SCOPE OF WORK

AHU Replacements &
HVAC System Deficiencies Abatement

Richard J. Hughes Justice Complex
Trenton, Mercer County, N.J.

Project No. A1383-00

STATE OF NEW JERSEY

Honorable Philip D. Murphy, Governor
Honorable Sheila Y. Oliver, Lt. Governor

DEPARTMENT OF THE TREASURY

Elizabeth Maher Muoio, Treasurer

DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Christopher Chianese, Director

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I. OBJECTIVE

The objective of this project is to evaluate, plan, design and execute the replacement of 27 AHU's and associated equipment within this fully operational office building. Include additional equipment, as needed, to address current humidity control issues. Also included is the design for removal of existing inoperable, abandoned or by-passed equipment and piping and the design and installation of a temporary or permanent opening to facilitate the project, along with removal of equipment / piping that may impact access and staging. Existing condensate / floor drain failures are to be abated with all new drains and piping or a piping restoration solution beneath the penthouse. Sludge, scaling, and deteriorating issues within existing chilled water piping are to be evaluated and branch piping will be replaced with a value engineering solution for the mains. Hot water piping is to be evaluated and addressed, as needed. Duct lined insulation degradation is to be evaluated throughout the building and particulate and mold discharge will be abated with a permanent solution. Include replacement and energy control of 4 exhaust fans within the garage. Evaluate, recommend and provide design development level of new high temperature hot water mains extension in order to by-pass steam generating equipment (owned by Vicinity Energy) and provide necessary exchangers and/or associated equipment from garage entry P2 to mechanical room P1 level.

II. CONSULTANT QUALIFICATIONS

A. CONSULTANT & SUB-CONSULTANT PRE-QUALIFICATIONS

The Consultant shall be a firm pre-qualified with the Division of Property Management & Construction (DPMC) in the following discipline(s):

- **P003 HVAC Engineering**

The Consultant shall also have in-house capabilities or Sub-Consultants pre-qualified with DPMC in:

- **P001 Architecture**
- **P002 Electrical Engineering**
- **P004 Plumbing Engineering**
- **P007 Structural Engineering**
- **P025 Estimating/Cost Analysis**
- **P037 Asbestos Design**
- **P038 Asbestos Safety Control Monitoring**

As well as, **any and all** other Architectural, Engineering and Specialty Disciplines necessary to complete the project as described in this Scope of Work (SOW).

III. PROJECT BUDGET

A. CONSTRUCTION COST ESTIMATE (CCE)

The initial Construction Cost Estimate (CCE) for this project is $ 19,434,783.

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

B. CURRENT WORKING ESTIMATE (CWE)

The Current Working Estimate (CWE) for this project is $ 24,000,000.

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. 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.

IV. PROJECT SCHEDULE

A. SCOPE OF WORK DESIGN & CONSTRUCTION SCHEDULE

The project is funded by the Coronavirus State and Local Fiscal Recovery Funds (SLFRF) program authorized by the American Rescue Plan Act. All funds must be obligated by 12/31/24 and expended by 12/31/26. See the link below for more information.

https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/state-and-local-fiscal-recovery-funds

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

PROJECT PHASE	ESTIMATED DURATION (Calendar Days)	
1. Site Access Approvals & Schedule Design Kick-off Meeting	**14**	
2. Schematic Design Phase	**42**	
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14	
3. Design Development Phase	**42**	
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14	
4. Final Design Phase	**42**	
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14	
5. Final Design Re-Submission to Address Comments	**7**	
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14	
6. DCA Submission Plan Review	**30**	
7. Permit Application Phase	**7**	
• *Issue Plan Release*		
8. Bid Phase	**42**	
9. Construction Bid Award Phase		**28**
10. Construction Phase	**756**	
11. Project Close Out Phase	**30**	

B. CONSULTANT'S PROPOSED DESIGN & CONSTRUCTION SCHEDULE

This specific project has strict requirements to receive the funding and the consultant shall be specific to implement a plan that will work to meet those dates within their written narrative of their proposal. The consultant is reminded that this is a fully functioning office building and phasing or shut down of a single floor or multiple floors at a time with durations need to be proposed and/or identified for consideration and discussion during the interview.

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

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.

V. PROJECT SITE LOCATION & TEAM MEMBERS

A. PROJECT SITE ADDRESS

The location of the project site is:

Richard J. Hughes Justice Complex
25 Market Street
Trenton, NJ 08611

GPS Coordinates: 40.21343°N, - 74.76388°W

See **Exhibit 'B'** for the project site location map.

B. PROJECT TEAM MEMBER DIRECTORY

The following are the names, addresses, and phone numbers of the Project Team members.

1. DPMC Representative

Name: Anthony R. Mazzella Jr., Construction Manager
Address: Division of Property Management & Construction
20 West State Street, 3rd Floor
Trenton, NJ 08608-1206
Phone No: (609) 203-5593
E-Mail: Anthony.MazzellaJr@treas.nj.gov

2. Richard J. Hughes Justice Complex

Name: Perry E. Stalter, Building Manager
Address: Division of Property Management & Construction
25 Market Street
Trenton, NJ 08625
Phone No: (609) 633-7502
E-Mail: Perry.Stalter@treas.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

The Richard Hughes Justice Complex was built from 1977-1981. An additional 900 square feet was completed in 2004. The approximate total square footage of the building is 1,070,900 square feet. The modernist designed building is 136.5 feet tall. The building is classified as Business/Assembly-3 Use Group and Type 1-B construction.

Previous Consultant studies completed at the Richard J. Hughes Justice Complex have shown that the originally installed Air Handling Units (AHU), have reached their service lifetime. Twenty seven (27) AHU's and related HVAC components will be replaced.

Previous site visits and assessments of the building's internal mechanics and plumbing recorded failing elements throughout seasonal times of the calendar year. Existing maintenance crews have used various mitigation strategies to inhibit any further corrosion. The condensation from AHU's in the 9th floor penthouse mechanical room is causing ceiling leaks in employee workspaces on the 8th floor. Due to the inability to control humidity with the current systems, the interior duct lining has deteriorated causing loose insulation particles to be airborne. Recommendations were provided in these studies to replace the AHUs and HVAC related elements.

B. FUNCTIONAL DESCRIPTION OF THE BUILDING

1. General

The Richard J. Hughes Justice Complex is located at 25 Market Street in Trenton, Mercer County, New Jersey. The building complex houses the New Jersey State Supreme Court, the courtroom, chambers and the administrative offices of the State Court System. It is also home to New Jersey Department of Law and Public Safety.

The building can be seen as three buildings in one: two eight-story office buildings around a cube, which houses the courtroom. Indoor bridges connect the fourth, fifth, seventh and eighth floors. The building includes two main entrances from the street leading into the atrium lobby which is open through ten stories to a rooftop skylight. Floors one through eight are office space, chambers and courtrooms. Floor nine is the mechanical penthouse, level P1 is the street level, and P2 is the parking garage below P1.

Currently, the air handlers are emitting high humidity and conditioned discharge air flow to the building's occupied areas. This increased humidity has saturated the duct lining and has caused insulation degradation, resulting in particulate insulation and mold to discharge from air diffusers

throughout the building. The internal areas of the AHU's have poor drainage, which is causing mold growth conditions within the AHU's and associated ducting.

The HVAC system has been in operation since the late 1970's and has exceeded its useful life. The control valves, dampers, insulation and steel have all deteriorated. The condensate drip pans have deteriorated completely. As a temporary measure, the bottom of the units have been sealed with hardened sealer and a drain has been cut in the deteriorated bottom. The new units should be equipped with humidity control. The ventilation systems must operate properly and provide acceptable indoor air quality for the current occupancy level for each space. The HVAC system can only accommodate MERV 8 filter filtration. The Consultant shall recommend the MERV rating for the new HVAC system.

Twenty-two (22) of the AHU's to be replaced in this project are located in the 9th floor mechanical penthouse. The remaining five (5) AHU's are located in the P2 basement level under the Supreme Court portion of the building.

2. History

Original construction drawings under project DBC Project A076 are available and will be provided to the shortlistedConsultants.

Under DPMC Project A0988-00 in 2007, Powell-Harpstead, Inc. prepared an AHERA Management Plan (AMP) for the building. The AMP will be provided to the shortlisted Consultants.

Under DPMC Project A1185-00 in 2014-2016, USA Architects performed a facility assessment for multiple state owned buildings including the Justice Complex. The final report for the Justice Complex was issued in a separate volume on March 31, 2016 and provides a good description of the building, including the mechanical systems. The final report by USA Architects will be provided to the shortlisted Consultants.

In late 2016, Concord Engineering was contracted by DPMC to investigate twenty seven (27) AHU's. Two options were recommended: Option 1 would replace condensate drain pans and Option #2 would fully replace the AHU's. Concord suggested a construction duration of four weeks per unit for Option #2 and one floor of the complex to be evacuated at a time while the associated AHU's are replaced. These suggestions will have to be re-evaluated in light of the fact that each floor is served by more than one air handler and most of the air handlers serve at least two floors. AHU #6 serves three floors. The ability of employees to telework should help with the phasing of this project.

The Concord study referenced the Robert Shaw control system which has since been replaced under project A1254-00. The Concord Report is shown in **Exhibit 'C'**. A listing of AHU's and

the respective floors served is shown in **Exhibit 'D'**. Note that the AHU list goes up to 31. Four stair pressurization fans were included in that count. These fans are excluded from the project.

Under DPMC Project A1254-00, the building HVAC controls were upgraded from the Robert Shaw system to a Schneider Electric EcoStruxure software system installed by CM3 Building Solutions. Documents and plans from A1254-00 will be provided to the shortlisted Consultants. Control wiring was not replaced resulting in slow response time. It is desired to replace the control wiring with Cat6 cable wherever old equipment is removed and new equipment is installed under this contract.

Some VFD's have been upgraded with Schneider Electric Supply Fan VFD's and Schneider Electric Return Fan VFD's. These fans are different horse powers for the individual units. Some VFD's are on order and some are on site but not yet installed. Old units have been failing. See the spreadsheet in **Exhibit 'E'** for status details. These new VFD's may be used as part of new design, if desired as a project cost savings, but will be salvaged if not compatible with basis of design.

