SCOPE OF WORK

ACSU Hot Water Heating System Plumbing Restoration

Northern State Prison Newark, Essex County, NJ

Project No. C1099-00

STATE OF NEW JERSEY

Honorable Philip D. Murphy, Governor Honorable Tahesha L. Way, Lt. Governor

DEPARTMENT OF THE TREASURY

Elizabeth Maher Muoio, Treasurer



DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION

Thomas A. Edenbaum, Director

Date: June 09, 2025

PROJECT NAME: ACSU Hot Water Heating System Plumbing Restoration PROJECT LOCATION: Northern State Prison

PROJECT NO: C1099-00 DATE: June 09, 2025

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I. OBJECTIVE

The objective of this project is to perform emergency repairs and plumbing restoration for the hot water heating system at Administrative Close Supervision Unit –North and Administrative Close Supervision Unit -South 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):

• P004 Plumbing Engineering

As well as, <u>any and all</u> 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 \$488,000.

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

B. CURRENT WORKING ESTIMATE (CWE)

The Current Working Estimate (CWE) for this project is \$723,760.

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

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

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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.

<u>PR</u>	ROJECT PHASE ESTIMA	ATED DURATION (Ca	<u>alendar Days</u>
1.	Site Access Approvals & Schedule Desig	n Kick-off Meeting	14
2.	Design Development Phase		42
	Project Team & DPMC Plan/Code Unit Review	v & Comment	14
3.	Final Design Phase		42
	Project Team & DPMC Plan/Code Unit Review	w & Approval	14
4.	Final Design Re-Submission to Address	Comments	7
	Project Team & DPMC Plan/Code Unit Review	w & Approval	14
5.	DCA Submission Plan Review		30
6.	Permit Application Phase • Issue Plan Release		7
7.	Bid Phase		42
8.	Award Phase		28
9.	Construction Phase		180
10.	. Project Close Out Phase		30

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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, 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.

PROJECT LOCATION: Northern State Prison

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B. PROJECT TEAM MEMBER DIRECTORY

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

1. **DPMC Representative:**

Name: Nurul Hasan, Project Manager

Address: Division of Property Management & Construction

20 West State Street, 3rd Floor

Trenton, NJ 08608-1206

Phone No: (609) 633-8265

E-Mail: nurul.hasan@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

The Division of Property Management and Construction (DPMC) retained the services of MAITRA ASSOCIATES, PC. is to investigate domestic hot water system deficiencies, diagnose domestic heaters operational issues, and provide recommendations for improved system controls and infrastructure for a compliant and efficient hot water heating system. At Administrative Close Supervision Unit –North and Administrative Close Supervision Unit -South at the Northern State Prison.

The details can be found in the Study prepared by MAITRA ASSOCIATES, PC, Dated December 24, 2024. Shown in **Exhibit 'C'**.

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VII. CONSULTANT DESIGN RESPONSIBILITIES

A. DESIGN REQUIREMENTS

1. Design Phase:

Using the recommendations by Maitra Associates, PC as a guide, the Consultant shall provide design, specifications, bid/award and construction administration services to upgrade the plumbing systems at ACSU Wings 1, 2, 3 and 4 at Northern State Prison. Refer to **Exhibit 'C'**.

The Consultant shall provide the design for domestic hot water upgrades to maintain the hot water temperature, adding source temperature activated mixing valves. This project would look at ways to increase those hot water temps while also protecting clients by installing scald protection.

2. Phasing and Testing:

The Consultant shall provide the design as one project with two phases. Each unit work has to be complete with new equipment installed, tested and accepted before starting the next phase (next unit). There is no need to vacate the building. The facility will notify the residents when each building needs to shut down the system to perform the work.

3. Site Access:

The Consultant shall comply with DOC Rules and Regulations, General Security Information and Application for Clearance shall provide signed document. Refer to Exhibit 'D & E'.

B. 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.

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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:

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

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

C. 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.

- C0355-00 Administrative Close Supervision Unit
- C0656-00 Water Heater Replacements at Housing Units
- C0662-00 Replacement of Domestic Water Heater
- C0713-00 Hot Water Piping Replacement
- C0841-00 Boiler Replacement
- C1056-00 Legionella Plumbing Restoration

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.

