JANUARY 24, 2019

EXHIBIT A

SCOPE OF WORK

FOR

Design Services for

SE 5th Avenue Bridge Replacement

CITY OF POMPANO BEACH

BROWARD COUNTY

HIGHWAY AND BRIDGE/STRUCTURAL DESIGN

This Exhibit forms an integral part of the agreement between the City of Pompano Beach of Transportation (hereinafter referred to as the CITY) and ***TY LIN International*** (hereinafter referred to as the CONSULTANT) relative to the transportation facility described as follows:

Description:

- Replacement of Southeast 5th Avenue Bridge - Bridge No. 868109
- Rehabilitation/Enhancement of Palm Aire Bridge to the Herb Skolnick Center – Bridge No. 868101, (hereby referred to as Palm Aire Bridge South)
- Rehabilitation/Enhancement of Palm Aire Bridge spanning the C-14 canal- Bridge No. 868114 (hereby referred to as Palm Aire Bridge North)

1 PURPOSE

The City of Pompano Beach Engineering Department (CITY) has identified major projects and programs within the CITY boundaries with the goal to make the City more attractive to residents, visitors and tourists and promote economic growth and activity as detailed in the City's Strategic Plan. The CITY, as part of its Capital Improvement Program and Strategic Plan, is providing for the replacement and upgrade of bridges throughout the City. As such, the CITY has selected **T. Y. Lin International** to perform professional engineering, architectural, environmental, and construction administration services as required for the three bridges – all located with the City of Pompano's city limits.

The purpose of this Exhibit is to describe the scope of work and the responsibilities of the CONSULTANT and the CITY in connection with the design and preparation of a complete set of construction contract documents and incidental engineering services, as necessary, for improvements to the transportation facility described herein.

The general objective is for the CONSULTANT to prepare a set of contract documents including plans, specifications, supporting engineering analysis, calculations and other technical documents in accordance with FDOT policy, procedures and requirements. These Contract documents will be used by the contractor to build the project and test the project components. These Contract documents will be used by the Consultant for inspection and final acceptance of the project. The CONSULTANT shall follow a systems engineering

process to ensure that all required project components are included in the development of the Contract documents and the project can be built as designed and to specifications.

The Scope of Services establishes which items of work in the FDOT Design Manual and other pertinent manuals are specifically prescribed to accomplish the work included in this contract, and also indicate which items of work will be the responsibility of the CONSULTANT and/or the CITY.

The CONSULTANT shall be aware that as a project is developed, certain modifications and/or improvements to the original concepts may be required. The CONSULTANT shall incorporate these refinements into the design and consider such refinements to be an anticipated and integral part of the work. This shall not be a basis for any supplemental fee request(s).

The CONSULTANT shall demonstrate good project management practices while working on this project. These include communication with the CITY and others as necessary, management of time and resources, and documentation. The CONSULTANT shall set up and maintain throughout the design of the project a contract file in accordance with CITY procedures. CONSULTANTs are expected to know the laws and rules governing their professions and are expected to provide services in accordance with current regulations, codes and ordinances and recognized standards applicable to such professional services. The Consultant shall provide qualified technical and professional personnel to perform to CITY standards and procedures, the duties and responsibilities assigned under the terms of this agreement. The Consultant shall minimize to the maximum extent possible the CITY's need to apply its own resources to assignments authorized by the CITY.

The CITY will provide contract administration, management services, and technical reviews of all work associated with the development and preparation of contract documents, including Construction documents. The CITY's technical reviews are for high-level conformance and are not meant to be comprehensive reviews. The CONSULTANT shall be fully responsible for all work performed and work products developed under this Scope of Services. The CITY may provide job-specific information and/or functions as outlined in this contract, if favorable.

2 SCOPE DESCRIPTION

The following are detailed activities to be performed by the Consultant:

2.1 Project General and Roadway (Activities 3, 4, and 5)

Public Involvement:

- *SE 5th Street Replacement: Two Public Meetings and one presentation to the City Commission*

Specification Package Preparation: Consultant shall prepare One Specification Package

Typical Section: One typical section for each bridge will be developed.

Pavement Design: Standard City Pavement Design will be used

TTCP: Temporary Traffic Control to be provided by the contractor

2.2 Drainage (Activities 6a and 6b)

Drainage Design for SE 5th Street Bride Replacement

2.3 Utilities Coordination (Activity 7) Keith & Assoc

The CONSULTANT is responsible to certify that all necessary arrangements for utility work on this project have been made and will not conflict with the physical construction schedule. The CONSULTANT should coordinate with CITY personnel to coordinate transmittals to Utility Companies and meet production schedules.

The CONSULTANT shall ensure City standards, policies, procedures, practices, and design criteria are followed concerning utility coordination.

The Utility Coordination Manager shall be responsible for managing all utility coordination, including the following:

Assisting the engineer of record in identifying all existing utilities and coordinating any new installations. Assisting the Engineer of Record with resolving utility conflicts.

Scheduling and performing utility coordination meetings, keeping and distribution of minutes/action items of all utility meetings, and ensuring expedient follow-up on all unresolved issues.

Distributing all plans, conflict matrixes and changes to affected utility owners and making sure this information is properly coordinated and documented.

Utilities for SE 5th Street Bridge:

1. *City of Pompano Beach*
2. *FP&L Distribution*
3. *FP&L Subaqueous*
4. *Crown Castle*
5. *AT&T*
1. *AT&T*
2. *City of Fort Lauderdale*

2.4 Environmental Permits, Compliances, and Environmental Clearances (Activity 8)

A number of permits/approvals are anticipated for authorization of the proposed works and is dependent on the level of construction activities that may be required to rehabilitate or replace the existing structures (i.e., dredging, seawall replacement, etc.). The following permits/approvals are expected for the three bridges:

Permits for SE 5th Street Bridge:

- SFWMD: General Environmental Resource Permit (ERP) Minor Bridge Alteration for Municipalities (62-330.443 FAC)
- FDEP: National Pollutant Discharge Elimination System (NPDES) General Permit Notice of Intent (NOI)
- USCG: Bridge Permit
- USACE: Nationwide #15 USCG Approved Bridge
- Broward County: Environmental Resource General License

Florida Fish and Wildlife relocation permits if Florida burrowing owls or gopher tortoises are detected within the project limits.

2.5 Structures (Activities 9 – 10)

Structures Design for SE 5th Street Bridge: Short Span bridge replacement

2.6 Lighting (Activities 12-13) (not applicable to this project)

2.7 Landscape Architecture (Activities 14-15)- Calvin Giordano

Landscape Architecture plans for SE 5th Street bridge.

2.8 Survey (Activity 16) Keith & Assoc

Design Survey:

SE 5th Street Bridge:

Subsurface Utility Exploration:

SE 5th Street Bridge:

Right of Way Survey:

SE 5th Street Bridge:

2.9 Geotechnical (Activity 18) H2R

2. 10 Submittals

The CONSULTANT shall furnish construction contract documents as required by the CITY to adequately control, coordinate, and approve the work concepts. The CONSULTANT shall distribute submittals as directed by the CITY. The CITY will determine the specific number of copies required prior to each submittal.

2. 11 Provisions for Work

All work shall be prepared with English units in accordance with the latest editions of standards and requirements utilized by the CITY which include, but are not limited to,

publications such as:

- General
  - Title 29, Part 1910, Standard 1910.1001, Code of Federal Regulations (29 C.F.R. 1910.1001) – Asbestos Standard for Industry, U.S. Occupational Safety and Health Administration (OSHA)
  - 29 C.F.R. 1926.1101 – Asbestos Standard for Construction, OSHA
  - 40 C.F.R. 61, Subpart M - National Emission Standard for Hazardous Air Pollutants (NESHAP), Environmental Protection Agency (EPA)
  - 40 C.F.R. 763, Subpart E – Asbestos-Containing Materials in Schools, EPA
  - 40 C.F.R. 763, Subpart G – Asbestos Worker Protection, EPA
  - Americans with Disabilities Act (ADA) Standards for Accessible Design
  - AASHTO – A Policy on Design Standards Interstate System
  - AASHTO – Roadside Design Guide
  - AASHTO – Roadway Lighting Design Guide
  - AASHTO – A Policy for Geometric Design of Highways and Streets
  - AASHTO – Highway Safety Manual
  - Rule Chapter 5J-17, Florida Administrative Code (F.A.C.), Standards of Practice for Professional Surveyors and Mappers
  - Chapter 469, Florida Statutes (F.S.) – Asbestos Abatement
  - Rule Chapter 62-257, F.A.C., Asbestos Program
  - Rule Chapter 62-302, F.A.C., Surface Water Quality Standards
  - Code of Federal Regulations (C.F.R.)
  - Florida Administrative Codes (F.A.C.)
  - Chapters 20, 120, 215, 455, Florida Statutes (F.S.) – Florida CITY of Business & Professional Regulations Rules
  - Florida CITY of Environmental Protection Rules
  - FDOT Basis of Estimates Manual
  - FDOT Computer Aided Design and Drafting (CADD) Manual
  - FDOT Standard Plans
  - FDOT Flexible Pavement Design Manual
  - FDOT - Florida Roundabout Guide
  - FDOT Handbook for Preparation of Specifications Package
  - FDOT Standard Plans Instructions
  - FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (“Florida Greenbook”)
  - FDOT Materials Manual
  - FDOT Pavement Type Selection Manual
  - FDOT Design Manual
  - FDOT Procedures and Policies
  - FDOT Procurement Procedure 001-375-030, Compensation for Consultant Travel Time on Professional Services Agreements
  - FDOT Project Development and Environmental Manual
  - FDOT Project Traffic Forecasting Handbook
  - FDOT Public Involvement Handbook