3. Vicinity Energy

The building hot water and chilled water is served by Vicinity Energy (Formerly known as Veolia Energy). Once it enters the building at the P2 Level North Garage it is flashed to steam using two Vicinity owned and operated steam generators. The steam is supplied to domestic hot water heat exchangers located on the P1 level to heat the domestic hot water loop and the domestic tempered water loop. This same steam is also supplied to heating hot water heat exchangers to heat the hot water closed loop system for the building. The condensate is pumped back to the steam generators for reuse. A drawing with mark-ups showing this is shown in **Exhibit 'F'**.

Steam was originally needed for steam absorption chillers in the penthouse to supply chilled water for the building. Sometime after original construction, the state began purchasing chilled water from Vicinity and its predecessors. The chillers and associated steam generating equipment are no longer needed. It is desired to remove the steam generating equipment in addition to the ancillary pumps, etc. associated with the steam medium and utilize the high temperature hot water to feed new hot water to hot water heat exchangers for the domestic and heating loops. This would save money in maintenance and energy cost.

The Consultant shall evaluate, coordinate with Vicinity and design new high temperature hot water "HTHW" connection from P2 to P1 with new heat exchangers and any ancillary equipment necessary for this piping modification. The consultant's base contract design effort for this medium change from steam to HTHW will include all deliverables and effort up to and including the Design Development phase. If funding is sufficient, all following phases of design, project management and deliverables through close out will be executed utilizing the consultants allowance identified in their fee proposal.

4. Additional Considerations

To remove the AHU's a temporary or permanent opening will have to be made in the penthouse wall and perhaps the P2 basement level. This has been done in the past by Vicinity Energy in the west wing metal wall in the penthouse.

While this opening is in place, facility staff has a list of equipment that is no longer in use and can be removed. The list is shown in **Exhibit 'G'** along with equipment location. Drawings highlighting some of this equipment will be provided to the Consultant. However, some of it is not shown on the drawings and will have to be identified on a walk through. Removing this unused or abandoned equipment and piping will facilitate the necessary access and staging for the new work to be completed within this tight schedule.

Some of this equipment is owned by Vicinity Energy. The State has reached out to Vicinity regarding the disposition of its equipment. Vicinity has agreed to allow the State to remove any steam generating equipment in the P2 Garage level to facilitate a transition to use of hot water directly from Vicinity. Vicinity has **not** yet agreed to allow removal of any of its equipment from the 9th floor penthouse (Frick rotary compressor, cooling towers and 26KV substations).

Note that generators on the list on the 9th floor are still in use but are expected to be abandoned by the end of 2023 as they are being replaced under project A1296-00. New generators are already in place outside and awaiting testing.

Interior duct lining deterioration will have to be addressed. The consultant shall evaluate the condition throughout the building and determine the best course of action that may include multiple solution methods being executed based on condition of duct and size of duct, etc. Floor drains and associated storm drain piping used to carry condensate away from penthouse AHU's are rusting and allowing condensate to drip into workspaces on the 8th floor. This drain and piping system condition needs to be evaluated and corrected.

Four garage exhaust fans located on the 9th floor and designated GEF41, 42, 43 and 44 will be removed and replaced in this project with proper energy saving control, timers and/or demand ventilation associated with this type of equipment.

Chilled water piping is showing signs of deterioration. All chilled water piping shall be evaluated and at a minimum, branch piping to AHU's shall be replaced to a point recommended after the consultants evaluation, random testing. Any existing piping to be reused shall be cleaned, so as not to create problems with the new equipment.

Secondary heating loop piping does not look to be in poor condition, but it too shall be evaluated and the consultant shall make the determination of what (if any) needs to be replaced. Again, the

consultant shall include necessary cleaning / flushing of any existing piping to remain, so as not to create problems with the new equipment being installed.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. DESIGN REQUIREMENTS

1. General

The Consultant shall provide the design, specifications, bid/award and construction administration services to replace twenty seven (27) Air Handler Units (AHUs), system controls and related HVAC equipment located throughout the Complex.

Identify the existing AHU floors and the locations served. All replaced AHUs to include energy efficiency components. Incompatible recently installed Variable Frequency Drives (VFDs) in existing AHUs are to be disconnected and provided to the State for reuse.

Provide the design for electrical supply, panels, breakers, etc. for new air handler units and ancillary equipment where required.

The specifications shall describe the preferred new air handler systems or equipment and shall list the names of three equal manufacturers for each. The Consultant shall recommend the MERV rating for the new HVAC system.

The consultant shall be aware of any modification in sizing, duct routing, access for maintenance, impact to smoke/fire devices (including dampers), specific manufacturer requirements and clearances and condition of existing bases/equipment pads (if being reused) etc.

2. Demolition

Special demolition and removal procedures shall be identified in the design documents for the HVAC units that are to be replaced. Special procedures and required hours for electric utility shutdown and/or switchover during the HVAC unit removal and replacement shall be described and included in the design documents. With the exception of Vicinity owned equipment on the 9th floor penthouse, demolition documents shall include at a minimum the equipment listed in **Exhibit 'G'**. Piping reconfiguration and demolition for access and staging is also included as part of the demolition scope.

3. Building Access

The Consultant shall provide the design for construction access to provide for removal and replacement of equipment. This may include a temporary or permanent opening, or enlarged opening in the walls of the 9th floor penthouse and the P2 Mechanical Room. The design shall include a site plan with proposed options for crane locations (if applicable) and general area for staging/loading/unloading the project.

4. Phasing Plan

The Consultant shall coordinate with building staff and provide a phasing plan in order to minimize delays during construction.

The consultant shall provide a constructability analysis taking into consideration the funding requirement deadlines. The consultant shall evaluate lead times for equipment, access for installation and durations associated with completing the construction work tasks. The consultant shall provide their professional opinion/recommended phasing plan to the owner for review, with the goal of limiting the disturbance to the facility's daily business operation.

5. New Equipment

The consultant shall evaluate the schedule requirements associated with the funding and verify the availability of equipment that aligns with the consultants phasing plan. If pre-purchase of equipment and bidding is necessary to meet the aggressive schedule and achieve competitive bidding rather than a sole source, then the consultant shall advise in their project approach and include when submitting their fee.

Delivery dates of the HVAC equipment specified must be obtainable to meet the projected completion date of the project. Documents shall include a requirement for the Contractor to minimize the HVAC system downtime.

The Consultant shall ensure that a factory representative is onsite for the start-up of the new HVAC equipment.

6. Building Management System Integration

The Consultant shall provide the design to integrate all of the new AHU controls & points into the Schneider Electric EcoStruxure Building Management Software. The consultant shall also include in their design new air status stations in ductwork (airflow measurement) or design new technology to address feedback to AHU's.

7. Duct Lining

The consultant shall perform surveying and sampling of all ductwork to determine the corrective measures required to address the duct insulation degradation condition in all areas of the

building. The consultant shall provide a solution or multiple solutions depending on condition, location, size, scheduling constraints, etc. to address their findings and their recommended solution(s) shall align with the project budget.

8. Chilled and Hot Water Piping

All chilled water piping shall be evaluated and at a minimum, branch piping to AHU's shall be replaced to a point recommended after the consultants evaluation, random testing. Any existing piping to be reused shall be cleaned, so as not to create problems with the new equipment.

Secondary heating loop piping does not look to be in poor condition, but it too shall be evaluated and the consultant shall make the determination of what (if any) needs to be replaced. Again, the consultant shall include necessary cleaning/flushing of any existing piping to remain, so as not to create problems with the new equipment being installed.

9. Garage Exhaust Fans

The Consultant shall provide the design to replace four (4) garage exhaust fans designated as GEF41, 42, 43 and 44 located on the 9th floor penthouse with proper energy saving control, timers and/or demand ventilation associated with this type of equipment.

10. Steam Generating Equipment

Evaluate and coordinate with Vicinity and design new HTHW connections from P2 to P1 with new heat exchangers and any ancillary equipment necessary for this piping modification. The consultant's base contract design effort for this medium change from steam to HTHW will include all deliverables and effort up to and including the Design Development phase. If funding is sufficient, all following phases of design, project management and deliverables through close out will be executed utilizing the consultants allowance identified in their fee proposal.

The Consultant shall estimate the cost to complete the final design, project management and deliverables through close-out and include that amount in their fee proposal line item entitled **"Steam Generating Equipment Removal Allowance"**.

11. Testing and Balancing

The Consultant shall use its discretion and experience to determine whether HVAC System Testing and Balancing is needed in order to properly assess the function of the existing HVAC System. Such HVAC System Testing and Balancing shall be performed by a qualified firm. It is not required that such firm be pre-qualified with DPMC, however a NJ Business Registration Certificate and Department of Labor certification will be required.

As part of the design documents, the Consultant shall ensure that, following construction, the Contractor is required to hire a qualified HVAC Testing and Balancing firm, and such firm shall perform system tests to ensure that the HV AC system as installed performs as specified and designed. The design documents shall further require that the HV AC System Testing and Balancing firm shall produce a report setting forth its findings, adjustments, recommendations, and further that it shall certify that the HV AC system meets the design intent and will perform as specified and designed and that that all equipment, i.e., fans, controls, dampers, and devices requiring adjustments or regulation are properly installed, thoroughly cleaned, adjusted, or regulated for proper operation and free from objectionable noise and vibration. It is not required that such firm be pre-qualified with DPMC, however a NJ Business Registration Certificate and Department of Labor Certification will be required.

As part of Consultant's Construction Site Administration services, it will oversee the Contractor's work and their hiring of a HVAC System Testing and Balancing firm. The Consultant shall further ensure that any testing and balancing is performed in accordance with the current Association Air Balancing Council Standards or other State approved associations. A copy of the certified report and certification referred to above is to be provided to the DPMC Project Manager. The system shall be maintained by the maintenance personnel in accordance with the report data and operating manuals provided by the Contractor.

