

EXECUTIVE SUMMARY

Recommend Approval of the proposal by Coastal Planning & Engineering to provide construction phase administration, survey and engineering services for a not-to-exceed, Time and Material price of \$225,000 for the City of Naples/County beach re-nourishment project.

OBJECTIVE: Approval the proposal by Coastal Planning & Engineering to provide construction phase administration, survey and engineering services for a not-to-exceed, Time and Material price of \$225,000 for the City of Naples/County beach re-nourishment project.

CONSIDERATIONS: Construction services are required by permit from FDEP. This will be accomplished by a combination of CP&E to provide survey, reports and engineering support and Al Madsen to perform the daily (including weekends and evenings) site inspections and monitoring.

Al Madsen's effort will be supplemented by the contractors QA/QC procedures as well as support from Chairman Pennington and Dr. Bauer.

Structuring the support in this manner saves the CAC/project \$225,000. CP&E's original proposal to provide these services was \$450,000+++.

COUNTY ATTORNEY FINDING: A finding by the County Attorney is not required for this item.

ADVISORY COMMITTEE RECOMMENDATIONS: At the October 14, 2005 Coastal Advisory Committee Meeting this item was unanimously recommended for approval 5-0

FISCAL IMPACT: The Source of funds is from Category "A" Tourist Development Tax fund. This approach saves the CAC/project considerable money.

GROWTH MANAGEMENT IMPACT: There is no impact to the Growth Management Plan related to this action.

RECOMMENDATION: Recommend approval to the Board of County Commissioners of the proposal by Coastal Planning & Engineering to provide construction phase administration, survey and engineering services for a not-to-exceed, Time and Material price of \$225,000 for the City of Naples/County Beach Re-nourishment Project No. 90527

PREPARED BY: Gary McAlpin, Coastal Projects Manager

SCOPE OF SERVICES
COLLIER COUNTY BEACH RENOURISHMENT PROJECT
CONSTRUCTION PHASE ADMINISTRATION,
SURVEY AND ENGINEERING SERVICES
Revised October 10, 2005

Introduction:

This scope of services will provide the engineering services required through the construction phase of the Collier County Beach Renourishment Project. The scope of services has been reformulated to support the county as the lead in construction management and provide flexibility to the county in tailoring the professional services to the county's needs as the project progresses. The proposal also addresses the technical and permit management services during construction to include coordination of the permit monitoring effort for the project. This task takes the project through post-construction surveys and reports. CPE will provide on site and office support services daily during construction. The services are hourly (time and material) for a fee of \$225,000, except of Task 1A & B, which is lump sum.

The following are the services provided in this scope of services:

1. Construction Phase Services: Construction phase services include management of beach construction during bidding, pre-construction, during and post-construction period; until the contractor demobilizes from the project area and completes all submittals.

A. Contractor Bidding, Selection and Negotiation:

We will assist COLLIER COUNTY in the bidding and final selection of a dredging contractor and provide responses to contractor questions during the bidding process under the direction of the County project manager. We will attend a pre-bid meeting and present the technical aspects of the project. We will address questions from the contractors and make them aware of critical information about the project. The contractors will be advised of all permit conditions, which will also be incorporated into the plans and specifications, and ultimately the contract documents for the project after each permit has been received. The contractors will be provided sufficient time to submit a bid for the project. We will answer questions during the bidding period and assist COLLIER COUNTY in issuing addendums, as required. We will also assist COLLIER COUNTY in reviewing the bids and selecting the lowest responsible bidder, taking into consideration the capability of the contractor (low bidder) and his equipment in constructing the beach nourishment project.

A map of the nearshore natural resources, recent hardbottom and the contours based on 2004 Corps of Engineers Lidar survey will be developed for use in project construction. The map will show the pipeline corridors, FDEP monuments, aerial of the on-shore roads

and development and other pertinent features. It will be provided in ACROBAT (pdf) format. This map will be used as the basis of a vessel operating plan developed by the Contractor.