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VIII. PERMITS & APPROVALS

A. NJ UNIFORM CONSTRUCTION CODE PLAN REVIEW AND PERMIT

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

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

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

1. NJ Uniform Construction Code (NJUCC) Plan Review

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

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

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

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

https://www.state.nj.us/dca/divisions/codes/forms/pdf bcpr/pr app guide.pdf

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

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

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

The NJUCC "Plan Review Fee Schedule" can be found at:

http://www.state.nj.us/dca/divisions/codes/forms/pdf bcpr/pr fees.pdf

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2. NJ Uniform Construction Code Permit

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

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

https://www.nj.gov/dca/divisions/codes/resources/constructionpermitforms.html

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

3. Prior Approval Certification Letters:

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

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

4. Multi-building or Multi-site Permits:

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

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5. Special Inspections:

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

Bulletin 03-5 can be found at:

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 New Jersey Uniform Construction Code.

b. Responsibilities:

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

B. OTHER REGULATORY AGENCY PERMITS, CERTIFICATES AND APPROVALS

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

The Consultant may refer to the Division of Property Management and Construction "Procedures for Architects and Engineers Manual", Paragraph "9. REGULATORY AGENCY APPROVALS" which presents a compendium of State permits, certificates, and approvals that may be required for this project.

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

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

IX. ENERGY 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.

X. ALLOWANCES

A. PLAN REVIEW AND PERMIT FEE ALLOWANCE

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

1. Permits:

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

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2. Permit Costs:

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

NOTE: The NJ Uniform Construction Code permit is excluded since it will be paid for by the State.

3. Applications:

The Consultant shall complete and submit all permit applications to the appropriate permitting authorities and the costs shall be paid from the Consultant's permit fee allowance. A copy of the application(s) and the original permit(s) obtained by the Consultant shall be given to the DPMC Project Manager for distribution during construction.

4. Consultant Fee:

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

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

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XI. SOW SIGNATURE APPROVAL SHEET

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

The client agency approval signature on this page indicates that they have reviewed the design criteria and construction schedule described in this project Scope of Work (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 Strahim	06/09/2025
LUCY IBRAHIM, PROJECT MANAGER DPMC PROJECT PLANNING & INITIA	
SOW APPROVED BY: James Wright WAMES WRIGHT, MANAGER	6/9/2025 DATE
DPMC PROJECT PLANNING & INITIA	
SOW APPROVED BY: David Wiszniewski DAVID WISZNIEWSKI, PROJECT MAN DEPARTMENT OF CORRECTIONS	6/18/2025 NAGER DATE
SOW APPROVED BY: Nurul Hasan NURUL HASAN, PROJECT MANAGER DPMC PROJECT MANAGEMENT GRO	
SOW APPROVED BY: Jeantle M. Barnard, JEANETTE M. BARNARD, DEPUTY DI DIV PROPERTY MGT & CONSTRUCTI	

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XII. CONTRACT DELIVERABLES

The following are checklists listing the Contract Deliverables that are required at the completion of each phase of this project. The Consultant shall refer to the DPMC publication entitled "Procedures for Architects and Engineers," 3.0 Edition, dated September 2022 available at https://www.nj.gov/treasury/dpmc/Assets/Files/ProceduresforArchitectsandEngineers.pdf for a detailed description of the deliverables required for each submission item listed. References to the applicable paragraphs of the "Procedures for Architects and Engineers" are provided.

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

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

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

XIII. EXHIBITS

- A. SAMPLE PROJECT SCHEDULE FORMAT
- B. PROJECT SITE MAP & BUILDINGS LIST
- C. C-RPT 24 1224 Nothern State Prison Report
- D. GENERAL SECURITY INFORMATION
- E. APPLICATION FOR CLEARANCE

END OF SCOPE OF WORK

Deliverables Checklist Design Development Phase

A/E Name:

A/E Manual	Submission Item	Required by S.O.W.		Previously Submitted		Encl	osed
Reference		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						
14.4.20.	Statement Design development Phase Poliverables						
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.