B. HAZARDOUS MATERIALS SURVEY AND REPORT

During Final Design, the Consultant shall survey the building(s) and, if deemed necessary, collect samples of materials that will be impacted by the construction/demolition activities and analyze them for the presence of hazardous materials including:

a. Asbestos in accordance with N.J.A.C. 5:23-8, Asbestos Hazard Abatement Subcode.

b. Lead in accordance with N.J.A.C. 5:17, Lead Hazard Evaluation and Abatement Code.

c. PCB's in accordance with 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions. Consultant shall engage a firm certified in the testing and analysis of materials containing PCB's.

d. Other items as necessary, such as mold.

Consultant shall document their procedure, process and findings and prepare a "Hazardous Materials Survey Report" identifying building components impacted by construction activities requiring hazardous materials abatement. Consultant shall provide three copies of the "Hazardous Materials Survey Report" to the Project Manager.

Consultant shall estimate the cost of hazardous materials sample collection, destructive testing as necessary, tests and analysis and preparation of the Hazardous Materials Survey Report and

include that amount in their fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance"**, refer to paragraph XI.B.

Based on the Hazardous Materials Survey Report, Consultant shall provide construction documents for abatement of the hazardous materials impacted by the work in accordance with the applicable code, subcode and Federal regulations.

Consultant shall estimate the cost to prepare construction documents for hazardous materials abatement and include that amount in their fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance"**, refer to paragraph XI.C.

Consultant shall estimate the cost to provide "Construction Monitoring and Administration Services" for hazardous materials abatement activities and include that amount in their fee proposal line item entitled **"Hazardous Materials Construction Administration Allowance"**, refer to paragraph XI.D.

There shall be no "mark-up" of subconsultant or subcontractor fees if subconsultants or subcontractors are engaged to perform any of the work defined in paragraph VII.B "Hazardous Materials Survey and Report". All costs associated with managing, coordinating, observing and administrating subconsultants and subcontractors performing hazardous materials sampling, testing, analysis, report preparation and hazardous materials construction administration services shall be included in the consultant's lump sum fee proposal.

D. EXISTING DOCUMENTATION

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

- DBC Project A076: New Jersey Justice Complex, September 13, 1977, Grad/Hillier Joint Venture
- DPMC Project A0988-00: AHERA Management Plan; February 7, 2007; Powell~Harpstead, Inc.
- DPMC Project A1185-00: Facility Assessment Report and Capital Improvement Plan for the Department of Treasury Buildings Various Locations, March 31, 2016; USA Architects Planners + Designers Project #2014-114
- DPMC Project A1254-00: Hughes Justice Complex BAS Upgrades, Various Documents, April, 2021, CMS Inc.

Review these documents 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.

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

VIII. PERMITS & APPROVALS

A. NJ UNIFORM CONSTRUCTION CODE PLAN REVIEW AND PERMIT

The project construction documents must comply with the latest adopted edition of the NJ Uniform Construction Code (NJUCC).

The latest NJUCC Adopted Codes and Standards can be found at:

http://www.state.nj.us/dca/divisions/codes/codreg/

1. NJ Uniform Construction Code (NJUCC) Plan Review

Consultant shall estimate the cost of the NJUCC Plan Review by DCA and include that amount in their fee proposal line item entitled **"Plan Review and Permit Fee Allowance"**, refer to paragraph XI.A.

Upon approval of the Final Design Phase Submission by DPMC, the Consultant shall submit the construction documents to the Department of Community Affairs (DCA), Bureau of Construction Project Review to secure a complete plan release.

As of July 25, 2022, the Department of Community Affairs (DCA) is only accepting digital signatures and seals issued from a third party certificate authority. The DCA ePlans site can be found at:

https://www.nj.gov/dca/divisions/codes/offices/ePlans.html

Procedures for submission to the DCA Plan Review Unit can be found at:

https://www.state.nj.us/dca/divisions/codes/forms/pdf_bcpr/pr_app_guide.pdf

Consultant shall complete the "Project Review Application" and include the following on Block 5 as the "Owner's Designated Agent Name":

Joyce Spitale, DPMC
PO Box 235
Trenton, NJ 08625-0235
Joyce.Spitale@treas.nj.gov 609-943-5193

The Consultant shall complete the NJUCC "Plan Review Fee Schedule", determine the fee due and pay the NJUCC Plan Review fees, refer to Paragraph X.A.
The NJUCC "Plan Review Fee Schedule" can be found at:

http://www.state.nj.us/dca/divisions/codes/forms/pdf_bcpr/pr_fees.pdf

2. NJ Uniform Construction Code Permit

Upon receipt of a complete plan release from the DCA Bureau of Construction Project Review, the Consultant shall complete the NJUCC permit application and all applicable technical sub-code sections. The "Agent Section" of the application and certification section of the building sub-code section shall be signed. These documents, with **six (6) sets of DCA approved, signed and sealed construction documents** shall be forwarded to the DPMC Project Manager.

The Consultant may obtain copies of all NJUCC permit applications at the following website:

http://www.state.nj.us/dca/divisions/codes/forms/

All other required project permits shall be obtained and paid for by the Consultant in accordance with the procedures described in Paragraph VIII.B.

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 N.J.A.C. 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 N.J.A.C. 7:14B, Pinelands Commission, Highlands Council, Well

Construction and Maintenance; Sealing of Abandoned Wells with N.J.A.C. 7:9D, 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 N.J.A.C. 5:23-2.15(a)5, a permit cannot be issued until the letter(s) of certification is received.

4. 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.

5. Special Inspections:

In accordance with the requirements of the New Jersey Uniform Construction Code N.J.A.C. 5:23-2.20(b), Bulletin 03-5 and Chapter 17 of the International Building Code, the Consultant shall be responsible for the coordination of all special inspections during the construction phase of the project.

Bulletin 03-5 can be found at:

http://www.state.nj.us/dca/divisions/codes/publications/pdf_bulletins/b_03_5.pdf

a. Definition:

Special inspections are defined as an independent verification by a certified Special Inspector for **Class I buildings and smoke control systems in any class building**. The special inspector is to be independent from the Contractor and responsible to the Consultant so that there is no possible conflict of interest.

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

b. Responsibilities:

The Consultant shall submit with the permit application, a list of special inspections and the agencies or special inspectors 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.

B. 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."**

The Consultant may refer to the Division of Property Management and Construction "Procedures for Architects and Engineers Manual", Paragraph **"9. REGULATORY AGENCY APPROVALS"** 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.

IX. ENERGY INCENTIVE PROGRAM

The Consultant shall review the programs available on the "New Jersey's Clean Energy Program" website at: http://www.njcleanenergy.com as well as New Jersey electric and gas utility websites to determine if any proposed upgrades to the mechanical and/or electrical equipment and systems for this project qualify for "New Jersey Clean Energy Program" or utility approved rebates and incentives.

Consultant shall identify all rebates and incentives in their technical proposal.

The Consultant shall be responsible to complete the appropriate registration forms and applications, provide any applicable worksheets, manufacturer's specification sheets, calculations, attend meetings, and participate in all activities with designated representatives of the programs 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 its fee proposal.

X. ALLOWANCES

A. PLAN REVIEW AND 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 permits, certificates, and approvals required to complete this project.

2. Permit Costs:

The Consultant shall estimate 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 its fee proposal line item entitled **"Plan Review and Permit Fee Allowance"**, refer to Paragraph IX.A. 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 will be paid for by the State.

3. Applications:

The Consultant shall complete and submit all permit applications to the appropriate permitting authorities and the costs shall be paid from the Consultant's permit fee allowance. A copy of the application(s) and the original permit(s) obtained by the Consultant shall be given to the DPMC 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 its fee proposal under the "Permit Phase" column.

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

B. HAZARDOUS MATERIALS TESTING AND REPORT ALLOWANCE

Consultant shall estimate the costs to complete the hazardous materials survey, sample collection, testing and analysis and preparation of a "Hazardous Materials Survey Report" noted in paragraph VII.B and enter that amount on their fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance"**. Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the fee proposal review and potential fee negotiations. The cost breakdown sheet shall include, but not be limited to, the following information:

- Description of tasks and estimated cost for the following:
  - Sample collection
  - Sample testing
  - Preparation of an Hazardous Materials Survey Report

Any funds remaining in the Hazardous Materials Testing and Report Allowance will be returned to the State at the close of the project.

C. HAZARDOUS MATERIALS ABATEMENT DESIGN ALLOWANCE

Consultant shall estimate the costs to prepare construction documents for hazardous materials abatement noted in paragraph VII.B and enter that amount on their fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance"**. Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the fee proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Abatement Design Allowance will be returned to the State at the close of the project.

D. HAZARDOUS MATERIALS CONSTRUCTION ADMINISTRATION ALLOWANCE

Consultant shall estimate the cost to provide Construction Monitoring and Administration Services for hazardous materials abatement as noted in paragraph VII.B and enter that amount on their fee proposal line item entitled **"Hazardous Materials Construction Administration Allowance"**. Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the fee proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Hazardous Materials Construction Administration Allowance will be returned to the State at the close of the project.

E. STEAM GENERATING EQUIPMENT REMOVAL ALLOWANCE

The Consultant shall estimate the cost to complete the final design, project management and deliverables through close-out and include that amount in their fee proposal line item entitled **"Steam Generating Equipment Removal Allowance"**.

The Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the fee proposal review and potential fee negotiations. The cost breakdown sheet shall include a description of the tasks to be performed and the estimated cost of each task.

Any funds remaining in the Allowance will be returned to the State at the close of the project.

XI. SOW SIGNATURE APPROVAL SHEET

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: Alison Gottlieb 3/30/2023
ALISON GOTTLIEB, PROJECT MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: James Wright 3/30/2023
JAMES WRIGHT, MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: Perry E Stalter 3/30/2023
PERRY STALTER, BUILDING MANAGER DATE
DEPARTMENT OF TREASURY, DPMC

SOW APPROVED BY: 3/30/23
ANTHONY R. MAZZELLA, PROJECT MANAGER DATE
DESIGN SERVICES & ENERGY INITIATIVES, DPMC

SOW APPROVED BY: 3/30/23
CHRISTOPHER GEARY, ASST. DEPUTY DIRECTOR DATE
DIV PROPERTY MGT & CONSTRUCTION

XII. CONTRACT DELIVERABLES

The following are checklists listing the 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," 3.0 Edition, dated September 2022 available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf for a detailed description of the deliverables required for each submission item listed. References to the applicable paragraphs of the "Procedures for Architects and Engineers" are provided.