B. Pre-Construction

We will attend a pre-construction meeting with the Contractor, COLLIER COUNTY, and permit agencies, and receive the Contractor's submittals and construction plan for the project. Pre-construction and mobilization activity by the Contractor will be monitored and observed periodically. At this time, no permanent local presence will be established, by CPE, although short term residency in the project area will be required during construction. We will assist the County in observing the Contractors pre-placement surveys. The pre-placement survey will be used as the basis for updating the construction plans, and creating cross-sections at intermediate profiles. CPE will update and expand the beach fill cross-sections to 100-foot spacing at the approved construction volume, and observe the contractors survey layout for compliance with the plans.

We will coordinate with permit agencies for beginning construction as required by permits. We will provide permit agencies project information and a construction schedule as they are provided by the contractor, and coordinate between them as needed, including the actions of CPE's biological monitoring team.

We will assist with the county's observations of the contractor's critical operations, especially around hardbottom, including placement of the submerged pipeline, pump out station and/or booster pump.

A quality assurance plan will be developed during this period to integrate the efforts of the COUNTY and CPE. The COUNTY will provide the primary observation team, and CPE will supplement coverage and provide for technical support. The plan will expand on this SOW, describing CPE's task in more detail. The COUNTY and Contractor will provide environmental monitoring services, which must be integrated with construction and produce reports required by permitting agencies. A daily construction observation report and check list will be developed for use by the observer teams.

C. Construction Observations

We will be COLLIER County's DESIGN PROFESSIONAL during the beach construction period, and will provide technical services and assist with construction observations during the construction week. Basic observation will be provided by the county, and the CPE observer will cover period and tasks as direct in the county's observation plan. CPE will provide on site and office support during each week of construction. Beach visits will be timed to coincide with pump out operations to the maximum extent possible. The timing of the inspections will rely on contractor reporting and observation of remote telemetry. Administrative tasks and observation of other tasks (surveys, grading) will be scheduled between pump out operations.

Construction observation emphasis will be placed upon monitoring the timeliness of the Contractor's work and the quality and volume of the sand placed on the beach. Sand samples will be collected from each hopper dredge when feasible, with particular attention given to the presence of rock in the fill. Selected samples, up to 16 samples total, will be sieve and color analyzed by CPE. At least one sample every 3000 feet will be analyzed. The Sediment QA/QC plan will be implemented by the observer team. The ENGINEER will interpret dredging and sand quality problems should they occur, and assist the contractor in resolving these issues.

We will be available to address questions concerning the plans and specifications and address other issues of coordination for the beach project. We will also accept and review the contractor quality control reports through the duration of the project from mobilization through demobilization from the project site. Some construction observations will be conducted offsite on the dredge, at the pump out location or with other supporting operations. The construction progress will be tracked using a spreadsheet.

The activities described in the pre-construction task will be continued during construction as appropriate to include: observing surveys and creating profiles at 100 foot spacing, observing emplacement operations of submerged pipeline, pump out facilities, and boosters; facilitate coordination among the Contractor, COUNTY, environmental observers and permit agencies. Non-technical task will be performed on a schedule developed by the county.

The county will manage the project environmental monitoring to include turbidity, shorebird and turtle monitoring through periodic observation. Turbidity monitoring reports will be collected, reviewed and provided to FDEP weekly. The County will coordinate and implement sea turtle trawling, when and if needed, and inform CPE biologists of the timing for during construction biological monitoring of the pipeline corridor.

The pre- and post-placement (AD and BD) construction survey performed by the Contractor during construction will be observed by the county. CPE will review contractor calculations of pay quantities and recommend approval of acceptance sections based on these records. We will also review pay estimates on a monthly basis and make recommendations on payment after verifying volumes.

We will be the technical liaison between COLLIER COUNTY, and the Contractor, answering technical inquiries and resolving problems as they occur. The county will serve as the single point of contact for the Contractor, unless delegated by task to the Engineer. The COUNTY will address community, residents and public issues as they arise, with the assistance of the ENGINEER, when needed.

We will issue with reasonable promptness such written clarifications or interpretations of the requirements of the contract documents (in the form of drawings or otherwise) as we may determine necessary, which shall be consistent with the intent of and reasonably

inferable from contract documents. Minor variations in the work from the requirements of the contract documents may be authorized which do not involve an adjustment in the contract price or the contract times and are compatible with the design concept of the completed project as a functioning whole as indicated by the contract documents. These actions will be made through the county.