Date

Consultant Signature

Deliverables Checklist Final Design Phase

A/E Name:

A/E Manual	Submission Item	Required by S.O.W.		Previously Submitted		Encl	osed
Reference		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						
					1		

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 Manual		Required by S.O.W.		Previously Submitted		Enclosed	
Reference	Submission Item	Yes	No	Yes	No	Yes	N
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 Cl 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						
	shall be completed by the Design Consultant and he DPMC Project Manager the status of all the de						
	Consultant Signature			 Date			

Deliverables Checklist Bidding and Contract Award Phase

A/E Name: _____

A/E Manual		Required by S.O.W.		Previously Submitted		Enclosed	
Reference	Submission Item	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				1	•	
	shall be completed by the Design Consultant and he DPMC the status of all the deliverables require						sion to
	Consultant Signature			 Date			

Deliverables Checklist Construction Phase

A/E Name:							
		Requi	red by	Previ	ously		
A/E Manual		S.O	.W.	Subm	itted	Encl	osed
Reference	Submission Item	Yes	No	Yes	No	Yes	No

A/E Manual			red by .W.		ously nitted	Encl	osed
Reference	Submission Item	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

Reference 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	A/E Manual		Requir S.O	-	Previ Subm	-	Encl	osed
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Date

Consultant Signature

February 7, 1997 **Rev.**: January 29, 2002

Responsible Group Code Table

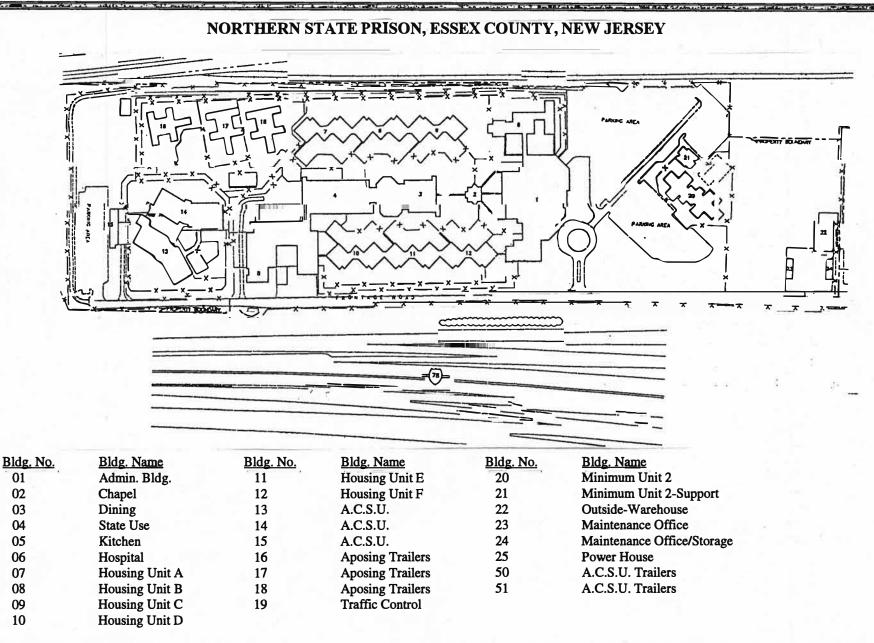
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CODE	DESCRIPTION	REPORTS TO ASSOCIATE DIRECTOR OF:
СМ	Contract Management Group	Contract Management
CA	Client Agency	N/A
CSP	Consultant Selection and Prequalification Group	Technical Services
A/E	Architect/Engineer	N/A
PR	Plan Review Group	Technical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

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CV3021	Distribute Program Submittal for Review		
CV3027	Prepare & Submit Project Cost Analysis (DPMC-38)		
CV3022	Review & Approve Program Submittal	*** The state of t	
CV3023	Review & Approve Program Submittal	X	
CV3024	Review & Approve Program Submittal		
CV3025	Consolidate & Return Program Submittal Comments		
CV3030	Prepare Schematic Phase Submittal	V V V V V V V V V V V V V V V V V V V	
CV3031	Distribute Schematic Submittal for Review		
CV3037	Prepare & Submit Project Cost Analysis (DPMC-38)		
CV3032	Review & Approve Schematic Submittal	** ** ** ** ** ** ** ** ** ** ** ** **	
CV3033	Review & Approve Schematic Submittal		
CV3034	Review & Approve Schematic Submittal		
CV3035	Consolidate & Return Schematic Submittal Comment		
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CV3045	Consolidate & Return D.D. Submittal Comments		
CV3050	Prepare Final Design Phase Submittal	A	
CV3051	Distribute Final Design Submittal for Review		
CV3052	Review & Approve Final Design Submittal	V	
CV3053	Review & Approve Final Design Submittal	PR	
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DIRECTIONS: From NJ Tumpike, take Exit 14. Take second right marked FRONTAGE ROAD after toll booth. Go left onto Frontage Road past Double Tree Hotel to Northern State Prison.

