



SPECIFICATIONS FOR CONSULTING ENGINEERING SERVICES RELATING TO LIVING SHORELINE PROJECTS

These specifications shall be part of the Contract and shall be considered and referred to by the Engineer in the submission of a project proposal. All work shall be performed in strict accordance with these specifications.

The proposed project shall involve the preparation and submission of documents in the manner described below. Prior to any work being undertaken at the project site, the Engineer shall identify himself to the resident Property Owner(s) and obtain permission to enter the site.

The Engineer shall be responsible for coordinating all design phases of the project with the Property Owners and the necessary Permit Agencies. As per the following the guidelines, the Engineer shall achieve standardization of documents, materials and construction, and economy in construction by simplification in design. All documents shall be submitted for approval of the Property Owner/s. It is the responsibility of the Engineer to achieve technical completeness and sufficiency of all documents.

SECTION I. APPROVALS AND PERMITS

- A. The Engineer shall act as the Authorized Agent of the Property Owner/s in applying for permits and shall so advise all permit agencies.
- B. The Engineer shall incorporate in the project Drawings and Specifications all criteria necessary to assure compliance with the regulations of the various Federal, State and Local permit agencies.
- C. The Engineer shall prepare all the required data, including an Alternative Analysis Report if required by the State or Federal agencies, submit all necessary applications to the proper agencies, and pursue until issuance the required permits and approvals. The various permits and approvals shall be applied for at the earliest possible time after the preliminary meeting and include the following:
 - 1. Corps of Engineers Permit issued by the Operation Division, Department of the Army, U.S. Army Corps of Engineers, Baltimore District.
 - 2. Tidal Wetlands License issued by the State of Maryland Board of Public Works, Wetlands Administration, through the Maryland Department of the Environment, Water Management Administration, Tidal Wetlands Division, for projects on tidal waters.
 - 3. Non-Tidal Wetlands and Waterways Permit issued by the State of Maryland, Department of the Environment, Water Management Administration, Non-Tidal Wetlands and Waterways Division, for projects on non-tidal waters.

4. Water Quality Certification issued by the Maryland Department of the Environment.
 5. Sediment and Erosion Control, and Stormwater Management Approvals issued by the local Soil Conservation Districts for projects not on State lands and from the Maryland Department of the Environment, Sediment and Stormwater Administration for projects on State lands.
 6. Building Permit, Grading and Sediment Control Permit, Soil Conservation District Approval, and any other permit or approval required by the local governmental agencies. *(Note: Some of these permits are of short duration. Applications for these permits shall be timed so that their issuance coincides with the final submittal.)*
 7. Critical Area Approval/Consistency Report issued by the State Critical Area Commission for projects on State/County lands and lands where local Critical Area Plans have not been approved or implemented, and issued by the local Critical Area offices with approved and implemented plans for projects not on State lands. A Buffer Management Plan along with the planting plan will be required for all work in the critical area.
 8. The Engineer shall obtain from the Property Owner/s any necessary signatures, fees, bonds and other securities required for the issuance of the various permits, certifications and approvals. The Engineer shall also obtain the necessary Property Owner/s signatures to validate the permits.
 9. It shall be imperative that the Engineer meet with neighboring property owners, adjacent to the project, and obtain concurrence for any work to be accomplished on or adjacent to their property, such as placement of stone, connections between proposed and existing structures, modifications to existing structures and landscaping, etc. The Engineer will be responsible for providing them with plans and a detailed explanation of the proposed work. In addition, the Engineer shall provide to the Property Owner/s minutes of any meeting with Property Owners documenting specific work items discussed, concerns, requests, conditions, etc. The Engineer will also be responsible for notifying adjacent property owners at the time of permit application submittals.
- D. As permits, certifications and approvals are obtained by the Engineers and necessary signatures are obtained, the original copies of all permits, certifications, and approvals shall be turned over to the Property Owner/s.

