

# **SCOPE OF WORK**

## **CAPITOL COMPLEX PARKING GARAGE REPAIRS**

New Jersey State House  
Trenton, Mercer County, N.J.

**PROJECT NO. A1123-00**

**STATE OF NEW JERSEY**

Honorable Chris Christie, Governor  
Honorable Kim Guadagno, Lt. Governor

**DEPARTMENT OF THE TREASURY**

Andrew P. Sidamon-Eristoff, Treasurer



**DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION**

Steven Sutkin, Director

**Date: August 11, 2011**

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## **I. OBJECTIVE**

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The objective of this project is to repair the Capitol Complex Parking Garage structural damage caused by recent flood events.

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## **II. CONSULTANT QUALIFICATIONS**

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### **A. CONSULTANT & SUB-CONSULTANT PRE-QUALIFICATIONS**

The Consultant shall be a firm pre-qualified with the Division of Property Management & Construction (DPMC) in the P007 Structural Engineering Professional Discipline and have in-house capabilities or Sub-Consultants pre-qualified with DPMC in all other Engineering and Specialty Disciplines necessary to complete the project as described in this Scope of Work (SOW).

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## **III. PROJECT BUDGET**

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### **A. CONSTRUCTION COST ESTIMATE (CCE)**

The initial Construction Cost Estimate (CCE) for this project is \$1,600,000.

The Consultant shall review this Scope of Work and provide a narrative evaluation and analysis of the accuracy of the proposed project CCE in their technical proposal based on their professional opinion.

### **B. CURRENT WORKING ESTIMATE (CWE)**

The Current Working Estimate (CWE) for this project is \$2,000,000.

The CWE includes the construction cost estimate and all consulting, permitting and administrative fees.

The CWE is the Client Agency's financial budget based on this project Scope of Work and shall not be exceeded during the design and construction phases of the project unless DPMC approves the change in Scope of Work through a Contract amendment.

### **C. COST ESTIMATING**

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All CCE under \$750,000 may be prepared by the Consultant's in-house staff or their Sub-Consultant's staff during each design phase of the project. However, if the CCE is \$750,000 or larger, the Consultant or Sub-Consultant providing the estimate must be pre-qualified with DPMC in the P025 Estimating/Cost Analysis Specialty Discipline.

All cost estimates shall be adjusted for regional location, site factors, construction phasing, premium time, building use group, location of work within the building, temporary swing space, security issues, and inflation factors based on the year in which the work is to be performed.

All cost estimates must be submitted on a DPMC-38 Project Cost Analysis form at each design phase of the project with a detailed construction cost analysis in CSI format (2004 Edition) for all appropriate divisions and sub-divisions. The Project Manager will provide cost figures for those items which may be in addition to the CCE such as CM services, etc. and must be included as part of the CWE. This cost analysis must be submitted for all projects regardless of the Construction Cost Estimate amount.

#### **D. CONSULTANT'S FEES**

The construction cost estimate for this project *shall not* be used as a basis for the Consultant's design and construction administration fees. The Consultant's fees shall be based on the information contained in this Scope of Work document and the observations made and/or the additional information received during the pre-proposal meeting.

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### **IV. PROJECT SCHEDULE**

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#### **A. SCOPE OF WORK DESIGN & CONSTRUCTION SCHEDULE**

The following schedule identifies the estimated design and construction phases for this project and the estimated durations.

<b>PROJECT PHASE</b>	<b>ESTIMATED DURATION (Calendar Days)</b>	
<b>1. Design Development Phase</b>	<b>50% (Minimum)</b>	<b>49</b>
• <i>Project Team &amp; DPMC Plan/Code Unit Review &amp; Comment</i>		14
<b>2. Final Design Phase</b>	<b>100%</b>	<b>35</b>
• <i>Project Team &amp; DPMC Plan/Code Unit Review &amp; Approval</i>		14
<b>3. Permit Application Phase</b>		<b>7</b>

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- *Issue Permit*

<b>4. Bid Phase</b>	<b>42</b>
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<b>6. Construction Phase</b>	<b>210</b>

## **B. CONSULTANT’S PROPOSED DESIGN & CONSTRUCTION SCHEDULE**

The Consultant shall submit a project design and construction bar chart schedule with their technical proposal that is similar in format and detail to the schedule depicted in **Exhibit ‘A’**. The bar chart schedule developed by the Consultant shall reflect their recommended project phases, phase activities, activity durations.

The Consultant shall estimate the duration of the project Close-Out Phase based on the anticipated time required to complete each deliverable identified in Section XIV of this document entitled “Contract Deliverables – Project Close-out Phase” and include this information in the bar chart schedule submitted.

A written narrative shall also be included with the technical proposal explaining the schedule submitted and the reasons why and how it can be completed in the time frame proposed by the Consultant.

This schedule and narrative will be reviewed by the Consultant Selection Committee as part of the evaluation process and will be assigned a score commensurate with clarity and comprehensiveness of the submission.

## **C. CONSULTANT DESIGN SCHEDULE**

The Project Manager will issue the Consultant’s approved project schedule at the first design kickoff meeting. This schedule will be binding for the Consultant’s activities and will include the start and completion dates for each design activity. The Consultant and Project Team members shall use this schedule to ensure that all design milestone dates are being met for the project. The Consultant shall update the schedule to reflect performance periodically (minimally at each design phase) for the Project Team review and approval. Any recommendations for deviations from the approved design schedule must be explained in detail as to the causes for the deviation(s) to and impact on the schedule.

## **D. BID DOCUMENT CONSTRUCTION SCHEDULE**

The Consultant shall include a construction schedule in Division 1 of the specification bid document. This schedule shall contain, at minimum, the major activities and their durations for each trade specified for the project. This schedule shall be in “bar chart” format and will be used by the

Contractors as an aid in determining their bid price. It shall reflect special sequencing or phased construction requirements including, but not limited to: special hours for building access, weather restrictions, imposed constraints caused by Client Agency program schedules, security needs, lead times for materials and equipment, anticipated delivery dates for critical items, utility interruption and shut-down constraints, and concurrent construction activities of other projects at the site and any other item identified by the Consultant during the design phases of the project.

## **E. CONTRACTOR CONSTRUCTION PROGRESS SCHEDULE**

The Contractor shall be responsible for preparing a coordinated combined progress schedule with the Sub-Contractors after the award of the contract. This schedule shall meet all of the requirements identified in the Consultant's construction schedule. The construction schedule shall be completed in accordance with the latest edition of the Instructions to Bidders and General Conditions entitled, "Article 9, Construction Progress Schedule" (No CPM).

The Consultant must review and analyze this progress schedule and recommend approval/disapproval to the Project Team until a satisfactory version is approved by the Project Team. The Project Team must approve the baseline schedule prior to the start of construction and prior to the Contractor submitting invoices for payment.

The Consultant shall note in Division 1 of the specification that the State will not accept the progress schedule until it meets the project contract requirements and any delays to the start of the construction work will be against the Contractor until the date of acceptance by the State.

The construction progress schedule shall be reviewed, approved, and updated by the Contractor of schedule, Consultant, and Project Team members at each regularly scheduled construction job meeting and the Consultant shall note the date and trade(s) responsible for project delays (as applicable).

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## **V. PROJECT SITE LOCATION & TEAM MEMBERS**

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### **A. PROJECT SITE ADDRESS**

The location of the project site is:

Capitol Complex Parking Garage  
165 West State Street  
Trenton, New Jersey 08625

See **Exhibit 'B'** for the project site plan.

### **B. PROJECT TEAM MEMBER DIRECTORY**

**PROJECT NAME: Capitol Complex Parking Garage Repairs**  
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The following are the names, addresses, and phone numbers of the Project Team members.

**1. NJBA Representative:**

Name: Vince Campanella, Sr. Project Manager  
Address: New Jersey Building Authority  
28 West State Street, 6<sup>th</sup> Floor  
Trenton, NJ 08625  
Phone No: (609) 943-4831  
E-Mail No: [Vincent.campanella@treas.state.nj.us](mailto:Vincent.campanella@treas.state.nj.us)

**2. NJBA Representative:**

Name: Joseph Alessi, Project Manager  
Address: New Jersey Building Authority  
28 West State Street, 6<sup>th</sup> Floor  
Trenton, NJ 08625  
Phone No: (609) 203-4908  
E-Mail No: [joseph.alessi@treas.state.nj.us](mailto:joseph.alessi@treas.state.nj.us)

**3. JMC Representative:**

Name: Victoria P. Lawler  
Address: Office of Legislative Services  
State House Annex  
PO Box 068  
Trenton, NJ 08625  
Phone No: (609) 292-1338  
E-Mail No: [vlawler@njleg.org](mailto:vlawler@njleg.org)

**4. Client Agency Representative:**

Name: Steve Pietrzak, Manager  
Address: Division of Property Mgt & Construction  
NJ State House  
125 West State Street, 325/3<sup>rd</sup> Floor, PO Box 239  
Trenton, New Jersey 08625  
Phone No: (609) 777-4411  
E-Mail No: [steve.pietrzak@treas.state.nj.us](mailto:steve.pietrzak@treas.state.nj.us)

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## **VI. PROJECT DEFINITION**

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## **A. BACKGROUND**

The Capitol Complex Parking Garage has approximately 380,000 square feet of parking area which serves the Capitol Complex in Trenton, NJ. Level 1 is below flood stage and has been adversely affected by three recent 50-year flood events occurring in January 1996, September 2004, and April 2005.

The lowest level of the garage is at an elevation of 15 feet. Flood levels of the nearby Delaware River are as follows: 10-year floods (above 18'-6"), 50-year floods (above 23'), 100-year floods (above 25'-6") and 500-year floods (above 30'-9").

The 50-year floods resulted in damage to the mechanical equipment and structural components located in Level 1 areas of the garage noted as the mechanical equipment room (MER), the three elevator mechanical rooms, parking area spaces, and the parking entrance lobby.

## **B. DESCRIPTION OF THE GARAGE**

The Capitol Complex Parking Garage was designed in 1995 and built in 1996. The north portion of the Garage extends two levels below grade and has an at-grade pedestrian plaza as its roof. The larger, south portion of the Garage extends three levels below the plaza. This area is only partially below grade because it was built into the side of a hill. On the west side of the facility is a high bay loading dock.

The structure consists of cast-in-place, post-tensioned slabs and beams supported by cast-in-place concrete columns. Typical beam span is in the order of 60 feet and typical beam spacing is 21 feet. With the exception of the loading dock, which is on drilled piles, the facility is founded on concrete spread footings.

The building is broken into 4 distinct structures, the Loading Dock, the Parking Garage north side, the Parking Garage south side, and the Mechanical Equipment Room (MER). The MER contains mechanical and electrical equipment for the lighting, heating, and cooling of both the garage and the adjacent State House. See **Exhibit 'C'** for a schematic plan showing the arrangement of the 4 parking garage structures.

Each of the four garage structures is separated by expansion joints. Where the garage does not interface with the State House Annex, it is surrounded by reinforced concrete retaining walls. Slabs within the Loading Dock and the South Garage at Level 1 are supported on grade. Slabs within the North Garage at Level 2 are slabs on grade. Level 3 is an elevated slab.

Slabs-on-grade are detailed as being built with 4000 psi concrete and are called out as a minimum of 5 inches thick, placed on a layer of crushed stone compacted sub-grade. Framed floors are detailed as being constructed from 5000 psi concrete. Slabs at Levels 2 and 3 are detailed as 6 to 7 inches thick and the roof/plaza slab is shown as 9 to 11 inches thick.

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## **VII. CONSULTANT DESIGN RESPONSIBILITIES**

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### **A. REPAIR PRIORITIES**

A “Flood Damage Assessment & Recommended Improvements Study”, dated November 14, 2007, prepared by the *Miller-Remick Corporation* serves as the basis of the repair work for this project. This project is intended to implement the structural repairs identified in the Study as priority #1, priority #2 and priority #3 repairs.

The Consultant shall be aware that the cost of the repairs shall not exceed the available project funding of \$2,000,000, the Current Working Estimate (CWE). The work may need to be prioritized and bid as alternates.

The garage repairs include:

- Columns
  - Cracks
  - Spalling
- Concrete slab/deck
  - Spalling
  - Waterproofing
- Walls
  - Cracks
  - Spalling
- Expansion Joints
  - Replacement

### **B. REPAIR DESIGN REQUIREMENTS**

#### **1.) Design Documents:**

The design documents shall specify in detail the acceptable methods required to prepare all surfaces to be repaired, the allowable environmental conditions and temperatures to apply all materials, acceptable names of three manufacturers “or equal” for each type of repair material, manufacturer’s product engineering data for the materials to be used, and the repair finishing and tolerance requirements. This information will be used as a reference by the full-time inspector during construction.

Design drawings of the parking garage shall identify all of the areas and related structural components that are to be repaired. Details shall be included that define the extent and method for each type of repair including the required length, width, and depth of materials to be removed and replaced.

Estimated total quantities and measurements of materials to be removed and replaced shall be defined to assist the Contractor in bidding this project.

Provide details that show the acceptable methods to protect all surfaces such as walls, floors, etc. which are not repair work areas.

All painted surfaces that are repaired shall be repainted to match the existing colors after the work is completed.

**2.) Codes & Standards:**

The design documents shall reference all appropriate ACI, ASTM, CRSI and any other related code and standard that will apply to the workmanship and materials of this project.

**3.) Unit Prices:**

A Unit Price Section shall be included in the specification that describes the items that the Contractor shall price on the Proposal Form for any potential unforeseeable site condition and for work countermanded, added, reduced, or omitted. All costs shall include labor, materials, overhead, and profits, insurance, etc.

**4.) Contractor Qualifications:**

The design documents shall state that the Contractor must have at least 10 years experience of similar concrete work, including concrete repair and shall submit documentation indicating successful completion of projects similar in size, scope, and materials.

**C. TESTING AGENCY SERVICES**

The Consultant shall employ the services of an independent testing lab pre-qualified with DPMC to conduct tests and perform other services for quality control during construction. The full-time inspector shall be responsible to notify the testing lab in advance for all required tests and inspections.

**D. WARRANTY**

Design documents shall state that the Contractor shall provide a written warranty for five years from the date of final completion and acceptance, guaranteeing materials and workmanship from concrete spalling, cracking, and failure of the sealer from remaining weather tight. During the five year period, the Contractor shall fix all problems relating to concrete spalling, cracking, and sealer failure without any cost to the State.

**E. PROJECT SCHEDULE**

The garage repair work shall be prioritized and an approved schedule included in Division 1 of the specification for Contractor reference during bidding. The project schedule shall include, but not be limited to: phased construction to reduce the impact on available parking spaces, seasonal weather and temperature restrictions, etc.

