



Hydraulic Analysis for Downtown Stormwater System

Contract No.: 046-2821-17/TP – General Consulting Services

Scope Category “C”

Task Order No. UT-2C-01

Background

This Task Authorization – Hydraulic Analysis for Downtown Stormwater System, when executed, shall become part of the Agreement for Professional Services between the City of Boynton Beach (CITY) and CDM Smith Inc. (CONSULTANT) dated August 20, 2018 as it relates to supporting the preparation of a South Florida Water Management District (SFWMD) Environmental Resource Permit (ERP) modification for the CITY's Town Square and Fire Station No. 1 (Town Square) redevelopment project being designed by Kimley Horn and Associates (KHA) and preparing an application for modification of the SFWMD ERP for the Downtown Watershed, originally issued by SFWMD in January 1999 (No, 50-04166-P). The Town Square is located within the Downtown Watershed and tributary to the downtown regional stormwater facility (Pond B).

Scope of Work

To support the ERP modification for the Town Square project, the CONSULTANT will provide an update to CONSULTANT's technical memorandum dated September 18, 2018. The CONSULTANT will then update the existing model as described herein to provide the technical basis for an update to the ERP for the Downtown Watershed to be developed by CONSULTANT. As part of the Downtown Watershed ERP update CONSULTANT will review available topographic map data and stormwater infrastructure data within the permit area that may alter the hydrologic and/or hydraulic representation of the stormwater model for the downtown watershed. These data will be incorporated into the updated permit model for purposes of supporting the permit application.

Task 1 – Update to Pond B Capacity Evaluation Memorandum

CONSULTANT's memorandum dated September 18, 2018 documented updates made to the Downtown Watershed Stormwater Model and the results of model simulations representing stormwater infrastructure performance for pre and post Town Square project condition. This was done for the 10 year and 100-year storm events. CONSULTANT will update the memorandum to be included as part of the Town Square project ERP update to be prepared by Kimley Horn for submission to SFWMD. The memorandum will document the results of simulations of up to two additional storm events using the previously updated Model. No updates to the Model will be completed as part of this task. It is expected that Kimley Horn will provide Town Square site discharge hydrographs for the additional storm events.

Budget has been included additional modelling and reporting of results for one Request for Additional Information from the District.

Task 2 – Update to Downtown Watershed ERP

Following completion Task 1, Consultant will prepare an application for updating the ERP for the Downtown Watershed. This permit will incorporate area tributary to Pond B including the original permit area with improvements and Best Management Practices (BMPs) that have been completed since the time the permit was issued as well as additional area added through permit modification. The results of this work will be a single comprehensive permit that will account for the existing condition as well as an up to date model that could be used for planning future development within the Downtown Watershed.

Task 2.1 – Data Collection & Supplemental Survey

The CONSULTANT will collect the following data if available for the Downtown Watershed.

Subtask 2.1.1 – Data Collection

The CONSULTANT will collect the following data for the Downtown Watershed as available from the noted source:

The City of Boynton Beach

- Stormwater structure inventory data.
- Stormwater infrastructure permit data.
- Roadway improvement plans containing stormwater infrastructure data.
- 2018 and Build-out land use data (2 scenarios).
- Historical flood complaint logs.

South Florida Water Management District

- ERP data for the Downtown Watershed available on the SFWMD permitting web site.
- Topographic map data.
- Aerial imagery.

Florida Department of Transportation

- Stormwater infrastructure construction drawings within the Downtown Watershed.

The CONSULTANT will incorporate the data collected into a geodatabase using the Geographic Information System (GIS) ArcMap Version 10.5 software from ESRI. Only the data needed to update the hydrologic and hydraulic representation of the Downtown Watershed stormwater model will be included in the geodatabase developed under this Task Authorization.

Subtask 2.1.2 – Field Reconnaissance

The CONSULTANT will conduct a field reconnaissance of the permit area that will include the following:

- Windshield survey of roadside swales.
- Observed inlets not included in the CITY provided stormwater GIS inventory.

The CONSULTANT will capture these data in a geodatabase. Note that only general location information will be captured using a data collector GIS tool (no geometric data or subsurface data). For budgeting purposes, the CONSULTANT has allocated 1-field days using a 2-person crew. In the event additional elevation/survey needs are identified, these needs will be relayed to the City. The City will be responsible for providing required elevation/survey data.