SECTION II. DRAWINGS AND SPECIFICATIONS

- A. The Drawings shall be prepared in conformance with the best drafting practices and standards and are subject to the review and approval of the Property Owner/s.
- B. The Engineer shall provide Key Project Data from the plan on the first (Title) page (i.e.: sq.ft. of marsh created, area of disturbance, etc...).
- C. The sheet size shall be 24 inches by 36 inches with 3/4-inch borders except for the left border, which shall be 1-1/2 inches.

- D. The title block shall be located in the lower right corner of the Drawings and shall contain the project name, the location, the type of structure, the Funding Agency name, the sheet number, the date and the SEC project number.
- E. The project Drawings shall also contain the following information and data:

- 1. PROPERTY LINE DATA

- a. All property lines shall be shown on the Drawings identified with distance, bearings, monuments and pipes. This shall include end property lines, outboard property lines, and property lines separating lots, rights-of-way, easements, and beach reservation areas, all within 50 feet of the limits of the construction project.
- b. Only the two end property lines, the outboard property line and any property line separating adjoining properties, rights-of-way, easements, beach reservation areas within 50 feet of the limits of the construction shall be accurately determined by survey. **In most cases, a complete property line survey will not be required.** In the event of insufficient property line markers existing in the field or if existing markers prove to be in error or in conflict with the recorded property line data, the Engineer shall notify the Property Owner/s.
- c. The Engineer shall establish the two end property lines adjacent to the construction site by field stake-out of control points sufficiently distant from the limits of disturbance to prevent loss due to erosion or construction activities. These points shall be preservative treated wood hubs with tacks and shall serve as property line references throughout the duration the design and construction project phases.
- d. All recovery and establishment of property lines shall be in accordance with the official recorded plats and deeds.
- e. Block and lot numbers, complete legal owners' names, addresses, telephone numbers, liber and folio numbers and other necessary property identification shall be shown on the Drawings within the boundaries of the project. The names, addresses and telephone numbers of adjoining property owners shall also be shown.

- 2. UTILITY INFORMATION

All existing utilities above and below ground and existing structures shall be accurately indicated on the Drawings. The location of underground utilities shall be determined from surface evidence and by contacting the various public and private agencies (gas company, telephone company, etc.). **Excavation to find or verify locations of underground utilities will not be required.** The Drawings and/or Specifications shall carry a notation holding the Contractor responsible for damage to existing utilities and structures.

3. SURVEY CONTROL AND STAKE-OUT DATA

a. Vertical Control

- i. Vertical control for the project site shall refer to the 0.0' Mean Low Water (MLW) datum. Elevations shall be established from reliable monuments located within 6,000 feet of the project site. Reliable monuments include: Bench Marks from the National Ocean Service (NOS-USC&GS), U.S. Geological Survey, Maryland State Highway Administration, County Department of Public Works, etc. The Engineer shall establish a Bench Mark at the project site for the purpose of controlling the survey of the project site and setting proposed elevations during construction.
- ii. In the event that reliable monuments are not found to exist within 2,000 yards of the project site, the Property Owner/s shall be so notified. The Engineer shall establish a Bench Mark at the project site using an alternate method approved by the Property Owner/s.
- iii. Elevations shall be carried to all traverse stations and stakeout points. These elevations, as well as the elevation for the Bench Mark, shall be shown on the Drawings.
- iv. When using Bench Marks referenced to datums other than mean low water such as NGVD of 1929, NAVD 1988, sea level datum, mean sea level, etc., the relationship between the datum for the bench mark used and 0' MLW shall be shown on the Drawings.
- v. The Drawings shall also show the relationship between mean high water and mean low water for the project site.

b. Horizontal Control

- i. Horizontal control shall consist of a closed traverse loop. End property lines, the centerline of construction, and other important lines shall be tied into the traverse loop and be shown on the Drawings.

c. Accuracy

- i. All legal requirements and procedures for accuracy in establishing control and in performing surveys shall be met. All traverse and level runs shall be closed and adjusted within an accuracy of 1:10,000 (second order). Loop levels shall close to within 0.05 feet.

