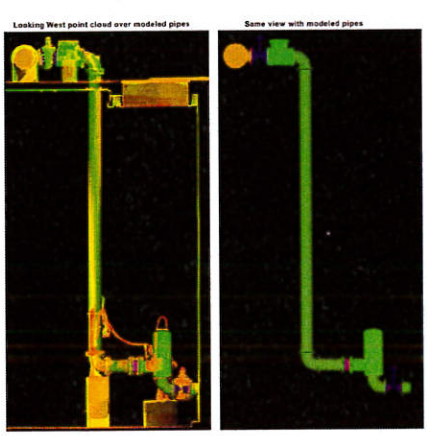
Craven Thompson & Associates provided surveying, engineering design, permitting, bidding and construction observation services for the Project.

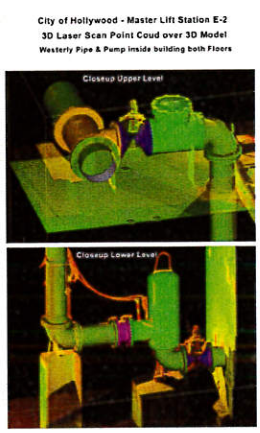
PROJECT NAME	**Lift Station A-6 Upgrade, Hollywood, Florida** **City of Hollywood Project No. 15-8061**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	December 2015 – June 2017
CTA CONTRACT AMOUNT	$60,929.14
CONSTRUCTION COST	$677,000.00
PROJECT SUMMARY	

This project involved the reconstruction of sanitary sewer Lift Station A6 which included the replacement of the existing suction lift pump station with a new wet well, submersible pumps, converting the existing wet well into a manhole, valve vault, panels, SCADA system as well as hardscape and landscaping. The new lift station will also be designed to accept City standard transfer switch for a generator. The work included coordination with the contractor and developer for the residential development to west. The coordination included accounting for the additional flows and allowing for a temporary connection to the existing wet well. The pumps were designed as variable frequency drives in order to meet the flow-pressure requirements provided by the City.

PROJECT NAME	**Lift Station E-2 Rehabilitation, Hollywood, Florida** **City of Hollywood Project No. 13-8052**
PROJECT ROLE	Prime Consultant
CLIENT / OWNER	Mr. Jeff Jiang, P.E. City of Hollywood Department of Public Utilities Engineering Support Services Division Hollywood, FL 33022 Phone: (954) 921-3930 Email: fjiang@hollywoodfl.org
PROJECT START / COMPLETION DATE	Survey Date: August 2013 / Design Start Date: November 2013 Construction Start Date: August 2014
ENGINEER'S ESTIMATED CONSTRUCTION COST	$765,135.00
ACTUAL CONSTRUCTION COST	$966,000.00
SERVICES PROVIDED	CTA provided surveying, civil engineering, and permitting services for the project.
PROJECT SUMMARY	The existing lift station is equipped with three 22 horsepower pumps which were upgraded to 46.94 horsepower pumps. The final design upgraded the pumps to three 45 horsepower pumps to meet the build out increased sanitary flow and the current DEP standards. All the 8-inch piping and valves in the lift station are being upgraded to 12-inch size. These upgrades increased the lift station capacity from approximately 1,700 gallons per minute to 3,500 gallons per minute. The additional upgrades provided odor control through additional high stack vent and new wet well hatch with odor reduction gaskets. The surveying of the existing above and below ground elements of the station was performed using a Leica C-10 Laser Scanner.







SECTION 2 - SUMMARY OF PROPOSED MANAGEMENT

SUMMARY OF PROPOSED MANAGEMENT

Narrative of Plan and Schedule for Performing Work Tasks

Project Management of Civil Engineering Projects

It is critical to establish the qualities of the project that are necessary to make the construction project sustainable. A well-programmed project will continue to provide value and meet user needs throughout its lifetime and will contribute positively to the environment in which it is located with a wide range of social and economic benefits. **Early management in planning, programming, and design can help deliver these benefits by reducing the cost, and keeping the project on schedule.** Successful project delivery requires the implementation of an innovative and developed management system focusing on project cost and schedule:

- **Reducing the project cost and schedule** in order to assemble and effectively manage the project in order to reduce costs and deliver on time.

Innovation in the Management of Civil Engineering Projects

First costs, cost-benefit ratios, and life-cycle costing are a few examples of how a project's cost-effectiveness can be evaluated. The control of costs requires:

- **Continual and systematic cost management** and monitoring to compare actual costs incurred against targeted budget numbers.
- **Cost management processes start with the establishment of budgets based on actual estimates for related work.** They need to align with scope and quality requirements and be based on realistic, current market conditions.
- **Comparing budgets to actual costs throughout the construction process is critical.** The process continues with milestone estimates, value engineering, procurement strategies, and change order management to ensure the project is timely and cost-effective.
- **Schedule management** defines the processes and establishes a timeline for delivering the project. Avoiding missing deadlines for delivery of project components is a key objective of schedule management. Schedule management interfaces directly with scope, cost, and quality optimization where team member roles and activities must be defined, coordinated, and continually monitored.
- **Project Management Plans (PMP) in order to provide documents and oversight tasks that are updated throughout the project as changes occur.** The plan includes definition of the City's program goals, technical requirements, schedules, resources, budgets, and management programs.

- **Project management software**; there are many software options available to assist in the management of the work. The Civil Engineering projects tend to Microsoft Projects for scheduling purposes.

- **Using Civil Information Modeling (CIM)** is the process of generating and managing civil engineering data during its life cycle. Typically, it uses three-dimensional modeling software to increase productivity in infrastructure design and construction. The process produces the Civil Information Model (CIM), which encompasses infrastructure geometry, spatial relationships, geographic information, and the quantities and properties of infrastructure components. Utilizing CIM has the potential to save project time and cost and increase overall productivity of construction and delivery of civil engineering projects with less rework, design, and construction errors.

General Management Plan and Approach for Water, Sanitary Re-use, and Stormwater Projects

Craven Thompson & Associates' (CTA) Approach to completing an infrastructure project which may include: potable water; sanitary sewer; re-use water; and/or stormwater.

We have developed a consistent and proven approach to undertaking the design, permitting, and construction of civil engineering capital improvement projects. Our approach helps to keep our client informed, maintain schedule, and to keep the project within budget. The following is a step-by-step approach to a general project for the City of Hollywood.

Preliminary Phase/Due Diligence

- *Initial Stages*

Upon being awarded the project by the City of Hollywood, the CTA primary Client Contact and Project Manager, Patrick Gibney, P.E., along with the assigned CTA Team Assistant Project Manager, Gary Tenn, P.E., will meet with City staff to determine specific requirements of the project, define the project budget, and will then prepare an understanding of project scope, and a preliminary project timeline. The understanding of project scope and preliminary project timeline will be provided to the City for review and approval prior to the CTA internal project "Kick-off Meeting". This "Kick-off Meeting" will occur after the initial project award meeting between Hollywood Staff and CTA Project Manager.

At the CTA internal "Kick-off Meeting", the team will be introduced to the scope, the budget and the timeline. The CTA Project Manager will define the various elements of the projects and describe the quality control/quality assurance requirements at this meeting. The CTA Project Manager and Assistant Project Manager will periodically review the progress of the project to assure meeting the project timeline and budget as initially approved by the City. The CTA Project Manager and Assistant Project Manager will then update Hollywood City Staff of the project progress.

- *Information Gathering and Review/Due Diligence*

CTA will gather as much available information that can be obtained through due diligence. This will include as-builts, atlases, GIS, studies, and past survey information. We will search for existing studies, reports, technical information, and design documents for the existing water mains, sanitary sewers, lift stations, drainage, gas, telephone and electric. Also, we will seek public and private utility atlases and as-builts for infrastructure within the specific project limits.

CTA will review existing topographic survey (LiDAR) from the Florida Department of Emergency Management (FDEM) website, and plat, Right-of-Way, and property information from the County Appraiser's website.

We will review the City of Hollywood minimum specifications, standard details, and project management procedures; agency permitting requirements, determine regulatory agencies having jurisdiction, and their submittal requirements. We will also gather any other available geotechnical and environmental data within the project limits.

During this phase, CTA will perform a preliminary site walkthrough of the project area.

- *Surveying*

CTA will prepare a topographic design survey of the designated project area. We will perform the survey using either low level or mobile LiDAR, or laser scanner and traditional surveying methods. The scanner collects millions of data points and allows us to more accurately define the existing aboveground improvements in and adjacent to the Rights-of-Way. Using conventional means, we can set horizontal and vertical control, as well as collect invert information for sanitary and storm structures. Integrating this information with collected as-built information, a base map will be produced depicting all available aboveground and below ground information. This base map's accuracy is vital in assuring the proposed design has accounted for existing conditions.

This survey will consist of a base map of the Rights-of-Way, a survey control baseline and survey control points, with both horizontal and vertical coordinate information, in the form of x-y-z coordinates, in State Plane, Florida East Zone, NAD83(90), US Survey Feet format. CTA will then use the survey control to create a topographic design survey of the full project areas, extending ten (10) feet beyond the existing rights-of-way where accessible. Locations will include all aboveground and visible improvements, including pavement, swales, signs, street lights, sidewalks, driveways, utility features and trees, three (3) inches in diameter and above, measured at four (4) feet aboveground level. All sanitary and storm sewer structures will include rims, inverts and pipe sizes and directions.

Minimum Technical Requirements for the surveying will be per the Florida Board of Professional Surveyors and Mappers in Chapter 61G17-6 of the Florida Administrative Code, pursuant to Section 472.027 Florida Statutes. This data will also serve as an electronic base map of the Rights-of-Way and adjacent lots within the project areas.

- *Conceptual Documents (30% Complete Documents)*

During the conceptual phase, we will begin to develop design alternatives. Based on meetings and discussions with City of Hollywood staff, we will choose the best design alternative. Using the collected information, survey and the research, we will develop base maps and then create a schematic plan for the improvements. At this stage, we will update the schedule and also provide a 30% design complete cost estimate for the projects. CTA will utilize **Tierra South Florida, Inc. (TSF)** to test the soils for permeability and provide soil borings for the Project.

Subsequently, CTA will meet with Hollywood staff to discuss and refine the design concept. The schematic plan will then be further developed into a 30% complete conceptual engineering document.

Schedules, cost estimates, permit requirements and schematic plans will be included in the 30% Conceptual Document Phase of the project. This phase is important to assure that the final design has proper direction as agreed upon in meetings with the City of Hollywood and permitting agencies. By having a clear and concise vision of the final construction documents, the design can be expedited to completion.

- *Meetings*

Regular project meetings will be held with Hollywood staff for all phases of the project. CTA will facilitate these projects and attendees present at the meetings will be dependent on the phase of the project and the issues to be addressed. These meetings will be focused on adherence to the project timeline, quality control, budget and also on the resolution of any outstanding issues.

Final Design Services

- *60% Complete, 90% Complete, and 100% Complete Documents*

The final design phase of the project consists of 60%, 90%, & 100% complete final design plans, specifications, computer and cost estimate. With all comments from the City incorporated into the plans for the 30% design, CTA will further develop the project to the 60% complete design document stage. CTA will process the plans, model, cost estimate and calculations through an internal review process as well as through Hollywood review. The typical internal reviews take place at 60%, 90%, and 100% complete documents.

As with the conceptual plan stage, the 60% complete design development documents will be provided to Hollywood staff for review and comment. These documents consist of plans, specifications, utility model, calculations and a 60% complete cost estimate. We will perform multiple project walkthroughs with staff for the project areas during this phase to ensure that all concerns are addressed.

During this phase sub-surface utility locates will be performed at key locations identified as the design progresses. This may be in areas of potential utility conflicts, and/or areas were critical sub-surface information is unavailable.

Subsequent to meeting with Hollywood and obtaining their comments and recommendations on the 60% complete final documents, CTA will update the plans and specifications to prepare for permit submittal.

CTA will hold a community workshop (if necessary) once we have submitted permit applications, and reviewed and modified the construction documents. Since these are major capital improvements, residents will be closely monitoring the cost and progress of the implementation. Therefore, we must deliver a straight forward and factual representation that can be appreciated by a non-technical audience.

Upon receiving Hollywood's and community stakeholder's comments, we will integrate the changes into the 90% complete documents. An identical process to the one described for 60% complete documents will be implemented for the 90% complete phase.

Permitting Phase

- *Permitting and Bidding Services*

CTA will prepare the design permit applications and supporting documentation at the 90% construction document stage to obtain the construction permits for the projects. During this period, CTA will prepare and submit responses to "Requests for Additional Information" (RAI) relative to the permitting packages submitted. Any comments or additional requirements will be discussed with the City and if deemed acceptable incorporated into the design prior to preparing the 100% design documents.

CTA will expedite the permits through the various agencies in order to remain on schedule and will review the comments from the agencies to determine the implications on the budget and timing of the project. Should there be negative impacts, we will aggressively pursue the mitigation of these impacts.