Northern State Prison



Building ID Northern State Prison

4152 Administrative Close Supervision Unit –North

4153 Administrative Close Supervision Unit -South

Northern State Prison

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



Northern State Prison

Newark NJ 07114

Plumbing Field Report and Recommendations for Domestic Hot Water Heating System

Prepared For:

State of New Jersey
Department of Treasury
Division of Property Management and Construction
Contracts & Procurement Unit
33 West State Street, 9th Floor, Plan Room
Trenton, New Jersey 08625-0034

Attn: Ms. Jeanette Barnard

Prepared By:

MAITRA ASSOCIATES, PC

1 Pluckemin Way, Suite 300 Bedminster, NJ 07921

Project No (ads). 24094.00

December 24, 2024



PURPOSE OF STUDY

The purpose of this study is to investigate domestic hot water system deficiencies, diagnose domestic heaters operational issues, and provide recommendations for improved system controls and infrastructure for a compliant and efficient hot water heating system.

II. EXISTING CONDITIONS

A. A.C.S.U Wings 3&4

Domestic hot water for North State Prison A.C.S.U Wings 3&4 is currently generated by two (2) Aerco SmartPlate SPDW-EV30 indirect instantaneous hot water heaters installed in 2021. Domestic hot water heat source is provided by two (2) central gas fired hydronic heating/hot water Clever Brooks boilers. The Aerco SmartPlate heaters transfer energy between the boiler hydronic loop and domestic water. Boiler flow to the unit is controlled by modulating three-way valve. The three-way valve is controlled by temperature sensors and flow meter. Continuous flow of minimum 6 gpm on the domestic side has to be maintained at each unit for proper operation.

Temperature setting at the domestic heaters at the time of the site visit was noted to be 145 F as desired set point and 150F as high temperature alarm. (Refer to Excerpts section Figure 1). As reported on November 13, 2024 by servicing contractor, Chapelle Mechanical Inc., the temperature set points were adjusted to 140F desired set point and 160 F high temperature alarm.

Both Aerco units have frequently entered high-temperature alarm state since installation, causing high-temperature spikes in the domestic hot water system.

Previous servicing of the units by Chapelle Mechanical Inc. aimed to address the issue included flushing of the wye strainers on the boiler water inlet and domestic hot water inlets from the cold water feed to the units and replacement of the temperature probes on the domestic hot water inlet and domestic hot water outlet at the threadelettes due to the amount of the corrosion of probe inlets.

As of November 12, 2024 Chapelle Mechanical Inc. reported that temperature fluctuations continued and were observed at the right hand heater. The unit experienced approximately 50 degree fluctuation with minimum temperature reaching 108 F and maximum reaching about 154 F, before settling back to around 145 F. The fluctuation occurred prior to shower usage and was resolved after the showers started running.

Following safeguards are currently provided for the hot water system:

a. Holby Master mixing valve

Master mixing valve thermostatically blends hot and cold water to ensure hot water delivery throughout distribution system at design temperature.

Master mixing valve does not provide anti-scald protection.

It was noted that valve is not provided with check valves on cold and hot water



supply. Temperature setting is approximately 135 F(based on thermostat reading at riser mixing valve). No thermostat is provided on the outlet of the valve.

b. ASCO anti-scald solenoid valve

Valve is installed on the hot water inlet to the master mixing valve and wired to aquastat. The valve is set to shut down hot water supply from the heaters if the hot water temperature exceeds the assigned setpoint.

c. Riser mixing valves

Riser mixing valves are provided for each hot water riser to deliver tempered water to showers. Based on the thermostat reading on the outlet of the valve it is set to approximately 90F(Wing 3(L) Riser). The valve did not bear manufacturer's make/model to verify flow rating of the valve and provision of internal check valves.

d. Speakman SPV Point of Use Scald protection valve

SPV valve is provided at each shower tempered water supply. It is factory set to activate at 98 F. Upon activation the valve spills on the floor. It shall be noted that upper building levels do not provide floor drain or waste receptor to accommodate valve discharge.