- FDOT Rigid Pavement Design Manual
- FDOT Standard Specifications for Road and Bridge Construction
- FDOT Utility Accommodation Manual
- Manual on Speed Zoning for Highways, Roads, and Streets in Florida
- Federal Highway Administration (FHWA) - Manual on Uniform Traffic Control Devices (MUTCD)
- FHWA – National Cooperative Highway Research Program (NCHRP) Report 672, Roundabouts: An Informational Guide
- FHWA Roadway Construction Noise Model (RCNM) and Guideline Handbook
- Florida Fish and Wildlife Conservation Commission - Standard Manatee Construction Conditions 2005
- Florida Statutes (F.S.)
- Florida's Level of Service Standards and Guidelines Manual for Planning
- Model Guide Specifications – Asbestos Abatement and Management in Buildings, National Institute for Building Sciences (NIBS)
- Quality Assurance Guidelines
- Safety Standards
- Any special instructions from the CITY

- Roadway
  - FDOT – Florida Intersection Design Guide
  - FDOT - Project Traffic Forecasting Handbook
  - FDOT - Quality/Level of Service Handbook
  - Florida's Level of Service Standards and Highway Capacity Analysis for the SHS
  - Transportation Research Board (TRB) - Highway Capacity Manual
- Permits
  - Chapter 373, F.S. – Water Resources
  - US Fish and Wildlife Service Endangered Species Programs
  - Florida Fish and Wildlife Conservation Commission Protected Wildlife Permits
  - Bridge Permit Application Guide, COMDTPUB P16591.3C
  - Building Permit
- Drainage
  - FDOT Bridge Hydraulics Handbook
  - FDOT Culvert Handbook
  - FDOT Drainage Manual
  - FDOT Erosion and Sediment Control Manual
  - FDOT Exfiltration Handbook
  - FDOT Hydrology Handbook
  - FDOT Open Channel Handbook
  - FDOT Optional Pipe Materials Handbook
  - FDOT Storm Drain Handbook
  - FDOT Stormwater Management Facility Handbook

- FDOT Temporary Drainage Handbook
- FDOT Drainage Connection Permit Handbook
- FDOT Bridge Scour Manual

- Survey and Mapping
  - All applicable Florida Statutes and Administrative Codes
  - Applicable Rules, Guidelines Codes and authorities of other Municipal, County, State and Federal Agencies.
  - FDOT Aerial Surveying Standards for Transportation Projects Topic 550-020-002
  - FDOT Right of Way Mapping Handbook
  - FDOT Surveying Procedure Topic 550-030-101
  - Florida CITY of Transportation Right of Way Procedures Manual
  - Florida CITY of Transportation Surveying Handbook
  - Right of Way Mapping Procedure 550-030-015
- Traffic Engineering and Operations and ITS
  - AASHTO - An Information Guide for Highway Lighting
  - AASHTO - Guide for Development of Bicycle Facilities
  - FHWA Standard Highway Signs Manual
  - FDOT Manual on Uniform Traffic Studies (MUTS)
  - FDOT Median Handbook
  - FDOT Traffic Engineering Manual
  - Minimum Specifications for Traffic Control Signal Devices
  - National Electric Safety Code
  - National Electrical Code
- Structures
  - AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specifications and Interims
  - AASHTO LRFD Movable Highway Bridge Design Specifications and Interims
  - AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, and Interims.
  - AASHTO/-AWS-D1. 5M/D1.5: An American National Standard Bridge Welding Code
  - AASHTO Guide Specifications for Structural Design of Sound Barriers
  - AASHTO Manual for Condition Evaluation and Load and Resistance Factor Rating (LRFR) of Highway Bridges
  - FDOT Bridge Load Rating Manual
  - FDOT Structures Manual
  - FDOT Structures Design Bulletins (available on FDOT Structures web site only)
  -
- Geotechnical
  - FHWA Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Specifications

- Manual of Florida Sampling and Testing Methods
- Soils and Foundation Handbook

- Landscape Architecture
  - Florida CITY of Agriculture and Consumer Services Grades and Standards for Nursery Plants
- Architectural
  - Building Codes
  - Florida Building Code:
    - Building
    - Fuel Gas
    - Mechanical
    - Plumbing
    - Existing Building
  - Florida Accessibility Code for Building Construction
  - Rule Chapter 60D, F.A.C., Division of Building Construction
  - Chapter 553, F.S. – Building Construction Standards
  - ANSI A117.1 2003 Accessible and Usable Building and Facilities
  - Titles II and III, Americans With Disabilities Act (ADA), Public Law 101-336; and the ADA Accessibility Guidelines (ADAAG)
  - NFPA 204M - Smoke and Heating Venting

2. 12 Services to be Performed by the CITY

When appropriate and /or available, the CITY will provide project data including:

- Access for the CONSULTANT to utilize the CITY's Information Technology Resources.
- All CITY agreements with Utility Agency Owner (UAO).
- Building Construction Permit Coordination
- All information that may come to the CITY pertaining to future improvements.
- All future information that may come to the CITY during the term of the CONSULTANT's Agreement, which in the opinion of the CITY is necessary for the prosecution of the work.
- Available traffic and planning data.
- All approved utility relocations.
- Engineering standards review services.
- All available information in the possession of the CITY pertaining to utility companies whose facilities may be affected by the proposed construction.
- Previously constructed Highway Beautification or Landscape Construction Plans
- Existing right of way maps.
- Existing pavement evaluation report for all RRR projects.
- Design Reports

- Letters of authorization designating the CONSULTANT as an agent of the CITY in accordance with F.S. 337.274.
- Phase reviews of plans and engineering documents.
- Regarding Environmental Permitting Services:
  - Approved Permit Document when available.
  - Approval of all contacts with environmental agencies.
  - General philosophies and guidelines of the CITY to be used in the fulfillment of this contract. Objectives, constraints, budgetary limitations, and time constraints will be completely defined by the Project Manager.
  - Appropriate signatures on application forms.

3 PROJECT COMMON AND PROJECT GENERAL TASKS

Project Common Tasks

Project Common Tasks, as listed below, are work efforts that are applicable to many project activities, 4 (Roadway Analysis) through 36 (3D Modeling). These tasks are to be included in the project scope in each applicable activity when the described work is to be performed by the CONSULTANT.

Cost Estimates: The CONSULTANT is responsible for producing a construction cost estimate and reviewing and updating the cost estimate when scope changes occur and/or at milestones of the project. Prior to 60% plans or completion of quantities, the CITY's Long Range Estimate (L.R.E.) system will be used to produce a conceptual estimate, according to District policy. Once the quantities have been developed (beginning at 60% plans and no later than 90% plans) the CONSULTANT shall be responsible for inputting the pay items and quantities into AASHTOWare Project Preconstruction through the use of the CITY's Designer Interface for generating the summary of quantities and the FDOT's in-house estimates. A Summary of Pay Items sheet shall be prepared with all required Plans submittals as required.

Technical Special Provisions: The CONSULTANT shall provide Technical Special Provisions for all items of work not covered by the Standard Specifications for Road and Bridge Construction and the workbook of implemented modifications.

A Technical Special Provision shall not modify the Standard Specifications and implemented modifications in any way.

The Technical Special Provisions shall provide a description of work, materials, equipment and specific requirements, method of measurement and basis of payment. Proposed Technical Special Provisions will be submitted to the District Specifications Office for initial review at the time of the Phase III plans review submission to the CITY's Project Manager. This timing will allow for adequate processing time prior to final submittal. The Technical Special Provisions will be reviewed for suitability in accordance with the

Handbook for Preparation of Specification Packages. The District Specifications Office will forward the Technical Special Provisions to the District Legal Office for their review and comment. All comments will be returned to the CONSULTANT for correction and resolution. Final Technical Special Provisions shall be digitally signed and sealed in accordance with applicable Florida Statutes.