In addition, CTA will review the project from a "constructability" of design perspective to meet the City of Hollywood's goals and objectives and to maintain a firm grasp on the costs associated with the project. The "constructability" of a design is an important facet to consider during each phase of a design's development. However, when a preliminary design is nearing substantial completion (90% plans), it undergoes an in-house constructability review by our construction services personnel. This review specifically targets construction related issues, and is intended to minimize potential problems in the field during construction. Important issues such as conflicts with existing utilities often occur on projects involving infrastructure improvements in older existing neighborhoods.

During our various internal review processes, we will also value engineer the project. Value engineering is not simply cutting the cost or scope of a project to reduce budget, it is a creative, organized effort, which analyses the requirements of a project for the purpose of achieving the essential functions at the lowest total costs (capital, staffing, energy, maintenance) over the life of the project.

Our staff of experts has extensive experience providing constructability, bid-ability, and value engineering services to our current and past public clients. By providing these services, we have saved cities and counties many thousands of dollars and months of schedule time. Our experts are as experienced in the design, permitting and construction as they are at the management.

With the results of the constructability review, value engineering, the permits obtained and all comments addressed, we will then proceed to complete preparation of the 100% contract documents, technical specifications, quantities and bidding documents for the solicitation of competitive bids for the construction of the project.

- *Bidding*

CTA will pull all necessary bid documents together, in conjunction with the Procurement Services Division, to provide to the City of Hollywood for bidding purposes. CTA and our sub-consultants will assist by attending the pre-bid meeting and responding to questions and requests from the prospective bidders during the bidding phase. Once bids have been received, the CTA Project Manager, and Assistant Project Manager will tabulate the bids and review for completeness and responsiveness. CTA has an extensive library of recent pricing on similar type projects within South Florida to use for comparison in the evaluation process. In addition, we are very familiar with the contractors that bid on projects of this nature and their capabilities and past performance. On behalf of the City of Hollywood, we will perform extensive background checks into each bidder to determine their responsiveness. In addition, we will check contractor references and prepare a recommendation letter to the City of Hollywood of the lowest responsive qualified bidder.

Construction Management and Related Services Phase

Many of the CTA's staff that will be handling the construction related services have been providing these services worry-free for the past twenty-four years on redevelopment projects. Our Construction Manager, Don Shaver, has been providing construction services for over thirty years. CTA provides a long and tested resume of implementing these projects from planning to final certification.

- *Construction Administration/Management*

Once the City of Hollywood has issued a Notice-to-Proceed to the contractor, the CTA Construction Manager will facilitate a preconstruction meeting, which will include the City, agencies, contractors, and all utilities to identify responsibilities, procedures and processes to be used during construction. The construction schedule will be addressed at this meeting.

During the construction process, CTA will work with the City of Hollywood and the contractor with the goal to complete the project on time and under budget.

During the first week of construction, the Project Manager and Construction Manager will be on-site interacting monitoring the construction. The CTA Project Manager, Assistant Project

Manager, and Construction Manager will keep in close contact with the City staff and provide regular updates on the progress and issues related to the project.

In order to keep the City of Hollywood fully informed, CTA will generate weekly or bi-weekly project status reports. We will communicate directives and clarifications on the project, as necessary. The Construction Manager will play a critical role during the construction process by reviewing the contractor's work and identifying issues when they are discovered. Bi-weekly site meetings will be scheduled and facilitated by the Construction Manager in order to review the project schedule and to maintain organization and communication.

In addition, we will review payment requests and quantities for payment; prepare an itemized unit quantities and unit cost spreadsheet to verify conformance with the contract; review and approve shop drawings; prepare certified recommendations for payment, resolve field issues, review contractor requests for additional information (RAIs); setup and attend construction progress meetings; review Maintenance of Traffic (MOT) plans; review and monitor Storm Water Pollution Prevention Plans (SWPPP), coordinate field and office as-built data; monitor testing; act as Hollywood's agent during the construction process; attend pre-final inspection and prepare a punch-list. During construction, the Construction Manager will meet with the City of Hollywood staff to monitor schedules and budget and assist in the administration of the contract. The Construction Manager will maintain copies of the daily reports, the contractor's progress reports, change order requests, and updated construction schedules. We will maintain a project file throughout the duration of the project, which will be provided to the City staff upon completion of the project.

- *Construction Inspection*

CTA will perform the following services for the City of Hollywood during the inspection phase of the contract: provide periodic field inspections for the construction of improvements; witness and schedule construction testing; prepare inspection and testing reports; prepare daily inspection reports; coordinate as-built data collection with the contractor; and coordinate weekly as-built plan updates.

- *Final Certification*

CTA will perform the following services for the City of Hollywood during the final certification phase of the contract:

- Attend final inspection of the project with applicable governmental agency representatives, the contractor, and the City of Hollywood;
- Prepare engineering certification letters, as required;
- Prepare project completion certification forms, and submit all other necessary documents to the governmental authorities to accept the project.

Anticipation of Major Problems in a Project and Solutions

- hen considering replacement of an existing gravity sewer system potential issues that may arise can be as simple as property access during construction (residential and commercial) to emergency vehicles unable to pass construction zones at certain points in time, to roadways impassable during major rainfall events. The costs of roadway reconstruction and inconvenience to property owners are potential issues that may hinder a project from moving forward. An option for sanitary gravity improvements in lieu of replacement is to consider lining the existing main and sanitary sewer laterals with a cured-in-place pipe (CIPP). This option would cause the least amount of disruption to the roadway traffic because all the work is performed in-situ. There is no excavation involved in this installation method and CIPP does provide for a very durable and potentially long effective life. Although, a new plastic pipe would provide for a virtual maintenance free system and a longer design life, a CIPP system provides an excellent alternative to replacing the pipe in situations such as this. Due to the limited Rights-of-Way, inconvenience to the residents and general public at large and length of the construction period, this option should be investigated and thoroughly discussed with the City prior to design. A CIPP system would provide a thirty (30) year design life versus a new system with a fifty (50) year design life. The cost savings could potentially reduce costs by twenty five (25%) to thirty (30%) percent over conventional installation.

- The installation of new water main, sewer mains or drainage systems within existing Rights-of-Way require a clear thought process of sequencing to assure all services provided to the property owners is maintained throughout the construction period. Throughout our decades of design and construction oversight of neighborhood improvements projects, it is clear that the installation of new water main is paramount to assure a smooth infrastructure installation process. The preferred sequencing of utility installation should begin with new domestic water main being installed first when the existing water main is located in the street. This is done because the new water main will be restrained and less likely to separate at a joint when excavating for a deep sewer adjacent to the pipe. The existing water main would be subject to failure once exposed by any excavations adjacent to the old non-restrained water mains. Once the new water main is installed, tested and certified, while keeping the existing water in service then transferring of the services to the new water main allows for the existing to be abandoned in place or removed. Without installing the new water main first, the main line construction of the new sanitary sewer collection system will be slowed due to the proximity of the existing water main and the inevitable breakages of the old water main. Typically, the sanitary sewer collection piping is installed from one (1') foot to twelve (12') feet below the bottom of the water main. If the old main fails, work must cease in order to repair the old water main immediately or a separate crew must be on hand to do the repairs since service must be maintained at all times to the consumers. When the transfer of water and sanitary sewer services for each property will be "front to front" transfers, the reconnection to the property is less intrusive since the work takes place within a few feet of the property line. If the existing services were located in the rear yards of the properties, a new service would be required to be installed from the front of the property to the rear of the property and then reconnected. This entails a complete restoration of private property improvements, patios, trees, lawns, air conditioning units, etc. As previously discussed, both the domestic water and sanitary sewer

systems will be required to be maintained throughout the course of construction. CTA will work closely with the contractor, residents and property owners to assure that service is maintained and disruption to everyday life is minimized during this process.

- The addition of parallel parking areas within a City Rights-of-Way, in lieu of adding a drainage system to the new parking area, the City may wish to consider the use of a permeable paver product known as "PaveDrain" (or equal). This highly permeable system is easily maintainable and highly successful at reducing runoff into the roadway storm sewer system. Considered a sustainable practice, this application would reduce the volume of freshwater runoff into the Intracoastal Waterway, thereby assisting in the goal of improving the water quality. Note that the other cities in Broward County implemented the use of this product into their Right-of-Way parking standards.

- Bio-swales are also alternatives to potential problem areas with limited drainage facilities and should be introduced for water quality purposes and swales restored for flood attenuation and groundwater recharge. In addition, where landscaping is required a Xeriscape design is to be considered to promote water conservation.

- As in many coastal cities, sea level rise is a real and potentially damaging force that can render drainage systems useless during rainfall events. At a minimum, stormwater backflow prevention devices should be placed near system outfalls to prevent the backflow of water from the Intracoastal or canals to the city roadways. Many low lying areas experience this negative affect of sea level rise by pushing the water back up through inlet and catch basin grates and into the roadways. In addition, sea level rise will cause a more flat hydraulic grade line which in turn will decrease flows and thereby create greater flood depths of longer durations. In addition, nearer to the ICWW and ocean, soil storage depths will decrease, and therefore surface runoff will be greater. The possible introduction of mechanical stormwater pumping systems can alleviate the condition.

Craven Thompson Organization for Completing Tasks

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CTA will be responsible for scheduling and managing the input of each sub-consultant and clearly communicating the owner's goals and the design requirements of the project.

- CTA's Project Manager, Patrick J. Gibney, P.E. will be the point of contact for the City.
- Gary Tenn, P.E. will act as the Assistant Project Manager and will be responsible for the overall design of projects.
- CTA will coordinate all tasks involving sub-consultants.
- CTA will assign Adolfo Gonzalez, P.E., LEED AP as the Quality Assurance Reviewer of all documents for this contract.
- The chain of command in descending order under this contract will include:

- Patrick Gibney, P.E. in the role of Primary Client Contact and Project Manager, including water, sewer, re-use and stormwater
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- Phillip Joseph, P.E. responsible for potable water, re-use water and sanitary design.
- Matthew Cigale, P.E. responsible for potable water design.
- Douglas Taylor, P.E. responsible for stormwater design.
- Zach Gamble P.E. responsible for stormwater design.
- Don Shaver, responsible for construction management.
- James Sheddy responsible for construction inspection.
- Richard Pryce, P.S.M. responsible for all survey related tasks.
- Nicholas Messina, Jr., P.S.M. responsible for survey tasks.
- The sub-consultants include: Aerial Cartographics of America (ACA), and Tierra South Florida (TSF).

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Delray Beach, Florida 33445
Phone: (561) 688-5010

SUB-CONSULTANTS

Sub-consultants offices are located at:

Tierra South Florida, Inc. (TSF)
2765 Vista Parkway, Suite 9
West Palm Beach, Florida 33411
Phone: (561) 687-8536
Fax: (561) 687-8570

Aerial Cartographics of America, Inc. (ACA)
423 S. Keller Road, Suite 300
Orlando, Florida 32810
Phone: (407) 937-0919
Fax: (407) 855-8250

The sub-consultants will be utilized in the project when and if LiDAR is necessary (ACA), and or when borings or permeability tests become necessary (TSF).

Methods of Communication

The CTA Team members are readily accessible for meetings, by phone, or via email during regular hours, 7:00 a.m. to 6:00 p.m. (and outside of regular hours should it become necessary).

CTA's primary method for attending meetings would be in person. The appropriate individual based on type of project will attend. This will be primarily the overall Client Contact /Project Manager or Assistant Project Manager. We would commit to having someone available for a meeting with as little as two hours' notice.

Based on our past experiences (please contact references), CTA has a proven record of being easily accessible and available to meet our clients' needs. We will be available through face to face meetings, by phone, and by email.

Bar Chart

Bar Chart is located on the following page.

