SCOPE OF WORK

Air Handler Replacement - Housing Units

Northern State Prison
Newark, Essex County, NJ

Project No. C1113-00

STATE OF NEW JERSEY

Honorable Mikie Sherrill, Governor
Honorable Dr. Dale G. Caldwell, Lt. Governor

DEPARTMENT OF THE TREASURY

Aaron Binder, State Treasurer

DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Thomas A. Edenbaum, Director

Date: June 04, 2026

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I. OBJECTIVE

The objective of this project is to replace/rebuild six (6) identical air handler units, dampers, fans and controls within the six (6) housing units A, B, C, D, E and F at the Northern State Prison. See **Exhibit 'B'** for the project site location map.

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**
- **P065 Lead Paint Evaluation**

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 $3,137,500.

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 $3,954,000.

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 after notification from the consultant during the design process and in a revised CWE deliverable.

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 following schedule identifies the estimated design and construction phases for this project and the estimated durations. The Consultant's proposed design and construction schedule shall be in Gantt chart format and calendar day durations with start and finish dates for each task.

PROJECT PHASE	**ESTIMATED DURATION (Calendar Days)**
1. Site Access Approvals & Schedule Design Kick-off Meeting	**14**
2. Advisability Study Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
3. Schematic Design Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
4. Design Development Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
5. Final Design Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14
6. Final Design Re-Submission to Address Comments	**7 (See Note)**

- *Project Team & DPMC Plan/Code Unit Review & Approval* 14

7. DCA Submission Plan Review **30**

8. Permit Application Phase **7**

- *Issue Plan Release*

9. Bid Phase **42**

10. Award Phase **28**

11. Construction Phase **300**

12. Project Close Out Phase **30**

Note: The Final Design Phase is considered complete upon the release of Construction Documents by the DPMC Code Group and/or the Department of Community Affairs (DCA).

B. CONSULTANT'S PROPOSED DESIGN & CONSTRUCTION SCHEDULE

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, and 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:

Northern State Prison
168 Frontage Road
Newark, NJ 07114

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:	Youstina Mansy, Project Manager
Address:	Division of Property Management & Construction 20 West State Street, 3rd Floor Trenton, NJ 08608-1206
Phone No:	(609) 633-2077
E-Mail:	Youstina.Mansy@treas.nj.gov

2. Department of Corrections:

Name:	David Wiszniewski, Project Manager Department of Corrections
Address:	Whittlesey Road, PO Box 863 West Trenton, NJ 08625
Phone No:	(609) 292-4036 ext. 5431/ (609) 433-7680
E-Mail:	David.Wiszniewski@doc.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

Northern State Prison was opened in 1987 and is a maximum-security prison. The Prison is located on a 43-acre site and includes in excess of fifty buildings. The Prison currently houses approximately 2,700 incarcerated persons.

B. FUNCTIONAL DESCRIPTION OF THE BUILDING

In 2018, the Department of Corrections (DOC) procured a study by Miller-Remick of the air-handling units at Northern State Prison (NSP to make recommendations for replacement. The study report is shown in **Exhibit 'F'**.

Air-handling units are located in mechanical penthouses on top of housing units A, B, C, D, E and F. See **Exhibit 'B'**. Units have exceeded life expectancy and need rebuild to repair or replacement. Coils were replaced last year.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. DESIGN REQUIREMENTS

1. Advisability Study Phase

The Consultant shall review the study by Miller-Remick shown in **Exhibit 'F'** and investigate the existing air handling systems in all six (6) housing units. Items to be addressed shall include, but not be limited to ductwork, controls, sensors, louvers, intake and exhaust equipment, motors, duct detectors, smoke mitigation, drip pans, freeze protection, drains and concrete pads.

Provide recommendations to rebuild or replace all six (6) air-handling units.

2. General

The Consultant shall provide the design, specifications, bid/award and construction administration services to replace/rebuild or recondition six (6) Air Handler Units (AHUs), system controls, replace louvers and related HVAC equipment, located throughout the housing units.

Identify the existing AHU floors and the locations served. All replaced/ rebuilt AHUs to include energy efficiency components.

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

Provide temporary heating and cooling systems that will be needed for each unit during construction.

The existing AHU's provide heating & cooling. However, in the current condition they do not meet any air exchange requirements. The new units must meet air exchange requirements.

Units A through F controls shall have cellular capability.

Provide electric damper controls along with operation of the exhaust fan system.

Provide a remote viewing station that will be used to provide Northern State Prison with indoor / outdoor temperatures, heating / cooling temperatures, have an alarm for freeze protection and have cellular capability. This viewing station shall be capable of monitoring Units A through F and have capacity for future installs.

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 (Minimum Efficiency Reporting Value) rating for the new AHUs.

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, condition of existing bases/equipment pads (if being reused), etc.

3. Demolition

Special demolition and removal procedures shall be identified in the design documents for the AHU units that are to be replaced. Special procedures and required hours for electric utility shutdown and/or switchover during the AHU unit removal and replacement shall be described and included in the design documents. Piping reconfiguration and demolition for access and staging is also included as part of the demolition scope.

4. Building Access

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

5. Phasing Plan

The Consultant shall provide the design as one project with multiple phases, taking into consideration that each new system must be completely installed, tested and accepted, with equipment, wiring, conduit and the necessary cutting and filling before starting the next phase (Housing unit). Coordination with the Facility (NSP) will be required during the construction phase.

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 DOC and Facility for review, with the goal of limiting the disturbance to the facility's operation.

6. 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 AHU 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 AHU system downtime.
The Consultant shall ensure that a factory representative is onsite for the start-up of the new AHU equipment.

7. Building Management System Integration

The Consultant shall provide the design to integrate all of the new AHU controls & points into a new Building Management System to be provided in this project. 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.

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 consultant’s evaluation, random testing. Any existing piping to be reused shall be cleaned, so as not to create problems with the new equipment.

9. Testing and Balancing

The Consultant shall use its discretion and experience to determine whether AHU system testing and balancing is needed in order to properly assess the function of the existing AHU System. Such 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 testing and balancing firm, and such firm shall perform system tests to ensure that the AHU system as installed performs as specified and designed. The

design documents shall further require that the system testing and balancing firm shall produce a report setting forth its findings, adjustments, recommendations, and further that it shall certify that the AHU 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 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 BUILDING MATERIALS

Consultant shall survey the building and related components 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:

1. Asbestos in accordance with N.J.A.C. 5:23-8, Asbestos Hazard Abatement Sub-code.

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

3. 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.

4. Mold.

Consultant shall document the 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, testing, analysis and preparation of the Hazardous Materials Survey Report and include that amount in the fee proposal line item entitled **“Hazardous Materials Testing and Report Allowance,”** refer to paragraph **XIII.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, sub-code and Federal regulations.

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

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

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

C. 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 three (3) 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:

Advisability Study Phase: One (1) oral presentation at phase completion.

Schematic Phase: One (1) oral presentation at phase completion.

Design Development Phase: One (1) oral presentation at phase completion.

Final Design Phase: One (1) oral presentation at phase completion.

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.

- C0588-00 - Northern State Prison Facility Inventory [1995]
- C0656-00 - Water Heater Replacements at Housing Units.

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:

https://www.nj.gov/dca/codes/codreg/ucc.shtml

1. NJUCC Plan Review

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

As of July 25, 2022, the DCA is only accepting digital signatures and seals issued from a third party certificate authority.

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

https://www.nj.gov/dca/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":

Trevor M. Dittmar, DPMC
PO Box 235
Trenton, NJ 08625-0235
Trevor.Dittmar@treas.nj.gov 609-984-5529

2. NJUCC 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 or DPMC released drawings and specifications, with raised seals and wet signatures** shall be forwarded to the DPMC Project Manager.

The following information should be provided for the permit application and technical sections to be submitted:

Ownership in Fee:
Department of Corrections
1300 Stuyvesant Avenue
Trenton, 08618

Proposed work site:
Northern State Prison

Work site location:
Northern State Prison
168-354 Frontage Road

Essex County
Block 5088 Lots 158 and 194
The county MUST be listed in the address.

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

https://www.nj.gov/dca/codes/resources/constructionpermitforms.shtml

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; and Notification to Adjoining Property Owners with N.J.A.C. 5:23-2.17(c). 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 NJUCC 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:

https://www.nj.gov/dca/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 NJUCC.

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, **"Plan Review and Permit Fee Allowance."**

The Consultant may refer to the DPMC "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. BIDDING AND CONTRACT AWARD RESPONSIBILITIES

The Bidding and Contract Award Phase commences with receipt of the required permits, UCC plan release and verification that funding is in place for construction. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "17. BIDDING AND CONTRACT AWARD" for all requirements for this phase available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

X. CONSTRUCTION ADMINISTRATION RESPONSIBILITIES

The A/E and their sub-consultants shall, unless otherwise specified in the project specific Scope of Work, provide site administration during the construction of the project. The services required of such site administration shall include, but shall not be limited to, attend and chair the pre-construction meeting, conduct weekly field observations, attend and chair regularly scheduled bi-weekly job meetings, review/approve shop drawings, submittals, and respond to RFI's.

The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "18. CONSTRUCTION PHASE" for all construction administration requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XI. PROJECT CLOSE-OUT PHASE

The DPMC Project Manager has the full responsibility for the planning, scheduling, and execution of project close-out activities. The A/E is responsible to cooperate with the DPMC Project Manager in the planning, scheduling, and execution of project close-out activities. The Consultant shall refer to the DPMC "Procedures for Architects and Engineers Manual", Paragraph "19. PROJECT CLOSE-OUT PHASE" for all requirements available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf.

XII. ENERGY REBATE AND INCENTIVE PROGRAMS

The Consultant shall review any and all programs on the State and Federal level to determine if any proposed upgrades to the mechanical and/or electrical equipment and systems for this project qualify for approved rebates and incentives.

The Consultant shall review the programs available on the "New Jersey's Clean Energy Program" website at: http://www.njcleanenergy.com as well as federal websites and New Jersey electric and gas utility websites to determine if and how they can be applied to this project.

The Consultant shall identify all applicable rebates and incentives in their technical proposal and throughout the design phase.

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.

XIII. 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 NJUCC permit) and include that amount in its fee proposal line item entitled **"Plan Review and Permit Fee Allowance."** A breakdown of each permit and application fee shall be attached to the fee proposal for reference.

NOTE: The NJUCC 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.

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

The 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 the 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 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; and,
    - Preparation of a 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

The Consultant shall estimate the costs to prepare construction documents for hazardous materials abatement noted in paragraph **VII.B** and enter that amount on the fee proposal line item entitled **"Hazardous Materials Abatement Design Allowance."** Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the 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

The 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 the fee proposal line item entitled "**Hazardous Materials Construction Administration**

Allowance." Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the 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.

XIV. 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 (including the subsequent contract deliverables and exhibits) and verifies that the work will not conflict with the existing or future construction activities of other projects at the site.

SOW PREPARED BY: Lucy Ibrahim 06/04/2026

LUCY IBRAHIM, PROJECT MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: James Wright 6/4/2026

JAMES WRIGHT, MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: David Wiszniewski 6/8/2026

DAVID WISZNIEWSKI, PROJECT MANAGER DATE
DEPARTMENT OF CORRECTIONS

SOW APPROVED BY: Youstina Mansy 6/9/2026

YOUSTINA MANSY, PROJECT MANAGER DATE
DPMC PROJECT MANAGEMENT GROUP

SOW APPROVED BY: Jeanette M Barnard 7.6.26

JEANETTE M. BARNARD, DEPUTY DIRECTOR DATE
DMV PROPERTY MGT & CONSTRUCTION

XV. 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:

ADVISABILITY STUDY PHASE;

SCHEMATIC DESIGN PHASE;

DESIGN DEVELOPMENT PHASE;

FINAL DESIGN PHASE;

PERMIT APPLICATION PHASE;

BIDDING AND CONTRACT AWARD;

CONSTRUCTION PHASE; and

PROJECT CLOSE-OUT PHASE

XVI. EXHIBITS

A. SAMPLE PROJECT SCHEDULE FORMAT
B. PROJECT SITE LOCATION MAP
C. EXISTING PHOTOS
D. GENERAL SECURITY INFORMATION
E. APPLICATION FOR CLEARANCE
F. AIR HANDLING UNIT REPLACEMENT IN HOUSING UNITS. STUDY BY MILLER-REMICK LLC.

END OF SCOPE OF WORK

Deliverables Checklist
Advisability Study Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Included	
		Yes	No	Yes	No	Yes	No
11.5.1.	A/E Statement of Site Visit						
11.5.2	Narrative Description of Project						
11.5.3.	Space Analysis						
11.5.4.	Special Features						
11.5.5.	Site Evaluation						
11.5.6.	Subsurface Investigation						
11.5.7.	Surveys						
11.5.8.	Arts Inclusion						
11.5.9.	Design Rendering						
11.5.10.	Regulatory Approvals						
11.5.11.	Utility Availability						
11.5.12.	Diagrammatic Sketches/Drawings (6 Sets)						
11.5.13.	Specifications (6 Sets)						
11.5.14.	Current Working Estimate/Cost Analysis in CSI Format						
11.5.15.	Project Schedule						
11.5.16.	Formal Presentation						
11.5.17.	Scope of Work Compliance Statement						
11.5.18.	Advisability Study Deliverables Checklist						
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

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						
13.4.2.	Narrative Description of Project						
13.4.3.	Building Code Information Questionnaire						
13.4.4.	Space Analysis						
13.4.5.	Special Features						
13.4.6.	Catalog Cuts						
13.4.7.	Site Evaluation						
13.4.8.	Subsurface Investigation						
13.4.9.	Surveys						
13.4.10.	Arts Inclusion						
13.4.11.	Design Rendering						
13.4.12.	Regulatory Approvals						
13.4.13.	Utility Availability						
13.4.14.	Drawings (6 Sets)						
13.4.15.	Specifications (6 Sets)						
13.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
13.4.17.	Project Schedule						
13.4.18.	Formal Presentation						
13.4.19.	Scope of Work Compliance Statement						
13.4.20.	Schematic Design Phase Deliverables Checklist						
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

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						
14.4.2.	Narrative Description of Project						
14.4.3.	Building Code Information Questionnaire						
14.4.4.	Space Analysis						
14.4.5.	Special Features						
14.4.6.	Catalog Cuts						
14.4.7.	Site Evaluation						
14.4.8.	Subsurface Investigation						
14.4.9.	Surveys						
14.4.10.	Arts Inclusion						
14.4.11.	Design Rendering						
14.4.12.	Regulatory Approvals						
14.4.13.	Utility Availability						
14.4.14.	Drawings (6 Sets)						
14.4.15.	Specifications (6 Sets)						
14.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
14.4.17.	Project Schedule						
14.4.18.	Formal Presentation						
14.4.19.	Plan Review/Scope of Work Compliance Statement						
14.4.20.	Design development Phase Deliverables Checklist						
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

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						
15.4.2.	Narrative Description of Project						
15.4.3.	Building Code Information Questionnaire						
15.4.4.	Space Analysis						
15.4.5.	Special Features						
15.4.6.	Catalog Cuts						
15.4.7.	Site Evaluation						
15.4.8.	Subsurface Investigation						
15.4.9.	Surveys						
15.4.10.	Arts Inclusion						
15.4.11.	Design Rendering						
15.4.12.	Regulatory Approvals						
15.4.13.	Utility Availability						
15.4.14.	Drawings (6 Sets)						
15.4.15.	Specifications (6 Sets)						
15.4.16.	Current Working Estimate/Cost Analysis in CSI Format						
15.4.17.	Project Schedule						
15.4.18.	Formal Presentation						
15.4.19.	Plan Review/Scope of Work Compliance Statement						
15.4.20.	Final Design Phase Deliverables Checklist						
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

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						
16.4.	Drawings, Signed and Sealed (6 Sets)						
16.5.	Specifications, Signed and Sealed (6 Sets)						
16.6.	Current Working Estimate/Cost Analysis in CI Format						
16.7.	Project Schedule						
16.8.	Plan Review/Scope of Work Compliance Statement						
16.9.	Permit Application Phase Deliverables Checklist						
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

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						
17.1.2.	Bid Proposal Form						
17.1.3.	Bid Clearance Form						
17.1.4.	Drawings (6 Sets)						
17.1.5.	Specifications (6 Sets)						
17.1.6.	Construction Schedule						
17.3	Pre-Bid Conference/Mandatory Site Visit						
17.3.1.	Meeting Minutes						
17.4	Bulletins						
17.5	Post Bid Meeting						
17.6.	Contract Award "Letter of Recommendation"						
17.8.	Bid Protests - Hearings						
17.9.	Bidding and Contract Award Phase Deliverables Checklist						
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

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						
18.3.	Submittal Log						
18.4.	Construction Schedule						
18.5.	Project Progress Meetings						
18.7.	Contractor's Invoicing and Payment Process						
18.8.	Contractor Submittals						
18.10.	Testing						
18.11.	Shop Drawings (6 Sets)						
18.12.	As-Built & Record Set Drawings (6 Sets)						
18.13.	Change Orders						
18.14.	Construction Photographs						
18.15.	Field Observations						
18.17.	Construction Phase Deliverables Checklist						
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

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						
19.5.	Determination of Substantial Completion						
19.6.	Correction/Completion of Punch List						
19.7.	Submission of Close-Out Documentation						
19.7.1.	As-Built and Record Sets of Drawing (6 Sets)						
19.8.	Final Payment						
19.9.1.	Contractors Final Payment						
19.9.2.	A/E's Final Payment						
19.10.	Project Close-Out Phase Deliverables Checklist						
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

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
0	**Typical Project Model**	**Mon 5/19/...**	**Fri 4/9/27**	**691 days**
1	**Project Initiation Phase**	**Mon 5/19/25**	**Mon 7/14/25**	**57 days**
2	Project Funding Received	Mon 5/19/25	Mon 5/19/25	1 day
3	Schedule Site Visit	Thu 5/22/25	Thu 5/22/25	1 day
4	Site Visit	Fri 5/30/25	Fri 5/30/25	1 day
5	Prepare Draft SOW	Mon 6/2/25	Fri 6/6/25	5 days
6	Distribute Draft SOW for Review	Mon 6/9/25	Mon 6/9/25	1 day
7	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
8	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
9	Review SOW	Tue 6/10/25	Mon 6/23/25	10 days
10	Receive Comments Revise SOW	Tue 6/24/25	Mon 6/30/25	5 days
11	Distribute Final SOW for Review & Signature	Tue 7/1/25	Tue 7/1/25	1 day
12	Review & Sign SOW	Wed 7/2/25	Wed 7/2/25	1 day
13	Review & Sign SOW	Mon 7/7/25	Mon 7/7/25	1 day
14	Review & Sign SOW	Thu 7/10/25	Thu 7/10/25	1 day
15	Forward SOW to Procurement	Mon 7/14/25	Mon 7/14/25	1 day
16	**Consultant Selection Phase**	**Tue 7/15/25**	**Mon 9/1/25**	**49 days**
17	Prepare Solicitation, Advertise Proj	Tue 7/15/25	Wed 7/16/25	2 days
18	Select Firms - Random Selection	Thu 7/17/25	Thu 7/17/25	1 day
19	Conduct Preproposal Meeting	Mon 7/28/25	Mon 7/28/25	1 day
20	Consultant Questions Due - Prepare and Issue Addenda	Tue 7/29/25	Tue 7/29/25	1 day
21	Receive Proposals - Distribute for Review	Tue 8/12/25	Tue 8/12/25	1 day
22	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
23	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
24	Review & Rank Proposals	Wed 8/13/25	Tue 8/19/25	5 days
25	Determine Rankings, Open Fee Proposals and Distribute to Committee	Wed 8/20/25	Wed 8/20/25	1 day
26	Negotiate Fee	Thu 8/21/25	Wed 8/27/25	5 days
27	Provide Funding for Consultant Contract	Thu 8/28/25	Thu 8/28/25	1 day
28	Complete Recommendation to Awa	Thu 8/28/25	Fri 8/29/25	2 days
29	Consultant Contract Award	Sat 8/30/25	Mon 9/1/25	2 days
30	**Design Phase**	**Sun 9/7/25**	**Fri 5/8/26**	**244 days**
31	Design Contract "Kick-Off" Meeting	Sun 9/7/25	Mon 9/8/25	2 days
32	Program Design Phase	Tue 9/9/25	Mon 10/6/25	28 days
33	Receive Program Submittal & Distribute for Review	Tue 10/7/25	Thu 10/9/25	3 days

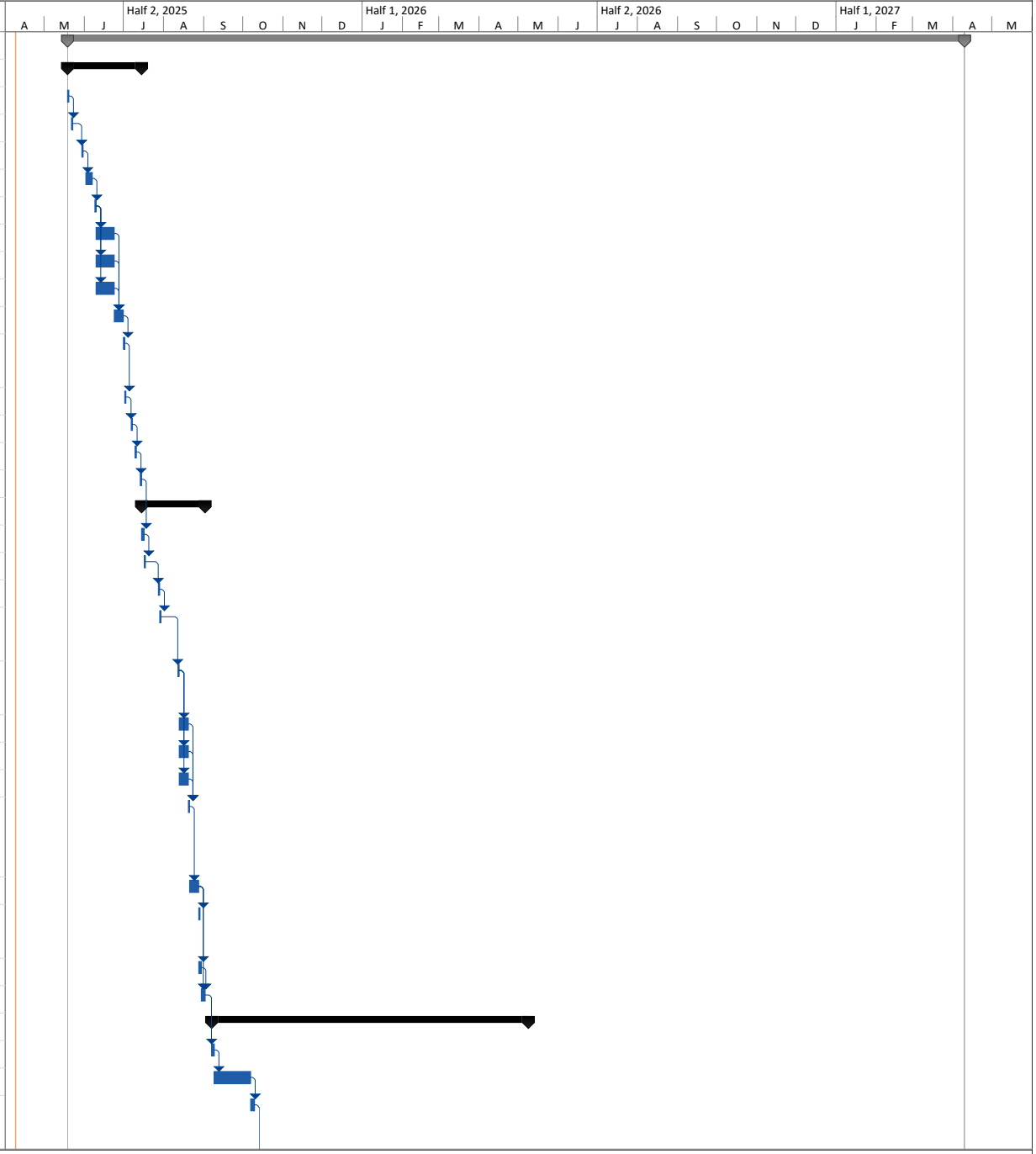


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
34	Program Phase Presentation/Submittal	Fri 10/10/25	Fri 10/10/25	1 day
35	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
36	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
37	Review Program Phase	Mon 10/13/25	Fri 10/24/25	10 days
38	Receive Program Phase Comments, Review & Consolidate and Forward to Consultant	Mon 10/27/25	Wed 10/29/25	3 days
39	Schematic Design Phase	Thu 10/30/25	Wed 11/26/25	28 days
40	Receive Schematic Submittal & Distribute for Review	Thu 11/27/25	Mon 12/1/25	3 days
41	Schematic Phase Presentation/Submittal	Tue 12/2/25	Tue 12/2/25	1 day
42	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
43	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
44	Review Schematic Phase	Wed 12/3/25	Tue 12/16/25	10 days
45	Receive Schematic Phase Comments, Review & Consolidate and Forward to Consultant	Wed 12/17/25	Fri 12/19/25	3 days
46	Design Development (DD) Design Phase	Sat 12/20/25	Fri 1/16/26	28 days
47	Receive DD Submittal & Distribute for Review	Mon 1/19/26	Wed 1/21/26	3 days
48	DD Phase Presentation/Submittal	Thu 1/22/26	Thu 1/22/26	1 day
49	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
50	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
51	Review DD Phase	Fri 1/23/26	Thu 2/5/26	10 days
52	Receive DD Phase Comments, Review & Consolidate and Forward to Consultant	Fri 2/6/26	Tue 2/10/26	3 days
53	Final Design Phase	Wed 2/11/26	Tue 3/10/26	28 days
54	Final Submittal & Distribute for Rev	Wed 3/11/26	Fri 3/13/26	3 days
55	Final Phase Presentation/Submittal	Sat 3/14/26	Mon 3/16/26	2 days
56	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
57	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
58	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
59	Review Final Phase	Tue 3/17/26	Mon 3/30/26	10 days
60	Receive Final Phase Comments, Review & Consolidate and Forward to Consultant	Tue 3/31/26	Thu 4/2/26	3 days
61	Final/Permit Design Phase	Fri 4/3/26	Thu 4/16/26	14 days