Note that the Deliverables Checklist may include submission items that are "S.O.W. Specific Requirements". These requirements will be defined in the project specific scope of work and included on the deliverables checklist.

This project includes the following phases with the deliverables noted as "Required by S.O.W" on the Deliverables Checklist:

- **SCHEMATIC DESIGN PHASE**
- **DESIGN DEVELOPMENT PHASE**
- **FINAL DESIGN PHASE**
- **PERMIT APPLICATION PHASE**
- **BIDDING AND CONTRACT AWARD**
- **CONSTRUCTION PHASE**
- **PROJECT CLOSE-OUT PHASE**

XIII. EXHIBITS

A. SAMPLE PROJECT SCHEDULE FORMAT
B. PROJECT SITE LOCATION MAP
C. AIR HANDLING UNIT STUDY - CONCORD
D. R.J. HUGHES JUSTICE COMPLEX AIR HANDLERS – FLOOR SERVED
E. VFD & POWER TRANSMISSSION REPLACEMENT STATUS
F. STEAM & HOT WATER FLOW DIAGRAM
G. EQUIPMENT NO LONGER IN USE (CAN BE REMOVED)

END OF SCOPE OF WORK

DPMC Project No.: A1383-00

Deliverables Checklist
Schematic Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
13.4.1.	A/E Statement of Site Visit	X					
13.4.2.	Narrative Description of Project	X					
13.4.3.	Building Code Information Questionnaire	X					
13.4.4.	Space Analysis	X					
13.4.5.	Special Features	X					
13.4.6.	Catalog Cuts	X					
13.4.7.	Site Evaluation, Pipe & Duct Testing	X					
13.4.8.	Subsurface Investigation		X				
13.4.9.	Surveys		X				
13.4.10.	Arts Inclusion		X				
13.4.11.	Design Rendering		X				
13.4.12.	Regulatory Approvals	X					
13.4.13.	Utility Availability	X					
13.4.14.	Drawings (6 Sets)	X					
13.4.15.	Outline Specifications (6 Sets)	X					
13.4.16.	Current Working Estimate/Cost Analysis	X					
13.4.17.	Project Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
13.4.18.	Formal Presentation with Page Turn of Design Documents	X					
13.4.19.	Scope of Work Compliance Statement	X					
13.4.20.	Schematic Design Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Design Development Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
14.4.1.	A/E Statement of Site Visit	X					
14.4.2.	Narrative Description of Project	X					
14.4.3.	Building Code Information Questionnaire	X					
14.4.4.	Space Analysis	X					
14.4.5.	Special Features	X					
14.4.6.	Catalog Cuts	X					
14.4.7.	Site Evaluation	X					
14.4.8.	Subsurface Investigation		X				
14.4.9.	Surveys		X				
14.4.10.	Arts Inclusion		X				
14.4.11.	Design Rendering		X				
14.4.12.	Regulatory Approvals	X					
14.4.13.	Utility Availability	X					
14.4.14.	Drawings (6 Sets)	X					
14.4.15.	Outline Specifications (6 Sets)	X					
14.4.16.	Current Working Estimate/Cost Analysis	X					
14.4.17.	Project Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
14.4.18.	Formal Presentation with Page Turn of Design Documents	X					
14.4.19.	Plan Review/Scope of Work Compliance Statement	X					
14.4.20.	Design development Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Final Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
15.4.1.	A/E Statement of Site Visit	X					
15.4.2.	Narrative Description of Project	X					
15.4.3.	Building Code Information Questionnaire	X					
15.4.4.	Space Analysis	X					
15.4.5.	Special Features	X					
15.4.6.	Catalog Cuts	X					
15.4.7.	Site Evaluation	X					
15.4.8.	Subsurface Investigation		X				
15.4.9.	Surveys		X				
15.4.10.	Arts Inclusion		X				
15.4.11.	Design Rendering		X				
15.4.12.	Regulatory Approvals	X					
15.4.13.	Utility Availability	X					
15.4.14.	Drawings (6 Sets)	X					
15.4.15.	Outline Specifications (6 Sets)	X					
15.4.16.	Current Working Estimate/Cost Analysis	X					
15.4.17.	Project Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
15.4.18.	Formal Presentation with Page Turn of Design Documents	X					
15.4.19.	Plan Review/Scope of Work Compliance Statement	X					
15.4.20.	Final Design Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Permit Application Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
16.1.	N.J. UCC Permit Application	X					
16.4.	Drawings, Signed and Sealed (6 Sets)	X					
16.5.	Specifications, Signed and Sealed (6 Sets)	X					
16.6.	Current Working Estimate/Cost Analysis	X					
16.7.	Project Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
16.8.	Plan Review/Scope of Work Compliance Statement	X					
16.9.	Permit Application Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC Project Manager the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Bidding and Contract Award Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
17.1.1.	Notice of Advertising	X					
17.1.2.	Bid Proposal Form	X					
17.1.3.	Bid Clearance Form	X					
17.1.4.	Drawings (6 Sets)	X					
17.1.5.	Specifications (6 Sets)	X					
17.1.6.	Construction Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
17.3	Pre-Bid Conference/Mandatory Site Visit	X					
17.3.1.	Meeting Minutes	X					
17.4	Bulletins	X					
17.5	Post Bid Meeting	X					
17.6.	Contract Award "Letter of Recommendation"	X					
17.8.	Bid Protests - Hearings	X					
17.9.	Bidding and Contract Award Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Construction Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
18.2.	Pre-Construction Meeting	X					
18.3.	Submittal Log	X					
18.4.	Construction Schedule – Detailed Phasing Plan with Agency Approved Constructability Concept to Meet Funding Deadlines	X					
18.5.	Project Progress Meetings	X					
18.7.	Contractor's Invoicing and Payment Process	X					
18.8.	Contractor Submittals	X					
18.10.	Testing	X					
18.11.	Shop Drawings (6 Sets)	X					
18.12.	As-Built & Record Set Drawings (6 Sets)	X					
18.13.	Change Orders	X					
18.14.	Construction Photographs	X					
18.15.	Field Observations	X					
18.17.	Construction Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

DPMC Project No.: A1383-00

Deliverables Checklist
Project Close-Out Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
19.3.	Development of Punch List and Inspection Reports	X					
19.5.	Determination of Substantial Completion	X					
19.6.	Correction/Completion of Punch List	X					
19.7.	Submission of Close-Out Documentation	X					
19.7.1.	As-Built and Record Sets of Drawing (6 Sets)	X					
19.8.	Final Payment	X					
19.9.1.	Contractors Final Payment	X					
19.9.2.	A/E's Final Payment	X					
19.10.	Project Close-Out Phase Deliverables Checklist	X					
S.O.W. Reference	**S.O.W. Specific Requirements**						

This checklist shall be completed by the Design Consultant and included as the cover sheet of this submission to document to the DPMC the status of all the deliverables required by the project specific Scope of Work.

_____ _____

Consultant Signature Date

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.

CODE	DESCRIPTION	REPORTS TO ASSOCIATE DIRECTOR OF:
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
<PROJ>		
Design		
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 Submitl for Constructability	OCS

Weeks

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

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Sheet 1 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

Activity ID	Description	Rspn
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
Plan Review-Permit Acquisition		
CV4001	Review Constr. Documents & Secure UCC Permit	PR
CV4010	Provide Funding for Construction Contracts	CA
CV4020	Secure Bid Clearance	CM
Advertise-Bid-Award		
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
Construction		
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

Weeks

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

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DBCA - TEST

Sheet 2 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

Activity ID	Description	Rspn
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

Weeks

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

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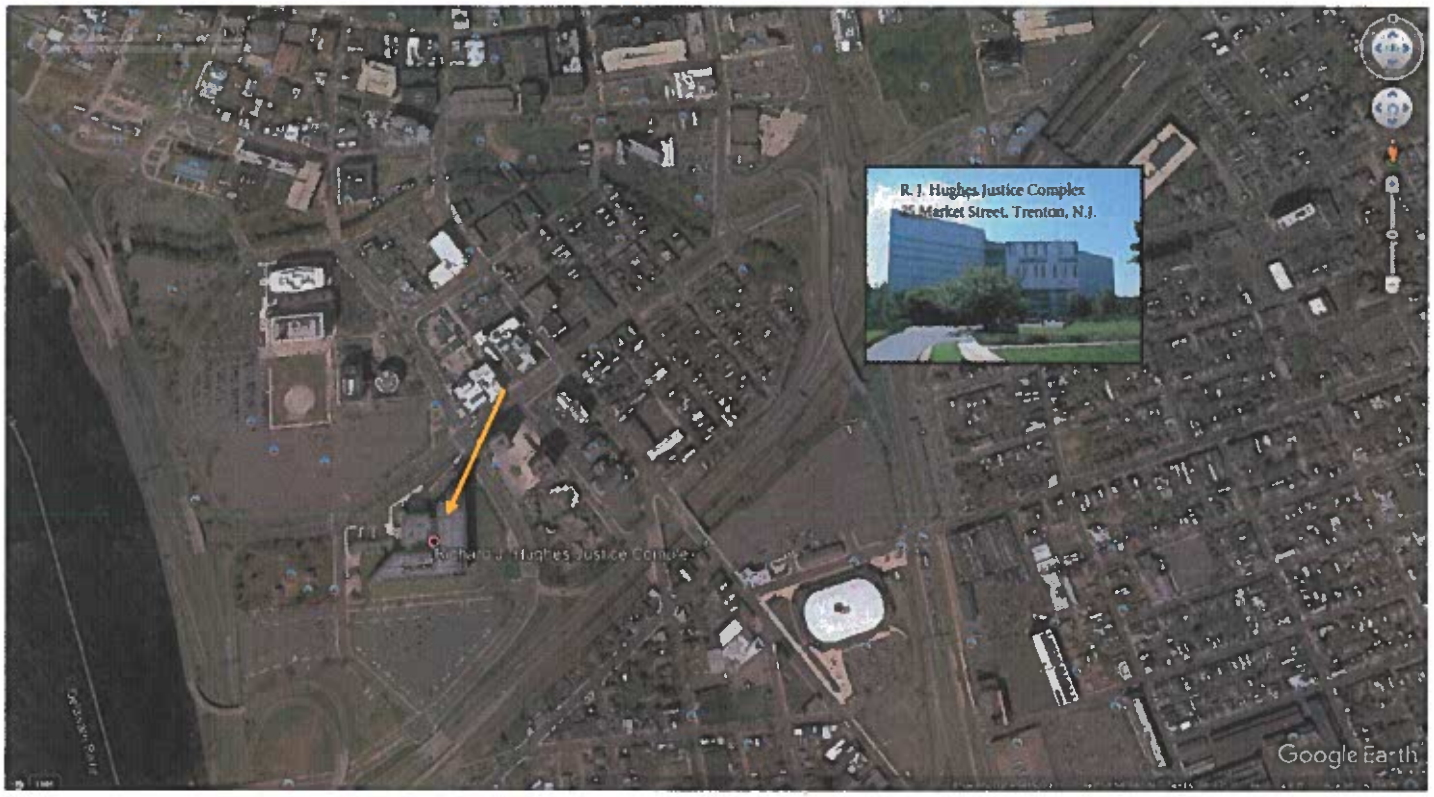
DBCA - TEST