- **City of Greenacres Gladiator Lake Bank Stabilization** (15% Design Complete)
  Personnel on Project: Douglas Taylor, P.E., Zach Gamble, P.E., Joseph Carothers, Richard Pryce P.S.M.
  Construction Cost: $2 Million
- **City of Greenacres Sidewalk Improvements** (20% Design Complete)
  Personnel on Project: Douglas Taylor, P.E., Zach Gamble, P.E., Joseph Carothers, Ray Young, P.S.M.
  Construction Cost: $350,000.00
- **14th Avenue Streetscape** (80% Designed)
  Personnel on Project: Patrick Gibney, P.E., Matt Cigale, P.E.
  Construction Cost: $3 Million
- **Fort Lauderdale Stormwater Improvements** (10% Complete - Project is 2 basins in City)
  Personnel on Project: Patrick Gibney, P.E., Donnelly Chin, E.I., Edwin Franceschi, E.I., Richard Pryce, P.S.M., Douglas Davie, P.S.M., Tom Shahan, P.S.M.
  Construction Cost: Not Applicable (Study Cost - $300,000)
- **Broward County Utility Analysis Zone Program - UAZ 122 & 123**
  (15% Design Complete - Project Design over 4 year period)
  Personnel on Project: Patrick Gibney, P.E., Philip Joseph, P.E., Robert Connors, P.E., Matthew Cigale, P.E., Andrew Dorris, Joseph Carothers, Fareez Abrahim, E.I., Matthew Vorderer, E.I., Scott Peavler, R.L.A., Richard Pryce, P.S.M., Douglas Davie, P.S.M., Tom Shahan, P.S.M.
  Construction Cost: $50 Million
- **Hollywood Watermain Replacement Program**
  Project 5117 -100%, Project 5129 – 50%, Project 5138 – 10%)
  Personnel on Project: Gary Tenn, P.E., Mary Cook, P.E., Matthew Novack, E.I., Edwin Franceschi, E.I., Donnelly Chin, E.I.
  Construction Cost: $11 Million
- **Plantation Fashion Mall** (35% Design Complete)
  Personnel on Project: Timothy Hall, P.E., Eric Toebe, E.I., Kevin Menting, E.I., Edwin Franceschi, E.I., Fareez Abrahim, E.I., Richard Pryce, P.S.M., Nick Messina, Jr., P.S.M.
  Construction Cost: $4 Million (Sitework)
- **Lake Worth 2" Watermain Replacement Phase 3** (15% Complete)
  Personnel on Project: Matthew Cigale, P.E., Douglas Taylor, P.E., Andrew Dorris, Joseph Carothers, Fareez Abrahim, E.I., Kevin Menting, E.I., Richard Pryce, P.S.M., Thomas Shahan, P.S.M.
  Construction Cost: $3 Million
- **Miramar Complete Streets Project** 25% Design Complete)
  Personnel on Project: Douglas Taylor, P.E., Matthew Vorderer, E.I., Mary Cook, P.E., Scott Peavler, R.L.A., Richard Pryce, P.S.M., David Reyes, Douglas Davie, P.S.M.
  Construction Cost: $1.6 Million

- **Nova Southeastern University General Consulting Services**
  (%Complete- Varies - Multi-Year)
  Personnel on Project: Chad Edwards, P.E., Zach Gamble, P.E., Mary Kusper, E.I., Don Shaver, James Sheddy, Scott Peavler, R.L.A., Ray Young, P.S.M.
  Construction Cost: Varies
- **Hallandale Beach Lift Station Rehabilitation** (15% Complete - Varies)
  Personnel on Project: Patrick Gibney, P.E., Robert Connors, P.E., Kevin Menting, E.I.
  Construction Cost: $500,000.00
- **North Miami Beach Sewer & Watermain Rehabilitation** (40% Complete - Varies)
  Personnel on Project: Timothy Hall, P.E., Philip Joseph, P.E., Fareez Abrahim, E.I., Andrew Dorris
  Construction Cost: $7 Million

PROPOSED PROJECT TEAM

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SECTION 3 – PROPOSED PROJECT TEAM

Organizational Chart

CRAVEN·THOMPSON & ASSOCIATES INC.

PROJECT MANAGER / CLIENT CONTACT

Patrick J. Gibney, P.E.
Vice President, Engineering

CRAVEN·THOMPSON & ASSOCIATES INC.

ASSISTANT PROJECT MANAGER

Gary Tenn, P.E.

CRAVEN·THOMPSON & ASSOCIATES INC.

SURVEYING & MAPPING

Richard Pryce, P.S.M.
Vice President, Surveying & GIS

Nicholas Messina, P.S.M.
Surveyor

CRAVEN·THOMPSON & ASSOCIATES INC.

STORMWATER

Patrick Gibney, P.E.
Vice President, Engineering

Adolfo Gonzalez, PE, LEED AP
Senior Supervising Engineer

Zach Gamble, P.E.
Senior Engineer

Doug Taylor, P.E.
Director, Municipal Services

CRAVEN·THOMPSON & ASSOCIATES INC.

WATER, SEWER & RE-USE

Patrick Gibney, P.E.
Vice President, Engineering

Matt Cigale, P.E.
Senior Supervising Engineer

Robert Connors, P.E.
Senior Supervising Engineer

Phillip Joseph, P.E.
Senior Engineer

CRAVEN·THOMPSON & ASSOCIATES INC.

CONSTRUCTION SERVICES

Don Shaver
Director Construction Services

James Sheddy
Field Inspector

ACA Aerial Cartographics of America, Inc.

AERIAL CARTOGRAPHICS

Matthew LaLuzerne, P.S.M.
Vice President

Iarelis Hall, P.S.M.
Assistant Vice President

tierra SOUTH FLORIDA

GEOTECHNICAL ENGINEERING

Raj Krishnasamy, P.E.
President/Principal Engineer

Kumar Vedula, P.E.
Principal Engineer

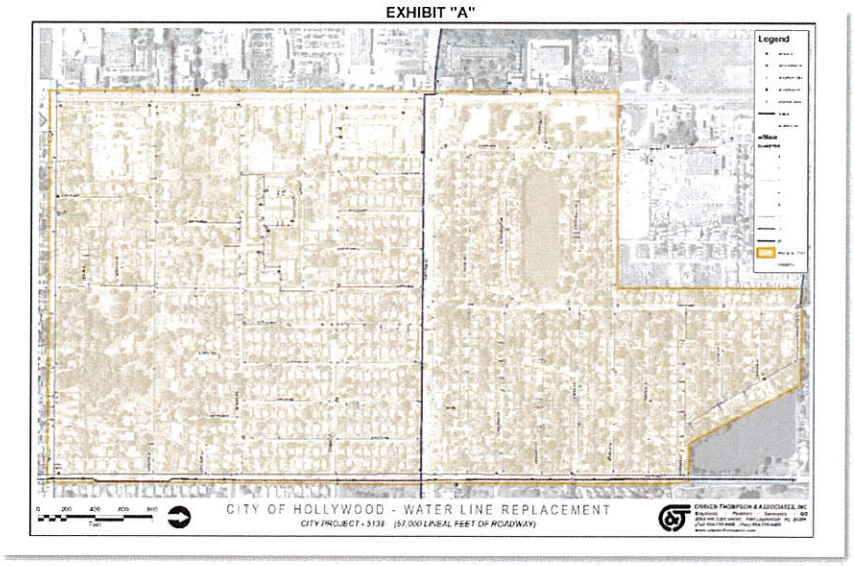
SUMMARY OF EXPERIENCE

See the following Project Summary Sheets for Craven Thompson & Associates Team's similar experience.

PROJECT NAME	**Watermain Replacement Program (between Taft Street, Charleston Street, N. 56th Avenue and State Road 7) Hollywood, Florida – City of Hollywood Project No. 16-5138**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	May 2017 - Present
CTA CONTRACT AMOUNT	$640,978.68
PROJECT SUMMARY	Water Main Replacement

Craven Thompson & Associates, Inc. (CTA) provided Consulting Services per our Professional Services Agreement for General Engineering Consulting Services in connection with the Water Main Replacement within the Project Limits defined between Taft Street, Charleston Street, N 56th Avenue and SR 7.

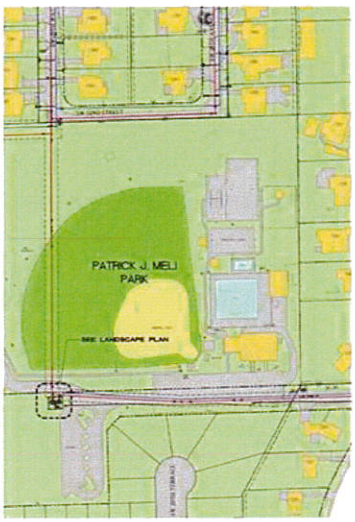
CTA provided survey, design, permitting, bidding and limited construction observation to replace approximately 57,000 linear feet of existing water main distribution pipe and relocate the services in the rear yards to the front yards. The replacement of services also included work on private property to reconnect the existing buildings. It is anticipated that the surveying and engineering design and permitting only will be completed within twelve (12) months from NTP. The bidding and construction will follow according to the City of Hollywood's schedule.

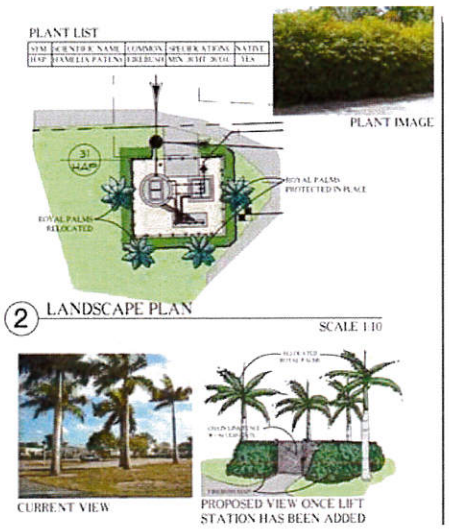


PROJECT NAME	**John U. Lloyd Water Main Replacement Project** **Hollywood, Florida, City of Hollywood Project No. 13-5118**
PROJECT ROLE	Prime Consultant
OWNER / CLIENT	Mr. Clece Aurelus, P.E. Senior Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, Florida 33020 Phone: (954) 805-3681 Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
PROJECT START DATE	Design: May 2013 Construction: November 2014
COMPLETION DATE	Design: August 2014 Construction: 2016
CONSTRUCTION COST	$149,700.00 (no additional services)
ENGINEER'S COST ESTIMATE	$2,352,035.00
CONSTRUCTION COST	$1,799,195.00
PROJECT SUMMARY	The City of Hollywood required replacement of an existing 12" diameter water main along S.R. A1A from Dania Beach Boulevard to the northern limits of John U. Lloyd State Park. The replacement consists of 8,800 linear feet of 12" diameter PVC water main, 880 linear feet of 8" water main, 3,000 linear feet of 12" diameter directional drill water main, consisting of two 12" diameter HDPE directional drills that cross beneath two canals directly connected to the Intracoastal Waterway. The pipe is located 15' – 20' below the bottom of the canals. Craven Thompson & Associates, Inc. provided the civil engineering design, permitting and construction engineering and inspection services for the project.

PROJECT NAME	**Utility Analysis Zone Improvement Program (UAZ) 308 Broward County**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Patrick MacGregor Expansion Administrator Broward County Water & Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
START/ COMPLETION DATE	2008/2011 Design & Permitting 2011/2013 Construction
CTA FEES	$2,207,259.00 (Billed only $1,957,421.00 & no additional services)
ENGINEER'S ESTIMATED CONSTRUCTION COST	$7,387,849.00
ACTUAL CONSTRUCTION COST	$6,249,174 (1 Change Order in the amount of –($239,117) for final of $6,249,175)
PROJECT SUMMARY	The UAZ 308 project encompasses approximately 125 acres in the City of Dania Beach and is located south of Griffin Road, west of Anglers Avenue, east of SW 30th Avenue, and north of SW 53rd Court.

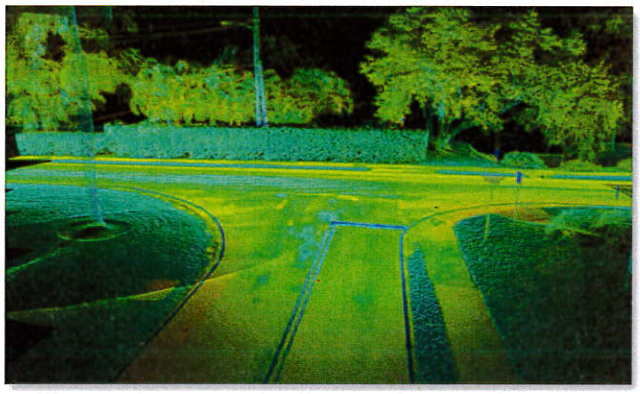
The infrastructure improvements to the existing neighborhood included new water and sanitary sewer systems. This area is primarily residential, built in the 1950's and early 1960's. The area was developed without a sanitary sewer collection system and had an inadequate water distribution system. As a result of inadequate infrastructure, Broward County selected Craven Thompson and Associates, Inc. (CTA) to design infrastructure improvements needed in the area. CTA designed, permitted, and provided construction engineering and inspection services for the construction of over 28,700 linear feet of water main, 219 Water Services, 20,300 linear feet of Gravity sewer main, 340 sewer laterals, and 1,270 linear feet of force main. Main line pipe sizes ranged from 6" to 10" in diameter. Project also included over 50,000 SY of new roadway construction, sidewalks, driveway aprons, and sodded swales. This project required coordination with the City of Dania Beach and included a lift station located within Meli Park.

