



June 18, 2020

City of Pompano Beach  
1201 NE 5<sup>th</sup> Avenue  
Pompano Beach, FL 33060  
ATTN: Anthony Alhashemi

**Subject: RFQ E-21-9 Stormwater Improvements  
Project 1 – NE 27<sup>th</sup> Avenue and NE 16<sup>th</sup> Street  
Scope of Services**

Dear Mr. Alhashemi:

Chen Moore and Associates (CMA) is pleased to submit the attached Scope of Services to provide professional engineering services on Project #1 – NE 27<sup>th</sup> Avenue and NE 16<sup>th</sup> Street Stormwater Improvements under RFQ E-21-9. This scope of services will include the planning, design, permitting, bidding, and construction services necessary for the City of Pompano Beach to implement proposed stormwater improvements for this project.

### **PROJECT INTRODUCTION**

Based on the City's Stormwater Master Plan, this project area was identified as priority drainage basin in need of stormwater system improvements based on the historical flooding problems observed by City staff, the flooding complaints received from residents, and the results from the existing conditions stormwater model. The project area is bound by Federal Highway to the west, NE 16<sup>th</sup> Street to the south, Intracoastal Waterway to the east, and NE 22<sup>nd</sup> Court to the north. This project area consists of primarily single family residential properties with a limited existing drainage system serving the public right of way areas. The existing drainage system within the project area consists of independent drainage systems that collect stormwater runoff from the public right of way area and discharges via existing outfalls into tidally influenced canals, which are directly connected to the Intracoastal Waterway. The existing outfalls are located along the north side of NE 22<sup>nd</sup> Court and along the south side end of NE 16<sup>th</sup> Street. Although there are existing stormwater facilities within the project area, it does not provide an adequate level of service to the right of way areas within the project area. In order to alleviate the existing flooding problems within the project, stormwater improvements need to be implemented to enhance the performance of the existing stormwater management system within the project area.

The project area typically experiences significant flooding within low lying segments of public right of way during heavy rainfall events. In general, the western portion of the project has a relatively higher ground surface elevation compared to the majority of the internal roadways within the project area. According to the topography, stormwater runoff can be expected to flow from the western portions of the project area before collecting in low lying areas in the right-of-way. The lowest elevations within the project area directly correlate to the location of flooding problems. Based on the results of the existing conditions stormwater model along with the observations by City staff, the flooding issues are most critical along NE 27<sup>th</sup> Avenue, NE 16<sup>th</sup> Street, and the adjacent intersecting roadways. The primary purpose of this stormwater improvement project is to reduce the flooding depth and duration within the project area during significant storm events. CMA shall assess the feasibility, the constructability, the regulatory permit restrictions, the cost impacts, and the flood reduction effectiveness of various potential improvement alternative within the project area. CMA will develop construction documents for the implementation of the recommended stormwater improvements within the project area, which include but are not limited to the following options:

- Install new exfiltration trench throughout project area
- Extend existing drainage infrastructure throughout the project area
- Replace existing stormwater outfalls with larger diameters
- Replace existing stormwater piping with larger diameters
- Interconnect existing independent outfalls
- Raise low lying roadway segments within the public right of way
- Restore roadway swale areas

CMA shall be responsible for providing professional services according to the scope of services below.

## **SCOPE OF SERVICES**

### **Task 1: Preliminary Design Services**

#### **Task 1.1 Document Research/Review**

CMA will gather, review, and evaluate all available topographic surveys, atlases, design drawings, record drawings and/or maintenance records for the existing stormwater infrastructure within the project area to determine the configuration of existing conditions. CMA shall contact the Sunshine State One Call Service to determine the configuration of the existing utilities located in the project area. As necessary, CMA will coordinate directly with all utility providers with existing infrastructure within the project area to obtain any available system maps. CMA shall incorporate the approximate location of all existing underground utilities into the design plans based on any available drawings. CMA gather, review, and evaluate all plat maps for the project area to confirm the presence of any utility easements at the locations of the existing stormwater outfalls throughout the project area. CMA will gather, review, and evaluate any existing stormwater permits issued by the relevant regulatory agencies for the project area. Any existing stormwater permit issued for the project area will define the peak allowable discharge via the existing outfalls into surrounding surface waters, which can limit the extent of the potential stormwater improvements within the project area. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. The fees for this task will be paid on a lump sum basis.

#### **Task 1.2 Topographic Survey**

CMA shall retain a licensed surveyor to complete the topographic survey of the public right of way within the project limits along with any existing drainage easements. The surveyor will be responsible for providing the topographic survey of the project area in PDF and CAD formats along with any signed and sealed surveys required during the permitting process. The topographic survey shall include the following information:

- Survey each public roadway from right-of-way line to right-of-way line along with the utility easements for the 4 existing stormwater outfalls within the project area.
- Establish a control traverse with Florida State Plane Coordinates at sufficient intervals to support the topographic survey to be utilized on the design plans.
- Establish benchmarks relative to North American Vertical Datum 1988 (NAVD). The elevations will be based on the nearest governmental benchmark of record.
- Locate aboveground features within the survey limits according to the following schedule: pavement, driveways, pavement markings, parking spaces, paved swales, sidewalks, curbs, walls, fences, utility poles, anchors, handrails, utility manholes, catch basins, pull boxes, signs, cabinets, risers, valve boxes, meter boxes, control panels, vaults, slabs, fire hydrants, and overhead utilities.
- Locate underground features of sanitary manholes, storm manholes, and catch basins. Measure the invert elevations of pipes and determine the pipe materials and size when possible.