Sheet 3 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'



Project Site Location Map

R. J. Hughes Justice Complex

EXHIBIT 'B'

RJ HUGHES JUSTICE COMPLEX

AIR HANDLING UNIT STUDY

DATED: DECEMBER 28, 2016

PREPARED FOR: DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION
OFFICE OF BUILDING MANAGEMENT & OPERATION
PO BOX 235
TRENTON, NJ 08625

PREPARED BY: CONCORD ENGINEERING

520 S. BURNT MILL ROAD
VOORHEES, NJ 08043
TELEPHONE: (856)427-0200
WWW.CONCORD-ENGINEERING.COM

PROJECT NO.: 4C16456.00

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study

Table of Contents

1. Executive Summary
2. Appendix A – Condensate Drain Pan Sketch
3. Appendix B – AHU Coil Replacement Recommendation List
4. Appendix C – AHU Characteristics and Unit Replacement Cost
5. Appendix D – Photographs

520 South Burnt Mill Road, Voorhees, NJ 08043 P: (856) 427-0200
3020 Market Street, Suite 103, Philadelphia, PA 19104 P: (215) 387-1011
www.concord-engineering.com

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study – Executive Summary

Concord Engineering was contracted by the Division of Property & Construction (DPMC) Office of Building Management & Operations (OBMO) to perform an investigation at the RJ Hughes Justice Complex. The investigation included (27) twenty seven Air Handler Units (AHUs), which are original to the building's construction in 1980. The condensate drain pans under the chilled water coil have corroded, failed and been removed causing the bottom of the units to collect the condensate, damage the insulation and ultimately corrode the bottom of the units. Concord Engineering was tasked with determining options for repairing the units as well as evaluating the cost and feasibility of replacing the units in their entirety.

Building Overview

The RJ Hughes Justice Building was originally constructed in 1980 and is utilized as a state court and office building. The building is over 735,000 ft² and the majority of the equipment in the building is original to the building's construction. Twenty seven AHU's with hot water and chilled water coils serve Variable Air Volume (VAV) units throughout the building. High temp hot water and chilled water are supplied to the building from the district Veolia plant. The existing building automation system utilizes pneumatically driven devices with an antiquated electronic control system. It is our understanding that the building automation system is in the early stages of a replacement project.

Project Approach

Based on previous experience in the building, Concord Engineering was able to develop a strategic approach to evaluate the existing conditions, document the witnessed conditions, develop solutions for remediation and gather enough information to determine the appropriate cost and feasibility for unit replacement.

The first step in the process was to perform focused site visits to review and document the existing conditions. During these site visits, Concord Engineering gathered photographic documentation of each unit, developed potential options for repair and documented equipment characteristics.

At the conclusion of the site investigation phase, Concord Engineering spent time researching potential options for repair, contacting equipment manufacturers to confirm availability and determining approximate equipment costs for replacement in order to develop budget values for a replacement project.

HVAC System Overview

The installed air handlers are original to the building's construction in 1980. It was quite evident during our onsite review that the building staff has done an excellent job of maintaining the HVAC equipment within the building. The (27) Twenty Seven AHUs are feeding tempered air to the VAV boxes throughout the building consist of the following unit makeup:

EXHIBIT 'C'

- The mixed air plenum consists of outdoor air and return air connections that have modulating pneumatic dampers. Dampers are controlled by the existing Robert Shaw control system.
- After the mixing plenum is the air filters section. Access doors allow for easy filter changes and equipment service.
- Following the air filter section, is the belt driven supply fan section. Supply fans are equipped with Variable Frequency Drives (VFDs) to vary blower motor speed (Two Atrium units have a motor starter and not a VFD as units are a constant volume unit only). The Robert Shaw system is controlling the VFD speed based on system static pressure downstream to account for the modulation of the VAVs.
- A Hot Water Coil (HWC) with a 2-way pneumatic modulation control valve follows the supply fan section. The control valve is operated by the Robert Shaw control system.
- Chilled Water Coil (CWC) with a 2-way pneumatic modulation control valve then follows the HWC section. The condensate drain pans have been removed along with the insulation on the base of the chilled water coil section. The base of the CWC section has been coated with a rhino liner in order to utilize the section base as a condensate drain pan. On the ninth floor mechanical room, the AHUs had a new drain connection installed in the base.
- The supply ductwork connects to the CWC section in order to supply conditioned air to the VAV boxes throughout the building.

The current equipment is in fair condition with the exception of the CWC sections. Concord believes with the repair of the CWC section drain pan issue, the remainder of the equipment components can remain in service. Items will need to be repaired in the future as expected but with general maintenance and service, the service life of the equipment could be extended another 5-10 years.

RJ Hughes Justice Complex Recommendations

Based on our findings, Concord Engineering developed two options for consideration. In addition, Concord Engineering developed budget estimates to allow for the DPMC to choose the appropriate option based on current funding available. Concord Engineering also explored a third option which consisted of replacing the entire chilled water section of the unit including the coil but based on discussions with the equipment manufacturer, the cost of a new unit and the cost of a new section are too close to actually explore this option further. Their recommendation was to just replace the unit as it is not worth it to replace the coil section.

Option #1 – Replacement of the Condensate Drain Pans

Concord Engineering has determined that the condensate drain pan can be replaced but will require the removal of the CWC in order to do so. Below is the scope of work necessary to replace the condensate pans in accordance to Appendix A – Condensate Pan Sketch:

- The existing CWC coil piping connections need to be disconnected and disassembled to allow the coil to be removed from the unit. In some instances, the Chilled Water Isolation valves may need to be replaced if it is determined they are not holding during the retrofit installation. Based on the year and condition of the valves, we recommend they be replaced during this retrofit. Appendix B – Coil Recommendations for Replacement, illustrates the coils in which we recommend replacing.
- The existing CWC needs to be drained and removed.
- The CWC section base to be coated with an epoxy product to seal metal base. This will extend the life of the bottom of the unit that has been damaged due to the condensate sitting in the bottom of the section. The existing drains from CWC base section will be reutilized as an emergency secondary pan only.

EXHIBIT 'C'

- The CWC to be reinstalled within the new Stainless Steel (SS) drain pan. Based on our findings, it is recommended that some of the CWC coils be replaced during this process as the coil frame rails have significant signs of corrosion due to the coils sitting inside the condensate pans.
- Rubber shims to be installed between the coil rail base and the new SS drain pan. This will allow for condensate to flow under the CWC rails and prevent the coil rails from rotting.
- Access panels to be added to the side of the unit to allow access for the splash guard to be installed and removed when needed.
- New splash guard to be installed to catch any condensate that is blown off the CWC and lands past the new drain pan. This guard to be angled back to the new drain pan for proper drainage.
- The new splash guard to be removable to allow the maintenance staff to gain access to the equipment base for service and cleaning.

Option #1 – Budget Pricing

Concord Engineering has developed the below pricing based on discussions with equipment manufacturers, feasibility of retrofit application and the anticipated effort for installation. In some cases based on equipment location and other infrastructure in close proximity to the equipment, the coils may not be able to be removed from the side of the unit and may require further disassembly of the cooling coil section or temporary relocation of other equipment.

- Materials - **$424,500.00**
    - Includes 13 New Coils
    - New Drain Pans
    - Access Panels
    - Isolation Valves
    - Epoxy Coating for the bottom of the units
    - Miscellaneous Piping, Insulation, etc.
- Labor - **$894,000.00**
    - Includes Coil Pulls and Replacement
    - Valve Replacement
    - Installation of Epoxy Coating
    - Installation of Drain Pans
    - Installation of Access Panels
    - Crane Rental and Operator
- **Total Budget Estimate = $1,318,500.00**
- Duration Schedule – 54 Weeks (We anticipate it taking two weeks per unit once materials are onsite)

Option #2 – Replacement of the Air Handler Units

Based on our site investigation and feasibility of replacing the Air Handling Units, Concord Engineering has developed the below scope of work necessary to replace the units;

- Demolition of the existing Air Handler Unit, one at a time
- Replacement of existing hot water and chilled water shut off valves
- Onsite assembly of the new Air Handling Unit

EXHIBIT 'C'

- Reconnect the Hot and Chilled Water Piping
- Reconnect the electrical connections
- Reconnect ductwork connections
- Installation of new sensors and duct smoke detectors
- Reconnect to existing BAS or the new BAS System
- Testing, Adjusting and Balancing the airflow and GPMs through the coils
- Commission the Air Handler

Option #2 – Budget Pricing

Concord Engineering has developed the below pricing based on the feasibility of the equipment and replacement, equipment costs provided by an equipment manufacturer and estimated labor values based on the sequencing of the replacement.