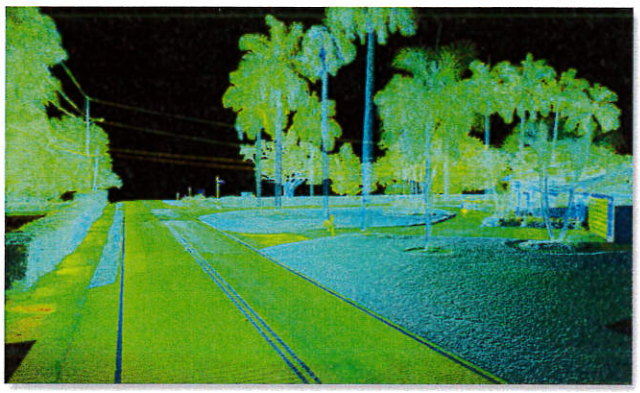




PROJECT NAME	**City of Greenacres – Original Section Drainage Improvements**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Carlos I. Cedeño Public Works Director City of Greenacres 5750 Melaleuca Lane Greenacres, Florida 33463 Phone: (561) 642-2074 Email: ccedeno@ci.greenacres.fl.us
PROJECT COMPLETION DATE	September 2014 (Master Plan) March 2016 Phase, Ditches 1 - 4
ENG. EST. CONSTRUCTION COST	$195,747.00
ACTUAL CONSTRUCTION COST	$212,340.00
PROJECT SUMMARY	The Original Section Drainage Improvements project located in the City of Greenacres is a master planned drainage improvement project for an existing 250 acre neighborhood between Jackson Avenue and Fleming Avenue from Lake Worth Road to 10th Avenue North. The project requires 4,500 linear feet of drainage pipe, 21,615 linear feet of ditch re-shaping, longs lengths of sidewalk replacement, driveway restorations, and pavement restoration. Project challenges included improving a neighborhood without a typical modern drainage system in and working with numerous franchise utility conflicts. In First Street all of the existing FPL poles had to be relocated from the front of the walk to the back of the walk to allow space for the drainage piping. The Phase 1 project required installation of 500 linear feet of 36" RCP storm pipe, 1,010 linear feet of 24" RCP Storm Pipe, 156 linear feet of 18" RCP Storm Pipe, 156 linear feet of 12"x18" RCP storm Pipe, significant ditch reshaping, sidewalk replacement, and replacement of outfall to LWDD canal. The design of Phase 1 was complete January 2015 and construction of Phase 1 in March of 2016.

PROJECT NAME	**Plantation Gardens Historical Area Watermain** **Plantation, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Charles Flynn Utilities Director City of Plantation 400 NW 73rd Avenue Plantation, Florida 33317 Phone: (954) 797-2293 Email: cflynn@plantation.org
COMPLETION DATE	2014 - 2017
SCHEDULE	270 Days (Construction)
ENGINEER'S ESTIMATED CONSTRUCTION COST	$3,241,988.00
ACTUAL CONSTRUCTION COST	$2,975,048.00 (No Change Orders)
PROJECT SUMMARY	Plantation Historical Area is located generally between Palm Tree Road, the Turnpike, Broward Boulevard, and Holly Lane. This project included the demolition of existing utilities, installation of water main and roadway/right-of-way restoration. Craven Thompson & Associates, Inc. provided mobile LiDAR surveying, design, permitting as well as Resident Project Representative services for 33,200 linear feet of water main, the installation of 41 new fire hydrants, and the installation of 270 new water services.





PROJECT NAME	**Central Broward Water Control District, District Engineer** **Davie, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Michael Crowley District Manager Central Broward Water Control District 8020 Stirling Road Hollywood, FL 33024 Phone: 954.432-5110 Email: districtmanager@centralbrowardwcd.org
CONTRACT DURATION	2007 - Present
PROJECT SUMMARY	Craven Thompson & Associates, Inc. (CTA) has served as the District Engineer for the Central Broward Water Control District (CBWCD) since March 2007. In this capacity, we review and recommend approval of all drainage projects within the District; review variance requests; serve on the Development Review Committee; attend Board meetings; and prepare construction plans for capital improvement projects. Services to the District include plan and Constructability Review; engineering studies and reports; plan review, surveying; design & permitting for capital improvement projects; construction services; inspection services; and meeting attendance.

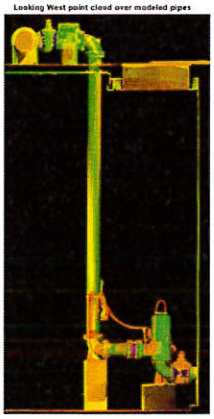
PROJECT NAME	**North County Neighborhood Improvement Project, Northeast Quadrant, Bid Package 11, Pompano Beach, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Patrick MacGregor Expansion Coordinator Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
PROJECT START DATE	Design: November 2009 Construction: October 2011
PROJECT COMPLETION DATE	Design: February 2011 Construction: 2014
ENGINEER'S ESTIMATED CONSTRUCTION COST	$23,033,142.00
ACTUAL CONSTRUCTION COST	$17,608,000.00
PROJECT SUMMARY	The North County Neighborhood Improvement Project (NCNIP) Northeast Quadrant, Bid Package 11 includes approximately 357 acres of land between Dixie Highway and Federal Highway, North of Sample Road in Pompano Beach.

The infrastructure improvements to the existing neighborhood included new water, sanitary sewer, drainage, landscaping, signage, roadway, and sidewalk systems. Bid Package 11 was the final area in the North Central County Neighborhood Improvement, NE Quadrant. The area is primarily residential that was developed in the 1950's. The existing infrastructure was longer suitable to meet the current standards for water and sanitary sewer facilities. The Project was completed under budget and on time. This project required coordination with several different municipalities and agencies including the SFWMD. NCNIP Bid Package 11 included over 29,350 linear feet of new drainage, 64,000 linear feet of water main, 553 Water Services, **49,700 linear feet of reclaimed water main, 796 reclaimed water services**, 43,805 linear feet of gravity sewer main, 750 sewer laterals, lift station, and 1,630 linear feet of force main. Main line pipe sizes ranged from 4" to 48" in diameter. The project also included over 124,000 SY of new roadway construction, sidewalks, driveway aprons, and sodded swales.

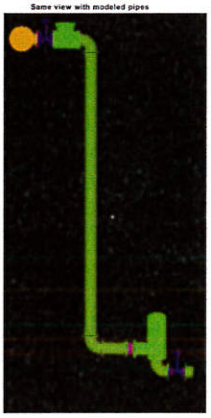
PROJECT NAME	**Lift Station E-2 Rehabilitation, Hollywood, Florida** **City of Hollywood Project No. 13-8052**
PROJECT ROLE	Prime Consultant
CLIENT / OWNER	Mr. Jeff Jiang, P.E. City of Hollywood Department of Public Utilities Engineering Support Services Division Hollywood, FL 33022 Phone: (954) 921-3930 Email: fjiang@hollywoodfl.org
PROJECT START / COMPLETION DATE	Survey Date: August 2013 / Design Start Date: November 2013 Construction Start Date: August 2014
ENGINEER'S ESTIMATED CONSTRUCTION COST	$765,135.00
ACTUAL CONSTRUCTION COST	$966,000.00
SERVICES PROVIDED	CTA provided surveying, civil engineering, and permitting services for the project.
PROJECT SUMMARY	The existing lift station is equipped with three 22 horsepower pumps which were upgraded to 46.94 horsepower pumps. The final design upgraded the pumps to three 45 horsepower pumps to meet the build out increased sanitary flow and the current DEP standards. All the 8-inch piping and valves in the lift station are being upgraded to 12-inch size. These upgrades increased the lift station capacity from approximately 1,700 gallons per minute to 3,500 gallons per minute. The additional upgrades provided odor control through additional high stack vent and new wet well hatch with odor reduction gaskets. The surveying of the existing above and below ground elements of the station was performed using a Leica C-10 Laser Scanner.

CITY OF HOLLYWOOD
LIFT STATION E2 - 3D LASER SCAN
SIDEVIEW - LOOKING WEST - EAST WALL REMOVED
3C SCANS FROM LEICA C10 LASER SCANNER

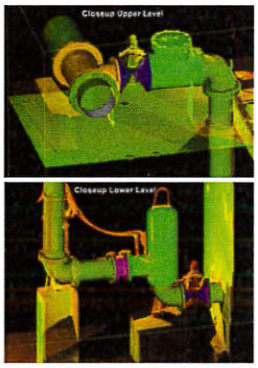
Looking West point cloud over modeled pipes



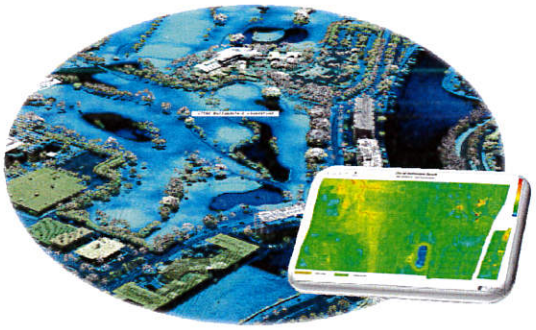
Same view with modeled pipes



City of Hollywood - Master Lift Station E-2
3D Laser Scan Point Coud over 3D Model
Westerly Pipe & Pump inside building both Floors



PROJECT NAME	**Hallandale Beach City-Wide Storm Water Master Plan** **Hallandale Beach, Florida**
PROJECT ROLE	Prime Consultant
OWNER	Ms. Mariana Pitiriciu, P.E., City Engineer City of Hallandale Beach 630 NE 2nd Street Hallandale Beach, Florida 33009 Phone: (954) 457-3042 Email: mpitiriciu@hallandalebeachfl.gov
START DATE / COMPLETION DATE	February 2015 / February 2016
EST. ENGINEER'S COST ESTIMATE	N/A
ACTUAL CONSTRUCTION COST	N/A



The drainage master plan study area encompasses the entire City of Hallandale Beach which is approximately 4.4 square miles or 2,816 acres. Hallandale Beach is generally located at the Southeast corner of Broward County and is bordered by the Town of Pembroke Park to the West, the City of Hollywood to the North, the Atlantic Ocean to the East, and the City of Aventura to the South. There are a number of drainage facilities within the eastern half of the City with limited conveyance capacity and high head loss. In the lowest areas the average lowest floor elevations average between 4.0' to 5.0' NAVD, and roadway elevations are approximately 2.3' to 3.0' NAVD (NE Quadrant). The conveyance system is subject to the effects of tidal fluctuation; and therefore at times there is virtually no head available to drain the basins. The hydrologic simulations utilize the Interconnected Pond Routing (ICPR) computer modeling software, Version 3.10 (Streamline Technology). Rainfall quantities are based on the South Florida Water Management District isohyetal maps for specified design storm events. Watershed hydrographs were prepared based upon the South Florida Water Management District's rainfall distribution curve presented in their Basis of Review document. Storm water runoff modeling was performed, considering the following design storm recurrence intervals:

Design Storm	Level of Service
▪ 5-year, 24-hour event	Street Flooding
▪ 10-year, 24-hour event	Street Flooding (Crown of Road)
▪ 100-year, 72-hour event	House Flooding (Finished Floor Elevation)

Craven Thompson & Associates (CTA) determined alternative methods of achieving protection for the chosen design storms. We assessed solutions and provided cost estimates for each alternative. We also identified optimum phasing within the City relative to cost and level of service in the development of the Capital Improvements for storm water. The survey included a GPS control network to meet horizontal and vertical accuracies to 0.10 feet on all hard surfaces within the City Limits. This included setting 188 aerial targets to control an area of about 26,000 acres from Pembroke Road, south to the Broward / Miami-Dade County line and from the Atlantic Ocean west to Interstate 95. Our survey crews then ran level loops and cross-sections over 862 ground truth checks on hard surfaces at 80 street intersections across the City with accuracy of 0.05 feet at 67% (one sigma) and 0.10 feet accuracy at 95% (two sigma). The LiDAR was flown by our subcontractor, Pickett & Associates, Inc., and checked by CTA. The Survey included 2 inch pixel resolution aerials, identifying and mapping overall drainage flows across the City for drainage basin designation, including review of outfalls and drainage structures upstream.

PROJECT NAME	**City of Oakland Park Bid Pack 10 – Watermain/Sanitary Improvements, Oakland Park, Florida**
PROJECT ROLE	Prime Consultant
OWNER / CLIENT	Mr. Harvey Rambarath (Now with Seminole Tribe - Was with Oakland Park at time of project) Former Assistant Director Engineering & Community Development Seminole Tribe of Florida 6365 Taft Street, Suite 3008 Hollywood, Florida 33024 Phone: (954) 828-6522 Email: harveyrambarath@semtribe.com
PROJECT DATES	2012 - 2016
ENGINEER'S ESTIMATED CONSTRUCTION COST	$8,130,685.00
ACTUAL CONSTRUCTION COST	$7,399,400.00
PROJECT SUMMARY	Bid Pack 10 area is approximately 520 acres and is located east of I-95, west of Dixie Highway, south of NE/NW 38th Street down to the southern City limits. The majority of the project is watermain replacement, and sanitary sewer with pavement restoration. Craven Thompson & Associates, Inc. provided design and permitting services for approximately 21,000 linear feet of watermain, 8,700 linear feet of ductile iron sanitary sewer, 800 linear feet of direct drill, and 56,000 SY of 1" overlay in the 520 acre area. This includes the replacement of services throughout the mainly residential area and the addition of eighty (80) fire hydrants to maintain a maximum hydrant spacing of 500 feet in the area. The watermain was permitted through the City and the Broward County Public Health Unit, and Broward County Wastewater.