- Locate trees with caliper of 3 inches and larger will be located. Clusters of trees will be shown as a group. Trees will be identified by the common species name and denoted as unknown if the species cannot be identified. A tree legend will be affixed to the survey drawing and will list the tree species, DBH, and identifying tree number.
- Tie in any subdivision corners, lot corners, and plat corners which can be located along the right-of-way lines. Depict right-of-way lines on the survey for informational purposes only. This will not constitute a boundary or right-of-way survey as defined in the Minimum Technical Standards for Land Surveying and Mapping.
- Measure topographic cross-sections approximately every 50 feet of public right of way and at high and lows spots.
- Ownership and title searches are not included within the scope.
- Easements will be based on information obtained from record plats.

CMA shall coordinate directly with the surveyor to ensure all appropriate data is gathered during the completion of the topographic survey. CMA shall review topographic data upon completion of the survey and provide any comments to the surveyor if necessary. CMA shall update the CAD settings of the topographic survey as necessary and incorporate survey information into the base plans for the project. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. All work under this task will be billed on a lump sum basis.

#### Task 1.3 Geotechnical Investigation

CMA shall retain a geotechnical engineering firm to acquire the relevant soils information required to estimate subsurface soil conditions, soil infiltration rates, and soil permeability, which is necessary to properly design the proposed stormwater improvements within the project area. This task includes the completion of 2 FDOT Standard Exfiltration Tests within the project area to verify the subsurface soil permeability, 2 Standard Penetration Test (SPT) soil borings to verify the subsurface soil conditions, and up to 5 asphalt cores to measure the existing roadway thickness within the project area. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. All work under this task will be billed on a lump sum basis.

#### Task 1.4 Subsurface Utility Verification

CMA shall retain a subsurface utility engineering consultant to conduct up to 25 utility testholes to confirm the location of any existing underground utilities within the project area. The completion of up to 25 utility testholes will be necessary to avoid conflicts between the proposed stormwater improvements and any existing underground utility infrastructure within the public right of way. The subsurface utility engineering consultant will be responsible for providing the utility testhole report to CMA for use in the development of the design plans. CMA shall coordinate directly with the subsurface utility engineering consultant to ensure all appropriate data is gathered on the existing underground utilities. CMA shall review the utility testhole report upon completion and provide any comments to the subsurface utility engineering consultant if necessary. CMA shall incorporate the existing underground utilities into the base plans for the project based on the information included within the utility testhole reports. CMA shall complete this task within 30 calendar days from the completion of Task 1.1 and Task 1.2. All work under this task will be billed on a lump sum basis.

#### Task 1.5 Project Site Visits and Meetings

CMA shall perform necessary site visits throughout the project area to verify the configuration of the any existing utilities, structures, driveways, walkways, tree, landscaping, fencing, and other obstructions within the public right of way and on private property within the project area. CMA shall walk the site and obtain photographs of all potential obstructions and encroachments that may negatively impact the feasibility of the proposed

stormwater improvements. CMA shall also visually inspect the existing drainage infrastructure within the project area to confirm the current condition, particularly the existing stormwater outfalls from this project area. CMA shall review any drainage pipe inspection videos provided by the City. CMA shall also meet with the relevant regulatory agencies to discuss the potential system improvement alternatives for this project and to confirm the permit requirements for each potential system improvement alternative. CMA shall complete this task throughout the duration of the Preliminary Design Phase. The fees for this task will be paid on a lump sum basis.

#### Task 1.6 Stormwater Model Analysis

CMA shall develop an updated ICPR4 stormwater model to conduct a more detailed analysis of the project area. CMA will subdivide the project area into multiple drainage basins to allow for the more detailed analysis of the project area on a block by block basis. CMA will tabulate the model parameters of the relevant nodes and links within the stormwater model to reflect the revised basin boundaries within the project area. CMA will run the updated stormwater model to obtain peak flood stages, flood durations, and peak discharges for the existing conditions within the project area. CMA will also use the stormwater model to assess the effectiveness of the various potential system improvement alternatives prior to design development. CMA will run updated stormwater model for various scenarios which will include multiple combinations of the potential system improvement alternatives.

CMA will review, evaluate, and compare the feasibility and effectiveness of each system improvement alternative within the project area for the purpose of developing a recommendation for stormwater improvements to be implemented during the detailed design phase of this project. CMA will use the stormwater model to compare the effectiveness of each scenario at reducing the peak flood stage and flood duration throughout the project area while also estimating the impact on peak discharge into the surrounding surface waters. CMA will assess and compare the impact of each system improvement alternative based on the following items:

- Permit Restrictions
- Impact on Peak Discharge
- Flood Control (Reduction in Peak Stage)
- Flood Control (Reduction in Estimated Flood Duration)
- Water Quality Impacts

Based on the regulatory requirements, the implementation of the proposed stormwater improvements within the project area will likely be contingent on providing sufficient storage volume for water quality treatment of stormwater runoff prior to discharge via the existing outfalls and on limiting the peak discharge via the existing stormwater outfalls. CMA shall review, evaluate, and compare the permit restrictions on the various potential system improvement alternatives. CMA will tabulate the maximum water quality volume that could be provided under each potential system improvement alternatives for comparison with the minimum volume per regulatory requirements. CMA will compare the peak discharge under each potential system improvement alternatives with the maximum allowable discharge per regulatory requirements. CMA shall meet with the relevant regulatory agencies to present the potential system improvement alternatives for this project and to confirm the permit requirements for each potential system improvement alternatives. The purpose of this alternative comparison is to identify the recommended stormwater improvements for the project area prior to detailed design. CMA shall complete this task within 30 calendar days from the completion of Task 1.1. The fees for this task will be paid on a lump sum basis.