The CONSULTANT shall contact the appropriate District Specifications Office for details of the current format to be used before starting preparations of Technical Special Provisions.

Field Reviews: The CONSULTANT shall make as many trips to the project site as required to obtain necessary data for all elements of the project.

Technical Meetings: The CONSULTANT shall attend all technical meetings necessary to execute the Scope of Services of this contract. This includes meetings with CITY and/or Agency staff, between disciplines and subconsultants, such as access management meetings, pavement design meetings, local governments, railroads, airports, progress review meetings (phase review), and miscellaneous meetings. The CONSULTANT shall prepare, and submit to the CITY's Project Manager for review, the meeting minutes for all meetings attended by them. The meeting minutes are due within five (5) working days of attending the meeting.

Quality Assurance/Quality Control: It is the intention of the CITY that design CONSULTANTS, including their subconsultant(s), are held responsible for their work, including plans review. The purpose of CONSULTANT plan reviews is to ensure that CONSULTANT plans follow the plan preparation procedures outlined in the FDOT Design Manual, that state and federal design criteria are followed with the CITY concept, and that the CONSULTANT submittals are complete. All subconsultant document submittals shall be submitted by the subconsultant directly to the CONSULTANT for their independent Quality Assurance/Quality Control review and subsequent submittal to the CITY.

It is the CONSULTANT'S responsibility to independently and continually QC their plans and other deliverables. The CONSULTANT should regularly communicate with the CITY's Design Project Manager to discuss and resolve issues or solicit opinions from those within designated areas of expertise.

The CONSULTANT shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications and other services furnished by the CONSULTANT and their subconsultant(s) under this contract.

The CONSULTANT shall provide a Quality Control Plan that describes the procedures to be utilized to verify, independently check, and review all maps, design drawings, specifications, and other documentation prepared as a part of the contract. The CONSULTANT shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan shall be one specifically designed for this project. The CONSULTANT shall submit a

Quality Control Plan for approval within twenty (20) business days of the written Notice to Proceed and it shall be signed by the CONSULTANT's Project Manager and the CONSULTANT QC Manager. The Quality Control Plan shall include the names of the CONSULTANT's staff that will perform the quality control reviews. The Quality Control reviewer shall be a Florida Licensed Professional Engineer fully prequalified under F.A.C. 14-75 in the work type being reviewed. A marked up set of prints from a Quality Control Review indicating the reviewers for each component (structures, roadway, drainage, signals, geotechnical, signing and marking, lighting, landscape, surveys, etc.) and a written resolution of comments on a point-by-point basis will be required, if requested by the CITY, with each phase submittal. The responsible Professional Engineer, Landscape Architect, or Professional Surveyor & Mapper that performed the Quality Control review will sign a statement certifying that the review was conducted and found to meet required specifications.

The CONSULTANT shall, without additional compensation, correct all errors or deficiencies in the designs, maps, drawings, specifications and/or other products and services.

Supervision: The CONSULTANT shall supervise all technical design activities.

Coordination: The CONSULTANT shall coordinate with all disciplines of the project to produce a final set of construction documents.

Project General Tasks

Project General Tasks, described in Sections 3.1 through 3.7 below, represent work efforts that are applicable to the project as a whole and not to any one or more specific project activity. The work described in these tasks shall be performed by the CONSULTANT when included in the project scope.

3.1 Public Involvement –

Public involvement includes communicating to all interested persons, groups, and government organizations information regarding the development of the project. The CONSULTANT shall provide to the CITY drafts of all Public Involvement documents (i.e., newsletters, property owner letters, advertisements, etc.) associated with the following tasks for review and approval at least **10** *business days prior to printing and / or distribution.*

3.1.1 Notifications DK Architecture/TYLI

In addition to public involvement data collection, the CONSULTANT prepare notifications, flyers, and/or letters to elected officials and other public officials, private property owners, and tenants at intervals during plans production as identified by the CITY. All letters and notices shall be reviewed by the **CITY** *to ensure that they are addressed to the correct and current public officials.*

3.1.2 Preparing Mailing Lists DK Architecture

At the beginning of the project, The CONSULTANT shall identify all impacted property owners and tenants (within a minimum of 300 feet of the project corridor) The CONSULTANT shall prepare a mailing list of all such entities and shall update the mailing list as needed during the life of the project.

3.1.3 Renderings DK Architecture

The CONSULTANT shall prepare renderings for use in public meetings.

3.1.4 PowerPoint Presentations DK Architecture

The CONSULTANT shall prepare PowerPoint presentations for use in public meetings.

3.1.5 Public Meeting Preparations DK Architecture/TYLI

The CONSULTANT shall prepare the necessary materials for use in public meetings.

The CONSULTANT will investigate potential meeting sites to advise the CITY on their suitability. The CITY *will reimburse Consultant all costs for meeting site rents and insurance.*

3.1.6 Public Meeting Attendance and Follow-up DK Architecture/TYLI

The CONSULTANT shall attend public meeting(s), assist with meeting setup and take down. The CONSULTANT shall also prepare a summary of the public meeting that includes all copies of all materials shown or provided at the public meeting. The summary shall also include a listing of all written comments made during or after the meeting and responses to those written comments.

The CONSULTANT will attend the meetings with an appropriate number of personnel to assist the CITY'S Project Manager.

It is estimated for this project there will be 2 *Public meetings for SE 5th Street*

3.1.7 Commission Meetings

It is estimated for this project there will be 1 *City Commission meeting for SE 5th Street Bridge*

3.2 Specifications Package Preparation

The CONSULTANT shall prepare and provide a specifications package in accordance with the CITY'S Procedure Topic No. 630-010-005 Specifications Package Preparation and the Specifications Handbook. The CONSULTANT shall provide the CITY names of at least two team members who have successfully completed the Specifications Package Preparation Training and will be responsible for preparing the Specifications Package for the project. The Specifications Package shall be prepared using the CITY's Specs on the Web application. The CONSULTANT shall be able to document that the procedure defined in the Handbook for the Preparation of Specifications Packages is followed, which includes the quality assurance/quality control procedures. The specifications package shall address

all items and areas of work.

The CONSULTANT shall coordinate with the CITY on the submittal requirements. Final submittal of the specifications package must occur at least 20 working days prior to the contract package being submitted for Construction. This submittal shall be digitally signed, dated, and sealed in accordance with applicable Florida Statutes.

3.3 Contract Maintenance

3.4 Prime Consultant Project Manager Meetings

Includes only the Prime Consultant Project Manager's time for travel and attendance at Activity Technical Meetings and other meetings.

3.5 Post Design Services

Post Design Services may include, but not limited to, meetings, construction assistance, plans revisions, shop drawing review, survey services, as-built drawings, and load ratings.

4 ROADWAY ANALYSIS

The CONSULTANT shall analyze and document Roadway Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

4.1 Typical Section Package

The CONSULTANT shall provide an approved Typical Section Package prior to the first plans submittal.

4.2 Horizontal/Vertical Master Design Files

The CONSULTANT shall design the geometrics using the Standard Plans that are most appropriate with proper consideration given to the design traffic volumes, design speed, capacity and levels of service, functional classification, adjacent land use, design consistency and driver expectancy, aesthetics, existing vegetation to be preserved, pedestrian and bicycle concerns, ADA requirements, Safe Mobility For Life Program, access management, PD&E documents and scope of work. The CONSULTANT shall also develop utility conflict information to be provided to project Utility Coordinator in the format requested by the CITY.

4.3 Cross Section Design Files

The CONSULTANT shall establish and develop cross section design files

4.4 Temporary Traffic Control Plan (TTCP) Analysis

The CONSULTANT shall design a safe and effective TTCP to move vehicular and pedestrian traffic during all phases of construction. The design shall include construction phasing of roadways ingress and egress to existing property owners and businesses, routing, signing and

pavement markings, and detour quantity tabulations, roadway pavement, drainage structures, ditches, front slopes, back slopes, drop offs within clear zone, transit stops, and traffic monitoring sites. Special consideration shall be given to the construction of the drainage system when developing the construction phases. Positive drainage must be maintained at all times. The design shall include construction phasing of roadways to accommodate the construction or relocation of utilities when the contract includes Joint Project Agreements (JPAs).

The CONSULTANT shall investigate the need for temporary traffic signals, temporary highway lighting, detours, diversions, lane shifts, and the use of materials such as sheet piling in the analysis. The Traffic Control Plan shall be prepared by a certified designer who has completed training as required by the CITY. Before proceeding with the TTCP, the CONSULTANT shall meet with the appropriate CITY personnel. The purpose of this meeting is to provide information to the CONSULTANT that will better coordinate the Preliminary and Final TTCP efforts.