d. Field Location of Survey Control

- i. All vertical and horizontal control that has been established or used shall be staked, referenced and identified. Reference distances for Bench Marks, traverse stations, stakeout points, etc., shall be measured from a minimum of three fixed objects or structures and

shall be shown on the Drawings. All control points shall be sufficiently distant from the top of existing banks and the limits of disturbance to prevent loss due to interim erosion over the course of the design and construction project phases. These control points shall be established by using preservative treated 2" x 2" x 6" (minimum) wooden hubs and tacks, and 1" x 2" x 3' guard stakes and ribbon. All beach control shall consist of steel reinforcing bars, a minimum of 4 feet in length, in order to minimize loss due to storms. If any control points related to the traverse, stakeout, and property lines are lost during the design phase of the project, the Engineer shall be responsible for re-establishing them. Iron pipes shall not be used at the site.

- ii. The Engineer shall include with the Final Submittal a statement indicating that all bench mark, traverse, stakeout and property line control was checked, prior to the submittal, is easily identifiable and located, and is in good condition.

e. Field Stake-out of Structure

- i. A provision shall be made on the Drawings for the field stakeout of the structure for construction purposes. This method of staking out the structure shall be accurate and simple, and be the most direct method to locate all corners, ends and bends of a structure.
- ii. The stakeout method shall: minimize the number of instrument set-ups; be easily accomplished with standard surveying instruments; allow for horizontal measuring without the need for vertical angles; be within 150 feet of the reference point; and, in cases of high banks, include permanent horizontal and vertical control established at the beach level. Accurate dog legs are acceptable.
- iii. Angles and distances along the base line of the structure shall be included to be used as an alternate stakeout method and cross-check of the location of the structure.

4. SOILS DATA

- a. Generally, soil borings shall be taken along the approximate alignment of the proposed structure and be of a nature which will provide the data required for proper design of the proposed structure. Borings shall extend to a depth below the bottom design elevation of the proposed structure. The Engineer shall determine the extent of the test boring program required as to number, spacing, depth and type of boring.
- b. Boring locations and logs shall be shown on the Drawings. Boring logs shall be shown to an appropriate scale using 0.0' MLW as the datum, showing the appropriate elevation of the various strata. A description of material composition of various strata shall be indicated in accordance with the ASTM Standard D 2488-69 Recommended Practice for Description of Soils (Visual-Manual Procedure), or latest revision.

- c. On sites where identifiable subsurface water flow problems may exist, the Engineer shall determine through the use of borings the best suitable elevation for the location of a functional drainage system. The location and logs of the borings taken for this purpose shall be shown on the Drawings.
- d. The following note shall accompany the boring logs on the Drawings: "Soil Borings were obtained for design purposes only. Boring data is provided for the Contractor's convenience and is applicable only at the specific points where the borings were performed. Neither the Engineer nor the Property Owner/s warrant the continuity of subsurface conditions."

5. TOPOGRAPHIC INFORMATION

- a. Wooded areas, cultivated fields, major patches of beach grasses, sand and marsh areas shall be shown by symbol or annotation. The surface composition of the beach and bank outcroppings shall also be indicated. The predominant soil type of the locality as published by the U.S. Department of Agriculture in the Soil Surveys shall also be indicated. Sufficient details of existing vegetation within the 100' Buffer Zone, as defined by the Critical Area Law, shall be included on the Drawings to satisfy the requirements of the Local and State Critical Area review offices.
- b. All requirements for reforestation, afforestation and buffer zone management necessary to obtain Critical Area approval shall be included on the Drawings as stipulated by the county in which the property is located. For projects where one or more acres of woodland are to be cleared, a Reforestation Plan must be approved by the Forest Service of the Maryland Department of Natural Resources.
- c. Sufficient topographic contours with a 1 or 2 foot contour interval shall be shown on the Drawings in order to determine grading requirements, drainage patterns and to satisfy Soil Conservation District and MD Department of the Environment requirements. Spot elevations shall be shown on the Drawings where appropriate (along the top and bottom of banks, etc.). In general, contours within an eroding bank will not be required. Finished grade contours shall not be shown except in rare cases for clarity or as may be required by permit agencies.
- d. Surface water channelization and ground water seepage shall be accurately determined and noted on the Drawings. An investigation, including subsurface investigation when deemed necessary, shall be conducted to determine the need and feasibility of surface or underground drain systems to correct any storm water run-off problems and ground water outcroppings. The design of such systems shall be included in the Drawings with ample description in the Specifications.
- e. Standard depth contours, sufficient to determine the scour characteristics of the site, including the mean low water and mean high water lines, shall be indicated on the Drawings. Depth contours shall extend to at least 3.0 feet below the mean low water line or at a minimum of 100 feet outboard from