## **Task 2: Design Services**

### **Task 2.1 60% Design Submittal**

CMA shall be responsible for all civil engineering design services necessary to prepare the 60% Design Submittal. CMA will prepare and submit the 60% Design Submittal to the City for review and approval. The 60% Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare 60% design drawings, which will consist of the existing condition plans, demolition plans, stormwater plans (plan view only), paving and grading plans, and any relevant detail drawings.
- Cost Estimate – CMA will prepare a preliminary cost estimate of the probable construction costs which will reflect the proposed work included within the 60% Design Submittal.

CMA shall submit 60% Design Submittal to the City for review within 30 calendar days from the completion of Task 1 – Preliminary Design. Any review comments from the City on the 60% Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

### **Task 2.2 90% Design Submittal**

CMA shall be responsible for all civil engineering design services necessary to prepare the 90% Design Submittal. CMA will prepare and submit the 90% Design Submittal to the City for review and approval. The 90% Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare these 90% design drawings, which will consist of the existing condition plans, demolition plans, stormwater plans (plan and profile views), paving and grading plans, pavement markings and signage plans, landscape restoration plans, and any relevant detail drawings.
- Technical Specifications – CMA will prepare technical specifications within the proposed work included within the 90% Design Submittal.
- Cost Estimate – CMA will prepare a cost estimate of the probable construction costs which will reflect the proposed work included within the 90% Design Submittal.

CMA shall submit the 90% Design Submittal to the City for review within 60 calendar days from the completion of Task 2.1 – 60% Design Submittal. Any review comments from the City on the 90% Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

### **Task 2.3 Regulatory Permitting**

CMA will obtain, review, and complete permit applications and will prepare backup documentation required by the regulatory permitting agencies. CMA will be responsible for coordination with all regulatory agencies during the permitting process. CMA will send the application forms to the City for signature along with check(s) for all permit and application fees, which shall be provided by the City. CMA shall submit all required permit applications to the relevant regulatory agencies. The regulatory agencies typically complete their initial review within 30 calendar days after the permit submittal. Upon obtaining review comments from the regulatory agencies, CMA will revise applications, plans, and technical specifications as per comments from these regulatory agencies and re-submit to the regulatory agencies for permit approval. CMA expects to need the following permit approvals for this project:

- Surface Water Permitting – CMA shall obtain the relevant surface water permits required for the proposed stormwater improvements within the project area. CMA shall submit permit application packages to the South Florida Water Management District (SFWMD) for an Environmental Resource Permit and to Broward County Environmental Protection and Growth Management (BCEPGM) for a Surface Water License as necessary. CMA shall update the design plans based on any review comments received from SFWMD and BCEPGM during the permitting process.
- Water Use Permitting – CMA shall obtain the relevant water use permits required for the dewatering activities needed during construction within the project area. CMA shall submit water use permit application packages to SFWMD and BCEPGM for the dewatering operations required during construction. CMA shall update the design plans based on any review comments received from SFWMD and BCEPGM during the permitting process.
- Roadway Permitting – CMA shall obtain the relevant roadway permits required for the proposed improvements to the pavement markings, and signage within the project area. CMA shall submit permit application packages to Broward County Traffic Engineering Department (BCTED) for approval as necessary. CMA shall update the pavement markings and signage plans based on any review comments received from BCTED during the permitting process.
- City Building Permit Dry Run Review – CMA shall submit the design plans to the City Building Department for a “dry run” review of the landscaping, irrigation, and structural components of the proposed improvements. For review and approval by the City Landscaping Division, CMA will also prepare a tree survey and assessment of the existing trees within the project area and a tree mitigation plan for any existing trees impacted by the construction activities. The City will coordinate directly with the City staff responsible for the “dry run” review of these component to expedite the review process. CMA shall update the design plans based on any review comments received from the City during the permitting process.

The permit approvals can typically be expected within 60-90 days of submittal to the regulatory agencies. All required permit approvals must be obtained from the regulatory agencies prior to submitting the 100% Design Submittal to the City. The fees for this task will be paid on a lump sum basis. The fees for this task will be paid on a lump sum basis.

#### Task 2.4 Final Design Submittal

CMA shall be responsible for all civil engineering design services necessary to prepare the Final Design Submittal. CMA will prepare and submit the Final Design Submittal to the City for review and approval. The Final Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare these final design drawings, which will consist of the existing condition plans, stormwater plans (plan and profile view), paving and grading plans, pavement markings and signage plans, landscape restoration plans, and any relevant detail drawings.
- Technical Specifications – CMA will prepare the final technical specifications, which will include the proposed work defined within the Final Design Submittal.
- Cost Estimate – CMA will prepare a final cost estimate of the probable construction costs, which will reflect the proposed work defined within the Final Design Submittal.
- Bid Schedule – CMA will prepare a final bid schedule, which will include all line items for the proposed work defined within the Final Design Submittal.