**F. CONTRACTORS USE OF THE PREMISES**

Refer to **Exhibit ‘D’**, 4 pages, entitled “Building Security and Contractor Use of the Premises” and work with the Project Team to edit the document as required to add any additional special security and policy requirements that must be followed during all work conducted at the Capitol Complex Parking Garage and include this information in Division 1 of the specification. Additional items shall include, but not be limited to:

**1.) Hours of Construction:**

Determine the allowable hours of construction and include that information in Division 1 of the specification for Contractor reference. Note that construction work on nights and weekends may not be performed without prior approval of the Project Team.

**2.) Demolition:**

Precautions shall be taken to eliminate dust and dirt in the construction areas and protect the parked vehicles. Construction barriers shall be provided to prevent parking in the areas of construction and temporary enclosures to contain the dust and debris contamination to the portion of the garage remaining open shall be considered where applicable.

All demolition materials shall be removed from the garage each day and disposed in the dumpster located in an area approved by the Project Team.

**3.) Finishes:**

All concrete floor and wall finishes shall be protected from potential damage and shall be restored to their original condition at no cost to the Client Agency.

**4.) Material Storage:**

Design drawings shall identify the acceptable areas and methods of material storage on the site and in the garage.

**5.) Site Provisions:**

Determine what items the State will provide to the Contractor at the construction site such as water, electric, toilet facilities, conference room for meetings, etc. and identify them in the design documents for Contractor reference during bidding.

**6.) Project Directory:**

Develop a project directory that identifies the name and phone numbers of approved escorts and any other key personnel that will be involved in this project. Access to the project site must be coordinated with the State Police.

**7.) Security:**

Describe the Contractor security requirements when working in the parking garage and any coordination with the State Police. It shall be noted that all Contractors will be subjected to a background check by the State Police before being allowed to work the Capitol Complex Parking Garage premises.

Division 1 of the specification shall include a statement that all Contractors will be subject to complete a "Request for Criminal History Record Information for a Noncriminal Justice Purpose" form for this project.

**G. SPECIAL PRESENTATION**

The Consultant shall be required to make an oral presentation, utilizing appropriate graphical tools, describing the work to be completed to the State Capitol Joint Management Commission (SCJMC) at a monthly meeting at the completion of the Final Design Phase (total of one 4 hour meeting).

**H. GENERAL DESIGN OVERVIEW**

**1. Design Detail:**

Section VII of this Scope of Work is intended as a guide for the Consultant to understand the overall basic design requirements of the project and is not intended to identify each specific design component related to code and construction items. The Consultant shall provide those details during the design phase of the project ensuring that they are in compliance with all applicable codes, regulating authorities, and the guidelines established in the DPMC Procedures for Architects and Engineers Manual.

The Consultant shall understand that construction documents submitted to DPMC shall go beyond the basic requirements set forth by the current copy of the Uniform Construction Code NJAC 5:23-2.15(f). Drawings and specifications shall provide detail beyond that required to merely show the nature and character of the work to be performed. The construction documents shall provide sufficient



information and detail to illustrate, describe and clearly delineate the design intent of the Consultant and enable all Contractors to uniformly bid the project.

The Consultant shall ensure that all of the design items described in this scope of work are addressed and included in the project drawings and specification sections where appropriate.

It shall be the Consultant's responsibility to provide all of the design elements for this project. Under no circumstance may they delegate the responsibility of the design; or portions thereof, to the Contractor unless specifically allowed in this Scope of Work.

## **2. Specification Format:**

The Consultant shall ensure that the project design specifications are formatted in the revised and expanded version of the Construction Specifications Institute (CSI) format entitled "Master Format 2004 Edition: Numbers and Titles."

The Consultant shall review all of the CSI Master Format 2004 specification sections listed and remove those that do not apply and edit those that remain so they are consistent and specific to this project scope of work.

# **I. PROJECT COMMENCEMENT**

A pre-design meeting shall be scheduled with the Consultant and the Project Team members at the commencement of the project to obtain and/or coordinate the following information:

## **1. Project Directory:**

Develop a project directory that identifies the name and phone number of key designated representatives who may be contacted during the design and construction phases of this project.

## **2. Site Access:**

Develop procedures to access the project site and provide the names and phone numbers of approved escorts when needed. Obtain copies of special security and policy procedures that must be followed during all work conducted at the facility and include this information in Division 1 of the specification.

## **3. Project Coordination:**

Review and become familiar with any current and/or future projects at the site that may impact the design, construction, and scheduling requirements of this project. Incorporate all appropriate information and coordination requirements in Division 1 of the specification.

## **4. Existing Documentation:**

A copy of the following documents on CD will be provided to each Consulting firm at the pre-proposal meeting to assist in the bidding process.

- A1013-00: “Flood Damage Assessment & Recommended Improvements Study”, prepared by *Miller-Remick Corporation*, dated November 14, 2007, including Appendix A through Appendix N. Note that the report, less the appendixes is included as Exhibit “E” of this scope of work.
- “Parking Garage – Record Drawings”, prepared by *Torcon, Inc.*, dated 8/1/95

Review the document and any additional information that may be provided at a later date such as reports, studies, surveys, equipment manuals, as-built drawings, etc. The State does not attest to the accuracy of the information provided and accepts no responsibility for the consequences of errors by the use of any information and material contained in the documentation provided. It shall be the responsibility of the Consultant to verify the contents and assume full responsibility for any determination or conclusion drawn from the material used. If the information provided is insufficient, the Consultant shall take the appropriate actions necessary to obtain the additional information required.

Any original documentation shall be returned to the provider at the completion of the project.

#### **5. Scope of Work:**

Review the design and construction administration responsibilities and the submission requirements identified in this Scope of Work with the Project Team members. Items such as: contract deliverables, special sequencing or phased construction requirements, special hours for construction based on Client Agency programs or building occupancy, security needs, delivery dates of critical and long lead items, utility interruptions or shut down constraints for tie-ins, weather restrictions, and coordination with other project construction activities at the site shall be addressed.

This information and all general administrative information; including a narrative summary of the work for this project, ***shall be included in Division 1*** of the specification. The Consultant shall assure that there are no conflicts between the information contained in Division 1 of the specification and the DPMC General Conditions.

#### **6. Project Schedule:**

Review and update the project design and construction schedule with the Project Team members.

### **J. BUILDING & SITE INFORMATION**

The following information shall be included in the project design documents.

#### **1. Building Classification:**

Provide the building Use Group Classification and Construction Type on the appropriate design drawing.

**2. Building Block & Lot Number:**

Provide the site Block and Lot Number on the appropriate design drawing.

**3. Building Site Plan:**

Only when the project scope involves site work, or when the design triggers code issues that require site information to show code compliance, shall a site plan be provided that is drawn in accordance with an accurate boundary line survey. The site plan shall include, but not be limited to, the following as may be applicable.

- The size and location of new and existing buildings and additions as well as other structures.
- The distance between buildings and structures and to lot lines.
- Established and new site grades and contours as well as building finished floor elevations.
- New and existing site utilities, site vehicular and pedestrian roads, walkways and parking areas.

**4. Site Location Map:**

Provide a site location map on the drawing cover sheet that identifies the vehicular travel routes from major roadways to the project construction site and the approved access roads to the Contractor's worksite staging area.

**K. DESIGN MEETINGS & PRESENTATIONS**

**1. Design Meetings:**

Conduct the appropriate number of review meetings with the Project Team members during each design phase of the project so they may determine if the project meets their requirements, question any aspect of the contract deliverables, and make changes where appropriate. The Consultant shall describe the philosophy and process used in the development of the design criteria and the various alternatives considered to meet the project objectives. Selected studies, sketches, cost estimates, schedules, and other relevant information shall be presented to support the design solutions proposed. Special considerations shall also be addressed such as: Contractor site access limitations, utility shutdowns and switchover coordination, phased construction and schedule requirements, security restrictions, available swing space, material and equipment delivery dates, etc.

It shall also be the responsibility of the Consultant to arrange and require all critical Sub-Consultants to be in attendance at the design review meetings.

Record the minutes of each design meeting and distribute within five (5) calendar days to all attendees and those persons specified to be on the distribution list by the Project Manager.

## **2. Design Presentations:**

The minimum number of design presentations required for each phase of this project is identified below for reference:

Design Development Phase: One (1) oral presentation at phase completion to the Project Team..

Final Design Phase: One (1) oral presentation, utilizing appropriate graphical tools, at phase completion to the Project Team.

One (1) oral presentation, utilizing appropriate graphical tools, at phase completion to the SCJMC.

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# **VIII. CONSULTANT CONSTRUCTION RESPONSIBILITIES**

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## **A. GENERAL CONSTRUCTION ADMINISTRATION OVERVIEW**

This section of the Scope of Work is intended as a guide for the Consultant to understand their overall basic construction administration responsibilities for the project and does not attempt to identify each specific activity or deliverable required during this phase. The Consultant shall obtain that information from the current publication of the DPMC Procedures for Architects and Engineers Manual and any additional information provided during the Consultant Selection Process.

## **B. PRE-BID MEETING**

The Consultant shall attend, chair, record and distribute minutes of the Contractor pre-bid meetings. When bidders ask questions that may affect the bid price of the project, the Consultant shall develop a Bulletin(s) to clarify the bid documents in the format described in the Procedures for Architects and Engineers Manual, Section 9.2 entitled "Bulletins." These Bulletins must be sent to DPMC at least seven (7) calendar days prior to the bid opening date. DPMC will then distribute the document to all bidders.

## **C. BID OPENING**

The Consultant must attend the bid opening held at the designated location.

In the event that the construction bids received exceed the Consultant's approved final cost estimate by 5% or more, the Consultant shall redesign and/or set up sufficient approved alternate designs, plans and specifications for the project work, to secure a bid that will come within the allocation specified by the State without impacting the programmatic requirements of the project. Such redesign work and changes to plans, including reproduction costs for submission in order to obtain final approval and permits, shall be undertaken by the Consultant at no additional cost to the State.

## **D. POST BID REVIEW MEETING, RECOMMENDATION FOR AWARD**

The Consultant; in conjunction with the Project Manager, shall review the bid proposals submitted by the various Contractors to determine the low responsible bid for the project. The Consultant; in conjunction with the Project Manager, shall develop a post bid questionnaire based on the requirements below and schedule a post bid review meeting with the Contractor's representative to review the construction costs and schedule, staffing, and other pertinent information to ensure they understand the Scope of the Work and that their bid proposal is complete and inclusive of all requirements necessary to deliver the project in strict accordance with the plans and specifications.

### **1. Post Bid Review:**

Review the project bid proposals including the alternates, unit prices, and allowances within seven (7) calendar days from the bid due date. Provide a bid tabulation matrix comparing all bids submitted and make a statement about the high, low, and average bids received. Include a comparison of the submitted bids to the approved current construction cost estimate. When applicable, provide an analysis with supporting data, detailing why the bids did not meet the construction cost estimate.

### **2. Review Meeting:**

Arrange a meeting with the apparent low bid Contractor to discuss their bid proposal and other issues regarding the award of the contract. Remind the Contractor that this is a Lump Sum bid. Request the Contractor to confirm that their bid proposal does not contain errors. Review and confirm Alternate pricing and Unit pricing and document acceptance or rejection as appropriate.

Comment on all omissions, qualifications and unsolicited statements appearing in the proposals. Review any special circumstances of the project. Ensure the Contractor's signature appears on all post bid review documents.

### **3. Substitutions:**

Inquire about any potential substitutions being contemplated by the Contractor and advise them of the State's guidelines for the approval of substitutions and the documentation required. Review the deadline and advise the Contractor that partial submissions are not acceptable. Submission after the deadline may be rejected by the State.

Equal substitutions that are proposed by the Contractor that are of lesser value must have a credit change order attached with the submittal (See Article 4 of the General Conditions). The State has the right to reject the submission if there is no agreement on the proposed credit. Contractor will be responsible to submit a specified item.

**4. Schedule:**

Confirm that the Contractor is aware of the number of calendar days listed in the contract documents for the project duration and that the Contractor's bid includes compliance with the schedule duration and completion dates. Particular attention shall be given to special working conditions, long lead items and projected delivery dates, etc. Review project milestones (if applicable). This could give an indication of Contractor performance, but not allow a rejection of the bid.

Review the submittal timeframes per the Contract documents. Ask the Contractor to identify what products will take over twenty-eight (28) calendar days to deliver from the point of submittal approval.

**5. Performance:**

Investigate the past performance of Contractor by contacting Architects and owners (generally three of each) that were listed in their DPMC pre-qualification package and other references that may have been provided. Inquire how the Contractor performed with workmanship, schedule, project management, change orders, cooperation, paper work, etc.

**6. Superintendent:**

Remind the Contractor that a full-time non-working superintendent is required per the General Conditions, who must be responsible to address Contract issues. (Article 4.3.2.).

**7. Letter of Recommendation:**

The Consultant shall prepare a Letter of Recommendation for contract award to the Contractor submitting the low responsible bid within three (3) calendar days from the post bid review meeting. The document shall contain the project title, DPMC project number, bid due date and expiration date of the proposal. It shall include a detailed narrative describing each post bid meeting agenda item identified above and a recommendation to award the contract to the apparent low bid Contractor based on the information obtained during that meeting. Describe any acceptance or rejection of Alternate pricing and Unit pricing.

Comment on any discussion with the Contractor that provides a sense of their understanding of the project and any special difficulties that they see, and how they might approach those problems.

Attach all minutes of the Post bid meeting and any other relevant correspondence with the Letter of Recommendation and submit them to the Project Manager.

## **8. Conformed Drawings:**

The Consultant shall prepare and distribute two (2) sets of drawings stamped “Conformed Drawings” to the Project Manager that reflect all Bulletins and/or required changes, additions, and deletions to the pertinent drawings within twenty-eight (28) calendar days of the construction contract award date.

Any changes made in Bulletins, meeting minutes, post bid review requirements shall also be reflected in the specification.

## **E. DIRECTOR’S HEARING**

The Consultant must attend any Director’s hearing(s) if a Contractor submits a bid protest. The Consultant shall be present to interpret the intent of the design documents and answer any technical questions that may result from the meeting. In cases where the bid protest is upheld, the Consultant shall submit a new “Letter of Recommendation” for contract award. The hours required to attend the potential hearings and to document the findings shall be estimated by the Consultant and the costs will be included in the base bid of their fee proposal.

## **F. CONSTRUCTION JOB MEETINGS, SCHEDULES, LOGS**

The Consultant shall conduct all of the construction job meetings in accordance with the procedures identified in the A/E manual and those listed below.