the proposed structure. In the event that the proposed structure is a groin, jetty or breakwater, depth contours shall be plotted at 1-foot intervals to a depth 2.0 feet below the bottom elevation at the outboard end of the proposed structure or at a minimum of 100 feet outboard from the end of the proposed structure.

SECTION III. SUBMITTALS

A. The Preliminary Submittal shall be made to the Property Owner/s for concept approval and shall include:

1. Copies of the Drawings for the use of the Property Owner/s.

a. The Drawings shall contain:

- i. The Engineer shall provide Key Project Data from the plan on the first (Title) page (i.e.: sq.ft. of marsh created, area of disturbance, etc...).
- ii. all property line and traverse information, in accordance with Section II of these specifications;
- iii. topography and bathymetry of the project site including the area a minimum of 100' landward of the existing Mean High Water Line (MHW) or landward of the top of the existing bank, whichever is greater; house location; the MHW and MLW lines; and the proposed alignment of the structure in accordance with Section II of these specifications. The plan view shall be drawn at a scale of 1"=10' or 1"=20' for clarity unless otherwise approved by the Property Owner/s;
- iv. a Typical Cross-Section of the proposed structure, detailing material sizes and proposed elevations, at a scale of 1"=2.0' or 1"=3.0';
- v. actual cross-sections at approximately 50-foot intervals or as needed, showing the location of the structure and the extent of backfill and grading, any proposed drainage systems, etc. Use the same scale of 1"=5.0' or 1"=10.0', horizontally and vertically; and
- vi. soil boring locations and boring logs, in accordance with Section II of these specifications.

2. Copies of sets of sample Specifications for the Property Owner/s.

3. The Engineer shall be responsible for maintaining a complete project file and supplying the Property Owner/s with copies of all correspondence which will include, but not be limited to:

- a. copies of all permit applications, including State, Federal and Local Government applications; and

- b. letters sent to or received from adjoining property owners, permit agency officials, etc.
 - 4. Completed permit applications shall be submitted to the required permit agencies immediately after the Engineer has received acceptance of the proposed type and alignment of the structure from the Property Owner/s. The Property Owner/s will not accept invoices prior to the Engineer submitting copies of all permit applications.
- B. The Pre-Final Submittal shall be made when issuance of State and Federal permits are imminent and shall include the following items for approval by the Property Owner/s:
 - 1. The Drawings shall include:
 - a. all completed information required in Section III of these specifications;
 - b. title, identification, approval boxes;
 - c. vicinity map with detailed name of streets;
 - d. general notes, Erosion and Sediment Control notes and standards;
 - e. stake-out data, in accordance with Section II of these specifications;
 - f. special notes; and
 - g. structural details.
 - 2. Complete Specifications including General Conditions and Instructions to Bidder.
 - 3. Construction Bid Form with applicable contract forms
 - 4. Estimated project construction cost, indicating unit quantities and current unit costs. These estimates shall be considered confidential information and shall not be discussed with contractors or vendors.
 - 5. Design computations.
 - 6. Property Owner/s signature(s) on original Drawings.
 - 7. Additional pertinent correspondence in accordance with Section III of these specifications.
- C. The Final Submittal shall be made after all permits and approvals have been obtained and shall include:
 - 1. One set of prints plus one (1) electronic copy for the Property Owner/s of the Final Drawings and Specifications with General Conditions and Instructions to Bidder.