PROJECT NAME	**North County Neighborhood Improvement Project, Water, Sanitary & Stormwater, Northwest Quadrant, Broward County**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Alan Garcia, P.E. Director of Water & Wastewater Operations Division Broward County Water & Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0747 Fax: (954) 831-0798 Email: agarcia@broward.org
PROFESSIONAL SERVICES	2011 - 2014
CONSTRUCTION COST	Estimated: $43,000,000.00 Actual: $40,054,583.00
CTA FEES	$6,892,622.28
PROJECT SUMMARY	Services included engineering studies and design (water, roadway, paving, storm water quality treatment, storm sewer, and sanitary sewer), surveying, planning and landscape architecture, and Construction Engineering Inspection Services

The North County Neighborhood Improvement Project (NCNIP) Northwest Quadrant is one example which includes approximately 650 acres of land between Dixie Highway and I-95, North of Sample Road, in the City of Deerfield Beach. This area is primarily residential, built in the 1950's and early 1960's. The area was developed with limited sanitary sewer system, no drainage and an inadequate and now aged water distribution system. Additionally, CTA designed and permitted water distribution, sanitary sewer collection systems storm sewer systems, and roadway improvements for the entire 650 acres. The sanitary sewer collection system consisted of 22,047 linear feet - 8" gravity main, and 34 linear feet - 10" gravity main. The sanitary force main system consisted of 295 linear feet - 8" main, 2,235 linear feet - 10" main, 3,790 linear feet 12" main, 4,300 linear feet - 16" main, and 4,205 linear feet - 20" main. There were ninety three (93) new sanitary manholes added to the area. The water distribution system additions included 17,900 linear feet - 6" D.I.P. main, 5,100 linear feet - 8" D.I.P. main and 1,850 linear feet- 12" D.I.P. main. All construction on the project is complete.

PROJECT NAME	**Lift Station A-6 Upgrade, Hollywood, Florida** **City of Hollywood Project No. 15-8061**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	December 2015 – June 2017
CTA CONTRACT AMOUNT	$60,929.14
CONSTRUCTION COST	$677,000.00
PROJECT SUMMARY	

This project involved the reconstruction of sanitary sewer Lift Station A6 which included the replacement of the existing suction lift pump station with a new wet well, submersible pumps, converting the existing wet well into a manhole, valve vault, panels, SCADA system as well as hardscape and landscaping. The new lift station will also be designed to accept City standard transfer switch for a generator. The work included coordination with the contractor and developer for the residential development to west. The coordination included accounting for the additional flows and allowing for a temporary connection to the existing wet well. The pumps were designed as variable frequency drives in order to meet the flow-pressure requirements provided by the City.

PROJECT NAME	**City of Miami Gardens Livable Neighborhood Improvement Project, Vista Verde Phases 1A & 1B, Miami Gardens, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Tom Ruiz, Director of Public Works Public Works/Engineering 1050 NW 163rd Drive Miami Gardens, Florida 33169 Phone: (786) 279-1260 Email: truiz@miamigardens-fl.gov
PROJECT START / COMPLETION DATE	Design 2012 - 2013 Construction: 2014 - 2015
CTA FEES	$203,400.00 (No Additional Services)
ENGINEER'S COST ESTIMATE	$1,840,893.00
INITIAL CONSTRUCTION COST	$1,131,279.00
FINAL CONSTRUCTION COST	$1,205,604.00 (2 Change Orders totaling $74,325.00)
SERVICES PROVIDED	CTA provided all of the survey services, all civil engineering, all landscape architectural, and construction management/CEI services for the project.
PROJECT SUMMARY	


MONUMENT SIGNAGE

The Livable Neighborhoods Improvement Project includes approximately 222 total acres of land subdivided among four separate sites; namely *Garden Circle*, *Kings Garden I & II*, *Kings Garden III* and *Vista Verde*. The various project sites are all located within the confines of NW 183rd Street (Miami Gardens Drive), NW 215th Street (County Line Road), NW 47th Avenue, and NW 37th Avenue in the City of Miami Gardens, Florida. No stormwater quality treatment or quantity attenuation facilities were included in the initial developments, which are apparent through the numerous drainage issues observed.

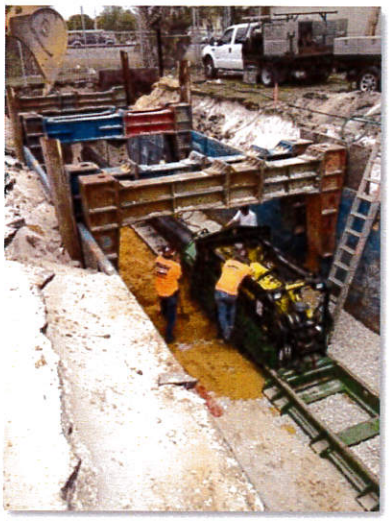

BEFORE

The Vista Verde Phase 1A & 1B Improvements are located within the City of Miami Gardens bordered by NW 213th Street to the north, NW 207th Lane to the south, NW 37th Avenue (Douglas Road) to the east, and a vacant plot of land to the west. It is a drainage improvements project for the City of Miami Gardens. The project resulted in no additional increases to the site impervious area and was an improvement to existing conditions.

The project included 1,900 linear feet of roadway and 1,900 linear feet of storm sewer and full right-of-way restoration.


AFTER

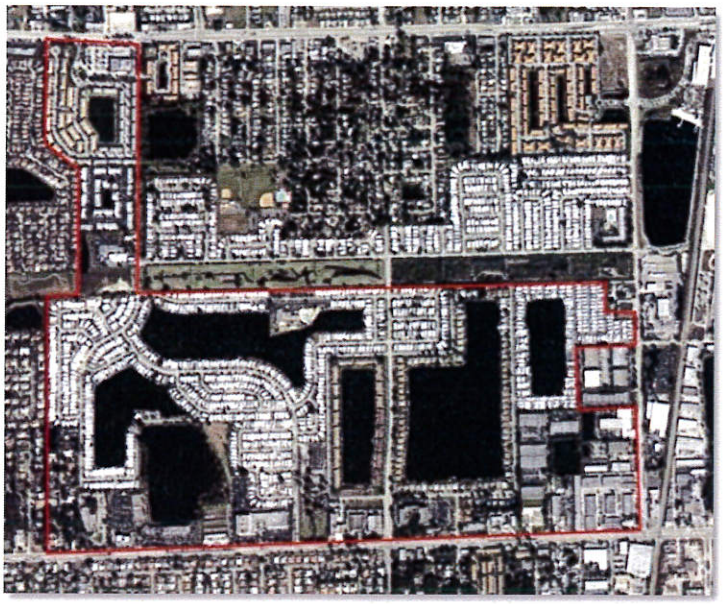
PROJECT NAME	**North County Neighborhood Improvement Project, Northeast Quadrant, Bid Package 9, Pompano Beach, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Pat MacGregor, Expansion Administrator Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
PROJECT START DATE	Design: March 2007 Construction: 2010
PROJECT COMPLETION DATE	Design: September 2010 Construction: June 2013
ENGINEER'S ESTIMATED CONSTRUCTION COST	$17,052,306.00
ACTUAL CONSTRUCTION COST	$14,980,000.00
PROJECT SUMMARY	The North County Neighborhood Improvement Project (NCNIP) Northeast Quadrant, Bid Package 9 includes approximately 152 acres of land between Dixie Highway and Federal Highway, North of Sample Road in Pompano Beach.



The infrastructure improvements to the existing neighborhood included new domestic water, sanitary sewer, drainage, landscaping, signage, and sidewalk systems. This area is generally residential with some commercial properties built in the 1950's and early 1960's. The area was developed with inadequate sanitary sewer system, no drainage and an under sized domestic water distribution system. As a result of aging and inadequate infrastructure, Broward County selected Craven Thompson and Associates, Inc. to design infrastructure improvements needed in the area. Construction cost for these improvements were over 15.5 million dollars. A total of 57,000 linear feet of domestic water main was installed with a total of 40,000 linear feet of sanitary sewer collection and transmission systems. These improvements ranged in size from 6" to 12" for the various infrastructure improvements. The project was completed on time and under budget by Ocean Bay Construction. This project required coordination with several different municipalities and agencies. An inter-local agreement was worked out with the City of Pompano Beach. **A reclaimed water distribution system consisting of 22, 000 linear feet of 4" diameter, and 1,800 linear feet of 12" diameter reclaimed distribution water main was constructed on Bid Package 9.** The project required close communication with HOA and residents.

PROJECT NAME	**Broward County Utility Analysis Zone 310 (UAZ 310)** **Broward County, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Patrick MacGregor Expansion Administrator Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
PROJECT START DATE	Design - June 2011
PROJECT COMPLETION DATE	Design - January 2013 Construction - September 2016
ENGINEER'S ESTIMATED CONSTRUCTION COST	$10,539,237.00
ACTUAL CONSTRUCTION COST	$8,230,721.00
PROJECT SUMMARY	The UAZ 310 project encompasses approximately 375 acres in the City of Dania Beach and is located south of SW 53rd Court, north of Stirling Road, east of SW 32nd Terrace and west of Anglers Avenue.

The improvements to the existing neighborhood included a new water distribution system. The water main improvements included replacement of existing water services and fire hydrants. This area is primarily residential, built in the 1950's and early 1960's. The area was developed with a sanitary sewer collection system and an inadequate water distribution system. Broward County selected Craven Thompson and Associates, Inc. to survey, design, permit, and provide construction engineering and inspection services for infrastructure improvements including: 55,237 linear feet of watermain, 767 water services, 123 fire hydrants, 41,940 SY of road reconstruction, and 19,600 SY of mill and overlay. This project was coordinated with the City of Dania Beach.



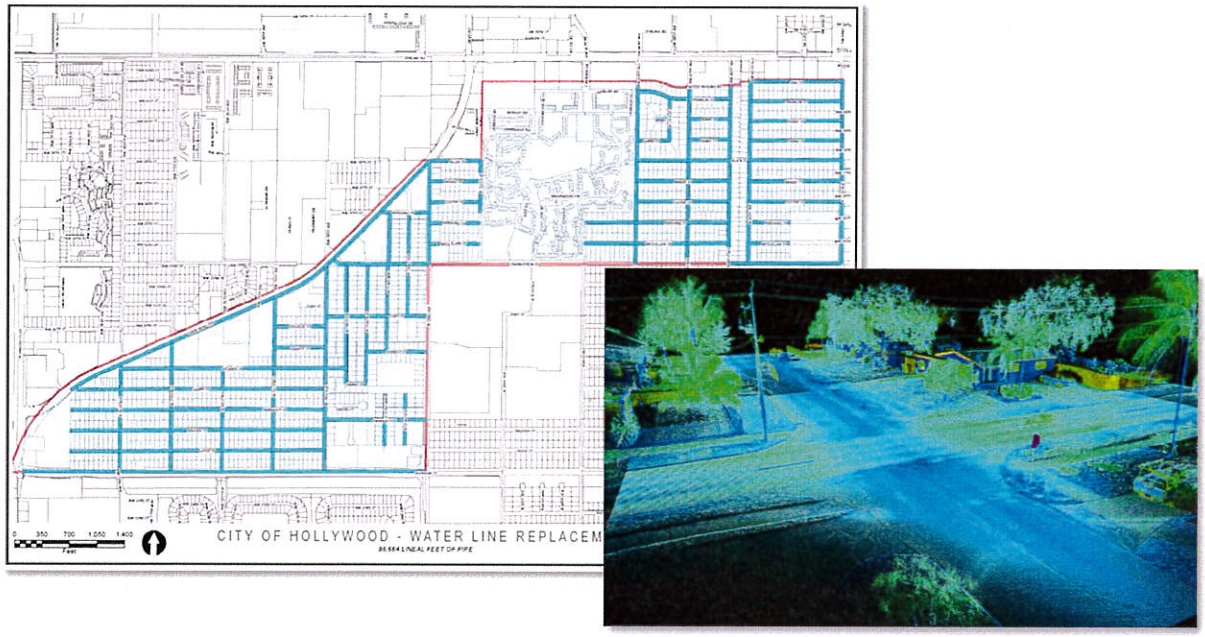
PROJECT NAME	**North County Neighborhood Improvement Project, Northeast Quadrant, Bid Package 10, Pompano Beach, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Pat MacGregor, Expansion Administrator Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
PROJECT START DATE	Design: October 2008 Construction: 2012
PROJECT COMPLETION DATE	Design: March 2010 Construction: 2014
CTA FEES	$3,532,754.00
ENGINEER'S ESTIMATED CONSTRUCTION COST	$13,387,427.00
ACTUAL CONSTRUCTION COST	$11,083,460 (5 Change Orders)
PROJECT SUMMARY	The North County Neighborhood Improvement Project (NCNIP) Northeast Quadrant, Bid Package 10 includes approximately 213 acres of land.

