SCOPE OF WORK

HVAC and Exhaust Unit and Roof Replacement

Marie Katzenbach School for the Deaf
Ewing, Mercer County, NJ

Project No. E0402-00

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

Christopher Chianese, Director

Date: February 23, 2024

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I. OBJECTIVE

The objective of this project is to replace the gymnasium heat and exhaust units with energy efficient equipment in the Academic High School (Building 26). Approximately 19,280 square feet of the existing roofing system on the same building will require replacement to accommodate the new HVAC equipment. A further objective is to add reheat coils to VAV boxes in the Vocational High School (Building 25).

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:

- **P002 Electrical Engineering**
- **P007 Structural Engineering**
- **P025 Estimating/Cost Analysis**
- **P028 Roofing Inspection**
- **P035 Roofing Consultant**
- **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 $2,270,833.

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 $3,000,000.

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

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

C. CONSULTANT'S FEES

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

IV. PROJECT SCHEDULE

A. SCOPE OF WORK DESIGN & CONSTRUCTION SCHEDULE

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

PROJECT PHASE	ESTIMATED DURATION (Calendar Days)
1. Site Access Approvals & Schedule Design Kick-off Meeting	**14**
2. Investigation Phase	**28**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
3 Design Development Phase	**42**
• *Project Team & DPMC Plan/Code Unit Review & Comment*	14
4. Final Design Phase	**42**
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5. Final Design Re-Submission to Address Comments	**7**
• *Project Team & DPMC Plan/Code Unit Review & Approval*	14
6. DCA Submission Plan Review	**30**
7. Permit Application Phase	**7**
• *Issue Plan Release*	
8. Bid Phase	**42**
9. Award Phase	**28**
10. Construction Phase	**180**
11. Project Close Out Phase	**30**

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:

Marie H. Katzenbach School for the Deaf
320 Sullivan Way
Ewing Township, NJ 08628

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: Doreen Heluk, Project Manager
Address: Division of Property Management & Construction
20 West State Street, 3rd Floor
Trenton, NJ 08608-1206
Phone No: (609) 433-8745
E-Mail: Doreen.Heluk@treas.nj.gov

2. Department of Education Representative:

Name: Robert Cueto, Project Manager
Address: NJ Department of Education
100 Riverview Plaza PO Box 500
Trenton, NJ 08625
Phone No: (609) 376-9130
E-Mail: Robert.Cueto@doe.nj.gov

3. New Jersey Board of Public Utilities:

Name: Sara Bluhm Gibson, Director, Division of State Energy Services
Address: New Jersey Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625
Phone No: (609) 633-9275
E-Mail: Sara.Bluhm@bpu.nj.gov

VI. PROJECT DEFINITION

A. BACKGROUND

The Marie Katzenbach School for the Deaf (MKSD) was established in 1883 and is the largest school for the deaf in the State of New Jersey. It serves the needs of over 100 deaf students and is the only residential school for the deaf in the State. The 118-acre campus contains 34

buildings that are used as utility, storage, administrative, health, educational, and dormitory facilities. The majority of buildings are in generally good condition despite their age.

B. FUNCTIONAL DESCRIPTION OF THE BUILDINGS

1. Academic High School:

The Academic High School, also known as Building 26, is a one story masonry structure with a gymnasium. The gymnasium roof contains approximately 10,000 square feet and has five rows of skylights along with a built-up roofing system.

In 2023, the NJ Department of Education (DOE) commissioned Ronald A. Sebring Associates, LLC (RASA) and Schiller and Hersh Inc. to conduct an investigation of the existing HVAC and exhaust system within the gymnasium located in the Academic High School. Their report entitled "Heat and Exhaust Units Modernization" is shown in **Exhibit 'C'**. There are two (2) ceiling hung heating and ventilation units with steam heating coils and exposed supply air ductwork. They are original to the building and beyond their life expectancy.

It is recommended to replace the units with two (2) packaged rooftop units with DX cooling and gas fired heat. Due to lack of space on the gymnasium roof with skylights, it is proposed that the new units be placed on the adjoining roof. The gymnasium roof was replaced under project E0381-00. A significant portion of the remaining building roofing system (19,280 square feet identified in the Sebring report) requires replacement prior to installation of the new HVAC units. Phasing of the installation may be required based on occupancy of the building.

2. Vocational High School:

The Vocational High School, also known as Building No. 25, was built in 1977, with a total building area of 65,250 square feet, is a two-story multi-level concrete and glass structure with a flat roof, built into a sloping site containing classrooms, culinary kitchen, vocational shops, and related offices.

Not mentioned in the Sebring report is the need to add heating coils to the VAV boxes in the Vocational High School (Building 25). It is estimated that there are between 22-25 rooms containing one VAV box per room. Exact numbers will be determined in the investigation phase.