Additional observations and issues reported during the site visit:

- a. Domestic hot water system recirculation is provided by two(2) Bell&Gossett recirculation pumps. Pumps are controlled by aquastat set to 145 F. Recirculation piping is connected to cold water line immediately upstream of master mixing valve.
- b. Expansion tank is not provided on CW supply to heater downstream of check valve. Expansion tank is required to accept expanded water as system temperature rises to reduce pressure build up.
- c. Active leak is observed at the ceiling of the mechanical room at shower waste stack and tempered water riser. Waste stack and tempered water riser display signs of corrosion. Tempered water riser is not insulated. (Refer to Excerpts section Figure 2)
- d. Shower control panels were reported damaged and in need of replacement. (Refer to Excerpts section Figure 3) Steel brackets supporting control panel show signs of advanced corrosion. (Refer to Excerpts section Figure 4)

B. A.C.S.U Wings 1&2

Domestic hot water system for North State Prison A.C.S.U Wings 1&2 is set up similar to the system at Wings 3&4. The hot water is generated by two (2) Thermodyne HX indirect semi-instantaneous hot water heaters. Domestic hot water heat source is provided by two (2) central gas fired hydronic heating/hot water Clever Brooks boilers. Similar to Aerco units the heaters transfer energy between the boiler hydronic loop and domestic water. The heaters are in a poor condition and show advanced signs of corrosion. The heater controls are non-



operational with power supply disconnected. (Refer to Excerpts section Figure 5)

No past high temperature spikes and fluctuations were reported for Thermodyne HX heaters.

Following safeguards are provided for the hot water system:

e. Holby Master mixing valve

Master mixing valve thermostatically blends hot and cold water to ensure hot water delivery throughout distribution system at design temperature.

Master mixing valve does not provide anti-scald protection.

Cold and Hot water inlets are provided with isolation valves, strainers and check valves. Thermostat reading on the outlet is 105 F.

f. ASCO anti-scald solenoid valve

Valve is installed on the hot water inlet to the master mixing valve and wired to aquastat. The valve is set to shut down hot water supply from the heaters if the hot water temperature exceeds the assigned setpoint.

g. Riser mixing valves

Riser mixing valves are provided for each hot water riser to deliver tempered water to showers. Based on the thermostat reading on the outlet of the valve it is set to approximately 95F(Wing 2(R)). The valve did not bear manufacturer's make/model to verify flow rating of the valve and provision of internal check valves.

h. Speakman SPV Point of Use Scald protection valve

SPV valve is provided at each shower tempered water supply.

It is factory set to activate at 98 F. Upon activation the valve spills on the floor. It shall be noted that upper building levels are not provided with floor drain or waste receptor to accommodate valve discharge.

Additional observations and issues reported during site visit:

- a. Existing expansion tank shows signs of corrosion.
- b. Piping, valves and insulation at the mechanical HW heater room shows varying degree of deterioration/corrosion with exception of recently installed mixing valve, associated piping and accessories.
- c. Shower control panels were reported damaged and in need of replacement.

III. CONCLUSIONS AND RECOMMENDATIONS:

A. <u>A.C.S.U Wings 3&4</u>

a. Temperature fluctuations at both Aerco units suggest that the issue lies within the system set up and operation, rather than with the units themselves. Based on Aerco installation guidelines each unit must receive minimum flow of 6 gpm to properly modulate three-way control valve. The units do not include internal recirculation pump and rely on building recirculation system to provide the





minimum flow. It was reported that the system stabilizes during shower operation/high flow conditions. However, when there is no hot water demand the temperature fluctuates. This suggests that the existing building recirculation pumps and/or recirculation piping configuration may not be providing consistent 6 gpm or higher flow through the units.

We recommend to test building recirculation pumps to ensure proper operation and obtain flow meter readings from the Aerco units under the following conditions:

- 1. No hot water demand with both recirculation pumps running
- 2. 1 shower riser is operating and both recirculation pumps are running
- 3. 3 shower risers are operating and both recirculation pumps are running

Riser flow can be simulated at riser mixing valve tempered water drain line. Temperature and flow readings should be reported back to the engineer. If it is confirmed that building recirculation system doesn't provide minimum flow through the units recirculation pumps and piping configuration will be further evaluated to make necessary adjustments.