### **1. Meetings:**

The Consultant and Sub-Consultant(s) shall attend the pre-construction meeting and all construction job meetings during the construction phase of the project. The Consultant shall chair the meeting, transcribe and distribute the job-meeting minutes for every job meeting to all attendees and to those persons specified to be on the distribution list by the Project Manager. The Agenda for the meeting shall include, but not be limited to the items identified in the Procedures for Architects and Engineers Manual, Section 10.3.1, entitled “Agenda.”

Also, the Consultant is responsible for the preparation and distribution of minutes within five (5) calendar days of the meeting. The format to be used for the minutes shall comply with those identified in the “Procedures for Architects and Engineers Manual,” Section 10.3.4, entitled, “Format of Minutes.” All meeting minutes are to have an “action” column indicating the party that is responsible for the action indicated and a deadline to accomplish the assigned task. These tasks must be reviewed at each job progress meeting until it is completed and the completion date of each task shall be noted in the minutes of the meeting following the task completion.

### **2. Schedules:**

The Consultant; with the input from the Client Agency Representative and Project Manager, shall review and recommend approval of the project construction schedule prepared by the Contractor. The schedule shall identify all necessary start and completion dates of construction, construction activities, submittal process activities, material deliveries and other milestones required to give a complete review of the project.

The Consultant shall record any schedule delays, the party responsible for the delay, the schedule activity affected, and the original and new date for reference.

The Consultant shall ensure that the Contractor provides a two (2) week “look ahead” construction schedule based upon the current monthly updated schedule as approved at the bi-weekly job meetings and that identifies the daily planned activities for that period. This Contractor requirement must also be included in Division 1 of the specification for reference.

### **3. Submittal Log:**

The Consultant shall develop and implement a submittal log that will identify all of the required project submittals as identified in the design specification. The dates of submission shall be determined and approved by all affected parties during the pre-construction meeting.

Examples of the submissions to be reviewed and approved by the Consultant and Sub-Consultant (if required) include: shop drawings, change orders, Request for Information (RFI), equipment and material catalog cuts, spec sheets, product data sheets, MSDS material safety data sheets, specification procedures, color charts, material samples, mock-ups, etc. The submittal review process must be conducted at each job progress meeting and shall include the Consultant, Sub-Consultant, Contractor, Project Manager, and designated representatives of the Client Agency.

The Consultant shall provide an updated submittal log at each job meeting that highlights all of the required submissions that are behind schedule during the construction phase of the project.

## **G. CONSTRUCTION SITE ADMINISTRATION SERVICES**

The Consultant and Sub-Consultant(s) shall provide construction site administration services during the duration of the project. The Consultant and Sub-Consultant(s) do not necessarily have to be on site concurrently if there are no critical activities taking place that require the Sub-Consultant’s participation.

The services required shall include, but not be limited to; field observations sufficient to verify the quality and progress of construction work, conformance and compliance with the contract documents, and to attend/chair meetings as may be required by the Project Manager to resolve special issues.

A field observation visit may be conducted in conjunction with regularly scheduled construction job meetings, depending on the progress of work. The Consultant and their Sub-Consultant(s) shall submit a field observation report for each site inspection to the Project Manager. Also, they shall



conduct inspections during major construction activities including, but not limited to the following examples: code inspections, final testing of systems, achievement of each major milestone required on the construction schedule, and requests from the Project Manager. The assignment of a full time on-site inspector does not relieve the Consultant of their site visit obligation.

The Consultant shall refer to Section XIV. Contract Deliverables of this Scope of Work subsection entitled "Construction Phase" to determine the extent of services and deliverables required during this phase of the project.

## **H. FULL TIME INSPECTION**

### **1.) Documentation:**

A full time qualified inspector shall be provided by the Consultant during all repair work being done at the parking garage. This inspector shall prepare daily detailed reports on the progress of construction, records of the manufacturer's product engineering data being used, certifications and affidavits from an independent testing agency certifying that all materials furnished comply with the design specifications, and daily photographs of the work being done.

Weather conditions, temperatures, humidity levels, winds, etc. shall be recorded on a daily basis and a description of planned protective measures for cold and hot weather concrete repairs and prevention of premature surface drying and curing times shall be included in the report when applicable.

### **2.) Report:**

The inspector shall provide the Project Manager with copies of these reports and photographs on a weekly basis. The Consultant's proposal shall indicate the specific professional qualifications of the individual and the estimated cost for these services during construction.

## **I. SUB-CONSULTANT PARTICIPATION**

It is the responsibility of the Consultant to ensure that they have provided adequate hours and/or time allotted in their technical proposal so that their Sub-Consultants may participate in all appropriate phases and activities of this project or whenever requested by the Project Manager. This includes the pre-proposal site visit and the various design meetings and construction job meetings, site visits, and close-out activities described in this Scope of Work. Field observation reports and/or meeting minutes are required to be submitted to the Project Manager within seven (7) calendar days of the site visit or meeting. All costs associated with such services shall be included in the base bid of the Consultant's fee proposal.

## **J. DRAWINGS**

### **1. Shop Drawings:**

Each Contractor shall review the specifications and determine the numbers and nature of each shop drawing submittal. Five (5) sets of the documents shall be submitted with reference made to the appropriate section of the specification. The Consultant shall review the Contractor's shop drawing submissions for conformity with the construction documents within fourteen (14) calendar days of receipt. The Consultant shall return each shop drawing submittal stamped with the appropriate action, i.e. "Approved", "Approved as Noted", "Approved as Noted Resubmit for Records", "Rejected", etc.

## **2. As-Built & Record Set Drawings:**

The Contractor(s) shall keep the contract drawings up-to-date at all times during construction and upon completion of the project, submit their AS-BUILT drawings to the Consultant with the Contractor(s) certification as to the accuracy of the information prior to final payment. All AS-BUILT drawings submitted shall be entitled AS-BUILT above the title block and dated.

The Consultant shall review the Contractor(s)' AS-BUILT drawings at each job progress meeting to ensure that they are up-to-date. Any deficiencies shall be noted in the progress meeting minutes.

The Consultant shall acknowledge acceptance of the AS-BUILT drawings by signing a transmittal indicating they have reviewed them and that they reflect the AS-BUILT conditions as they exist.

Upon receipt of the AS-BUILT drawings from the Contractor(s), The Consultant shall obtain the original mylars from DPMC and transfer the AS-BUILT conditions to the original full sized signed mylars to reflect RECORD conditions within twenty-eight (28) calendar days of receipt of the AS-BUILT information.

The Consultant shall note the following statement on the original RECORD-SET drawings. "The AS-BUILT information added to this drawing(s) has been supplied by the Contractor(s). The (Architect) (Engineer) does not assume the responsibility for its accuracy other than conformity with the design concept and general adequacy of the AS-BUILT information to the best of the (Architect's) (Engineer's) knowledge."

Upon completion, The Consultant shall deliver the RECORD-SET original mylars to DPMC who will acknowledge their receipt in writing. This hard copy set of drawings and three (3) sets of current release AUTO CAD discs shall be submitted to DPMC and the discs shall contain all AS-BUILT drawings in both ".dwg" (native file format for AUTO CAD) and ".tif" (Tagged Image File) file formats.

## **K. CONSTRUCTION DEFICIENCY LIST**

The Consultant shall prepare, maintain and continuously distribute an on-going deficiency list to the Contractor, Project Manager, and Client Agency Representative during the construction phase of the project. This list shall be separate correspondence from the field observation reports and shall not be considered as a punch list.

**L. INSPECTIONS: SUBSTANTIAL & FINAL COMPLETION**

The Consultant and their Sub-Consultant(s) accompanied by the Project Manager, Code Inspection Group, Client Agency Representative and Contractor shall conduct site inspections to determine the dates of substantial and final completion. The Project Manager will issue the only recognized official notice of substantial completion. The Consultant shall prepare and distribute the coordinated punch list, written warranties and other related DPMC forms and documents, supplied by the Contractor, to the Project Manager for review and certification of final contract acceptance.

If applicable, the punch list shall include a list of attic stock and spare parts.

**M. CLOSE-OUT DOCUMENTS**

The Consultant shall review all project close-out documents as submitted by the Contractors to ensure that they comply with the requirements listed in the “Procedure for Architects and Engineers’ Manual.” The Consultant shall forward the package to the Project Manager within twenty-eight (28) calendar days from the date the Certificate of Occupancy/Certificate of Approval is issued. The Consultant shall also submit a letter certifying that the project was completed in accordance with the contract documents, etc.

**N. CLOSE-OUT ACTIVITY TIME**

The Consultant shall provide all activities and deliverables associated with the “Close-Out Phase” of this project as part of their Lump Sum base bid. The Consultant and/or Sub-Consultant(s) may not use this time for additional job meetings or extended administrative services during the Construction Phase of the project.

**O. TESTING, TRAINING, MANUALS, AND ATTIC STOCK**

The Consultant shall ensure that all equipment testing, training sessions and equipment manuals required for this project comply with the requirements identified below.

**1. Testing:**

All equipment and product testing conducted during the course of construction is the responsibility of the Contractor. However, the Consultant shall ensure the testing procedures comply with manufacturers recommendations. The Consultant shall review the final test reports and provide a written recommendation of the acceptance/rejection of the material, products or equipment tested within fourteen (14) calendar days of receipt of the report.

**2. Training:**

The Consultant shall include in the specification that the Contractor shall schedule and coordinate all equipment training with the Project Manager and Client Agency representatives. It shall state that the Contractor shall submit the Operation and Maintenance (O&M) manuals, training plan contents, and training durations to the Consultant, Project Manager and Client Agency Representative for review and approval prior to the training session.

All costs associated with the training sessions shall be borne by the Contractor installing the equipment. A signed letter shall be prepared stating when the training was completed and must be accompanied with the training session sign-in sheet as part of the project close-out package.

### **3. Operation & Maintenance Manuals:**

The Consultant shall coordinate and review the preparation and issuance of the equipment manuals provided by the Contractor(s) ensuring that they contain the operating procedures, maintenance procedures and frequency, cut sheets, parts lists, warranties, guarantees, and detailed drawings for all equipment installed at the facility.

A troubleshooting guide shall be included that lists problems that may arise, possible causes with solutions, and criteria for deciding when equipment shall be repaired and when it must be replaced.

Include a list of the manufacturer's recommended spare parts for all equipment being supplied for this project.

The Consultant shall ensure that the training session is videotaped by the Contractor. A transmittal copy must be presented to the Project Manager who will forward the document to the Client Agency for future reference.

A list of names, addresses and telephone numbers of the Contractors involved in the installations and firms capable of performing services for each mechanical item shall be included. The content of the manuals shall be reviewed and approved by the Project Manager and Client Agency Representative.

The Consultant shall include in the specification that the Contractor must provide a minimum of ten (10) "throwaway" copies of the manual for use at the training seminar and seven (7) hardbound copies as part of the project close-out package.

### **4. Attic Stock:**

The Consultant shall determine and recommend whether "attic stock" should be included for all aspects of the project. If required, the Consultant shall specify attic stock items to be included in the project.

Prior to project close-out, the Consultant must prepare a comprehensive listing of all items for delivery by the Contractor to the Owner and in accordance with the appropriate specification/plan section. Items shall include, but not be limited to: training sessions, O&M manuals, as-built drawings, itemized attic stock requirements, and manufacturer guarantees/warranties.

## **P. CHANGE ORDERS**

The Consultant shall review and process all change orders in accordance with the contract documents and procedures described below.

### **1. Consultant:**

The Consultant shall prepare a detailed request for Change Order including a detailed description of the change(s) along with appropriate drawings, specifications, and related documentation and submit the information to the Contractor for the change order request submission. This will require the use of the current DPMC 9b form.

### **2. Contractor:**

The Contractor shall submit a DPMC 9b Change Order Request form to the Project Manager within twenty (20) calendar days after receiving the Change Order from the Consultant. The document shall identify the changed work in a manner that will allow a clear understanding of the necessity for the change. Copies of the original design drawings, sketches, etc. and specification pages shall be highlighted to clarify and show entitlement to the Change Order.

Copies shall be provided of job minutes or correspondence with all relative information highlighted to show the origin of the Change Order. Supplementary drawings from the Consultant shall be included if applicable that indicate the manner to be used to complete the changed work. A detailed breakdown of all costs associated with the change, i.e. material, labor, equipment, overhead, Sub-Contractor work, profit and bond, and certification of increased bond shall be provided.

If the Change Order will impact the time of the project, the Contractor shall include a request for an extension of time. This request shall include a copy of the original approved project schedule and a proposed revised schedule that reflects the impact on the project completion date. Documentation to account for the added time requested shall be included to support entitlement of the request such as additional work, weather, other Contractors, etc. This documentation shall contain dates, weather data and all other relative information.

### **3. Recommendation for Award:**

The Consultant shall evaluate the reason for the change in work and provide a detailed written recommendation for approval or disapproval of the Change Order Request including backup documentation of costs in CSI format and all other considerations to substantiate that decision.

#### **4. Code Review:**

The Consultant shall determine if the Change Order request will require Code review and shall submit six (6) sets of signed and sealed modified drawings and specifications to the DPMC Plan & Code Review Unit for approval, if required. The Consultant must also determine and produce a permit amendment request if required.

#### **5. Cost Estimate:**

The Consultant shall provide a detailed cost estimate of the proposed Change Order Request, as submitted by the Contractor, in CSI format (2004 Edition) for all appropriate divisions and subdivisions using a recognized estimating formula. The estimate shall then be compared with that of the Contractor's estimate. If any line item in the Consultant's estimate is lower than the corresponding line item in the Contractor's estimate, the Consultant in conjunction with the Project Manager is to contact the Contractor by telephone and negotiate the cost differences. The Consultant shall document the negotiated agreement on the Change Order Request form. If the Contractor's total dollar value changes based on the negotiations, the Consultant shall identify the changes on the Change Order Request form accordingly.

When recommending approval or disapproval of the change order, the Consultant shall be required to prepare and process a Change Order package that contains at a minimum the following documents:

- DPMC 9b Change Order Request
- DPMC 10 Consultant's Evaluation of Contractor's Change Order Request
- Consultant's Independent Detailed Cost Estimate
- Notes of Negotiations

#### **6. Time Extension:**

When a Change Order Request is submitted with both cost and time factors, the Consultant's independent cost estimate is to take into consideration time factors associated with the changed work. The Consultant is to compare their time element with that of the Contractor's time request and if there is a significant difference, the Consultant in conjunction with the Project Manager is to contact the Contractor by telephone and negotiate the difference.

When a Change Order Request is submitted for time only, the Consultant is to do an independent evaluation of the time extension request using a recognized scheduling formula.

Requests for extension of contract time must be done in accordance with the General Conditions Section 14.2.2.