The CONSULTANT shall consider the local impact of any lane closures or alternate routes. When the need to close a road is identified during this analysis, the CONSULTANT shall notify the CITY's Project Manager as soon as possible. Proposed road closings must be reviewed and approved by the CITY. Diligence shall be used to minimize negative impacts by appropriate specifications, recommendations or plans development. Local impacts to consider will be local events, holidays, peak seasons, detour route deterioration and other eventualities.

4.5 Master TTCP Design Files

The CONSULTANT shall develop master TTCP files showing each phase of the TTCP. This includes all work necessary for designing lane configurations, diversions, lane shifts, signing and pavement markings, temporary traffic control devices, and temporary pedestrian ways.

4.6 Quantities

The CONSULTANT shall develop accurate quantities and the supporting documentation, including construction days when required.

4.7 Cost Estimate

4.8 Quality Assurance/Quality Control

4.9 Supervision

5 ROADWAY PLANS

The CONSULTANT shall prepare Roadway, TTCP, Utility Adjustment Sheets, plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction.

5.1 Key Sheet

5.2 Summary of Pay Items Including Quantity Input

5.3 Typical Section Sheets

5.4 General Notes/Pay Item Notes

5.5 Summary of Quantities Sheets

5.6 Plan/Profile Sheet

5.7 Cross Sections

5.8 Temporary Traffic Control Plan Sheets

5.9 Utility Adjustment Sheets

5.10 Project Network Control Sheet(s)

5.11 Environmental Detail Sheets

Preparation of detail sheets for potential environmental issues such as, underground fuel tanks and monitoring wells, septic tanks within the proposed right of way. All piping and pumps in association with the above referenced issues shall also be located and identified by the survey. The CONSULTANT shall relay to the CITY any findings of contaminated soil, monitoring wells, or any features relating to contamination or hazardous material.

Coordination with Permits/Environmental staff and preparing Dredge & Fill Detail sheets where applicable.

5.12 Utility Verification Sheet(s) (SUE Data)

5.13 Quality Assurance/Quality Control

5.14 Supervision

6a DRAINAGE ANALYSIS (included in Roadway hours)

The CONSULTANT shall analyze and document Drainage Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

The CONSULTANT shall be responsible for designing a drainage and stormwater management system. All design work shall comply with the requirements of the appropriate regulatory agencies and the CITY's Drainage Manual.

The CONSULTANT shall coordinate fully with the appropriate permitting agencies and the CITY's staff. All activities and submittals should be coordinated through the CITY's Project

Manager. The work will include the engineering analyses for any or all of the following:

6a Design of Stormwater Management Facility (Roadside Treatment Swales and Linear Ponds) (Not applicable to this project)

6a.1 Design of Storm Drains

Delineate contributing drainage areas, determine runoff, inlet locations, and spread. Calculate hydraulic losses (friction, utility conflict and, if necessary, minor losses). Determine design tailwater and, if necessary, outlet scour protection.

6a.2 Drainage Design Documentation Report

Compile drainage design documentation into report format. Include documentation for all the drainage design tasks and associated meetings and decisions, except for stand-alone reports, such as the Pond Siting Analysis Report and Bridge Hydraulics Report.

6a.3 Bridge Hydraulic Report

Calculate hydrology, hydraulics, deck drainage, scour, and appropriate counter measures. Prepare report and the information for the Bridge Hydraulics Recommendation Sheet.

6a.4 Cost Estimate

Prepare cost estimates for the drainage components, except bridges and earthwork for stormwater management and flood compensation sites.

6a.5 Existing Permit Analysis

Data gathering including desktop analysis of local, state and federal Drainage permits.

6a.6 Field Reviews

6a.7 Technical Meetings

Meetings with CITY staff, regulatory agencies, local governments such as meetings with District Drainage Engineer, the Water Management District, FDEP, etc.

6a.8 Quality Assurance/Quality Control

6a.9 Supervision

6a.10 Coordination

6b DRAINAGE PLANS (included in roadway hours)

The CONSULTANT shall prepare Drainage plan sheets, notes, and details. The plans shall include the following sheets necessary to convey the intent and scope of the project for the purposes of construction.

6b.1 Bridge Hydraulics Recommendation Sheets

6b.2 Summary of Drainage Structures

6b.3 Miscellaneous Drainage Detail Sheets

6b.4 Erosion Control Plan Sheet(s)

6b.5 SWPPP Sheet(s)

6b.6 Quality Assurance/Quality Control

6b.7 Supervision

7 UTILITIES Keith and Assoc

The CONSULTANT shall identify utility facilities and secure agreements, utility work schedules, and plans from the Utility Agency Owners (UAO) ensuring all conflicts that exist between utility facilities and the CITY's construction project are addressed. The CONSULTANT shall certify all utility negotiations have been completed and that arrangements have been made for utility work to be undertaken.

7.1 Utility Kickoff Meeting

Before any contact with the UAO(s), the CONSULTANT shall meet with the District Utility Office (DUO) to receive guidance, as may be required, to assure that all necessary coordination will be accomplished in accordance with CITY procedures. CONSULTANT shall bring a copy of the design project work schedule reflecting utility activities.

7.2 Identify Existing Utility Agency Owner(s)

The Consultant shall identify all utilities within and adjacent to the project limits that may be impacted by the project.

7.3 Make Utility Contacts

First Contact: The CONSULTANT shall send letters and two sets of plans to each utility, one set for the utility office, and one set to the CITY Offices as required by the District. Includes contact by phone for meeting coordination. Request type, size, location, easements, and cost for relocation if reimbursement is claimed. Request the voltage level for power lines in the project area. Send UAO requests for reimbursement to FDOT for a legal opinion. Include the meeting schedule (if applicable) and the design schedule. Include typical meeting agenda. If scheduling a meeting, give 4 weeks advance notice.

Second Contact: At a minimum of 4 weeks prior to the meeting, the CONSULTANT shall transmit two complete sets of Phase II plans and the utility conflict information (when applicable and in the format requested by the CITY) to each UAO having facilities located within the project limits, and one set to the CITY Offices as required by the District.

Third Contact: Identify agreements and assemble packages. The CONSULTANT shall send

agreements, letters, the utility conflict information (when applicable and in the format requested by the CITY) and two sets of plans to the UAO(s) including all component sets, one set for the utility office, one set to construction and maintenance if required. Include the design schedule.

Not all projects will have all contacts as described above.

7.4 Preliminary Utility Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a preliminary utility meeting with all UAO(s) having facilities located within the project limits for the purpose of presenting the project, review the current design schedule, evaluate the utility information collected, provide follow-up information on compensable property rights from the FDOT Legal Office, discuss the utility work by highway contractor option with each utility, and discuss any future design issues that may impact utilities. This is also an opportunity for the UAO(s) to present proposed facilities. The CONSULTANT shall keep accurate minutes and distribute a copy to all attendees.

7.5 Individual/Field Meetings

The CONSULTANT shall meet with each UAO as necessary, separately or together, throughout the project design duration to provide guidance in the interpretation of plans, review changes to the plans and schedules, standard or selective clearing and grubbing work, and assist in the development of the UAO(s) plans and work schedules. The CONSULTANT is responsible for motivating the UAO to complete and return the necessary documents after each Utility Contact or Meeting.

7.6 Collect and Review Plans and Data from UAO(s)

The CONSULTANT shall review utility marked plans and data individually as they are received for content. Ensure information from the UAO (utility type, material and size) is sent to the designer for inclusion in the plans. Forward all requests for utility reimbursement and supporting documentation to the DUO.

7.7 Utility Design Meeting

The CONSULTANT shall schedule (time and place), notify participants, and conduct a Utility meeting with all affected UAO(s). The CONSULTANT shall be prepared to discuss impacts to existing trees/vegetation and proposed landscape, drainage, traffic signalization, temporary traffic control plan (TTCP) (construction phasing), review the current design schedule and letting date, evaluate the utility information collected, provide follow-up information on compensable property rights from FDOT Legal Office, discuss with each UAO the utility work by highway contractor option, discuss any future design issues that may impact utilities, etc., to the extent that they may have an effect on existing or proposed utility facilities with particular emphasis on drainage and TTCP with each UAO. The intent of this meeting shall be to assist the UAOs in identifying and resolving conflicts between utilities and proposed construction before completion of the plans, including utility adjustment details. Also to work with the UAOs to recommend potential resolution between known utility conflicts with proposed construction plans as may be deemed practical by the UAO. The CONSULTANT shall keep accurate minutes of all

meetings and distribute a copy to all attendees within 3 days. See Task 4.5 (Horizontal/Vertical Master Design File) and Task 4.8 (Cross Section Design Files) for utility conflict location identification and adjustments.