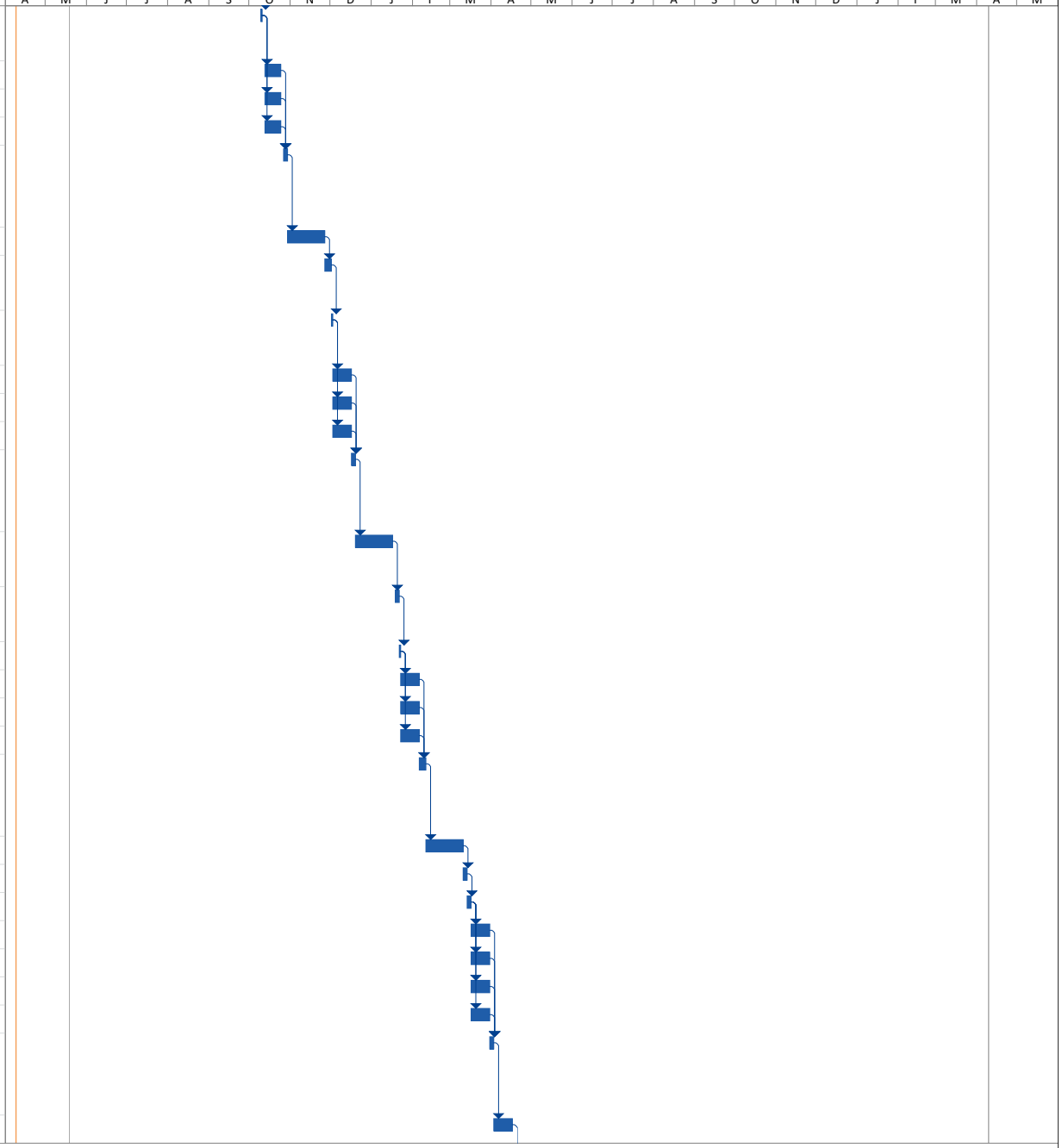


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

ID	Task Name	Start	Finish	Duration
62	Final/Permit Submittal & Distribute for Review	Fri 4/17/26	Tue 4/21/26	3 days
63	Review Final/Permit Phase	Wed 4/22/26	Tue 5/5/26	10 days
64	Receive Final/Permit Phase Approval and Forward to	Wed 5/6/26	Fri 5/8/26	3 days
65	**Permit Acquisition Phase**	**Wed 4/22/26**	**Fri 5/22/26**	**31 days**
66	Prepare UCC Application, Bid Clearance & Submit Bid Package	Sat 5/9/26	Fri 5/15/26	7 days
67	Provide Funding for Construction	Wed 4/22/26	Wed 4/22/26	1 day
68	Secure Bid Clearance Including Funding Verification	Mon 5/18/26	Fri 5/22/26	5 days
69	**Advertise-Bid-Award Phase**	**Mon 5/25/26**	**Thu 7/23/26**	**60 days**
70	Advertise Project for Construction	Mon 5/25/26	Mon 5/25/26	1 day
71	Conduct Pre-Bid Meeting	Tue 6/9/26	Tue 6/9/26	1 day
72	Contractor Questions Due - Prepare and Issue Bulletin	Mon 6/15/26	Wed 6/17/26	3 days
73	Construction Bids Due - Open Bids	Tue 6/23/26	Tue 6/23/26	1 day
74	Conduct Post Bid Review Meeting	Mon 6/29/26	Mon 6/29/26	1 day
75	Prepare and Submit Recommendation for Award	Tue 6/30/26	Wed 7/1/26	2 days
76	Prepare and Submit Recommendation for Award	Thu 7/2/26	Fri 7/3/26	2 days
77	Prepare Contract and Schedule Award Meeting	Mon 7/6/26	Fri 7/10/26	5 days
78	Conduct Contract Award Meeting/Issue NTP	Thu 7/16/26	Thu 7/16/26	1 day
79	Sign/Seal UCC Permit Applications	Thu 7/16/26	Thu 7/16/26	1 day
80	Secure UCC Permit from DCA	Fri 7/17/26	Thu 7/23/26	5 days
81	**Construction Phase**	**Fri 7/24/26**	**Wed 1/20/27**	**181 days**
82	Conduct Construction "Kick-Off Meeting"	Fri 7/24/26	Fri 7/24/26	1 day
83	Complete Construction - Achieve Substantial Completion	Sat 7/25/26	Wed 1/20/27	180 days
84	**Project Close-Out Phase**	**Thu 1/21/27**	**Fri 4/9/27**	**79 days**
85	Complete Punch List	Thu 1/21/27	Fri 2/19/27	30 days
86	Close Out Construction Contract	Mon 2/22/27	Fri 2/26/27	5 days
87	Close Out Consultant Contract	Mon 3/1/27	Fri 4/9/27	30 days

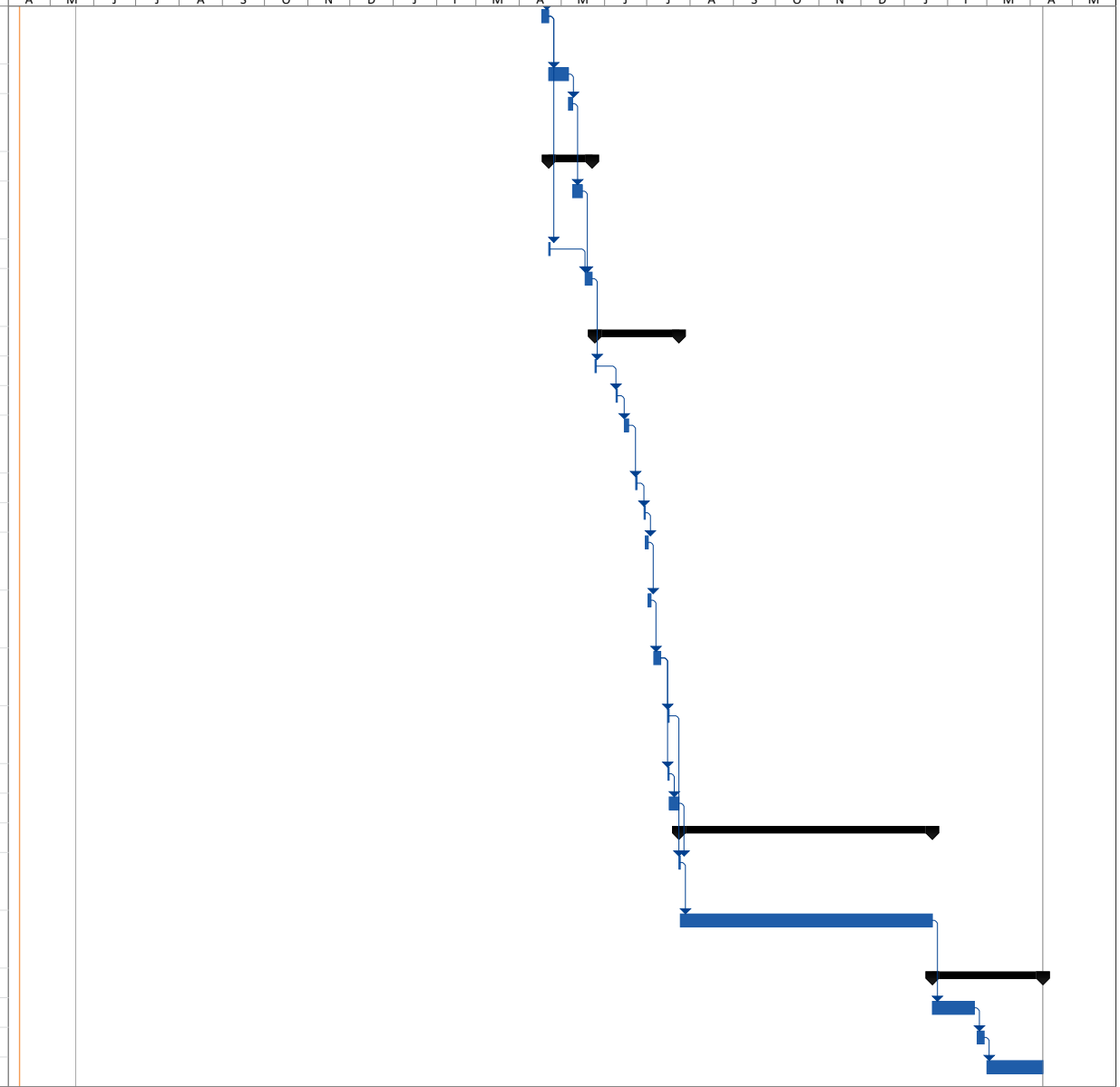


EXHIBIT 'A'

Typical DPMC Project - Random Selection of Design Consultant

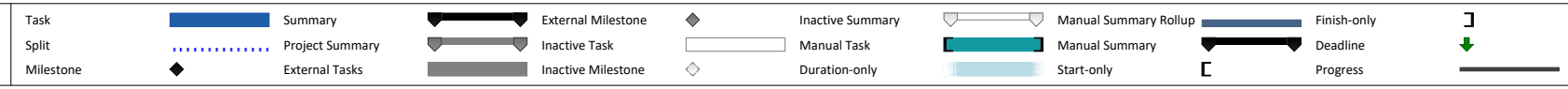
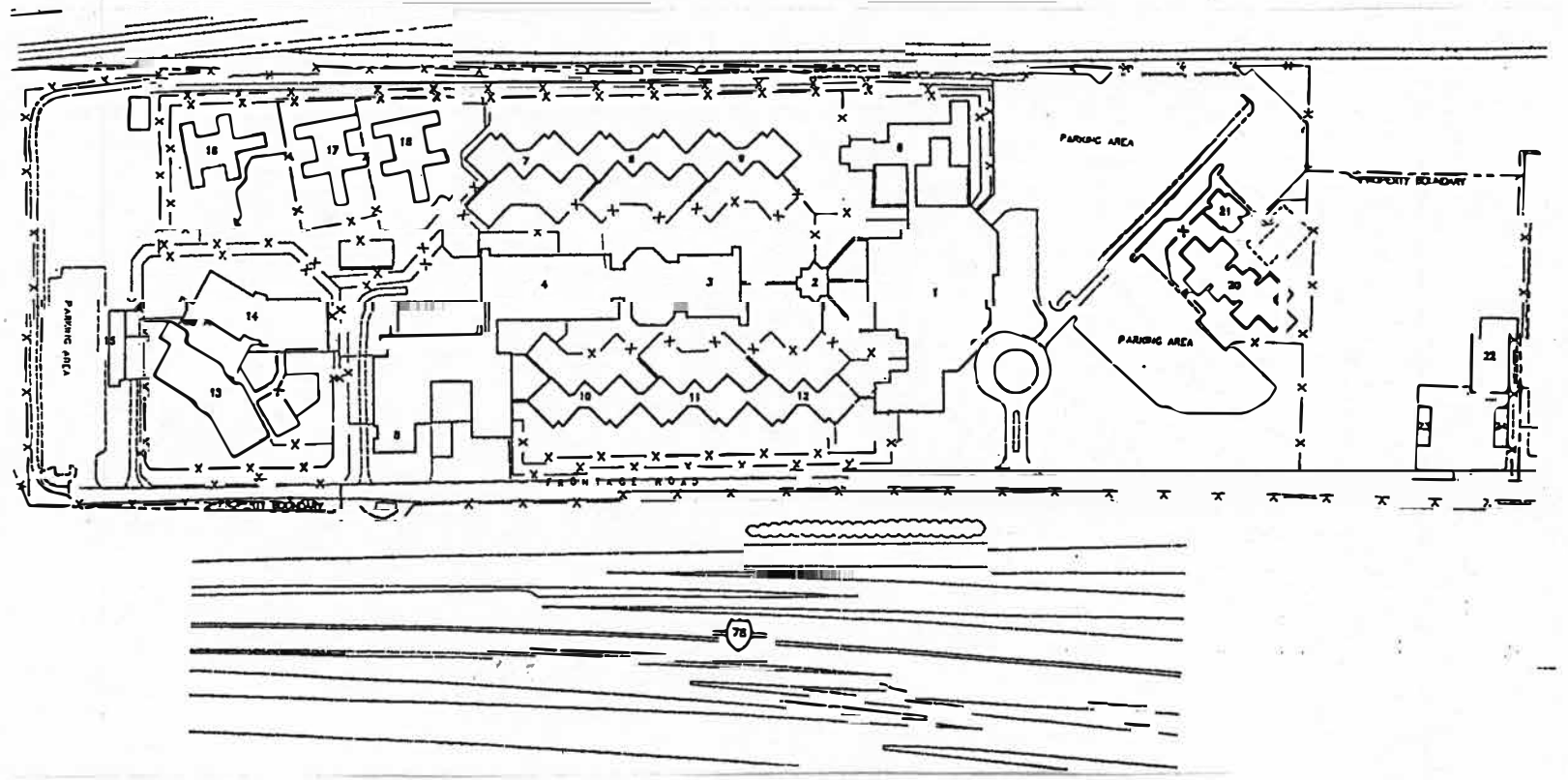


EXHIBIT 'A'

NORTHERN STATE PRISON, ESSEX COUNTY, NEW JERSEY



Bldg. No.	Bldg. Name	Bldg. No.	Bldg. Name	Bldg. No.	Bldg. Name
01	Admin. Bldg.	11	Housing Unit E	20	Minimum Unit 2
02	Chapel	12	Housing Unit F	21	Minimum Unit 2-Support
03	Dining	13	A.C.S.U.	22	Outside-Warehouse
04	State Use	14	A.C.S.U.	23	Maintenance Office
05	Kitchen	15	A.C.S.U.	24	Maintenance Office/Storage
06	Hospital	16	Aposing Trailers	25	Power House
07	Housing Unit A	17	Aposing Trailers	50	A.C.S.U. Trailers
08	Housing Unit B	18	Aposing Trailers	51	A.C.S.U. Trailers
09	Housing Unit C	19	Traffic Control		
10	Housing Unit D				

DIRECTIONS: From NJ Turnpike, take Exit 14. Take second right marked **FRONTAGE ROAD** after toll booth. Go left onto Frontage Road past **D**ouble Tree Hotel to Northern State Prison.

EXHIBIT 'B'

Building ID Northern State Prison

EXHIBIT 'B'

Bldg ID	Bldg Name
2103	Administration Bldg / Tower # 1 & # 5
2104	Chapel
2105	Inmate Dining / Education
2106	Vocational Educ. & State Use Sewing
2108	Hospital/Detention
2109	Housing Unit A
2110	Housing Unit B
2111	Housing Unit C
2112	Housing Unit D
2113	Housing Unit E
2114	Housing Unit F
2115	Guard Tower # 2 South Wall
2116	Guard Tower # 3 West Parking Lot
2117	Guard Tower # 4 North Wall
2118	Maintenance Garage/Warehouse
2119	Maintenance Office Trailer
4151	Minimum Unit 2
4152	Administrative Close Supervision Unit –North
4153	Administrative Close Supervision Unit -South
4154	ACSU Support / Power House
4155	Power House
4158	Minimum Unit 2 Support
4159	Refrigerated Trailers (6)
4160	Food Storage Trailers (3)
8186	Clothing Issue Building
8187	Lobby
8188	Gate Building
8189	Vehicle Maintenance Garage
8190	Lawn and Maintenance Storage Shed
8191	Salt Storage Shed
8192	Sight Security Building

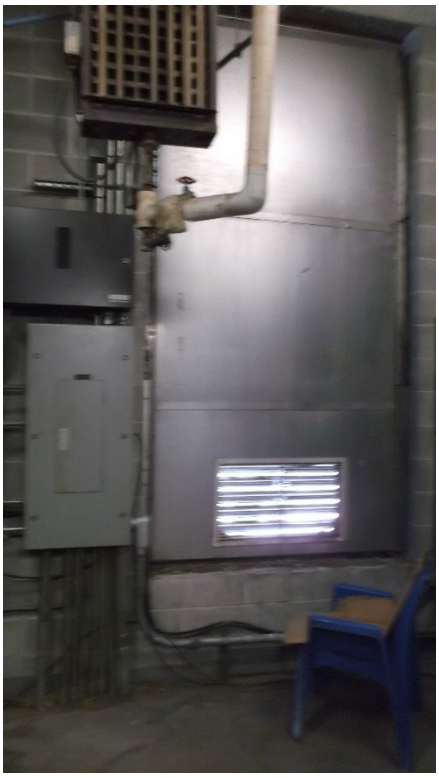
EXHIBIT 'B'

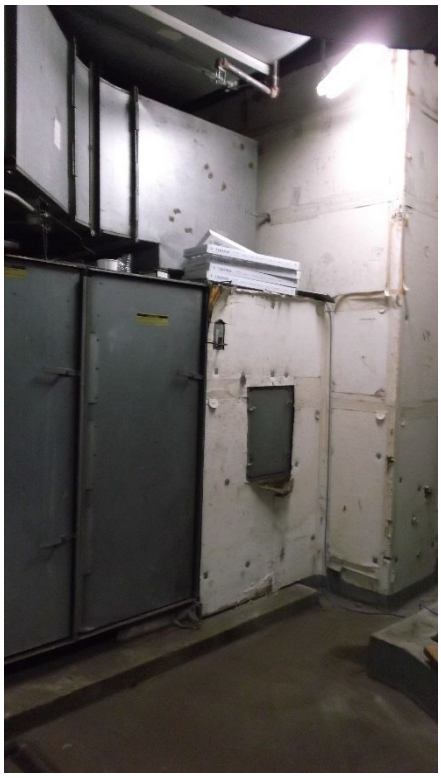

Phillipsburg–Newark Expy
I-78 Express (Toll road)
Phillipsburg–Newark Expy

EXHIBIT 'B'

EXHIBIT 'C'

EXHIBIT 'C'





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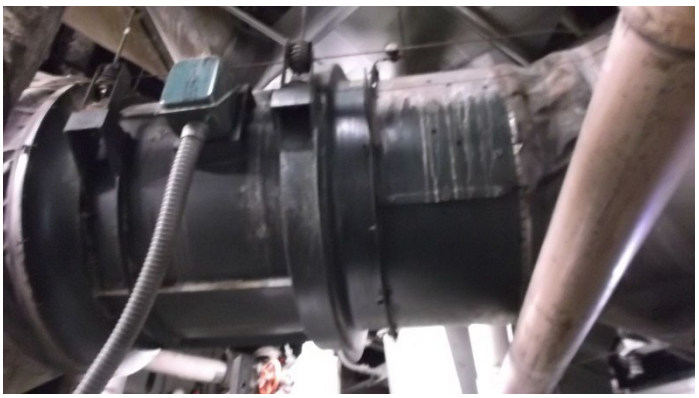


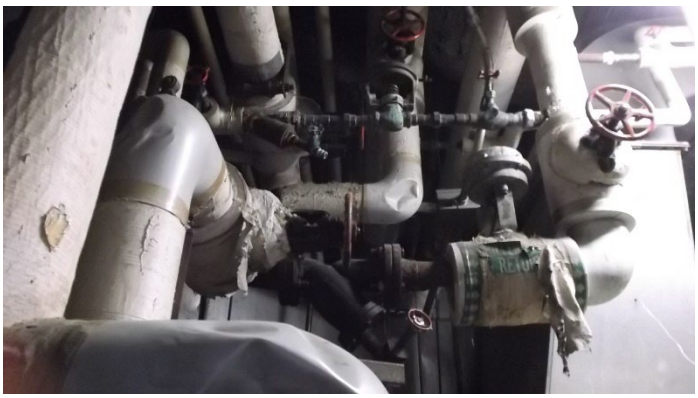
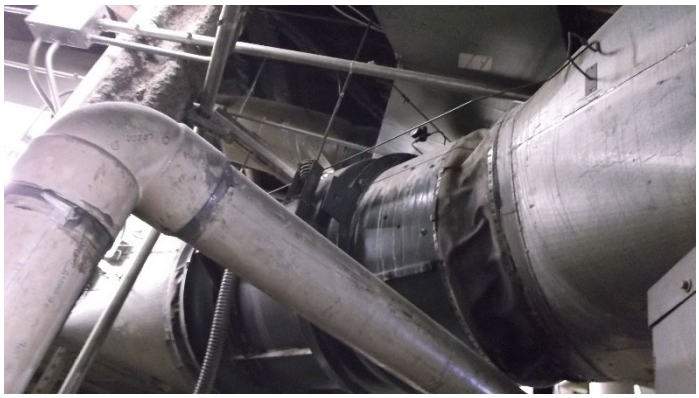


EXHIBIT 'C'



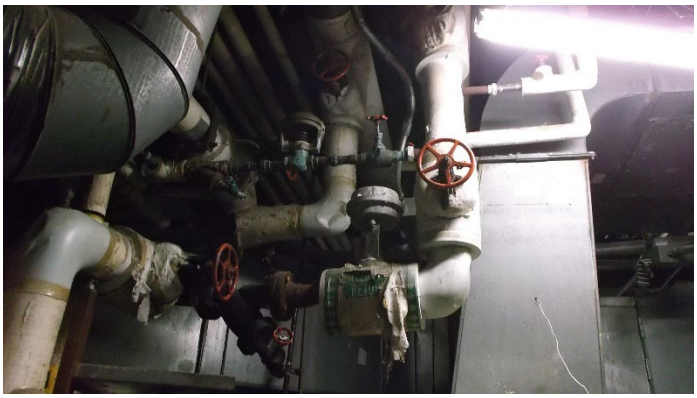


EXHIBIT 'C'

RULES AND REGUALTIONS REGARDING OUTSIDE CONTRACTORS

1. All civilian's, contractors, sub-contractors that will be working on NJ DOC construction projects will be subject to a criminal history background check done through the NJ DOC Special Investigation Department unless noted otherwise.

