



**Solicitation Information**  
**April 7, 2016**  
**Solicitation**

**RFP # 7550495**

**TITLE: RIVMC Improvement and Expansion Crypts Project**

**Submission Deadline: Monday April 25, 2016 at 11:30 AM (Local Time)**

**PRE-BID CONFERENCE: NO**

Questions concerning this solicitation may also be e-mailed, in Word format to the Division of Purchases at [thomas.bovis@purchasing.ri.gov](mailto:thomas.bovis@purchasing.ri.gov) no later than **4/14/2016 at 4 PM** Please reference the RFP # on all correspondence. Questions received, if any, will be answered and posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information.

**SURETY REQUIRED: No**

**BOND REQUIRED: No**

**Thomas Bovis**  
**Interdepartmental Project Manager**

**Vendors must register on-line at the State Purchasing Website at [www.purchasing.ri.gov](http://www.purchasing.ri.gov)**

**NOTE TO VENDORS:**

**Offers received without the entire completed RIVIP Generated Bidder Certification Form attached may result in disqualification.**

**THIS PAGE IS NOT A BIDDER CERTIFICATION FORM**

## **SECTION 1 – INSTRUCTIONS AND NOTIFICATIONS TO OFFERORS**

### **1.1) INTRODUCTION**

- a) The Rhode Island Department of Administration, Division of Purchases, on behalf of the Division of Veteran Affairs, Rhode Island Veterans Memorial Cemetery are soliciting proposals from qualified firms to provide Architectural, Engineering, and Design Services for an Expansion and Improvement Project (E & I), involving the “Preplacement of Precast, Cement Crypts” as described elsewhere herein, and in accordance with the terms of this Request and the State's General Conditions of Purchase ([www.purchasing.ri.gov](http://www.purchasing.ri.gov)).
- b) This is a Request for Proposal (RFP), not an Invitation for Bid: responses will be evaluated on the basis of the relative merits of the proposal, in addition to price; there will be no public opening and reading of responses received by the Office of Purchases pursuant to this Request, other than to name those offerors who have submitted proposals.
- c) Respondents to this solicitation are hereby advised that the respondent selected for award of a contract pursuant to this solicitation, and its affiliated or subsidiary companies (whether partially or wholly owned), shall be ineligible to bid upon any future consulting or construction solicitations which may arise from or relate to the services described in this solicitation. In addition, any sub-consultants or subcontractors engaged by the respondent selected for award of a contract who performs any services arising from this solicitation shall be ineligible to bid upon any future consulting or construction solicitations which may arise from or relate to the services described in this solicitation.

### **1.2) NOTIFICATIONS TO OFFERORS:**

- a) Potential Respondents are advised to review all sections of this RFP carefully and to follow instructions completely, as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.
- b) In order to submit a proposal, Respondents must properly register with the State of Rhode Island. For information of registering, please see the Division’s website at [www.purchasing.ri.gov](http://www.purchasing.ri.gov) and under the heading “Vendor Registration Information”.
- c) All proposals shall include the Respondent’s FEIN or Tax Identification number as evidenced by a W9, downloadable from the Division’s website at [www.purchasing.ri.gov](http://www.purchasing.ri.gov).
- d) Alternative approaches and/or methodologies to accomplish the desired or intended results of this procurement are solicited. However, proposals which depart from or materially alter the terms, requirements, or scope of work defined by this RFP will be rejected as being non-responsive.
- e) All costs associated with developing or submitting a proposal in response to this RFP, or to provide oral or written clarification of its content shall be borne by the offeror. The State assumes no responsibility for these costs.

- f) Proposals submitted in response to this solicitation shall be considered to be irrevocable for a period of not less than ninety (90) days following the opening date, and may not be withdrawn, except with the express written permission of the State Purchasing Agent.
- g) All pricing submitted by Respondents in response to this solicitation shall be considered to be firm and fixed unless otherwise indicated herein.
- h) Proposals misdirected to other than the Division of Purchases, or which are otherwise not submitted to the Division of Purchases prior to the time of opening for any cause shall be determined to be late and shall not be accepted, opened, or considered. The official time clock is located in the reception area of the Division of Purchases, 2<sup>nd</sup> floor, One Capitol Hill, Providence, RI.
- i) In accordance with R. I. Gen. Laws § 7-1.2-1401 no foreign corporation has the right to transact business in Rhode Island until it has procured a certificate of authority so to do from the Secretary of State (401/222-3040) [www.sos.ri.gov](http://www.sos.ri.gov). However, this is a requirement only for successful bidder (s).
- j) Respondents are advised that all documents and materials submitted to the Division of Purchases for consideration in response to this solicitation shall be considered to be public records, as defined in Title 38 Chapter 2 of the Rhode Island General Laws.
- k) Respondents should be aware of all applicable MBE requirements, as set forth in R. I. Gen. Law § 37-14.1-1, *et seq.* The State's goal is for a minimum ten per cent (10%) participation by MBE's in all State procurements. For further information, contact the State MBE Administrator at (401) 574-8253 or [charles.newton@doa.ri.gov](mailto:charles.newton@doa.ri.gov), Visit the website <http://www.mbe.ri.gov/>
- l) Interested parties are instructed to peruse the Division of Purchases web site on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFP.
- m) Equal Employment Opportunity-R. I. Gen. Laws § 28-5.1 Declaration of Policy. – (a) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further information, contact the Rhode Island Equal Employment Opportunity Office, at 222-3090 or via e-mail [raymond1@gw.doa.state.ri.us](mailto:raymond1@gw.doa.state.ri.us)
- n) Subcontractors are permitted for this project, provided that the identity of the proposed subcontractor(s) and scope of the subcontractor's services are clearly stated in the Respondent's proposal.
- o) Questions concerning this solicitation may be e-mailed to the Division of Purchases in accordance with the terms and conditions expressed on the cover page of this solicitation. All questions received by the Division of Purchases shall be posted on the Division of

Purchases' website as an addendum to this solicitation. It is the responsibility of all interested parties to monitor the Division of Purchases' website for updated solicitation information and addenda.