- b. Master mixing valve has to be provided with check valves on cold and hot inlets as required by NJ Plumbing code(Refer to Excerpts section Figure 6). Check valves prevent thermal siphoning of hot water to the cold water supply and will further mitigate any fluctuations in the system. Additionally it is recommended to provide thermostat on the outlet of the valve.
- c. Riser mixing valves shall comply with ASSE 1069 and include check valves on cold and hot inlets as required by NJ Plumbing code(Refer to Excerpts section Figure 6). As mixing valves did not bear manufacturers make/model obtain selection from the installing contractor to verify flow rating of the valve and compliance with applicable standards.
- d. Waste receptors are not provided on upper floors to accommodate Speakman Scald protection valve discharge. Waste receptors/floor drains shall be installed to avoid floor spills and leaks. Additionally riser mixing valve temperature settings should be verified and set not to exceed 90F to avoid frequent valve discharge.
- e. Heaters and master mixing valve are operated at high temperatures thus potentially presenting scalding hazard if downstream safeguards fail. Since the heaters are instantaneous type the temperature can be set below 140 F. We recommend to adjust heater settings to 130F desired set point and 150F high temperature alarm. Master mixing valve shall be set to 120F.
- f. There are currently no means to allow for thermal expansion in cold water feed to heaters downstream of check valve. Thermal expansion tank shall be sized based on system volume and connected to cold water feed downstream of check valve.
- g. All active leaks shall be addressed, corroded waste and water piping, fittings



and accessories replaced. Based on the age/condition of the system it is recommended to conduct more extensive survey to access condition of waste, sanitary and vent stacks and domestic water risers and evaluate remaining life expectancy and recommended repairs/replacements.

h. Shower control panel and support brackets shall be replaced with compatible ligature-resistant panels, hardware and supports. One of the options is to utilize KryptoMax shower panel by G2 Automated Technologies which is fully customizable allowing for seamless replacement.

B. <u>A.C.S.U Wings 1&2</u>

- a. Thermodyne HX indirect semi-instantaneous hot water heaters show advanced stages of corrosion and need to be replaced as soon as possible to avoid service interruption. The heater shall be replaced with matching capacity instantaneous or semi-instantaneous indirect heaters. Associated piping, accessories, valves and expansion tank shall also be replaced.
- b. Riser mixing valves shall comply with ASSE 1069 and include check valves on cold and hot inlets as required by NJ Plumbing code(Refer to Excerpts section Figure 6). As mixing valves did not bear manufacturers make/model obtain selection from the installing contractor to verify flow rating of the valve and compliance with applicable standards.
- c. Waste receptors are not provided on upper floors to accommodate Speakman Scald protection valve discharge. Waste receptors/floor drains shall be installed to avoid floor spills and leaks. Additionally riser mixing valve temperature settings should be verified and set not to exceed 90F to avoid frequent scald protection discharge.
- d. No active leaks were observed during site visit however based on the age/condition of the system it is recommended to conduct more extensive survey to access condition of waste, sanitary and vent stacks and domestic water risers and evaluate remaining life expectancy and recommended repairs/replacements.
- e. Shower control panel and support brackets shall be replaced with compatible ligature-resistant panels, hardware and supports. One of the options is to utilize KryptoMax shower panel by G2 Automated Technologies which is fully customizable allowing for seamless replacement.



EXCERPTS





Figure 1: Aerco heater temperature settings

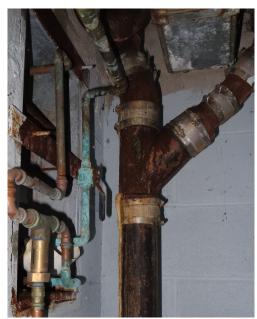


Figure 2: Active leak at waste stack





Figure 3 Shower control panel



Figure 4 Shower control panel support brackets





Figure 5 ACSU 1&2 Domestic Hot Water Heater



- b. The hot water pipe material shall be suitable for the installation of the electric trace heating cables, as indicated by the cable manufacturer.
- Electric resistance trace heating systems shall comply with IEEE 515 (industrial), IEEE 515.1 (commercial), or UL 515 (commercial).
- d. Electric heat traced piping shall be labeled as "ELECTRIC TRACED" at 10-foot maximum spacing.

10.15.2.5 Pipe Insulation

Recirculated hot water supply and return piping and heat traced hot water supply piping shall be thermally insulated to not less than R-3 thermal resistance.

10.15.2.6 Tempered Water

The requirements of this section for hot water temperature maintenance shall also apply to tempered water supply piping.