- Materials - **$3,861,400.00**
    - New Air Handling Units
    - New Sensors, Smoke Detectors
    - New Isolation Valves
    - New Actuators
    - New Ductwork Connections
    - New Insulation
- Labor - **$4,237,500.00**
    - Demolition of Existing Units
    - Valve Replacement
    - Site Assembly of the new units
    - Reconnect ductwork
    - Reconnect electrical connections
    - Reconnect piping connections
    - Connections to the BAS System
    - Installation of new sensors, smoke detectors
    - Testing, Adjusting and Balancing
    - Commissioning
    - Crane Rental and Operator
- **Total Budget Estimate = $8,098,900.00**
- Duration Schedule – 108 Weeks (We anticipate it taking four weeks per unit once materials are onsite)

Conclusion

Concord Engineering has performed a detailed investigation aiming at identifying the most feasible and cost effective solutions to ensure proper operation of the HVAC Equipment within the building. Based on our analysis, it is significantly more expensive to replace the equipment in its entirety and the recommendation we provided to install a new drain pan should extend the useful life of the equipment another 5-10 years at which time the DPMC may be able to replace a few of the units each year to minimize the capital expenditure.

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study

Appendix A – Condensate Drain Pan Sketch

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EXHIBIT 'C'

CONCORD ENGINEERING GROUP (856) 427-0200 — Calculation Sheet —	TITLE	JOB NO.			SHEET
		PREPARER NAME (print)			OF
	ORIGINATOR				
	DATE				
	VERIFIER				
	DATE				

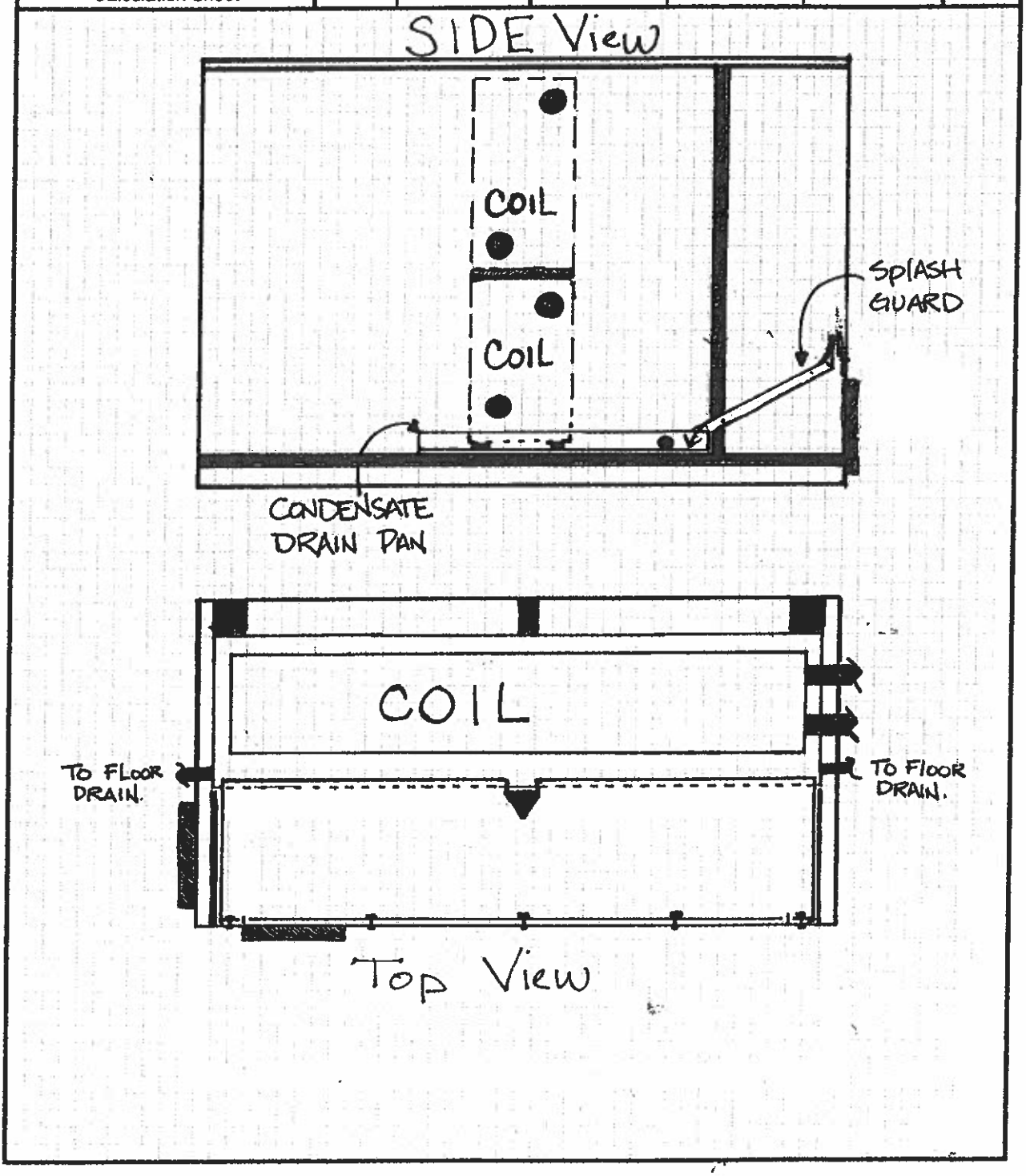

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study

Appendix B – AHU Coil Replacement Recommendation List and General Notes

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EXHIBIT 'C'

CONCORD ENGINEERING

AHU Coil Replacement Recommendation List and General Notes

AC Dimensions										
9'10" W x 7'4"H x 26'9"L (48"W CW Coil Section)	9'10"W x 8'4"H x 27'L (48" W CW Coil Section)	9'10"W x 5'4"H x 23'5"L (42"W CW Coil Section)	6'2"W x 3'6"H x 19'3"L (36"W CW Coil Section)	12'8"W x 8'4"H x 28'L (48"W CW Coil Section)	5'6"W x 3'H x 16'8"L (48"W CW Coil Section)	9'10"W x 5'4"H x 22'6"L (48"W CW Coil Section)	12'9"W x 8'4"H x 29'6"L (48"W CW Coil Section)	9'10"W x 8'4"H x 29'L (48"W CW Coil Section)	11'W x 8'4"H x 28'L (48"W CW Coil Section)	9'4"W x 4'10"H x 23'L (39"W CW Coil Section)
AC-3	AC-2	AC-9	AC-26	*AC-10	*AC-31	AC-29	AC-1	*AC-27	*AC-6	*AC-21
*AC-4	AC-5	*AC-13		AC-24					AC-17	
*AC-8	*AC-18	*AC-25							AC-20	
AC-7	AC-19									
AC-14										
*AC-15										
*AC-16										
AC-28										
*AC-30										

*(The coil frame is excessively rusted and may pose an issue when moving the coil.)

Comment No.	General Equipment Comments
1.	Should consider replacing the entire coil section on AC-15.
2.	The building column is in close proximity to AC-17 and may make it difficult to remove the coil from either side.
3.	AC-30 has pneumatic lines running across the coil section which will make it difficult to remove the coil from either side.
4.	AC-29: The flex connector flange is separating and leaking a lot of air.
5.	AC-8: Coil pull will be difficult. Will need to remove supply duct fromHV-1/EF.
6.	AC-16: Cannot pull coil from either side. Will need to disassemble the coil housing in order to remove coil and insert new pan.
7.	All units have had the CW drain pan removed, insulation removed and the bottom coated with rhino liner.
8.	All units have had the insulation removed in the CW and HW sections and new armaflex insulation installed. The bottom of the units remains with no insulation.
9.	The units on the 9th floor mechanical room have had shower drains installed into the bottom of the CW

EXHIBIT 'C'

Comment No.	General Equipment Comments
	coil section.
10.	Equipment is currently 38 years old. Condition of the equipment is fair with the exception of the CW coil section. If drain pans and coils are repaired the remainder of the unit should last another 10-15 years.
11.	CW coils will need to be removed, new SS drain pan installed under the coil with a rubber shim in order to keep coil rail from sitting in the new pan. A splash guard will also need to be installed in order to catch any water that blows off of the coil. This pan will be angled back to the new SS drain pan. Splash guard should be removable in order to clean coils and access the base of the unit. Base of the unit will need to be coated with an epoxy coating along with the sides in order to make the unit bottom a secondary drain pan and to keep it from rotting out.
12.	New SS drain pans will be 24"W x equipment width. The splash guards will be as follows: • 48"W CW Coil = 22"W x equipment width. • 42"W CW Coil = 18"W x equipment width. • 39"W CW Coil = 16"W x equipment width. • 36"W CW Coil = 14"W x equipment width.

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study

Appendix C – AHU Characteristics and Unit Replacement Costs

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EXHIBIT 'C'

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AHU Characteristics and Unit Replacement Costs

Unit	Supply CFM	System Static Pressure	Return CFM	New Unit Cost (Equipment Only)
9th Floor				
AHU-1	43,500	N/A	N/A	$174,000
AHU-3	31,420	1.5"w.c.	28,890	$125,680
AHU-4	31,250	1.3"w.c.	28,730	$125,000
AHU-5	33,020	1.25"w.c.	30,380	$132,080
AHU-2	33,200	0.7"w.c.	30,480	$132,800
AHU-25	20,000	1.35"w.c.	17,600	$80,000
AHU-9	16,650	2.0"w.c.	15,875	$66,600
AHU-8	28,215	0.9"w.c.	25,960	$112,860
AHU-7	25,830	0.7"w.c.	23,760	$103,320
AHU-6	38,805	Unit not running.	35,740	$155,220
AHU-10	40,000	1.15"w.c.	31,830	$160,000
AHU-14	27,305	1.6"w.c.	25,120	$109,220
AHU-15	26,730	1.5"w.c.	24,590	$106,920
AHU-16	29,000	1.0"w.c.	26,660	$116,000
AHU-21	14,760	1.6"w.c.	13,860	$59,040
AHU-13	19,185	0.7"w.c.	17,630	$76,740
AHU-17	33,225	1.1"w.c.	30,570	$132,900
AHU-20	35,435	1.5"w.c.	32,620	$141,740
AHU-26	N/A	N/A	N/A	$30,000
AHU-19	33,940	0.6"w.c.	31,220	$135,760
AHU-18	33,380	0.9"w.c.	30,710	$133,520
AHU-24	43,500	N/A	N/A	$174,000
Basement				
AHU-27	34,500	1.2"w.c.	31,050	$138,000
AHU-28	29,000	2.00"w.c.	26,100	$116,000
AHU-29	20,000	1.7"w.c.	17,600	$80,000
AHU-30	28,000	1.9"w.c.	26,100	$112,000
AHU-31	5,500	N/A	N/A	$22,000
			Total Replacement Equipment Cost	**$3,0541,400**