2. The Contractor shall provide a worker list 48 hrs. in advance of all workers who will be on-site during construction. The Contractor shall provide a construction equipment list 48 hrs. advance for all large equipment that will be on grounds.

3. Before entry all Contractors and Sub Contractor will be required to show a form of identification. (driver's license with photo, NJDOC State Id)

4. All individual's that enter the facility's secured perimeter will have to pass through a metal detector and be subject to a physical pat-down search done by a security officer.

5. All Contractor staff members will be required to present and wear at all times within the facility and grounds their NJDOC State issued identification badges.

6. An escort will be required to and from the job site. No contractor will walk anywhere on the compound without a proper escort.

7. Working days will be Monday through Friday, no weekends or holidays unless special permission is granted through the Capital Planning & Construction Unit.

8. Working hours will be 7:30 am. to 3:30 pm. subject to change.

9. A tool inventory list will be required for all tools entering the secured perimeter. Job Boxes left inside the facility will require approval from the Department Head.

10. Do not give anything to, or take anything from Incarcerated Personnel.

11. No alcoholic beverages, controlled substances, or prescription medication (drugs) are permitted inside the facility. Smoking is prohibited in ALL State Buildings including all smoking paraphernalia.
12. No electronic devices such as cell phones, pagers, smart watches, cameras, tape recorders, recording devices, lap tops, radios, iPod or other MP3 players, any Bluetooth technology, flash drives or any other electronic device not of Departmental use will be permitted inside the secured perimeter unless approved by the facility's Department Head.

13. Any clothing that resembles an inmate's attire is prohibited. ***For example:*** Khaki – colored clothing, Gray sweatshirts, orange shirts or sweatshirts, plain white t-shirts. Shirts that display the title "POLICE".

EXHIBIT 'D'

14. Military style clothing worn by a person not in active or reserved military status is prohibited. To include any camouflage outerwear.

15. Shorts, sweat pants, Warm up suits, legging/jegging, yoga pants, and tank- tops are not permitted to be worn. ***Shirts must have sleeves covering the shoulder area if they are the outer most garment.***

16. Footwear such as sandals, flip-flops, beach or pool shoes, open toed shoes (exposing all toes) or shoes with wheels (i.e. Heelys) are not permitted.

EXHIBIT 'D'

NEW JERSEY DEPARTMENT OF CORRECTIONS
SPECIAL INVESTIGATIONS DIVISION (609) 292-9362
P.O. BOX 863 TRENTON, NEW JERSEY 08625

APPLICATION FOR CLEARANCE AND ISSUANCE OF

IDENTIFICATION CARDS

CIRCLE ONE; **TEMPORARY** **OR** **VOLUNTEER** CIRCLE ONE; **NEW** **RENEWAL**

(PLEASE PRINT LEGIBLY)

NAME: _____ **SS #:**_____
(LAST) (FIRST) (M.I.)

AKA: _____ / _____
(OTHER NAMES USED SUCH AS MAIDEN NAME, ADOPTIONAL, RELIGIOUS, ETC.) (MARKS, SCARS AND TATTOOS)

DATE OF BIRTH : _____/_____/_____ **SEX:** _____ **RACE:** _____ **EYES:** _____ **HAIR:** _____ **HT:** _____ **WT:**_____

PLACE OF BIRTH: _____ **Driver' s Lic. #:** _____
(State Only) (State) (Number)

HOME ADDRESS: _____
(STREET) (CITY) (STATE) (ZIP CODE)

Name of your Department/Agency: _____**Phone #**_____

ADDRESS: _____
(STREET) (CITY) (STATE) (ZIP CODE)

PURPOSE OF VISITATION TO INSTITUTIONS: _____

Have you ever been convicted of any violation of the Criminal Code in this State or in any other Jurisdiction? (Violations include offenses, crimes, misdemeanors, and felonies).

(Circle one) YES NO **If "YES", explain on reverse side.**

Do you presently have any pending criminal charges? YES _____ NO _____ **If "YES", explain on reverse side.**

APPLICANT MUST LIST EXPUNGED CONVICTION(s) INFORMATION, SIGN AND DATE THE "AUTHORIZATION TO RELEASE INFORMATION" FORM LOCATED IN THIS APPLICATION. FALSIFICATION OF APPLICATION MAY RESULT IN THE TERMINATION OF YOUR EMPLOYMENT.

Have you ever engaged in sexual abuse in a prison, jail, lockup, community facility, juvenile facility, or other institution (as defined in 42 U.S.C. 1997)? YES_____ NO_____

If "YES", explain: (Please note the date of incident, date of adjudication and the name and location of the prison, jail, lockup community, facility or institution where the incident occurred).

_____

_____

_____

Have you ever been civilly or administratively adjudicated of engaging or attempting to engage in sexual activity in the community facilitated by force, overt or implied threats of force, or coercion, or if the victim did not consent or was unable to consent or refuse? YES_____ NO_____

If "YES", explain: _____

_____

EXHIBIT 'E'

Have you ever been employed by the NJ Dept. of Corrections in any capacity? YES _____ NO _____ If "YES", explain on reverse side.

Are you currently on an inmate visit list or do you currently have any acquaintances or family members incarcerated in any NJ Dept. of Corrections facilities? YES_____ NO _____ If "YES", explain on reverse side.

****

^ ******** (DO NOT WRITE BELOW THIS LINE, FOR SPONSOR USE ONLY) ********* ^**

Title applicant applying for: _____ Location: _____

Sponsor: _____ Title: _____

Division, Bureau or Unit: _____

Sponsor's signature: _____ Date: _____

Send reply to: _____ Phone: _____
(Print Name)

Applicant Section Continued

NATURE OF CONVICTION	DATE OF CONVICTION	AGE AT TIME OF INCIDENT	NAME & ADDRESS OF POLICE AGENCY OR COURT	DISPOSITION

COMMENTS / EXPLANATIONS: _____

_____

_____

_____

EXHIBIT 'E'

AUTHORIZATION TO RELEASE INFORMATION:

I hereby authorize the release of any and all information regarding me, to the NJ Department of Corrections, at their request, in order that they may determine my suitability for employment.

SIGNATURE OF APPLICANT: _____ DATE: _____

^ ******** DO NOT WRITE BELOW THIS LINE ********** ^**

********** SPECIAL INVESTIGATIONS DIVISION USE ONLY **********

THE ABOVE NAMED APPLICANT'S CRIMINAL HISTORY RECORD INDICATES:

_____	_____	_____
ARREST & CONVICTION	ARREST AND NO CONVICTION	NO RECORD

_____	_____	_____
NAME	TITLE	DATE

EXHIBIT 'E'

Air-Handling Unit Replacement In Housing Units

Report of Investigation, Analysis & Recommendations

DPMC Project No. D0249-00

Northern State Prison
Newark, NJ

Miller-Remick LLC
1010 Kings Highway South
Building Two – 2nd Floor
Cherry Hill, New Jersey 08034

April 12, 2018

Miller-Remick LLC
M.E.P. & Structural Engineering
A Service Disabled Veteran Owned Small Business

EXHIBIT 'F'

Miller-Remick LLC
M.E.P. & Structural Engineering
A Service Disabled Veteran Owned Small Business

Building Two – 2nd Floor
1010 Kings Highway South
Cherry Hill, NJ 08034

Tel: 856-429-4000
Fax: 856-429-5002
Email: office@miller-remick.com
www.miller-remick.com

April 12, 2018

Attn: Mr. Joseph Fuca
State of New Jersey Department of Corrections
Whittlesey Road
P.O. Box 863
Trenton, NJ 08625

Re: Northern State Prison
Newark, NJ – Air Handling Unit Replacement in Housing Units Study
DPMC Project No. D0249-00

Dear Mr. Fuca:

Miller-Remick LLC (M-R) has completed the *Air Handling Unit Replacement in Housing Units Study* at Northern State Prison. The objective of this study is to assist the New Jersey Department of Corrections in the design and construction planning for the air handling system replacements in the housing units.

Specifically this report addressed the following tasks:

- Conduct site visit to verify work required.
  - *M-R conducted site visits on January 25, 2018.*
- Prepare initial site report and findings.
  - *M-R prepared or site report and delivered to the Department of Corrections on February 16, 2018.*
- Prepare recommendations and capital cost estimates for long-term rebuild/replacement of the air handlers, dampers, fans and controls.
  - *M-R prepared a cost estimate to replace the (6) six housing unit air handling systems (see **Appendix 3**).*

PROJECT SITE LOCATION AND BACKGROUND

Northern State Prison (NSP) is located at 168 Frontage Road, Newark New Jersey 07114 (see ***Figure 1***). NSP was opened in 1987 on a 43 acre site in close proximity to the Newark Liberty International Airport. NSP houses a diverse offender population classified as General Population, Special Needs, Administrative Close Supervision Unit (inmates who have incurred serious disciplinary charges) and Therapeutic Community (addictive behaviors).

The proposed work for this project will be located housing units "A"; "B"; "C"; "D"; "E" and "F", specifically within the mechanical penthouses (see ***Figure 2***).

EXHIBIT 'F'

Figure 1: Aerial View of Northern State Prison (see ***Appendix 1***)

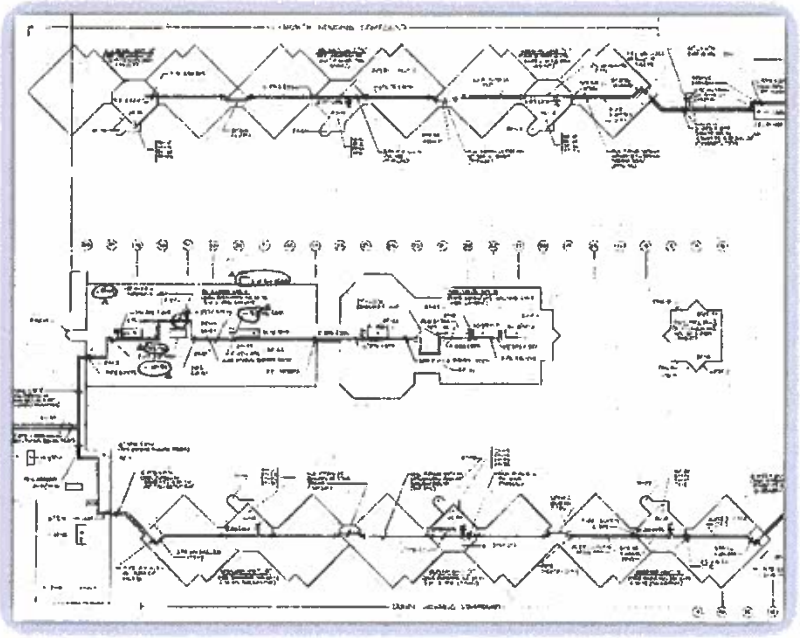


Figure 2: Northern State Prison Housing Units (see ***Appendix 2***)

EXHIBIT 'F'

OBJECTIVE

The existing air handling systems are original to the prison and are over 31 years old. These units have not only exceeded their life expectancy but are in very poor condition. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) publishes data that show on average the life expectancy of air handling units and fans to be 15 to 20 years.

The objective of this project is to provide replacement air handling systems for the (6) six inmate housing units designated as "A"; "B"; "C"; "D"; "E" and "F". This shall include new air handling units, corresponding return fans, outside air dampers, condensate drain pans, associated chilled and hot water coil piping, isolation, balance and control valves and appurtenances.

The existing air handling systems are shown and referenced in the DBC No. C219 project drawings, titled *"Newark State Prison"*, prepared by Gruzen/Berger, P.C. Architects, dated November 1, 1984. The data for the existing air handling units and return air fans are shown in the following tables:

TABLE 1 ***(see Appendix 1)***
EXISTING AIR HANDLING UNIT DATA

HOUSING UNIT	AIR HANDLER No.	TOTAL AIRFLOW (CFM)	MINIMUM OUTSIDE AIR (CFM)	COOLING COIL LOAD (MBH)	PREHEAT COIL LOAD (MBH)
A	AC-16	21,000	2,810	703	683
B	AC-17	21,000	2,810	703	683
C	AC-18	21,000	2,810	703	683
D	AC-19	21,000	2,810	703	683
E	AC-20	21,000	2,810	703	683
F	AC-21	21,000	2,810	703	683

TABLE 2 ***(see Appendix 1)***
EXISTING RETURN FAN DATA

HOUSING UNIT	RETURN FAN No.	EXHAUST AIRFLOW (CFM)
A	RF-15	18,350
B	RF-16	18,350
C	RF-17	18,350
D	RF-18	18,350
E	RF-19	18,350
F	RF-20	18,350

EXHIBIT 'F'

Figure 3: Existing Air Handling Unit (AC-21 shown)

Figure 4: Existing Exhaust Fan

Figure 5: Existing Air Handling Bag Filters

Figure 6: Hydronic Piping

EXHIBIT 'F'

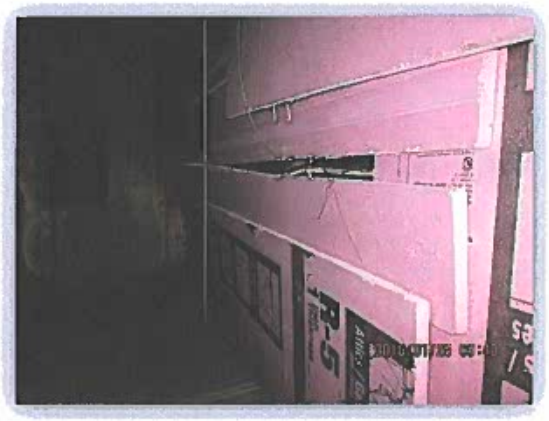


Figure 7: Blocked Outside Air

Figure 8: Blocked Outside Air

RECOMMENDATIONS AND PROPOSED SCOPE OF WORK

Due to the age and poor conditions of the housing unit air handling units and return fans we highly recommend that these units be replaced. In addition most of the existing pneumatic controls are either disconnected or non-functioning and the outside air intake has been temporarily blocked to prevent further freezing of the coils.

Our recommendations are listed in the following proposed scope of work:
The *"Air Handling Unit Replacement in Housing Units"* project is to provide removal of and replacement air handling systems for the (6) six inmate housing units designated as "A"; "B"; "C"; "D"; "E" and "F". This shall include but not limited to the following:

1. Remove (6) six air handling units, designated as AC-16; AC-17; AC-18; AC-19; AC-20 and AC-21.
2. Remove the associated chilled water and hot water heating branch piping, isolation, balance and pneumatic control valves and appurtenances connected to the AHU hydronic coils.
3. Remove (6) six outside air dampers.
4. Remove (6) six return fans, designated as RF-15; RF-16; RF-17; RF-18; RF-19 and RF-20.
5. Provide (6) six new replacement air handing units. The replacement air handling units shall be supplied to meet the current codes, however the supply air, outside air, cooling and heating load requirements shall match the existing units.
   All new handling units shall be supplied with:
   - Electrical requirements: 480V/3ph/60Hz
   - Draw-Thru supply fan shall be supplied with variable frequency drive
   - Inlet vanes
   - Chilled water coil
   - Hot water pre-heat coil
   - Air filter Mixing Box (Merv 8 Pre-filter and Merv 13 Bag/Cartridge filter)
   - Supply and return smoke detectors
   - Direct Digital Control capability *(Note: For future replacement of pneumatic controls)*.
   - Interlock with corresponding return and exhaust fans
6. Provide (6) six new replacement return air fans
   All new exhaust fans shall be supplied with:
   - All new exhaust fans shall be supplied with:
   - Electrical requirements: 480V/3ph/60Hz

EXHIBIT 'F'

- Exhaust fan shall be supplied with variable frequency drive
- Interlock with corresponding air handling unit

7. Provide (6) six new outside air dampers.
8. Provide new modifications to the ductwork to properly reconnect the existing to the new air handling units, exhaust fans and outside air dampers.
9. Provide all new chilled water and heating water coil piping, isolation, balance and control valves and appurtenances (i.e. piping bypasses, strainers, air vents, drains, pressure indicators, temperature indicators and pressure indicators etc.). Reconnect new hydronic piping to existing system mains. The new control valves shall be supplied with direct digital control (DDC) capability for future DDC system connection.
10. Provide new conduit and wiring from the existing power sources and route and connect to the new equipment.
11. *Due to the failed pneumatic controls, the new air handling units and fans will have to be locally controlled.

*We recommend that the existing pneumatic control system be upgraded to a direct digital control system in the future to properly monitor and control the new air handling systems.

SUMMARY

We estimated the associated costs for the replacement of the six (6) housing unit air handling systems. The estimated construction for this project is estimated at **$820,000 to $900,000 dollars.** Please note that this estimate does not include an upgrade of the HVAC control system from pneumatics to DDC.

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

Sincerely,
Miller-Remick, LLC

Anthony D. Pacapo, Jr., P.E.
Senior Vice President

ATTACHMENTS

1. Report Appendices

P:\1400_NJ-State\0697 Northern St AHU Emerg Repair\1_Admin\3_Engineering_Narrative\NSP-Air Handling Unit Replacement in Housing Units_REPORT.docx

Miller-Remick LLC
M.E.P. & Structural Engineering

EXHIBIT 'F'

APPENDICIES
TABLE OF CONTENTS

EXHIBIT 'F'

APPENDIX 1

GOOGLE EARTH IMAGE OF PROJECT SITE

EXHIBIT 'F'


N
Northern State Prison
Frontage Rd
78
Interstate 78 Express
Interstate 78 Express (Toll road)
©2018 Google
503 ft
Google Earth
Imagery Date: 4/19/2016 40°42'48.86" N 74°10'28.75" W elev 8 ft eye alt 2280 ft

EXHIBIT 'F'

APPENDIX 2

ORIGINAL HOUSING UNIT HVAC DRAWINGS & EQUIPMENT SCHEDULES

EXHIBIT 'F'

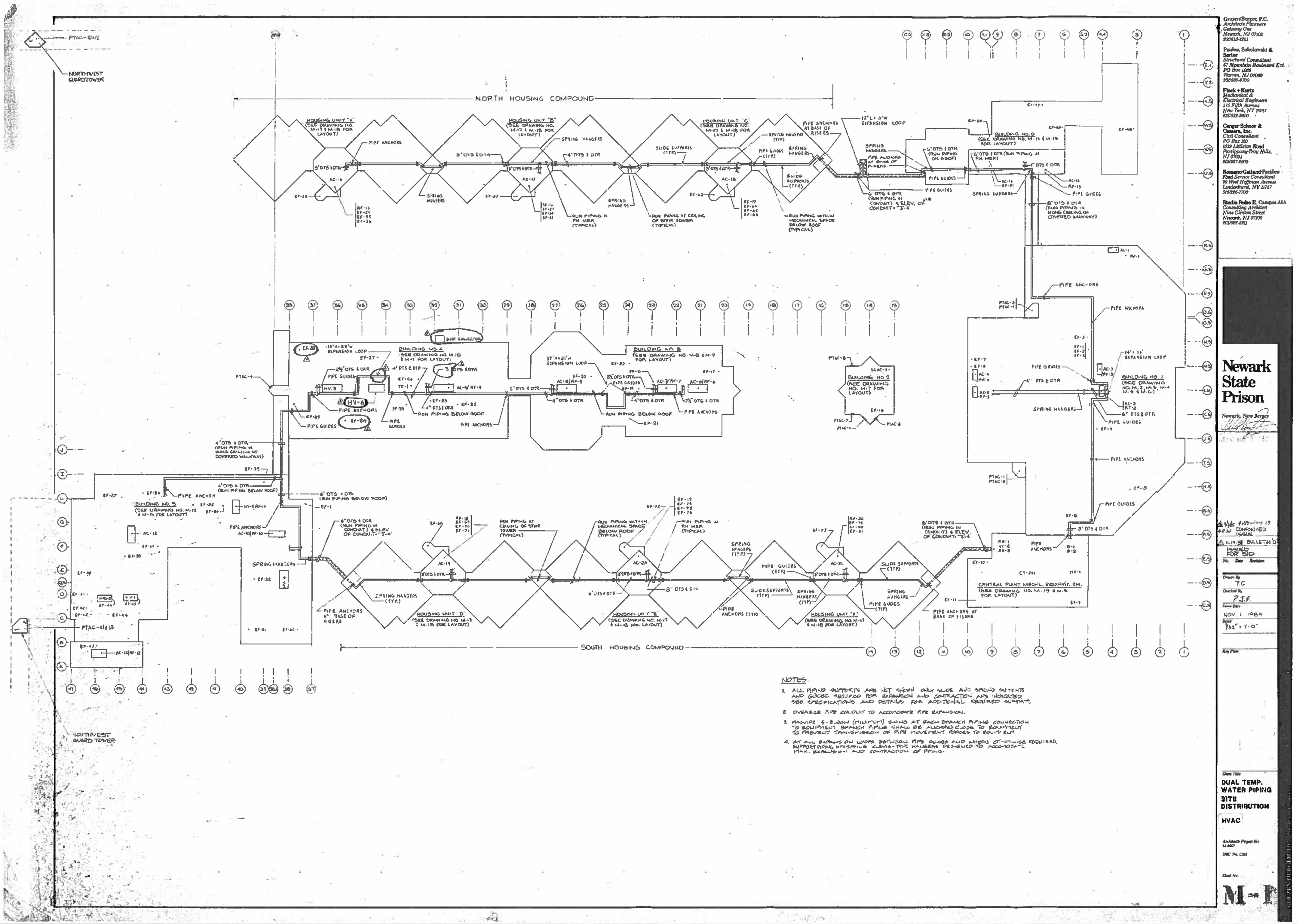

NORTH HOUSING COMPOUND
SOUTH HOUSING COMPOUND
NORTHWEST GUARDTOWER
SOUTHWEST GUARD TOWER
HOUSING UNIT "A"
HOUSING UNIT "B"
HOUSING UNIT "C"
HOUSING UNIT "D"
HOUSING UNIT "E"
HOUSING UNIT "F"
BUILDING NO. 1
BUILDING NO. 2
BUILDING NO. 3
BUILDING NO. 4
BUILDING NO. 5
BUILDING NO. 6
CENTRAL PLANT MECH'L. EQUIPMENT RM.
NOTES
Grusen/Berger, P.C.
Paulus, Sokolowski & Sartor
Flack + Kurtz
Canger Schoor & Cassera, Inc.
Romano Gatland-Pacifico
Studio Pedro E. Campos AIA
Newark State Prison
Newark, New Jersey
ISSUED FOR BID
DUAL TEMP. WATER PIPING SITE DISTRIBUTION
HVAC
M-F

EXHIBIT 'F'

NOTE:
THIS DRAWING INDICATES LAYOUT FOR HOUSING UNIT 'E'
IT IS TYPICAL FOR SIX HOUSING UNITS A THRU F
FOR EQUIPMENT SCHEDULE SEE TABLE ON RIGHT

'A' 'B' 'C'
TYPICAL HOUSING UNITS
'D' 'E' 'F'

HOUSING UNIT EQUIPMENT NO SCHEDULE

HOUSING UNIT / EQUIP. NO.	'A'	'B'	'C'	'D'	'E'	'F'
AC-P	16	17	18	19	20	21
RF-W	15	16	17	18	19	20
EF-6	52	57	62	67	72	77
EF-8	54	59	64	69	74	79
EF-9	55	60	65	70	75	80
EF-9	56	61	66	71	76	81
ECUH-9	A	A	A	A	A	A
ECUH-5	A	A	A	A	A	A

2ND FLOOR PLAN

1ST FLOOR PLAN

Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1811

Paulus, Sokolowski & Sartor
Structural Consultants
67 Mountain Boulevard Ext.
PO Box 1039
Warren, NJ 07060
201/580-9700

Flack + Kurtz
Mechanical & Electrical Engineers
175 Fifth Avenue
New York, NY 10017
212/533-8600

Cangro Schoor & Cannero, Inc.
Civil Consultant
PO Box 180
1859 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/887-8800

Romano-Gatland-Paolino
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Crespos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/623-3211

Newark State Prison

Newark, New Jersey

NJ Lic. No. 26780

11-1-84 SUCL-66
11-1-85 ADDENDUM
10-1-85 ADDENDUM 29
6-7-85 ADDENDUM 10
6-8-85 CANCELLED
3-14-85 CONFORMED TO ACCEPTED ALTERNATES
12-10-84 BULLETIN 2
ISSUED FOR BID

Drawn By: T.C.
Checked By: R.J.F
Issue Date: NOV - 1 - 1984
Scale: 1/8" = 1'-0"

TYPICAL HOUSING UNIT - 1ST & 2ND FLOOR PLANS

HVAC

Architect's Project No. 84-8007
DEC No. C120

Sheet No.
M-16

EXHIBIT 'F'

NOTE:
THIS DRAWING INDICATES LAYOUT FOR HOUSING UNIT 'E' IT IS TYPICAL FOR 4 HOUSING UNITS A THRU F PER EQUIPMENT SCHEDULE SEE TABLE ON THIS RIGHT.