CMA shall submit the Final Design Submittal to the City for review within 30 calendar days upon receiving permit approvals from all regulatory agencies. Any review comments from the City on the Final Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

### **Task 3: Reimbursable Expenses**

#### **Task 3.1 Document Reproduction**

CMA shall provide all document reproduction required for each project deliverable to the City and regulatory agencies as defined within the scope. All printing costs for deliverable will be reimbursed by the City at cost.

#### **DELIVERABLES**

CMA will provide the following deliverables at each submittal:

Design Plans:

- 5 half size sets (11"x17") at each submittal
- 1 digital copy (CAD format) at each submittal
- 1 digital copy (PDF format) at each submittal

Technical Specifications:

- 1 hard copy at each submittal
- 1 digital copy (PDF format) at each phase submittal

#### **SCOPE ASSUMPTIONS**

- This scope does not include any title searches to confirm presence of existing utility easements on private property within the project area.
- This scope does not include any legal services required for to establish new utility easements on private property or acquire any new public right-of-way from private property.
- This scope does not include does include any bidding assistance, such as attending pre-bid meetings, responding to questions from prospective bidders, or evaluating any bid proposals. Any bidding assistance would be included in separate scope of services.
- This scope does not include does include any construction services, such as attending progress meetings, reviewing shop drawings, assisting the contractor with obtaining their building permit, responding to questions from the contractor, assisting with SRF compliance, conducting construction inspections, or project certification. Any construction services would be included in separate scope of services.
- City will provide all available topographic surveys, atlases, design drawings, record drawings, shop drawings, permit documents, maintenance reports, drainage pipe inspection videos and/or master plans relevant to the project area.
- City will conduct video inspections of the five existing stormwater outfalls within the project area for the purpose of confirming the current condition of the existing pipes.
- City will provide timely responses to information included within each submittal.
- City shall provide all required permit fees.
- City will be responsible for all coordination necessary to schedule the public workshops with residents.
- City will be responsible for the preparation of the bid documents.
- The selected contractor will be responsible for obtaining any City Building Permit required for this project along with all related coordination and preparation of any backup documentation required for the City Building Permit. This scope does not include does include any construction services, such as assisting the contractor with obtaining their building permit. Any construction services would be included in separate scope of services.
- City will reimburse CMA for any document reproduction costs for all submittals to City and to regulatory agencies.
- CMA will submit monthly invoices, which will be payable by City within 30 days.

- Additional reimbursable expenses requested by the City outside of the items defined within scope, such as additional land surveying, geotechnical testing, utility testholes, laboratory testing, permit fees, additional document reproduction, or express delivery of documents, shall be invoiced at cost as defined in our Exhibit A – General Conditions/Provisions.
- Any additional engineering services from CMA requested by the City outside of the items defined within scope will be billed at hourly rates according the Exhibit C – Hourly Rate Schedule.

### **PROJECT SCHEDULE**

CMA shall start work immediately upon receipt of Notice to Proceed and official authorization from the City. The estimated project schedule was prepared based on the assumption that the City will provide any review comments on design submittals within 14 days and regulatory agencies will provide any review comments on permit submittals within 30 days. The estimated project schedule listed within the table below.

<b>Task</b>	<b>Task Description</b>	<b>Duration</b>	<b>Estimated Deadline</b>
1	Preliminary Design Services	90 days	TBD
2	Design Services	180 days	TBD

### **PROJECT FEES**

CMA has prepared this proposal for the professional services necessary to accomplish this scope of services on this project. The total fees for this project are **\$230,315.00**, which is comprised of a lump sum fee amount of **\$229,315.00** and an reimbursable expense allowance of **\$1,000.00**. The fees for each task on this project are summarized within the table below:

<b>Task</b>	<b>Task Description</b>	<b>CMA Fees</b>	<b>Subconsultant Fees</b>
1	Preliminary Design Services	\$25,270.00	\$80,670.00
2	Design Services	\$123,375.00	\$0.00
3	Reimbursable Expenses	\$0.00	\$1,000.00
	<b>Totals:</b>	<b>\$148,645.00</b>	<b>\$81,670.00</b>

Should you have any questions, please do not hesitate to contact me at my office at (954) 730-0707 – Extension 1003 or on my cell phone at (954) 818-9550 or send me an electronic message at [jmclair@chenmoore.com](mailto:jmclair@chenmoore.com).

Respectfully submitted,



CHEN MOORE AND ASSOCIATES  
Jason McClair, PE, CFM, LEED AP  
Senior Engineer





June 18, 2020

City of Pompano Beach  
1201 NE 5<sup>th</sup> Avenue  
Pompano Beach, FL 33060  
ATTN: Anthony Alhashemi

**Subject: RFQ E-21-9 Stormwater Improvements  
Project 2 – South Riverside Drive  
Scope of Services**

Dear Mr. Alhashemi:

Chen Moore and Associates (CMA) is pleased to submit the attached Scope of Services to provide professional engineering services on Project #2 – South Riverside Drive Stormwater Improvements under RFQ E-21-9. This scope of services will include the planning, design, permitting, bidding, and construction services necessary for the City of Pompano Beach to implement proposed stormwater improvements for this project.