- p) The Division of Purchases reserves the right to accept or reject any or all proposals submitted in response to this solicitation, to waive minor irregularities, or to negotiate with any Respondents, as necessary, to serve the best interests of the State.

### **1.3) ARCHITECTURAL / ENGINEERING SERVICES**

- a) Persons or firms practicing Architectural and/or Engineering Services in the State of Rhode Island must possess a proper registration and Certificate of Authorization in accordance with Rhode Island General Laws.
- b) A copy of the current Rhode Island Certificate of Authorization for the firm and current Rhode Island registration(s) for the individual(s) who would perform the work must be included behind the front page of each copy of the Proposal.
- c) The Board of Design Professionals can be contacted as follows:

**Board for Design Professionals**  
**1511 Pontiac Avenue (Bldg 68-2)**  
**Cranston, RI 02920**  
**Tel: 401-462-9530**  
**Fax: 401-462-9532**  
**Website: [www.bdp.state.ri.us](http://www.bdp.state.ri.us)**

- d) The respondent's Proposal will be disqualified and removed from consideration if the Proposal fails to include the required current Rhode Island Certificate of Authorization for the firm and current Rhode Island registration(s).

## **SECTION 2 – SCOPE OF WORK**

### **2.1) BACKGROUND AND MISSION**

The Rhode Island Veteran's Memorial Cemetery, (RIVMC) is located at 301 South County Trail, Exeter, Rhode Island. The total site consists of approximately 280 acres of land that was originally established in 1974; on a twelve acre parcel of land in central Rhode Island.

Located on the property are seven individual buildings, administration office, public rest room, chapel, columbarium committal center, maintenance office with heated storage service bay and two unheated storage buildings.

The intention and mission of the E & I project is to address the current need to expand and improve the cemetery grounds by adding approximately 3,000 additional pre-placed lawn crypts. The installation of the crypts shall include the items, as described in, Section 2.2, Scope of Work.

## 2.2) SCOPE OF WORK

The Rhode Island Veterans Memorial Cemetery is seeking an architectural firm to provide all design services necessary for the installation of approximately 3,000 pre-placed lawn crypts on the cemetery grounds. Services are to include, but not be limited to, Master Planning/site selection; topographic survey, environmental and geotechnical investigations, concept design layout, Design development plans and construction bid documents, along with cost estimates for submittal to the State for approval. Such construction bid documents are to include, but not be limited, to the following: site demolition plans; layout and drainage plans for the crypts and their access; design of the double depth, concrete burial crypts; an irrigation system; plans for gravesite control monuments and section markers; access road(s) or a cu-de-sac turn-around; and storm water drainage system along with other applicable site improvements. Construction administration and inspection is also to be provided. All work shall be in conformance with State and the federal standards.

All phases of basic engineering services are to be conducted, although not limited to the following:

1. A Master Plan Design which depicts the proposed layout of all facilities—including buildings, roadways and burial sections along with an analysis of all factors affecting the design and as noted below:
  - a) Boundary, Topographical and Site Surveys; (Exhibit A)
  - b) Soil Investigation, including climate and environmental constraints; (Exhibit B)
  - c) Storm Drainage Plans (Exhibit C)
  - d) The Master Plan shall be detailed enough to enable the State to proceed directly into preparation of Design Development for each phase of cemetery development
  - e) The development of the Master Plan is an interactive process between the State, the VA and the A/E consultant.
  - f) The Master Plan shall incorporate the elements listed in the Scope of Work for the project. The site analysis process shall evaluate all man-made and natural site features. The A/E consultant will document findings of the analysis in the Site Characteristics Report.
  - g) Relationships between structures, circulation, and site features shall be combined to produce both a functional and aesthetic plan. The plan shall reflect the history of the region, the culture of the people and veterans of the area.
  - h) Transportation Access, a roadway system including horizontal layouts
2. Grading and drainage plan with rough grading of roads and interment areas, proposed first floor elevations of the architectural elements and special site features and other critical grades. A phasing plan for the entire site, illustrating the distinct phases and their priority, based on demographic projections.

3. Burial sections, numbered and illustrating limits of gravesites and approximate yield (number of gravesites per section). 11. Planting plan indicating location of plant masses.
4. Irrigation layout of main lines, submains, a typical lateral block layout, master valves and valve concept.
5. Design development drawings, (Exhibit D)
6. Final construction drawings and specifications which include, architectural drawings, equipment drawings, layout drawings and mechanical drawings, including the design, dimensions, installation preparation, subgrade preparation and how the pre-placed lawn crypts will be covered.
7. Roadway system, including horizontal layout. Grading and drainage plan with rough grading of roads and interment areas proposed first floor elevations of the architectural elements and special site features and other critical grades. A phasing plan for the entire site, illustrating the distinct phases and their priority, based on demographic projections. Burial sections, numbered and illustrating limits of gravesites and approximate yield (number of gravesites per section). Planting plan indicating location of plant masses. Irrigation layout of main lines, submains, a typical lateral block layout, master valves and valve concept.
8. Onsite conferences will be held at the RIVMC administration building to ensure the consultant comprehends all requirements of the project and to ensure adherence to the federal and state rules and regulations of the grant and to provide an opportunity to become familiar with the site and its characteristics.

**2.3) QUALIFICATIONS:**

- a) Qualified bidders must be registered through the State of Rhode Island's Division of Purchasing website, and must be able to submit all the listed requirements as specified throughout this document.

**2.4) COST ESTIMATES:**

- a) Provide professional, independent cost estimates. A minimum of four (4) professional independent cost estimates of the entire Work produced by a professional cost estimator who is not an employee of the lead firm or a regular employee of a construction firm is required for each part of the work (see Section 2.1 b) for description of each part of work at the following stages:

1. End of Schematic Design
2. Start of Construction Documents
3. At 60% Construction Documents

4. With the Hazardous material abatement and approval plan

### SECTION 3 –SELECTION PROCEDURE AND SUBMISSION REQUIREMENTS

#### 3.1) RESPONSES

- a) Responses will be evaluated in two parts for a maximum score of 100 points. Part One is a Technical proposal (70 points max) and Part Two is a Professional Fee proposal (30 points max). Both the Technical and Professional Fee proposals are required on the due date listed on page 1 of this solicitation, they are to be submitted in **separate sealed envelopes**.