VII. CONSULTANT DESIGN RESPONSIBILITIES

A. INVESTIGATION PHASE

1. Academic High School (Building 26):

The Consultant shall review the report entitled "Heat and Exhaust Units Modernization" by Ronald A. Sebring Associates, LLC and Schiller and Hersh Associates, Inc. shown in **Exhibit 'D'** to understand the recommendations made in the report. Review applicable drawings and existing documentation on the building.

2. Vocational High School (Building 25):

The Consultant shall conduct an investigation and identify all the VAV boxes in the Vocational High School that require reheat coils. Review applicable drawings and existing documentation on the building and identify requirements to provide reheat coils to these VAV boxes.

B. DESIGN PHASE

1. General:

The Consultant shall provide the design, specifications, bid/award and construction administration services to remove and replace the HVAC and exhaust systems in the gymnasium and replace approximately 19,280 square foot of the roofing system on the Academic High School as recommended in the report by Ronald A. Sebring Associates, LLC and Schiller and Hersh Associates, Inc. shown in **Exhibit 'C'**.

The Consultant shall provide the design, specifications, bid/award and construction administration services to add reheat coils to the VAV boxes in the Vocational High School. The number and location of VAV boxes shall be determined in the investigation phase.

2. Demolition:

Identify on the drawings any walls, ceilings, electric conduit, light fixtures and switches, data and telecommunication outlets, electrical junction boxes, panels, brackets, hangers and other obstructions required to be removed and/or be relocated in order to facilitate new construction.

Special demolition and removal procedures shall be identified in the design documents for the HVAC units that are to be replaced. Special procedures and required hours for electric utility shutdown and/or switchover during the HVAC unit removal and replacement shall be described and included in the design documents.

Procedures for the security of materials and equipment in the building during construction shall be established and included in Division 1 of the specification.

3. Structural Calculations:

The Consultant shall provide design services to strengthen the roofing system as necessary to support the new HVAC equipment. One (1) set of signed and sealed structural calculations shall be provided to the DPMC Plan and Code Review Unit Manager indicating that the roof structural system is designed properly for the weight of the replacement HVAC units, curbing, supports, ductwork, etc.

The design drawings must indicate the size and dimensions of the new HVAC units and their related curbing, support fixtures, and structural components including the approved method of attachment to those components.

4. New Equipment:

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

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

The Consultant shall provide Riser Diagrams to indicate locations and method of tie-in of all new HVAC & utility system circuits to the existing utility and system circuits.

5. Testing and Balancing:

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

As part of the design documents, the Consultant shall ensure that, following construction, the Contractor is required to hire a qualified HVAC Testing and Balancing firm, and such firm shall perform system tests to ensure that the HVAC system as installed performs as specified and designed. The design documents shall further require that the HVAC System Testing and Balancing firm shall produce a report setting forth its findings, adjustments, recommendations, and further that it shall certify that the HVAC 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 will be required.

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

6. New Roof System:

The design documents shall address the roof manufacturer’s installation criteria, occupancy of the building, access to the building roof and security issues, approved storage methods of the roofing materials, etc.

The manufacturer of the roofing system shall have no less than five (5) years successful experience in producing the materials required for this project. Membrane, flashing, and adhesive shall be the single product of a standard manufacturer.

The roofing system shall be in accordance with the latest ASHRAE 90.1 (latest version) energy standards.

The roofing system shall be in compliance with the “Factory Mutual Research Corp” (FMRC) standards and must meet all requirements of Factory Mutual I-90 classification for wind uplift.

The Contractor shall supply only a U.L. Class “A” fire rated roofing system.

If the roofing system and/or related components are not a replacement in kind, then the Consultant shall submit a signed and sealed calculations to the DPMC Design and Code Review Unit Manager verifying that the existing roof structure can support all loads of the new roofing system and components per current code requirements.

7. Roof System Removal:

The existing roof system and flashings shall be completely removed to the original decking and legally disposed. The removal of the existing roof system shall be coordinated with the installation of the new roof to prevent exposure to weather conditions and potential water infiltration into the building.

Design documents shall identify all requirements for safety devices, need for chutes and/or cranes for roof material removal, dumpster location, protection from exposure to the weather, protection of property and personnel, building access routes and circulation patterns, contractor use of the premises, parking, security procedures, equipment and materials storage, waste disposal, etc.

8. Flashing:

All rooftop pipe supports, pipe vents, and other roof penetrations must have new flashing installed as part of this project. All pipe flashings are to be pre-molded and provided with stainless steel pipe clamps at each penetration.