The County may prepare a QA report summarizing construction on each day observed. The County shall submit a weekly report (via fax or email) to FDEP and other interested parties, that summarizes the progress of beach construction and compliance with the permit and contract, amount and location of work performed and by whom, equipment, problems encountered, method to correct problems, errors, omissions, deviations from Contract Documents, and weather conditions.

The CPE observer will attend project meetings, including pre-construction and periodic (weekly) construction meetings. The CPE senior project engineer will attend the pre-construction meeting and four weekly meetings.

The engineer will assist with daily observations and perform the following specific task:

- Update the plan cross-section using the contractor's pre-placement survey.
- Verify compliance of post-placement surveys with plans and permits, and calculate and verify the pay volume due.
- Laboratory analysis of sand samples taken from the constructed beach for compliance with the QA/QC plan.
- Assist county in verifying pipeline corridor locations before laying the pipeline and placing dredges pump out and booster pump facilities.
- Plot contractors dredge positioning data at least weekly and evaluate compliance with plans and permits.
- Observe dredge telemetry when available.

E. Immediate Post-Construction Services

During the immediate post-construction time frame, the county will inspect/observe the beach construction site and overall project area and create a punch list of any deficiencies. The engineer will make a site visit in support of the project certification process, to observe the projects compliance with plans, specifications and permits.

An engineering letter report with as-built drawings will be prepared containing post-construction results. The ENGINEER will certify completion of the project to permit agencies based on infrequent personal observation, reports and records provided by the County, contractor and CPE observer, and as required in the DEP permit. This certification will be accompanied by a report which will include the as-built surveys provided by the Contractor for the beach and borrow area, and the post-construction information required by permit.

The County or his representative may observe demobilization of the Contractor, to include removal of equipment from the beach, staging areas and COUNTY property; final grading, tilling and scarp leveling of the beach, debris removal and other clean up operations. The Contractor will be informed of any equipment or debris left on or offshore.

2. Post-Construction Survey, Aerial Photography and Report:

After completion of the construction of the beach renourishment project, a comprehensive post-construction survey will be conducted of the project by the CPE surveyors. CPE will survey 68 primary FDEP beach profiles, using the FDEP monitoring standards for beach erosion control projects, March 2004, between FDEP's reference monument R-17 through reference monument R-84, which extends from the Delnor-Wiggins State Park to approximately one mile north of Gordon Pass. An intermediate profile is added south of Doctors Pass at R-58A. These profiles will be measured along the same azimuth previously surveyed and commence at a point landward of the 1996 beach fill and extend seaward to a depth of -16.0 feet NGVD, or a minimum of 2000 feet seaward of the mean high water, whichever is closer. The survey will take place about June 2006 in conjunction with the annual biological monitoring. The survey data will be reduced, and a report prepared which documents the survey results. The report will be provided to COLLIER COUNTY and to the State of Florida.

A. Beach Profile Survey

The survey of the beach and offshore area will be conducted in two phases. A combination of GPS-RTK and standard survey techniques for measurement of elevations will be employed to survey the "dry land" and nearshore portion of the beach. Beach profile lines established approximately perpendicular to the shoreline at each FDEP monument will be surveyed by a GPS-RTK unit over most of the beach from the monument offshore to a depth of 2 to 6 feet (NGVD). Standard survey techniques will be used to supplement the GPS in regions where GPS signal is weak or blocked.

A survey vessel will be used to perform the hydrographic portion of the survey on every DEP line which will extend from the 3 to 6 foot depth to a depth of 16 feet or 2,000 feet offshore along the profile line, whichever is least. During the hydrographic survey, depths will be collected at approximately twenty five foot intervals with final processed data reflecting a maximum interval of fifty feet. The spacing may be smaller within the reef zones. The hydrographic survey will be conducted using a survey launch (boat) with centrally mounted transducer. The positioning of the survey vessel is acquired by the use of GPS-RTK. Vessel navigation will be controlled by the Coastal Oceanographics "HYPACK" system. Horizontal positioning checks will be conducted at the beginning and end of each day using fixed objects or known control points to verified position.