#### **7. Submission:**

The Consultant shall complete all of the DPMC Change Order Request forms provided and submit a completed package to the Project Manager with all appropriate backup documentation within seven (7) calendar days from receipt of the Contractor's change order request. The Consultant shall resubmit the package at no cost to the State if the change order package contents are deemed insufficient by the Project Manager.

**8. Meetings:**

The Consultant shall attend and actively participate at all administrative hearings or settlement conferences as may be called by Project Manager in connection with such Change Orders and provide minutes of those meetings to the Project Manager for distribution.

**9. Consultant Fee:**

All costs associated with the potential Contractor Change Order Requests shall be anticipated by the Consultant and included in the base bid of their fee proposal.  
If the Client Agency Representative requests a scope change; and it is approved by the Project Manager, the Consultant may be entitled to be reimbursed through an amendment and in accordance with the requirements stated in paragraph 10.01 of this Scope of Work.

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## **IX. PERMITS & APPROVALS**

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**A. REGULATORY AGENCY PERMITS**

The Consultant shall comply with the following guidelines to ensure that all required permits, certificates, and approvals required by State regulatory agencies are obtained for this project.

**1. NJ Uniform Construction Code Permit:**

The Consultant shall complete the NJUCC permit application and all applicable technical sub-code sections with all technical site data listed. The Agent section of the application and certification section of the building sub-code section shall be signed. These documents shall be forwarded to the Project Manager who will send them to the Department of Community Affairs (DCA) and all permit application costs will be paid by DPMC from encumbered funds for the project.

The Consultant may obtain access and copies of all NJUCC Building, Fire, Plumbing, Electrical and Elevator permit applications at the following website: [www.nj.gov/dca/codes](http://www.nj.gov/dca/codes)

The project construction documents must comply with the latest adopted edition of the NJ Uniform Construction Code that is in effect at the Final Design Phase of this project.

All other required project permits shall be obtained and paid for by the Consultant in accordance with the procedures described in paragraph 2. below.

## **2. Other Regulatory Agency Permits, Certificates, and Approvals:**

The Consultant shall identify and obtain all other State Regulatory Agency permits, certificates, and approvals that will govern and affect the work described in this Scope of Work. An itemized list of these permits, certificates, and approvals shall be included with the Consultant's Technical Proposal and the total amount of the application fees should be entered in the Fee Proposal line item entitled, "**Permit Fee Allowance.**" See Section XIV. 6.4.8 for a preliminary list of Regulatory Agency approvals.

The Consultant may refer to the Division of Property Management and Construction "Procedures for Architects and Engineers Manual", Section 6.4.8, which presents a compendium of State permits, certificates, and approvals that may be required for this project.

The Consultant shall determine the appropriate phase of the project to submit the permit application(s) in order to meet the approved project milestone dates.

Where reference to an established industry standard is made, it shall be understood to mean the most recent edition of the standard unless otherwise noted. If an industry standard is found to be revoked, or should the standard have undergone substantial change or revision from the time that the Scope of Work was developed, the Consultant shall comply with the most recent edition of the standard.

## **3. Prior Approval Certification Letters:**

The issuance of a construction permit for this project may be contingent upon acquiring various prior approvals as defined by NJAC 5:23-1.4. It is the Consultant's responsibility to determine which prior approvals, if any, are required. The Consultant shall submit a general certification letter to the DPMC Plan & Code Review Unit Manager during the Permit Phase of this project that certifies all required prior approvals have been obtained.

In addition to the general certification letter discussed above, the following specific prior approval certification letters, where applicable, shall be submitted by the Consultant to the DPMC Plan & Code Review Unit Manager: Soil Erosion & Sediment Control, Water & Sewer Treatment Works Approval, Coastal Areas Facilities Review, Compliance of Underground Storage Tank Systems with NJAC 7:14 b, Pinelands Review, Compliance of Abandoned Wells with NJAC 7:9-9, Certification that all utilities have been disconnected from structures to be demolished, Board of Health Approval for Potable Water Wells, Health Department Approval for Septic Systems. It shall be noted that in accordance with NJAC 5:23-2.15(a)5, a permit cannot be issued until the letter(s) of certification is received.



**B. BARRIER FREE REQUIREMENTS**

The Consultant, in cooperation with the Client Agency Representative, shall assure that this project complies with the NJUCC Barrier Free Sub code where applicable.

**C. STATE INSURANCE APPROVAL**

The Consultant shall respond in writing to the FM Global Insurance Underwriter plan review comments through the DPMC Plan & Code Review Unit Manager as applicable. The Consultant shall review all the comments and modify the documents while adhering to the project's SOW requirements, State code requirements, schedule, budget, and Consultant fee.

**D. PUBLIC EMPLOYEES OCCUPATIONAL SAFETY & HEALTH PROGRAM**

A paragraph shall be included in the design documents, if applicable to this project that states:  
The Contractor shall comply with all the requirements stipulated in the Public Employees Occupational Safety & Health Program (PEOSHA) document, paragraph 12:100-13.5 entitled "Air quality during renovation and remodeling". The Contractor shall submit a plan demonstrating the measures to be utilized to confine the dust, debris, and air contaminants in the renovation or construction area of the project site to the Project Team prior to the start of construction.

The link to the document is: <http://www.state.nj.us/health/eoh/peoshweb/iaqstd.pdf>

**E. MULTI-BUILDING OR MULTI-SITE PERMITS**

A project that involves many buildings and/or sites requires that a separate permit shall be issued for each building or site. The Consultant must determine the construction cost estimate for *each* building and/or site location and submit that amount where indicated on the permit application.

**F. PERMIT MEETINGS**

The Consultant shall attend and chair all meetings with Permitting Agencies necessary to explain and obtain the required permits.

**G. MANDATORY NOTIFICATIONS**

The Consultant shall include language in Division 1 of the specification that states the Contractor shall assure compliance with the New Jersey "One Call" Program (1-800-272-1000) if any excavation is to occur at the project site.

The One Call Program is known as the New Jersey Underground Facility Protection Act, N.J.S.A. 48:2-73 through N.J.S.A. 48:2-91, and N.J.A.C. 14:2-1.1 through N.J.A.C. 14:2-6.4.

## **H. CONSTRUCTION TRAILER PERMITS**

If construction trailers are required for the project then the Consultant shall include language in the Supplemental General Conditions that states the Contractor(s) shall be responsible to obtain and pay for each construction trailer permit directly from the Department of Community Affairs. (General Contractor for Single Bid-Lump Sum All Trades contract, and each Contractor for Separate Bids & Single Bid contract).

DCA will allow a single permit application to cover more than one trailer per Contractor provided the building, plumbing, and electrical technical sub-code sections, as applicable, specify the correct numbers and costs. The trailers will not require a plan review.

DCA will inspect each construction trailer and issue a Certificate of Occupancy (CO) separate from the main building construction.

Storage trailers with no utility connections are exempt from this requirement.

## **I. SPECIAL INSPECTIONS**

In accordance with the requirements of the New Jersey Uniform Construction Code, Bulletin 03-5 and as clarified further by the Department of Community Affairs, the Consultant shall be responsible for the coordination of all special inspections during the construction phase of the project.

### **1. Definition:**

Special inspections are defined as an independent verification by a qualified person (special Inspector) rendered to the code official for **Class I buildings only**. The special inspector is to be independent from the Contractor and responsible to the building owner or owner's agent so that there is no possible conflict of interest.

### **2. Responsibilities:**

The Consultant shall submit with the permit application, a list of special inspections and the firm(s) that will be responsible to carry out the inspections required for the project. The list shall be a separate document, on letter head, signed and sealed.

### **3. Special Inspections:**

The following special inspections, as applicable to this project, shall be performed in accordance with Chapter 17 of the International Building Code, New Jersey Edition, as defined below.

- Steel construction, in accordance with Section 1704.3.
- Concrete construction, in accordance with Section 1704.4.

- Masonry construction, in accordance with Section 1704.5.
- Soils, in accordance with Section 1704.7.
- Pile foundations, in accordance with Section 1704.8.
- Seismic resistance for Design Category D buildings, in accordance with Section 1707.
- Structural testing for isolation damping systems in seismic Design Category D buildings, in accordance with Section 1708.
- A quality assurance plan for seismic resistance of seismic Design Category D buildings, in accordance with Sections 1705.1 and 1705.2.

Special inspectors shall be licensed in accordance with the requirements in the New Jersey Uniform Construction Code.

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## **X. GENERAL REQUIREMENTS**

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### **A. SCOPE CHANGES**

The Consultant must request any changes to this Scope of Work in writing. An approved DPMC 9d Consultant Amendment Request form reflecting authorized scope changes must be received by the Consultant prior to undertaking any additional work. The DPMC 9d form must be approved and signed by the Director of DPMC and written authorization issued from the Project Manager prior to any work being performed by the Consultant. Any work performed without the executed DPMC 9d form is done at the Consultant's own financial risk.

### **B. ERRORS AND OMISSIONS**

The errors and omissions curve and the corresponding sections of the "Procedures for Architects and Engineers Manual" are eliminated. All claims for errors and omissions will be pursued by the State on an individual basis and resolved during the close-out phase of the project. The State will review each error or omission with the Consultant and determine the actual amount of damages, if any, resulting from each negligent act, error or omission.

### **C. ENERGY INCENTIVE PROGRAM**

The Consultant shall review the Program Overview described on the NJ Smart Start Buildings website at: <http://www.njsmartstartbuildings.com/> to determine if any proposed upgrades to the mechanical and/or electrical equipment and systems for this project will qualify for the "New Jersey Smart Start Building Energy Incentive Program".

The Consultant shall be responsible to complete the Smart Start Registration Form and the Application Forms, provide any applicable worksheets, manufacturer's specification sheets, calculations, attend

meetings, and participate in all activities with designated representatives of the Smart Start Program and Utility Companies to obtain the entitled financial incentives and rebates for this project. All costs associated with this work shall be estimated by the Consultant and the amount included in the base bid of their fee proposal.

#### **D. AIR POLLUTION FROM ARCHITECTURAL COATINGS**

The Consultant shall include in the appropriate sections of the specification the requirement that all architectural coatings applied at the project site shall comply with the NJDEP Administrative Code Title 7, Chapter 27, Subchapter 23, entitled "Prevention of Air Pollution from Architectural Coatings".

Architectural coatings shall mean materials applied for protective, decorative, or functional purposes to stationary structures or their appurtenances, portable buildings, pavements, or curbs. The coating materials include, but are not limited to, paints, varnishes, sealers, and stains.

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### **XI. ALLOWANCES**

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#### **A. PERMIT FEE ALLOWANCE**

The Consultant shall obtain and pay for all of the project permits in accordance with the guidelines identified below.

##### **1. Permits:**

The Consultant shall determine the various State permits, certificates, and approvals required to complete this project.

##### **2. Permit Costs:**

The Consultant shall determine the application fee costs for all of the required project permits, certificates, and approvals (excluding the NJ Uniform Construction Code permit) and include that amount in their fee proposal line item entitled "**Permit Fee Allowance**". A breakdown of each permit and application fee shall be attached to the fee proposal for reference.

NOTE: The NJ Uniform Construction Code permit is excluded since it is obtained and paid for by DPMC.

##### **3. Applications:**

The Consultant shall fill out and submit all permit applications to the appropriate permitting authorities and the costs shall be paid from the Consultant's permit fee allowance provided. A copy of

the application(s) and the original permit(s) obtained by the Consultant shall be given to the Project Manager for distribution during construction.

#### **4. Consultant Fee:**

The Consultant shall determine what is required to complete and submit the permit applications, obtain supporting documentation, attend meetings, etc., and include the total cost in the base bid of their fee proposal under the "Permit Phase" column.

Any funds remaining in the permit allowance account will be returned to the State at the close of the project.

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## **XII. SUBMITTAL REQUIREMENTS**

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### **A. CONTRACT DELIVERABLES**

All submissions shall include the Contract Deliverables identified in Section XIV of this Scope of Work and described in the DPMC Procedures for Architects and Engineers Manual.

### **B. CATALOG CUTS**

The Consultant shall provide catalog cuts as required by the DPMC Plan & Code Review Unit during the design document review submissions. Examples of catalog cuts include, but are not limited to: mechanical equipment, hardware devices, plumbing fixtures, fire suppression and alarm components, specialized building materials, electrical devices, etc.

### **C. PROJECT DOCUMENT BOOKLET**

The Consultant shall submit all of the required Contract Deliverables to the Project Manager at the completion of each phase of the project. All reports, meeting minutes, plan review comments, project schedule, cost estimate in CSI format (2004 Edition), correspondence, calculations, and other appropriate items identified on the Submission Checklist form provided in the A/E Manual shall be presented in an 8½" x 11" bound "booklet" format.

### **D. DESIGN DOCUMENT CHANGES**

Any corrections, additions, or omissions made to the submitted drawings and specifications at the Permit Phase of the project must be submitted to DPMC Plan & Code Review Unit as a complete document. Corrected pages or drawings may not be submitted separately unless the Consultant inserts the changed page or drawing in the original documents. No Addendums or Bulletins will be accepted as a substitution to the original specification page or drawing.

**PROJECT NAME: Capitol Complex Parking Garage Repairs**  
**PROJECT LOCATION: NJ State House**  
**PROJECT NO: A1123-00**  
**DATE: August 11, 2011**

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## **E. SINGLE-PRIME CONTRACT**

All references to “separate contracts” in the Procedures for Architects and Engineers Manual, Chapter 8, shall be deleted since this project will be advertised as a “Single Bid” (Lump Sum All Trades) contract. The single prime Contractor will be responsible for all work identified in the drawings and specifications.

The drawings shall have the required prefix designations and the specification sections shall have the color codes as specified for each trade in the DPMC Procedure for Architects and Engineers Manual.

The Consultant must still develop the Construction Cost Estimate (CCE) for each trade and the amount shall be included on the DPMC-38 Project Cost Analysis form where indicated. This document shall be submitted at each design phase of the project and updated immediately prior to the advertisement to bid.

PROJECT NAME: Capitol Complex Parking Garage Repairs  
PROJECT LOCATION: NJ State House  
PROJECT NO: A1123-00  
DATE: August 11, 2011

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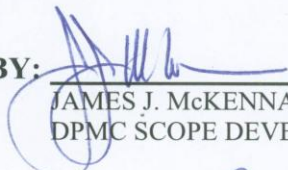
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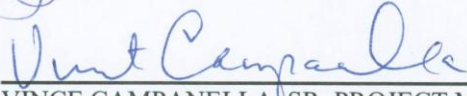
### XIII. SOW SIGNATURE APPROVAL SHEET

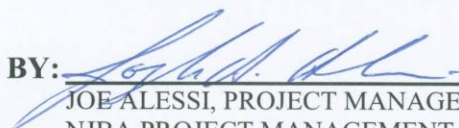
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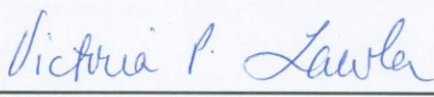
This Scope of Work shall not be considered a valid document unless all signatures appear in each designated area below.