9. Insulation:

Recommend new high-density rigid insulation boards that comply with current energy code requirements to the extent possible based on space constraints. Ensure the roofing system manufacturer approves the method of fastening the insulation board to the roof deck system.

Flat roofs shall be avoided by using tapered insulation to promote positive drainage to the roof drains. Incorporate a roof design that shall slope a minimum of ¼" per foot (½" per foot preferred).

DPMC does not permit Urethane material insulation due to a history of gas release and bubbling under the roofing ply layer(s).

10. Roof Drains:

Perform a visual inspection of the roof area to determine areas lacking positive drainage. Investigate the condition of all interior/exterior roof drains. Ensure that the drains are located properly and are sufficient in number and size to drain all accumulated water from the surface of the roof in accordance with code.

Inspect for broken or separated drain pipe seals and joint connections, broken or stripped bolts, clamping rings, and strainers. Conduct water flow tests for every roof drain prior to roof demolition and upon completion of the new roof installation.

Notify the Using Agency of any drain blockages discovered so facility staff may take immediate corrective action. It will be the Consultant's responsibility to design repairs for any drainage system issues discovered during the inspection that are beyond preventative maintenance.

11. Construction Canopy:

Investigate the need for a temporary canopy that will prevent roofing materials, construction tools and equipment, dirt and debris, solvents, sealants, bonding adhesives, etc. from injuring personnel using the public access areas and emergency egress paths must be kept clear throughout demolition and construction activities.

12. Night Seals:

The Contractor, having begun work on a roof section, should make every effort to finish roofing that section before the end of the day. However, the Consultant shall specify in the design documents that the Contractor shall install temporary water tight night seals around all exposed edges of the roofing assembly at the end of each work day, as necessary, and when work must be postponed due to inclement weather.

13. Fire Protection Program:

Address the fire protection requirements during the demolition and installation of the roofing system. Language shall be included in the design documents that states, any acetylene, welding, brazing, and soldering equipment, or other potential source of fire ignition cannot be used on the construction site until the Contractor notifies facility personnel. The facility will not perform a fire watch.

14. Warranty:

The roofing manufacturer's warranty shall be for a minimum period of twenty (20) years.

15. Unit Prices:

If the total amount or quantity of repair work cannot be determined for a roof related item by the roof inspection process, then the Consultant shall include a "Unit Price" Section in Division 1 of the specification for that item. Items may include deteriorated, plywood sheathing, wood blocking or curbing, vapor barriers, underground drains, etc.

C. ROOF MONITOR

The Consultant shall have in-house capabilities or a Sub-Consultant pre-qualified with DPMC in the P028 Roofing Inspection Specialty Discipline. The costs for the services provided by the roof monitor shall be included in their fee proposal line item entitled **"Roof Monitor Allowance"**, refer to paragraph X.E. A cost breakdown sheet shall accompany the fee proposal that identifies all costs associated with the Roof Monitoring services to be provided.

The Consultant shall provide a full time roof monitor during the installation of the roof systems on the buildings. The responsibilities of the roof monitor shall include, but not be limited to the following items:

1. Roof Monitor Inspections:

The Roof Monitor must continuously inspect and monitor the Contractor's work on site and file a daily DPMC 605 Roofing Inspector's Check List Form to ensure compliance with the contract documents. Photographs shall be included for reference. The report shall include weather conditions, number of workers, and the amount of roof removed and installed together with comments on each phase of work. Comments shall provide descriptions and information on project mobilization, material delivery, removal of existing roof system, preparation of the existing deck, installation of the new underlayment and/or insulation, sealant and adhesive applications, flashing, walkways, etc.

2. Inclement Weather:

The Consultant, in conjunction with the Roof Monitor, shall anticipate time losses due to seasonal inclement weather conditions such as rain, wind and low ambient temperatures and include these hours in the base bid of the fee proposal.

On the first day of inclement weather, the Roof Monitor will be entitled to four hours to visit the site and inspect the roofing system for potential roof leaks or damage. Additional time spent on the site during inclement weather will not be reimbursed unless directed by the Project Manager.

3. Unsatisfactory Work:

If the Roof Monitor determines that the roof Contractor is installing the roofing system improperly, he shall notify the Contractor to stop all work until the Consultant is notified and inspects the work for design conformity. If appropriate, provisions shall be made to seal the roof work area until the Consultant arrives and the installation issues are resolved.

If the Consultant determines that the installation does not meet the intentions of the design or indicates poor workmanship, he shall notify the Project Manager that he recommends the questionable roofing installation be removed and replaced properly. The Project Manager shall then notify the Contractor verbally to take the recommended action and shall follow up with a written directive indicating the time and date the Contractor was notified.

4. Meetings:

The Consultant and Roof Monitor shall both attend the pre-construction conference and all job progress meetings during the construction phase of the project.