**Part One – Technical Proposal:** Technical proposal will be evaluated on the following criteria (All Respondents must receive a minimum score of 55 points on the technical proposal. Respondents not scoring at least 55 points will not be considered for fee proposal evaluation).

#### 1. Experience of the Firm and Project Principals (0-30 points):

Describe the firm's and the firm's consultants general experience as well as its specific experience and qualifications for projects of this size, scope and use. List the percentage of work to be completed by the firm and the percentage to be completed by outside consultants. Include Standard Form 330 (for prime contractor and all sub-contractors) in this section. Indicate the plan for compliance with the State's MBE requirements by listing all Subcontractors / Suppliers / Consultants / Independent Contractors, the estimated dollar value of each, a brief description of work or scope, and whether each is RI Certified as a Minority Business Enterprise or not.

Proposals must provide answers to the following questions:

- a. What experience does the Respondent have with design and construction of pre-placed lawn crypts projects of a similar size, scope and use at a state or federal level?
- b. Does the Proposal illustrate that the Project Manager and each consultant assigned to the project have the background and experience necessary for a successful design, construction project of this type, especially with:
  - i. Preparing cost estimates for similar work including site survey and geotechnical services?
  - ii. The Construction and Design of pre-placed lawn crypts including; dimensions, installation preparation, subgrade preparation and how they are covered?
  - iii. Design, site selection, surveys, soil investigations, storm drainage planning, roadway development and all other specifications listed in the Master Plan?
  - iv. Bidding for a project of this type?
  - v. Does the design team have experience and expertise in regards to the National Environmental Policy Act (NEPA), Section 106 and all compliance requirements?

- vi. Has an organization chart of the firm and any sub-consultants been provided for the project, indicating also MBE status for any firm?
- vii. Does the Respondent appear able to incorporate Owner's and End User's goals and criteria into their work?
- viii. Does the Respondent have LEED Accredited Professionals on Staff?

## **2. Project Plan (0-30 points):**

This section shall describe the firm's understanding of the State's requirement, including the result(s) intended and desired, the approach and/or method to be employed, and a Work Plan for accomplishing the results proposed, it **must** include a **project schedule** with personnel assignments and hours associated with project tasks. Proposals must provide answers to the following questions:

- a. Does the project plan illustrate the Respondent has analyzed, interpreted and understands issues presented by this RFP?
- b. Does the project plan provide solutions for the issues presented by the project in a manner likely to meet the needs of the other client?
- c. Does the proposed project plan appear sensitive to budget and time constraints?
- d. Does the project plan address relevant design and program issues, by providing possible solutions?
- e. Does the project plan include a discussion of value engineering and LEED standards?
- f. Does the Respondent identify both constraints and opportunities posed by this project?
- g. Is there a project schedule provided by the Respondent and is that schedule achievable (not overly optimistic or needlessly long)?
- h. Is the staff to be assigned to the project, including a project manager, subcontractors, engineers and others, identified including FTE and/or hourly effort?
- i. Does the level of effort for each appear adequate?
- j. Does the Respondent describe their current workload and the availability of their personnel to perform the project, is it a feasible?

## **3. References (0-10 Points):**

Select a minimum of three and a maximum of five projects and provide principal contacts, including all contact information, for construction and FF&E projects of similar size and scope and use to the proposed project. All contact information must be confirmed and current. These individuals may be contacted by members of the selection committee for further information. Proposals must provide answers to the following questions:

- a. Were the references provided related to the construction and design of pre-placed lawn crypts, including site improvements and similar projects of this type and scope?
- b. Did the Respondent identify problems and issues in a timely and complete manner?
- c. Were technical, budget and aesthetic issues resolved by the Respondents, fairly balanced with a good outcome resulting?
- d. Did the projects come in on time and in budget, if yes what was the budget and what is the number of change orders on the project?
- e. Did the Respondents adequately research relevant design and program issues?

- f. Was the Respondent's design process characterized by effective communication, clear graphic and verbal presentations and appropriate inclusion of all designated stakeholders?

#### 4. Interviews:

The State reserves the right to interview any or all Respondents to this RFP based on their Technical Proposals. All Staff who will be part of the project including key subs should make themselves available for these interviews.

#### Part Two – Professional Fee Proposal:

Professional Fee proposal will be evaluated (if firm meets minimum of 55 points in Part One) on the following criteria (Will represent 30 points max):

1. The Professional Fee proposal shall be submitted in a **separate, sealed envelope**.
2. The Professional Fee proposal shall be submitted as a Lump Sum price. The price must be provided on the attached Fee Proposal Form. This shall be a fixed fee (dollar amount), which includes, as a separate line item, an allowance for expected reimbursable.
3. **Full 30 points.** The other opened Professional Fee proposals shall be allocated points prorated in correlation to the lowest Professional Fee proposal (e.g. a bid of twice the amount of the low bid will receive 15 points). Professional Fee proposal points are determined by the following formula:  $x/n (y) = \text{points awarded}$ ; whereas "x" = lowest opened bid, "n"= any bid under consideration and "y"= 30 points.
4. All services described in this RFP must be included in the proposal, with **no exclusions** and a lump sum fixed fee (dollar amount) must be provided, or the proposal shall be rejected as being non-responsive.
5. The State reserves the right to award based upon the most favorable cost proposal. Notwithstanding the above, the State reserves the right not to award this contract or to award on the basis of cost alone, to accept or reject any or all responses, and to award in its best interest.
6. A Total Lump Sum bid must be provided and then separate line items must be provided for each package as delineated in the bid form.

#### 3.2) PROPOSAL SUBMISSION

- a) Proposals to provide the services set forth in this solicitation must be received by the Division of Purchases on or before the date and time indicated on page one of this solicitation. Responses (a clearly labeled **original** plus five (5) copies) should be mailed or hand-delivered in a sealed envelope marked with the RFP number and "Architectural, Engineering and Design Services for New Rhode Island Veterans Home Facilities and Renovations in Bristol, RI".