HOUSING UNIT EQUIP NO.	'A'	'B'	'C'	'D'	'E'	'F'
AC-#	16	17	18	19	20	21
RF-#	13	16	17	18	19	20
EF-#	52	57	62	67	72	77
EF-#	54	59	64	69	74	79
EF-#	59	60	65	70	75	80
EF-#	56	61	66	71	76	81
ECU#-#	A	A	A	A	A	A
ECU#-#	A	A	A	A	A	A

HOUSING UNIT EQUIPMENT Nº SCHEDULE

4TH FLOOR PLAN

3RD FLOOR PLAN

Gruzen/Bergen, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1059
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
475 Fifth Avenue
New York, NY 10017
212/532-9600

Cauger Schoor & Cannon, Inc.
Civil Consultant
PO Box 190
1852 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/887-8800

Romano-Gatland Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
New Clinton Street
Newark, NJ 07108
201/622-3211

Newark State Prison

Newark, New Jersey

NJ LIC. NO. 16780

10-1-85 ADDENDUM #2
6-1-85 ADDENDUM 10
4-8-85 CONFORMED ISSUE
3-4-85 CONFORMED TO ACCEPTED ALTERNATE
12-10-84 BULLETIN 'E'
ISSUED FOR BID
No. Date Remarks

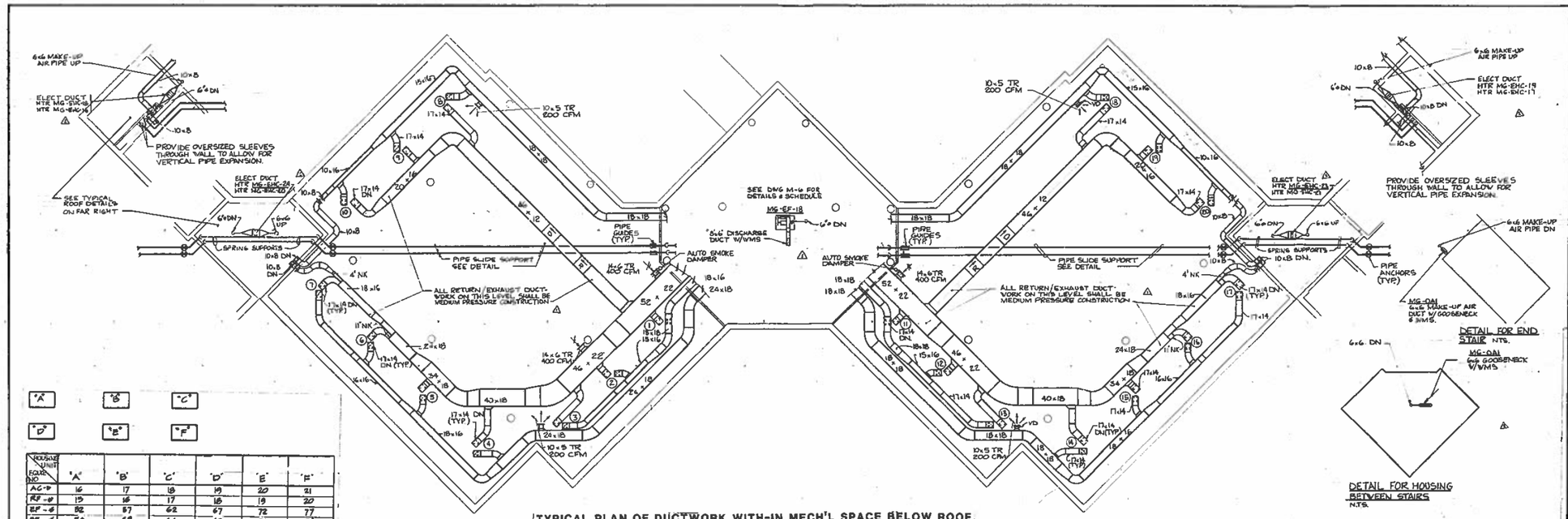
Drawn By T. C.
Checked By R. & F
Issue Date NOV-1-1984
Scale 1/8"=1'-0"
Key Plan

Sheet Title
TYPICAL HOUSING UNIT - 3RD & 4TH FLOOR PLANS HVAC

Architect's Project No. 83-8009
GSMC Job. No. 1269

Sheet No.
M-17

EXHIBIT 'F'



Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1911

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1039
Warren, NJ 07060
201/580-9700

Flack + Kurtz
Mechanical & Electrical Engineers
175 Fifth Avenue
New York, NY 10017
212/533-9600

Cosper Schoor & Cosmen, Inc.
Civil Consultant
PO Box 220
1259 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/887-8600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07108
201/623-5833

Newark State Prison

Newark, New Jersey

NJ Lic No 20780

3-8-85 REV. - 335
7-1-85 ADDENDUM 10
4-1-85 CHANGE #7
11-15-84 BULLETIN "B"
ISSUED FOR BID

Drawn By T CAP
Checked By R. & F.
Issue Date NOV-1-1984
Scale AS NOTED

Sheet Title
TYPICAL HOUSING UNIT - ROOF PLAN & P.H. MER PLAN & SECTIONS
HVAC

Architect's Project No. 21.0007
DEC No. C220

Sheet No.
M-18

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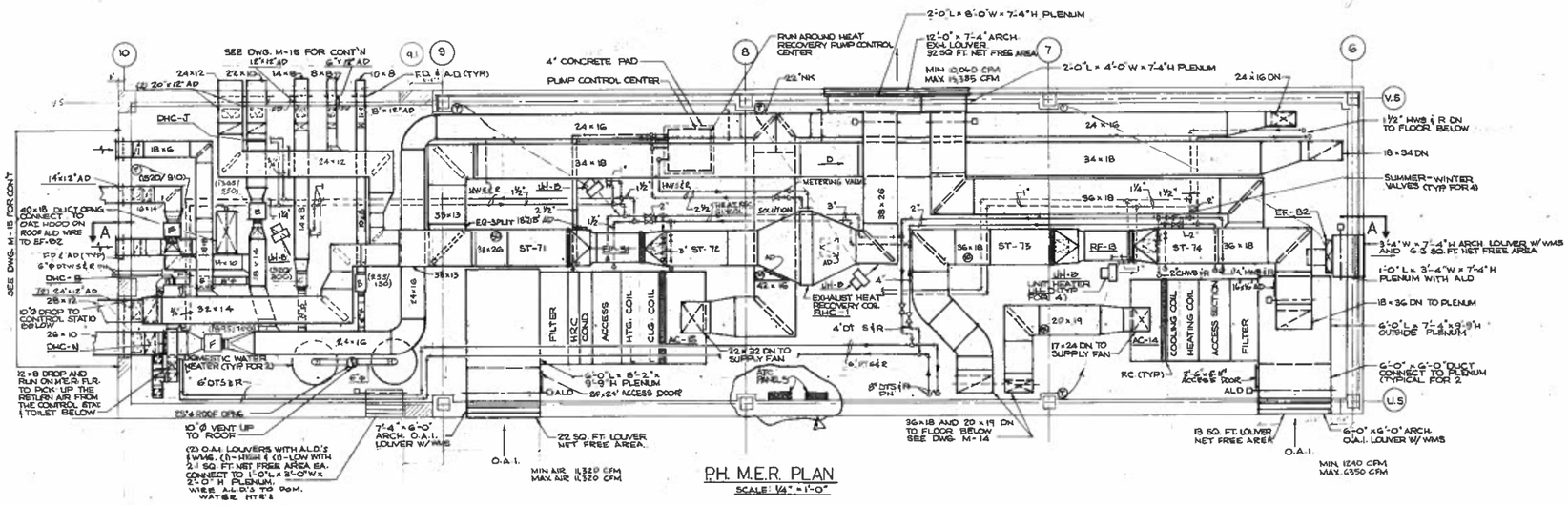
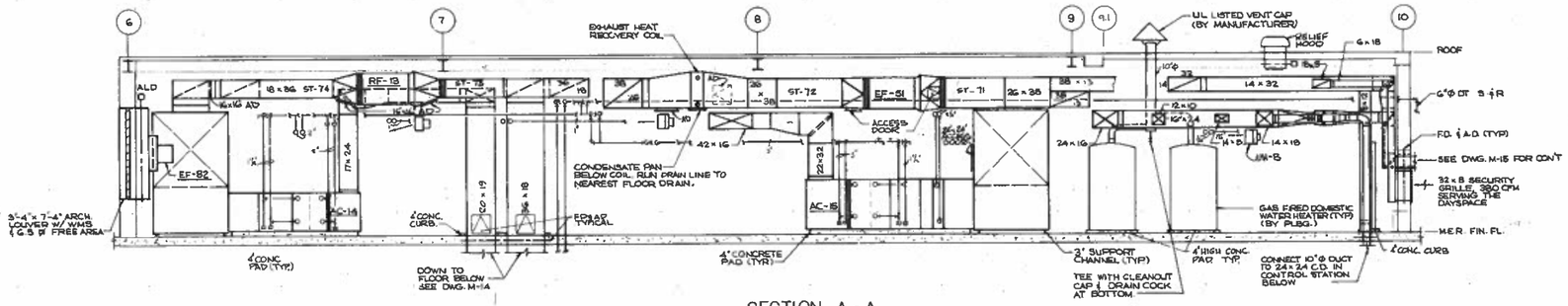




Grazen/Bergen, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1914

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1039
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
175 Fifth Avenue
New York, NY 10027
212/532-9600

Cangor Schoor & Cassera, Inc.
Civil Consultant
PO Box 280
1535 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/267-8800

Romano-Gatland Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07108
201/622-5211

Newark State Prison

Newark, New Jersey

NJ LIC. NO. 21780

No.	Date	Revisions
1	5-29-84	ISSUED FOR BID

Drawn By: J.T.
Checked By: R.J.F
Issue Date: NOV 1 1984
Scale: 1/4"=1'-0"
Key Plan

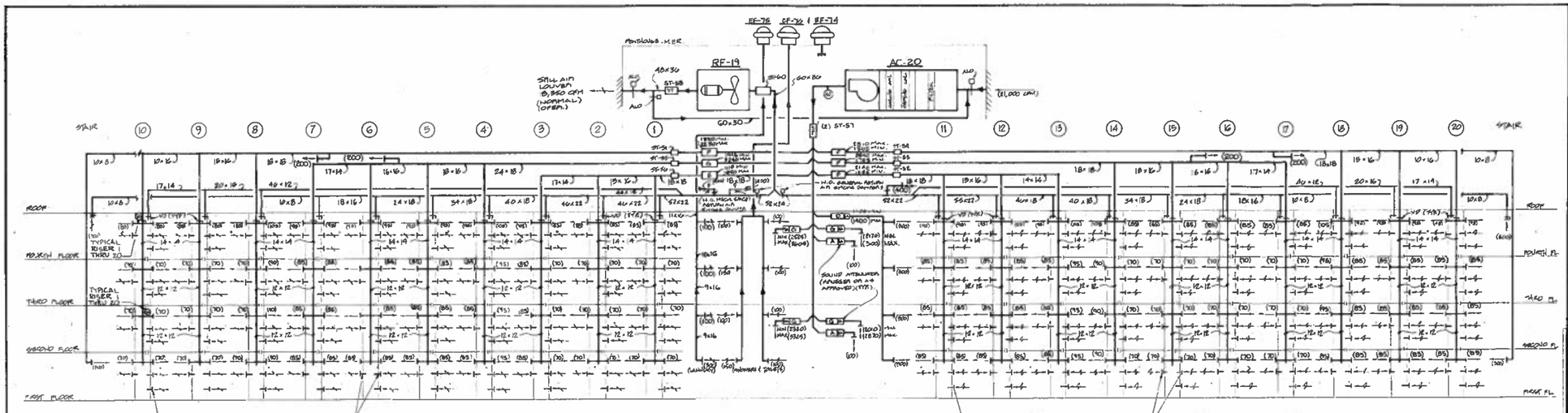
Sheet Title: **BUILDING NO. 6 P.H. MER PLAN & SECTIONS**

HVAC

Architect's Project No. 84-3007
DEC No. C119

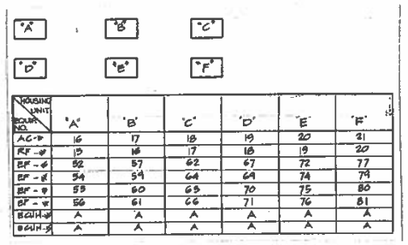
Sheet No.: **M-21**

EXHIBIT 'F'



TYPICAL HOUSING UNIT AIR RISER DIAGRAM

HOUSING UNIT 'E' SHOWN, TYPICAL FOR SIX HOUSING UNITS 'A' THRU 'F'. EQUIPMENT NUMBERS SHOWN ARE FOR HOUSING UNIT 'E' ONLY. FOR EQUIPMENT IN OTHER HOUSING UNITS SEE SCHEDULE BELOW.

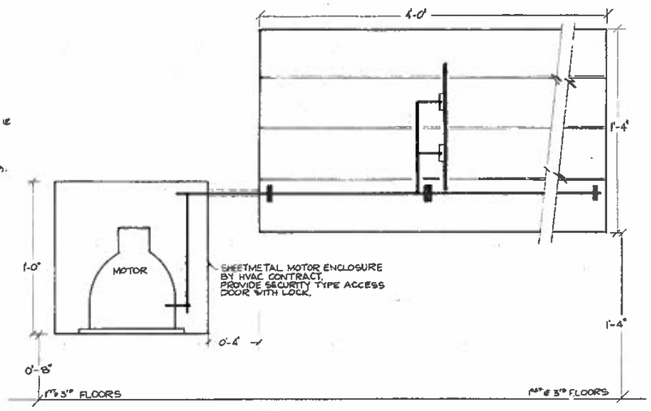


HOUSING UNIT EQUIP. NO.	'A'	'B'	'C'	'D'	'E'	'F'
AC-20	16	17	18	19	20	21
RF-19	15	16	17	18	19	20
EF-76	52	57	62	67	72	77
EF-75	54	59	64	69	74	79
EF-74	55	60	65	70	75	80
EF-73	56	61	66	71	76	81
EQUH-18	A	A	A	A	A	A
EQUH-19	A	A	A	A	A	A

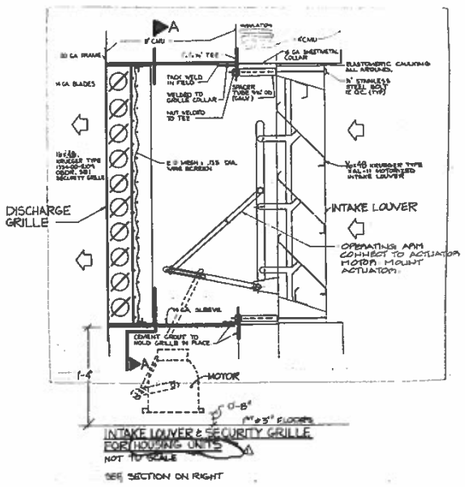
HOUSING UNIT EQUIPMENT N° SCHEDULE

AIR RISER NOTES:

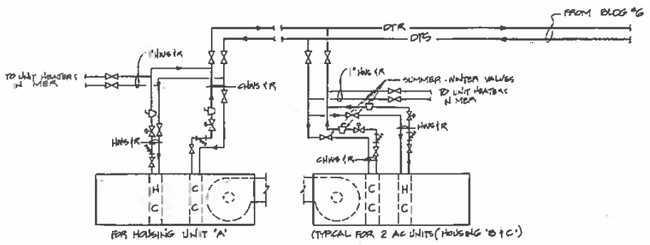
1. THIS RISER DIAGRAM IS TO BE USED AS A GUIDE ONLY FOR DUCT DIMENSIONS AND DUCTWORK ACCESSORIES THAT ARE NOT SHOWN REFER TO FLOOR PLANS.
2. DIMENSIONS AND CFM'S SHOWN ON RISER '10' ARE TYPICAL FROM 1ST TO 3RD FLOORS FOR RISERS 1, 2, 5, 6, 7, 9, 10, 11, 12, 15, 16, 17, 19, & 20. FOR FOURTH FLOOR DIMENSION & CFM'S REFER TO DIAGRAM INDICATED ABOVE. DIMENSION & CFM'S SHOWN FROM FIRST TO FOURTH FLOORS FOR RISERS 3, 4, 8, 13, 14 & 18 ARE INDICATED ON RESPECTIVE RISERS ABOVE.
3. 16"x16" SLAB OPENINGS TYPICAL FOR RETURN AIR FOR RISERS 1 THRU 20.
4. SMOKE DETECTORS (SD) SHOWN ON RISER 10 ARE TYPICAL FOR RISERS 1 THRU 20 SMOKE DETECTORS SHALL BE FURNISHED & INSTALLED BY ELECTRICAL CONTRACTOR.
5. BOXES WITH LETTER DESIGNATIONS INDICATE PITCH-DOWN VAV BOXES.



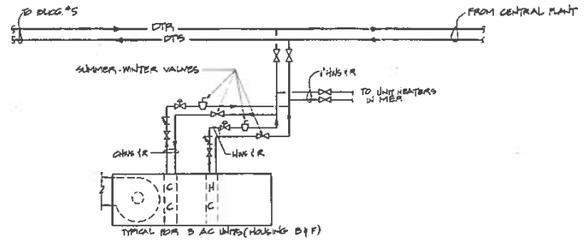
SECTION A-A OF INTAKE LOUVER & SECURITY GRILLE
NOT TO SCALE



INTAKE LOUVER & SECURITY GRILLE FOR HOUSING UNITS
NOT TO SCALE
SEE SECTION ON RIGHT



HOUSING UNITS (NORTH)



HOUSING UNITS (SOUTH)

TYPICAL HOUSING UNIT SCHEMATIC WATER FLOW DIAGRAMS

NOT TO SCALE

NOTE.

1. THIS IS A SCHEMATIC DRAWING ONLY MAJOR PIPES ARE SHOWN FOR PIPING RUN, SIZE, LOCATION AND SUPPORTS, SEE DWG. M-1
2. ALL PIPING ACCESSORIES ARE NOT SHOWN. REFER TO COIL PIPING DETAIL, DWG. M-32.

Grissom/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1911

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1029
Warren, NJ 07060
201/580-9700

Flack + Kurtz
Mechanical & Electrical Engineers
175 Fifth Avenue
New York, NY 10017
212/533-8600

Cauger Schoor & Cassera, Inc.
Civil Consultant
PO Box 180
1559 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/887-8600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-3811

Newark State Prison

Newark, New Jersey

N.J.I.I.C. NO. 24780

4-8-85 CONFORMED TO BIDDING
5-24-85 CONFORMED TO ACCEPTED ALTERNATES
ISSUED FOR BID
No. Date Revisions

Drawn By T.C.
Checked R. J.F.
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Scale 1/8"=1'-0"
Key Plan

Sheet Title
SCHEMATIC AIR FLOW & WATER FLOW DIAGRAMS - TYPICAL HOUSING UNIT

HVAC

Architect's Project No. AL-8007
DEC No. C222

Sheet No.
M-24

EXHIBIT 'F'

AIR HANDLING UNIT SCHEDULE

AH — BASIS OF DESIGN: CARRIER

UNIT NO.	LOCATION	AREA SERVED	DWG. NO.	TOTAL CFM	MIN. OUTDOOR AIR CFM	FAN: TOTAL PRESS. (IN. WG)	FAN: STATIC PRESS. (IN. WG)	FAN: NOMINAL WHEEL DIA. (IN)	FAN: MAX. OUTLET VELOCITY (FPM)	FAN: RPM	FAN: BHP	FAN TYPE	DRIVE	ARRGT. CLASS	DISCHARGE	MOTOR: HP	MOTOR: RPM	MOTOR: VOLT/PH	TOTAL MBH
AC-1	BLDG NO. 1 [illegible]	BLDG NO. 1 [illegible] 24 HOUR AREAS	M-2	2525	1585	3.5	1.1	13 7/32	1515	2394	1.8	AF	BELT	3/II	UB	3	1800	480/3	140
2	BLDG NO. 1 [illegible]	BLDG NO. 1 [illegible] 24 HOUR AREAS	M-3,4,5 M-20	12,050	3800	5.5	5.0	24	651	1768	14.8	AF		3/II	UB	20			500
3		BLDG NO. 1 [illegible] SOUTH 12 HOUR AREAS		31,485	7025	4.9	3.0	35 9/16	2160	1250	38.8	AF		3/II	TH	50			1261
4	BLDG NO. 1 [illegible]	BLDG NO. 1 NORTH [illegible] & ROOMS		11,450	5015	4.0	1.25	22	2390	952	11.6	FC		3/II	TH	15			618
5		BLDG NO. 1 SOUTH [illegible] & ROOMS		11,850	5015	4.2	1.25	22	2473	900	12.5	FC		3/II	TH	15			630
6	BLDG NO. 8 ROOF	SOUTH DINING ROOM	M-8	8500	5750	3.93	0.95	19 5/16	2186	1935	7.6	AF		3/II	DB	10		480/3	427
7		BLDG NO. 8 NORTH DINING ROOM		7560	5790	3.72	0.95		1942	1734	6.3	AF		3/II		10			401
8		BLDG NO. 5 LIBRARY		5760	775	4.09	1.00	16 5/16	2234	2266	4.6	AF		3/II		7½		480/3	179
9	BLDG NO. 4 ROOF	BLDG NO. 4 VOCATIONAL AREA	M-11	12,000	7025	4.10	1.00	24	1971	1639	11.8	AF		3/II		15		208/3	610
10	BLDG NO. 5	BLDG NO. 5 REPAIR SHOP, OFFICES, COMMISSARY & STORAGE	M-15	6290	850	3.47	1.60	18 7/8	2384	1080	5.5	FC		3/II		7½		480/3	175
11	NOT USED																		
12	BLDG NO. 5	BLDG NO. 5 [illegible]	M-13	20000	10639	4.50	1.85	29 1/2	2679	750	13	AF			DD	25	1800	480/3	1309
13	BLDG NO. 5 [illegible]	MAXIMUM SECURITY	M-14 M-15	6450	[illegible]	4.53	1.90	16 5/16	2525	2050	7.3	AF			DB	10		208/3	218
14	BLDG NO. [illegible]	MEDICAL/DENTAL	M-14 M-21	6550	1240	6.07	3.75		2185	2874	9.2	AF			UB	15			235
15		BLDG NO. 6 DETENTION [illegible]		11,320	11,320	6.80	3.80	21 9/16	2504	2160	16.6	AF			UB	20			795
16 THRU 21	HOUSING UNITS A THRU F	HOUSING UNITS A THRU F	M-16 M-18	21,000 EA.	2810	4.05	2.0	21 1/2	2813	1520	23.1	AF			UB	30		480/3	703