D. EMERGENCY REPAIRS

The Consultant must include information in the contract documents that will address the Contractor's responsibility for repairs to the roofing system during the construction phase of the project. The information shall include, but not be limited to the following:

Stipulate in the contract documents that the Contractor shall perform all inspections and emergency repairs to all defects or leaks in the roofing system during construction within twenty four (24) hours of receipt of notice from the owner. Repairs shall include all labor, roofing materials, flashing, etc. When weather permits, all temporary repairs shall be redone and the roof restored to the standard of the original installation.

E. CONTRACTOR CERTIFICATION

The Consultant shall state in the design documents that the DPMC Contractor Classification Group must have certification in writing from the roofing system manufacturer that the Roofing Contractor is a licensed or approved installer of the roofing system selected for the project. The certification can be delivered post bid but must be delivered prior to contract award.

F. HAZARDOUS BUILDING MATERIALS

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

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

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.

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

Consultant shall estimate the cost of hazardous materials sample collection, destructive testing as necessary, tests and analysis and preparation of the Hazardous Materials Survey Report and include that amount in their fee proposal line item entitled **"Hazardous Materials Testing and Report Allowance"**, refer to paragraph XI.B.

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

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

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

There shall be no "mark-up" of subconsultant or subcontractor fees if subconsultants or subcontractors are engaged to perform any of the work defined in paragraph VII.F "Hazardous Building Materials". All costs associated with managing, coordinating, observing and administrating subconsultants 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.

G. SITE REQUIREMENTS

The following project site requirements shall be included in the design documents as appropriate:

1. Contractor Use of the Premises:

Determine the coordination, policies, and procedures with the Client Agency and the Contractor with respect to parking, material staging, and storage areas, use of Client Agency utilities, allowable hours of construction, the need for and location of portable toilets, the need for and location of construction and storage trailers, etc. and include the information in Division 1 of the specification.

2. Dumpster:

If a dumpster is required, the location shall be shown on the site plan in an area approved by the Client Agency, and the frequency of debris removal shall be identified in the design specification. The dumpster must be lockable and shall remain so, except when the Contractor is actively making use of the dumpster. In that case, the dumpster shall be supervised with a man on the ground. The dumpster shall also be enclosed with a temporary fence. See VII. G. 5. Fencing, for specific information.

3. Special Sequencing:

The contract documents must incorporate special sequencing of the work, if necessary, to be coordinated with the Client Agency in order to provide for any functional requirement of the facility. Items shall include, but not be limited to: safety/security requirements, pedestrian and vehicle traffic flow, weather and/or seasonal concerns, and shut down of any physical plant functions or services.

4. Site Restoration:

Include in the contract documents that the site must be restored to pre-construction conditions after construction has been completed and approved.

H. SPECIAL CONSIDERATIONS

1. Security:

Include any special security requirements or policies published by the Client Agency in Division 1 of the specification.

2. Hours of Work:

Identify the approved construction work hours for this project in Division 1 of the specification. Additional construction hours during the day or weekends will be allowed if the Contractor obtains prior approval from the Project Team members.

3. Cameras:

Determine if cameras are restricted on the construction site and include this information in the contract documents.

4. Trailers:

Should the Contractor elect to use a trailer, than the Contractor shall procure said trailer for storage or a meeting room at the construction site for the project. Its placement must be in an area agreed upon and approved by the Client Agency. Please note that the Client Agency does not require the use of a trailer. Should a trailer be used then the Contractor is responsible for obtaining all necessary permits.

5. Fencing:

All security fencing that is required around the construction site or elements of the site such as storage trailers, construction materials, buildings, equipment, dumpsters, etc. shall be identified

on the design drawings where appropriate. The construction fencing must be a minimum of six feet (6') high and have locked gates. The facility Engineer in Charge shall be provided with a key to the gates. If fencing is to be used, then the Contractor is responsible for obtaining all necessary permits.

6. Material Staging:

The material staging area must be fenced in and lockable and remain in a locked condition throughout the Contractor's work day to the fullest extent possible. The facility Engineer in Charge shall be provided with a key for emergency purposes only. The Client Agency shall approve the construction material staging area and the location shall be shown on the project site plan.

7. Material Protection:

All stored roofing materials, insulation boards, and/or other roofing components shall be protected from the elements and moisture with plastic sheet covers or other approved materials.

8. Material Safety Data Sheets (MSDS):

Specify in the contract documents that the Contractor shall provide material safety data sheets to the facility's Engineer in Charge and Safety Officer for all roofing materials used such as: sealants, bonding adhesives, solvents, bitumen, etc.