### **PROJECT INTRODUCTION**

Based on the City's Stormwater Master Plan, this project area was identified as priority drainage basin in need of stormwater system improvements based on the historical flooding problems observed by City staff, the flooding complaints received from residents, and the results from the existing conditions stormwater model. The project area includes South Riverside Drive between SE 10<sup>th</sup> Street and East Atlantic Boulevard and SE 10<sup>th</sup> Street between South Riverside Drive and South Ocean Drive. This project area consists of primarily residential properties with a limited existing drainage system serving the public right of way area for South Riverside Drive. The existing drainage system within the project area consists of seven independent drainage outfalls that discharge stormwater runoff from the public right of way areas into the Intracoastal Waterway. In order to alleviate the existing flooding problems within the project area, stormwater improvements need to be implemented to enhance the performance of the existing stormwater management system within the project area. The project area typically experiences significant flooding within public right of way area during heavy rainfall events due to the very low ground surface elevations throughout the project area. The ground surface elevation along the centerline of South Riverside Drive is as low as +1.3 feet NAVD at some locations. Due to the very low ground surface elevation within the project area, the discharge capacity of the existing stormwater outfalls from the project area is limited by the tidal influence of the Intracoastal Waterway.

The primary purpose of this stormwater improvement project is to reduce the flooding depth and duration within the project area during significant storm events. CMA shall assess the feasibility, the constructability, the regulatory permit restrictions, the cost impacts, and the flood reduction effectiveness of various potential improvement alternative within the project area. CMA will develop construction documents for the implementation of the recommended stormwater improvements within the project area, which include but are not limited to the following options:

- Install new stormwater pump station(s)
- Install new pumped drainage well(s)
- Replace existing stormwater outfalls with larger diameters

- Interconnect existing independent outfalls
- Raise low lying roadway segments within the public right of way
- Restore roadway swale areas

CMA shall be responsible for providing professional services according to the scope of services below.

## **SCOPE OF SERVICES**

### **Task 1: Preliminary Design Services**

#### **Task 1.1 Document Research/Review**

CMA will gather, review, and evaluate all available topographic surveys, atlases, design drawings, record drawings and/or maintenance records for the existing stormwater infrastructure within the project area to determine the configuration of existing conditions. CMA shall contact the Sunshine State One Call Service to determine the existing utilities which are located in the project area. As necessary, CMA will coordinate directly with all utility providers with existing infrastructure within the project area to obtain any available system maps. CMA shall incorporate the approximate location of all existing underground utilities into the design plans based on any available drawings. CMA gather, review, and evaluate all plat maps for the project area to confirm the presence of any utility easements at the locations of the existing stormwater outfalls throughout the project area. CMA will gather, review, and evaluate any existing stormwater permits issued by the relevant regulatory agencies for the project area. Any existing stormwater permit issued for the project area will define the peak allowable discharge via the existing outfalls into surrounding surface waters, which can limit the extent of the potential stormwater improvements within the project area. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. The fees for this task will be paid on a lump sum basis.

#### **Task 1.2 Topographic Survey**

CMA shall retain a licensed surveyor to complete the topographic survey of the public right of way within the project limits along with any existing drainage easements. The surveyor will be responsible for providing the topographic survey of the project area in PDF and CAD formats along with any signed and sealed surveys required during the permitting process. The topographic survey shall include the following information:

- Survey each public roadway from right-of-way line to right-of-way line along with the utility easements for the 7 existing stormwater outfalls within the project area.
- Establish a control traverse with Florida State Plane Coordinates at sufficient intervals to support the topographic survey to be utilized on the design plans.
- Establish benchmarks relative to North American Vertical Datum 1988 (NAVD). The elevations will be based on the nearest governmental benchmark of record.
- Locate aboveground features within the survey limits according to the following schedule: pavement, driveways, pavement markings, parking spaces, paved swales, sidewalks, curbs, walls, fences, utility poles, anchors, handrails, utility manholes, catch basins, pull boxes, signs, cabinets, risers, valve boxes, meter boxes, control panels, vaults, slabs, fire hydrants, and overhead utilities.
- Locate underground features of sanitary manholes, storm manholes, and catch basins. Measure the invert elevations of pipes and determine the pipe materials and size when possible.
- Locate trees with caliper of 3 inches and larger will be located. Clusters of trees will be shown as a group. Trees will be identified by the common species name and denoted as unknown if the species cannot be identified. A tree legend will be affixed to the survey drawing and will list the tree species, DBH, and identifying tree number.

- Tie in any subdivision corners, lot corners, and plat corners which can be located along the right-of-way lines. Depict right-of-way lines on the survey for informational purposes only. This will not constitute a boundary or right-of-way survey as defined in the Minimum Technical Standards for Land Surveying and Mapping.
- Measure topographic cross-sections approximately every 50 feet of public right of way and at high and lows spots.
- Ownership and title searches are not included within the scope.
- Easements will be based on information obtained from record plats.

CMA shall coordinate directly with the surveyor to ensure all appropriate data is gathered during the completion of the topographic survey. CMA shall review topographic data upon completion of the survey and provide any comments to the surveyor if necessary. CMA shall update the CAD settings of the topographic survey as necessary and incorporate survey information into the base plans for the project. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. All work under this task will be billed on a lump sum basis.

#### Task 1.3 Geotechnical Investigation

CMA shall retain a geotechnical engineering firm to acquire the relevant soils information required to estimate subsurface soil conditions, which is necessary to properly design the proposed stormwater improvements within the project area. This task includes the completion of 4 Standard Penetration Test (SPT) soil borings to verify the subsurface soil conditions and up to 5 asphalt cores to measure the existing roadway thickness within the project area. CMA shall complete this task within 30 calendar days from the issuance of the Notice to Proceed (NTP) from the City. All work under this task will be billed on a lump sum basis.