Soundings will be collected using an Innerspace model 448 with digitizer fathometer. The fathometer will be calibrated prior to the start of the survey following manufacturer

recommended procedures included in the FDEP's Monitoring Standards for Beach Erosion Control Projects (March 2004).

Upon completion of the survey, a survey report will be prepared that compares pre construction conditions with surveyed beach conditions. The report will consist of the required FDEP Monitoring Standards, which include: Beach Profile Survey Report Notes and Certification/Charts, Monument Information Report, Federally Compliant Metadata, xyz data, DEP ASCII files, Profile Plots, Field Book Pages, and Ground Digital Photography.

B. Controlled Aerial Photography

Color aerial photography will be obtained for the project between Wiggins Pass and Gordon Pass (R-16 to R-90). The controlled aerial photographs will be used to support the post-construction biological/hardbottom monitoring program required by permit. CPE's surveyors and its subcontractor will establish targeting and ground control. A subcontractor will take the aerial photographs utilizing a precision aerial camera to obtain negatives suitable for raster imagery. The subcontractor will provide 9" x 9" stereoscopic photographs and CD-ROM raster imagery files. The aerial photographs will be conducted using the standards for Environmental Aerial Photography acquisition (section 02100) in the FDEP's Monitoring Standards for Beach Erosion Control Projects (March 2004). Hardbottom visible from the aerials will support the hardbottom monitoring program.

C. Post-Construction Coastal Engineering Report Preparation

A post-construction coastal engineering report of the beach will be prepared, incorporating the permit surveys, along with during construction surveys provided by the Contractor. The engineering report will contain post-construction monitoring results compared to the pre-construction conditions. The changes in shoreline width, beach sand volume placed, and other pertinent beach characteristics will be described and illustrated in tables and figures. The pay volume surveys will be verified against the Engineer's surveys. The post-dredging survey of the borrow areas conducted by the Contractor will be included in the report. The volume of sand removed from the borrow area will be calculated, and compared to the pay volume. The report will summarize permit required monitoring tasks. The ENGINEER will attend a CAC or other meeting, if requested, to present the results from the annual monitoring report. The report is required by the State and MMS.

**CONSTRUCTION SERVICES AND POST-CONSTRUCTION SURVEYS &
REPORTS, COLLIER COUNTY, FLORIDA NOURISHMENT PROJECT**

June 30, 2005

PREPARED BY:



**CONSTRUCTION SERVICES AND POST-
CONSTRUCTION SURVEYS & REPORTS, COLLIER
COUNTY, FLORIDA NOURISHMENT PROJECT
LABOR, EQUIPMENT & DIRECT COST RATES**

COASTAL PLANNING & ENGINEERING, INC.

	2005
LABOR RATES (HOURLY)	
Principal Engineer	\$154.00
Senior Coastal Engineer (PM)	\$120.00
QC / QA Technical Reviewer	\$120.00
Senior Coastal Engineer	\$120.00
Senior Marine Biologist	\$115.00
Certified Inshore Hydrographer	\$115.00
Professional Surveyor & Mapper	\$115.00
Coastal Engineer	\$95.00
Marine Biologist	\$85.00
Geologist	\$85.00
Boat Operator	\$75.00
Senior CADD Operator	\$82.00
CADD Operator	\$75.00
GIS Operator	\$75.00
Technician	\$75.00
Clerical	\$41.00
EQUIPMENT RATES (DAILY)	
Survey Boat (24 ft.)	\$575.00
Survey Vehicle	\$0.29
Differential GPS	\$400.00
Navigation System	\$250.00
Digital Land Camera	\$10.00
Underwater Camera (35 mm)	\$25.00
Klein 590 Side Scan Sonar	\$780.00
SSS Expendables	\$88.00
Triton Elics Isis	\$220.00
SSS Operator	\$770.00
Triton Elics Isis Freight	\$165.00
Film (35 mm)	\$6.25
Underwater Video Camera	\$100.00
GPS Integrated U/W Video Camera	\$400.00
Dive Equipment & Insurance	\$75.00
Dives	\$25.00
DIRECT COSTS	
Meals	\$21.00
Lodging *	\$100.00
Misc. Expenses/ Expendables *	1.00

Note: * Lodging and Expenses will be billed at cost, although values are used in the spreadsheet to determine a contract value.