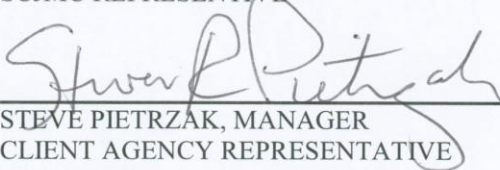
The Client Agency approval signature on this page indicates that they have reviewed the design criteria and construction schedule described in this project Scope of Work and verifies that the work will not conflict with the existing or future construction activities of other projects at the site.

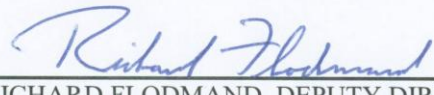
SOW PREPARED BY:  8/11/11  
JAMES J. McKENNA, MANAGER  
DPMC SCOPE DEVELOPMENT UNIT DATE

SOW APPROVED BY:  8/15/11  
VINCE CAMPANELLA, SR. PROJECT MANAGER DATE  
NJBA PROJECT MANAGEMENT GROUP

SOW APPROVED BY:  8/16/11  
JOE ALESSI, PROJECT MANAGER DATE  
NJBA PROJECT MANAGEMENT GROUP

SOW APPROVED BY:  8/30/11  
VICTORIA P. LAWLER DATE  
SCJMC REPRESENTATIVE

SOW APPROVED BY:  9-13-11  
STEVE PIETRZAK, MANAGER DATE  
CLIENT AGENCY REPRESENTATIVE

SOW APPROVED BY:  9/19/11  
RICHARD FLODMAND, DEPUTY DIRECTOR DATE  
DIV PROPERTY MGT & CONSTRUCTION

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## **XIV.CONTRACT DELIVERABLES**

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The following is a listing of Contract Deliverables that are required at the completion of each phase of this project. The Consultant shall refer to the DPMC publication entitled, "Procedures for Architects and Engineers," Volumes I and II, 2<sup>nd</sup> Edition, dated January, 1991 to obtain a more detailed description of the deliverables required for each item listed below.

The numbering system used in this "Contract Deliverables" section of the scope of work corresponds to the numbering system used in the "Procedures for Architects and Engineers" manual and some may have been deleted if they do not apply to this project.

### **DESIGN DEVELOPMENT PHASE: 50% Complete Design Documents (Minimum)**

#### **7.1 Project Schedule (Update Bar Chart Schedule)**

#### **7.2 Meetings & Minutes (Minutes within 5 calender days of meeting)**

#### **7.3 Correspondence**

#### **7.4 Submission Requirements**

7.4.1 A/E Statement of Site Visit, As-Built Drawing Verification (if available)

7.4.8 Regulatory Agency Approvals (See Section 6.4.8 for listing)

7.4.8.2 NJ Department of Community Affairs

(a) UCC Permit for Building Construction

7.4.10 Drawings: 6 sets

Cover Sheet (See A/E Manual for format)

Site Plan

Garage Floor Plans

Elevations

Sections/Details

Structural Repair Drawings & Details

7.4.11 Specifications: 6 sets (See A/E Manual for format, include Division 1 and edit to describe the administrative and general requirements of the project)

7.4.12 Current Working Estimate in CSI Format & Cost Analysis 38 Form

7.4.13 Bar Chart of Design and Construction Schedule

7.4.14 Oral Presentation of Submission to Project Team

7.4.15 SOW Compliance Statement

7.4.16 This Submission Checklist (See A/E Manual, Figure 6.4.16 for format)

7.4.17 Deliverables Submission in Booklet Form: 7 sets

#### **7.5 Approval**



7.5.1 Respond to Submission Comments

## **7.6 Submission Forms**

Figure 7.4.12 Current Working Estimate/Cost Analysis

Figure 7.4.16 Submission Checklist

## **FINAL DESIGN PHASE 100% Complete Construction Documents**

This Final Design Phase may require more than one submission based on the technical quality and code conformance of the design documents.

### **8.1 Schedule (Update Bar Chart Schedule)**

### **8.2 Meeting & Minutes (Minutes within 5 calendar days of meeting)**

### **8.3 Correspondence**

### **8.4 Submission Requirements**

8.4.1 A/E Statement of Site Visit

8.4.8 Regulatory Agency Approvals (Include itemized list specific to this project)

8.4.10 Drawings: 6 sets

8.4.11 Specifications: 6 sets

8.4.12 Current Working Estimate in CSI Format & Cost Analysis 38 Form

8.4.13 Bar Chart of Design and Construction Schedule

8.4.14 Oral Presentation of this Submission to Project Team

8.4.15 Plan Review/SOW Compliance Statement

8.4.16 This Submission Checklist

8.4.17 Deliverables Submission in Booklet Form: 7 sets

### **8.5 Approvals**

8.5.1 Respond to Submission Comments

## **PERMIT APPLICATION PHASE**

This Permit Application Phase should not include any additional design issues. Design documents shall be 100% complete at the Final Design Phase.

### **8.6 Permit Application Submission Requirements**

- 8.6.1 - 8.6.7: If all of the deliverables of these sections have been previously submitted to DPMC and approved there are no further deliverables due at this time
- 8.6.8 Regulatory Agency Approvals
  - (a) UCC Permit Application & Technical Sub-codes completed by A/E
- 8.6.10 Signed and Sealed Drawings: 6 sets
- 8.6.11 Signed and Sealed Specifications: 6 sets
- 8.6.12 Current Working Estimate/Cost Analysis
- 8.6.13 Bar Chart Schedule
- 8.6.14 Project Presentation (N/A this Project)
- 8.6.15 Plan Review/SOW Compliance Statement
- 8/6.16 Submission Checklist

## **8.7 Approvals**

## **8.8 Submission Forms**

- Figure 8.4.12 Current Working Estimate/Cost Analysis
- Figure 8.4.16 Submission Checklist (Final Review Phase)
- Figure 8.6.12-b Bid Proposal Form (Form DPMC -3)
- Figure 8.6.12-c Notice of Advertising (Form DPMC -31)
- Figure 8.6.16 Submission Checklist (Permit Phase)
- Figure 8.7 Bid Clearance Form (Form DPMC -601)

## **BIDDING AND CONTRACT AWARD**

### **9.0 Bidding Phase Requirements**

- 9.0.1 Original Drawings signed & sealed by A/E, one (1) set AUTOCAD Discs
- 9.0.2 One Unbound Specification Color Coded per A/E Manual Section 8.4.11
- 9.0.3 Bid Documents Checklist
- 9.0.4 Bid Proposal Form
- 9.0.5 Notice for Advertising

### **9.1 Chair Pre-Bid Conference/Mandatory Site Visit**

### **9.2 Prepare Bulletins**

### **9.3 Attend Bid Opening**

### **9.4 Recommendation for Contract Award**

- 9.4.1 Prepare Letter of Recommendation for Award & Cost Analysis
-

**9.5 Attend Pre-Construction Meeting**

**9.6 Submission Checklist**

**9.7 Submission Forms**

Figure 9.4.1 Cost Analysis

Figure 9.6 Submission Checklist

**CONSTRUCTION PHASE**

**10.1 Site Construction Administration**

**10.2 Pre-Construction Meeting**

**10.3 Construction Job Meetings**

10.3.1 Agenda: Schedule and Chair Construction Job Meetings

10.3.2 Minutes: Prepare and Distribute Minutes within 5 calendar days of meeting

10.3.3 Schedules; Approve Contractors' Schedule & Update

10.3.4 Minutes Format: Prepare Job Meeting Minutes in approved format, figure 10.3.4-a

**10.4 Correspondence**

**10.5 Prepare and Deliver Conformed Drawings**

**10.7 Approve Contractors Invoicing and Payment Process**

**10.8 Approve Contractors 12/13 Form for Subs, Samples and Materials**

**10.10 Approve Test Reports**

**10.11 Approve Shop Drawings**

**10.12 Construction Progress Schedule**

**10.13 Review & Recommend or Reject Change Orders**

10.13.1 Scope Changes

10.13.2 Construction Change Orders

10.13.3 Field Changes

**10.14 Construction Photographs**

## **10.15 Submit Field Observation Reports**

## **10.16 Submission Forms**

- Figure 10.3.4-a Job Meeting Format of Minutes
- Figure 10.3.4-b Field Report
- Figure 10.6 DPMC Insurance Form-24
- Figure 10.6-a Unit Schedule Breakdown
- Figure 10.6-b Monthly Estimate for Payment to Contractor DPMC 11-2
- Figure 10.6-c Monthly Estimate for Payment to Contractor DPMC 11-2A
- Figure 10.6-d Invoice DPMC 11
- Figure 10.6-e Prime Contractor Summary of Stored Materials DPMC 11-3
- Figure 10.6-f Agreement & Bill of Sale certificate for Stored Materials DPMC 3A
- Figure 10.7-a Approval Form for Subs, Samples & Materials DPMC 12
- Figure 10.7-b Request for Change Order DPMC 9b
- Figure 10.9 Transmittal Form DPMC 13
- Figure 10.10 Submission Checklist

## **PROJECT CLOSE-OUT PHASE**

### **11.1 Responsibilities: Plan, Schedule and Execute Close-Out Activities**

### **11.2 Commencement: Initiate Close-Out w/DPMC 20A Project Close-Out Form**

### **11.3 Develop Punch List & Inspection Reports**

### **11.4 Verify Correction of Punch List Items**

### **11.5 Determination of Substantial Completion**

### **11.6 Ensure Issuance of “Temporary Certificate of Occupancy or Approval”**

### **11.7 Initiation of Final Contract Acceptance Process**

### **11.8 Submission of Close-Out Documentation**

- 11.8.1 As-Built & Record Set Drawings, 3 sets AUTOCAD Discs Delivered to DPMC
- 11.8.2
  - (a) Warranties
  - (b) Guarantees
  - (c) Testing Reports
  - (f) Shop Drawings
  - (g) Letter of Contract Performance

**PROJECT NAME: Capitol Complex Parking Garage Repairs**  
**PROJECT LOCATION: NJ State House**  
**PROJECT NO: A1123-00**  
**DATE: August 11, 2011**

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11.8.3 Final Cost Analysis-Insurance Transfer DPMC 25  
11.8.4 This Submission Checklist

### **11.9 Final Payment**

11.9.1 Contractors Final Payment  
11.9.2 A/E Invoice and Close-Out Forms for Final Payment

### **11.10 Final Performance Evaluation of the A/E and the Contractors**

### **11.11 Ensure Issuance of a “Certificate of Occupancy or Approval”**

### **11.12 Submission Forms**

Figure 11.2 Project Close-Out Documentation List DPMC 20A  
Figure 11.3-a Certificate of Substantial Completion DPMC 20D  
Figure 11.3-b Final Acceptance of Consultant Contract DPMC 20C  
Figure 11.5 Request for Contract Transition Close-Out DPMC 20X  
Figure 11.7 Final Contract Acceptance Form DPMC 20  
Figure 11.8.3-a Final Cost Analysis  
Figure 11.8.3-b Insurance Transfer Form DPMC 25  
Figure 11.8.4 Submission Checklist

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## **XV. EXHIBITS**

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The attached exhibits in this section will include a sample project schedule, and any supporting documentation to assist the Consultant in the design of the project such as maps, drawings, photographs, floor plans, studies, reports, etc.

**END OF SCOPE OF WORK**

February 7, 1997  
Rev.: January 29, 2002

### Responsible Group Code Table

The codes below are used in the schedule field "GRP" that identifies the group responsible for the activity. The table consists of groups in the Division of Property Management & Construction (DPMC), as well as groups outside of the DPMC that have responsibility for specific activities on a project that could delay the project if not completed in the time specified. For reporting purposes, the groups within the DPMC have been defined to the supervisory level of management (i.e., third level of management, the level below the Associate Director) to identify the "functional group" responsible for the activity.

<u>CODE</u>	<u>DESCRIPTION</u>	<u>REPORTS TO ASSOCIATE DIRECTOR OF:</u>
CM	Contract Management Group	Contract Management
CA	Client Agency	N/A
CSP	Consultant Selection and Prequalification Group	Technical Services
A/E	Architect/Engineer	N/A
PR	Plan Review Group	Technical Services
CP	Construction Procurement	Planning & Administration
CON	Construction Contractor	N/A
FM	Financial Management Group	Planning & Administration
OEU	Office of Energy and Utility Management	N/A
PD	Project Development Group	Planning & Administration

**EXHIBIT 'A'**

Activity ID	Description	Rspn	Weeks
<b>&lt;PROJ&gt;</b>			
<b>Design</b>			
CV3001	Schedule/Conduct PreDesign/Project Kick-Off Mtg.	CM	
CV3020	Prepare Program Phase Submittal	AE	
CV3021	Distribute Program Submittal for Review	CM	
CV3027	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3022	Review & Approve Program Submittal	CA	
CV3023	Review & Approve Program Submittal	PR	
CV3024	Review & Approve Program Submittal	CM	
CV3025	Consolidate & Return Program Submittal Comments	CM	
CV3030	Prepare Schematic Phase Submittal	AE	
CV3031	Distribute Schematic Submittal for Review	CM	
CV3037	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3032	Review & Approve Schematic Submittal	CA	
CV3033	Review & Approve Schematic Submittal	PR	
CV3034	Review & Approve Schematic Submittal	CM	
CV3035	Consolidate & Return Schematic Submittal Comment	CM	
CV3040	Prepare Design Development Phase Submittal	AE	
CV3041	Distribute D. D. Submittal for Review	CM	
CV3047	Prepare & Submit Project Cost Analysis (DPMC-38)	CM	
CV3042	Review & Approve Design Development Submittal	CA	
CV3043	Review & Approve Design Development Submittal	PR	
CV3044	Review & Approve Design Development Submittal	CM	
CV3045	Consolidate & Return D. D. Submittal Comments	CM	
CV3050	Prepare Final Design Phase Submittal	AE	
CV3051	Distribute Final Design Submittal for Review	CM	
CV3052	Review & Approve Final Design Submittal	CA	
CV3053	Review & Approve Final Design Submittal	PR	
CV3054	Review Final Design Submittl for Constructability	OCS	

**NOTE:**  
Refer to section "IV Project Schedule" of the  
Scope of Work for contract phase durations.

DBCA - TEST

Bureau of Design & Construction Services  
Routine Project

Sheet 1 of 3

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# Exhibit "A"

