



an Atkins company

March 1, 2011

Doug Bradshaw
201 William St., 2nd Floor
Key West, FL 33040

Re: Smathers Beach Renourishment Monitoring

Mr. Bradshaw:

The City of Key West (City) previously selected PBS&J in February 2008 as an approved contractor to furnish general environmental services to the City. Per Article 6.1 (A), the City Commission extended this agreement by the execution of Resolution 110-051.

PBS&J has been requested to provide services for the above referenced project. In support of this project, please find attached supporting detailed cost estimates and task order information for submission to and for the approval of the City Commission. The cost estimate is being provided as a guide for the future.

Thank you in advance for your consideration of this extension request. If you have any questions or need additional assistance, please do not hesitate to contact me at (305) 514-3387.

We are available to commence work on this task immediately.

Sincerely,

A handwritten signature in blue ink that reads 'Adam R. Gelber'.

Adam R. Gelber
Group Manager
PBS&J

TASK ORDER 01

CONSTRUCTION MONITORING SERVICES SMATHERS BEACH, KEY WEST, FLORIDA

CONTRACT NO. 11-051

General

The City of Key West (City) was issued a Consolidated Joint Coastal Permit (JCP) and a Sovereign Submerged Lands Authorization in July 1998 through permit number 0129031-001-JC. This permit authorizes periodic placement of sand along the 3,000 foot Smathers Beach within the City limits. The initial beach restoration project involved the placement of 36,000 cubic yards of sand and mitigated for 5.2 acres of seagrass habitat at a site known as the blimp pad in 2000. The USACE permit application is pending approval. The three main task assignments for this task order are: 1) construction monitoring, 2) biological monitoring and 3) physical monitoring.

1.0 Kick Off Meeting

PBS&J will participate in the Kickoff Meeting with the City and other designated agencies/individuals. Anticipated date of _____ to be held at a location to be determined. Prior to this meeting PBS&J will develop concise timeline and organize the permits into a single composite document with all of the necessary requirements.

Points of discussion will include, but are not limited to:

- Exchange of information
- Establishing definitive project, monitoring and construction scheduling goals
- Agency negotiations approach
- Establish communications plan
- Establish health and safety plan

Deliverable – Meeting minutes and any required additional submittals as a result of the meeting

2.0 Agency Coordination/Negotiation

Currently the FDEP and the USACE are requiring multiple monitoring events at inconsistent intervals. The pre-, post- and 12 month post-construction surveys are common to the requirements of both regulatory agencies, but additional intermittent intervals are defined by either agency at 4, 6, and 8 months post construction. PBS&J will meet with the regulatory agencies in order to seek relief from survey intensive requirements and attempt to negotiate a common monitoring schedule that is both effective and practical. The objective of this task is to reduce to the monitoring requirements of both agency authorizations to be consistent with each other and occur at the pre-, post- and 12 month post-construction timeframes. PBS&J will coordinate meetings with the regulatory agencies in order to facilitate this process.

Deliverable – Documentation of the meetings and results of those meeting.

3.0 Preconstruction Activities

The biological and physical monitoring services described below will be repeated for the post construction monitoring events with the exclusion of the sea turtle nesting monitoring. The monitoring protocols should be established based on the information in Section 5.1 so that they will be repeatable for comparison purposes through the end of the monitoring period. If a mitigation plan is required, the

resource investigation associated with the mitigation plan development will serve as the preconstruction survey.

3.1 Biological Monitoring

PBS&J will compile and review available data, existing permits, reports, maps and aerial photographs pertaining to benthic habitats and associated communities, fisheries, manatees, listed/proposed endangered coral species, and other protected species/critical habitat applicable to the study area. PBS&J will gather information through database literature searches, telephone interviews, and meetings with identified sources of information.

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel. All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

3.2 Topographic/Bathymetric Surveys

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

3.2.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

3.2.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

3.2.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for the Pre construction survey.

3.3 Marine Sea Turtle Lighting Survey

Stray light being cast upon documented marine sea turtle nesting beaches is a significant factor in the degradation of nesting habitat on the beaches of Florida. In order to monitor for the potential of impact, the following monitoring protocol will be established.