10.15.3 Minimum Requirements for Hot Water Storage Tanks

- a. Hot water storage tanks shall be adequate in size, when combined with the capacity of the water heating equipment, to provide sufficient hot water for both the hourly peak loads and daily requirements of the occupancy served.
- b. Pressure tanks shall comply with the design and construction requirements of Section 3.3.8.
- Safety devices for pressure tanks shall comply with Section 3.3.10.

10.15.4 Drainage of Hot Water Storage Tanks

Hot water storage tanks shall be equipped with a valve capable of draining the tank completely. See Figure 10.12.7

10.15.5 Pressure and Temperature Marking of Hot Water Storage Tanks

Pressure tanks for hot water storage shall permanently indicate their pressure and temperature ratings in accordance with ASME, CSA, UL, or the manufacturer.

10.15.6 Mixed Water Temperature Control

- a. Hot Water Supply Sources: The temperature control devices for water heaters and other hot water supply sources shall not be permitted to be used to meet this Section's requirements for mixed water temperature control unless the water heater complies with ASSE 1082, ASSE 1084, or ASSE 1085.
- b. Hot Water Distribution Temperature Control: Where temperature-actuated mixing valves are installed to control the hot water supply temperature in the water distribution system, they shall comply with ASSE 1017. Such devices shall be installed at the hot water source and alone shall not supersede the other requirements of Section 10.15.6 for mixed water temperature control.
- c. Application of Water Temperature Control and Limiting Devices: The inlet hot and cold water temperatures for temperature control and limiting devices shall be within their

operating ranges and have sufficient differential above and below their discharge set point.

- d. Where Check Valves Are Required: Where a water temperature control or temperature limiting device supplies one or more outlets that can be shutoff downstream from the device, the device shall include integral check valves or check valves shall be provided in the hot and cold water supplies to the device or at its inlets to prevent cross flow through the device when there is no flow through the outlet or outlets that it supplies.
- e. Showers and Bath/Shower Combinations: The water discharged from shower heads, wall or ceiling mounted hand-held showers, body sprays, and tub spouts shall be controlled to a temperature no higher than 120°F by a Type P, Type T, or Type P/T automatic compensating valve complying with ASSE 1016/ASME A112.1016/CSA B125.16. The upper temperature of 120° F shall be permitted to be controlled by a water heater complying with ASSE 1082 or ASSE 1084.
- f. Multiple Showers: Where multiple (gang) showers are supplied by a one-pipe tempered water supply system, the water temperature shall be controlled to a temperature no higher than 105°F by an automatic temperature control mixing valve complying with ASSE 1069 or a water heater complying with ASSE 1084.
- g. Multiple Lavatories: Where multiple lavatories are supplied by a one-pipe tempered water supply system, the water temperature shall be controlled to a temperature no higher than 110°F by a water temperature limiting device complying with ASSE 1070/ASME A112.1070/CSA B125.70 or a water heater complying with ASSE 1084.
- h. Bathtubs and Whirlpool Baths: The hot water supply to the faucets for bathtubs and whirlpool baths without showers and with or without deck-mounted hand sprays, shall be controlled to a temperature no higher than 120°F by a water temperature limiting device complying with ASSE 1070/ASME A112.1070/CSA B125.70 or a water heater complying with ASSE 1084.

EXCEPTION: A water temperature limiting device shall not be required if the fixture is supplied by an ASSE 1016/ASME A112.1016/CSA B125.16 automatic compensating valve.

- i. Bidets: The hot water supply to the faucet on bidet plumbing fixtures shall be controlled to a temperature no higher than 110°F by a water temperature limiting device complying with ASSE 1070/ASME A112.1070/CSA B125.70 or a water heater complying with ASSE 1084. Where bidets are incorporated into toilet seats or consist of a heated water tank and nozzle, their controls shall limit the discharge temperature to no more than 110°F.
- j. Hand Washing Facilities: The hot water supply to the following hand washing fixtures shall be controlled to a temperature no higher than 110°F by a water temperature limiting device complying with ASSE 1070/ASME A112.1070/CSA B125.70 or a water heater complying with ASSE 1084:
 - 1. in public toilet rooms
 - 2. in hotel and motel guest rooms