UNIT NO.	AIR: ENT. DB (°F)	AIR: ENT. WB (°F)	AIR: LVG. DB (°F)	AIR: LVG. WB (°F)	AIR: MAX. P.D. (IN. WG)	WATER: TOTAL GPM	WATER: ENT. TEMP. (°F)	WATER: LVG. TEMP. (°F)	WATER: MAX. P.D. (FT)	COIL: MAX. FACE VELOCITY (FPM)	COIL: MIN. ROWS DEEP	COIL: NO. OF COILS	COIL: NOMINAL SIZE (IN) (EACH) F.W. x F.L.	RETURN OR EXHAUST FAN NO.	PREHEAT COIL NO.	AIR FILTER NO.	MODEL NUMBER	CONTROL SCHEME	VIB. ISO. TYPE	MIN. STATIC DEFLECTION	REMARKS	UNIT NO.	INTERLOCK
AC-1	86.9	72.5	56.0	55.9	.54	20.8	47	60.5	2.6	375	6	1	8'FW x 66"FL	RF-1	HC-1	AF-1	CARRIER 39[illegible]	1	V	1"	W/ INLET VANES	AC-1	RF-1
2	83.5	68.8	56.0	55.85	.92	64.8		62.4	11.6	526	6	1	[illegible] x 34"FL	RF-2	2	2	39ED-23L	1				2	RF-2, EF-8
3	83.0	68.5	56.0	55.9	1.17	132		66	4.1	518	8	2	[illegible] x 126"FL	RF-3	3	3	39E-57L	2				3	RF-3 (WITH VARIABLE FREQUENCY DRIVE SEE SPEC'K.)
4	84.4	70.7	54.0	53.9	1.41	100		58.7	6.6	561	8	1	[illegible] x 94"FL	RF-4	4	4	39E-25L	3				4	RF-4, EF-6
5	84.2	70.5	54.0	53.9	1.23	97.8		59.9	6.1	517	8	1		RF-5	5	5		3				5	RF-5
6	84.4	71.2	54.0	53.9	1.11	80.1		57.6	3.6	485	8	1	4'FW x 71"FL	RF-6	6	6	39EA-17L	4	*		INLET VANES, FACE & BYPASS [illegible]	6	RF-6
7	85.9	70.5	54.0	53.9	.95	71		58.1	6.9	439	8	1	4'FW x 71"FL	RF-7	7	7		4	*			7	RF-7
8	81.9	67.1	58.0	57.3	.55	24		61.9	11.8	501	4	1	[illegible] x 66"FL	RF-8	8	8	39E-11L	4	*			8	RF-8
9	85.1	69.1	51.5	51.5	1.25	114		57.6	8.0	525	8 ROW DOUBLE	1	14'FW x 72"FL	RF-9	9	9	39EA-23L	4	*			9	RF-9
10	81.3	66.6	58.0	57.4	.68	33.5		57.3	3.6	547	4	1	[illegible] x 66"FL	RF-10	10	10	39EA-11L	4	*			10	RF-10, EF-33
11																							
12	88.0	74.0	54.0	54.0	1.2	204.7	47	60.1	6.0	459	8	1	18'FW x 126"FL		12	12	39EA-[illegible]	5	*		INLET VALVES, FACE & BYPASS [illegible]	12	EF-38, 18, 41, 42, RF-36, EF-37
13	82.2	67.5	57.0	56.9	.99	22.4		62.9	3.5	561	6	1	[illegible] x 66"FL	RF-12	13	13	39EA-11L	6	*		INLET VALVES, FACE & BYPASS [illegible]	13	RF-12, EF-47
14	80.9	66.0	54.0	53.9	.98	42.7		58.0	7.7	552	6	1		RF-13	14	14	39E-11L	2	V		INLET VANES	14	RF-13
15	90.0	76.0	56.0	55.9	1.4	[illegible]		61.3	7.2	555	8	1	[illegible]	EF-51	15	15	39E-[illegible]	7				15	EF-51, EF-48
16 THRU 21	81.5	66.6	56.0	55.9	.78	76.4		65.4	7.8	491	6	2	14'FW x 102"FL	[illegible] THRU [illegible]	HC-16 THRU 21	16 THRU 21	39E-54L	1				16 THRU 21	[illegible] (WITH VARIABLE FREQUENCY DRIVE INCLUDING 208 VOLT TO 480 VOLT TRANSFORMER SEE SPEC'K.)

FOR AC-6 & 7, PROVIDE NEW STARTER SUITABLE FOR 480 VOLT OPERATION.

NOTE: PROVIDE SPRING ISOLATION CURB MOUNTING SYSTEM SIMILAR TO TYPE CMAB BY MASON INDUSTRIES.

HEATING AND VENTILATING UNIT SCHEDULE

HV — BASIS OF DESIGN: CARRIER/DESCHAMPS LABS

UNIT NO.	LOCATION	AREA SERVED	DWG. NO.	TOTAL CFM	OUTDOOR AIR CFM	TOTAL PRESS.	STATIC PRESS.	NOMINAL WHEEL DIA. (IN)	MAX. OUTLET VELOCITY (FPM)	RPM	BHP	FAN TYPE	DRIVE	ARRGT. CLASS	DISCHARGE	MOTOR HP	MOTOR RPM	VOLT/PH	TOTAL MBH
HV-1	BLDG NO. 1 CENTRAL PLANT	CENTRAL PLANT	M-19	13,000	3100/500	1.7	0.4	22	3130	660	8.0	FC	BELT	3/I	TH	15	1800	480/3	488
2	BLDG NO. 1 CENTRAL PLANT [illegible] ROOF	SWITCHGEAR RM	M-5	27000	27000	1.5	[illegible]	30	2513	980	14.5				DB	20		480/3	—
3	BLDG NO. 4 ROOF	INDUST. AREA	M-11	13800	3600/13800	2.5	2.5	22	3130	700	11.5			3/II		15		208/3	708
4	BLDG NO. 5 ROOF	VEH. MAINT. & STORAGE	M-13	7000	3600/7000	1.8	.4	18 1/4	2455	730	3.5			3/I		5.0		480/3	460
5		BLDG NO. 5 LAUNDRY	M-15	6800	1000/6800	1.3	.5	18 1/4	2575	650	2.7					7.5		480/3	221
HV-6	BLDG NO. 4 ROOF	BLDG NO. 4 INDUST. AREA	M-11	33,000	16,500/33,000	2.95	1.25	36 1/2	2393	850	22.5	BI-DWDI		13/I	DD	30		208/3	1,105
HPU-1	BLDG NO. 5 ROOF	BLDG NO. 5 KITCHEN HOOD MAKE-UP	M-13	5870	5870	2.96	0.5	15	2519	2400	5.8	DI-DWDI	BELT	3/II	TH	7.5	1800	480/3	335
HPU-2			M-13	4740	4740	1.90	0.6	15	2034	2000	3.0					5.0		480/3	295

UNIT NO.	AIR: ENT. TEMP (°F)	AIR: LVG. TEMP (°F)	AIR: MAX. P.D. (IN. WG)	WATER: TOTAL GPM	WATER: ENT. TEMP (°F)	WATER: LVG. TEMP (°F)	WATER: MAX. P.D. (FT)	COIL: MAX. FACE VELOCITY (FPM)	COIL: MIN. ROWS DEEP	COIL: NO. OF COILS	COIL: NOMINAL SIZE (IN.) (EACH) F.W. x F.L.	RETURN OR EXHAUST FAN NO.	AIR FILTER NO.	CONTROL SCHEME	SOUND ATTEN. NO.	VIB. ISO. TYPE	MIN. STATIC DEFLECTION	UNIT TYPE	MODEL NO.	REMARKS	UNIT NO.	INTERLOCK
HV-1	35	84	.30	25.4	195	155	2.4	700	1	1	8'FW x 84"FL		AF-22	8	—	V	1 3/4"		39EA-23	CARRIER ROOF TOP UNIT FACE & BYPASS	HV-1	EF-10 & REL. HOOD
2	—	—	—	—	—	—	—		—	—	—		AF-23	9	—	*	1"		39EA-48		2	EF-11
3	41	85	.47	26.0	195	158.7	2.5		1	1	14'FW x 84"FL		AF-24	10	—	*	1"		39EA-23		3	EF-27, 28, 29
4	24.4	85	.32	21.1		149.5	6.2		2	1	8'FW x 66"FL		AF-25	11	—	*	1"		39EA-11		4	EF-30, 31, 32
5	55	85	.30	13.2		180	1.9		1	1		RF-14	AF-26	12	—	*	1"		39EA-		5	RF-14
HV-6	10	72	.50	—	—	—	—	600	—	—	—	—	AF-31	24	—	*	1"	YORK MOD. [illegible]		PROVIDE 2 SPEED STARTER	[illegible]	[illegible]
HPU-1	35	87.7	0.4	198	195	152.5	1.4	700	2	1	—	EF-43	28	13	—	I	1"			DESCHAMPS LABS PKG. B SPECIAL W/ HEAT RECOVERY	HPU-1	EF-43
HPU-2	35	85	0.3	128	195	142.2	1.0	700	2	1	—	EF-44	29	13	—	I	1"				HPU-2	EF-44

NOTE: PROVIDE SPRING ISOLATION CURB MOUNTING SYSTEM SIMILAR TO TYPE CMAB BY M.I.

NOTE: FOR HV-2: PROVIDE NEW STARTER SUITABLE FOR 480 VOLT OPERATION.

AIR FILTER SCHEDULE

AF — BASIS OF DESIGN: FARR

FILTER NO.	EQUIPMENT OR SYSTEM SERVED	DWG. NO.	TOTAL CFM	MAXIMUM FACE VELOCITY (FPM)	EFFICIENCY %	MAXIMUM P.D. (IN. WG) CLEAN	MAXIMUM P.D. (IN. WG) DIRTY	INDIVIDUAL UNIT NOMINAL SIZE (IN.) HEIGHT	WIDTH	DEPTH	ARRANGEMENT TOTAL NO. OF UNITS	UNITS HIGH	UNITS WIDE	F.L.I.E. TYPE	MODEL NO.	PRE-FILTER MODEL NO. & SIZE	REMARKS
AF-1	AC-1	M-2	2525	500	50-55	.15	1.0	24	24	12	3	1	3	CARTRIDGE RIGID [illegible]	RIGA-FLO 15	30/30	
2	2	M-20	12050					24 / 12	24 / 24	12 / 12	4 / 4	1	4 / 4				
3	3		31,485					24 / 24			15 / 3	5 / 3	5 / 1				
4	4		11,450					24 / 12			4 / 4	1	4 / 4				
5	5		11,850								4 / 4		4 / 4				
6	6	M-8	8390								4 / 4		4 / 4				
7	7		7600								4 / 4		4 / 4				
8	8		5760								3 / 3		3 / 3				
9	9	M-11	10200								4 / 4		4 / 4				
10	10	M-13	6290								3 / 3		3 / 3				
AF-31	HV-6	M-11	33,000			.13	.75	24	24	2"	—	—	—	THROW AWAY IN V-BANK	30/30	—	
12	12	M-13	20,000			.15	1.0	24 / 12	24 / 24	12 / 12	8 / 2	2 / 2	4 / 1	CARTRIDGE-RIGID, DISPOSABLE	RIGA-FLO 15	—	
13	13	M-13	6450					24 / 12	24 / 24	12 / 12	3 / 3	1	3 / 3			30/30	
14	14	M-21	4350								3 / 3	1	3 / 3				
15	15	M-21	11,320								4 / 4	1	4 / 4				
16 THRU 21	16 - 21	M-18	21,000					24 / 24	24 / 12		8 / 4	2 / 1	4 / 4				
22	HV-1	M-19	13,000		30	.15	.30	24	24	2"	—	—	—	THROWAWAY IN V-BANK	30/30	—	
23	2	M-5	27,000								—	—	—			—	
24	3	M-11	15000								—	—	—			—	
25	4	M-13	7000								—	—	—			—	
26	5	M-13	6800								—	—	—			—	
27	SF-1		4000	300	30	.10	.25	16	20	1"	8	—	—	THROWAWAY	—	—	
28 / 29	HPU-1 / HPU-2	M-13	5870 / 4740	367 / 296	50-55	.75 / .50	1.00	24	24	12	4	2	2	FARR CARTRIDGE	RIGA-FLO 15	FARR 30/30-2"	
30	TF-1	M-10	2665	300	30	.15	.30	16	20	1"	4	—	—	THROWAWAY	—	—	

HEATING COIL SCHEDULE (HOT WATER)

HC — BASIS OF DESIGN: CARRIER

COIL NO.	EQUIPMENT OR SYSTEM SERVED	DWG. NO.	TOTAL MBH	AIR: TOTAL CFM	AIR: MAXIMUM FACE VELOCITY (FPM)	AIR: TEMP. °F ENT	AIR: TEMP. °F LVG	AIR: MAX. P.D. (IN. WG)	WATER: TOTAL GPM	WATER: TEMP °F ENT	WATER: TEMP °F LVG	WATER: MAX. P.D. (FT)	INDIVIDUAL COIL DATA: MIN. ROWS DEEP	INDIVIDUAL COIL DATA: NOMINAL SIZE (IN) F.W. x F.L.	ARRANGEMENT: TOTAL NO. OF COILS	ARRANGEMENT: NO. OF COILS HIGH x WIDE	REMARKS
HC-1	AC-1	M-2	108	2525	325	54.2	73.6	.07	3.0	195	121	.11	1	8'FW x 45"FL	1	—	
2	2	M-20	425	12050	590	55	85	.23	17.1		143	1.2		8'FW x 134"FL	1	—	
3	3		1024	31825	560	55	85	.18	35.1		134	2.0		8'FW x 126"FL	2	—	
4	4		464	11,450	560	45	82.6	.18	21.4		150	1.8		8'FW x [illegible]"FL	1	—	
5	5		459	11,850	580	45.9	81.6	.20	21.2		150	1.7			1	—	
6	6	M-8	384	8390	485	46.1	85	.22	30.8		169	4.1		8'FW x 71"FL	1	—	
7	7		365	7600	440	42.2	85	.17	24.4		164	2.7			1	—	
8	8		183	5760	500	55	85	.21	7.9		147	.6		8'FW x 66"FL	1	—	
9	9	M-11	374	11,500	564			.19	13.4		137	.78		8'FW x 84"FL	1	—	
10	10	M-13	154	6290	550			.26	10.6		106	1.0		8'FW x 66"FL	1	—	
11	NOT USED														1	—	
12	12	M-13	1219	20,000	515	24	85	.22	38.4		129	2.7		8'FW x 126"FL	2	—	
13	13	M-13	210	6450	560	55	85	.28	10.9		155	.28		8'FW x 66"FL	1	—	
14	14	M-21	206	6350	555			.27	10.8			.27			1	—	
15	15	M-21	770	11,320	655	13	75.7	.39	40.1			.39		8'FW x [illegible]"FL	1	—	
16 THRU 21	16-21	M-18	683	21,000	540	55	85	.17	22		130	.17		8'FW x 126"FL	2	—	
HRC-1	RF-51	M-21		10500	475			.80							1	20x96	PUMP AROUND SYS. 28PC005

Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 4039
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
475 Fifth Avenue
New York, NY 10017
212/532-9600

Canger Schoor & Cannera, Inc.
Civil Consultant
PO Box 120
1259 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/267-2600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-5211

Newark State Prison

Newark, New Jersey

NJ LIC NO 26780

No.	Date	Revision
5	[illegible]	ADDENDUM 40
4	[illegible]	ADDENDUM 19
		ISSUED FOR BID

Drawn By: GO
Checked By: RJF
Issue Date: NOV-1-1984
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Key Plan

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HVAC

Architect's Project No. 84-007
DBC No. C239

Sheet No. M-27

EXHIBIT 'F'

EF - EXHAUST FAN

EXHAUST FAN SCHEDULE

BASIS OF DESIGN: PENN VENTILATOR, JOY, SWARTWOUT

FAN NO.	LOCATION	AREA OR SYSTEM SERVED	DWG. NO.	CFM	TOTAL PRESS. (IN. WG)	STATIC PRESS. (IN. WG)	WHEEL DIA. (IN)	MAX. OUTLET VELOCITY (FPM)	MAX. TIP SPEED (FPM)	MAX RPM	FAN BHP	FAN TYPE	DRIVE	CLASS	DISCHARGE	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT/PH	CONTROL SCHEME	VIBRATION MOUNTING TYPE	MIN. STATIC DEFLECTION	MODEL NO.	INTERLOCK	REMARKS
EF-1	BLDG NO. 1 2ND FL. MER. ROOF	BLDG NO. 1 1ST FL. VEHICULAR SALLYPORT	M-2	2000		1.00	—	—	5680	1815	.75	CENTRIF ROOF	BELT	I	–	1	1750	480/3	23		—	PENN DOMEX BB-EX	WALL SW. IN CONTROL RM-H-100	
2	BLDG NO. 1 1ST FL. EAST MER	BLDG NO. 1 1ST FL. 2ND FL. TOILET	M-20	3450		1.2	20	820	6950	1330	1.7	IN-LINE CENTRIF			–	2			15	VI	1 3/8	PENN REX 208	AC-3	
3		BLDG NO. 1 1ST FL. N-24 HR. TOILET		1480		1.1	16 1/2	520	7430	1420	.70				–	3/4			15			PENN REX HB	AC-1	
4		BLDG NO. 1 1ST FL. S-12 HR. TOILET		840		1.1	16 1/2	300	5510	1280	.43				–	1/2			15				AC-3	
5	BLDG NO. 1 ROOF	BLDG NO. 1 2ND FL. EAST M.E.R.	M-6	2500		.375	–		3615	690	.31	CENTRIF ROOF			–	1/3		115/1	18	–	–	PENN CB18	EXT. HOOD ALD	
6	BLDG NO. 1 2ND FL. WEST M.E.R.	BLDG NO. 1 1ST FL. ROOMS TOILET	M-20	150		.35	–	170	3350	1550	.04	IN-LINE CENTRIF	DIRECT		–	1/10		115/1		VI	1 3/8"	PENN REX-08A	AC-4	
7	BLDG NO. 1 ROOF	BLDG NO. 1 M.E.R. WEST	M-6	2180		.375	–	–	4720	1110	.40	CENTRIF ROOF	BELT		–	1/2		480/3	18	–	–	PENN BB551	①	
8	BLDG NO. 1 ROOF	BLDG NO. 1 2ND FL. LOCKER ROOM	M-6	2965		.375	–	–	5440	535	.38				–	1/2		208/3	15	–	–	PENN LB-24	AC-2	
9	BLDG NO. 1 CENT. PLANT MER. ROOF	CENTRAL PLANT GAS METER ROOM	M-5	1000		.375	–	–	5750	1070	–				–	1/6		115/1	23	–	–	PENN AB-35	–	24 HR OPERATION
10		CENTRAL PLANT M.E.R.		2100		.125	–	–	5000	1270	.36				–	1/2		480/3	15	–	–	PENN BB-45	HV-1	
11		CENTRAL PLANT M.E.R. SWITCHGEAR		27000		.25	–	–		415	–				–	5			15	–	–	AIRETITE AB-604	HV-2	W/ MOTOR OUTSIDE OF AIR STREAM
12		NOT USED																						
13		NOT USED																						
14	BLDG NO. 5 ROOF	BLDG NO. 5 TRASH CAN WASH	M-5	600		.30	–	–	3180	900	–	CENTRIF ROOF			–	1/6	1750	115/1	15	–	–	PENN AD35	AC-12	
15	BLDG NO. 1 ROOF	BLDG NO. 1 ELEV. MACH. RM./ELEC. CLOSET	M-6	285		.35	–	–	2890	800	–				–	1/6		115/1	18	–	–	PENN AB 35	①	
16	BLDG NO. 2 STORAGE RM.	BLDG NO. 2 TOILET	M-7	100		.375	–	170	3350	1550	.03	IN-LINE CENTRIF	D	I	–	1/10	1750	115/1	22	VI	1 3/8"	PENN RBX08A	LIGHT SWITCH	
17	BLDG NO. 3 ROOF	BLDG NO. 3 TOILET	M-9	75		.375	–	–	3120	1700	–	CENTRIF ROOF			–	1/12			17	–	–	PENN XQ60L	TIME CLOCK	
18		BLDG NO. 3 J.C.		150		.375	–	–	3195	1250	–				–	1/10			17	–	–	PENN XR94L	TIME CLOCK	
19		BLDG. NO. 3 DISHWASHER		1600		.68	–	–	4925	1140	.63		BELT		–	3/4		480/3	16	–	–	PENN FXK48	AC-6+7	W/ MOTOR OUTSIDE OF AIR STREAM
20		BLDG. NO. 3 PANTRY NORTH		1380		.40	–	–	4060	940	.32				–	1/2		208/3	15	–	–		AC-7	
21		BLDG. NO. 3 PANTRY SOUTH		1400		.40	–	–	4180	970	.32				–	1/2		208/3	15	–	–		AC-6	
22		BLDG. NO. 3 ACAD. TOILET		465		.50	–	–	3435	795	–				–	1/6		115/1	15	–	–	PENN B5531	AC-8	
23	BLDG NO. 4 ROOF	BLDG. NO. 4 VOC. AREA TOILETS	M-11	150		.33	–	–	3067	1200	–		D		–	1/10			15	–	–	PENN XR94	AC-9	
24				300		.33	–	–	3705	1450	–				–	1/10			15	–	–	PENN XR94L		
25		BLDG. NO. 4 VOC. AREA ELECT. ROOM		1200		.30	–	–	3885	1100	–		B		–	1/6			20	–	–	PENN AB-35		
26		BLDG. NO. 4 VOC. AREA RECEIVING		900		.33	–	–	3355	950	–				–	1/6			18	–	–	PENN AB-35	①	
27		BLDG. NO. 4 INDUST. AREA METAL SHOP/[illegible]		4000/5000		.39	–	–	3600	640	1.6		BELT		–	2		208/3	21	–	–	PENN MX150B	HV-3	2-SPEED
28		BLDG. NO. 4 INDUST. AREA WELDING AREA		1500/3000		.33	–	–	5410	260	.40				–	1/2		208/3	21	–	–	PENN CB18		
29		BLDG. NO. 4 INDUST. AREA TOILETS		450		.35	–	–	3705	1450	–		D		–	1/10		115/1	15	–	–	PENN XR94L		
30	BLDG NO. 5 ROOF	BLDG. NO. 5 VEHICULAR MAINT.	M-13	2800		.25	–	–	3615	690	.31		BELT		–	1/3			15	–	–	PENN CB18	HV-4	
31				2800		.25	–	–	3615	690	.31				–	1/3			15	–	–			
32		BLDG. NO. 5 VEH. MAINT. TOILET		530		.40	–	–	3900	910	–				–	1/6			15	–	–	PENN AB 35		
33		BLDG. NO. 5 COMM./CONTROL RM. TOILET		300		.35	–	–	3080	870	–				–	1/6			15	–	–		AC-10	
34		BLDG. NO. 5 VEH. SALLYPORT		2400		.43	–	–	3900	740	.38				–	1/2		480/3	23	–	–	PENN CB-18	MANUAL	
35		BLDG. NO. 5 VEH. SALLYPORT		2400		.43	–	–	3900	740	.38				–	1/2		480/3	23	–	–			
36		BLDG. NO. 5 STAFF DINING PANTRY		500		.32	–	–	3040	700	.09				–	1/6		115/1	15	–	–	PENN FMX14B	AC-12	MOTOR OUT OF AIR STREAM
37		BLDG. NO. 5 STAFF DINING DISHWASHER		600		.50	–	–	3436	795	.15		BELT		–	1/4			15	–	–			
38		BLDG. NO. 5 KITCHEN AREA TOILETS		225		.25	–	–	3210	1750	–		D		–	1/12			15	–	–	PENN XQ60	AC-12	
39		BLDG. NO. 4 [illegible] DARK ROOM		150		.25	–	–	2895	1340	–		D		–	1/33			15	–	–	PENN FMX8AL	AC-9	
40		BLDG. NO. 5 COMPRESSOR RM. EXH.		3550		.25	–	–	4295	820	.80		BELT		–	1/2		208/3	18	–	–	PENN CB18	①	
41		BLDG. NO. 5 KITCHEN DISHWASHER		2100		.75	–	–	4467	850	.60				–	3/4		480/3	15	–	–	PENN FMX-88	AC-12	MOTOR OUT OF AIR STREAM
42		BLDG. NO. 5 CART/POT WASH EXH.		800		.38	–	–	3160	732	.15				–	1/4		115/1	15	–	–	PENN FMX-48	AC-12	
43		BLDG. NO. 5 KITCHEN HOOD EXH.		9700		3.96	27	2329	1294	1250	8.60	SW. SWSI CENTRIF	BELT	II	TH	10	1750	208/3	15	*	1"	270-BI SWSI	HMU-1	IN ROOFTOP UNIT HMU-1
44				7875		3.85	27	1131	1044	1215	6.70		BELT	II	TH	10	1750		15	*	1"		HMU-2	IN ROOFTOP UNIT HMU-2
45		BLDG. NO. 5 MAX. SECURITY PANTRY		600		.40	–	–	3413	790	.15	CENTRIF ROOF			–	1/4	1750	115/1	22	–	–	PENN FMX-48	W/ PANTRY LIGHT SWITCH	MOTOR OUT OF AIR STREAM
46		BLDG. NO. 5 MAX. SECURITY DISHWASHER		600		.50	–	–	3470	800	.15				–	1/4			22	–	–			
47	BLDG NO. 5 MAX. SEC. ROOF	BLDG. NO. 5 MAX. SECURITY TOILETS		150		.50	–	–	4080	1025	–				–	1/4			15	–	–	PENN BB45	AC-13	
48	BLDG NO. 6 INFIRMARY ROOF	BLDG. NO. 6 INFIRMARY PANTRY	M-16	305		0.16	–	–	2910	1140	–		D		–	1/12			15	–	–	PENN FMX-9T	AC-15	MOTOR OUT OF AIR STREAM
49	BLDG NO. 6 MER/DELT. ROOF	BLDG. NO. 6 DARK ROOM		185		0.18	–	–	2990	1600	–		D		–	1/12			15	–	–	PENN XQ60L	AC-14	W/ LEV-TROL SPEED CONTROL
50	BLDG NO. 6 MAX. SEC./JA ROOF	DETENTION AREA PANTRY		540		0.19	–	–	4090	1580	–		D		–	1/12			15	–	–	PENN FMX9L	AC-15	MOTOR OUT OF AIR STREAM W/ LEV-TROL SP. CONT.
51	BLDG NO. 6 PH M.E.R.	BLDG. NO. 6 DETENTION/[illegible] GEN. EXH.	M-21	10000		3.30	34	1597	–	1770	9.0	VANEAXIAL		II	–	15		208/3	15	VI	1 3/8"	JOY 34-26-1770	AC-15	CONTROLLABLE PITCH
52,57,62, 67,72,77	TYP. HOUS. UNIT ENTRY STAIR ROOF	TYP. HOUS. UNIT ENTRY STAIR	M-17	200		.30	–	–	3120	1700	–	CENTRIF ROOF		I	–	1/12		115/1	15	–	–	PENN XQ60L	AC-16 THRU AC-21	
53,58,63, 68,73,78		NOT USED																						
54,59,64, 69,74,79	TYP. HOUS. UNIT PH MER ROOF	TYP. HOUS. UNIT PH MER EXHAUST	M-18	1630		.375	–	–	4830	1370	.35	CENTRIF ROOF	B	I	–	1/3		115/1	18	–	–	PENN AB35	①	
55,60,65, 70,75,80		TYP. HOUS. UNIT CENTRAL CORE OFFICES		800		.85	–	–	4440	1136	.30				–	1/3			15	–	–	PENN BB45	AC-16 THRU AC-21	
56,61,66, 71,76,81		TYP. HOUS. UNIT CENTRAL CORE SHOWERS		900		.85	–	–	4790	1110	.35				–	3/4		208/3	15	–	–	PENN FMX14B		MOTOR OUT OF AIR STREAM
82	BLDG NO. 6 ROOF	BLDG. NO. 6 M.E.R. EXH.	M-15	3250		.50	24	–	–	990	.80	WALL FAN	BELT		–	1			18	–	–	PENN PD24	①	
83	BLDG NO. 6 ROOF	MER/DELT. TOILETS		450		.45	–	–	3495	980	–	ROOF FAN			–	1/6		208/3	15	–	–	PENN AB-35	AC-14	
EF-84	BLDG 4 ROOF	BLDG 4 SEWING	M-11	26000		.70	–		5610	375	–	ROOF FAN				10			21			PENN MB 542	HV-6	