**RI Dept. of Administration  
Division of Purchases, 2nd floor  
One Capitol Hill  
Providence, RI 02908-5855**

- b) **Reminder:** Proposals misdirected to locations other than the Division of Purchases, or which are otherwise not submitted to the Division of Purchases prior to the time of opening for any cause shall be determined to be late and shall not be accepted, opened, or considered. The "official" time clock is located in the reception area of the Division of Purchases, 2<sup>nd</sup> floor, One Capitol Hill, Providence, RI.

**3.3) ADDITIONAL PROPOSAL CONTENTS**

1. In addition to the contents described in Section 3.1 proposals must include the following:
  - a) A completed and signed four-page RIVIP generated Respondents certification cover sheet (downloaded from the Division of Purchases' website <http://www.purchasing.ri.gov>)
  - b) A completed and signed IRS Form W-9 downloaded from the Division of Purchases' website, should **only** be included in the **original copy**.
  - c) In addition to the multiple hard copies of proposal required, Respondents are requested to provide their proposal in electronic format (CD-Rom, Diskette, flash drive). Microsoft Word / Excel or PDF for is preferable. Only one (1) electronic copy is requested. This CD or diskette should be included in the proposal marked "Original".

**3.4) ADDITIONAL TERMS AND CONDITIONS**

- a) Responses found to be technically or substantially non-responsive at any point in the evaluation process will be rejected and not considered further. The State reserves the right to reject any or all responses submitted and to waive any informality in any vendor's submission.
- b) The successful respondents shall be solely responsible for meeting all terms and conditions specified in this RFP, and any resulting contract. The use of any subcontractors or other vendors must receive prior approval by the State. The Division of Purchases reserves the right to clarify the terms and conditions of any proposal submitted. The respondents recommended for contract award will be notified by the Division of Purchases. A contract, based on standard A.I.A. forms will be developed by the Division of Purchases and Division of Capital Projects which incorporate a final work plan and schedule. The selected respondents must agree to provide all deliverables by the dates established in the final work plan and schedule.
- c) The selected respondents must complete the scope of services in this RFP within the time frame specified in the final work plan and schedule and shall be required to

appoint a representative from their firm who will act at their project manager and who will be responsible for seeing that all services are performed with the final work plan and schedule. The selected respondents shall not change its designated representative during the project without prior written consent from the Division of Veterans Affairs.

- d) Payment Schedule for each Package: Payments shall be made monthly in portion of services performed per each individual priced package as described in the bid form and under Section 2; so that compensation shall aggregate to the following percentages at the completion of each phase of work.
1. Programming & Conceptual Design = 15%
  2. Schematic Design = 10%
  3. Design Development = 15%
  4. Construction & FF&E Documents = 30%
  5. Bidding Phase = 5%
  6. Construction Administration = 20%
  7. Move in & Close Out = 5%
- e) Un-invoiced monies at Project completion will not be paid to the respondents.
- f) Five percent (5%) retainage shall be held by the State until the satisfactory completion of each phase of the project.
- g) All drawings shall be submitted in hard copy as well as CAD (compatible with AutoCAD lite, current edition) and PDF formats.
- h) Reimbursable expenses: Only the actual reimbursable expenditure will be paid. When authorized in advance in writing by the Division of Veterans Affairs reimbursable expenses shall be paid based on approved costs and shall generally be limited to document reproductions, postage and handling requested by the Owner. Reproductions for office use by the selected Respondents and its' consultants shall not be reimbursable, transportation to the project site and the Offices of the Design team and Owner, telephone expenses and other telecommunication expenses are not considered reimbursable expenses under this RFP. Four Percent (4%) markup will be allowed on the reimbursable expenses for the design team and their consultants.
- i) If additional sub-consultant are required due to changes in scope or unforeseen conditions, when authorized in advance in writing by the Division of Capital Projects and Property Management expenses shall be paid based on approved costs plus a management fee not to exceed four percent (4%) of the sub-consultants' proposal.
- j) Conflicts of interest: The selected Respondents shall certify that neither the firm, its employees, nor its consultants, have or enter into, any contract or business venture with any general contractor or trade sub-contractor who is selected to work on this project. This provision, shall not apply to sub-contractors hired to provide sub-contractor services during the investigation phase.

- k) **Cancellation for convenience:** The State reserves the right to cancel, for its convenience, any and all contracts that are entered into as the result of this award and the selected Respondents shall have no claim to any reimbursement for lost work or profits and shall have only a claim for work done until the date of cancellation for convenience. The State shall provide thirty (30) days notice of any cancellation.
- l) **Alterations to AIA forms-front end documents:** The Division of Capital Projects and Property Management shall make available to the selected Respondents modified AIA bidding front end and general conditions documents that will require editing by the selected Respondents to make the documents project specific. The editing is to be completed by the Respondents at no additional cost to the State.
- m) **De-scoping:** The selected Respondent shall make the project principals and all key engineering staff and/or consultant(s) available for the de-scoping within seven to ten business days after receipt of the Tentative Letter of Award.
- n) **Value engineering:** the selected respondents shall perform, at no additional cost, any and all value engineering necessary to bring the project into budget after the receipt of the professional, independent cost estimates. The selected respondents shall also keep an informal statement of probable costs and provide value engineering corrections on an ongoing basis paralleling project programming and project design work.
- o) **The professional cost estimator required for construction cost estimates shall NOT be an employee of the selected respondents and shall NOT be a regular employee of a construction firm.**

Rhode Island Veteran's Memorial Cemetery  
Expansion & Site Improvements

**EXHIBITS A, B, C & D**

RHODE ISLAND DEPARTMENT OF HUMAN SERVICES



VETERENS MEMORIAL CEMETERY

EXHIBIT A

Boundary and Site Survey Requirements

The consultant shall provide a survey of the site and furnish a legal description including the outline and location referenced to boundaries, as applicable, of all existing buildings, streets, alleys (whether public or private), block boundaries, easements, encroachments, the names of streets, railroads and streams, and other information as specified. If there is nothing of this character affecting the property, the Surveyor shall so state on the drawings.