2. One set plus one (1) electronic copy for the Property Owner/s of the Construction Bid Form with any applicable contract forms.
3. The Final estimated project construction cost (*engineer's estimate*).
4. Copies of ASTM, AWWA, SHA, etc., standards and specifications quoted and used on the Drawings and in the Specifications. The use of these and other standards by quotation shall be kept to a minimum.
5. All original permits and approvals, validated by the Property Owner/s signature(s). It is the responsibility of the Engineer to provide up-to-date, valid permits and licenses to the Property Owner/s at the time of the Final Submittal. The Engineer shall apply for extensions on all expired permits, licenses and bonding or on those that will expire within six (6) months of date of Final Submittal.
6. Original Drawings and Specifications.
7. Copies of all additional pertinent correspondence, as described in Section III of these specifications.
8. Topographic base sheet, field data and survey computations.
9. When necessary, signed letters from adjacent property owners for approval to tie-in to their property at the property line or to cross over into their property.

SECTION IV. SCHEDULE

Time Schedules for the Preliminary Submittal, Pre-Final Submittal and Final Submittal shall be in accordance with the Contract between the Property Owner/s and the Engineer. Time frames for submission of work shall be strictly adhered to and shall only be modified at the discretion of the Property Owner/s.

SECTION V. MEETINGS

- A. The Engineer shall be responsible for coordinating all design phases of the project with the Property Owner/s and Permit Agencies. The Engineer shall be responsible for making informal progress reports to the Property Owner/s from time to time prior to the Final Submittal. The Engineer shall also be responsible for the following formal meetings to be held at the project site:
 1. Preliminary: to obtain approval from the Property Owner/s on the concept of the project (alignment, type of structure, grading and other major details) for the purpose of applying for permits.
 2. Pre-final: to review the details of the project and the requirements of the State and Federal permits, and obtain the signature(s) of the Property Owner/s on the original Drawings.

3. Final: to submit all completed documents and review complete status of project including field stakeout data, permits, etc.

SECTION VI. PAYMENT

- A. The Payment Schedule shown below shall be followed by the Engineer. The billing format shall be as per sample invoice supplied by the Property Owner/s.
 1. Payment of 50 percent of the contract price shall be made upon completion of the field survey and delivery of the complete Preliminary Submittal, including permit applications, and acceptance by the Property Owner/s of the items submitted.
 2. Payment of 25 percent of the contract price shall be made upon delivery and acceptance by the Property Owner/s of the Pre-Final Submittal.
 3. Payment of 25 percent of the contract price shall be made upon delivery of final plans and specifications and all relevant permits and approvals to the Property Owner/s.

SECTION VII. ENGINEER'S AVAILABILITY

The Engineer shall be available to assist the Property Owner/s in the review of any phase of work within the scope of the project, including any conflicting matter that may arise during bid analysis, change order issuance and general construction. It is not intended for the Engineer to be involved in the project bid and analysis phase, construction phase or post-construction phase of the project, except to clarify or resolve design-related issues.

SECTION VIII. LIABILITY AND INSURANCE REQUIREMENTS

- A. The Property Owner/s shall be free and clear of any liability. The Engineer shall accept all responsibility for personal injury and property damage incurred during the course of the survey or as a result of the survey, and for damages resulting from errors or omissions in the surveys, Drawings and Specifications, and other documents relating to the design of the project.
- B. Evidence of insurance shall be submitted to the Property Owner/s. Insurance requirements are as follows:
 1. General Liability Insurance: Bodily injury, \$200,000.00 per occurrence and \$500,000.00 in the aggregate. Property damage, \$100,000.00 per occurrence and \$200,000.00 in the aggregate.
 2. Professional Liability Insurance: minimum coverage \$300,000.00.
 3. Updated insurance certificates shall be submitted to the Property Owner/s during the duration of the project.