7.8 Review Utility Markups & Work Schedules and Processing of Schedules & Agreements

The CONSULTANT shall review utility marked up plans and work schedules as they are received for content and coordinate review with the designer. Send color markups and schedules to the appropriate CITY office(s) such as survey, geotechnical, drainage, structures, lighting, roadway, signals, utilities, landscape architecture, municipalities, maintaining agency, and District Traffic Operations for review and comment if required by the District. Coordinate with the District for execution. Distribute Executed Final Documents. Prepare Work Order for UAO(s). The CONSULTANT shall coordinate with the DUO the programming of necessary Work Program funds.

7.9 Utility Coordination/Follow-up

The CONSULTANT shall provide utility coordination and follow up. This includes follow-up, interpreting plans, and assisting the UAOs with completion of their work schedules and agreements. Includes phone calls, face-to-face meetings, etc., to motivate and ensure the UAO(s) complete and return the required documents in accordance with the project schedule. Ensure the resolution of all known conflicts. The CONSULTANT shall keep accurate minutes of all meetings and distribute a copy to all attendees. This task can be applied to all phases of the project.

7.10 Utility Constructability Review

The CONSULTANT shall review utility schedules against construction contract time, and phasing for compatibility. Coordinate with and obtain written concurrence from the construction office. See Task 4.5 (Horizontal/Vertical Master Design File) and Task 4.9 (Cross Section Design Files) for utility conflict identification and adjustments.

8 ENVIRONMENTAL PERMITS, Compliance and Environmental Clearances

The CONSULTANT shall notify the CITY Project Manager, Environmental Permit Coordinator, and other appropriate CITY personnel in advance of all scheduled meetings with the regulatory agencies to allow a CITY representative to attend. The CONSULTANT shall copy in the Project Manager and the Environmental Permit Coordinator on all permit related correspondence and meetings. The Consultant shall use current regulatory guidelines and policies for all permits required as identified in Section 2.4.

8.1 Preliminary Project Research

The CONSULTANT shall perform preliminary project research and shall be responsible for regulatory agency coordination to assure that design efforts are properly directed toward permit requirements. The research shall include shall include any available project development studies prepared by the CITY

The CONSULTANT shall research any existing easements or other restrictions that may exist both within or adjacent to the proposed project boundary. Project research may include but should not be limited to review of available: federal, state, and local permit files and databases; and local government information including county and property appraiser data. The CONSULTANT shall determine if any Sovereign Submerged Lands easements need to be modified or acquired. Any applicable information will be shown on the plans as appropriate.

8.2 Field Work

8.2.1 Establish Wetland Jurisdictional Lines and Assessments:
The CONSULTANT shall be responsible for, but not limited to, the following activities:

- Determine landward extent of wetlands and other surface waters as defined in Rule Chapter 62-340, F.A.C., as ratified in Section 373.4211, F.S.

- Collect all data and information necessary to determine the jurisdictional boundaries of wetlands and other surface waters as defined by the rules or regulations of each permitting agency processing a CITY permit application for the project.

- Set seasonal high water levels
- Obtain a jurisdictional determination as defined by the rules or regulations of each permitting agency processing a CITY permit application for the project.
- Prepare aerial maps showing the jurisdictional boundaries of wetlands and other surface waters. Aerial maps shall be reproducible, of a scale of 1"=400'or more detailed and be recent photography. The maps shall show the jurisdictional boundaries of each agency. Photo copies of aerials are not acceptable. When necessary, a wetland specific survey will be prepared by a registered surveyor and mapper. All surveyed jurisdictional boundaries are to be tied to the project's baseline of survey.
- Prepare a written assessment of the current condition and functional value of the wetlands and other surface waters. Prepare data in tabular form which includes the ID number for each wetland (and other surface water, if necessary) impacted, size of wetland to be impacted, type of impact, and identify any wetland (by ID number and size) within the project limits that will not be impacted by the project.
- Prepare appropriate agency forms to obtain required permits. Forms may include but are not limited to the United States Army Corps of Engineers (USACE) "Wetland Determination Data Form – Atlantic and Gulf Coastal Plain Region"; the USACE "Approved Jurisdictional Determination Form"; Uniform Mitigation Assessment Method forms and/or project specific data forms.

8.2.2 Species Surveys:
The CONSULTANT shall conduct wildlife surveys as defined by rules or regulations of any permitting agency, or commenting agency that is processing a CITY permit. Expected species specific surveys include Florida bonneted bats and Florida burrowing owls and gopher tortoises at the Palm Aire bridges.

8.3 Agency Verification of Wetland Data

The CONSULTANT shall be responsible for verification of wetland and other surface water data identified in Section 8.2 and coordinating regulatory agency field reviews, including finalization of assessments and jurisdictional determinations with applicable agencies.

8.4 Complete and Submit All Required Permit Applications

The CONSULTANT shall collect all of the data and information necessary to prepare the permit applications and obtain the environmental permits required to construct the project as identified

in the Project Description and as described in 8.4.1, 8.4.2, and 8.12 (Other Permits). The CONSULTANT shall prepare each permit application in accordance with the rules and/or regulations of the regulatory agency responsible for issuing a specific permit and/or authorization to perform work. The permit application packages must be approved by the CITY prior to submittal to regulatory agencies.

The CONSULTANT will submit all permit applications, as directed by the CITY. The CITY will be responsible for payment of all permit and public noticing fees.

8.4.1 Complete and Submit all Required Wetland Permit Applications

The CONSULTANT shall prepare, complete, and submit required wetland permit (i.e. ERP, Section 404) application packages to the appropriate regulatory agencies. This includes, but is not limited to, applications submitted to SFWMDs USACE and Broward County. The application package may include but is not limited to attachments (i.e. project location map, aerials, affidavit of ownership, pictures, additional technical analysis, etc.), a cover letter with project description as well as completion of applicable agency forms. The CONSULTANT shall prepare and respond to agency Requests for Additional Information (RAIs), including necessary revisions to the application package. All responses and completed application packages must be approved by the City Permit Coordinator prior to submittal to the regulatory agencies.

8.4.2 Complete and Submit all Required Species Permit Applications

The CONSULTANT shall prepare, complete and submit required species permit applications to the appropriate agencies. This includes federal and state protected species permit application packages as required. The work includes completion of application package (i.e. project location map, aerials, affidavit of ownership, pictures, additional technical analysis, etc.), and cover letter with project description as well as completion of applicable forms. The CONSULTANT shall respond to agency RAIs, including necessary revisions to the application package. All responses and completed applications must be approved by the City Permit Coordinator prior to submittal to the regulatory agency.

8.5 Prepare and Coordinate Dredge and Fill Sketches

The CONSULTANT shall review Dredge and Fill Detail sheets to ensure information on the sketch(es) meet the requirements of the regulatory agencies and are appropriate for environmental permit application submittal and acquisition. The CONSULATANT will also provide environmental data/information as needed to support the preparation of the Dredge and Fill sketches.

8.6 Prepare USCG Permit Application

The CONSULTANT shall prepare, complete, and submit the USCG Bridge Permit application for the SE 5th Street bridge as required. The application package may include but is not limited to attachments (i.e. project location map, aerials, affidavit

of ownership, pictures, additional technical analysis, etc.), a cover letter with project description as well as completion of applicable agency forms. The CONSULTANT shall prepare and respond to agency Requests for Additional Information (RAIs), including necessary revisions to the application package. All responses and completed application packages must be approved by the CITY Permit Coordinator prior to submittal to the regulatory agencies.

8.7 Prepare Water Management District or Local Water Control District Right of Way Occupancy Permit Application

The CONSULTANT shall prepare, complete, and submit required Right of Way Occupancy permits application packages to the appropriate regulatory agencies. This includes, but is not limited to, applications submitted to SFWMD and Broward County Water Control District #4. The application package may include but is not limited to attachments (i.e. project location map, aerials, affidavit of ownership, pictures, additional technical analysis, etc.), a cover letter with project description as well as completion of applicable agency forms. The CONSULTANT shall prepare and respond to agency Requests for Additional Information (RAIs), including necessary revisions to the application package. All responses and completed application packages must be approved by the CITY Permit Coordinator prior to submittal to the regulatory agencies

8.8 Compensatory Mitigation Plan

If impacts cannot be avoided, the CONSULTANT shall prepare a mitigation plan to be included as a part of the applications.

Prior to the development of mitigation alternatives, the CONSULTANT shall meet with the Project Manager and Environmental Permit Coordinator to determine the CITY's policies in proposing mitigation. The CONSULTANT shall develop a mitigation plan based upon the general guidelines provided by the CITY.