* PROVIDE SPRING ISOLATION CURB MOUNTING SYSTEM SIMILAR TO TYPE CMAB BY MASON INDUSTRIES.

SF - SUPPLY FAN
RF - RETURN FAN

SUPPLY AND RETURN FAN SCHEDULE

BASIS OF DESIGN: JOY, PENN & CARRIER

FAN NO.	LOCATION	AREA OR SYSTEM SERVED	DWG. NO.	CFM	TOTAL PRESS. (IN. WG)	STATIC PRESS. (IN. WG)	WHEEL DIA. (IN)	MAX. OUTLET VELOCITY (FPM)	MAX. TIP SPEED (FPM)	MAX RPM	FAN BHP	FAN TYPE	DRIVE	CLASS	DISCHARGE	MOTOR DATA HP	MOTOR DATA RPM	MOTOR DATA VOLT/PH	CONTROL SCHEME	VIBRATION MOUNTING TYPE	MIN. STATIC DEFLECTION	MODEL NO.	INTERLOCK	REMARKS
RF-1	BLDG NO. 1 1ST FL. NORTH M.E.R.	AC-1	M-2	1045		0.80	18	590	–	1770	.20	VANE-AXIAL	DIRECT	I	–	1	1770	480/3	1	VI	1 3/8"	JOY 18-4-1770	AC-1	
2	BLDG NO. 1 2ND FL. EAST M.E.R.	AC-2	M-20	10,800		1.10	32	1956	–	1170	3.0				–	5	1170		1			JOY 32-17-1170	AC-2	CONTROLLABLE PITCH
3		AC-3	M-20	24,800		1.95	36	3508	–	1170	16.0				–	25	1170		2			JOY 36-17-1170	AC-3	
4	BLDG NO. 1 2ND FL. WEST M.E.R.	AC-4	M-20	11,120		1.65	27	2746	–	1770	4.6				–	7 1/2	1770		3			JOY 27-14-1770	AC-4	
5		AC-5	M-20	11,850		1.65	27	2926	–	1770	5.0				–	7 1/2	1770		3			JOY 27-14-1770	AC-5	
6	BLDG NO. 3 ROOF	AC-6	M-9	8500		.32	19 3/4	2,190		1479	2.9	AF	BELT		DB	5	1800	480/3	4	*	1"	CARRIER 39EA17	AC-6	IN ROOFTOP UNIT, INLET VANES
7		AC-7	M-9	7600		.32		1,960		1324	2.4	AF				3			4			CARRIER 39EA17	AC-7	
8		AC-8	M-9	5760		.35	16 3/4	2,190		1854	1.5	AF				3		480/3	4			CARRIER 39EA11	AC-8	
9	BLDG NO. 4 ROOF	AC-9	M-11	9180		.35	24	1775		900	2.1	AF				5		208/3	4			CARRIER 39EA23	AC-9	
10	BLDG NO. 5 ROOF	AC-10	M-13	4560		.30	18 1/8	1,640		450	1.1	FC				2		480/3	4			CARRIER 39EA11	AC-10	
11	NOT USED																							
12	BLDG NO. 5 MAX. SEC. ROOF	AC-13	M-13	5035		0.50	16 3/4	1,920		530	1.6	AF	BELT	I	DB	2	1800	208/3	6	*	1"	CARRIER 39EA11	AC-13	
13	BLDG NO. 6 PH MER.	AC-14	M-21	5325		1.30	23	1805	–	1770	2.0	VANEAXIAL	DIRECT		–	7 1/2	1770		2	VI	1 3/8"	JOY 23-17-1770	AC-14	CONTROLLABLE PITCH
14	BLDG NO. 5 ROOF	HV-5	M-13	6000		1.00	18 1/8	2,160		700	2.7	FC	BELT		DB	5	1800	480/3	12	*	1"	CARRIER 39EA11	HV-5	
15 THRU 20	TYP. HOUS. PH MER.	AC-16 THRU 21	M-18	18350**	2.25**	1.85**	36	3,500	–	1770	17**	VANEAXIAL	DIRECT	II	–	50	1770	208/3	1	VI	1 3/8"	JOY 36-20-1770	AC-16 THRU AC-21	CONTROLLABLE PITCH ***
SF-1	BLDG NO. 5 ROOF	BLDG NO. 5 ELECT. ROOM	M-13	4000		.25	1	–	–	630	20	ROOF AXIAL	BELT	I	–	1/4	1750		18	–	–	PENN AF450B	①	

* PROVIDE SPRING ISOLATION CURB MOUNTING SYSTEM SIMILAR TO TYPE CMAB BY MASON INDUSTRIES.
** NORMAL OPERATION IS INDICATED ABOVE. SMOKE PURGE OPERATION SHALL BE 24,470 CFM AT 6.5" SP TOTAL, 6.0" SP EXTERNAL. 40 FAN BHP. FAN SHALL HAVE CAPABILITY OF 26,500 CFM @ 8.0" TSP 50 FAN BHP.
*** PROVIDE CLOSED TRANSITION, AUTO-TRANSFORMER, REDUCED VOLTAGE STARTERS FOR FANS RF-15 THROUGH RF-20

ST

SOUND TRAP SCHEDULE

BASIS OF DESIGN: INDUSTRIAL ACCOUS

UNIT NO.	LOCATION	AREA OR SYSTEM SERVED	DWG. NO.	TOTAL CFM	MAX. FACE VELOC. (FPM)	MAX P.D. (IN. WG)	OVERALL DIMENSIONS WIDTH (IN)	OVERALL DIMENSIONS HEIGHT (IN)	OVERALL DIMENSIONS LENGTH (IN)	SPEC. TYPE	REMARKS
ST-1	BLDG. 1 MER	RF-2	M-20	10,800	1800	.20	36	24	60	B	
ST-2		RF-2		10,800	1800		36	24	36	A	
ST-3		RF-3		24,800	1655		60	36	60	B	
ST-4		RF-3		24,800	1655		60	36	36	A	
ST-5	BLDG. 1 [illegible]	RF-4		11,120	1590		42	24	60	B	
ST-6		RF-4		11,120	1590				36	A	
ST-7		RF-5		11,850	1695				60	B	
ST-8		RF-5		11,850	1695				36	A	
ST-9	BLDG. 1 [illegible]	RF-1	M-2	1,045	700	.10	18	12	36	A	
ST-10		RF-1	M-2	1,045	700		18	12	36	A	
ST-11	HOUSING "A"	VAV (F)	M-18	2260	910	.10	18	18	60	B	
ST-12		(F)		2140	960		18	18	60	B	
ST-13		(F)		2850	1180		18	18	60	B	
ST-14		(F)		2510	1030		18	18	60	B	
ST-15		(G)		3240	1015		24	18	60	B	
ST-16		(E)		1850	815		18	18	60	B	
ST-17		AC-16		10,500	2335	.30	36	18	60	B	
ST-18		RF-15		18,350	1375	.20	48	36	60	B	
ST-19		VAV (D)		1,400	956	.10	18	12	60	B	
ST-20		RF-16		18,350	1225	.20	60	36	60 60	E B	
ST-71	BLDG. 6 MER.	EF-51	M-21	10,060	1680	.20	36	24	60	B	
ST-72							36	24	60	B	
ST-73		RF-13	M-21	5325	1185	.10	36	18	60	B	
ST-74							36	18	60	B	
ST-75	BLDG. 1 MER.	EF-4	M-20	840	680		15	12	36	C	
ST-76		EF-3		1480	595		15	24	36	C	
ST-77		EF-2		3430	915		36	15	36	C	

NOTE: ST-11→20 ARE TYPICAL FOR SIX HOUSING UNITS. SEE SCHD. ON RIGHT FOR NUMBERS

SOUND TRAP SCHEDULE FOR HOUSING UNITS

ST-# / CFM \ HOUSING UNIT	'A'	'B'	'C'	'D'	'E'	'F'
VAV(F) (2250)	11	21	31	41	51	61
(F)(2140)	12	22	32	42	52	62
(F)(2850)	13	23	33	43	53	63
(F)(2510)	14	24	34	44	54	64
(G)(3240)	15	25	35	45	55	65
(E)(1850)	16	26	36	46	56	66
AC-(21,000)	17 / 17	27 / 27	37 / 37	47 / 47	57 / 57	67 / 67
RF-(18,350)	18	28	38	48	58	68
VAV(D) 1400	19	29	39	49	59	69
RF-(18,350)	20	30	40	50	60	70

FAN POWERED INDUCTION V.A.V BOXES (KRUEGER AS STD)

MODEL TIM DRAW-THRU

DESIGNATION	PRIMARY CFM MAXIMUM CFM	PRIMARY CFM MINIMUM CFM	FACE CFM RANGE TOTAL	SIZE (NOM. CFM)	INLET DIAMETER	OUTLET WxH (INCHES)	INDUCTION INLET WxH (INCHES)	MIN. LENGTH ACOUSTICAL LINING DOWNSTREAM OF BOX	FAN ELECTRICAL DATA FAN TYPE	FAN MAX. R.P.M.	MOTOR FAN H.P.	MOTOR AMPS	VOLTS/PHASE	HOT WATER COIL DATA @ 65° E.A.T. LEAVING AIR TEMP. °F	M.B.H.	G.P.M./NO. OF ROWS	MAX WATER PRESS DROP (FT. H2O)	REMARKS
6	500	375	350-550	450	6	6 7/8×10 3/4	10×8	10 FT	FC	1750	1/6	2.6	115/1	90	19.0	0.5/1	0.2	W/ VARIABLE FAN SPEED CONTROLLER
8	900	700	550-900	800	8	9 7/8×10 3/4	10×12				1/4	3.8		85	13.6	0.9/1	0.2	
10	1125	925	800-1200	1000	10	11 7/8×10 3/4	16×12				1/3	5.7			21.3	0.9/1	0.1	
12	1800	1225	1150-2000	1500	12	13 7/8×11 7/8	16×16				1/2	7.7			28.5	1.7/1	0.4	
14	2250	1750	1600-2450	2000	16	13 7/8×11 7/8	16×16				1/2				30.5	1.7/1	0.4	

V.A.V BOXES (KRUEGER AS STD)

DESIGNATION	CFM SELECTION RANGE MINIMUM	CFM SELECTION RANGE MAXIMUM	MAXIMUM P.D. THRU BOX INCHES H2O	MAX. INLET PRESSURE INCHES H2O	BOX SIZE L×W×H (INCHES)	INLET SIZE (INCHES)	OUTLET SIZE W×H (INCHES)	MODEL NO.	CONTROL TYPE	MIN. LENGTH ACOUSTIC LINING DOWNSTREAM OF BOX	REMARKS
A	100	250	0.25	1.5	17×12×12 1/2	4 7/8	12×12 1/2	LMH II-5	N.O. [illegible]	10 FT.	
B	200	450				5 7/8		LMH II-6			
C	350	850				7 7/8		LMH II-8			
D	600	1400			17×18×14	9 7/8	18×14	LMH II-10			
E	1000	2000				11 7/8		LMH II-12			
F	1200	2800			17×18×17 3/4	13 7/8	18×17 3/4	LMH II-14			
G	2000	4000			23×24×17 3/4	15 7/8	24×17 3/4	LMH II-16			

NOTE: PROVIDE REVERSE ACTING RELAY (HEATING MODE ONLY) FOR BOXES DESIGNATED WITH 'X' SUFFIX (IE. Ax, Bx, Cx, ETC.).

Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1844

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 4039
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
475 Fifth Avenue
New York, NY 10017
212/532-9600

Canger Schoor & Camera, Inc.
Civil Consultant
PO Box 180
1359 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/267-2600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-5211

Newark State Prison

Newark, New Jersey

NJ LIC. NO. 7G780

No.	Date	Revision
4	4/86	ADDENDUM 40
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Sheet Title: SCHEDULE SHEET #2
HVAC

Architect's Project No. 84-6007
DBC No. C219

Sheet No. **M-28**

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EXHIBIT 'F'

SELF CONTAINED AIR CONDITIONING UNIT (SC)

Basis of design: CARRIER

Unit No.	Location	Area Served	Dwg. No.	Total Cooling MBH	Compressor Total Input (KW)	No. of Comp's	Supply Fan Total CFM	Min. O.A. CFM	Outlet Veloc. (FPM)	Total S.P. (in. WG)	Ext. S.P. (in. WG)	Fan RPM	Motor HP	Evap. Coil EDB °F	EWB °F	LDB °F	LWB °F	Max. F.V. (FPM)	Min. Rows Deep	Outdoor Design DB °F	Coil Rows Deep	Max. Cond. Temp. (°F)	Cond. Total CFM	Fan RPM	Ext. S.P. (in. WG)	No. of Motors	Motor HP (each)	Filter Type	Thick In.	Face Veloc. (FPM)	Heating Total MBH	KW	Elect. Data Volt/Ph	Control Scheme	Vibration Mounting Type	Model No.	Remarks
SC-1	CHAPEL	CHAPEL	M-7	120.0	12	2	3,710	390	1100	1.5	.6	887	2	80.6	67.8	58.0	57.0	345	4	90	3	105	8800	1075	-	2	½	THROW AWAY	1"	280	54.6	16	208/3	—	*	40RRO14 INDOOR UNIT / 38AQ014 OUTDOOR UNIT	FLA=50.7 A / FLA=51.6 A

* MTG. TYPE 5 – 1" MIN. ST-DEFLECTION – INDOOR UNIT.
MTG. TYPE 13 – 1" MIN. ST-DEFLECTION – OUTDOOR UNIT.

BOILER SCHEDULE (B)

Basis of design: CLEAVER BROOKS

Boiler No.	Location	Service	Dwg. No.	Boiler HP	Net Output MBH	Total Heating Surface (Fireside) (sq.ft.)	Furnace Volume (cu.ft.)	Pass Arr't	Oper. Press. (psig)	Boiler Press. Rating (psig)	Flue Outlet Size (in)	Eff'cy at Rated Load %	Hot Water GPM	P.D. (ft)	Temp. °F Ent	Temp. °F Lvg	Fuel Grade	Fuel BTU/GAL	Firing at Rated Load GPH	Maximum Firing Rate GPH	Fuel Pump HP	Air Compr. HP	Oil Heater KW	Gas Type	Gas BTU/CF	Firing at Rated Load CFH	Maximum Firing Rate CFH	Gas Inlet Press. (psig)	Draft Blower CFM	Motor HP	Electr. Data Volt/Ph	Maximum Overall Height	Control Scheme	Boiler Type	Model No.	Remarks
B-1,2	CENTRAL PLANT	HEATING	M-19	200	6695	1000	40	4	—	125	16	85%	415	2.5	100	200	#6	150,000	60	—	½	—	5.0	NATURAL GAS	1000	8,370	—	20.5 (IN. WG)	1700	10	480/3	7'-2"	—	4 PASS FIRE TUBE SCOTCH MARINE	CB400-200-125	

REFRIGERATION MACHINE SCHEDULE (CENTRIFUGAL) (RM)

Basis of design: CARRIER

Unit No.	Service	Dwg. No.	Refrig. Cap'ty (Tons)	Chiller GPM	Temp. °F Ent	Temp. °F Lvg	Max. P.D. (ft)	No. of Pass.	Fouling Factor	Condenser GPM	Temp. °F Ent	Temp. °F Lvg	Max. P.D. (ft)	No. of Pass.	Fouling Factor	Motor KW Input	RPM	Volt/Ph	FLA/LRA	Control Scheme	Vibration Mounting Type	Model No.	Remarks
RM-1,2	COOLING	M-19	525	750	62.8	46.0	7.1	2	.0005	1575	85	94.4	21.2	2	.0005	323	3600	4160/3	50/273	ELECT.	RUBBER IN SHEAR	CARRIER HERMETIC 19EA	FIELD INSUL. 218 FT. REQ.

COOLING TOWER SCHEDULE (CT)

Basis of design: MARLEY

Tower No.	Location	System Served	Dwg. No.	Max. Refrig. (Tons)	Total GPM	Temp. °F Ent	Temp. °F Lvg	Max. Head Loss (ft)	Outdoor Design WB (°F)	Fan RPM	Motor Qu'ty	HP (each)	Volt/Ph	No. of Sp'ds (each)	No. of Cells	Control Scheme	Tower Type	Vibration Mounting Type	Model No.	Remarks
CT-1,2	CENTRAL PLANT ROOF	RM-1, RM-2	M-5	1050	3150	95	85	11.7	76		2	25	480/3		2	—	CROSS FLOW INDUCED DRAFT	13	2-8915	

PUMP SCHEDULE (P)

Basis of design: W - WEINMAN; P - PREFERRED UTL.; B&G - BELL & GOSSETT

Pump No.	Location	Equipment or System Served	Dwg. No.	GPM	Total Head (ft)	NPSH Req'd (ft)	Operating Press. (psig)	Fluid Temp. (°F)	Impel'r Dia. (inch)	Eff'y %	BHP	Motor HP	RPM	Volt/Ph	Seal Type	Control Scheme	Vibration Mounting Type	Min. Static Deflection	Pump Type	Model No.	Remarks
P-1,2&3	CENTRAL PLANT	DUAL TEMP WATER	M-19	750	145	-	86	46/200	13	77	35	40	1750/1166	460/3	SEE SPECS	—	8	1"	DOUBLE SUCTION	W 4"L1	2 PUMPS OPER. 1 STANDBY
P-4,5&6		CONDENSER WATER		1575	55	-	37	95	9	84	25	30	1750			—	8	1"		W 6"L2	
P-7,8		HEATING HOT WATER		100	70	-	57	200	8½	64	2.8	5				—	—	—	IN-LINE	W CA2595	1 PUMP OPER. 1 STANDBY

NOTE: SEE FUEL OIL PUMP AND HEATER SET SCHEDULE FOR BOILER FUEL OIL PUMPS, GLYCOL/WATER PUMPS, AND HOT WATER PUMPS.
* MIN. 12" HG. SUCTION CAPABILITY.

DUCT HEATING COIL SCHEDULE (HOT WATER) (DHC)

Basis of design: KRUEGER

Coil No.	Location	Unit & Area Served	MBH	CFM	Max. Face Veloc. (FPM)	Air Temp. °F Ent	Air Temp. °F Lvg	Max. P.D. (in. WG)	GPM	Water Temp. °F Ent	Water Temp. °F Lvg	Max. P.D. (ft)	Min. Rows Deep	Nominal Size (in.)	Control Scheme	Remarks
DHC-A	SEE PLANS	VAV (A)	4.6/4.1	100	750	60	102.5	.15	0.5	195	155	.09	1	8¾x12	—	
B		(B)	8.5/7.4	300			86.2		.5			.13	1	8¾x12	—	
C		(C)	12.0/11.3	350			93.3		1.0			.56	1	11¼x12	—	
D		(D)	30.4/14.2	800/400			81.3		1.0			.10	1	11¼x18	—	
E		(D)	17.8/14.2	525/300			41.4		1.5			.10	1		—	
F		(D)	23.3/19.0	1000/500			81.5		2.0			.23	1		—	
G		(E)	17.0/15.2	600			86.2		1.0			.15	1		—	
H		(E)	26.7/21.0	1200/600			80.6		2.0			.35	1		—	
I		(E)	24.5/21.8	600			97.8	.22	1.0			.15	[illegible]		—	
J		(E)	56.0/41.1	1900/600			87.3	.25	1.5			.33	[illegible]	16¼x24	—	
K		(F)	23.6	1000			81.8	.16	1.0			.18	[illegible]	16¼x18	—	
L		(F)	34.1/27.6	1500/1000			80.0	.20	1.5			.33	[illegible]		—	
M		(F)	47.7/30.9	1540/1000			88.7	.18	2.0			.63	1	16¼x24	—	
N		(F)	60.0/47.7	2220/1550			80.9	.25	2.0			.51	2	16¼x38	—	
O		(B)	25.2/12.6	400/200		65	118.3	.16	1.0			.44	1	11¼x18	—	
P	M-10	(C)	9.7	230			99.0	.15					1	11¼x12	—	

NOTE: DATA FOR SCHEDULE ABOVE ARE BASED ON NOMINAL CFM IS INDICATED THERE ON. ACTUAL PERFORMANCE WILL VARY WITH CFM. REFER TO FLOOR PLANS FOR ACTUAL COIL CFMS.