#### Task 1.4 Subsurface Utility Verification

CMA shall retain a subsurface utility engineering consultant to conduct up to 25 utility testholes to confirm the location of any existing underground utilities within the project area. The completion of up to 25 utility testholes will be necessary to avoid conflicts between the proposed stormwater improvements and any existing underground utility infrastructure within the public right of way. The subsurface utility engineering consultant will be responsible for providing the utility testhole report to CMA for use in the development of the design plans. CMA shall coordinate directly with the subsurface utility engineering consultant to ensure all appropriate data is gathered on the existing underground utilities. CMA shall review the utility testhole report upon completion and provide any comments to the subsurface utility engineering consultant if necessary. CMA shall incorporate the existing underground utilities into the base plans for the project based on the information included within the utility testhole reports. CMA shall complete this task within 30 calendar days from the completion of Task 1.1 and Task 1.2. All work under this task will be billed on a lump sum basis.

#### Task 1.5 Project Site Visits and Meetings

CMA shall perform necessary site visits throughout the project area to verify the configuration of the any existing utilities, structures, driveways, walkways, tree, landscaping, fencing, and other obstructions within the public right of way and on private property within the project area. CMA shall walk the site and obtain photographs of all potential obstructions and encroachments that may negatively impact the feasibility of the proposed stormwater improvements. CMA shall also visually inspect the existing drainage infrastructure within the project area to confirm the current condition, particularly the existing stormwater outfalls from this project area. CMA shall review any drainage pipe inspection videos provided by the City. As needed, CMA will also attend coordination meetings with the City staff during the preliminary design phase of this project. During the preliminary design, CMA shall also meet with the relevant regulatory agencies to discuss the potential system improvement alternatives for this project and to confirm the permit requirements for each potential system

improvement alternative. CMA shall complete this task throughout the duration of the Preliminary Design Phase. The fees for this task will be paid on a lump sum basis.

#### Task 1.6 Stormwater Model Analysis

CMA shall develop an updated ICPR4 stormwater model to conduct a more detailed analysis of the project area. CMA will subdivide the project area into multiple drainage basins to allow for the more detailed analysis of the project area on a block by block basis. CMA will tabulate the model parameters of the relevant nodes and links within the stormwater model to reflect the revised basin boundaries within the project area. CMA will run the updated stormwater model to obtain peak flood stages, flood durations, and peak discharges for the existing conditions within the project area. CMA will also use the stormwater model to assess the effectiveness of the various potential system improvement alternatives. CMA will run updated stormwater model for various scenarios which will include multiple combinations of the potential system improvement alternatives.

CMA will review, evaluate, and compare the feasibility and effectiveness of each system improvement alternative within the project area for the purpose of developing a recommendation for stormwater improvements to be implemented during the detailed design phase of this project. CMA will use the stormwater model to compare the effectiveness of each scenario at reducing the peak flood stage and flood duration throughout the project area while also estimating the impact on peak discharge into the surrounding surface waters. CMA will assess and compare the impact of each system improvement alternative based on the following items:

- Permit Restrictions
- Impact on Peak Discharge
- Flood Control (Reduction in Peak Stage)
- Flood Control (Reduction in Estimated Flood Duration)
- Water Quality Impacts

Based on the regulatory requirements, the implementation of the proposed stormwater improvements within the project area will likely be contingent on providing sufficient storage volume for water quality treatment of stormwater runoff prior to discharge via the existing outfalls and on limiting the peak discharge via the existing stormwater outfalls. CMA shall review, evaluate, and compare the permit restrictions on the various potential system improvement alternatives. CMA will tabulate the maximum water quality volume that could be provided under each potential system improvement alternatives for comparison with the minimum volume per regulatory requirements. CMA will compare the peak discharge under each potential system improvement alternatives with the maximum allowable discharge per regulatory requirements. CMA shall meet with the relevant regulatory agencies to present the potential system improvement alternatives for this project and to confirm the permit requirements for each potential system improvement alternatives. The permit requirements for each system improvements scenario will be summarized in the Preliminary Design Report for comparison purposes. The purpose of this alternative comparison is to identify the recommended stormwater improvements for the project area. The comparison of each system improvements scenario will be summarized in the Preliminary Design Report. CMA shall complete this task within 30 calendar days from the completion of Task 1.1 through Task 1.5. The fees for this task will be paid on a lump sum basis.

#### Task 1.7 Preliminary Design Report

Prior to commencing with detailed design of stormwater improvements within the project area, the completion of a Preliminary Design Report for the neighborhood is necessary to assess the feasibility, regulatory permit restrictions, cost impacts, and flood reduction effectiveness of each potential system improvement alternative within the project area. The Preliminary Design Report will summarize the work completed under the previous tasks for the site investigation, stormwater model analysis, permit verification, and alternative Comparison. CMA

will prepare a preliminary design report which outlines the impacts of the potential stormwater improvement alternatives and presents the recommended stormwater improvements within the project area. The Preliminary Design Report will include a conceptual plan layout of the recommended stormwater improvements in the project area along with a preliminary construction cost estimate. The Preliminary Design Report will be submitted for review and approval by the City. CMA will be available to meet with City staff to discuss the Preliminary Design Report in more detail. As necessary, CMA shall revise the Preliminary Design Report to address any review comments from the City. CMA shall complete this task within 30 calendar days from the completion of Task 1.6. The fees for this task will be paid on a lump sum basis.