- Identify potential problem sources during the day light hours
- Conduct night time surveys
- Identify problem sources
- Address problem sources and remove stray source from impacting beach prior to construction

3.4 Preconstruction CEI

- Facilitate submittal of the City's signed and sealed construction plans to the FDEP.
- Submit detailed geotechnical reports provided by the Contractor for the upland borrow site. Information on the material to be placed on the beach shall include grain size analysis from representative points throughout the borrow area. Reports shall provide assurance that the material is similar to that already existing at the beach site in both coloration and grain size. Reports shall document that all material is free of construction debris, rocks or other foreign matter and does not contain, on average, greater than 10 percent fines passing a No. 200 sieve and shall not contain coarse gravel or cobbles, exclusive of shell material retained by a No. 4 sieve.
- Conduct a pre-construction conference with all contractors, engineer of record, marine turtle permit holder and FDEP staff representative. Other appropriate agency staff and stakeholders may also be invited. The purpose of the meeting is to establish an understanding among all parties as to the requirements of the permit. A minimum 10 days advance written notification to the appropriate agencies and attendees will be provided.
- Provide written notice of commencement to appropriate agencies (FDEP, Corps, FWC, FKNMS, etc.) within the time frames addressed to all parties as required by regulatory authorizations.
- Marine Sea Turtle Lighting Survey
- Biological Monitoring per Section 3.1.

Deliverables:

- Meetings - all meeting agendas, notifications and minutes of the meetings.

- Reports and notices – copies of all reports and notices filed with agencies.

4.0 Construction Engineering Inspection Monitoring

PBS&J will provide construction engineering and inspection (CE&I) services for a period of 20 days. If additional time is required, additional funding will come from Task 14. PBS&J is well qualified and has a long history working on beach and coastal construction projects throughout the state of Florida. An inspector will be onsite during construction for an estimated duration of 20 days, tentatively scheduled to begin _____. The inspector will be qualified and familiar with coastal projects and environmental resources, beach construction techniques, and turbidity monitoring. The inspector will serve as site supervisor and have the authority to alter construction techniques or shut down operations based on turbidity monitoring results or other observations the inspector deems appropriate. Daily construction monitoring activities will include:

- Conduct daily briefings and weekly meetings with contractor
- Do not allow construction to begin until daily marine turtle monitoring of the area has been conducted
- Review contractor invoices and provide recommendations to the City
- Daily monitoring and recording of construction activities
- Random visit to stockpile site to observe delivery of sand, random visual assessment of truck volumes with comparison to delivery ticket volumes stated.
- Oversight of placement of sand on the beach and assessment of sand quality to ensure meets standards in plans, specifications and permit documents
- Collection and logging of periodic sand samples for quality assurance Record
- Daily construction monitoring observations documented with photographs.
- Perform turbidity monitoring as required by regulatory authorizations and provide required reports
- Oversee beach tilling and any compaction monitoring, if required
- Prepare weekly project progress reports to the City
- Maintain copies of project records
- Monitor and advise on placement of erosion control devices
- Prepare final engineers report at conclusion of project and submit along with notice of completion to agencies as required by permits
- Within 30 days following project completion submit appropriate written statement of completion and certification providing confirmation that activities were performed in compliance with the plans, specifications and all conditions of the permit. Any deviations shall be duly noted and described. If completed project is substantially different than permitted plans, substantial deviations shall be noted and provided on a set of as-built drawings.
- Submit required reports to specified regulatory agencies.
- Train City staff to take turbidity samples for the one week post construction monitoring.

5.0 Post Construction Monitoring

The post construction biological and physical monitoring will be based on the repeatable program established for the preconstruction physical and biological monitoring. Biological

5.1 Biological Immediate Post Construction

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel. All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a

Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

5.2 Topographic/Bathymetric Immediate Post Construction

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

5.2.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

5.2.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

5.2.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for immediate post construction survey.

5.3 Turtle Lighting Survey

Stray light being cast upon documented marine sea turtle nesting beaches is a significant factor in the degradation of nesting habitat on the beaches of Florida. In order to monitor for the potential of impact, the following monitoring protocol will be established.

- Identify potential problem sources during the day light hours
- Conduct night time surveys
- Identify problem sources
- Address problem sources and remove stray source from impacting beach during construction

6.0 4 Month Post Construction Monitoring

6.1 Biological Post Construction

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel. All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

7.0 6 Month Post Construction Monitoring

7.1 Topographic/Bathymetric Post Construction

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

7.1.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe

the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

7.1.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

7.1.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for immediate post construction survey.