Task 2.2 – Downtown Watershed Stormwater Model Update

The CONSULTANT will update the 2018 SWMM5 hydrologic and hydraulic data using the information collected under Task 2.1.1 and 2.1.2. The stormwater model uses the Environmental Protection Agency (EPA) Stormwater Management Model Version 5 (SWMM5) and PCSWMM 17, which is a Graphical User Interface (GUI) for the EPA SWMM5. The model update will include the area tributary to Pond B:

- Convert the existing model from the National Geodetic Vertical Datum of 1929(NGVD29) to NAVD88.
- HU runoff parameters (flow width, infiltration, imperviousness, etc.)
- Overland flow connectivity to modeled system (e.g., street overflows)

Once the updates have been made to the stormwater model, the CONSULTANT will simulate the following design storm events and check for computational stability. The model will be deemed numerically stable if the mass balance of inflows versus outflows is within 5 percent or less.

- 100-Year/72-Hour Design Storm
- 25-Year/72-Hour Design Storm
- 10-Year/72-Hour Design Storm

The SFWMD rainfall distribution will be used for each design storm event. The CONSULTANT will confirm with both the CITY and the SFWMD on total rainfall volume to be used for each design storm event. Peak stages and flows predicted by the stormwater model will be tabulated. The CONSULTANT will also use the existing LiDAR data to prepare a flood inundation map to help identify flood risk areas within the CITY. It should be noted that alternatives analysis for identified flooding problems as well as flood risk associated with sea level rise are not part of this Task Authorization.

Task 2.3 – Conceptual ERP Permit Application

The CONSULTANT will prepare an ERP modification application for the Downtown Watershed. The ERP will require completion of Sections A and E. The following assumptions have been made for this effort:

- The CONSULTANT assumes that the SFWMD will agree that no significant wetland/surface impacts will occur that would require ecological analysis (e.g., UMAM), mitigation, or survey.
- The CONSULTANT will respond to 1 additional Request for Additional Information (RAI) from the SFWMD.
- The CONSULTANT will include the cost of the ERP application fee as part of this Task Assignment as a direct cost.

Task 2.4 – Project and Quality Management Meetings

Activities performed under this task consist of those general functions required to maintain the project on schedule, within budget, and that the quality of the work products defined within this scope is consistent with the CONSULTANT's standards and the CITY's requirements. Specific activities included are identified below:

Subtask 2.4.1 –Progress Meetings

The CONSULTANT will meet with the CITY at regular intervals during the duration of the project to discuss the progress of the project. A total of three progress meetings have been planned for budget estimating purposes. The CONSULTANT will prepare meeting notes of each meeting as appropriate. This task also includes internal team meetings.

Subtask 2.4.2 – Project Quality Management

The CONSULTANT maintains a quality management system (QMS) for CITY projects performed by the CONSULTANT. Technical reviews of deliverables are budgeted for and will be performed to review various milestone submittals.

Subtask 2.4.3 – Project Status Reports

The CONSULTANT's project manager will prepare and submit a monthly written status report and invoice for anticipated project duration of 4 months. Additionally, the CONSULTANT will provide email updates as requested by the CITY.

Assumptions

The above described engineering services have been based upon the following assumptions:

- KHA will be responsible for providing the CITY and the CONSULTANT the discharge hydrographs from the Town Square redevelopment site for use in the CONSULTANT's stormwater model for 4 design storm events (Task 1).
- The CONSULTANT assumes that the SFWMD will agree that no significant wetland/surface impacts will occur that would require ecological analysis (e.g., UMAM), mitigation, or survey (Task 2.3).
- The CONSULTANT will respond to 1 additional Request for Additional Information (RAI) from the SFWMD (Task 2.3).
- The CITY will make the relevant data available to the CONSULTANT (Task 2.3).

- Additional survey needs identified in Task 3 will be provided by the CITY following their approval of the need (Task 2.3).

Deliverables

The CONSULTANT will provide the following deliverables to the CITY:

- Meeting notes for the project kickoff meeting, SFWMD meetings, and project status review meetings.
- Environmental Resource Permit (ERP) modification for the CITY's Town Square and Fire Station No. 1 redevelopment
- Response to one ERP Request for Additional Information.
- One DVD containing a digital copy of GIS data in a geodatabase format; updated EPA SWMM5 stormwater model input and output files for the 3 design storm events.

Fee

For the services performed under this Task Authorization, the CITY agrees to pay the CONSULTANT the lump sum fees for Task 1 and Task 2 as summarized below. The fee build-up for the lump sum amount are presented in the attached tables.

Task 1 - \$6,380

Task 2 - \$55,660

Schedule

The CONSULTANT shall complete the work within 4 months of receipt of the notice-to-proceed from the City. A project schedule will be developed following the project kickoff meeting with CITY staffs.

cc: Suzanne Mechler
Brian Mack