9. Fire Extinguishers:

Design documents shall require the Contractor to make provisions for stand-by portable fire extinguishers of proper size and type. They shall be located on the roof and/or near any source of open flame or spark and all employees shall be trained in their proper use.

I. BOARD OF PUBLIC UTILITIES

Energy savings will be tracked and reported to BPU per the Clean Energy Act requirements.

Protocols have been developed for the purpose of determining energy and resource savings for technologies and measures supported by *New Jersey's Clean Energy Program*. The protocols are updated from time to time to reflect the addition of new programs, modifications to existing programs, and the results of future program evaluations.

The Consultant shall estimate energy savings using the Technical Resource Manual (historically called the Protocols to Measure Resource Savings) to the extent that the TRM addresses the prescriptive energy conservation measures included in this project. A workbook will be provided to the consultant to enter the estimated energy savings, products that were installed, verify

project milestones such as construction complete, and utility service provider. A link to the protocols is found below.

https://www.njcleanenergy.com/main/public-reports-and-library/market-analysis-protocols/market-analysis-baseline-studies/market-an

J. 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.

- DPMC Project A1227-01: Academic High School Boiler Replacement, As-Built 9-9-2020, Concord Engineering
- DPMC Project A1227-02: Vocational High School Boiler Replacement, As-Built 9-9-2020, Concord Engineering
- DBC 1366: Vocational School Phase A, 5-28-1975, J. Robert Hillier – Architects/Planner, P.A.
- DBC 1366: Vocational School Phase B, 8-22-1975, J. Robert Hillier – Architects/Planner, P.A.
- DPMC Project E0252-00: Emergency Roof Replacement, Academic High School, Building 26, 8-19-1996, ARMM Associates, Inc.
- DPMC Project E0362-00: HVAC Upgrades at Vocational High School, 4-4-2014, Vinokur-Pace Engineering Services, Inc.
- DPMC Project E0381-00: High School Roof and HVAC Replacements, 4-21-2021, Ronald A. Sebring Associates
- DPMC Project E0384-00: Domestic Hot Water System Upgrade Vocational High School Building No. 25, As-Built 11-23-2021, Princeton Engineering Services

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

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

VIII. PERMITS & APPROVALS

A. NJ UNIFORM CONSTRUCTION CODE PLAN REVIEW AND PERMIT

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

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

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

1. NJ Uniform Construction Code (NJUCC) Plan Review

Consultant shall estimate the cost of the NJUCC Plan Review by DCA and include that amount in their fee proposal line item entitled **"Plan Review and Permit Fee Allowance"**, refer to paragraph 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. The DCA plans site can be found at:

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

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

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

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

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

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

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

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

2. NJ Uniform Construction Code Permit

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

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

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

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

3. Prior Approval Certification Letters:

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

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

4. Multi-building or Multi-site Permits:

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

5. Special Inspections:

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

Bulletin 03-5 can be found at:

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

a. Definition:

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

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

b. Responsibilities:

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

B. OTHER REGULATORY AGENCY PERMITS, CERTIFICATES AND APPROVALS

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

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

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

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

IX. ENERGY 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. Utility incentive programs cannot be applied for on this project as it is being funded through the State Facilities Initiative which is part of the NJ Clean Energy Program.

The Consultant shall review the programs available on the "New Jersey's Clean Energy Program" website at: http://www.njcleanenergy.com as well as federal 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.

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.

B. HAZARDOUS MATERIALS TESTING AND REPORT ALLOWANCE

Consultant shall estimate the costs to complete the hazardous materials survey, sample collection, testing and analysis and preparation of a "Hazardous Materials Survey Report" noted in paragraph VII.F and enter that amount on their fee proposal line item entitled **"Hazardous**

Materials Testing and Report Allowance". Consultant shall attach a detailed cost breakdown sheet for use by DPMC during the proposal review and potential fee negotiations. The cost breakdown sheet shall include, but not be limited to, the following information:

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

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

C. HAZARDOUS MATERIALS ABATEMENT DESIGN ALLOWANCE

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

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

D. HAZARDOUS MATERIALS CONSTRUCTION ADMINISTRATION ALLOWANCE

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

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

E. ROOF MONITOR ALLOWANCE

The Consultant shall provide a full time roof monitor pre-qualified with DPMC in the P028 Roofing Inspection Specialty Discipline. The roof monitor must be present during the installation of the roof system to the building. See section VII.C of this Scope of Work for a description of services to be provided by a roof monitor.

The costs for the services provided by the roof monitor shall be included in the "**Roof Monitor Allowance"** of their fee proposal. A cost breakdown sheet shall accompany the fee proposal that identifies all costs associated with the Roof Monitoring services to be provided.

Provide a clarification of how the roof monitor will monitor two roofs simultaneously if that is how the work is being installed.