CONSTRUCTION SERVICES AND POST-CONSTRUCTION SURVEYS & REPORTS, COLLIER COUNTY, FLORIDA NOURISHMENT PROJECT

**TASK 2
PREPARED BY: COASTAL PLANNING & ENGINEERING, INC.**

TASK 2 POST-CONSTRUCTION SURVEY, AERIAL PHOTOGRAPHY AND REPORT	LABOR COSTS										EQUIPMENT COSTS						DIRECT COSTS			
	Principal Engineer (Hours)	Senior Coastal Engineer (Hours)	Coastal Engineer (Hours)	Professional Surveyor & Mapper (Hours)	Boat Operator (Hours)	Party Chief (Hours)	Survey Tech. 2 (Hours)	Senior CADD Operator (Hours)	GIS Operator (Hours)	Clerical (Hours)	Differential GPS (Days)	Survey Boat (24 ft.) (Days)	Heave Compensator (Days)	RTK (Days)	Level (Days)	Total Station (Days)	Survey Vehicle (Miles)	Meals (Days)	Lodging * (Days)	Misc. Expenses/Expendable (\$)
A. BEACH PROFILE SURVEY																				
ONSHORE BEACH SURVEY																				
1 MOBILIZE / DEMOBILIZE / TRAVEL	1	1	1	2	8	4	8			4						300	1	1		
2 CONTROL MONUMENT RECON AND SETUP				8		8	8								1	110	5	5	\$100.00	
3 BEACH SURVEY (R17 TO R84)		1		12		44	132						5	5						
4 DATA REDUCTION		1		8		24	20	20												
\$28,203																				
OFFSHORE HYDROGRAPHIC SURVEY																				
1 CONTROL MONUMENT RECON AND SETUP						4	4	10								200				
2 HYDROGRAPHIC SURVEY				4	40	40	40				5	4	4	4	2		4	4	\$100.00	
3 DATA REDUCTION		2		4		12	20													
\$21,372																				
CHARTING & SURVEY REPORT PREPARATION																				
1 CHARTING						4		20												
2 PRODUCT QC / QA TECHNICAL REVIEW		1	4	2																
3 FDEP SURVEY REPORT DEVELOPMENT AND CERT.		1		4		8	4	8		4										
\$4,930.00																				
B. ENVIRONMENTAL AERIAL PHOTOGRAPHY																				
\$18,503.36																				
C. COASTAL ENG. MONITORING REPORT AND DESIGN UPDATE																				
1 ANALYZE SHORELINE & VOLUME CHANGES		4	30	2		4		4	2											
2 PREPARE TABLES & FIGURES, VERIFY CONSTR.-VOLUMES			8	36		4		20												
3 PREPARE REPORT/MEETING	1	12	8					16	2	8						260			\$600.00	
\$16,917.40																				
Total =	2	31	79	48	48	168	260	98	4	18	5	4	4	9	7	1	870	10	10	\$16,331.36
Labor Rate / Hour =	\$154.00	\$120.00	\$115.00	\$95.00	\$75.00	\$75.00	\$75.00	\$82.00	\$75.00	\$41.00	\$400.00	\$575.00	\$150.00	\$475.00	\$55.00	\$125.00	\$0.29	\$21.00	\$100.00	1.00
Labor Cost =	\$308.00	\$3,720.00	\$9,085.00	\$4,560.00	\$3,600.00	\$12,600.00	\$19,500.00	\$8,036.00	\$300.00	\$738.00	\$2,000.00	\$2,300.00	\$600.00	\$4,275.00	\$385.00	\$125.00	\$252.30	\$210.00	\$1,000.00	\$16,331.36
LABOR COST =	\$62,447.00																			
EQUIPMENT COST =	\$9,685.00																			
DIRECT COST =	\$17,793.66																			
TOTAL COST =	\$89,925.66																			