## **Task 2: Design Services**

### **Task 2.1 60% Design Submittal**

CMA shall be responsible for all civil engineering design services necessary to prepare the 60% Design Submittal. CMA shall retain an electrical engineer for the design the electrical service and instrumentation control for the proposed stormwater pump station(s). CMA will prepare and submit the 60% Design Submittal to the City for review and approval. The 60% Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare 60% design drawings, which will consist of the existing condition plans, demolition plans, stormwater plans (plan view only), stormwater pump station plans, paving and grading plans, and any relevant detail drawings.
- Cost Estimate – CMA will prepare a preliminary cost estimate of the probable construction costs which will reflect the proposed work included within the 60% Design Submittal.

CMA shall submit 60% Design Submittal to the City for review within 60 calendar days from the completion of Task 1 – Preliminary Design. Any review comments from the City on the 60% Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

### **Task 2.2 90% Design Submittal**

CMA shall be responsible for all civil engineering design services necessary to prepare the 90% Design Submittal. CMA shall retain an electrical engineer for the design the electrical service and instrumentation control for the proposed stormwater pump station(s). CMA will prepare and submit the 90% Design Submittal to the City for review and approval. The 90% Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare these 90% design drawings, which will consist of the existing condition plans, demolition plans, stormwater plans (plan and profile views), stormwater pump station plans, paving and grading plans, pavement markings and signage plans, landscape restoration plans, electrical plans and any relevant detail drawings.
- Technical Specifications – CMA will prepare technical specifications within the proposed work included within the 90% Design Submittal.
- Cost Estimate – CMA will prepare a cost estimate of the probable construction costs which will reflect the proposed work included within the 90% Design Submittal.

CMA shall submit the 90% Design Submittal to the City for review within 60 calendar days from the completion of Task 2.1 – 60% Design Submittal. Any review comments from the City on the 90% Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

### Task 2.3 Regulatory Permitting

CMA will obtain, review, and complete permit applications and will prepare backup documentation required by the regulatory permitting agencies. CMA will be responsible for coordination with all regulatory agencies during the permitting process. CMA will send the application forms to the City for signature along with check(s) for all permit and application fees, which will be provided by the City. CMA shall submit all required permit applications to the relevant regulatory agencies. The regulatory agencies typically complete their initial review within 30 calendar days after the permit submittal. Upon obtaining review comments from the regulatory agencies, CMA will revise applications, plans, and technical specifications as per comments from these regulatory agencies and re-submit to the regulatory agencies for permit approval. CMA expects to need the following permit approvals for this project:

- **Surface Water Permitting** – CMA shall obtain the relevant surface water permits required for the proposed stormwater improvements within the project area. CMA shall submit permit application packages to the South Florida Water Management District (SFWMD) for an Environmental Resource Permit and to Broward County Environmental Protection and Growth Management (BCEPGM) for a Surface Water License as necessary. CMA shall update the design plans based on any review comments received from SFWMD and BCEPGM during the permitting process.
- **Water Use Permitting** – CMA shall obtain the relevant water use permits required for the dewatering activities needed during construction within the project area. CMA shall submit water use permit application packages to SFWMD and BCEPGM for the dewatering operations required during construction. CMA shall update the design plans based on any review comments received from SFWMD and BCEPGM during the permitting process.
- **Environmental Permitting** – CMA shall obtain the relevant environmental permits required due to any potential outfall modifications within the project area. CMA shall submit environmental permit application packages to SFWMD and BCEPGM to any potential outfall modifications within the project area. CMA shall update the design plans based on any review comments received from SFWMD and BCEPGM during the permitting process. CMA shall retain an environmental engineer for an environmental permitting required due to the potential modifications to existing outfalls within the project area.
- **Roadway Permitting** – CMA shall obtain the relevant roadway permits required for the proposed improvements to the pavement markings, and signage within the project area. CMA shall submit permit application packages to Broward County Traffic Engineering Department (BCTED) for approval as necessary. CMA shall update the pavement markings and signage plans based on any review comments received from BCTED during the permitting process.
- **City Building Permit Dry Run Review** – CMA shall submit the design plans to the City Building Department for a “dry run” review of the landscaping, irrigation, and structural components of the proposed improvements. For review and approval by the City Landscaping Division, CMA will also prepare a tree survey and assessment of the existing trees within the project area and a tree mitigation plan for any existing trees impacted by the construction activities. The City will coordinate directly with the City staff responsible for the “dry run” review of these component to expedite the review process. CMA shall update the design plans based on any review comments received from the City during the permitting process.

The permit approvals can typically be expected within 60-90 days of submittal to the regulatory agencies. All required permit approvals must be obtained from the regulatory agencies prior to submitting the 100% Design Submittal to the City. The fees for this task will be paid on a lump sum basis. The fees for this task will be paid on a lump sum basis.

#### Task 2.4 Final Design Submittal

CMA shall be responsible for all civil engineering design services necessary to prepare the Final Design Submittal. CMA shall retain an electrical engineer for the design the electrical service and instrumentation control for the proposed stormwater pump station(s). CMA will prepare and submit the Final Design Submittal to the City for review and approval. The Final Design Submittal shall include the following design documents:

- Design Plans – CMA will prepare these final design drawings, which will consist of the existing condition plans, stormwater plans (plan and profile view), stormwater pump station plans, paving and grading plans, pavement markings and signage plans, landscape restoration plans, and any relevant detail drawings.
- Technical Specifications – CMA will prepare the final technical specifications, which will include the proposed work defined within the Final Design Submittal.
- Cost Estimate – CMA will prepare a final cost estimate of the probable construction costs, which will reflect the proposed work defined within the Final Design Submittal.
- Bid Schedule – CMA will prepare a final bid schedule, which will include all line items for the proposed work defined within the Final Design Submittal.