8.0 8 Month Post Construction Monitoring

8.1 Biological Post Construction

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

9.0 12-Month Post Construction Monitoring

9.1 Biological 12-Month Post Construction

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the

operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

Deliverable – Detailed report describing, comparing and contrasting conditions from post construction monitoring efforts and the results from this effort.

10.0 24 Month Post Construction

10.1 Biological 24-Month Post Construction

PBS&J shall conduct field investigations to locate, delineate and characterize existing benthic resources, e.g. seagrasses, sandbottom, hardbottom, corals, etc., within the marine survey areas. The entire project area will begin with a visual reconnaissance, during which time 2 to 4 PBSJ biologists will haphazardly cover the sampling area via snorkel. All individual coral colonies with diameters >4.0 in (>10.2 cm) within the survey area will be identified and mapped using a Trimble Geo-XT handheld DGPS unit, running ArcPad 7.0. Each coral will have a representative photograph taken for future reference for constructability purposes, if mitigation is required. Polygonal contour vertices will be identified by snorkelers in the water and recorded by the operator of the Trimble floating adjacent to the biologist. Successive polygons will then be added to the shapefile until the entire project area has been sufficiently mapped. All hardbottom outcroppings or edges will be mapped using the same technology. A map of the individual coral colony locations will be produced and incorporated into the bathymetry and seagrass data using Geographical Information System (GIS) software. All submerged lands within the 550 foot buffer will be intensively sampled for seagrass occurrence using an agency approved approach. The objectives of the survey will be (1) to produce a detailed, species-specific map capable of estimating impact acreage, and (2) to quantify the distribution of seagrass within the project area using NMFS/NOAA methods (National Marine Fisheries Service 2002).

10.2 Topographic/Bathymetric Post Construction

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

10.2.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe

the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

10.2.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

10.2.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for 12-month survey.

11.0 36 Month Post Construction

11.1 Topographic/Bathymetric Post Construction

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

11.1.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

11.1.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

11.1.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for 12-month survey.

12.0 48 Month Post Construction

12.1 Topographic/Bathymetric Post Construction

In order to conduct surveying activities a network of control stations shall be established or recovered in the proposed survey area with both vertical and horizontal values. The network shall consist of Local 2nd Order, Class 2 vertical (both NAVD88 and NGVD29), Tidal Bench Marks and Horizontal (NAD83) control points. Vertical points shall be tied into the Tidal Bench Mark in the area and the horizontal control points shall be tied into the Florida GPS Network. Permanent Reference Control Monuments (brass disc in concrete) shall be established at 500 ft intervals along the length of project. The network of control stations shall include temporary benchmarks (3rd order vertical/horizontal) and physical ground topography points (3rd order vertical/horizontal). The ground topography points shall be either digital, differential, or trigonometric measurements.

All work performed will meet or exceed USACE requirements, FDEP requirements and Florida Minimal Technical Standards of Chapter 472.027 F.S. Rule 5J-17 Florida Administrative Code.

12.1.1 Data Resolution

The topographic data will be collected at 100 intervals not to exceed 25 ft. along the profile and all grade breaks and attributed items along the profile sufficient to describe the profile. All survey data shall be provided in digital form and used to produce a Digital Terrain Model (DTM) map at 0.5 ft contour intervals and tied to the Mean High Water line as approved by FDEP.

12.1.2 Data Collection

The Topographic data shall be collected seaward out to approximate 600 feet in order to establish continuity with offshore data and landward to no less than 150 landward of the established Mean High Water line as approved by the FDEP or to the edge of pavement of the abutting roadway.

12.1.3 Procedural Control

The surveyor shall outline and maintain a schedule for planned data collection and itemize all procedures including quality control and instrumentation to be followed during the pre and immediate post construction survey, DTM map with cut and fill calculations will required to be performed and again at the 6 and 12 month monitoring period.

Deliverables - All survey data shall be provided in digital form and used to produce the DTM map. Signed and sealed surveys by a Professional Land Surveyor will be submitted for 12-month survey.