Topographic, Utility, and Landscape Surveys: The A/E Consultant shall provide to the state a topographic, utility, and landscape survey of the entire site. All elevations are to be based on U.S.C. & G. Survey benchmarks. A permanent U.S.C. & G. Benchmark shall be established on the cemetery site if none exists, as well as permanent property corner monuments. The topographic survey shall include all features affecting site development, such as contours at an appropriate interval approved by VA (approximate interval is 150 mm (.5 feet) to 1500 mm (5 feet)). Significant stands and prominent trees/plant materials will be shown with size and specie identification. All property lines, building line setbacks, and any leases, rights-of-way or easements within the limits of this survey shall be located and shown. Surrounding land uses and property owners by name, historic/archaeological sites, and natural features (lakes, rivers, flood plains, wetlands, etc.) shall be identified on the survey drawings. The locations and sizes of any utilities will be shown. The survey plans shall be made part of the Master Plan drawing set shown on a:

- a) Single sheet, hard-line finish, on an Ortho Photo Base Topo Map. Also the A/E Consultant is to provide survey information compositely at a scale of 1:400 (approximately 1" = 30'). Use match lines for orientation and alignment. All surveys shall conform to the "United States National Map Accuracy Standards" and shall be certified as such by a Professional Surveyor licensed in the State. c. Site Characteristics Report: The A/E Consultant shall prepare a report of site characteristics from an analysis of the Environmental Impact Statement (EIS), data gathered from personal site visits and the topographic, utility, and landscape surveys. The site analysis process should reflect an understanding of all natural systems of the site. The report shall document the analysis process and shall contain a graphic and narrative description of the cemetery site along with a graphic and narrative description of the vicinity relationships with the cemetery site. The resulting vicinity map is to also be used in the set of Master Plan drawings.
- b) Show the point of beginning, bearing, distances, and interior angles. Closure computations shall be furnished with the survey and error of closure shall not exceed 1 foot for each 10,000 feet of lineal traverse. Boundaries of an unusual nature (curvilinear, off-set, or having other change or direction between corners) shall be referenced with curve data (including measurement chord) and other data sufficient for replacement and such information shall be shown on the map. For boundaries of such nature, coordinates shall be given for all angles and other pertinent points. The area of the parcel in acres or in square feet
- c) The location of all monuments
- d) Delineation of 100-year floodplain and source
- e) The signature and certification of the surveyor



VETERENS MEMORIAL CEMETERY

EXHIBIT B

Soil Investigations

The A/E Consultant shall obtain a report of subsurface investigations to include seismic data and geologic formations, analysis of soil fertility, organic content, and pH measurement. Depths to rock, ground water, and the existence of aquifers and perched water tables or springs and percolation locations will be identified. Soil pits and borings shall be accomplished to a depth of 8 feet below existing grade or to bedrock. Soil pits and/or borings shall be made in as many areas as the A/E Consultant considers necessary and as VA approves in order to obtain a good understanding of the soil and rock conditions of the site for double- or single-depth burial. Identify rock strata and prepare a profile illustrating their depth below surface.

The A/E Consultant shall conduct a soil investigation of the scope necessary to ascertain site characteristics for construction and burial or to determine foundation requirements and utility service connections. Soil investigation, when done, shall be documented in a signed report. Adequate investigation shall be made to determine the subsoil conditions. Study the depth of ground water during wet and dry periods. The investigation shall include a sufficient number of test pits or test borings as will determine, in the judgment of the architect, the true conditions. The site analysis process shall evaluate all man-made and natural site features the following information shall be covered in the report:

- (a) Thickness, consistency, character, and estimated safe bearing value where needed for structural foundation design of the various strata encountered in each pit or boring
- (b) Amount and elevation of ground water encountered in each pit or boring, its probable variation with the seasons, and effect on the subsoil
- (c) The elevation of rock, if known, and the probability of encountering quicksand
- (d) If the site is under laid with mines, the elevations and location of the tops of the mine workings relative to the vicinity
- (e) Format: 210 mm x 297 mm\*(8-1/2" x 11") narrative report with 297 mm x 420 mm\*(11" x 17") fold out graphics, as needed. Drawings indicating locations of borings and soil analysis shall be made part of the MP set. Large format drawings will meet the same requirements as topographic, utility and landscape survey drawings.

# RHODE ISLAND DEPARTMENT OF HUMAN SERVICES



## VETERENS MEMORIAL CEMETERY

### EXHIBIT D

#### Preliminary or Design Development Drawings

The consultant must submit design development drawings that show all current phase construction elements and associate costs. The drawings must comply with the following requirements:

1. Site development and environmental plans must include locations of structures, demolition, parking, roads, service areas, walks, plazas, memorial paths, other paved areas, landscape buffer and major groupings, interment areas (including quantity of gravesites in each area). A grading plan including existing and proposed contours at 1-foot intervals of the entire area affected by the site work must be submitted. A site plan of the immediate area around each building shall be drawn to a convenient scale and shall show the building floor plan, utility connections, walks, gates, walls or fences, flagpoles, drives, parking areas, indication of handicapped provisions, landscaping, north arrow and any other appropriate items.
2. Crypt design demonstrating the dimensions and preplaced installation plans describing how the subgrade is prepared and how the crypts are covered
3. Preliminary mechanical and electrical layout plans shall be drawn at a convenient scale and if applicable, shall have an equipment and plumbing fixture schedule.
4. Elevations of the exteriors of all buildings, where applicable to the project, shall be drawn to the same scale as the plan and shall include all material indications.
5. Final construction drawings and specifications. The consultant shall prepare final working drawings so that clear and distinct prints are obtained and ready for federal approval of grant funding. These drawings must be accurately dimensioned to include all necessary explanatory notes, schedules and legends. Working drawings shall be complete and adequate for state and federal approval. The consultant shall prepare separate drawings for each of the following types of work, where and when applicable: architectural, equipment, layout, structural, heating and ventilating, plumbing, and electrical.
6. Site Analysis Plan that illustrates a significant constraints for construction and burials that must be considered during the planning of the site. The site analysis process shall evaluate all man-made and natural site features. The A/E Consultant will document findings of the analysis in the Site Characteristics Report
  - a. Include site and utility constraints in adjacent off-site areas (steep grades [15% slope is maximum for interment areas], flood plains, rock outcroppings, etc.).
  - b. Potential entrances - public and maintenance.