Activity ID	Description	Respn	Weeks
CV3055	Review & Approve Final Design Submittal	CM	
CV3056	Consolidate & Return Final Design Comments	CM	
CV3060	Prepare & Submit Permit Application Documents	AE	
CV3068	Prepare & Submit Bidding Cost Analysis (DPMC-38)	CM	
<b>Plan-Review-Permit Acquisition</b>			
CV4001	Review Constr. Documents & Secure UCC Permit	PR	
CV4010	Provide Funding for Construction Contracts	CA	
CV4020	Secure Bid Clearance	CM	
<b>Advertise-Bid-Award</b>			
CV5001	Advertise Project & Bid Construction Contracts	CP	
CV5010	Open Construction Bids	CP	
CV5011	Evaluate Bids & Prep. Recommendation for Award	CM	
CV5012	Evaluate Bids & Prep. Recommendation for Award	AE	
CV5014	Complete Recommendation for Award	CP	
CV5020	Award Construction Contracts/Issue NTP	CP	
<b>Construction</b>			
CV6000	Project Construction Start/Issue NTP	CM	
CV6001	Contract Start/Contract Work (25%) Complete	CON	
CV6002	Preconstruction Meeting	CM	
CV6003	Begin Preconstruction Submittals	CON	
CV6004	Longest Lead Procurement Item Ordered	CON	
CV6005	Lead Time for Longest Lead Procurement Item	CON	
CV6006	Prepare & Submit Shop Drawings	CON	
CV6007	Complete Construction Submittals	CON	
CV6011	Roughing Work Start	CON	
CV6012	Perform Roughing Work	CON	
CV6010	Contract Work (50%+) Complete	CON	
CV6013	Longest Lead Procurement Item Delivered	CON	
CV6020	Contract Work (75%) Complete	CON	

**NOTE:**  
Refer to section "IV Project Schedule" of the  
Scope of Work for contract phase durations.

DBCA - TEST

Bureau of Design & Construction Services  
Routine Project

Sheet 2 of 3

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Activity ID	Description	Rspn	Weeks																				
CV6014	Roughing Work Complete	CON																					
CV6021	Interior Finishes Start	CON																					
CV6022	Install Interior Finishes	CON																					
CV6030	Contract Work to Substantial Completion	CON																					
CV6031	Substantial Completion Declared	CM																					
CV6075	Complete Deferred Punch List/Seasonal Activities	CON																					
CV6079	Project Construction Complete	CM																					
CV6080	Close Out Construction Contracts	CM																					
CV6089	Construction Contracts Complete	CM																					
CV6090	Close Out A/E Contract	CM																					
CV6092	Project Completion Declared	CM																					

Bureau of Design & Construction Services  
Routine Project

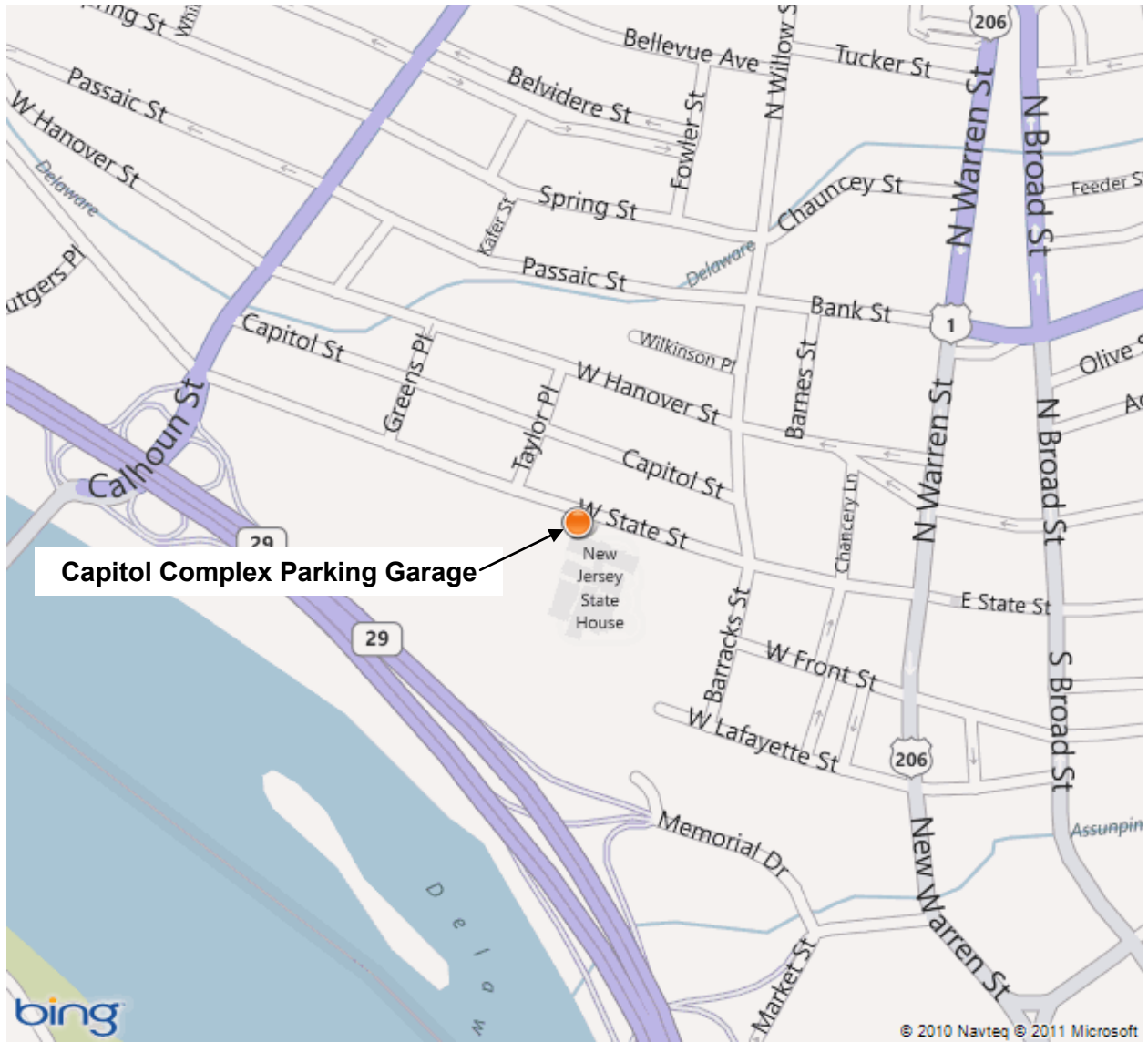
# Exhibit "A"

DBCA - TEST

**NOTE:**  
Refer to section "IV Project Schedule" of the  
Scope of Work for contract phase durations.

# Capitol Complex Parking Garage

165 West State Street  
Trenton, NJ



**EXHIBIT "B"**

State Street



**PARKING  
GARAGE  
NORTH**

F.F. @ EL. 27.0

**LOADING  
DOCK**

FL. @ EL.  
31.5

**PARKING  
GARAGE  
SOUTH**

F.F. @ EL. 15.8

**MECH.  
ROOM**

FL. @ EL.  
12.2

ROUTE 29

**Parking Garage Layout**

**EXHIBIT 'C'**

SECTION 01541

**BUILDING SECURITY AND CONTRACTOR USE OF THE PREMISIES**

*(Revised 12/05/06)*

**SAMPLE - TO BE MODIFIED FOR INDIVIDUAL PROJECTS**

**PART 1 GENERAL**

**1.1 REQUIREMENTS INCLUDED**

- A. Coordination, site access, parking, deliveries and storage
- B. Availability and use of utilities
- C. Contractor work areas, working conditions, and equipment storage regulations
- D. Noise and odor restrictions, material approvals and working hours
- E. Security issues
- F. Protection of interior finishes

The following items describe the allowed use of the N.J. State House and grounds by the contractor, the availability and use of utilities, contractor equipment storage regulations, noise and odor restrictions, security issues, parking restrictions, material deliveries, working hours and protection of interior finishes. This list shall not be considered all-inclusive and may be extended by the Project Engineer or DPMC. The content of this section shall not relieve the contractor from complying with the terms of the DPMC "Instructions To Bidders And General Conditions" and "Supplementary Instructions To Bidders And General Conditions" included in the project specifications.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

**3.1 COORDINATION, SITE ACCESS, PARKING, DELIVERIES, AND STORAGE**

- A. The contractor shall provide a verbal daily Progress Report to the Office of Legislative Services (OLS) staff, Building Manager and State Police identifying the construction work to be performed.
- B. It should be noted that other projects may be in progress concurrently with this project within the Capitol Complex area. Site access, deliveries, traffic control, parking, heavy equipment parking, material storage and trailer locations must be coordinated with the Project Manager, State Police and Building Manager.
- C. Demonstrations may be held in front of or adjacent to the State House or at other sites at the Capitol Complex. The contractor shall not block access to these areas.
- D. The public and building's tenants must have free and safe access to, from, and within all State Capitol Complex buildings including the parking garage at all times.

- E. Contractor access to the building's interiors will be limited to approved routes. Under absolutely NO circumstances will the contractor's personnel, materials or equipment gain access or use routes except as authorized herein. Routes may be modified by Building Management, OLS, the State Police or Project Manager as may be necessary.
- F. The Contractor must coordinate in advance with OLS, Building Management and the State Police regarding protection of facilities, equipment and people.

### **3.2 AVAILABILITY AND USE OF UTILITIES**

- A. Although use of the building elevators for the transportation of construction materials or equipment will NOT be allowed, elevator #1 in the State House Annex may be available for limited use by the contractor if needed. Approval of such use must be approved by the Building Manager, OLS and Project Manager.
- B. Electric and water are available at the site. The Building Manager and Project Manager will approve, in advance, specific usage.

### **3.3 CONTRACTOR WORK AREAS, WORKING CONDITIONS AND EQUIPMENT STORAGE REGULATIONS**

- A. The contractor shall not unreasonably encumber the facilities with its equipment or work to be performed. The contractor shall be responsible for clean up every day.
- B. The contractor shall, at all times during the progress of the work, keep the site free from the accumulation of all rubbish and debris caused by its performance. The contractor shall remove all equipment, tools, debris and rubbish from or related to its work to the satisfaction of the Building Manager, OLS and the Project Manager.
- C. The contractor shall adequately secure and protect its equipment, materials and vehicles. The State assumes no liability for any damage to, or theft of, the contractor's property. The contractor shall have the use of a designated area for storage and staging of construction materials and equipment. If outdoors, items stored in this area shall be screened from view by the public. The contractor shall install a six foot high fence with screening material to surround the area. The location of the area, type fence and screening material to be used shall be approved by the Project Engineer, Project Manager, the Building Manager and State Police. The contractor shall be responsible for adhering to security procedures outlined by the Building Manager and the State Police and any specific needs of the OLS.
- D. The contractor is responsible for all safety precautions for all of its employees and property while performing its services.
- E. The contractor shall strictly limit its employees' use of the facilities for lunch, smoking or rest time usage to only those areas designated by the Building Manager. Use of State telephones will not be allowed. Use of designated toilet facilities within the buildings shall be permitted. Smoking is not allowed inside any of the buildings within the Complex.

- F. The contractor shall, at all times, enforce strict discipline and good order among its employees and shall not employ any unfit person or any non-skilled person in the task assigned to him. The contractor shall supervise and direct the work using its best skill and attention.

The contractor shall employ a competent, full-time supervisor to appropriately supervise the work and protect people and the facilities. The contractor must maintain a person on the site who represents the firm and can make immediate decisions when required.

- G. The contractor agrees that upon request by the Project Manager, it will remove from services hereunder any of its employees who are incompetent, prone to tardiness, absenteeism or theft, are improper in conduct, or are not qualified or needed to perform the work assigned.
- H. The Project Engineer and Consultant, in cooperation with the contractor, Project Manager, State Police, OLS and Building Management representatives, shall develop a "Project Directory" which identifies key designated representatives who may make decisions. Phone and cell phone numbers and pagers must be identified for immediate problem resolution.
- I. If a construction dumpster is used by the contractor, it shall be placed in a location approved by the Building Manager, Project Manager and State Police. Any dumpster shall be properly secured during the project and promptly removed at the end of the project and emptied regularly so as not to allow trash to be spewn about the grounds or to cause odors.

### **3.4 NOISE AND ODOR RESTRICTIONS, MATERIAL APPROVALS AND WORKING HOURS**

- A. **The approved working hours for this project shall begin at am and shall be completed no later than pm Monday through Friday.**
- B. Consideration shall be given by the contractor regarding odors, adhesives, noise, etc. If the odors or noise are such that they may disturb the building tenants and/or public in any way, then such work shall be performed while the building is not occupied. This determination shall be at the sole discretion of the Project Manager.
- C. If construction work is performed adjacent to other State offices in full and continuous use during the course of the project, then the contractor shall coordinate all operations with the Project Manager, OLS and the Building Manager to minimize disturbances to the occupants of these offices. The playing of radios and other unnecessary noise will not be permitted.
- D. All material safety data sheets shall be submitted and approved by the Project Manager prior to use of the material.

### **3.5 SECURITY ISSUES**

- A. Prior to working on site, the contractor and his/her employees are subject to a security clearance by the State Police. The contractor and all employees must wear badges issued by the State Police and sign in and out each day.

### **3.6 PROTECTION OF INTERIOR FINISHES**

- A. Because of the historic nature of the State House , the contractor shall take extra care to avoid damage or soiling to any part of the facility. The contractor is responsible for all damages or destruction caused directly or indirectly by its performance to any part of the building or adjoining property. Any damage or destruction caused by the contractor or its employees will be repaired as the Building Manager, OLS and the Project Manager direct and to their satisfaction with all costs charged to the contractor. The costs may be deducted from any and all amounts due to the contractor.
- B. Because this project involve a building of historical significance which is on the State and National Historic Registers, the contractor shall take extra care to avoid damage or soiling to any part of the building or its finishes. Any of the contractor's employees found defacing, damaging or marring the building or its finishes shall be immediately removed by the contractor. The contractor shall be charged for all remedial work to restore the damaged area to its original condition to the satisfaction of the State.
- C. The contractor shall take all necessary steps to ensure adequate protection of all building furniture, equipment and building finishes, including but not limited to: floors, walls, windows, draperies, blinds, fan coil unit millwork, carpeting, doors and doorways. In this endeavor, all workers are to take precautions to protect rugs and floors. The contractor shall be charged for all remedial work to clean, repair and/or replace items damaged by the contractor to the satisfaction of the State.
- D. The contractor is responsible for the cost of cleanup of dust, dirt and stains caused by the work to the satisfaction of the Building Manager, OLS and the Project Manager. The contractor shall take all necessary precautions to keep dust, dirt and debris to a minimum within the construction area.