EXHIBIT 'C'

RJ Hughes Justice Complex

Air Handling Unit Study

Appendix D – Photographs

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EXHIBIT 'C'

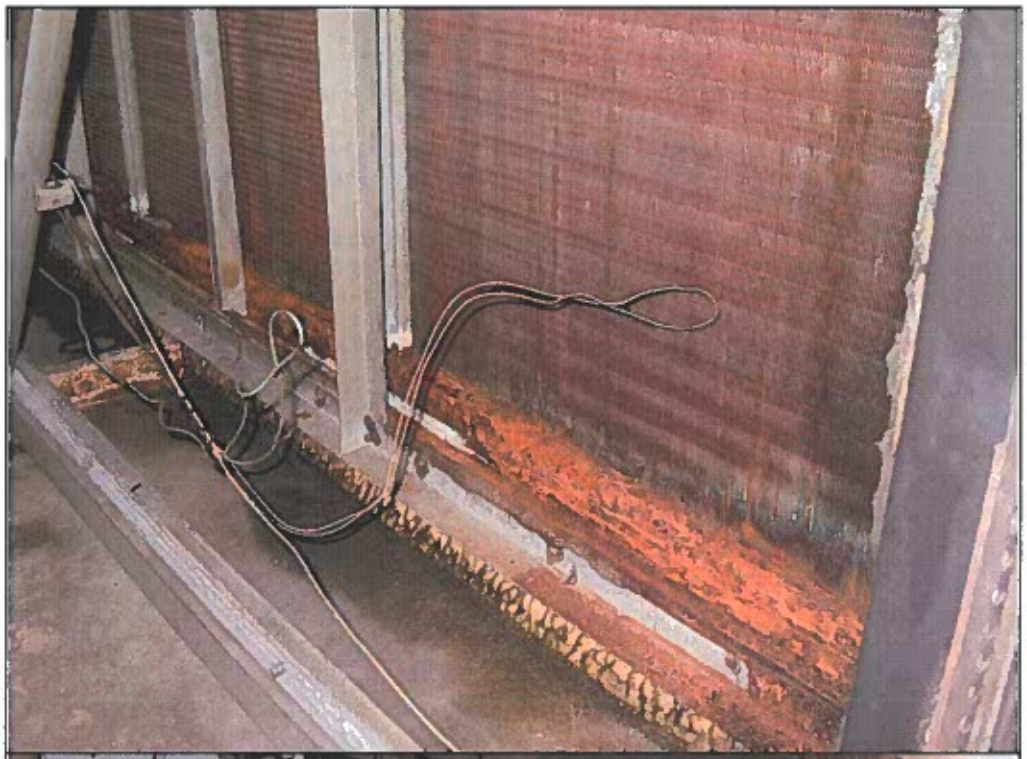
Photographs

EXHIBIT 'C'

EXHIBIT 'C'

EXHIBIT 'C'

EXHIBIT 'C'



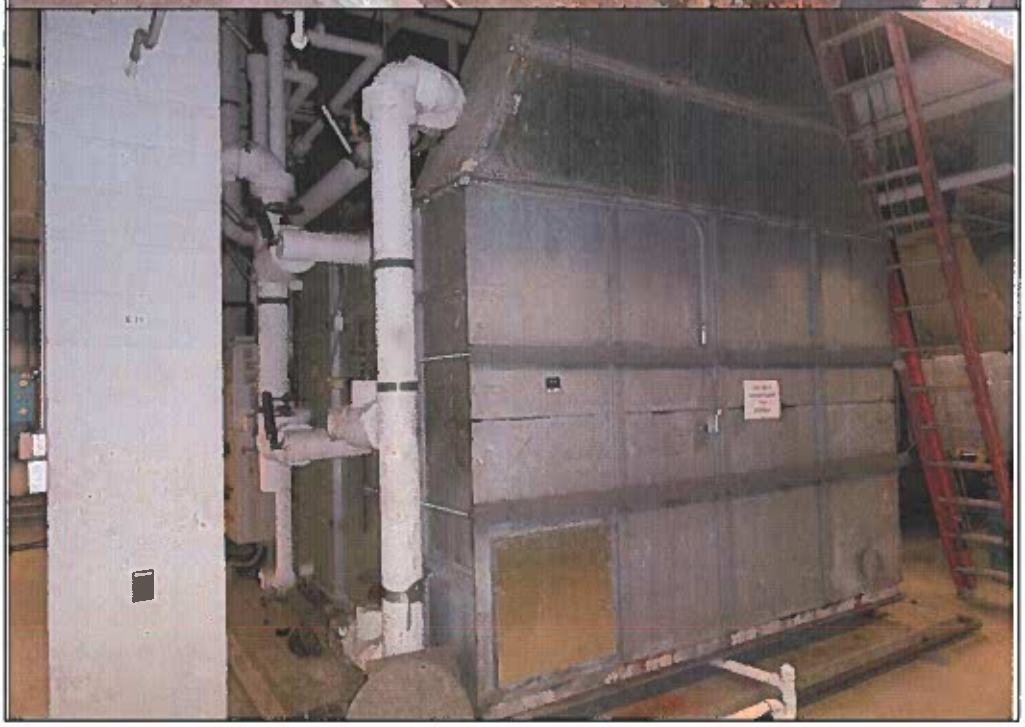


EXHIBIT 'C'

R.J. Hughes Justice Complex Air Handlers

AHU#	FLOOR SERVED	SECTION
AHU 1	ATRIUM WEST SIDE	E
AHU 2	FLOOR 1 & 2	A
AHU 3	FLOOR 3 & 4	A
AHU 4	FLOOR 5 & 6	A
AHU 5	FLOOR 7 & 8	A
AHU 6	FLOOR 2,3 & 4	B
AHU 7	FLOOR 5 & 6	B
AHU 8	FLOOR 7 & 8	B
AHU 9	P1 WEST END	A & B
AHU 10	CAFETERIA 1ST. FLOOR	B
AHU 13	FLOOR 1 & 2	C
AHU 14	FLOOR 3 & 4	C
AHU 15	FLOOR 5 & 6	C
AHU 16	FLOOR 7 & 8	C
AHU 17	FLOOR 1 & 2	D
AHU 18	FLOOR 3 & 4	D
AHU 19	FLOOR 5 & 6	D
AHU 20	FLOOR 7 & 8	D
AHU 21	P1 NORTH END	C & D
AHU 24	ATRIUM NORTH SIDE	E
AHU 25	SUPREME COURT OFFICE 8M & 8B	E
AHU 26	SUPREME COURT	E
AHU 27	FLOOR 5E & 7E TAX COURT	E
AHU 28	P1 LEVEL ATRIUM FLOOR VENTS (WINDOW WASH), P1 LEVEL CEILING VAV'S AND NORTH SIDE ONLY WINDOW WASH AT THE 3RD FLOOR CEILING LEVEL	E
AHU 29	CONFERENCE ROOM 4TH. FLOOR	E
AHU 30	P1 ATRIUM CEILING VAV'S AT THE 3RD FLOOR LEVEL AND WINDOW WASH WEST SIDE ONLY AT THE 3RD FLOOR LEVEL	E
AHU 31	FLOOR 5E SUPERIOR COURT	E

EXHIBIT 'D'

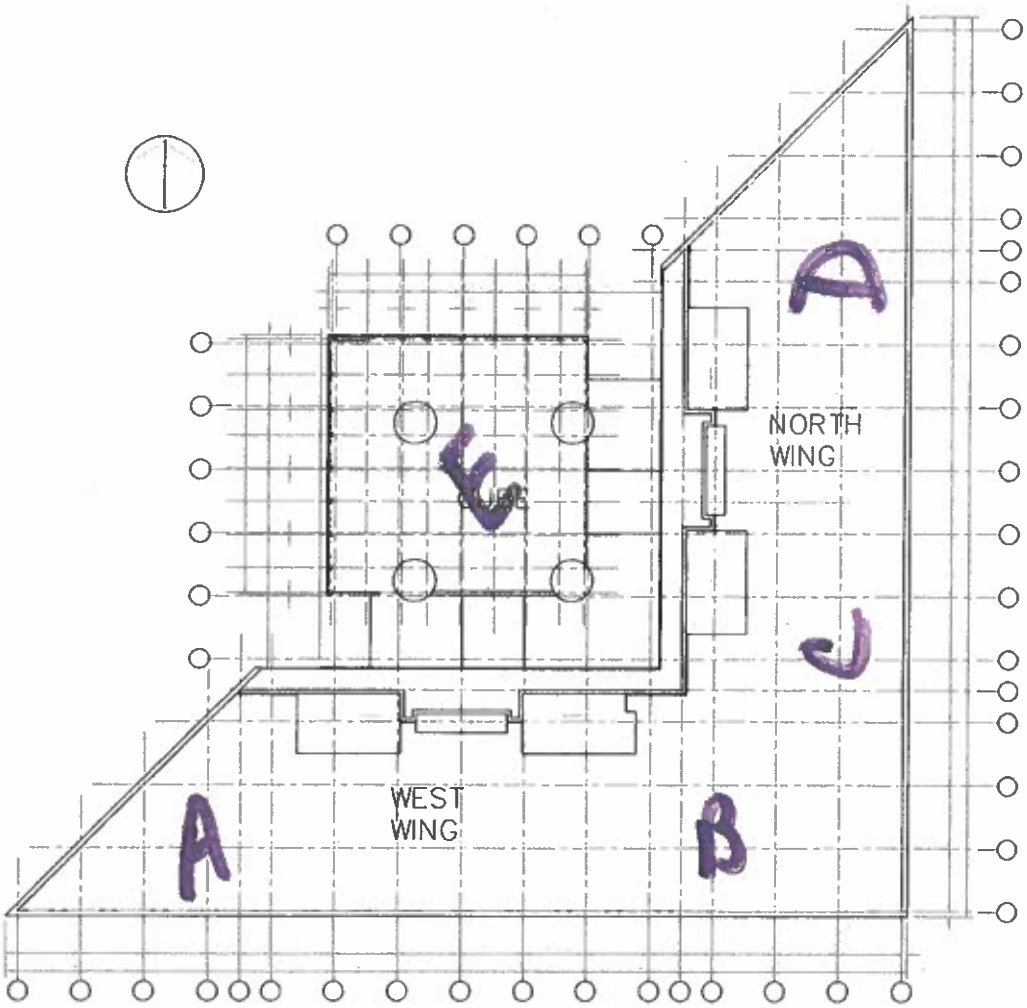


EXHIBIT 'D'