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- b. Plans must show the primary access routes to and around the property with notations of any traffic control signals and future plans for adjacent development and roadway improvements that might affect the site and proposed cemetery. Potential site organization
- burial, maintenance and staff. Public traffic includes funeral attendees and cemetery visitors.
- c. Maintenance traffic includes headstone delivery, soil spoils, grounds maintenance supplies and equipment and casketed remains, after the committal service.
- d. On-site utility service studies consisting of establishing requirements and preparing initial designs for: Electrical service and distribution, natural gas service and distribution, water supply and distribution, potable/non-potable irrigation, site drainage, sanitary sewer system and disposal, process waste water treatment for irrigation, storm water collection and disposal, security, pollution control, site illumination, and communications systems
- e. Describe natural gas and water sources, disposal methods of sewage and storm water, and proposed natural gas, domestic water, irrigation, storm drainage, and sanitary sewage systems. Indicate if on-site water or sewage treatment is necessary. Describe gasoline and fuel oil facilities. Indicate if existing utilities and equipment can be used.
- f. Provide letters (Memoranda of Understanding) from all affected utilities stating availability and connection potential.
- g. If wells are required for water source, install test well and obtain water analysis and expected yield in gallons per minute. Cost of test well will be a reimbursable to the A/E contract.
- h. Off-site utility studies including: Location, size and adequacy of utilities serving the site, the requirements for connections to the utilities, planning for off-site utility extensions, and design of off-site utility extensions.
- i. Format: 210 mm x 297 mm\*(8-1/2" x 11") narrative report with 297 mm x 420 mm\*(11" x 17") fold-out graphics, as needed. Provide a large format drawing that summarizes the site analysis as part of the Master Plan drawing set. Large format drawings will meet the same requirements as topographic, utility and landscape survey drawings.
7. Geotechnical Soil Survey for Burials: The A/E consultant shall obtain a report of subsurface investigations to include seismic data and geologic formations, analysis of soil fertility, organic content, and pH measurement. Depths to rock, ground water, and the existence of aquifers and perched water tables or springs and percolation locations will be identified. Soil pits and borings shall be accomplished to a depth of 8 feet below existing grade or to bedrock. Soil pits and/or borings shall be made in as many areas as the A/E Consultant considers necessary and as VA approves in order to obtain a good understanding of the soil and rock conditions of the site for double- or single-depth burial. Identify rock strata and prepare a profile illustrating their depth

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below surface. Study the depth of ground water during wet and dry periods. a. Format: 210 mm x 297 mm\*(8-1/2" x 11") narrative report with 297 mm x 420 mm\*(11" x 17") fold out graphics, as

needed. Drawings indicating locations of borings and soil analysis shall be made part of the MP set. Large format drawings will meet the same requirements as topographic, utility and landscape survey drawings.

8. Architectural drawings. The consultant must submit drawings which include structures and other work to be removed and all elevations which are affected by the alterations as well as other details involved in the completion of the proposed work Architectural concept with floor plans and elevations. Draw all floor plans at an appropriate scale which will permit an entire floor plan to fit on a standard VA sheet, normally 1:100 (1/8" = 1'-0") or 1:50 (1/4" = 1'-0"), one building per sheet. Indicate on the drawings the size of all spaces listed in the Square Footage Requirements of the Scope of Work. Show on the floor plan the net program area required for each area and the actual designed area. Indicate the total gross area of each building. Floor plans will be reviewed for accessibility to disabled persons and adaptability to furnishings. Describe the interior design scheme and submit a floor plan indicating generic furniture placement.
9. Equipment drawings, the consultant shall submit a list of all equipment to be provided under the terms of the state contract and federal grant provisions, in the case of an establishment project. Large scale drawings of typical special rooms indicating all fixed equipment shall be included, when applicable to project requirements.
10. Layout drawings. The consultant shall submit a layout plan that include:
  - i. All proposed features such as roads, buildings, walks, utility lines, burial layout, etc.
  - ii. contours, scale, north arrow, legend showing existing trees
  - iii. A graphic or keyed method of showing plant types as well as quantities of each plant
  - iv. Plant list with the following: Key, quantity, botanical name, common name, size and remarks
  - v. Typical tree and shrub planting details
  - vi. Areas to be seeded or sodded
  - vii. Areas to be mulched
  - viii. Gravesite section layout with permanent section monument markers and lettering system
  - ix. Individual gravesite layout and numbering system. If the cemetery is existing and the project is expansion or renovation, show available, occupied, obstructed and reserved gravesites
  - x. Direction the headstone faces
11. Structural drawings. The consultant shall submit complete foundation and framing plans and details, with general notes to include: Governing code, material strengths, live loads, wind loads, foundation design values, and seismic zone, when applicable to the project.

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12. Mechanical drawings, when applicable to the project requirements, the consultant shall submit:
  - a. Heating and ventilation drawings showing complete systems and details of air conditioning, heating, ventilation and exhaust; and
  - b. Plumbing drawings showing sizes and elevations of soil and waste systems, sizes of all hot and cold water piping, drainage and vent systems, plumbing fixtures, and riser diagrams
13. Electrical drawings, when applicable to the project requirements, the consultant shall submit separate drawings for lighting and power, including drawings of:
  - a. Service entrance, feeders and all characteristics;
  - b. All panel, breaker, switchboard and fixture schedules;
  - c. All lighting outlets, receptacles, switches, power outlets and circuits; and Telephone layout, fire alarm systems and emergency lighting.
  - d. Determine presence of any existing electrical service and related major equipment, and ascertain its capacity to supply the new load. Show on an electrical site plan the location of major existing and proposed service equipment including power transformers, switches, etc.
14. Where buildings are involved, show location of mechanical and electrical equipment rooms and closets on the floor plans.
15. Provide a description of the heating, ventilating and air conditioning (HVAC) systems and equipment in accordance with latest ASHRAE Standards and VA criteria. Investigate the availability of utilities (natural or propane gas, electricity, steam, or hot water) for the HVAC equipment and provide description of their status. Indicate the tentative locations of HVAC equipment, including any outdoor equipment
16. Final specifications (to be used for bid purposes) shall be in completed format. Specifications shall include the invitations for bids, cover or title sheet, index, general requirements, form of bid bond, form of agreement, performance and payment bond forms, and sections describing materials and workmanship in detail for each class of work.
17. The consultant shall show, in a fixed format and detail, the estimated total cost of the work to be performed under the contract including provisions, where applicable, of fixed equipment shown by the plans and specifications, to reflect the changes of the approved financial plan. Estimates shall be summarized and totaled under each trade or type of work. Where applicable, estimates shall also be provided for each building structure and other important features such as the assembly area and include burial facilities.