The infrastructure improvements to the existing neighborhood included new domestic water, sanitary sewer, drainage, landscaping, signage, roadway, and sidewalk systems. The neighborhood is approximately 60 years old and the infrastructure had reached the end of its useful life. The Bid Package 10 improvements consisted of approximately 4,740 linear feet of water main, 21 water services, 27,755 linear feet of sanitary sewer collection and transmission lines, 475 laterals, 114,225 S.Y. of roadway reconstruction, and 29,700 S.Y. of sidewalk construction. Several traffic calming devices were designed and constructed as part of this Project in conformance with Broward County and the City of Pompano Beach standards. Lanzo Construction was the Contractor. This project required coordination with several different municipalities and agencies. An inter-local agreement was worked out with the City of Pompano Beach. **In addition, a reclaimed water distribution system consisting of 32,900 linear feet was constructed on Bid Package 10.**

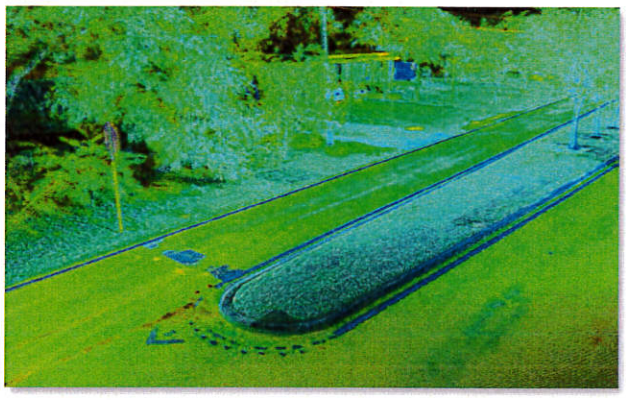
PROJECT NAME	**City of Greenacres – Ramblewood Drainage Improvements**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Carlos I. Cedeño Public Works Director City of Greenacres 5750 Melaleuca Lane Greenacres, Florida 33463 Phone: (561) 642-2074 Email: ccedeno@ci.greenacres.fl.us
PROJECT DATES	2013 - 2014
ENGINEER'S ESTIMATED CONSTRUCTION COST	$224,441.00
ACTUAL CONSTRUCTION COST	$218,080.00
PROJECT SUMMARY	The Ramblewood Drainage & Sidewalk Improvements project is located at Ramblewood Circle off of Jog Road in the City of Greenacres. The project was designed and constructed with the goal of improving the drainage system function and interconnecting missing sidewalks in an existing residential neighborhood. The project required 615 linear feet of drainage piping, 351 linear feet of exfiltration trench, 1,000 linear feet of sidewalk, and numerous driveway restorations within the neighborhood road rights of ways. Significant pavement restoration was also required. The challenges in the project included working around existing water and sewer services to remain in service while installing significant trench and drainage pipe as well as working to minimize impacts to residences during construction as much as possible. The design work was completed August 2014 and the construction was completed December 2014.

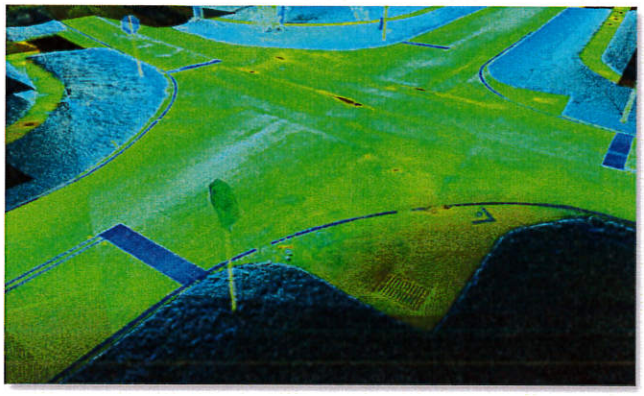
PROJECT NAME	**Watermain Replacement Program - Survey (from Davie Road Ext to Sheridan St & University Drive to North 72nd Avenue, Hollywood, Florida – City of Hollywood Project No. 5129**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, Florida 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
SURVEYING SERVICES	2016
SERVICES PROVIDED	Engineering, Surveying & Mapping
PROJECT SUMMARY	Replacement of nearly 17 miles of Existing Water Main

The project consists of approximately 500 acres of existing developed area in western Hollywood, where Craven Thompson & Associates is performing mobile Lidar surveying, engineering design, permitting, bidding and limited construction engineering and inspection to construct approximately 88,664 linear feet of water main replacement. The replacement consists of new 4", 6", 8" and 12" diameter water mains throughout the neighborhood including replacement of existing rear yard water services to the front yards and reconnection to the building. CTA will coordinate with the lot owners where the services are located and the best location to install the services at the front. This Project was also phased and coordinated with Broward County in order to install approximately 7,000 linear feet of water main in Dave Road Extension before Broward County proposed improvements to the Roadway were constructed. This project also includes the installation of new fire hydrants, relocated services, right-of-way restoration, and the restoration of affected areas on private property.

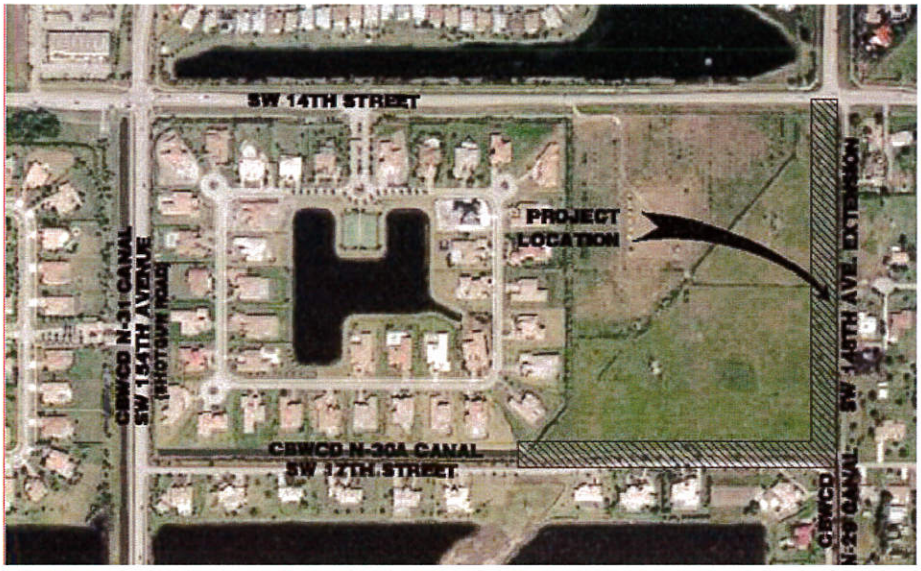


PROJECT NAME	**Plantation Gardens Phase IIB Watermain Plantation, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Charles Flynn Utilities Director City of Plantation 400 NW 73rd Avenue Plantation, Florida 33317 Phone: (954) 797-2293 Email: cflynn@plantation.org
COMPLETION DATE	2014-2017
SCHEDULE	365 Days (Construction)
ACTUAL CONSTRUCTION COST	$2,290,631.00
ENGINEER'S ESTIMATED CONSTRUCTION COST	$2,522,060.00
PROJECT SUMMARY	Plantation Gardens and the Historical Area are located generally between Sunrise Boulevard, the Turnpike, Palm Tree Road, and Holly Lane. This project included the demolition of existing utilities, installation of water main and roadway/right-of-way restoration. Craven Thompson & Associates, Inc. provided mobile Lidar surveying, design, permitting as well as Resident Project Representative services for 18,000 linear feet of water main, the installation of 31 new fire hydrants, and the installation of 250 new water services.



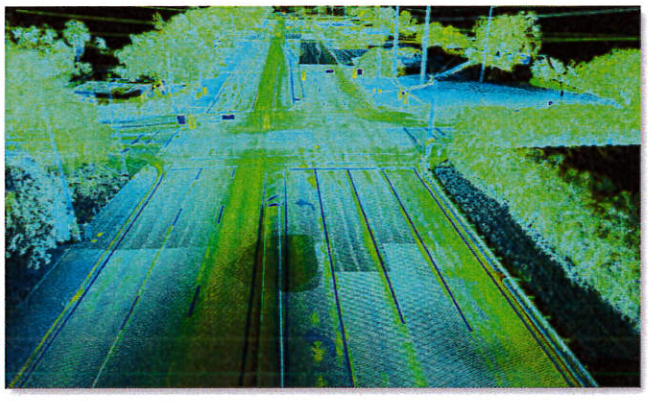


PROJECT NAME	**Central Broward Water Control District, N30 Culvert Extension, Davie, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Michael Crowley District Manager Central Broward Water Control District 8020 Stirling Road Hollywood, Florida 33024 Phone: (954) 432-5110 Email: districtmanager@centralbrowardwcd.org
CONTRACT DURATION	2009 - 2012
ENGINEER'S ESTIMATED CONSTRUCTION COST	$896,034.00
ACTUAL CONSTRUCTION COST	$747,018.00
PROJECT SUMMARY	Craven Thompson & Associates, Inc. (CTA) provided watershed analysis and modeling to interconnect three District canals. CTA also provided survey layout, final engineering design, environmental and surface water permitting, and bid phase services for a 60" pipe interconnect and ancillary drainage facilities, including a 48" storm water check valve for the piping of the N30 canal owned by the Central Broward Water Control District. This canal is adjacent to SW 17th Street and the SW 145th Avenue Extension.



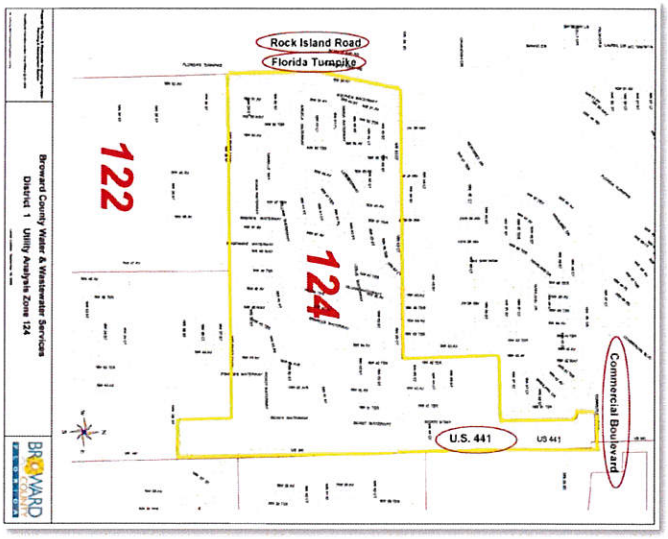
PROJECT NAME	**Watermain Replacement Program (from Taft Street to Charleston & N. 66th Avenue to North 72nd Avenue, Hollywood, Florida City of Hollywood Project No. 5117**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
DESIGN SERVICES	2014 - 2015
ESTIMATED CONSTRUCTION COMPLETION	2017
CTA CONTRACT AMOUNT	$988,724.00
CONSTRUCTION COST	$11,500,000.00
PROJECT SUMMARY	

The project consists of approximately 750 acres of existing developed area, where CTA is performing mobile Lidar surveying, design, permitting, bidding and limited construction engineering and inspection to construct approximately 7,080 linear feet of new 4" diameter water main, 34,015 linear feet of new 8" diameter water main, 15,655 linear feet of new 12" diameter water main, 5,200 linear feet of new 16" diameter water main, and the relocation to the front of the lots of services located in the rear yards. CTA is coordinating with the lot owners. This project also includes the installation of new fire hydrants, relocated services, right-of-way restoration, and the restoration of affected areas on private property



PROJECT NAME	**Broward County Utility Analysis Zone 124 (UAZ 124)**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Patrick MacGregor Expansion Coordinator Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0904 Email: pamacgregor@broward.org
PROJECT START DATE	Design - June 2006
PROJECT COMPLETION DATE	October 2012
DESIGN COST	Contract Amount: $3,887,902.00 / Billed Amount: $3,492,010.83
CONSTRUCTION COST	Engineer's Estimate - $10,383,436.00 Change Orders - $169,603.01 Actual Cost: $10,553,039.01
SERVICES PROVIDED	Craven Thompson & Associates, Inc. provided surveying, civil engineering, and construction management services.
PROJECT SUMMARY	

The UAZ 124 project is located between Florida Turnpike, State Road 7, Commercial Boulevard and NW 39th Street. The infrastructure improvements to the existing neighborhood included new water, sanitary sewer systems. This area is primarily residential, built in the 1950's and early 1960's. The area was developed with no sanitary sewer system, and an inadequate water distribution system. As a result of the aging sanitary system and inadequate water distribution infrastructure, Broward County selected Craven Thompson and Associates, Inc. (CTA) to design infrastructure improvements needed in the area. CTA designed, permitted, and provided construction engineering and inspection services for the construction of a sanitary sewer collection system consisting of 25,446 linear feet – 8" gravity main, 302 linear feet – 10" gravity main, 2,003 linear feet – 12" gravity main, and 46 linear feet – 16" gravity main. The sanitary force main system consisted of 2,350 linear feet – 8" main, and 3,790 linear feet - 12" main. The water distribution system additions included 28,810 linear feet – 6" main, 4,440 linear feet – 8" main and 5,380 linear feet – 10" main.