The Consultant shall attach a detailed hourly rate cost breakdown of the roof monitor 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 Allowance shall be returned to the State at the end of the project.

XI. SOW SIGNATURE APPROVAL SHEET

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

The client agency approval signature on this page indicates that they have reviewed the design criteria and construction schedule described in this project Scope of Work (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: Gregory Symcak 2/23/24

GREGORY SYMCAK, PROJECT MANAGER DATE
DPMC PROJECT PLANNING & INITIATION

SOW APPROVED BY: Robert Cueto 2/23/2024

ROBERT CUETO, PROJECT MANAGER DATE
DEPARTMENT OF EDUCATION

SOW APPROVED BY: Sara Gibson 2/23/2024

SARA BLUHM, DIRECTOR DATE
NEW JERSEY BOARD OF PUBLIC UTILITIES

SOW APPROVED BY: Doreen Heluk 2/23/2024

DOREEN HELUK, PROJECT MANAGER DATE
DPMC PROJECT MANAGEMENT GROUP

SOW APPROVED BY: 2/29/24

CHRISTOPHER GEARY, ASST. DEPUTY DIRECTOR DATE
DIV PROPERTY MGT & CONSTRUCTION

XII. CONTRACT DELIVERABLES

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

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

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

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

XIII. EXHIBITS

A. SAMPLE PROJECT SCHEDULE FORMAT
B. PROJECT SITE LOCATION MAP
C. HVAC AND EXHAUST UNITS MODERNIZATION REPORT

END OF SCOPE OF WORK

DPMC Project No.: E0402-00

Deliverables Checklist
Investigation 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.	Outline Specifications (6 Sets)						
13.4.16.	Current Working Estimate/Cost Analysis						
13.4.17.	Project Schedule						
13.4.18.	Formal Presentation						
13.4.19.	Scope of Work Compliance Statement						
13.4.20.	Investigation 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

DPMC Project No.: E0402-00

Deliverables Checklist
Design Development Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
14.4.1.	A/E Statement of Site Visit						
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.	Outline Specifications (6 Sets)						
14.4.16.	Current Working Estimate/Cost Analysis						
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

DPMC Project No.: E0402-00

Deliverables Checklist
Final Design Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
15.4.1.	A/E Statement of Site Visit						
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.	Outline Specifications (6 Sets)						
15.4.16.	Current Working Estimate/Cost Analysis						
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

DPMC Project No.: E0402-00

Deliverables Checklist
Permit Application Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
16.1.	N.J. UCC Permit Application						
16.4.	Drawings, Signed and Sealed (6 Sets)						
16.5.	Specifications, Signed and Sealed (6 Sets)						
16.6.	Current Working Estimate/Cost Analysis						
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

DPMC Project No.: E0402-00

Deliverables Checklist
Bidding and Contract Award Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
17.1.1.	Notice of Advertising						
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

DPMC Project No.: E0402-00

Deliverables Checklist
Construction Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
18.2.	Pre-Construction Meeting						
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

DPMC Project No.: E0402-00

Deliverables Checklist
Project Close-Out Phase

A/E Name: _____

A/E Manual Reference	Submission Item	Required by S.O.W.		Previously Submitted		Enclosed	
		Yes	No	Yes	No	Yes	No
19.3.	Development of Punch List and Inspection Reports						
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**						
	BPU Energy Efficiency Reporting Workbook						