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EXHIBIT C

Storm Drainage Systems Design Criteria

1. Piped Collection Systems

- a. The preliminary design (initial pipe sizing and profile design) of piped collection systems shall be based upon conveyance of the peak flows associated with a fully developed 25-year storm with the hydraulic grade line (HGL) being one foot or more below the top of each structure, gutter line or proposed final ground surface elevation, whichever is lowest.
- b. Once the preliminary design of a piped collection system has been prepared, it shall be analyzed for its behavior during conditions of 100-year flow, with the objective of this analysis being to ascertain the quantities of flow and flow paths followed by flows exceeding the capacity of the system, whether these pond at inlets or flow along the ground's surface.
- c. Based on the analysis of 100-year conditions, the preliminary design shall be revised where necessary to produce a final design for which the likelihood of burial section or building flooding, major property damage, or substantial public access and/or utility interruption shall be less than one chance in 100 years.
- d. The minimum allowable pipe diameter shall be 15 inches.
- e. Catch basins shall be spaced so that the spread in the street for a 10-year design flow shall not exceed 8 feet as measured from the face of the curb.
- f. Complete flow, velocity, and hydraulic grade line computations, shall be provided for all portions of a piped collection system. Hydraulic grade lines shall be shown on the storm drainage profiles contained with the development plans for the 25-year storm.

2. Pipe Length

- a. Culverts shall extend to where the crown of the pipe intersects finished grade.
- b. The length requirement, however, shall be subject to requirements for maintaining stream buffers in accordance with State, Tribal and local regulations.

3. Design Slope

- a. Velocities over 10 fps in a pipe of any material shall be considered a special design with particular attention required to pipe invert protection and the ability of the receiving waterway or detention facility to accept the flow without damage.
- b. The minimum allowable slope shall be one (1) percent.
- c. The maximum allowable slope for a concrete storm drainage pipe shall be 10 percent and for a HDPE pipe shall be 14 percent. Greater slopes may be approved if installation is in accordance with manufacturer's recommendations. In cases where the slope is in excess of 10 percent, anchor collars may be required.
- d. A minimum pipe cover of 18 inches shall be required.

4. Outlet Location - Culverts And Pipe Systems

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- a. Outlet structures (such as headwalls) shall not be located closer to the project site's property line than the greater of the distance necessary to construct any velocity protection or a flow distance equal to six (6) pipe diameters. For non-circular conduits, this distance shall be six (6) times the rise dimension of the conduit.
  - b. The invert elevation of a culvert or pipe outlet shall be no more than 2 feet above the elevation of the bottom of the receiving watercourse at the outlet.
5. Discharge of Concentrated Flows.
- a. The discharge of concentrated flows of storm water into public roadways shall be avoided.
6. Culverts
- a. Frequency Flood:

The design storm for a culvert for all roads is the 100-year storm using future development land use conditions, assuming no detention. The design of lateral systems shall be based on a 25-year storm event, using future development land use conditions assuming no detention. The 100-year frequency storm shall be routed through all culverts to be sure burial sections and building structures are not flooded or increased damage does not occur to the roadways or adjacent property for this design event. Culverts or pipe systems designed to convey water from one side of the roadway to the other shall be designed to pass the fully developed peak flow associated with a 100-year storm with at least 1.5 feet of freeboard between the 100-year ponding elevation and the centerline of the road, without raising the 100-year flood elevation on the upstream properties. Fully developed flows shall be based on the approved cemetery Master Plan.
  - b. Velocity Limitations:

Both minimum and maximum velocities should be considered when designing a culvert. The maximum velocity should be consistent with channel stability requirements at the culvert outlet. There is no specified maximum allowable velocity for reinforced concrete pipe, but outlet protection shall be provided where discharge velocities will cause erosion problems. To ensure self-cleaning during partial depth flow, a minimum velocity of 2.5 feet per second, for the 2-year flow velocity, when the culvert is flowing partially full is required. Velocities over 10 fps in a pipe of any material shall be considered a special design with particular attention required to pipe or structure invert protection and to fill slope, stream bed, and stream bank stability.
  - c. Buoyancy Protection:

Headwalls, end walls, slope paving or other means of anchoring to provide buoyancy protection should be considered for all flexible culverts.
  - d. Length and Slope:

The culvert length and slope should be chosen to approximate existing topography, and to the degree practicable: the culvert invert should be aligned with the channel bottom and the skew angle of the stream, and the culvert entrance should match the geometry of the roadway embankment. The maximum slope using concrete pipe is 10% before pipe restraining methods must be taken. Maximum drop in a drainage structure is 10 feet.
  - e. The following criteria related to headwater should be considered:
    - The allowable headwater for design frequency conditions should allow for the following upstream controls.
    - 18 inch freeboard.

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- Avoid upstream property damage.
- Elevations established to delineate flood plain zoning.
- Low point in the road grade that is not at the culvert location.
- Ditch elevation of the terrain that will permit flow to divert around culvert.
- Following HW/D criteria.
- For drainage facilities with cross-section area equal to or less than 30 sq. ft. - HW/D = to or < 1.5.
- For drainage facilities with cross-section area greater than 30 sq. ft. - HW/D = to or < 1.2.
- The headwater should be checked for the 100-year flood to ensure that the culvert is sized to maintain flood-free conditions on roadway with 18 inches freeboard at the low-point of the road.
- The maximum acceptable outlet velocity should be identified. Either the headwater should be set to produce acceptable velocities or stabilization or energy dissipation should be provided where these velocities are exceeded.
- Other site-specific design considerations should be addressed as required.
- In general the constraint which gives the lowest allowable headwater elevation establishes the criteria for the hydraulic calculations.