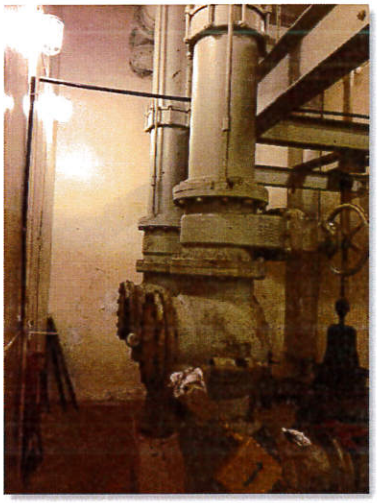
This project required coordination with the City of Lauderdale Lakes.

PROJECT NAME	**City of Greenacres - 10th Avenue North, Phase 4 & 5 Sewer Project**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Carlos I. Cedeño Public Works Director City of Greenacres 5750 Melaleuca Lane Greenacres, Florida 33463 Phone: (561) 642-2074 Email: ccedeno@ci.greenacres.fl.us
PROJECT COMPLETION DATE	December 2015 (Design & Construction Observation)
ENGINEER'S ESTIMATED CONSTRUCTION COST	$832,240.00
ACTUAL CONSTRUCTION COST	$855,645.00 (Consulting Fees $39,000.00)
PROJECT SUMMARY	The 10th Avenue North Sanitary Sewer Phase 4 & 5 project is part of a master planned gravity sanitary sewer project.

Phase 4 & 5 is located at 10th Avenue North and Swain Boulevard and extends within the Fleming Avenue and Jennings Avenue Right-of-way, 300 feet north and south of the 10th Avenue North Right-of-Way and then within Perry and Martin Avenue, 300 feet north of 10th Avenue North as well as within 10th Avenue North from Fleming Avenue to Martin Avenue. Craven Thompson & Associates, Inc. performed design and construction administration work. The project required installation of 2,545 linear feet of 8" gravity SDR 35 sanitary sewer pipe from 6' deep to 10' deep, 20 linear feet of 8" DIP water main, 40 linear feet of C-900 water main, and 40 linear feet 8" DIP force main. Due to the pipe installation significant pavement section and sidewalk replacement was required. Additionally, due to the amount of work in the County Right-of-Way 3,300 square yards of asphalt was required to be milled, resurfaced, and re-striped. This required significant coordination with the County for the MOT. The design portion of the work was completed December 2014 and the construction of the project was completed December of 2015.

PROJECT NAME	**Lift Station W-14 Rehabilitation, Hollywood, Florida** **City of Hollywood Project No. 16-8063**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Clece Aurelus, P.E., Project Manager City of Hollywood 1621 N. 14th Avenue Hollywood, FL 33019 Phone: (954) 921-3930 / Fax: (954) 921-3258 Email: caurelus@hollywoodfl.org
START AND COMPLETION DATE	June 2017 - Present
CTA CONTRACT AMOUNT	$162,785.00
CONSTRUCTION COST	$1,500,000
PROJECT SUMMARY	

The proposed rehabilitation for sanitary sewer Lift Station W14 includes modifying the existing stations by replacing the existing pumps based on a wastewater system analysis, replacing internal piping to the Station wall including valves and fittings, rehabilitating the existing concrete floor, walls, ceiling, vaults, wet well, dry well, exterior vault, access hatch and concrete pillars, replace electrical meter and main, replace motor control panels and rewire new pumps, new RTU, new SCADA, rewire and replace branch wiring outlets and fixtures, generator with double wall tank with leak detection, etc. The W14 station is a regional station that conveys a significant portion of the sanitary flows from the western portions of Hollywood.



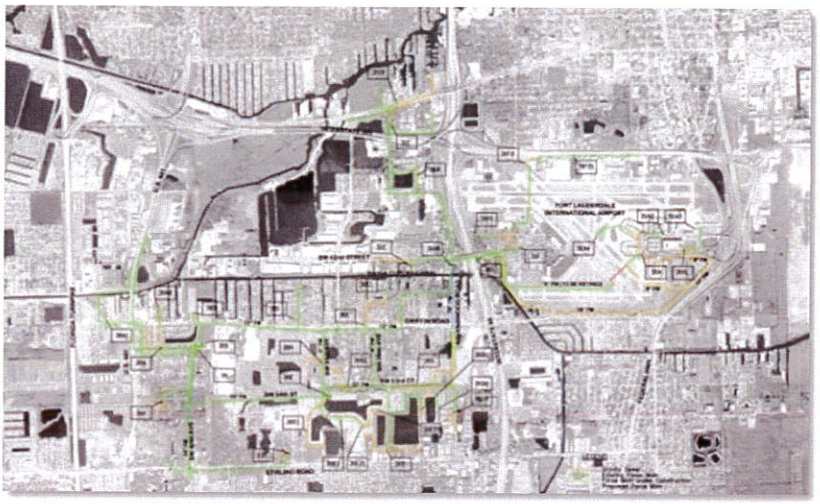
Craven Thompson & Associates provided surveying, engineering design, permitting, bidding and construction observation services for the Project.

PROJECT NAME	**NPDES Annual Reporting, Inspections and Monitoring Aventura, Florida**
PROJECT ROLE	Prime Consultant
CLIENT	Mr. Alan Levine Public Works Operations Manager City of Aventura 19200 W. Country Club Drive Aventura, Florida 33180 Phone: (305) 466-8931 Email: levinea@cityofaventura.com
PROJECT DATES	2002 - Present
ENGINEER'S ESTIMATED CONSTRUCTION COST	N/A
ACTUAL CONSTRUCTION COST	N/A
PROJECT SUMMARY	For the past fifteen years, Craven Thompson and Associates, Inc. (CTA) has assisted the City of Aventura in preparing and submitting the annual report to Miami-Dade County DERM as required by the City under the Miami-Dade County MS-4 Permit. CTA has been the responsible party for preparing the annual report and assembling the required back-up documents and reports. In addition, CTA has assisted the City in performing NPDES inspections throughout the year; documenting inspections and meetings; attending audit inspections with the Florida Department of Environmental Protection (FDEP) representatives; responding to RFI's; preparing permit criteria related to NPDES compliance and monitoring; providing Best Management Practices (BMP) for City CIP projects; and preparing and updating a City-wide drainage map identifying all drainage facilities with special emphasis on public outfalls.

Example of public out-fall

PROJECT NAME	**Broward County District 3A Wastewater System Modeling and Force Main Improvements, Broward County, Florida**
PROJECT ROLE	Sub-Consultant
CLIENT	Ms. Janeen M. Wietgrefe Hazen and Sawyer, P.C. 4000 Hollywood Boulevard, Suite 750-N Hollywood, Florida 33021 Phone: (954) 462-2700 Email: jwietgrefe@hazenandsawyer.com
OWNER	Mr. Bob Leonard Broward County Water and Wastewater Services 2555 West Copans Road Pompano Beach, Florida 33069 Phone: (954) 831-0969
PROJECT START DATE	Design - July 2007 Construction - May 2012
PROJECT COMPLETION DATE	Construction - February 2013
CTA CONTRACT AMOUNT	$418,315.00
ENGINEER'S ESTIMATED CONSTRUCTION COST	$2,563,176.00
ACTUAL CONSTRUCTION COST	$2,267,946.00
PROJECT SUMMARY	Broward County Water and Wastewater Services planned and relocated the wastewater Master Pump Station 310 serving Fort Lauderdale / Hollywood International Airport to accommodate the increased sanitary flows from the airport expansion and redevelopment of the area.

Craven Thompson and Associates, Inc. modeled the entire District 3A wastewater system involving 38 lift stations and associated force main network and designed approximately 7,000 feet of 16-inch force main along Ravenswood Road to accommodate the increased flows. The force main crossed Dania Cut-off Canal and Griffin Road through horizontal directional drilling.



Relevant Project Experience

Lake Worth Infrastructure 2020 Master Plan, Year 1
Lake Worth, Florida

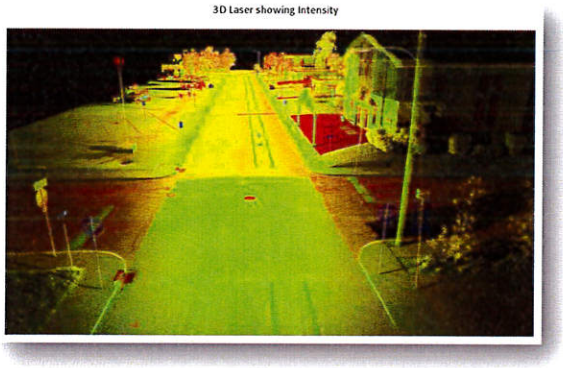
PROJECT SUMMARY

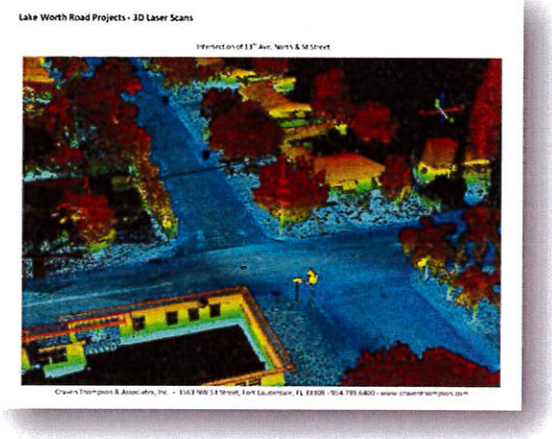
Aerial Cartographics of America, Inc. (ACA) and Craven Thompson & Associates teamed together to provide Mobile LiDAR surveying and civil engineering services of approximately 3.3 miles of roadway for Year 1's 2020 Master Plan Contract with the City. The projects include the rehabilitation of right-of-way infrastructure including roads, alleys, curb, sidewalk hardscape, drainage, and potable water. The areas scanned include the following: 15th Ave N: From Railroad to N J St.; 14th Ave N; From US 1 to N J St.; N J St: From 13th Ave North to 16th Ave North.; 11th Ave N: N H St. to N M St.; N K St.: 2nd Ave North to 9th Ave North; and N M St.; 2nd Ave North to 19th Ave North. Deliverables included calibrated LiDAR point cloud tiled in LAS format, DTM and planimetric topographic survey files in Civil 3D format, digital geo-referenced color imagery and field survey /trajectory accuracy report in accordance with the latest FDOT Terrestrial Mobile LiDAR Guidelines.

Owner:
Ms. Monica Shaner, P.E.
Project Manager
1900 Second Avenue North
Lake Worth, Florida 33461
Phone: (561) 586-1798
Email: mshaner@lakeworth.org

Date: 2014

ACA's Fees
$35,000.00





Relevant Project Experience

Plantation Gardens Historical & Phase II B Areas Watermain Plantation, Florida

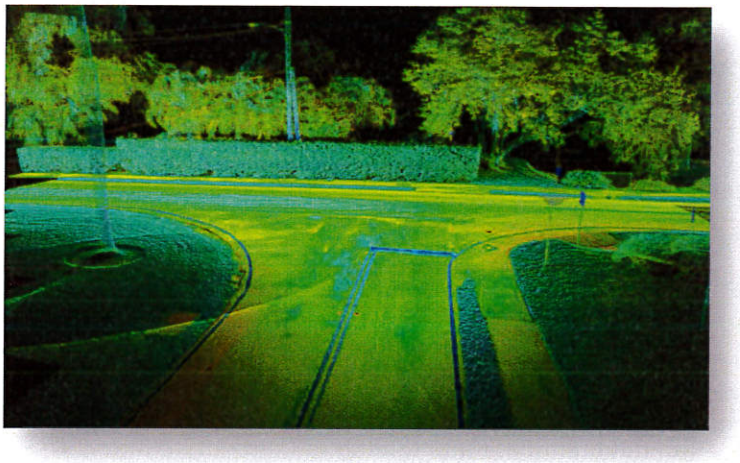
PROJECT SUMMARY

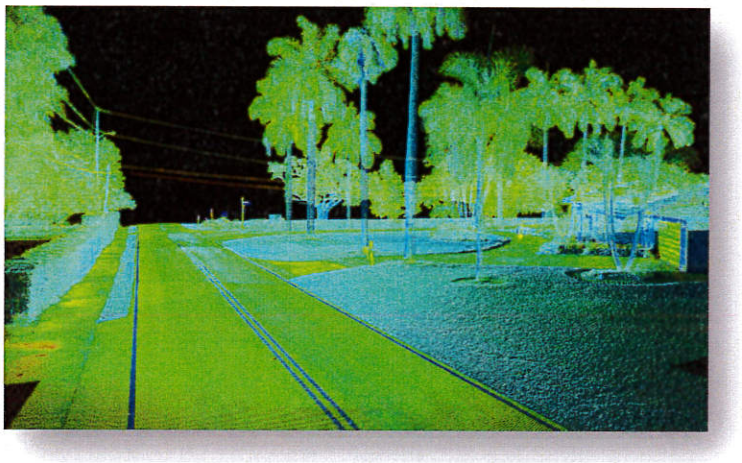
Aerial Cartographics of America, Inc. (ACA) provided Mobile LiDAR data and imagery of approximately 9.8 miles of roadway located in the City of Plantation, Florida. The areas scanned included 5.9 centerlines for the Historic Area from Holly Lane to Palm Tree Road and 3.9 centerline miles of Area B from Rose Terrace to Pine Terrace. Deliverables included calibrated LiDAR point cloud tiled in LAS format, DTM and planimetric topographic survey files in Civil 3D format, digital geo-referenced color imagery and field survey /trajectory accuracy report.