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

_____ _____

Consultant Signature Date

February 7, 1997
Rev.: January 29, 2002

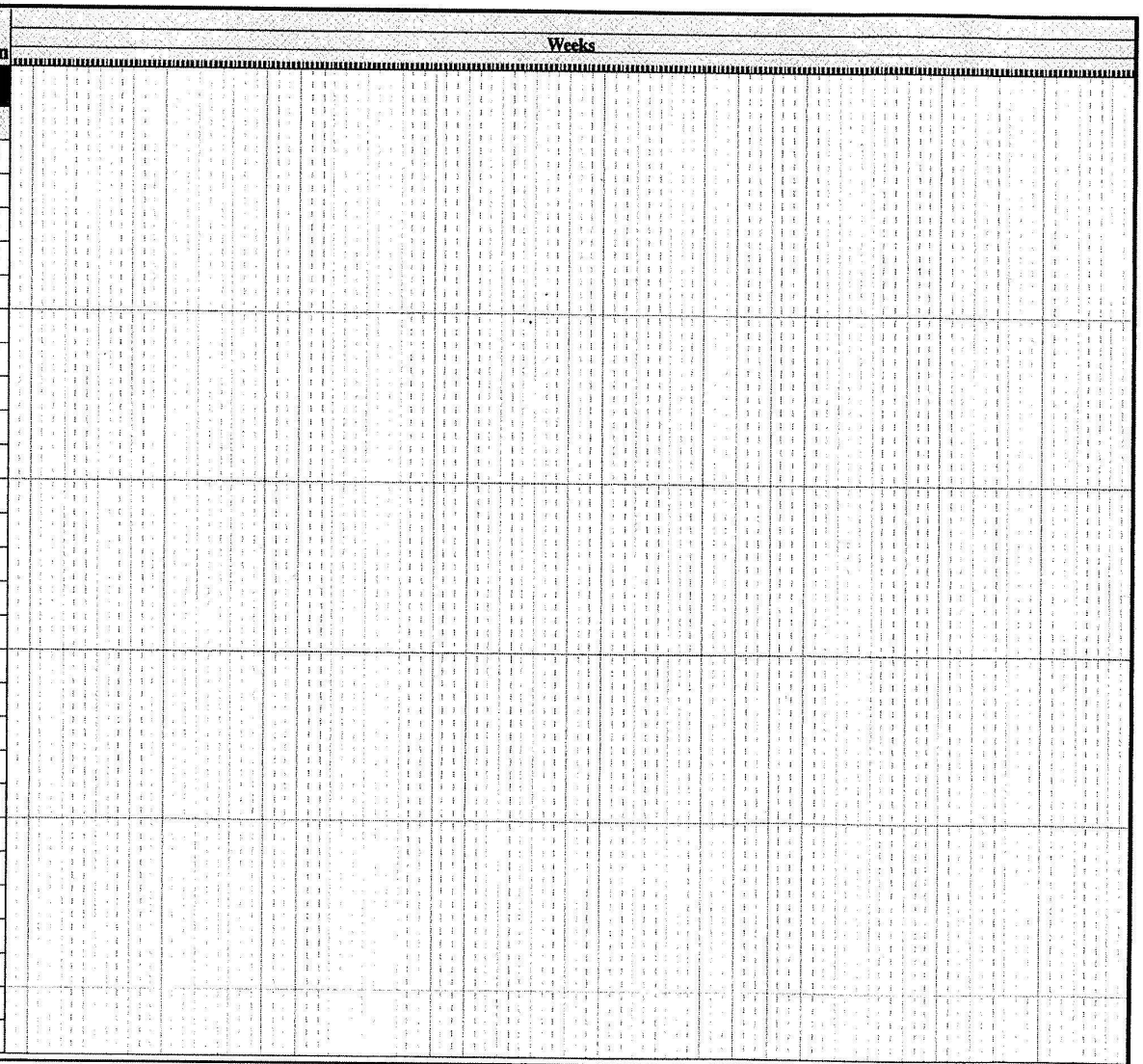
Responsible Group Code Table

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

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

EXHIBIT 'A'