The CONSULTANT will be directed by the CITY to investigate the mitigation options that meet federal and state requirements in accordance with section 373.4137, F.S. Below are mitigation options:

- Purchase of mitigation credits from a mitigation bank
- Payment to DEP/WMD for mitigation services
- Monetary participation in offsite regional mitigation plans
- Creation/restoration of wetlands

In the event that physical creation or restoration is the only feasible alternative to offset wetland impacts, the CONSULTANT shall coordinate with the CITY to prepare mitigation plans acceptable to all permitting agencies and commenting agencies who are processing or reviewing a permit application for a CITY project

In order to assist the CITY in selection of a final creation/restoration mitigation site, the CONSULTANT will provide the following services in the development of a mitigation plan:

- Preliminary jurisdictional determination for each proposed site
- Selection of alternative sites
- Coordination of alternative sites with the CITY/all environmental agencies
- Written narrative listing potential sites with justifications for both recommended and non-recommended sites.

8.9 Mitigation Coordination and Meetings

The CONSULTANT shall coordinate with CITY personnel prior to approaching any environmental permitting or commenting agencies. Once a mitigation plan has been reviewed and approved by the CITY, the CONSULTANT will be responsible for coordinating the proposed mitigation plan with the environmental agencies. The CONSULTANT will provide mitigation information needed to update the FDOT Environmental Impact Inventory

9 STRUCTURES - SUMMARY AND MISCELLANEOUS TASKS AND DRAWINGS

The CONSULTANT shall analyze, design, and develop contract documents for all structures in accordance with applicable provisions as defined in Section 2.19, Provisions for Work. Individual tasks identified in Sections 9 through 18 are defined in the Staff Hour Estimation Handbook and within the provision defined in Section 2. 20, Provisions for Work. Contract documents shall display economical solutions for the given conditions.

The CONSULTANT shall provide Design Documentation to the CITY with each submittal consisting of structural design calculations and other supporting documentation developed during the development of the plans. The design calculations submitted shall adequately address the complete design of all structural elements. These calculations shall be neatly and logically presented on digital media or, at the CITY's request, on 8 ½"x11" paper and all sheets shall be numbered. The final design calculations shall be signed and sealed by a Florida-licensed professional engineer. A cover sheet indexing the contents of the calculations shall be included and the engineer shall sign and seal that sheet. All computer programs and parameters used in the design calculations shall include sufficient backup information to facilitate the review task.

9.1 Key Sheet and Index of Drawings

9.2 Project Layout

9.3 General Notes and Bid Item Notes

9.4 Miscellaneous Common Details

9.5 Incorporate Report of Core Borings

9.6 Standard Plans- Bridges

9.7 Existing Bridge Plans

9.8 Assemble Plan Summary Boxes and Quantities

9.9 Cost Estimate

9.10 Technical Special Provisions and Modified Special Provisions

9.11 Field Reviews

9.12 Technical Meetings

9.13 Quality Assurance/Quality Control

9.14 Independent Peer Review

9.15 Supervision

9.16 Coordination

10 STRUCTURES - SHORT SPAN CONCRETE BRIDGE

The CONSULTANT shall prepare plans for Short Span Concrete Bridge(s) at the location(s) specified in Section 2.5.

General Layout Design and Plans

10.1 Overall Bridge Final Geometry

10.2 Expansion/Contraction Analysis

10.3 General Plan and Elevation

10.4 Construction Staging

10.5 Approach Slab Plan and Details

10.6 Miscellaneous Details

End Bent Design and Plans

10.7 End Bent Geometry

10.8 End Bent Structural Design

10.9 End Bent Plan and Elevation

10.10 End Bent Details

Intermediate Bent Design and Plans

10.11 Bent Geometry

10.12 Bent Stability Analysis

10.13 Bent Structural Design

10.14 Bent Plan and Elevation

10.15 Bent Details

Miscellaneous Substructure Design and Plans

10.16 Foundation Layout

Superstructure Design and Plans

10.17 Finish Grade Elevation Calculation

10.18 Finish Grade Elevations

Cast-In-Place Slab Bridges

10.19 Bridge Deck Design

10.20 Superstructure Plan

10.21 Superstructure Sections and Details

Prestressed Slab Unit Bridges and tasks 12.22 – 12.26 are not applicable for this project.

10.22 Prestressed Slab Unit Design

10.23 Prestressed Slab Unit Layout

10.24 Prestressed Slab Unit Details and Schedule

10.25 Deck Topping Reinforcing Layout

10.26 Superstructure Sections and Details

Reinforcing Bar Lists

10.27 Preparation of Reinforcing Bar List

Load Rating

10.28 Load Rating

11 SIGNING AND PAVEMENT MARKING PLANS

The CONSULTANT shall prepare a set of Signing and Pavement Marking Plans in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums that includes the following.

11.1 Tabulation of Quantities

11.2 Detail Sheets/General notes

11.3 Plan Sheet

11.4 Quality Assurance/Quality Control

11.5 Supervision

12 LIGHTING ANALYSIS

The CONSULTANT shall analyze and document Lighting Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

12.1 Voltage Drop Calculations

The CONSULTANT shall submit voltage drop calculations showing the equation or equations used along with the number of luminaries per circuit, the length of each circuit, the size conductor or conductors used and their ohm resistance values. The voltage drop incurred on each circuit (total volts and percentage of drop) shall be calculated, and all work necessary to calculate the voltage drop values for each circuit should be presented in such a manner as to be duplicated by the District.

The Voltage Drop Calculations shall be submitted as part of the Lighting Design Analysis

Report.

12.2 Reference and Master Design Files

The CONSULTANT shall prepare the Lighting Design file to include all necessary design elements and all associated reference files.

12.3 Quantities

12.4 Cost Estimate

12.5 Lighting Specifications

12.6 Field Reviews

The CONSULTANT shall collect information from the maintaining agencies and conduct a field review. The review should include but is not limited to the following:

- Existing Lighting Equipment
- Load Center, Capabilities and Condition/Age
- Condition of Lighting Structure(s)
- Verification of horizontal clearances
- Verification of breakaway requirements

12.7 Technical Meetings

12.8 Quality Assurance/Quality Control

12.9 Supervision

12.10 Coordination

13 LIGHTING PLANS -

The CONSULTANT shall prepare a set of Lighting Plans in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

13.1 Tabulation of Quantities

13.2 General Notes/Pay Item Notes

13.3 Light Fixture details/specifications

13.4 Service Point Details

13.5 Plan Sheet

13.6 Special Details

13.7 Quality Assurance/Quality Control

13.8 Supervision

14 LANDSCAPE ARCHITECTURE ANALYSIS

The CONSULTANT shall analyze and document Landscape Architecture Tasks in accordance with all applicable manuals, guidelines, standards, handbooks, procedures, and current design memorandums.

14.1 Data Collection

All research required to collect data necessary to complete the initial design analysis. Includes identifying local ordinances and collection of other project data.

14.2 Site Inventory and Analysis for Proposed Landscape

Includes identification of opportunities and constraints for the proposed landscape project based on existing site conditions. Identify available planting areas for nursery landscape material. Summary of analysis, if required, is included in conceptual design.

14.3 Planting Design

Conceptual Design: Includes delineation of all proposed planting types, scheme development and preliminary costs and reports. The design shall be submitted with the Phase I plans.

Final Design: Includes identifying the species/type, size, location, spacing, and quality of all plants.

14.4 Irrigation Design

Feasibility Report: Includes analysis of methods, materials and operation costs associated with proposed irrigation system design.

Conceptual Design: Typically not done in master design file. Includes determination of water and power sources. Phase I design level.

Final Design: Includes all work in master design files. Irrigation Design includes, but is not limited to, the locations and sizes of pumps, pump stations, mainlines, lateral lines, irrigation heads, valves, backflow and control devices.

14.5 Hardscape Design

Conceptual design - scheme development and preliminary costs: Typically not done in master design file. Delineation of areas and elements to be included in design. Select cut sheets, prepare image boards. Includes report, if required.

Final Design: Includes all work in master design files. Hardscape Design includes, but is not limited to, sidewalks, plazas, Steps, Fountains, Walls, Pedestrian bridges, non-regulatory signs or project graphics, roadway aesthetics, site furnishings.

14.6 Plan Summary Boxes

14.7 Cost Estimates

14.8 Spcifications

14.9 Field Reviews

14.10 Technical Meetings

14.11 Quality Assurance/Quality Control

14.12 Supervision

15 LANDSCAPE ARCHITECTURE PLANS

The CONSULTANT shall prepare a set of Landscape Plans which includes the following.

15.1 Key Sheet

15.2 Tabulation of Quantities

15.3 General Notes

15.4 Tree and Vegetation Inventory, Protection and Relocation Plans

15.5 Planting Plans for Linear Roadway Projects

15.7 Planting Details and Notes

15.8 Irrigation Plans for Linear Roadway Project

15.9 Irrigation Plans for Interchange and Toll Plazas

15.10 Irrigation Details and Notes

15.11 Hardscape Plans

15.12 Hardscape Details and Notes

15.13 Cost Estimate

15.14 Quality Assurance/Quality Control

15.15 Supervision

16 SURVEY -Keith and Assoc

The CONSULTANT shall perform survey tasks in accordance with all applicable statutes, manuals, guidelines, standards, handbooks, procedures, and current design memoranda.