### 7. Tail water Considerations

The hydraulic conditions downstream of the culvert site must be evaluated to determine a tailwater depth for a range of discharge. At times there may be a need for calculating backwater curves to establish the tailwater conditions. The following conditions must be considered:

- If the culvert outlet is operating with a free outfall, the critical depth and equivalent hydraulic grade line should be determined.
- For culverts which discharge to an open channel, the stage-discharge curve for the channel must be determined.
- If an upstream culvert outlet is located near a downstream culvert inlet, the head water elevation of the downstream culvert may establish the design tailwater depth for the upstream culvert.
- If the culvert discharges to a lake, pond, or other major water body, the expected high water elevation of the particular water body may establish the culvert tailwater.

### 8. Storage

If storage is being assumed upstream of the culvert, consideration should be given to:

- The total area of flooding.
- The average time that bankfull stage is exceeded for the design flood up to 6 hours.

### 9. Open Channel

- a. Channels with bottom widths greater than 10 feet shall be designed with a minimum bottom cross slope of 12 to 1.



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- b. Low flow sections shall be considered in the design of channels with large cross sections ( $Q > 100$  cfs).
- c. Channel side slopes shall be stable throughout the entire length and side slope shall depend on the channel material. A maximum of 3:1 is allowed for vegetation and 2:1 for riprap, unless otherwise justified by calculations.
- d. Super elevation of the water surface at horizontal curves shall be accounted for by increased freeboard.
- e. Trapezoidal or parabolic cross sections are preferred and triangular shapes should be avoided. "V" shaped cross sections are not permitted in grassed channels. The channel shall be shaped to the dimensions specified on the approved plans and shall be free of over falls, gullies, or other irregularities.
- f. For vegetative channels, if the channel slope exceeds 10 percent special design procedures presented in HEC-15 and HEC-14 should be used.
- g. For vegetative channels, design stability should be determined using low vegetative retardance conditions (Class D) and for design capacity higher vegetative retardance conditions (Class C) should be used. Protective cover in grassed channels shall be installed as soon as the earthwork is completed.
- h. For vegetative channels, flow velocities within the channel should not exceed the maximum permissible velocities given in Tables 1 and 2.
- i. Relocation of a stream channel is not permitted.
- j. Streambank stabilization should be provided, when appropriate, as a result of any stream disturbance such as encroachment and should include both upstream and downstream banks as well as the local site.
- k. All new proposed channels shall be designed to carry at least the fully developed 25- year storm with freeboard equal to 20% of the design flow depth. The 100-year design storm should be routed through the channel system to determine if the 100- year plus applicable burial section and building elevation restrictions are exceeded, structures are flooded, or flood damages increased.
- l. Sediment transport should be considered for conditions of flow below the design frequency. A low flow channel component within a larger channel can reduce maintenance by improving sediment transport in the channel.
- m. In cases of potential erosion due to irregular channel alignment, extreme velocities, or excessive slopes, a paved ditch may be required. However, if, in the opinion of the VCGS, the expected long-term maintenance of a surface drainage system could prove impractical, a pipe design may be required.
- n. If the channel will be affected by backwater from culverts, bridges, other structures or floodplains, backwater curves shall be shown in profiles of the channel.

10. Channel Transitions

The following criteria shall be considered at channel transitions:

- a. Transition to channel sections shall be smooth and gradual. A straight line connecting flow lines at both ends of the transition shall not make an angle greater than 12.5 degrees with the axis of the main channel without additional design considerations.
- b. Transition sections should be designed to provide a gradual transition to avoid turbulence and eddies.
- c. Energy losses in transitions should be accounted for as part of the water surface profile calculations.
- d. Scour downstream from rigid-to-natural and steep-to-mild slope transition sections should be accounted for through velocity slowing and energy dissipating devices.

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- e. Transition channels shall be provided at the inlet and outlet ends of all culverts and pipe systems, unless otherwise provided herein.

11. Velocity Limitations

The final design of artificial open channels should be consistent with the velocity limitations for the selected channel lining. Maximum velocity values for selected lining categories are presented in Table 1. Seeding and mulch should only be used when the design value does not exceed the allowable value for bare soil. Velocity limitations for vegetative linings are reported in Table 2. The maximum flow velocity at the project site's downstream property line shall not exceed the pre-developed velocity. Channels in fills shall be lined.

Table 1  
Maximum Velocities for Comparing Lining Materials

Material	Maximum Velocity (ft./s)
Sand	2.0
Silt	3.5
Firm Loam	3.5
Fine Gravel	5.0
Stiff Clay	5.0
Graded Loam or Silt to Cobbles	5.0
Coarse Gravel	6.0
Shales and Hard Pans	6.0

Table 2  
Maximum Velocities for Vegetative Channel Linings

Vegetation Type	Slope Range (%) (1)	Maximum Velocity (2) (ft./s)
Bermuda grass	0->10	5
Bahia		4
Tall Fescue Grass Mixtures (3)	0-10	4
Kentucky bluegrass	0-5	6
Buffalo grass	5-10	5
	>10	4
Grass mixture	0-5 (1)	4
	5-10	3
Sericea Lespedeza, Weeping	0-5 (4)	3
Lovegrass Alfalfa		
Annuals (5)	0-5	3
Sod		4
Lapped sod		5

- (2) Do not use on slopes steeper than 10 percent except for side-slope in combination channel
- (3) Use velocities exceeding 5 ft./s only where good stands can be established and maintained
- (4) Mixtures of Tall Fescue, Bahia, and/or Bermuda
- (5) Do not use on slopes steeper than 5 percent except for side-slope in combination channel
- (6) Annuals - used on mild slopes or as temporary protection until permanent covers are established