Smathers Beach Monitoring
Resolution 11-051 Task Order #01

Task	Category	Rodperson II	Instrument Operator I	Tech I	Tech II	Sr Tech I	Sr Tech II	Sr Tech III	Sr. Tech IV	Sr Tech V	PTP/Sr. Div Manager	Hours	Cost
		\$29.00	\$47.00	\$55.00	\$75.00	\$90.00	\$110.00	\$125.00	\$150.00	\$175.00	\$200.00		
1.0 - Project Kick Off													
1.1 Project Organization							16	8		4	4	32	\$4,260.00
1.2 Meet with City Staff							24	12			12	48	\$6,540.00
											Subtotal	48	\$10,800.00
2.0 - Agency Coordination/Negotiation													
2.1 Establish agency meeting							4			4		8	\$1,140.00
2.2 Negotiate for minimizing monitoring							8	4		8		20	\$2,780.00
											Subtotal	28	\$3,920.00
3.0 - Preconstruction Activities (Baseline)													
3.1 Biological													
3.1.1 Biological Monitoring					65	55	69	55		4		248	\$24,990.00
3.1.2 Biological Reporting					80	16	4	2				102	\$8,130.00
3.2 Topographic/Bathymetric Survey													
3.2.1 Establish Survey Controls		24	24			24	12		3		16	103	\$8,954.00
3.2.2 Data Collection		32	32			32						96	\$5,312.00
3.2.3 Procedural Control						24	16		3		4	47	\$5,170.00
3.2.4 Deliver DTM map signed and sealed						16			4		2	22	\$2,440.00
3.3 Sea Turtle Lighting Survey													
3.3.1 Survey							4	4				8	\$940.00
3.4 Preconstruction CEI													
3.4.1 CEI Coordination								16				16	\$2,000.00
											Subtotal	642	\$57,936.00
4.0 - Construction Engineering Inspection													
4.1 On-site coordination to extend 20 days							176					176	\$19,360.00
4.2 Biological Monitoring- limited survey					48	28	32	4				112	\$10,140.00
											Subtotal	288	\$29,500.00
5.0 - Post Construction Monitoring													
5.1 Biological - Immediate Post													
5.1.1 Biological Monitoring					65	55	65	55		4		244	\$24,550.00
5.1.2 Biological Reporting					56	16	4	2				78	\$6,330.00
5.2 Topographic/Bathymetric Survey (As-Built)													
5.2.1 Review Survey Controls		10	10			10	2		2		16	50	\$5,380.00
5.2.2 Data Collection		32	32			32						96	\$5,312.00
5.2.3 Procedural Control						24	16		3		1.5	44.5	\$4,670.00
5.2.4 Deliver DTM map signed and sealed						16	48		4		1	69	\$7,520.00
											Subtotal	581.5	\$53,762.00
6.0 - 4 Month Post Construction													
6.1 Biological - Immediate Post													
6.1.1 Biological Monitoring					65	55	65	55		4		244	\$24,550.00
6.1.2 Biological Reporting					56	16	4	2				78	\$6,330.00
											Subtotal	322	\$30,880.00