The CONSULTANT shall submit all survey notes and computations to document the surveys. All field survey work shall be recorded in approved media and submitted to the CITY. Field books submitted to the CITY must be of an approved type. The field books shall be certified by the surveyor in responsible charge of work being performed before the final product is submitted.

The survey notes shall include documentation of decisions reached from meetings, telephone conversations or site visits. All like work (such as bench lines, reference points, etc.) shall be recorded contiguously. The CITY may not accept field survey radial locations of section corners, platted subdivision lot and block corners, alignment control points, alignment control reference points and certified section corner references. The CITY may instead require that these points be surveyed by true line, traverse or parallel offset.

16.1 Horizontal Project Control (HPC)

Establish or recover HPC, for the purpose of establishing horizontal control on the Florida State Plane Coordinate System or datum approved by the District Surveyor (DS) or District Location Surveyor (DLS); may include primary or secondary control points. Includes analysis and processing of all field collected data, and preparation of forms.

16.2 Vertical Project Control (VPC)

Establish or recover VPC, for the purpose of establishing vertical control on datum approved by the District Surveyor (DS) or the District Location Surveyor (DLS).; may include primary or secondary vertical control points. Includes analysis and processing of all field collected data, and preparation of forms.

16.3 Alignment and/or Existing Right of Way (R/W) Lines

Establish, recover or re-establish project alignment. Also includes analysis and processing of all field collected data, existing maps, and/or reports for identifying mainline, ramp, offset, or secondary alignments. Depict alignment and/or existing R/W lines (in required format) per CITY R/W Maps, platted or dedicated rights of way.

16.4 Aerial Targets

Place, locate, and maintain required aerial targets and/or photo identifiable points. Includes analysis and processing of all field collected data, existing maps, and/or reports. Placement of the targets will be at the discretion of the aerial firm.

16.5 Reference Points

Reference Horizontal Project Network Control (HPNC) points, project alignment, vertical control points, section, ¼ section, center of section corners and General Land Office (G.L.O.) corners as required.

16.6 Topography/Digital Terrain Model (DTM) (3D)

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of creating a DTM with sufficient density. Shoot all break lines, high and low points. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

16.7 Planimetric (2D)

Locate all above ground features and improvements. Deliver in appropriate electronic format. Effort includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

16.8 Roadway Cross Sections/Profiles

Perform cross sections or profiles. May include analysis and processing of all field-collected data for comparison with DTM.

16.9 Side Street Surveys

Refer to tasks of this document as applicable.

16.10 Underground Utilities

Designation includes 2-dimensional collection of existing utilities and selected 3-dimensional verification as needed for designation. Location includes non-destructive excavation to determine size, type and location of existing utility, as necessary for final 3-dimensional verification. Survey includes collection of data on points as needed for designates and locates. Includes analysis and processing of all field collected data, and delivery of all appropriate electronic files.

16.11 Outfall Survey

Locate all above ground features and improvements for the limits of the project by collecting the required data for the purpose of a DTM. Survey with sufficient density of shots. Shoot all break lines, high and low points. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

16.12 Drainage Survey

Locate underground data (XYZ, pipe size, type, condition and flow line) that relates to above ground data. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

16.13 Bridge Survey (Minor/Major)

Locate required above ground features and improvements for the limits of the bridge. Includes field edits, analysis and processing of all field collected data, existing maps, and/or reports.

16.14 Channel Survey

Locate all topographic features and improvements for the limits of the project by collecting the required data. Includes field edits, analysis and processing of all field collected data, maps, and/or reports.

16.15 Pond Site Survey (Not applicable for this project)

16.16 Mitigation Survey (Not applicable for this project)

16.17 Jurisdiction Line Survey (Not applicable for this project)

16.18 Geotechnical Support

Perform 3-dimensional (X,Y,Z) field location, or stakeout, of boring sites established by geotechnical engineer. Includes field edits, analysis and processing of all field collected data and/or reports.

16.19 Sectional/Grant Survey (Not applicable for this project)

16.20 Subdivision Location (Not applicable for this project)

16.21 Maintained R/W (Not applicable for this project)

16.22 Boundary Survey (Not applicable for this project)

16.23 Water Boundary Survey

Perform Mean High Water, Ordinary High Water and Safe Upland Line surveys as required by CITY standards.

16.24 Right of Way Staking, Parcel / Right of Way Line

Perform field staking and calculations of existing/proposed R/W lines for on-site review purposes.

16.25 Right of Way Monumentation

Set R/W monumentation as depicted on final R/W maps for corridor and water retention areas.

16.26 Line Cutting (Not applicable for this project)

16.27 Work Zone Safety

Provide work zone as required by CITY standards.

16.28 Miscellaneous Surveys (Not applicable for this project)

16.29 Supplemental Surveys (Not applicable for this project)

16.30 Document Research

Perform research of documentation to support field and office efforts involving surveying and mapping.

16.31 Field Review

Perform verification of the field conditions as related to the collected survey data.

16.32 Technical Meetings

Attend meetings as required and negotiated by the Surveying and Mapping CITY.

16.33 Quality Assurance/Quality Control (QA/QC)

Establish and implement a QA/QC plan. Also includes subconsultant review, response to comments and any resolution meetings if required, preparation of submittals for review, etc.

16.34 Supervision

Perform all activities required to supervise and coordinate project. These activities must be performed by the project supervisor, a Florida P.S.M.

16.35 Coordination

Coordinate survey activities with other disciplines. These activities must be performed by the project supervisor, a Florida P.S.M.

17 BRIDGE ARCHITECTURE DESIGN

18 Construction Administration and Owner's Representative Services.

Engineer will serve as the City's representative to coordinate the overall project and ensure that the City's objectives are achieved.

18.1 Respond to Requests for Information (RFI's) from contractor.

18.2 Construction Progress Meetings

Attend biweekly coordination meetings with the CMR and other stakeholders. Engineer will provide meeting minutes, document decisions and list action items and pending issues.

18.3 Administration and Coordiantion

As Owner's Representative, the Project Manager will monitor daily correspondence and coordinate activities amongst the design team.

18.4 Site Visits by staff architects and engineers

18.5 Process Change Orders

18.6 Process contractor invoices

Review contractor request for payment and make recommendation to City.

18.7 Construction Progress Meetings

Provide closeout documentation upon final acceptance by the City.

19 GEOTECHNICAL -H2R

H2R Corp (H2R) will be responsible for a complete geotechnical investigation of S.E. 5th Avenue Bridge. All work performed by the H2R shall be in accordance with the city of Pompano Beach (CITY) standards, or as otherwise directed by the District Geotechnical Engineer. The CITY will make interpretations and changes regarding geotechnical standards, policies and procedures and provide guidance to the H2R if necessary. Before beginning each phase of investigation and after the Notice to Proceed is given, H2R will submit an investigation plan for approval and meet with the CITY's geotechnical Engineer or representative to review the project scope and CITY requirements. The investigation plan will include the proposed boring locations and depths, and all existing geotechnical information from available sources to generally describe the surface and subsurface conditions of the project site. Additional meetings may be required to plan any additional field efforts, review plans, resolve plans/report comments, resolve responses to comments, and/or any other meetings necessary to facilitate the project.

H2R will notify the CITY in adequate time to schedule a representative to attend all related meetings and field activities..

19.1 Document Collection and Review

H2R will review printed literature including topographic maps, county agricultural maps, aerial photography (including historic photos), ground water resources, geology bulletins, potentiometric maps, pile driving records, historic construction records and other geotechnical related resources. Prior to field reconnaissance, H2R will review U.S.G.S., S.C.S. and potentiometric maps, and identify areas with problematic soil and groundwater conditions.

Roadway (No roadway borings are required for this project)

Structures -Required for SE 5th Avenue Bridge only

H2R shall be responsible for coordination of all geotechnical related fieldwork activities. H2R will retain all samples until acceptance of Final plans. Rock cores shall be retained as directed in writing by the CITY's Geotechnical Engineer.

H2R will perform specialized field-testing as required by needs of project and as directed in writing by the CITY's Geotechnical Engineer.

All laboratory testing and classification will be performed in accordance with applicable CITY standards, ASTM Standards or AASHTO Standards, unless otherwise specified in the Contract Documents.