**END OF SECTION**

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# **Final Study Report**

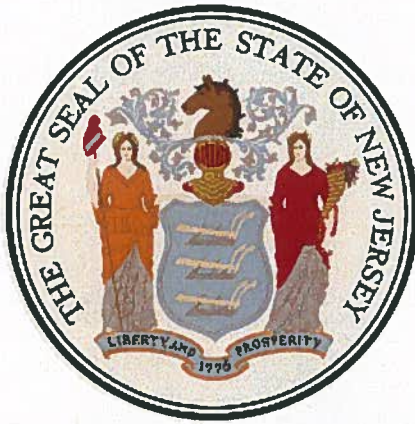
## **Flood Damage Assessment & Recommended Improvements Study**

NJ State House Garage  
Trenton, Mercer County, N.J.

**DPMC Project # A1013-00**

**STATE OF NEW JERSEY**

Honorable Jon S. Corzine, Governor



DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

A/E: **Miller-Remick Corporation**  
1010 Kings Highway South  
Building One – 1<sup>st</sup> Floor  
Cherry Hill, NJ 08034

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**John Lorenz, P.E.**  
PE # 061907

November 14, 2007

**EXHIBIT "E"**



November 14, 2007

Mr. Pasquale V. Papero  
Project Design Director  
State of New Jersey  
Department of Treasury  
DPMC Design and Construction  
20 West State Street, 3<sup>rd</sup> Floor  
P.O. Box 235  
Trenton, NJ 08625-0235

RE: Final Study Phase Report  
DPMC Project No. A1013-00: Flood Damage Assessment & Recommended Improvements Study  
State House Parking Garage

Dear Mr. Papero,

We have completed the garage "Flood Damage Assessment and Improvements Study". Our findings and recommendations are presented herein, and supported by the information presented in the Attachments to this report.

### **Introduction**

The State House Parking Garage in Trenton, New Jersey, built in 1994 serves the Capitol complex. Level 1 is below flood stage and has been adversely affected by three recent 50-year flood events occurring in January 1996, September 2004 and April 2005. These floods resulted in millions of dollars of restoration costs to the equipment and materials located in Level 1 areas noted as the mechanical equipment room, the three elevator mechanical rooms, parking area spaces and the parking entrance lobby. This investigation was prompted by both earlier reports of structural damage that need to be addressed and the interest in reducing the ongoing high cost of equipment flood damage prevention.

### **Executive Summary**

The general objectives of the Study were to:

1. Provide flood plain information in the form of a scaled topographic flood plain delineation map, flood elevation map cross-referenced to site landmarks and a scaled cross sectional profile of the riverbed at the project site.
2. Survey and investigate alternative locations for flood-prone equipment and systems, providing comparisons of advantages and drawbacks.
3. Investigate flood damage protection options to protect critical building components.
4. Conduct a structural investigation of the parking garage and recommend remediation measures. Identify the causes of the deficiencies noted in previous STV Inc. reports and studies.
5. Conduct a geotechnical investigation of the parking garage site and recommend remediation measures. Identify the causes of the deficiencies noted in previous STV Inc. reports and studies.
6. Provide cost estimates and proposed schedules for design and construction projects to implement the recommended remediation measures and alternatives.

Our findings and recommendations are summarized as follows:

- 1 Repair critical Garage column structural damages immediately.

- 2 --Fill selected areas of the garage subsurface with grout to minimize future settlement and enable the Garage to withstand floods safely. Perform this work as soon as possible, but not during cold weather when the mean temperature drops below 40°F.
- 3 Repair the minor Garage structural damages, replace worn components, and apply appropriate sealants and/or waterproofing to the floors during the next few years. These efforts are cost-effective and will more than pay for themselves in reduced maintenance costs.
- 4 The walls for the occupied spaces on the East End of the Garage were not built to withstand the hydrostatic pressure generated by a 100-year flood. The wall at Level 1 has not failed because the flood level on both sides of the wall was equal.
- 5 Relocate the Garage's mechanical, electrical and hydraulic systems above the 500-year flood level. Four options are available:
  - "1" – Relocate to the Old Powerhouse and its Substation
  - "2" – Relocate to the Old Powerhouse and its roof, adding a penthouse
  - "3" – Relocate to the Old Powerhouse and use parking spaces on the 2<sup>nd</sup> and 3<sup>rd</sup> levels
  - "4" – Relocate to Welcome Center, moving the Welcome Center elsewhere.
- 6 Parking Garage Level 2 and the adjacent powerhouse are elevated above the 100-year flood crest but are below the 500-year flood crest. The 100-year flood crest reaches nearly to Level 2.
- 7 The underslab drainage system for the garage was sized without a geotechnical sizing study. Considering the fact that the Garage is located adjacent to the bend of a river and is built on ground that has extensive fill, the drainage system does not appear to be sized adequately to prevent water infiltration.
- 8 Water infiltration controls and additional sump pump can reduce the likelihood of equipment damage from a 10-year flood but this is not a recommended long-term solution.

The project study was completed on schedule after allowances were made for both the requested delay of the kick-off meeting and coordination of the presentations with the JNC meetings. All the requirements of the request for proposal have been met.

The Project Study Team consisted of the following key members:

Victoria Lawler, OLS  
John Dye, OLS  
Pasquale Papero, DPMC  
Steven Pietrzak, DPMC  
Michael Budzinski, DPMC

William Winterbottom, DPMC  
SFC Kirk McLaughlin NJSP  
Anthony Pacaro, Miller-Remick  
John Lorenz, Miller-Remick

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If you have any questions concerning this report, please do not hesitate to contact us.

Sincerely,  
**Miller-Remick Corporation**

John E. Lorenz, P.E.  
Project Manager

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### **APPENDICES:**

APPENDIX A Meeting Minutes

APPENDIX B Flood Plain Information

Sketch 1, Scaled cross sectional elevation drawing of site landmarks and flood levels

Sketch 2, Topographic flood plain

Sketch 3, FEMA Delaware River Flood Profile 9P (downstream)

Sketch 4, FEMA Delaware River Flood Profile 10P (upstream)

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APPENDIX C Equipment Nameplate Data

APPENDIX D Equipment Location Matrices and Arrangement

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Drawing M-1, MER Relocation Option 1

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APPENDIX E Design and Construction Schedules

APPENDIX F Correspondence

APPENDIX G Photographs

APPENDIX H Cost Estimates

APPENDIX I Calculations

APPENDIX J Emergency Study Report, DPMC Project A1013-00, July 5, 2007.

APPENDIX K Report of Geotechnical Investigation, McClymont & Rak, July 12, 2007

APPENDIX L Report of Structural Investigation, O-Donnell & Naccarato, September 17, 2007

APPENDIX M Index of Attachment CD contents

APPENDIX N PowerPoint Presentation: Preliminary Study Phase

### **ATTACHMENT CD:**

Compact disk of project records, including:

- Photographs
- Final Study Phase Report, with Appendices

## 1. INTRODUCTION

### **Study Methodology**

The following is a description of the field investigations, reviews, data collection, and analyses that were conducted to generate the findings and recommendations of this study.

- We discussed the areas of concern with the facility personnel, collected relevant available information and drawings, and toured the project areas.
- We reviewed existing drawings and previous reports and studies.
- We requested information on any current or future projects at the site that may affect the recommendations of the Study.
- We consulted equipment manufacturers and obtained equipment-operating requirements.
- We documented the existing equipment, systems and utilities subject to flooding and obtained both descriptive measurements and replacement costs.
- We inspected the garage for structural damages.
- We performed geotechnical testing.
- We developed alternative conceptual plans including floor loading analyses and costs to relocate sensitive flood-prone equipment.
- We prepared and issued this report summarizing our findings.

### **Findings and Recommendations**

Our findings and recommendations are based on the information obtained through our field investigations, information provided by the State of New Jersey, information provided by equipment suppliers, and our engineering analysis and field testing activities described above and documented in the Attachments. The key findings and recommendations are presented below:

#### **Findings:**

- 1 Parking Garage Level 2 and the adjacent powerhouse are elevated above the 100-year flood crest but are below the 500-year flood crest. The 100-year flood crest reaches nearly to Level 2.
- 2 The underslab drainage system for the garage was sized without a geotechnical sizing study. Considering the fact that the garage is located adjacent to the bend of a river and is built on ground that has extensive fill, the drainage system does not appear to be sized adequately to prevent water infiltration.
- 3 We estimate that the garage subsurface drainage system could deliver up to 18,000 gpm to the sump during high hydrostatic pressure. The porosity of the ground beneath the garage was enhanced by the use of very porous fill.
- 4 The garage parking areas can be upgraded to withstand floods safely. Structural and subsurface repairs are required.
- 5 The walls for the occupied spaces on the East End of the garage were not built to withstand the hydrostatic pressures generated by a 100-year flood.
- 6 Water infiltration controls and additional sump pumps can reduce the likelihood of equipment damage from a 10-year flood but this is not a recommended long-term solution.
- 7 Several options are available for relocation of the garage's mechanical and hydraulic systems.

**Recommendations:**

- 1 Repair critical structural failures immediately, they pose a threat to public safety or facility.
- 2 Fill selected areas of the garage subsurface with grout to minimize future settlement.
- 3 Relocate building mechanical and electrical systems above the 500-year flood level.

2. FLOOD PLAIN INFORMATION AND GENERAL

We obtained FEMA flood profiles 9P and 10P for the Delaware River that show river elevations above and below the Capitol Complex; these are included in Appendix B. The red vertical line at 134.204 on these profiles represents the location of the Capitol Complex; the colored horizontal lines represent the levels for 500-year (green), 100-year (red), 50-year (blue) and 10-year (pink) floods. The FEMA Delaware River profile at mile marker 134.44, just North of Calhoun Street, is also shown in Appendix B, as are a scaled flood plan delineation map and a cross-sectional elevation drawing of the various flood levels with cross-references to project site landmarks.

**TABLE 1**  
Significant and/or Recent Delaware River Flood Crests at Trenton

River Height (ft)	Category	Year
18.82	10 year	2007
25.09	50 year	2006
25.33	50 year	2005
23.41	50 year	2005
22.20	10 year	1996
28.60	100 year	1955
21.12	10 year	1942
24.43	50 year	1936
30.60	100 year	1904
28.50	100 year	1903

3. GEOTECHNICAL INVESTIGATION

The full geotechnical investigation report is found in Appendix K of this report.

Review of Existing Reports

The following Studies and Reports by STV Inc. were submitted for our review. Our report of this review is included in Appendix K.

- R-1 "Statehouse Parking Garage Conditions Assessment Report", 7/3/2001.
- R-2 "Statehouse Parking Garage Flood Damage Study", 2/18/2005.
- R-3 "Statehouse Parking Garage Cracked Column Study", June 2005.

Geotechnical Investigation Report

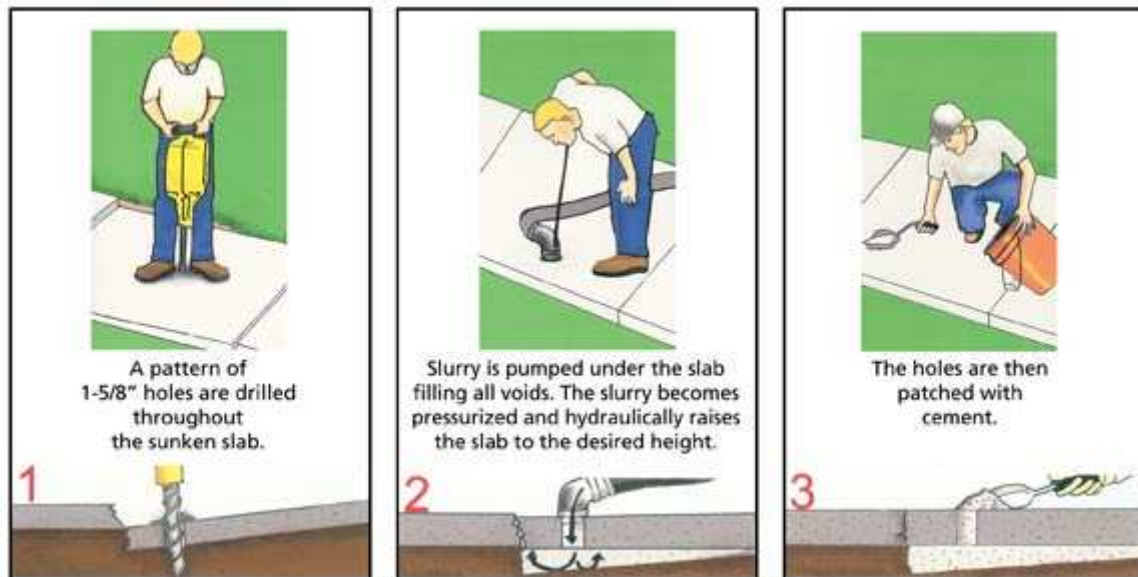
In summary, we performed geotechnical testing of the ground beneath the parking garage. Twelve inspection holes were drilled through the first level of the garage and four inspection holes were drilled along the garage exterior. We conclude that minor repairs would permanently prevent significant subsurface failures in the garage.

These repairs include both column foundation reinforcement and leveling of the slab. Column cracks as shown here in South Garage Level 1 have occurred due to foundation settlement. Pressure grout will be applied both beneath the two columns showing distress and beneath the settled slab to make it flush, a procedure called mud-jacking.



Slab settlement and differential movement occurred in South Garage Level 1 as shown here. This has created a tripping hazard.





#### MUD-JACKING PROCEDURE

The project for these repairs is titled "Immediate Repairs"; estimated project cost and schedule are included in section SI (Structural Immediate) of Appendices E and H.

We believe that the underslab drainage system is undersized. It is conceivable that the probability of garage flooding can be greatly reduced by upgrading the entire underslab drainage system. Sizing of this system would require an extensive geotechnical flooding study that is beyond the scope of the current study.

#### 4. STRUCTURAL INVESTIGATION

The full structural investigation report is found in Appendix L of this report.

##### Review of Existing Reports

The three reports listed for the geotechnical investigation were also reviewed as part of our structural investigation.

##### Structural Investigation Report

In summary, we performed a visual review of the parking garage to assess the overall structural condition. In general, our review found the structure in overall good condition. It was evident that the lower level had experienced significant water damage and previous repairs had been made. These repairs have exceeded their service life and new deterioration has appeared.

Our review identified numerous deteriorated conditions with some potential safety concerns. We summarized our findings into one of three categories: critical (Priority 1), serious (Priority 2), and moderate (Priority 3). The Priority 1 items were further subdivided into Immediate Repairs and the remaining Priority 1 items. Another Priority 1 item, the carbon fiber reinforcement of the two cracked

columns (shown above in the geotechnical report summary) should also be repaired immediately. All the recommended repairs are cost-effective, offering a good return due to extended service life and reduced maintenance costs

The Immediate Repairs include:

- the geotechnical “mud-jacking” repairs to the sunken South garage slab on grade
- the geotechnical “mud-jacking” repairs to the South Entrance sidewalk
- Pressure grouting of the foundations below the two cracked columns.