Smathers Beach Monitoring
Resolution 11-051 Task Order #01

Task	Category	Rodperson II	Instrument Operator I	Tech I	Tech II	Sr Tech I	Sr Tech II	Sr Tech III	Sr. Tech IV	Sr Tech V	PTP/Sr. Div Manager	Hours	Cost
		\$29.00	\$47.00	\$55.00	\$75.00	\$90.00	\$110.00	\$125.00	\$150.00	\$175.00	\$200.00		
7.0 - 6 Month Post Construction													
7.1 Topographic/Bathymetric Survey													
	7.1.1 Review Survey Controls	8	8			8			2		2	28	\$2,028.00
	7.1.2 Data Collection	32	32			32					1.5	97.5	\$5,612.00
	7.1.3 Procedural Control					24	16		3		1.5	44.5	\$4,670.00
	7.1.4 Deliver DTM map signed and sealed					16	16		4		1	37	\$4,000.00
											Subtotal	207	\$16,310.00
8.0 - 8 Month Post Construction													
8.1 Biological - Immediate Post													
	8.1.1 Biological Monitoring				65	55	65	55		4		244	\$24,550.00
	8.1.2 Biological Reporting				56	16	4	2				78	\$6,330.00
											Subtotal	322	\$30,880.00
9.0 - 12 Month Post Construction													
9.1 Biological - Immediate Post													
	9.1.1 Biological Monitoring				65	55	65	55		4		244	\$24,550.00
	9.1.2 Biological Reporting				56	16	4	2				78	\$6,330.00
											Subtotal	322	\$30,880.00
10.0 - 24 Month Post Construction													
10.1 Biological - Immediate Post													
	10.1.1 Biological Monitoring				65	55	65	55		4		244	\$24,550.00
	10.1.2 Biological Reporting				56	16	4	2				78	\$6,330.00
10.2 Topographic/Bathymetric Survey													
	10.2.1 Review Survey Controls	16	16			16	6		3		2	59	\$4,166.00
	10.2.3 Data Collection	32	32			32					2.5	98.5	\$5,812.00
	10.2.4 Procedural Control					24	16		4		4	48	\$5,320.00
	10.2.5 Deliver DTM map signed and sealed					16	16		6		2	40	\$4,500.00
											Subtotal	567.5	\$50,678.00
11.0 - 36 Month Topographic/Bathymetric													
	11.1 Review Survey Controls	16	16			16	6		3		2	59	\$4,166.00
	11.2 Data Collection	32	32			32					2.5	98.5	\$5,812.00
	11.3 Procedural Control					24	16		4		4	48	\$5,320.00
	11.4 Deliver DTM map signed and sealed					16	16		6		2	40	\$4,500.00
											Subtotal	245.5	\$19,798.00
12.0 - 48 Month Topographic/Bathymetric													
	12.1 Review Survey Controls	16	16			16	6		3		2	59	\$4,166.00
	12.2 Data Collection	32	32			32					2.5	98.5	\$5,812.00
	12.3 Procedural Control					24	16		4		4	48	\$5,320.00
	12.4 Deliver DTM map signed and sealed					16	16		6		2	40	\$4,500.00
											Subtotal	245.5	\$19,798.00
13.0 Project Management													
	13.1 Maintaining Schedule and Budget						120	40				160	\$18,200.00

Smathers Beach Monitoring
Resolution 11-051 Task Order #01

Task	Rodperson II	Instrument Operator I	Tech I	Tech II	Sr Tech I	Sr Tech II	Sr Tech III	Sr. Tech IV	Sr Tech V	PTP/Sr. Div Manager	Hours	Cost
	\$29.00	\$47.00	\$55.00	\$75.00	\$90.00	\$110.00	\$125.00	\$150.00	\$175.00	\$200.00		
14.0 Contingency Items												
Aerial Photography												
Other as authorized by City PM											5%	\$18,667.00
										Total Labor		\$392,009.00
										Total Expenses		\$55,126.77
										Total		\$447,135.77

Smathers Beach Monitoring
Resolution 11-051 Task Order #01

Item	Unit	Unit Price	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7	Task 8	Task 9	Task 10	Task 11	Task 12
Per Diem	day	\$42.00	\$252.00		\$966.00	\$1,806.00	\$1,764.00	\$1,050.00	\$630.00	\$1,050.00	\$1,050.00	\$630.00	\$630.00	\$630.00
Mileage	mile	\$0.49	\$152.29		\$304.58	\$1,316.29	\$304.58	\$152.29	\$152.29	\$152.29	\$152.29	\$152.29	\$152.29	\$152.29
Plane	R/T	At cost												
Tolls	Each	at cost												
Accommodations	per/nite	\$175.00	\$525.00		\$6,825.00	\$5,425.00	\$5,425.00	\$4,200.00	\$1,750.00	\$4,200.00	\$4,200.00	\$1,750.00	\$1,750.00	\$1,750.00
Jon Boat w/ outboard	day	\$50.00			\$200.00		\$200.00		\$200.00			\$200.00	\$200.00	\$200.00
Boat to 20'	1/2 day	\$200.00												
Boat to 20'	day	\$350.00												
Boat greater than 20'	day	at cost												
Snorkel Gear	day	\$15.00				\$300.00	\$300.00	\$300.00		\$300.00	\$300.00			
SCUBA Equipment	day	\$40.00												
Turbidity meter	day	\$15.00				\$525.00								
Misc Field Supplies	each	\$100.00			\$500.00									
Subtotal			\$929.29	\$0.00	\$8,795.58	9,372.29	\$7,993.58	5,702.29	\$2,732.29	5,702.29	5,702.29	\$2,732.29	\$2,732.29	\$2,732.29

Total \$55,126.77