Owner:
Mr. Charles Flynn
Utilities Director
City of Plantation
400 NW 73rd Avenue
Plantation, FL 33317
Phone: (954) 797-2293
Email: cflynn@plantation.org

Date: 2014

ACA's Fees
$19,000.00





Relevant Project Experience

City of Hollywood Waterline Replacement Program Mobile LiDAR Collection, Hollywood, Florida

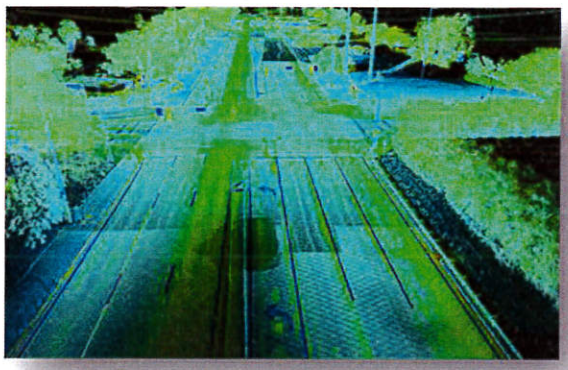
PROJECT SUMMARY

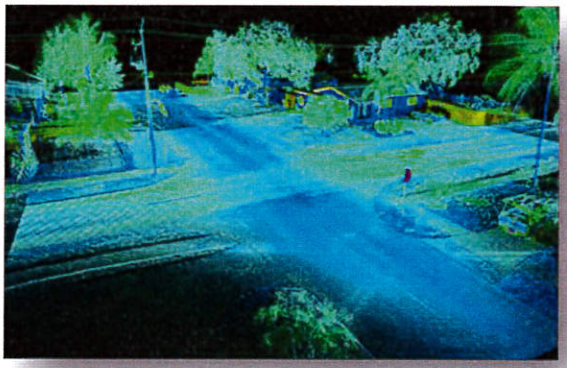
Aerial Cartographics of America, Inc. (ACA) and Craven Thompson teamed together to provided Mobile LiDAR data and imagery of approximately 17 miles of roadway located in the City of Hollywood Florida. Deliverables included calibrated LiDAR point cloud tiled in LAS format, DTM and planimetric topographic survey files in Civil 3D format, digital geo-referenced color imagery and field survey /trajectory accuracy report.

Owner:
Mr. Clèce Aurélus, PE
City of Hollywood
1621 N. 14th Avenue
Hollywood, Florida 33019
Phone: (954) 921-3930
Email: caurelus@hollywoodfl.org

Date: 2015

ACA's Fees
$28,000.00





Relevant Experience

Water Main Replacement, City of Hollywood, Florida. Tierra South Florida (TSF) performed a subsurface exploration for the water main replacement in the City of Hollywood, Florida. The project area is within the boundaries of NW 72nd Avenue, N 66th Avenue, Charleston Street, and Taft Street. Field work consisted of Standard Penetration Test (SPT) borings and pavement cores. Upon completion of the field exploration, a geotechnical engineer evaluated the results and provided subsurface profile and pavement core data.

Reuse Distribution Main, Sunrise, Florida. TSF perfromed a geotechnical engineering study for the reuse main distribution improvements within Sawgrass International Corporate Park in City of Sunrise, Florida. The alignment will have one aerial crossing at NW 8th Street, and the remainder areas will likely be cut and cover. Field work included Standard Penetration Test (SPT) borings. Provided geotechnical recommendations and evaluations regarding excavation, trench backfill, lateral earth pressures, and foundation and pavement design.

Intracoastal Waterway Water Main Crossing-Horizontal Directional Drilling, Ft. Lauderdale, Florida. The project includes installing a water main crossing through the Intracoastal water along East Las Olas Boulevard in Ft. Lauderdale, Florida. The purpose of the study was to explore the subsurface conditions at the site to enable an evaluation of acceptable construction and site development considerations. Field work included Standard Penetration Test (SPT) borings. Provided geotechnical discussion of subsurface and groundwater conditions. Provided geotechnical recommendations regarding site suitability, excavations, trench backfill, lateral earth pressures and soil parameters.

GT Lohmeyer WWTP Process Pipe Replacement, Fort Lauderdale, Florida. TSF performed a geotechnical engineering study for the pipe replacement within the GT Lohmeyer WWTP. The project includes replacement of about 1,100 linear feet of pipe, to include 30 to 66-inch diameter pipes, averaging 10 feet deep. Field work consisted of Standard Penetration Test (SPT) borings. Provided geotechnical discussion of subsurface conditions and groundwater and geotechnical recommendations regarding excavations, trench backfill, and lateral earth pressures along with a discussion of subsurface and groundwater conditions.

Design-Build Services for Replacement/ Rehabilitation of 72" Sanitary Sewage Force Main along NW/NE 159th St Between Northwest 17th Ave and N.E. 10th Ave, Miami-Dade, Florida. The project replaces a damaged section of 72-inch force main that experienced catastrophic failure. The rehabilitation involved 3.5 miles of 72 inch PCCP FM located between NW 17 Avenue and NE 10 Avenue in North Dade. Performed a geotechnical engineering study for the 72-inch force main rehab along NW 159th Street. Field work consisted of Standard Penetration Test (SPT) borings and Bore Hole Permeability (BHP) tests. Provided a report detailing information on groundwater and subsurface conditions as well as geotechnical recommendations regarding excavations, trench backfill, and lateral earth pressures (active, at-rest, and passive earth pressure) to be utilized by the design team.

Palm Aire Paving and Drainage Improvements, Broward County, Florida. TSF performed a geotechnical engineering study for the project which included a new access road to be dedicated to the City of Pompano Beach and relocating an existing 48-inch raw water main. The subsurface conditions at the site were evaluated by performing Standard Penetration Test (SPT) borings and Bore Hole Permeability (BHP) tests. Provided geotechnical discussion of subsurface conditions and groundwater and provided geotechnical recommendations regarding permanent cut/fill slopes, excavations, utilities, on-site soil suitability, and pavement design.

UAZ 310 Water Main Replacement, Broward County, Florida. TSF performed a geotechnical engineering study for the replacement of existing water main in the City of Dania Beach and Hollywood. Field work included Standard Penetration Test borings. Provided geotechnical recommendations regarding subsurface/groundwater conditions, excavations, trench backfill, and lateral earth pressures.

Water Main Replacement, City of Lake Worth, Florida. TSF provided Geotechnical Engineering Services for the project. Performed a subsurface exploration for the water main replacement in the City of Lake Worth, Florida. Field work included Standard Penetration Test (SPT) borings. Provided geotechnical evaluations and issued report that contains subsurface profile.

11th Avenue South Sewer and Water Improvements, Lake Worth, Florida. TSF provided Geotechnical Engineering Services for the installation of new sanitary sewer and water main replacement along 11th Avenue South between South C Street and South B street in Lake Worth, Florida. The subsurface conditions within the areas were explored with Standard Penetration Test (SPT) Boring. Provided geotechnical evaluations and recommendations regarding subsurface and groundwater conditions and excavations.

Stormwater Pumping Station at L-2 Canal, West Palm Beach, FL – TSF performed a geotechnical study for the construction of a storm water pumping station spanning across L-2 canal, and associated generator building and fuel tank at Lakeside Mobile Home Park. Provided geotechnical discussion of subsurface conditions and groundwater. Also provided geotechnical recommendations regarding pumping station foundation design, generator building and fuel tank foundation design, site clearing, and fill/backfill replacement.

15th Street Water Main Replacement, West Palm Beach, FL – TSF performed geotechnical engineering services for water main along 15th Street between Tamarind and Dixie Highway. Field work included 6 Standard Penetration Test boring and 5 pavement cores. Provided report with geotechnical recommendations addressing subsurface conditions, groundwater, excavations, dewatering, trench backfill, and lateral earth pressures to be utilized during design.

Royal Poinciana Alternate Crossing - 24" Watermain and 24" Forcemain Subaqueous Pipeline Installations, Palm Beach, Florida. TSF performed a geotechnical exploration for the proposed Water Main Route in West Palm Beach, Florida. The project consists of a 24-inch water main which traverses across Flagler Drive and the Intracoastal Waterway, to the Town of Palm Beach. Scope of services for this study included Standard Penetration Test (SPT) borings in the Intracoastal Waterway. Performed rock cores and unconfined compressive strength tests on rock cores. Provided a geotechnical report summarizing subsurface conditions and groundwater information. Evaluated Rock Quality Designation (RQD) and rock strength characteristics, and provided geotechnical recommendations regarding excavations, trench backfill, and lateral earth pressures for soil stabilization. The project included canal crossing, jack & bore, and directional bore operations.

Australian Avenue - 12" Water Main Replacement, West Palm Beach, FL – TSF performed geotechnical engineering services for the 12-inch water main replacement near the intersection of Australian Avenue and I-95 in Palm Beach County. Explored subsurface conditions with Standard Penetration Test (SPT) Borings. Provided recommendations regarding excavations, trench backfill and lateral earth pressures.

Neighborhood Improvement NCNIP Bid Pack 10, Broward County, FL
TSF performed a geotechnical engineering study for the proposed neighborhood improvement NCNIP Bid Pack 10 in Broward County, Florida. The project consisted of the drainage improvements along the existing subdivision streets at Dixie Highway and NE 54th Street. Field work included Standard Penetration Test (SPT) borings, Borehole Permeability (BHP) tests, and Double Ring Infiltrometer Tests (DRIT). TSF provided geotechnical recommendations regarding excavations and lateral earth pressures along with a discussion of subsurface and groundwater conditions. This project was completed on time and within budget.

Drainage Improvement - NW 21st Street and 18th Avenue, Pompano Beach, FL
TSF performed geotechnical services for the design of the proposed concrete footing to support the drainage pipe. The purpose of this geotechnical investigation was to explore the subsurface conditions at the site and to provide foundation recommendations. Provided recommendations which included information on allowable bearing pressures, settlement and other pertinent criteria for the foundation design. This project was completed on time and within budget.

Neighborhood Improvements - UAZ 124, Broward County, FL
TSF performed geotechnical and material testing services for Phase 1 of the proposed water and sewer improvements for the neighborhood. Responsibilities included developing the exploration program, conducting the program and developing engineering design criteria resulting from the field exploration program. Provided geotechnical discussion of subsurface and groundwater conditions and provided recommendations for excavations, dewatering, and lateral earth pressure on below grade structures. This project was completed on time and within budget.

Pump Station 310 Relocation, SW 42nd Street and SW 23rd Avenue, Fort Lauderdale, FL
TSF performed a geotechnical exploration for the Broward County Pump Station 310 relocation project located at SW 42nd Street and SE 23rd Avenue in Fort Lauderdale, Florida. The Pump Station building consists of a one-story structure housing pumps and piping, a diesel generator and electrical equipment. The structure will be concrete-framed with concrete masonry walls on a concrete foundation with a pre-cast/pre-stressed hollow core planks with concrete topping roof. Field work included Standard Penetration Test (SPT) borings to a depth of 30 feet below grade. Provided geotechnical recommendations regarding floor slab and foundation design as well as factors that will impact construction. This project was completed on time and within budget.

Hillsboro Pines Neighborhood Improvement Project, Broward County, FL
TSF completed a subsurface investigation for the Hillsboro Pines Neighborhood Improvement project. Field work included Standard Penetration Test (SPT) borings to a depth of 15 feet below existing grade, and Bore Hole Permeability (BHP) tests, two large and two standard tests. Issued a geotechnical report with the results of the soil test borings and BHP tests. This project was completed on time and within budget.

Lift Station #21, Pompano Beach, FL
TSF performed geotechnical services for the construction of a submersible lift station. Provided geotechnical discussion of subsurface and groundwater conditions and provided recommendations for foundation design (both shallow foundation and pile foundation), site clearing, fill/backfill placement, and other construction considerations. This project was completed on time and within budget.

Bid Pack 9, Oakland Park, FL
TSF performed a geotechnical engineering study for the drainage improvements and lift station project. Provided geotechnical recommendations regarding site suitability, excavations, backfill, lateral earth pressures. This project was completed on time and within budget.

Sanitary Sewer Lift Stations1, 2, 5 & 7 Upgrade, Oakland Park, FL
TSF performed a geotechnical engineering study for the proposed lift stations. Provided geotechnical recommendations regarding site suitability, excavations, backfill, lateral earth pressures. This project was completed on time and within budget.