CMA shall submit the Final Design Submittal to the City for review within 30 calendar days upon receiving permit approvals from all regulatory agencies. Any review comments from the City on the Final Design Submittal are expected to be provided to CMA in a timely manner. As necessary, CMA shall immediately revise the project documents to address any review comments from the City. The fees for this task will be paid on a lump sum basis.

#### **Task 3: Reimbursable Expenses**

##### Task 3.1 Document Reproduction

CMA shall provide all document reproduction required for each project deliverable to the City and regulatory agencies as defined within the scope. All printing costs for deliverable will be reimbursed by the City at cost.

##### Task 3.2 Legal Description and Sketch

The City may need to establish up to 4 new utility easements on private property for the proposed stormwater pump station(s), which will require a legal description and sketch of these new utility easements that is signed and sealed by the licensed surveyor. If needed, CMA shall retain with a licensed surveyor to prepare the legal description and sketch for up to 4 new utility easements in the project area. All survey costs for the legal description and sketch will be reimbursed by the City at cost.

#### **DELIVERABLES**

CMA will provide the following deliverables at each submittal:

##### Design Plans:

- 5 half size sets (11"x17") at each submittal
- 1 digital copy (CAD format) at each submittal
- 1 digital copy (PDF format) at each submittal

##### Technical Specifications:

- 1 hard copy at each submittal
- 1 digital copy (PDF format) at each phase submittal

## **SCOPE ASSUMPTIONS**

- This scope does not include any title searches to confirm presence of existing utility easements on private property within the project area.
- This scope does not include any legal services required for to establish new utility easements on private property or acquire any new public right-of-way from private property.
- This scope does not include does include any bidding assistance, such as attending pre-bid meetings, responding to questions from prospective bidders, or evaluating any bid proposals. Any bidding assistance would be included in separate scope of services.
- This scope does not include does include any construction services, such as attending progress meetings, reviewing shop drawings, assisting the contractor with obtaining their building permit, responding to questions from the contractor, assisting with SRF compliance, conducting construction inspections, or project certification. Any construction services would be included in separate scope of services.
- City will provide all available topographic surveys, atlases, design drawings, record drawings, shop drawings, permit documents, maintenance reports, drainage pipe inspection videos and/or master plans relevant to the project area.
- City will conduct video inspections of the five existing stormwater outfalls within the project area for the purpose of confirming the current condition of the existing pipes.
- City will provide timely responses to information included within each submittal.
- City shall provide all required permit fees.
- City will be responsible for all coordination necessary to schedule the public workshops with residents.
- City will be responsible for the preparation of the bid documents.
- The selected contractor will be responsible for obtaining any City Building Permit required for this project along with all related coordination and preparation of any backup documentation required for the City Building Permit. This scope does not include does include any construction services, such as assisting the contractor with obtaining their building permit. Any construction services would be included in separate scope of services.
- City will reimburse CMA for any document reproduction costs for all submittals to City and to regulatory agencies.
- CMA will submit monthly invoices, which will be payable by City within 30 days.
- Additional reimbursable expenses requested by the City outside of the items defined within scope, such as additional land surveying, geotechnical testing, utility testholes, laboratory testing, permit fees, additional document reproduction, or express delivery of documents, shall be invoiced at cost as defined in our Exhibit A – General Conditions/Provisions.
- Any additional engineering services from CMA requested by the City outside of the items defined within scope will be billed at hourly rates according the Exhibit C – Hourly Rate Schedule.

## **PROJECT SCHEDULE**

CMA shall start work immediately upon receipt of Notice to Proceed and official authorization from the City. The estimated project schedule was prepared based on the assumption that the City will provide any review comments on design submittals within 14 days and regulatory agencies will provide any review comments on permit submittals within 30 days. The estimated project schedule listed within the table below.

<b>Task</b>	<b>Task Description</b>	<b>Duration</b>	<b>Estimated Deadline</b>
1	Preliminary Design Services	120 days	TBD
2	Design Services	210 days	TBD



**PROJECT FEES**

CMA has prepared this proposal for the professional services necessary to accomplish this scope of services on this project. The total fees for this project are **\$272,645.00**, which is comprised of a lump sum fee amount of **\$269,045.00** and an reimbursable expense allowance of **\$3,600.00**. The fees for each task on this project are summarized within the table below:

<b>Task</b>	<b>Task Description</b>	<b>CMA Fees</b>	<b>Subconsultant Fees</b>
1	Preliminary Design Services	\$48,925.00	\$43,445.00
2	Design Services	\$140,875.00	\$35,800.00
3	Reimbursable Expenses	\$0.00	\$3,600.00
	<b>Totals:</b>	<b>\$189,800.00</b>	<b>\$82,845.00</b>

Should you have any questions, please do not hesitate to contact me at my office at (954) 730-0707 – Extension 1003 or on my cell phone at (954) 818-9550 or send me an electronic message at [jmcclair@chenmoore.com](mailto:jmcclair@chenmoore.com).

Respectfully submitted,



CHEN MOORE AND ASSOCIATES  
Jason McClair, PE, CFM, LEED AP  
Senior Engineer