VFD & POWER TRANSMISSION REPLACEMENT STATUS						
UNIT	HP	MOTOR	VFD	PULLEYS	STATUS	NOTES
AHU-001	75	ON SITE	X	X	COMPLETED	
AHU-002	50	ON SITE	ORDERED	X	VFD ordered 4/11/22	
AHU-003	50	X	X	X	COMPLETED	
AHU-004	50	ON SITE	X	X	READY FOR INSTALL	
AHU-005	50	ON SITE	ON SITE	X	READY FOR INSTALL	
AHU-006	75	X	X	X	COMPLETED	
AHU-007	40	NTO	NTO	X	ORDER ALL	
AHU-008	50	NTO	NTO	X	ORDER ALL	
AHU-009	30	X	X	X	COMPLETED	
AHU-010	100	X	X	X	COMPLETED	
AHU-013	40	NTO	NTO	X	ORDER ALL	
AHU-014	50	X	X	X	COMPLETED	
AHU-015	50	NTO	NTO	X	ORDER ALL	
AHU-016	50	X	X	X	COMPLETED	
AHU-017	60	X	X	X	COMPLETED	
AHU-018	50	NTO	NTO	X	ORDER ALL	
AHU-019	50	X	X	X	COMPLETED	
AHU-020	60	X	NTO	X	NEED TO ORDR VFD	
AHU-021	30	NTO	NTO	X	ORDER ALL	
AHU-024	75	X	X	X	COMPLETED	
AHU-025	40	NTO	NTO	X	ORDER ALL	
AHU-026	15	X	X	X	COMPLETED	
AHU-027	60	NTO	NTO	X	ORDER ALL	
AHU-028	40	NTO	NTO	X	ORDER ALL	
AHU-029	40	X	X	X	COMPLETED	
AHU-030	50	NTO	NTO	X	ORDER ALL	
AHU-031	10	X	N/A	X	COMPLETED	
RF-001	25	X	X	X	COMPLETED	
RF-002	20	NTO	X	X	NEED TO ORDER MOTOR	
RF-003	15	X	X	X	COMPLETED	WAS COMPLETED, THEN BASE AND MOTOR WENT BAD
RF-004	15	X	X	X	COMPLETED	
RF-005	15	X	X	X	COMPLETED	
RF-006	20	X	X	X	COMPLETED	8-5-21 NEW MOTOR INSTALLED, NEW MOTOR WENT BAD
RF-007	15	X	X	X	COMPLETED	
RF-008	15	X	X	X	COMPLETED	
RF-009	10	X	X	X	COMPLETED	
RF-010	20	X	X	X	COMPLETED	
RF-011	10	X	X	X	COMPLETED	

EXHIBIT 'E'

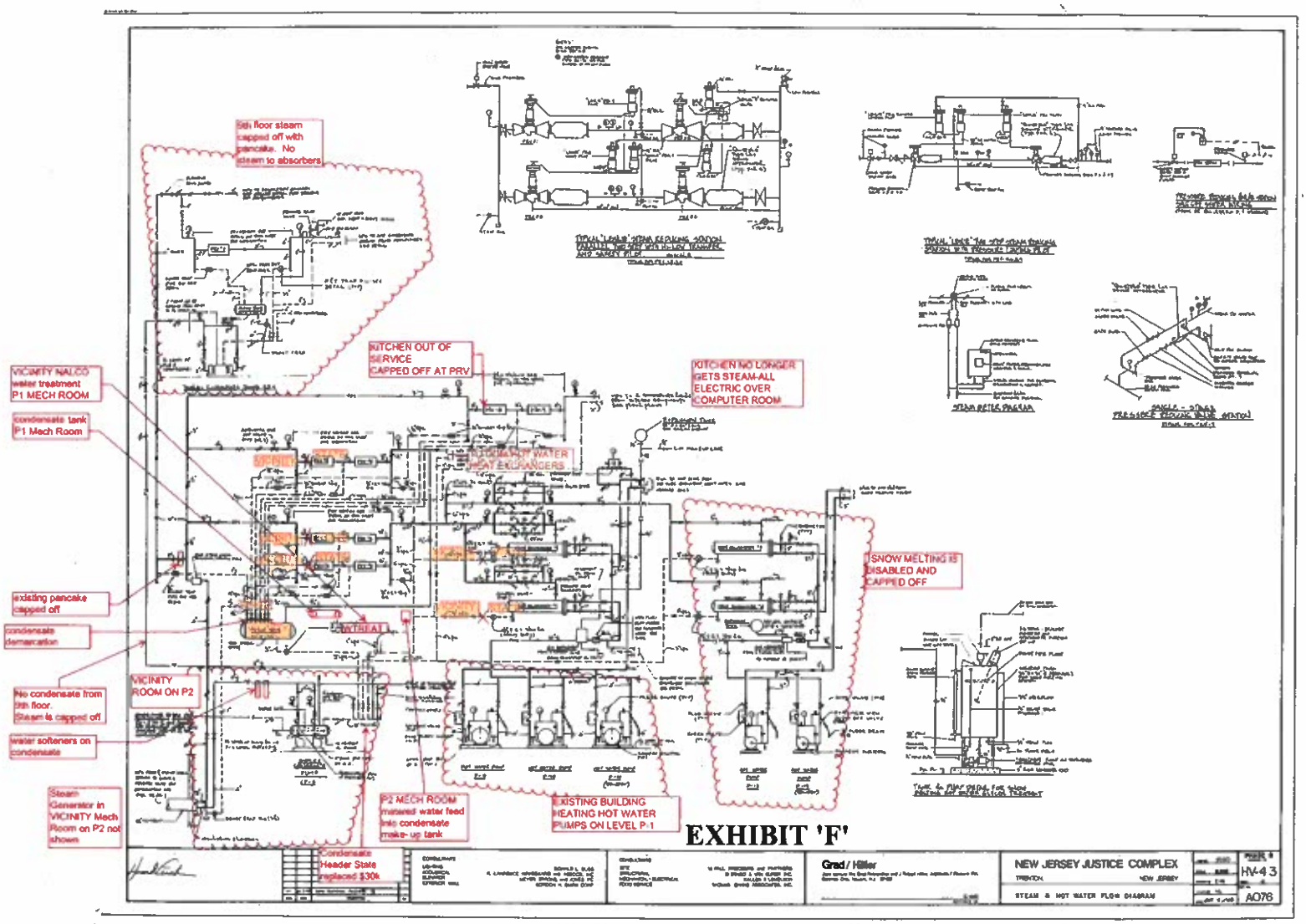

5th floor steam capped off with pancake. No steam to absorbers
KITCHEN OUT OF SERVICE CAPPED OFF AT PRV
KITCHEN NO LONGER GETS STEAM-ALL ELECTRIC OVER COMPUTER ROOM
VICINITY NALCO water treatment P1 MECH ROOM
condensate tank P1 Mech Room
existing pancake capped off
condensate demarcation
No condensate from 5th floor. Steam is capped off
water softeners on condensate
VICINITY ROOM ON P2
Steam Generator in VICINITY Mech Room on P2 not shown
P2 MECH ROOM metered water feed into condensate make- up tank
EXISTING BUILDING HEATING HOT WATER PUMPS ON LEVEL P-1
SNOW MELTING IS DISABLED AND CAPPED OFF
STEAM BETWEEN HOT WATER HEAT EXCHANGERS
Condensate Header State replaced $30k
Grad / Hiller
NEW JERSEY JUSTICE COMPLEX
TRENTON
NEW JERSEY
STEAM & HOT WATER FLOW DIAGRAM
HV-43
A076

EXHIBIT 'F'

Equipment No Longer in Use (Can be Removed)

9th floor

- 3 Absorption Chillers
- Solar Heating Equipment
- Any Equipment outside of the Air Handlers attached to the Abandoned humidification System (this will need to be walked as it's not shown clearly on the as built drawings)
- Condensate pumps
- Frick rotary screw compressor assembly (not shown on the as built drawings) Vicinity Owned
- Piping from various systems, Chilled Water, Condenser Water, Steam, Condensate
- Cooling Towers (Towers located on the upper roof are Vicinity owned)
- Cooling Towers (Towers located on lower roof are State owned)
- Pumps, Chilled Water, Condenser Water
- Solar Collectors
- 26KV substations, 2 ea. (not shown on the as built drawings) Vicinity Owned
- Glycol Tank
- Old Generators, associated equipment and piping

P1 Mechanical Room

- Solar Heating Pumps
- Snow Melt System
- Piping from various systems, Heating, Solar Heating, Steam, Condensate, Snow melt
- Abandoned Heat Exchanger and piping (not shown on the as built drawings)

P2 Mechanical Room

- Steam Station and piping

P2 Garage

- Condensate pumps, piping, tank (if converted to Hot Water from Steam) Vicinity Owned
- Steam Generators and piping (if converted to Hot Water from Steam) Vicinity Owned

If converted from Steam to High Temperature Hot Water as our heat transfer medium for our Heating and Domestic water systems there will be additional equipment to be removed.

Additional Equipment if changed over to Hot Water

- 2 Steam Stations in P1 Mechanical Room
- 2 Steam to Hot water Heat Exchangers, Heating System
- 2 Steam to Hot water Heat Exchangers, Domestic Hot Water System
- Flash Tank
- P1 Condensate Tank
- P1 water Treatment system
- P2 Condensate Tank
- P2 Condensate Pumps
- P2 Water Treatment system
- Any piping, valves, steam traps, safety devices, metering devices, enclosures, electrical equipment, compressors associated with the steam / condensate system.

EXHIBIT 'G'