The staff hour tasks for high embankment fills and structural foundations for bridges, box culverts, walls, high-mast lighting, overhead signs, mast arm signals, strain poles, buildings, and other structures include the following:

19.2 Develop Detailed Boring Location Plan

H2R will develop a detailed boring location plan and meet with the CITY's Geotechnical Engineer for boring plan approval. It is not expected that artesian conditions will be encountered during the field geotechnical investigation.

19.3 Stake Borings/Utility Clearance

Prior to commencement of geotechnical investigation, H2R will stake all the borings planned locations and obtain utility clearance.

19.4 Coordinate and Develop TTCP for Field Investigation

H2R will coordinate and develop TTCP plan. All work zone traffic control will be performed in accordance with the FDOT's Standard Plans Index 102 series.

19.5 Drilling Access Permits

Obtain all State, County, City, and Water Management District permits for performing geotechnical borings, as needed.

19.7 Collection of Corrosion Samples

Collect corrosion samples for determination of environmental classifications.

19.8 Coordination of Field Work

Coordinate all field work required to provide geotechnical data for the project.

19.9 Soil and Rock Classification - Structures

Soil profiles recorded in the field should be refined based on the results of laboratory testing.

19.10 Tabulation of Laboratory Data

Laboratory test results should be tabulated for inclusion in the geotechnical report and for the necessary calculations and analyses.

19.11 Estimate Design Groundwater Level for Structures

Review encountered groundwater levels, estimate seasonal high groundwater levels, and evaluate groundwater levels for structure design.

19.12 Selection of Foundation Alternatives

Evaluation and selection of foundation alternative, including the following:

- Prestressed concrete piling - various sizes
- Drilled shafts
- Foundation analyses shall be performed using approved CITY methods. Assist in selection of the most economical, feasible foundation alternative.

19.13 Detailed Analysis of Selected Foundation Alternate(s)

Detailed analysis and basis for the selected foundation alternative. Foundation analyses shall be performed using approved CITY methods and shall include:

- For pile and drilled shaft foundations, provide graphs of ultimate axial soil resistance versus tip elevations. Calculate scour resistance and/or downdrag (negative skin friction), if applicable.
- H2R shall assist the Engineer of Record in preparing the Pile Data Table (including test pile lengths, scour resistance, downdrag, minimum tip elevation, etc.)
- Provide the design soil profile(s), which include the soil model/type of each layer and all soil-engineering properties required for the Engineer of Record to run the FBPier computer program. Review lateral analysis of selected foundation for geotechnical compatibility.
- Estimate maximum driving resistance anticipated for pile foundations.
- Provide settlement analysis.

19.14 Bridge Construction and Testing Recommendations

Provide construction and testing recommendations including potential constructability

problems.

19.15 Lateral Load Analysis

Perform lateral load analyses.

19.16 Walls

Provide the design soil profile(s), which include the soil model/type of each layer and all soil engineering properties required by the Engineer of Record for conventional wall analyses and recommendations. Review wall design for geotechnical compatibility and constructability.

Evaluate the external stability of conventional retaining walls and retained earth wall systems. For retained earth wall systems, calculate and provide minimum soil reinforcement lengths versus wall heights, and soil parameters assumed in analysis. Estimate differential and total (long term and short term) settlements.

Provide wall construction recommendations.

19.17 Final Report - Bridge and Associated Walls

The final structures report shall include the following:

- Copies of U.S.G.S. and S.C.S. maps with project limits shown.
- Summary of structure background data, S.C.S., U.S.G.S., geologic and potentiometric data.
- The results of all tasks discussed in all previous sections regarding data interpretation and analysis.
- Recommendations for foundation installation, or other site preparation soils-related construction considerations with plan sheets as necessary.
- Any special provisions required for construction that are not addressed in the CITY's Standard specification.
- An Appendix which includes SPT and CPT boring/sounding profiles, data from any specialized field tests, engineering analysis, notes/sample calculations, sheets showing ultimate bearing capacity curves versus elevation for piles and drilled shafts, a complete FHWA check list, pile driving records (if available), and any other pertinent information.

19.18 SPT Boring Drafting

Prepare a complete set of drawings to include all SPT borings, auger borings and other pertinent soils information in the plans. Include these drawings in the Final Geotechnical Report. Draft borings, location map, S.C.S. map and U.S.D.A. map as directed by the CITY. Soil symbols must be consistent with those presented in the latest Florida Department of Transportation Soils and Foundations Handbook.

19.20 Field Reviews

Identify and note surface soil and rock conditions, surface water conditions and locations, and preliminary utility conflicts. Observe and note nearby structures and foundation types.

19.21 Technical Meetings

19.22 Quality Assurance/Quality Control

19.23 Supervision

19.24 Coordination

20 PROJECT REQUIREMENTS

20.1 Liaison Office

The CITY and the CONSULTANT will designate a Liaison Office and a Project Manager who shall be the representative of their respective organizations for the Project. While it is expected the CONSULTANT shall seek and receive advice from various state, regional, and local agencies, the final direction on all matters of this project remain with the CITY Project Manager.

20.2 Progress Reporting

The CONSULTANT shall meet with the CITY as required and shall provide a written progress report with approved schedule, schedule status,

20.3 Correspondence

Copies of all written correspondence between the CONSULTANT and any party pertaining specifically to this contract shall be provided to the CITY for their records within one (1) week of the receipt or mailing of said correspondence.

20.4 Professional Endorsement

The CONSULTANT shall have a Licensed Professional Engineer in the State of Florida sign and seal all reports, documents and specifications.

20.5 Computer Automation

The project will be developed utilizing Computer Aided Drafting and Design (CADD) systems.

20.6 Coordination with Other Consultants

The CONSULTANT is to coordinate his work with any and all adjacent and integral consultants so as to effect complete and homogenous plans and specifications for the project(s) described herein.

FEE PROPOSAL

Design Services for
SE 5th Avenue Bridge Replacement

JANUARY 2019

ESTIMATE OF WORK EFFORT AND COST - TY LIN INTERNATIONAL

Name of Project: CITY OF POMPANO BEACH- SE 5th Avenue Bridge Replacement
County: Broward
FPN: E-16-18
FAP No.:

Consultant Name: TYLIN International
Consultant No.:
Date: 1/24/2019
Estimator: TYLIN International

Staff Classification	Hours From "SH Summary - Firm"	Project Manager	Chief Engineer	Senior Engineer	Sr. Project Engineer	Project Engineer	Engineer	Engineer Intern	Sr. Designer	Sr. Specialist Environmental	Specialist Environmental	Secretary Clerical	SH By Activity	Salary Cost By Activity	Average Rate Per Task
		$189.33	$200.00	$156.00	$150.80	$131.61	$102.70	$82.68	$117.00	$208.00	$81.90	$53.56			
3. Project General and Project Common Tasks	188	56	0	0	0	38	38	0	0	0	0	56	188	$22,505	$119.71
4. Roadway Analysis	188	9	0	0	0	56	66	56	0	0	0	0	187	$20,482	$109.53
5. Roadway Plans	120	6	0	0	0	18	48	48	0	0	0	0	120	$12,403	$103.36
6a. Drainage Analysis	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0.00
6b. Drainage Plans	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0.00
7. Utilities	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
8. Environmental Permits, Compliance & Clearances	128	0	0	0	0	0	0	0	0	13	115	0	128	$12,123	$94.71
9. Structures - Misc. Tasks, Dwgs, Non-Tech.	88	2	3	4	0	0	35	22	18	0	0	13	97	$9,818	$101.22
10. Structures - Short Span Concrete Bridge	381	8	11	57	0	57	152	95	0	0	0	0	380	$43,573	$114.67
11. Signing & Pavement Marking Plans	28	1	0	0	0	0	14	7	6	0	0	0	28	$2,908	$103.85
12. Lighting Analysis	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
13. Lighting Plans	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
14. Landscape Architecture Analysis	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
15. Landscape Architecture Plans	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
16. Survey (Field & Office Support)	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0.00
17. Bridge Architecture	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	#DIV/0!
18. Construction Administration	600	30	0	0	120	150	300	0	0	0	0	0	600	$74,328	$123.88
19. Geotechnical	0	0	0	0	0	0	0	0	0	0	0	0	0	$0	$0.00
Total Staff Hours	2,558	112	98	312	288	403	779	354	24	13	115	69	2,567		
Total Staff Cost		$21,204.40	$19,600.00	$48,672.00	$43,430.40	$53,039.64	$80,003.30	$29,268.72	$2,808.00	$2,704.00	$9,418.50	$3,695.64		**$313,844.60**	**$122.26**

Check = $313,844.60

Subtotal		$313,844.60
Expenses		$2,000.00
TYLI Subtotal		**$315,844.60**
DK Architects		$11,368.88
Calvin Giordano		$13,780.00
Keith & Assoc		$53,120.00
H2R Geotech		$45,165.00
Project Grand Total	440000	**$439,278.48**