UNIT VENTILATORS (AAF AS STD)

Symbol	Model No.	Minimum O.A. CFM	Total CFM	Ent. Air Temp. DB (°F)	Ent. Air Temp. WB (°F)	Water GPM	Max. Press. Drop (ft. H2O)	Sensible Heat (MBH)	Total Heat (MBH)	Ent. Air Temp. °F	Water GPM	Max. Press. Drop (ft. H2O)	Output (MBH)	Motor H.P. (115V-1Ø-60)	RPM	Runout Sizes (in.)	Remarks	Location	Dwg. No.
UV-1, -2	SF/GAB/TBQ N6-319-2 *	175	750	81.2	67.7	7.1	2.0	18.0	28.0	70	7.1	2.0	32.0	1/8	680	1¼	CONTROLS BY A.T.C. CONTRACTOR. REFER TO PLANS FOR COIL CONN.	BUILDING Nº 3 CLASSROOMS	M-8
UV-3	SF/GAB/TBQ N6-419-2 *	250	1000	81.4	62.0	8.3	3.3	24.5	37.5	70	8.3	3.3	43.0	1/8	680	1¼			
UV-4, -5	*	175	1000	81.0	67.6	5.3	1.4	22.0	31.0	70	5.3	1.4	41.0	1/8	680	1			
UV-6, -7	*	200	1000	81.5	68.0	5.1	1.3	23.0	31.0	70	5.1	1.3	40.5	1/8	680	1			

* PROVIDE 18" HIGH PIPE ENCLOSURE ACCESSORY FURNISHED BY UNIT VENTILATOR MFR.

EXPANSION TANK SCHEDULE (ET)

Based on AMTROL

Tank No.	Location	Dwg. No.	System Served	Tank Volume (gal)	Size Dia. (in)	Size Length (in)	Avg. Oper. Temp. (°F)	Initial Fill Press. (psig)	Model No.
ET-1	CENTRAL PLANT M.E.R.	M-19	HEATING/DUAL TEMP	264	36	85	170	50	VERTICAL TYPE 1000 L
ET-2,3,&4			HEATING	328	48	74			VERTICAL TYPE 2000 L

RADIATION SCHEDULE (VULCAN AS STD)

Type	Location	Style	Rows of HTG Elements	Enclosure Height (in.)	Element Designation	BTU/HR/FT at 200°F AWT, 1 FPS WTR. VEL.	Remarks
FTR-A	SEE PLANS	MDV3 EXT. ALUM.	1	21 9/16	1S-3¼-0-.032	900	W/ SLIDE DAMPER
FTR-B			1	12 9/16	1S-3¼-0-.032	720	W/ SLIDE DAMPER
FTR-C	GUARD HOUSE TOWER	DS SLOPE TOP	1	12	1S-3¼-2¼-40-0.216	1270	W/ SELF CONT. ⓣ

CONVECTOR SCHEDULE (CV)

Basis of design: AAF

Unit Type	Location	MBH	Water GPM	Avg. Temp. (°F)	Temp. Drop (°F)	Steam Inlet Press. (psig)	Ent. Air Temp. (°F)	Enclosure Type	Dimensions (in.) Ht x Deep	Long	Control Scheme	Model No.	Remarks
CV-A	SEE PLANS	2.9	0.2	195	175	—	60	FLOOR NON-RECESSED	32x6	16	—	F	
CV-B		3.2	0.3	195	175	—	60		32x6	20	—	F	GUARD TOWER LE, SE
CV-C		3.2	—	—	—	—	1-ELEMENT	FLOOR NON-RECESSED ELECTRIC		12"	208/60/1	90-DS RENO 14	GUARD TOWER NW/SW 1KW-208-60

CABINET AND UNIT HEATER SCHEDULE (CUH / UH)

Basis of design: AAF VULCAN

Unit No.	Location	MBH	CFM (HI)	Air Temp. °F Ent	Air Temp. °F Lvg	Ext. S.P. (in. WG)	GPM	Water Temp. °F Ent	Water Temp. °F Lvg	Max. P.D. (ft)	No. Elements	KW	HP or Watts	RPM (HI)	No. of Speeds	Electr. Data Volt/Ph	Amps	Model No.	Remarks
CUH-A	SEE PLANS	22.0	350	55	113	0	2.0	195	173	5	—	—	1/40	1050	2	115/1	1.8	AAF 3000 AH-FPA	RECESSED INVERTED WALL
CUH-B	BLDG. Nº1 MAIN ENTR.	52.0	825		115				143		—	—	1/10			115/1	5.8	AAF 7000 AH-FPA	
CUH-C	GUARD TOWERS NE, SE	22.0	350		113				173		—	—	1/40			115/1	1.8	AAF 3000 SFG-TPA	NON-RECESSED F.A. TOP DISCH.
ECUH-A	HOUSING DETENTION	11.6	350		85		-	-	-	-	3	3.3	1/40			208/3	7.9	AAF 3000 IAH-FPA	RECESSED INVERTED WALL
ECUH-B	GUARD TOWER NW/SW	15.4	350		96		-	-	-	-	4	4.4	1/40			208/3	14.7	AAF 3000 SFG-TPA	NON-RECESSED F.A. TOP DISCH.
ECUH-C	CHAPEL	13.7	170	50	125		-	-	-	-	1	4.0	—	—	1	208/1	19.5	PROMAX AWH-4408	RECESSED WALL TYPE
CUH-D	SEE PLANS	22.0	350	55	113		2.0	195	173	5	—	—	1/40	1050	2	115/1		AAF 3000 AC-FPA	RECESSED CLG. TYPE
UH-A		7.8	328	60	82		0.5		165		—	—	5 WATTS	1450	1		.70	VULCAN 12 H8	VERTICAL W/ CONE & VERT. LOUVERS
UH-B		16.9	423		97		1.2				-	-	6 WATTS	1450			.70	VULCAN 28H9	
UH-C		41.0	1252		90		2.8				-	-	1/12	1550			3.0	VULCAN 60H12	
UH-D		68.9	1892		94		7.2				-	-	1/10	1050			4.0	VULCAN 98H16	
UH-E		112.8	2953		95		7.8				-	-	1/4	1140			4.5	VULCAN 156H18	
UH-F		22.0					1.5				-	-	9 WATTS	1450			1.0	VULCAN 30H10	HORIZONTAL W/ADJ. LOUVERS

GLYCOL/WATER MAKE UP UNIT

Pumps	Service	Flow Rate	Head	HP	RPM	V/PH	Model Nº
P-17	GLYCOL/WTR.	3 GPM	50 PSIG	½	3450	120/1	HSTCG 1550-2

BASIS OF DESIGN IS FEDERAL PUMP CORPORATION SIMPLEX TYPE TANK AND PUMP SET FACTORY ASSEMBLED ON A COMMON BASE. TANK SIZE IS 26 GALLONS.

PH-1 GLYCOL/WATER PUMP & HEATER SET *

30% GLYCOL / 70% WATER

Pumps	Service	Flow Rate	Head	HP	RPM	V/PH	Model Nº
P-11 OPERATING, P-12 STANDBY	BOILER HOT WTR.	60 GPM	60 FT.	3	1750	480/1	B&G 1531 1½" BB
P-13 OPERATING, P-14 STANDBY	GLYCOL/WTR.	10 GPM	70 FT.	2	3500		B&G 1522 ¾" AAB

Electric Heaters	Service	Flow Rate	Ent. Temp.	Lvg. Temp.	KW	V/PH
EH-1	GLYCOL/WATER	10 GPM	120°F	160°F	90	

Heat Exchanger	Service	Boiler Water Flow	Ent. T.	Lvg. T.	Glycol Water Flow	Ent. T.	Lvg. T.
HE-1 OPERATING, HE-2 STANDBY	BOILER WATER / GLYCOL/WATER	40 GPM	200°F	190°F	10 GPM	120°F	160°F

* NOTE: PUMP & HEATER SETS ARE TO BE FURNISHED AS FACTORY FABRICATED UNITS (SEE SPECS). THERE IS ONLY ONE ELEC. POWER CONNECTION TO EACH SET.

PH-2 FUEL OIL PUMP & HEATER SET *

Pumps	Service	Flow Rate	Head	HP	RPM	V/PH	Model No
P-15 OPERATING, P-16 STANDBY	Nº6 FUEL OIL	170 GPH	100 PSIG	1	1140	480/3	F 03706
	ALTERNATE Nº2 FUEL OIL	200 GPH					

Electric Heaters	Service	Flow Rate	Ent. Temp.	Lvg. Temp.	KW	V/PH
EH-2	Nº6 FUEL OIL	170 GPH	90°F	150°F	24	

Heat Exchanger	Service	Boiler Water Flow	Ent. T.	Lvg. T.	Nº6 Fuel Oil Flow	Ent. T.	Lvg. T.
HE-3 OPERATING, HE-4 STANDBY	BOILER WATER / Nº6 FUEL OIL	12.5 GPM	200°F	190°F	170 GPH	90°F	160°F

* FOR OPERATION WITH NO 2 OIL 200 GPH
** MIN. 17" SUCTION CAPABILITY

ELECTRIC WALL FIN (VULCAN AS STD)

Symbol	BTU/FT	Watt/FT	Amps/FT	Volts	Phase	Cycle	Elem.	Remarks
ECV-1	3580	1050	5	208	60	1	12 DS	GUARD TOWER NW, SW

PACKAGED TERMINAL AIR CONDITIONERS (CARRIER AS STD)

Unit Nº	Location	Cooling Total (BTU/HR)	Dehumid. (PINTS/HR)	Heating Type	Capacity (BTU/HR)	Back Up Elec. Cap. (BTU/HR)	E.E.R.	C.O.P.	Fan Motors H.P.	Supply Air CFM High Speed Total	Vent	Volts	Cycles	Phase	Max. Amps	Model Nº	Remarks
PTAC-1,-2,-3&-4	GUARD TOWERS NE, SE	13,400	5.0	HW	14500	—	7.3	2.1	1/10	275	55	208	60	1	9.1	52AH D014-301	195°EWT, 2.0 GPM SEE NOTE 1
PTAC-10,-11,-12&-13	GUARD TOWERS NW, SW	13,400	5.1	HEAT PUMP	12800	14000	6.7	2.0/2.3		280	70				20.3	52AQ B5143	
PTAC-5,-6	CHAPEL	8,200	2.5		7600	6500	8.3	2.4/2.7		200	70				9.7	52AO B2093	
PTAC-7,-8	CHAPEL	11,200	4.1		10500	9500	7.5	2.2/2.6		280	70				14.0	52AO B3123	
PTAC-9	INDUSTRIAL AREA CONTROL	11,300	3.3		10400	10900 AUX	7.7	2.3	1/6	315	65				20.0	52BQ A3123	WITH AUX ELECT HEAT.

NOTES:
1) INCLUDE HYDRONIC SUBBASE. FOR HW UNITS
2) EXTERIOR LOUVERS BY HVAC CONTR.

Grunzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 4039
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
475 Fifth Avenue
New York, NY 10017
212/532-9600

Canger Schoor & Cassera, Inc.
Civil Consultant
PO Box 180
1259 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/867-2600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-5211

Newark State Prison
Newark, New Jersey

N.J. LIC. NO. 26780

ADDENDUM #40
ADDENDUM
11-21-85 SKCL-75 ADDENDUM #30
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Key Plan

Sheet Title: SCHEDULE SHEET Nº 3 HVAC

Architects Project No.: [illegible]
DBC No. C[illegible]

Sheet No.: **M 29**

EXHIBIT 'F'

ABBREVIATIONS

ABV.	ABOVE	H.C.	HEATING COIL
A.F.F.	ABOVE FINISHED FLOOR	I.D.	INSIDE DIMENSION
A.D.	ACCESS DOOR	K.W.	KILOWATTS
A.L.	ACOUSTICAL LINING	L.D.	LINEAR DIFFUSER (CEILING, WALL, SILL, OR FLOOR)
A.L.D.	AUTOMATIC LOUVER DAMPER	M.B.H.	THOUSANDS OF BTU'S PER HOUR
B.D.D.	BACKDRAFT DAMPER	MIN.	MINIMUM
B.G.	BOTTOM GRILLE	M.O.	MASONRY OPENING
B.O.	BLANK OFF	N.C.	NORMALLY CLOSED
B.R.	BOTTOM REGISTER	NK.	NECK
B.T.U.	BRITISH THERMAL UNIT	N.O.	NORMALLY OPEN
C.D.	CEILING DIFFUSER	N.T.S.	NOT TO SCALE
C.F.M.	CUBIC FEET PER MINUTE	O.A.I.	OUTDOOR AIR INTAKE
C.G.	CEILING GRILLE	O.B.D.	OPPOSED BLADE DAMPER
C.O.	CLEAN OUT (DOOR)	O.D.	OUTSIDE DIMENSION
CONV.	CONVECTOR	P.S.I.(G)	POUNDS PER SQUARE INCH (GAUGE)
C.R.	CEILING REGISTER	P.R.V.	PRESSURE REDUCING VALVE
C.U.H.	CABINET UNIT HEATER	P.T.A.C.	PACKAGED TERMINAL AIR CONDITIONER
D.H.C.	DUCT HEATING COIL	R.A.	RETURN AIR
DN.	DOWN	STD.	STANDARD
D.P.L.	DRUM LOUVER	S.T. or S.A.	SOUND TRAP or SOUND ATTENUATOR
D.T.S.	DUAL TEMPERATURE SUPPLY	T.G.	TOP GRILLE
D.T.R.	DUAL TEMPERATURE RETURN	T.R.	TOP REGISTER
E.C.	ELECTRIC CONVECTOR	TR. G.	TRANSFER GRILLE
E.S.	EQUAL SPLIT	U.H.	UNIT HEATER (PROPELLER TYPE)
E.T.	EXPANSION TANK	U.V.	UNIT VENTILATOR
E.W.F.	ELECTRIC WALL FIN RADIATION	VAR.	VARIABLE
F.C.	FLEXIBLE CONNECTION	V.D.	VOLUME DAMPER
F.D.	FUSIBLE LINK FIRE DAMPER WITH DUCT ACCESS DOOR	V.A.V.	VARIABLE AIR VOLUME
FLR.	FLOOR	W.M.S.	WIRE MESH SCREEN
F.P.B.	FAN POWERED INDUCTION V.A.V. BOX	16x6 T.R.	16"x6" TOP REGISTER
F.T.R.	FINNED TUBE RADIATION	(300)	300 CUBIC FEET OF AIR PER MINUTE
G.P.M.	GALLONS PER MINUTE	[illegible]	[illegible]
SEC.	SECURITY TYPE REG.	(SD)	SMOKE DETECTOR
LCP	LOCAL CONTROL PANEL		

PIPING

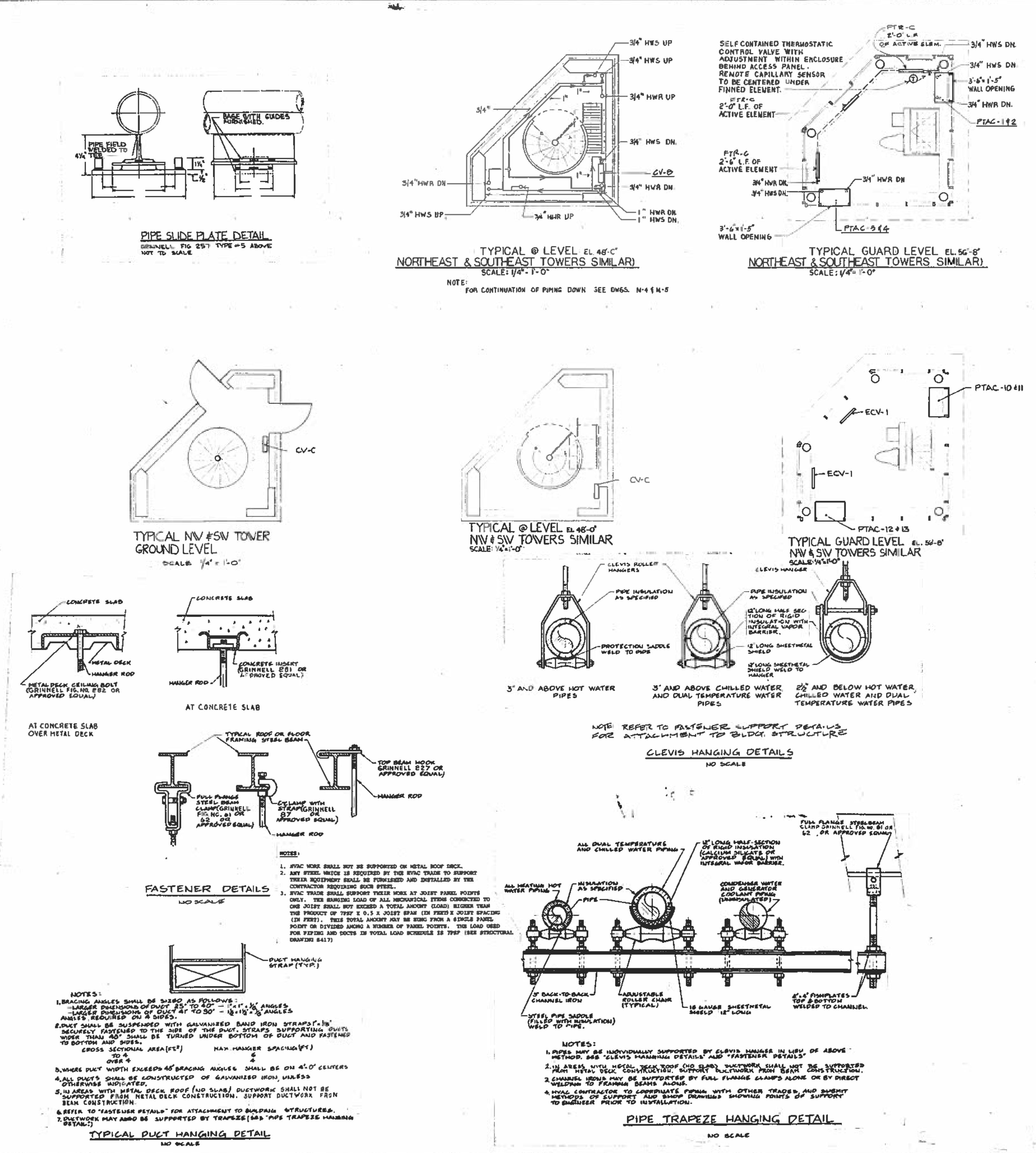
—C.S.—	CONDENSER WATER SUPPLY		ECCENTRIC REDUCER (E.R.)
—C.R.—	CONDENSER WATER RETURN		UNION
—C.H.W.S.—	CHILLED WATER SUPPLY		CAPPED PIPE WITH SHUT OFF VALVE
—C.H.W.R.—	CHILLED WATER RETURN		DIRT POCKET
—D—	DRAIN LINE		'Y' TYPE STRAINER WITH BLOW OFF VALVE
—V—	VENT LINE		BASKET TYPE STRAINER
	PIPE ANCHOR		ELBOW TURNED UP
	ARROW INDICATES DIRECTION OF FLOW		ELBOW TURNED DOWN
	PIPE GUIDE		CONNECTION TO HEATING ELEMENT ON FLOOR ABOVE
	PIPE EXPANSION JOINT	—R.L.—	REFRIGERANT LIQUID PIPING
	EXPANSION COMPENSATOR	—R.S.—	REFRIGERANT SUCTION PIPING
—H.R.S.—	HEAT RECOVERY SUPPLY	—R.S.V.—	REFRIGERANT- SAFETY VALVE RELIEF LINE
—H.R.R.—	HEAT RECOVERY RETURN	—F.O.V.—	FUEL OIL VENT
—F.O.F.—	FUEL OIL FILL	—F.O.S.—	FUEL OIL SUCTION
	PUMP DISCHARGE	—F.O.R.—	FUEL OIL RETURN
—D.T.S.—	DUAL TEMPERATURE WATER SUPPLY	—F.O.G.L.—	FUEL OIL - GAUGE LINE
—D.T.R.—	DUAL TEMPERATURE WATER RETURN	—HG.—	HOT GAS PIPING
—H.W.S.—	HOT WATER SUPPLY		PITCH PIPE IN DIRECTION OF ARROW
—H.W.R.—	HOT WATER RETURN	L.F.	LINEAR FEET

VALVE AND GAUGE LEGEND

	GATE VALVE		PRESSURE GAUGE
	GLOBE VALVE WITH LOCKSHIELD		MASTER THERMOSTAT
	CHECK VALVE		DAY/NIGHT THERMOSTAT
	AUTOMATIC THREE WAY VALVE		NIGHT THERMOSTAT
	AUTOMATIC CONTROL VALVE		FLOW METERING STATION
	HEATING ELEMENT		THERMOMETER WELL
	HEATING ELEMENT WITH AUTOMATIC CONTROL VALVE		VALVE IN VERTICAL
	EXPANSION LOOP WITH GUIDES		EMERGENCY BREAK GLASS SWITCH FOR EQUIPMENT SHUT-DOWN
	LUBRICATED PLUG VALVE WITH MEMORY STOP		HOT WATER SUPPLY RISER (NUMBER 1)
	HOSE DRAIN VALVE		HOT WATER RETURN RISER (NUMBER 2)
	MANUAL AIR VENT		
	AUTOMATIC AIR VENT		
	THERMOMETER		
	BUTTERFLY VALVE		

DUCTWORK LEGEND

	SUPPLY AIR DUCT UP		TRANSFER GRILLES ON BOTH SIDES OF PARTITION OR WALL
	SUPPLY AIR DUCT DOWN		WALL OPENING IN WALL ABOVE HUNG CEILING
	RETURN OR EXHAUST DUCT UP		FLEXIBLE DUCT CONNECTION
	RETURN OR EXHAUST DUCT DOWN		BRANCH TAKEOFF WITH VOLUME DAMPER
	SLOPING RISE IN DUCTWORK		CEILING DIFFUSER
	SLOPING DROP IN DUCTWORK		SUPPLY REGISTER OR DIFFUSER
	DUCT SIZING - FIRST FIGURE INDICATES PLAN SIZE		RETURN REGISTER OR GRILLE
	ACCESS DOOR IN DUCT		SUPPLY REGISTER
	ACOUSTIC LINING IN DUCT (SIZE NOTED AS INSIDE DIMENSIONS)		RETURN REGISTER OR GRILLE
	FLEXIBLE CONNECTION		LOUVER DOOR
	VOLUME DAMPER		UNDERCUT DOOR
	AUTOMATIC LOUVER DAMPER		10" ROUND DUCT
	ELBOW WITH TURNING VANES		SQUARE FEET
	BRANCH NECK		WALL OPNG 16x8 STANDARD



Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1059
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
475 Fifth Avenue
New York, NY 10017
212/532-9600

Canger Schoor & Cassera, Inc.
Civil Consultant
PO Box 180
1359 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/887-2800

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-3211

Newark State Prison

Newark, New Jersey

NJ LIC. NO. 15780

No.	Date	Revision
	4-1-85	CONFORMED SET
1	11-19-84	BULLETIN 'D'
		ISSUED FOR BID

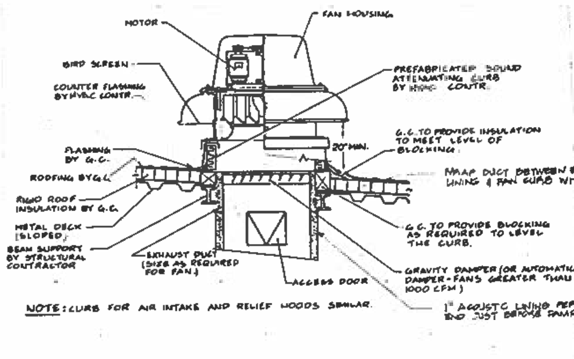
Drawn By: M.I.
Checked By: RJF
Issue Date: NOV-1-1984
Scale: AS SHOWN
Key Plan