The remaining Priority 1 items include:

- Carbon fiber reinforcement (two columns)
- Open vertical concrete crack repairs (South Garage, South and East Elevation)
- Overhead concrete spall repairs (beams & girders)
- Waterproof Level One (Silane)
- Waterproof entrance ramp (Northeast Entrance)

The Priority 2 items include:

- Vertical concrete and CMU spall repairs
- Vertical & horizontal crack repairs
- Vertical & horizontal joint repairs
- Concrete slab spall repairs
- Expansion joint replacement (perimeter included)
- Waterproof coating (levels 2 and 3)

The Priority 3 items include:

- Exposed steel rehabilitation
- Miscellaneous Exterior Repairs
- Clean floor drains

The non-Silane type waterproofing work (the Northeast Entrance and all of level 2 and level 3) cannot be done during cold weather. Project schedules and cost analyses for the Priority 1 and Priority 2 items are included in sections S1 and S2 of Appendices E and H. Appendix L quantifies the conditions and gives construction repair cost estimates. The Priority 3 “moderate” items are all routine maintenance and can be performed as maintenance activities.



The photograph to the right shows column horizontal cracking with incipient spall; this column is located in South Garage Level 1.



The deteriorated concrete slab at the northeast Garage entrance is shown to the right. The previous patches are beginning to fail.

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## 5. FLOOD DAMAGE PROTECTION INVESTIGATION

We evaluated the east side occupied areas on Level 1 of the parking garage to determine those areas that should be upgraded to prevent future flood damage to equipment and systems. We describe our findings and recommendations in Appendix J, the “Emergency Study Report” dated July 5, 2007. With the idea of keeping the occupied areas of the East Side dry, we investigated water infiltration controls, use of flood-resistant materials and enhancement of the MER sump pumps. Unfortunately, we discovered that the building walls are unable to withstand the hydrostatic pressure of a 50-year flood level without significant structural modifications, thereby limiting the utility of this approach. This project has an estimated CWE cost of \$413,300 as shown in Appendix H section EM.

As requested, we also evaluated the parking area sump pump system to consider the practicality of increasing the pumping capacity to keep the Garage dry during a 50-year flood event. The Garage cannot be kept dry when the flood level reaches the Level 2 entrance (at 27'-0" elevation), which would occur during a severe 100-year flood event. The garage underground drainage system empties into a single sump that contains two (2) pumps each rated at 314 gpm and 21 ft. of head. These pumps discharge into a 24" RCP storm drain that also serves Rt.29 and has little extra capacity; this storm drain line has a nominal capacity of 8,100 gpm at its installed slope of 0.5% and much of this is committed to the existing storm drains. We liberally estimate that the garage underground drainage system could feed the sump with up to 19,000 gpm during a storm when the underground hydrostatic pressure reaches 20 ft. (see calculations, Appendix I). This pressure is a likely possibility given the steep slope of ground to the North but this pressure would probably only be reached along the North side of the Garage, reducing the likely total flow rate. Another approach to sump pump sizing is to use the combined 4,000 – 6,300 gpm rate that occurred when three pump-trucks unsuccessfully attempted to maintain the flood level during a flood.

In the absence of a more accurate geotechnical flooding study, we propose a nominal garage sump capacity of 10,000 gpm. This rate could be achieved with a project to install a larger sump and VFD controlled 200 hp sump pump within the garage, a 16" pressure main connected to a new 19"x30"RCP drain tied into existing manhole 2, and a new lift station for this manhole to convert the existing 30" RCP drain to a pressure main. At the 100-year flood level, it is likely that all power would be lost because the transformers are located underground. We therefore include an emergency generator for the sump pump. This project has an estimated CWE of \$1,700,000 (see Appendix H section SU). This project would not include enhancements to the garage underslab drainage system that may be required to prevent water intrusion and flow through the garage. Before proceeding with this approach, the required sump pumping system should be accurately sized by performing a geotechnical flooding study at an expected cost of about \$50,000. A new large sump pump system might keep the Garage in full service during a major storm but there are no other significant advantages once the flood-prone equipment is relocated.

## 6. MECHANICAL EQUIPMENT ROOM INVESTIGATION

Most of the garage flood damage costs incurred have been due to damage of expensive equipment within the level 1 East End mechanical equipment room G-112 and the adjoining electrical equipment room G-113 and elevator mechanical equipment room G-110. As shown in sketch SK-1 in Appendix B, these rooms have a floor level 3'-10" below level 1 of the garage. The total cost of flood damages are listed below.

**TABLE 2**  
 STATEHOUSE GARAGE FLOOD DAMAGE COSTS

FLOOD CREST DATE	DAMAGE PREVENTION COST	FLOOD DAMAGE COSTS	TOTAL FLOOD EVENT COST
4/17/2007	\$58,000	\$17,000	\$75,000
6/29/06	\$257,000	\$238,000	\$494,977
4/4/05		\$567,498	\$567,498
9/19/04		\$1,086,240	\$1,086,240

Room G112, contains the HVAC equipment serving both the Annex and the occupied spaces on the east end of the garage, including the cafeteria, Welcome Center and Lobby areas. The electrical substation for the mechanical equipment is located in adjacent room G113. These are large rooms with generous space to serve the equipment. The rooms are about 13' high and have been subject to flooding nearly to the ceiling. Room G112 and adjacent rooms G110 and G113 are located several feet lower than the rest of Level 1. The mechanical and electrical equipment are placed on concrete housekeeping pads about 4" high. Room G112 has a trench that branches to most of the mechanical equipment and ends in a sump with duplex pumps; these pumps discharge to the storm sewer. The major equipment within these rooms are listed in Appendix C; additional equipment not listed include the overhead unit heaters and four (4) small overhead supply fans.

View of Garage East End L1 mechanical equipment room (MER) G112 during flood of April 2007.



There are a number of HVAC systems within room G112. The largest systems are the three (3) HVAC air handler units (AHU) with their associated return fans and extensive ductwork. One AHU serves the cafeteria, another serves the Welcome Center, and the third serves the three (3) lobbies. Two hydronic systems serve both the Annex and the Garage AHUs and unit heaters including one for hot water (HW) and one for chilled water (CHW). The low temperature HW system includes water-water heat exchangers, circulation pumps, an expansion tank and an air separator. The CHW system includes a recirculation loop with pumps.

Potential alternate sites for the East End mechanical equipment room, labeled options “1” through “4” are shown on project drawings M-1 through M-4. All four options include equipment flood barriers to the 500-year flood level (30’-9” elevation).

Option “1” would install the large air-handling units (AHU) within the old “Substation” shown to the right. Outside ductwork would extend above the Substation, Powerhouse and East End roofs.



Option “2” would install the AHUs within a new penthouse constructed above the Powerhouse, shown in center bottom on right.



Option “3” would install the AHUs in the Garage parking areas on both L2 and L3 opposite the Welcome Center and Café respectively. The L3 location is shown here.



Option “4” would relocate the Welcome Center to a new building and install the AHUs and all the mechanical equipment within the vacated space in the East End of the garage shown here, inside (to right) and outside (below).



East End (occupied space)  
of Garage. Café is on top  
(L3) and Welcome Center is  
on level 2 at ground level



Our floor loading analyses indicate that the equipment relocation options within the garage are all viable. We compared the design loads for the area of the structure under consideration with the anticipated worst-case relocated equipment load. Design loads for the parking garage were obtained from the Lagley, Harman & Associates, Inc. project drawing S300 dated 12-15-93. The drawing indicates that the design loads are as follows:

- Dead load: 5 psf for the parking areas and 30 psf for non-parking areas
- Live load: 50 psf for the parking area and 100 psf for non-parking areas
- Concentrated load: 2,000 lbs on 20 in<sup>2</sup>, or 14,400 psf in the parking area.

Due to high load density, the air separator/expansion tank may require additional support. The next highest load density piece of equipment, AHU-1, has a loading of about 90 psf and will not require additional support for MER relocation options 3 or 4.

Because structural drawings for the Powerhouse are unavailable, we have included cost allowances for additional support for mechanical equipment room (MER) relocation options 1-3. All of the MER equipment except the large air-handling units for the East End of the Garage was previously installed in the second floor of the Powerhouse. Based on the building use we feel that it is entirely feasible to relocate this equipment to the Powerhouse without additional support. A detailed structural survey to include slab cores, concrete imaging and rebar imaging is needed for a full structural analysis. The roof of the Powerhouse will most likely require significant reinforcement for the penthouse to be provided in MER relocation option 2; we have assumed that a new steel support system will be required for this option.

**TABLE 3**  
 Mechanical/Electrical Equipment Room Relocation Options Investigated

MER Relocation Option Number:	ONE	TWO	THREE	FOUR
Relocate pumps, exchangers, compressors to:	Powerhouse	Powerhouse	Powerhouse	East End L2
Relocate MCC to:	Powerhouse	Powerhouse	Garage	East End L2
<b>SCOPE OF WORK INCLUDES:</b>				
Replace all mechanical and electrical equipment with new	Yes	Yes	Yes	Yes
External routing of ductwork	Yes	Yes	No	No
Flood protection to 500-year level?	Yes	Yes	Yes	Yes
Relocate elevator 4	Yes	Yes	Yes	Yes
Relocate elevator 1-3 mechanical rooms to:	Powerhouse	Powerhouse	Garage L2 or L3	East End L2
New Welcome Center	No	No	No	Yes
<b>PROJECT DATA:</b>				
COST, CWE (\$K):	4,832	4,761	3,847	7,001
SCHEDULE DURATION (MONTHS):	23	24	24	38
GARAGE TRAFFIC OBSTRUCTION:	None	None	Yes, narrow car passage	None
NUMBER OF PARKING SPACES LOST:	None	None	4 std & 3 handicapped	None
OVERALL RATING (from App. Table D-1)	BEST	BEST	THIRD	LAST

The basic characteristics of the four alternate MER relocation options are summarized in Table 3. The site evaluation matrix for these alternate mechanical equipment room locations is shown in Appendix D, Table D-1. The rating weights shown in Appendix D were chosen by Miller-Remick Corp. based on concerns reported by the Project Team. These rating weights should be reviewed and possibly revised by the JNC to select the best options. The weights used heavily favor the lowest cost options with the least lost of parking space. Options "1" and "2" are the most promising options and have almost identical ratings. Options "1" and "2" include the installation of ductwork above the Powerhouse and the East End of the Garage; these options include provision for enclosing the exposed ductwork within an architecturally pleasing stone veneer. The aesthetic drawback for both options is that they will block the panoramic view of the Delaware River from some areas to the north. Option 3 offers the lowest cost but at the expense of a number of lost parking spaces and either difficult equipment access or restricted traffic flow. As shown on equipment arrangement drawing M-3 in Appendix D, pedestrian traffic from parking spaces south of the relocated AHUs will be diverted around this equipment, which will either restrict automobile traffic or make access to the AHU equipment difficult. Option "4" is by far the most expensive option due to the need to build another Welcome Center.

## 7. ELEVATOR MECHANICAL ROOM INVESTIGATION

The hydraulic machines for the four (4) garage elevators are located within three (3) equipment rooms on Level 1, two on the East End and one on the West End. Each of these rooms has a fan coil unit (FCU) for room temperature control. The hydraulic machines for passenger elevators No. 1 and No. 2 are located in elevator equipment room G110 that is adjacent to MER G112. The machine for service elevator No. 3 is located in elevator equipment room G109 adjacent to the East End elevator lobby. The machine for passenger elevator No. 4 is located in elevator equipment room G101 at the West End.

We propose combining the hydraulic machines for elevators 1-3 into a single room for all options. Currently these machines are located in elevator equipment rooms G109 and G110. We identified four alternate sites (“A” through “D”) for these hydraulic machines.

Area of elevator 1-3 machine room relocation Option “A”, Powerhouse 2<sup>nd</sup> floor, as shown on project drawing M-1.





Area of elevator 1-3 machine room relocation Option “B”, L3 of the Garage, as shown on project drawing M-3.



Elevator 1-3 machine room relocation Option “C”, L2 of the Garage, as shown on project drawing M-3 (similar to above, photo not shown)

Photo not shown

Area of elevator 1-3 machine room relocation Option “D”, within Welcome Center lecture room, as shown on project drawing M-4



Similarly, there are two alternate sites for the West End elevator 4 equipment room, Options ‘A’ and ‘B’.

Area of elevator 4 machine room relocation Option “A”, L3 of Garage West End, as shown on project drawing M-2



Area of elevator 4 machine room relocation Option “B”, L2 of Garage West End, as shown on project drawing M-2



We inquired into the possibility of obtaining waterproof hydraulic machines for the four elevators but found out that neither Thyssen-Krupp nor Otis Elevator companies can provide these.

Our floor loading analyses indicate that the equipment relocation options are all viable. The hydraulic machines have a floor loading of about 600 psf and can be located anywhere within the Garage. These machines will require steel beam supports for installation within the Powerhouse to redistribute the weight as required.

**TABLE 4**  
 Elevators 1-3 Mechanical Equipment Room Relocation Options

OPTION NUMBER	A	B	C	D
Relocate hydraulic machines to:	Old Powerhouse	Garage L3 parking	Garage L2 parking	Former Welcome Center
Relocation of Welcome Center required?	No	No	No	Yes
Flood protection to 500-year level?	Yes	Yes	Yes	Yes
CWE cost:	\$324,000	\$309,600	\$280,800	\$238,800
RANKING (from App D, Table D-2):	Best	Third	Second	(only applicable for MER relocation option 4)

**TABLE 5**  
 Elevator 4 Mechanical Equipment Room Relocation Options

OPTION	A	B
Relocate hydraulic machine to:	Garage L3	Garage L2
Flood protection to 500-year level?	Yes	Yes
CWE cost:	Base	\$14,000 less
RANKING (from App D, Table D-3):	Best	Second

See Appendix D, Tables D-2 and D-3 for the site evaluation matrix for alternative elevator equipment room locations. The four options for relocation of the hydraulic machines for elevators 1-3 are compared in Table D-2. Options “A” through “C” have similar rankings, with minor differences for cost, interference with logistical operations and aesthetics. Option “D” is only available if a new Welcome Center is built, in conjunction with MER relocation option “4”. There are only two options for relocation of the hydraulic machine for West End elevator 4 as shown in Table D-3. The third floor location has a slightly higher rating than the second floor location.

**END OF REPORT**