Figure 6 2021 NJ PC Section 10.15.6

NORTHERN STATE PRISON, ESSEX COUNTY, NEW JERSEY

GENERAL SECURITY INFORMATION

- 1. The Local Administration of this facility is charge with the responsibility of the custody of their inmates. All non-State employees are responsible and must comply with the following rules for their own protection, as well as the safety of their operation. These rules plus specific facility rules must be adhered to. This building is a medium security facility.
 - A. No workman is to fraternize or argue with the inmates. Any difficulties with inmates and/or employee should be handled through the officer on duty at the work station.
 - B. Do not give anything to, or take anything from, the inmates.
 - C. Lock all cars, trucks and demobilize all vehicles and equipment when unattended.
 - D. No photographs are to be taken without permission.
 - E. All tools and equipment to remain overnight, will be locked in storage areas. Equipment, such as, ladders and scaffolding will be chained and locked (Contractors supply these items) before leaving.
 - F. No firearms, ammunition, hunting knives, or other articles of this nature are permitted on the grounds.
 - G. Provide necessary protective drop cloth and barricades to prevent damage to adjacent areas, equipment or surfaces.
 - H. Institutional Fire Regulations shall be strictly adhered to; contact Fire Chief when in doubt.
 - I. Speed limit and all NO PARKING areas must be obeyed.
 - J. Personal items are to be kept locked in vehicle, outside the security perimeter of the facility.
 - K. It is the responsibility of the Contractor to know that his tools, and equipment are secured in a designated location at the end of every work day.

- L. Unless otherwise required by the facility, the work crews going into the existing facility will check in at approximately 7:30 AM. Passes will be issued by the Gate Officer. An inventory of tools will be completed at this time. The Correctional officer assigned will then escort the workers to the job site.
- M. Unless otherwise required by the facility, the hours at work will normally be from 7:30 AM until 4:00 PM. If necessary to work later than this, arrangements will be made through custody personnel through the duty officer, 24 hours in advance. The Contractor will be allowed to work Monday through Saturday, a six (6) day week.
- N. Contractor's working crew can provide their own lunch, but will be required to have their lunch break in designated areas. The Contractor to coordinate with the Facility prior to the commencement of work with regard to lunch preferences. Workers will not exit the facility to eat.
- O. All tools brought into the facility must be inventoried and a record kept of them on file. Any additions or deletions to the original list must be approved by the assigned custody officer who will initial the change.
- P. Tools brought into the security perimeter of the prison will be inventoried before going into and accounted for on the way out by the escort officer.
- Q. An escort officer will be assigned to work crews that are working inside of the prison. The escort officer is responsible for the supervision of the high security tools, large electric drills, large hammers, hacksaws, etc. Cooperation with the Officers is imperative.
- R. All persons must have some type of positive identification upon entering the prison. A current Driver's License is acceptable, picture I.D. cards will be made at the prison.
- S. Contractors will park in an area assigned to them by the facility.

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 OR	VOLUNTEER	CIRCLE ONE;	NEW	RENEWAL
(PLEASE PRINT L	EGIBLY)					
NAME:				SS	#:	
	(LAST)		(FIRST)	(M.I.)		
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HOME ADDRES	S:	(STREET)		(CITY)	(STATE)	(ZIP CODE)
				(0)		
ADDKE99:		(STREET)		(CITY)	(STATE)	(ZIP CODE)
Do you presentl PPLICANT M ELEASE INFO	UST LIST EXPU	g criminal ch NGED CON RM LOCAT	VICTION(s) INFORM ED IN THIS APPLICA	NO If "Y MATION, SIGN AND ATION. FALSIFICAT	DATE THE "AUTHO	ORIZATION TO
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the communi	ty facilitated by consent or refu	force, over use? YES	rt or implied threat S NO			
If "YES", exp	olain:					
DU: A003 Revised	3/14					

Have you ever been emp "YES", explain on rever		Dept. of Correct	ions in any capacity? YES	NO If
			tly have any acquaintances or fa ES NO If	
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Title applicant applying for:	·		Location:	
Sponsor:			Title:	
Division, Bureau or Unit:				
Sponsor's signature:			Date:	
Send reply to:	(Pr	rint Name)	Phone:	
Applicant Section Continued				
NATURE OF CONVICTION	DATE OF CONVICTION	AGE AT TIME OF INCIDENT	NAME & ADDRESS OF POLICE AGENCY OR COURT	DISPOSITION
COMMENTS / EXPLANA	ATIONS:			

EXHIBIT 'E'

TITLE

DATE

NAME