Sheet Title: SYMBOLS, ABBR., GUARD TOWERS, & DETAILS SHEET #1
HVAC

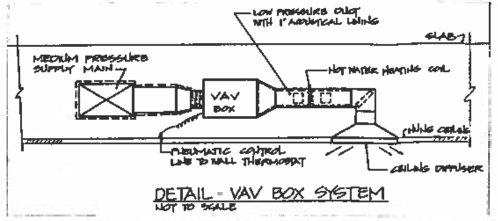
Architect's Project No. 81-8007
DBC No. C819

Sheet No. M-30

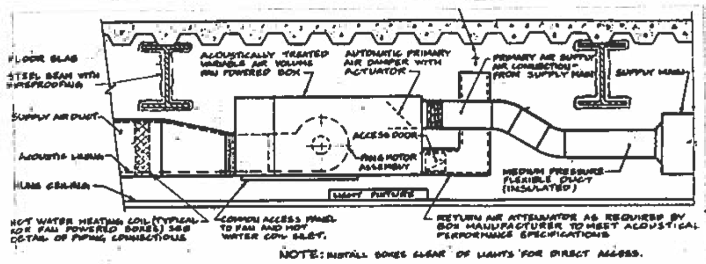
EXHIBIT 'F'



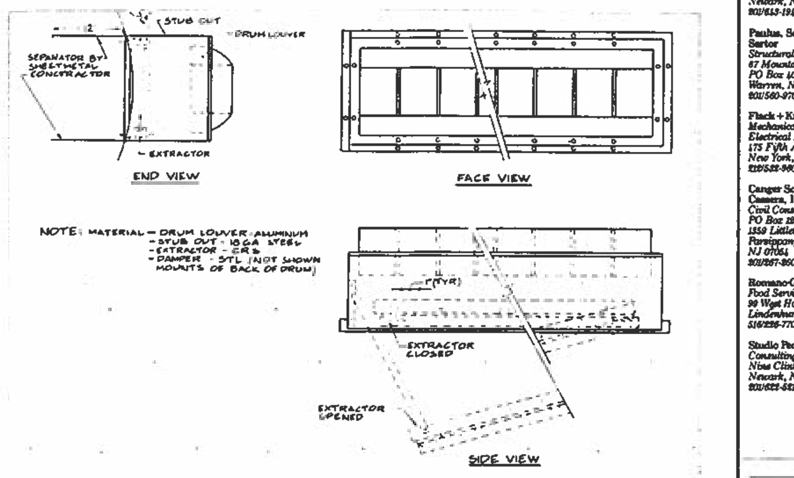
EXHAUST FAN DETAIL (METAL DECK ROOF)



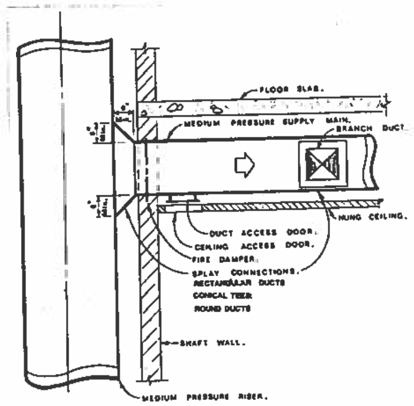
DETAIL - VAV BOX SYSTEM
NOT TO SCALE



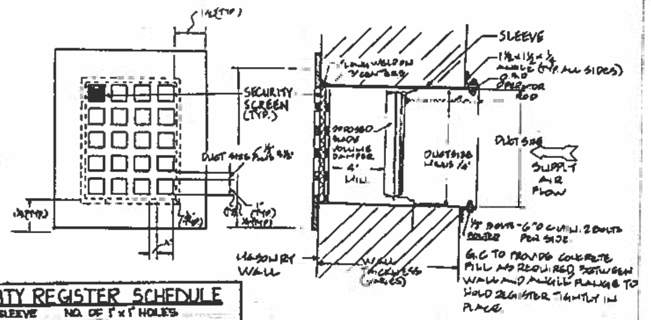
TYPICAL VARIABLE AIR VOLUME FAN POWERED BOX
NO SCALE



DRUM LOUVER
NO SCALE



MED. PRESSURE DUCT CONNECTION 1

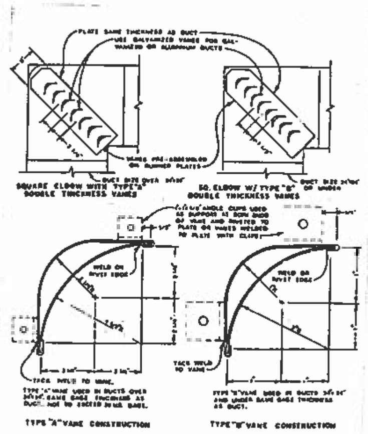


SECURITY REGISTER SCHEDULE

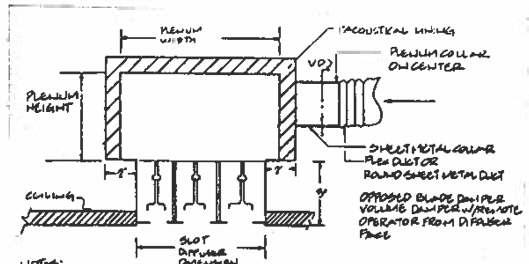
NOMINAL SLEEVE SIZE (IN)		NO. OF 1" x 1" HOLES		
WIDTH	HEIGHT	TOTAL HOLES (IN)	NO. WIDE COLUMNS	NO. HIGH (ROWS)
12	8	40	8	5
12	10	48	8	6
12	12	64	8	8
12	14	72	8	9
12	16	80	8	10
12	18	96	8	12
16	8	50	10	5
16	11	70	10	7
27	11	126	18	7

NOTES:
1. CONSTRUCTION STEEL - A 36 HARDNESS, FACE - 1/4" THICK BACK PLATE - 12 GAUGE.
2. SLEEVE CONSTRUCTION IS 12 GA. STEEL.
3. SCREEN: 10 MESH, O.087 STAINLESS STEEL WIRE CLOTH. SECURITY TYPE BY CHAMBERLIN BARNHART OR APPROVED EQUAL.
4. SCREEN TO BE TIGHTLY SANDWICHED BETWEEN FACE AND BACK PLATES. WELD BACK PLATE TO SLEEVE.
5. ANGLES HOLD OBD IN PLACE. DAMPER OPERATES FROM REAR WITH 1/4" ROD EXTENSION.
6. WELDS & ANGLES ON ALL 4 SIDES OF COLLAR.
7. HVAC CONTRACTOR TO COORDINATE WITH MASONRY CONTRACTOR TO DETERMINE SIZE OF COLLARS TO ACCOMODATE WALL THICKNESSES.
8. FINISH PRIME COAT.

DETAIL OF TYPICAL SECURITY-TYPE REGISTER

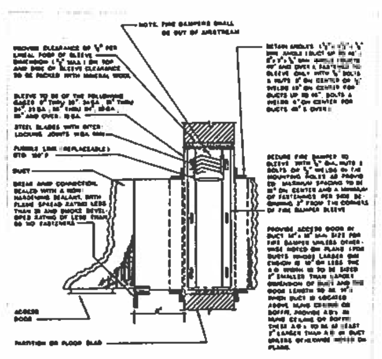


SQUARE DUCT ELBOWS

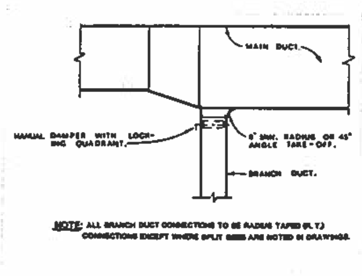


NOTES:
1) PLENUM LENGTH IS PERPENDICULAR TO THE PAGE
2) PLENUM SIZES ON DWGS ARE BASED UPON KRUEGER SERIES 1900 DIFFUSERS. FOR ALTERNATE MANUFACTURERS, ADJUST PLENUM WIDTH AS DETAILED ABOVE.
3) FOR PLASTER AND CONCEALED SPLINE TILE CEILINGS USE KRUEGER MOUNTING METHOD D, FOR LAY-IN TILE CEILINGS, USE KRUEGER MOUNTING METHOD C.
4) VOLUME DAMPER SHALL BE ADJUSTABLE VIA HEXAGONAL SCREW FROM FACE OF DIFFUSER.

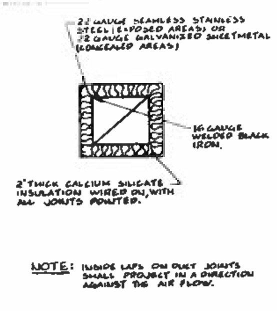
SLOT DIFFUSER DETAIL



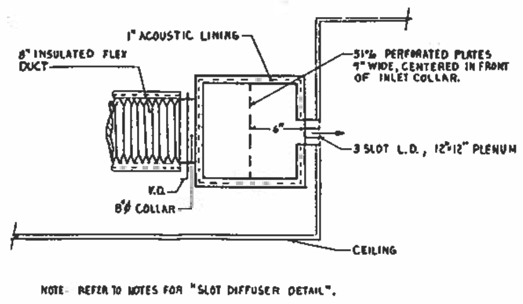
TYPICAL SHUTTER TYPE FIRE DAMPER
(FOR WALLS RATED 2-HOURS OR LESS)



BRANCH DUCT CONNECTION
LOW PRESSURE



KITCHEN HOOD EXHAUST



DETAIL OF STRAIGHT THROUGH
LINEAR DIFFUSER
SECTION
NOT TO SCALE

Gruzen/Berger, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 4039
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
175 Fifth Avenue
New York, NY 10017
212/532-9600

Canger Schoor & Camera, Inc.
Civil Consultant
PO Box 180
1359 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/267-8600

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
Nine Clinton Street
Newark, NJ 07102
201/622-5821

Newark State Prison

Newark, New Jersey

NJ LIC NO. 26780

ISSUED FOR BID

No.	Date	Revision

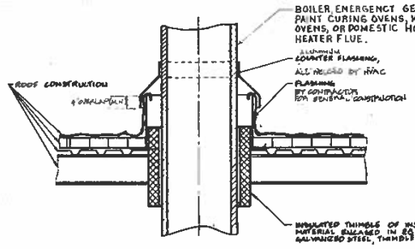
Drawn By: T.C.
Checked By: R.T.F.
Issue Date: NOV-1-1984
Scale: N.T.S.
Key Plan

Sheet Title: DETAILS SHEET NO. 2 HVAC

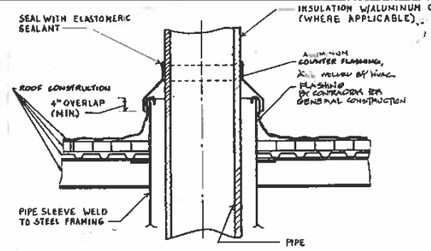
Architect's Project No. 81-3007
DBC No. C219

Sheet No. M-31

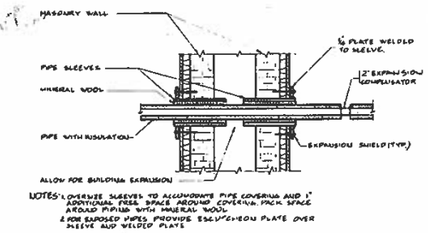
EXHIBIT 'F'



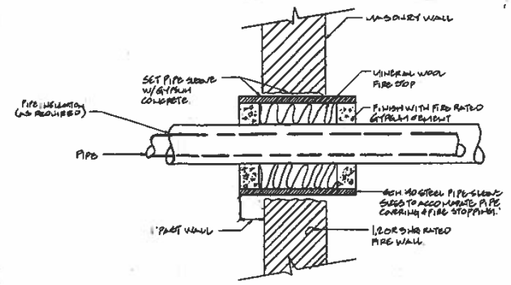
DETAIL OF FLUE - ROOF PENETRATION
NO SCALE
NOTE: REFER TO DWG FOR ACTUAL DIMENSIONS ALL MEASUREMENTS ARE INTERIOR CLEAR DIAMETER



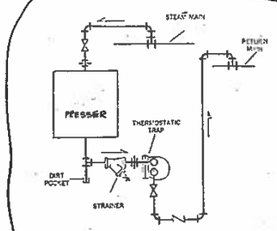
DETAIL OF PIPE ROOF PENETRATION
NO SCALE



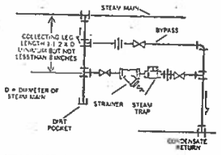
DETAIL OF PIPE PENETRATION THROUGH BUILDING EXPANSION JOINT



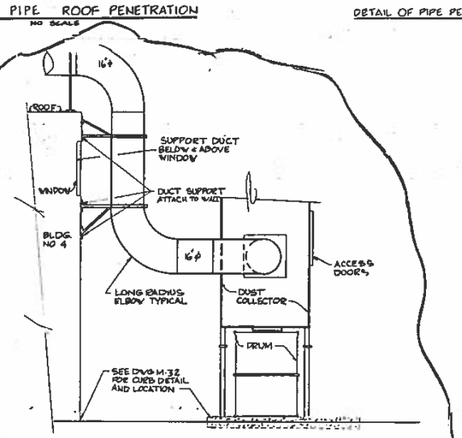
TYPICAL DETAIL OF PIPING THRU FIRE RATED WALL
NO SCALE



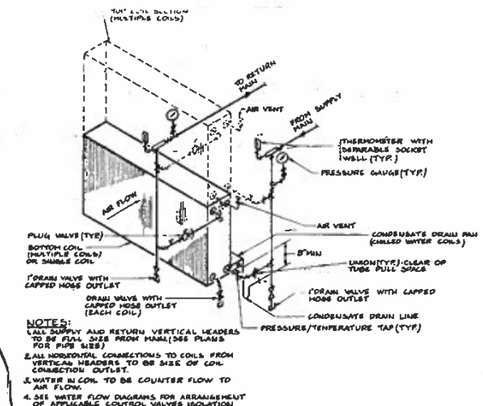
DRAINING LOW PRESSURE UNIT HEATER TO OVERHEAD RETURN DETAIL



TRAP INSTALLATION FOR SUPERVISED HEAT-UP OF STEAM MAINS DETAIL

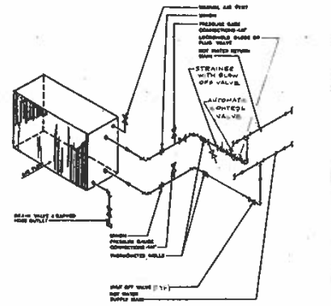


DETAIL OF DUST COLLECTOR & DUCTWORK

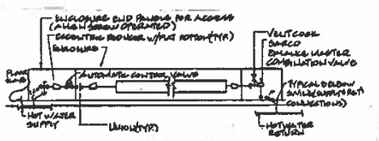


NOTES:
1. ALL SUPPLY AND RETURN VERTICAL HEADERS TO BE FULL SIZE FROM MAINS (SEE PLANS FOR PIPE SIZES)
2. ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTION OUTLET.
3. WATER IN COIL TO BE COUNTER FLOW TO AIR FLOW.
4. SEE WATER FLOW DIAGRAMS FOR ARRANGEMENT OF APPLICABLE CONTROL VALVES ISOLATION VALVES AND CIRCULATING PUMPS.

PIPING CONNECTIONS FOR HOT WATER AND CHILLED WATER COILS (CENTRAL STATION AIR HANDLING SYSTEMS)

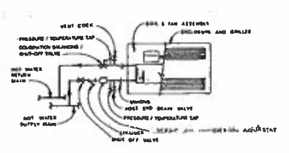


PIPING CONNECTIONS FOR DUCT MOUNTED HOT WATER HEATING COILS AND COILS FOR PINCH DOWN AND FAN POWERED VAV BOXES

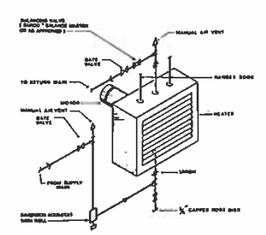


NOTES: CONTROL VALVES TO BE WITHIN ENCLOSURE OR AS SHOWN OTHERWISE ON PLANS.

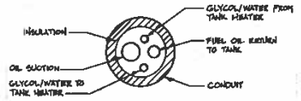
HOT WATER WALL FIN RADIATION DETAIL
NO SCALE



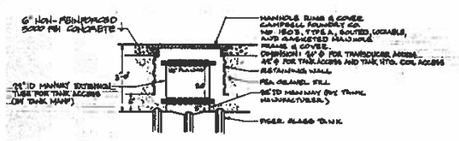
HOT WATER CABINET HEATER PIPING CONNECTIONS



UNIT HEATER HOT WATER PIPING

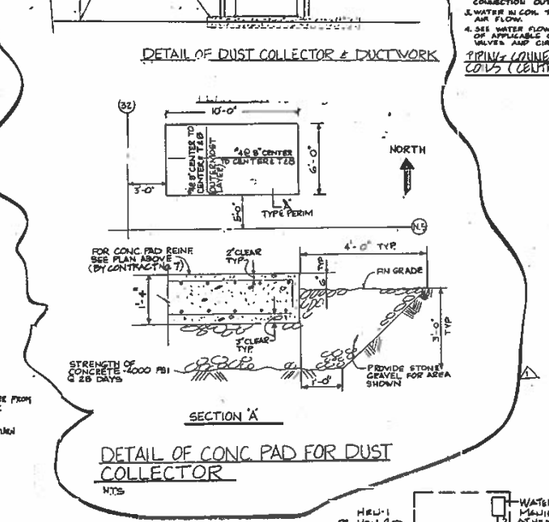


HOT WATER BOILER FUEL OIL PIPING CONDUIT SYSTEM DETAIL



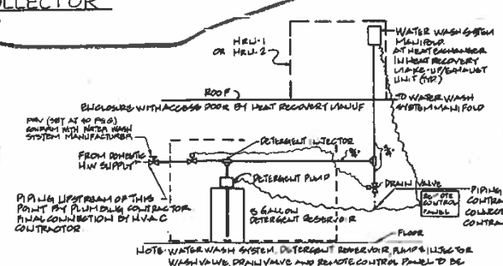
FUEL OIL TANK MANWAY DETAIL
NO SCALE

NOTE: BOILER FUEL OIL TANKS AND EMERGENCY GENERATOR FUEL OIL TANK HAVE TRANSDUCER ACCESS MANHOLES AND TANK MANWAYS, AND HAVE TRANSDUCER ACCESS MANHOLES. BOILER FUEL OIL TANKS HAVE TANK HEATING COIL ACCESS MANHOLES AND TANK MANWAYS. SEE FUEL OIL FLOW DIAGRAMS ON DWG. M-15.



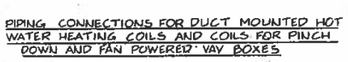
SECTION 'A'

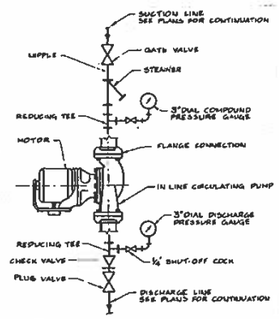
DETAIL OF CONC. PAD FOR DUST COLLECTOR
NTS



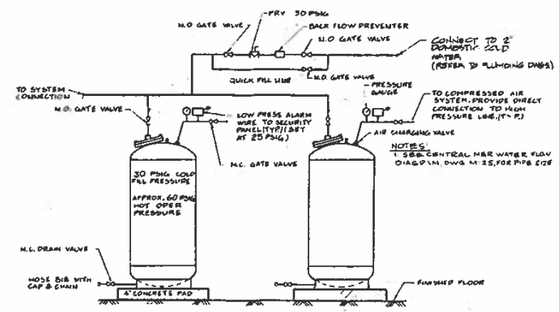
NOTE: WATER WASH SYSTEM, DETERGENT RESERVOIR, PUMPS & LIGHTS FOR WASH VALVES, DRAIN VALVE AND REMOTE CONTROL PANEL TO BE FURNISHED BY HEAT RECOVERY MAKE-UP EXHAUST UNIT MANUFACTURER AND INSTALLED BY HVAC CONTRACTOR

KITCHEN HOOD HEAT RECOVERY WATER WASH SYSTEMS
(ONE EACH FOR HRU-1 AND HRU-2)
NO SCALE





IN LINE CIRCULATING PUMP



NOTES:
1. SEE CENTRAL H&R WATER FLOW DIAGRAM DWG M-25 FOR PIPE SIZE

DETAIL OF EXPANSION TANKS
NO SCALE

Gruzen/Bergye, P.C.
Architects Planners
Gateway One
Newark, NJ 07102
201/643-1944

Paulus, Sokolowski & Sartor
Structural Consultant
67 Mountain Boulevard Ext.
PO Box 1029
Warren, NJ 07060
201/560-9700

Flack + Kurtz
Mechanical & Electrical Engineers
115 Fifth Avenue
New York, NY 10017
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Cauger Schoor & Company, Inc.
Civil Consultant
PO Box 120
1259 Littleton Road
Parsippany-Troy Hills, NJ 07054
201/267-0800

Romano-Gatland-Pacifico
Food Service Consultant
99 West Hoffman Avenue
Lindenhurst, NY 11757
516/226-7700

Studio Pedro E. Campos AIA
Consulting Architect
New Clinton Street
Newark, NJ 07102
201/623-5211

Newark State Prison

Newark, New Jersey

NJ LIC. NO. 21GT00

No.	Date	Revision
4	Mar 1	1984

ISSUED FOR BID

Drawn By: T.C.
Checked By: R.J.F
Issue Date: NOV 1-1984
Scale: AS SHOWN
Key Plan

Sheet Title: DETAILS - SHEET # 3 HVAC

Architect's Project No. 81-8007
DEC No. C239

Sheet No. **M-32**

EXHIBIT 'F'

APPENDIX 3

CONSTRUCTION COST ESTIMATE

EXHIBIT 'F'

Miller-Remick
M.E.P. & Structural Engineering

Project Name	Northern State Prison
Estimator	Pacaro
Type	Budgetary
Client	Housing Unit AHU Replacement
	Newark NJ
Project Number	1400-0697
Location	Newark, NJ
Estimator	Pacaro
Estimate Name	Study Budgetary Estimate

EXHIBIT 'F'

Miller-Remick
M E P & Structural Engineering

Housing Unit AHU Replacement
Northern State Prison
Client Project Number
Project Number1400-0697

Location - Details
Rundate 4/12/2018
EstimatorPacaro

CSI	Item Description	Takeoff Qty	Unit	Labor Total	Mat Total	Subs Total	Equip Total	Other Total	Grand Total
	New AHU								
01520550	Field office expense, office equipment rental, average	6.0	mnth		2,803.97				2,803.97
01590600	Lifting and hoisting equipment rental; aerial lift truck, 2 pers, 80' - Rent per week	6.0	week				29,454.56		29,454.56
15055300	Central station air handler, 17.5 thru 30 ton, selective demolition	6.0	EA	38,955.36					38,955.36
15055300	Air conditioner, ductwork, rigid, 30" x 72", selective demolition	120.0	LF	4,348.51					4,348.51
15055300	Fans, 15 thru 30 H.P. or above 20,000 CFM, selective demolition	6.0	EA	7,283.75					7,283.75
15055300	Relief vent, 48" x 60" thru 96" x 144", selective demolition	6.0	EA	2,917.12					2,917.12
15720200	Central station air handling unit, packaged indoor, constant volume, 20,000 CFM, cooling coils may be chilled water or DX, heating coils may be hot water, steam or electric	6.0	EA	156,727.37	280,396.80				437,124.17
15830100	Fans, air conditioning and process air handling, vaneaxial, constant speed, low pressure, 16,000 CFM, 5 H.P.	6.0	EA	15,400.96	148,416.83				163,817.79
15850600	Louver, aluminum, extruded, with screen, mill finish, dual combination, automatic, intake or exhaust	360.0	SF	48,920.68	46,965.34				95,886.02
15850600	Louver, aluminum, extruded, with screen, mill finish, motor for operating, electric or pneumatic	6.0	EA	1,159.60	6,709.33				7,868.94
16120900	Wire, copper, solid, 600 volt, #10, type THWN-THHN, in raceway	27.0	Clf	5,805.04	1,176.62				6,981.66
16132205	Intermediate metal conduit, 1/2" diameter, to 15' high, incl 2 terminations, 2 elbows, 11 beam clamps, and 11 couplings per 100 LF	900.0	LF	19,262.19	3,764.33				23,026.52
	New AHU Total			**300,780.57**	**490,233.22**		**29,454.56**		**820,468.35**
	Grand Total			**300,780.57**	**490,233.22**		**29,454.56**		**820,468.35**

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EXHIBIT 'F'