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



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

DBCA - TEST

Sheet 1 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

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

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

DBCA - TEST

Sheet 2 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

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

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

DBCA - TEST

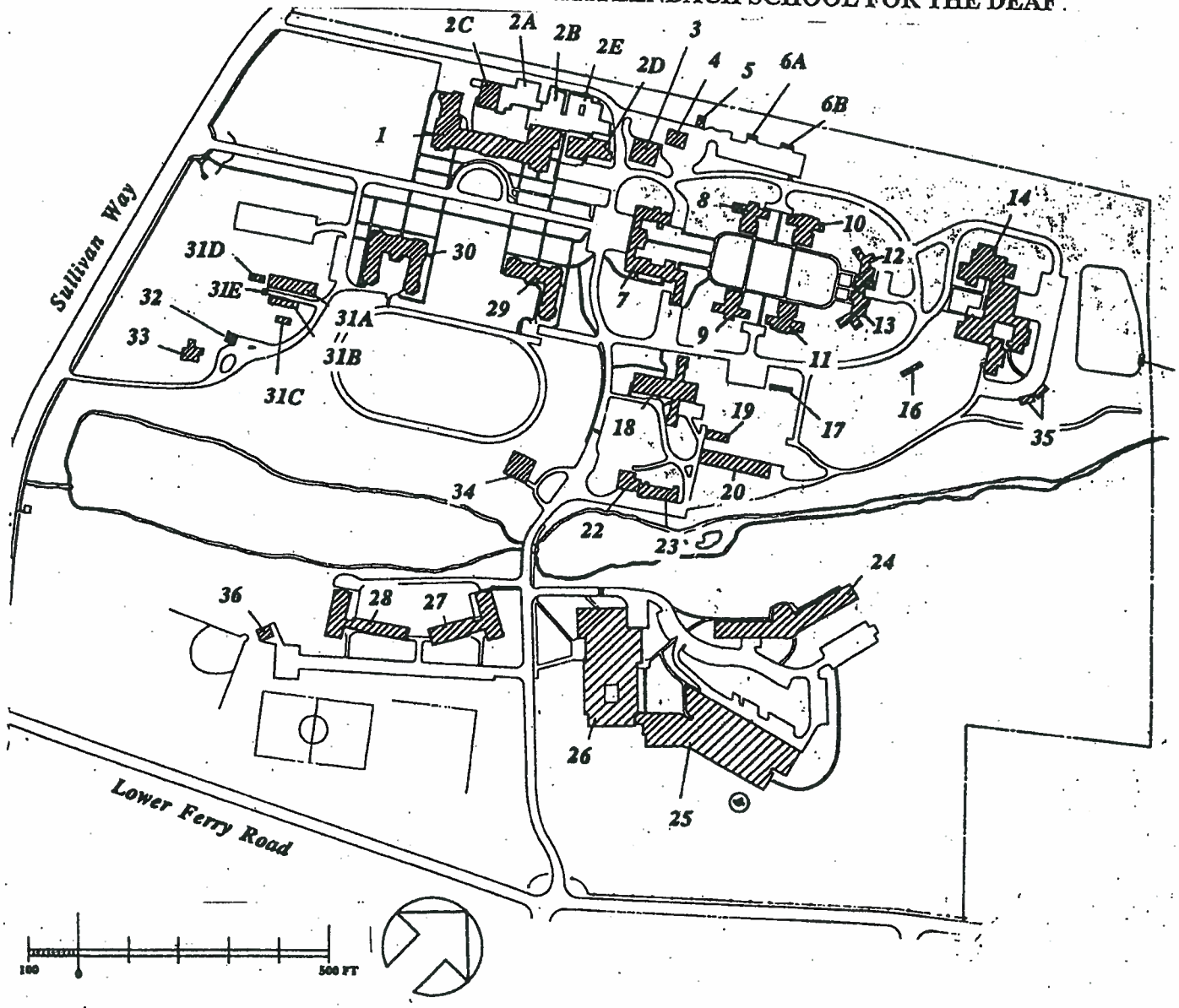
Sheet 3 of 3

Bureau of Design & Construction Services

EXHIBIT 'A'

EXHIBIT 'B'

MARIE KATZENBACH SCHOOL FOR THE DEAF



LEGEND

1. MIDDLE SCHOOL
2c. AUTOMOTIVE MAINTENANCE
2d. MIDDLE SCHOOL ANNEX
2e. POWER HOUSE
3. TO BE DETERMINED
4. GARAGE
5. BUS GARAGE
6. BIKE SHEDS
7. CLOCK TOWER BUILDING
8. COTTAGE NO. 1
9. HEALTH CENTER
10. COTTAGE NO. 3
11. COTTAGE NO. 4 PLUS PROGR.
12. COTTAGE NO. 5
13. COTTAGE NO. 6
14. LOWER SCHOOL
15. STORAGE SHED
16. BIKE SHED
17. STORAGE SHED
18. NURSERY SCHOOL
19. PAINT SHOP
20. MAINTENANCE GARAGE
22. CENTRAL BOILER HOUSE
23. MAINTENANCE OFFICE
24. PROCTOR RESIDENCE NO. 3
25. VOCATIONAL HIGH SCHOOL
26. ACADEMIC HIGH SCHOOL
27. H. S. GIRLS' RESIDENCE NO. 1
28. H.S. BOYS' RESIDENCE NO. 2
29. TO BE DETERMINED
30. PROCTOR RESIDENCE
31. GREENHOUSES
32. GARAGE
33. SUPERINTENDENT'S HOUSE
34. JOCHEM MEMORIAL CENTER
35. GUARD HOUSE
36. FIELD HOUSE

DIRECTIONS: Take I-95 South to Exit No. 2, West Trenton. Follow Route 579 (Bear Tavern Road) to first traffic light (Seven-Eleven on corner). Go through traffic light (road becomes Grand Ave.) and under railroad overpass (road becomes Sullivan Way). Main entrance to the school is 400 yards on the left.

HEAT AND EXHAUST UNITS MODERNIZATION
ACADEMIC CENTER
GYMNASIUM & BUILDING No.26
MARIE KATZENBACH SCHOOL FOR THE DEAF

WEST TRENTON, MERCER COUNTY, NEW JERSEY

Prepared by

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SCHILLER AND HERSH ASSOCIATES, INC., MEP ENGINEERING
636 SKIPPACK PIKE, SUITE 200, BLUE BELL, PA., 19422 PHONE: (215) 886-8947
E-MAIL: rdelp@schillerhersh.com

February 24, 2023

EXHIBIT 'C'

TABLE OF CONTENTS

EXHIBIT 'C'

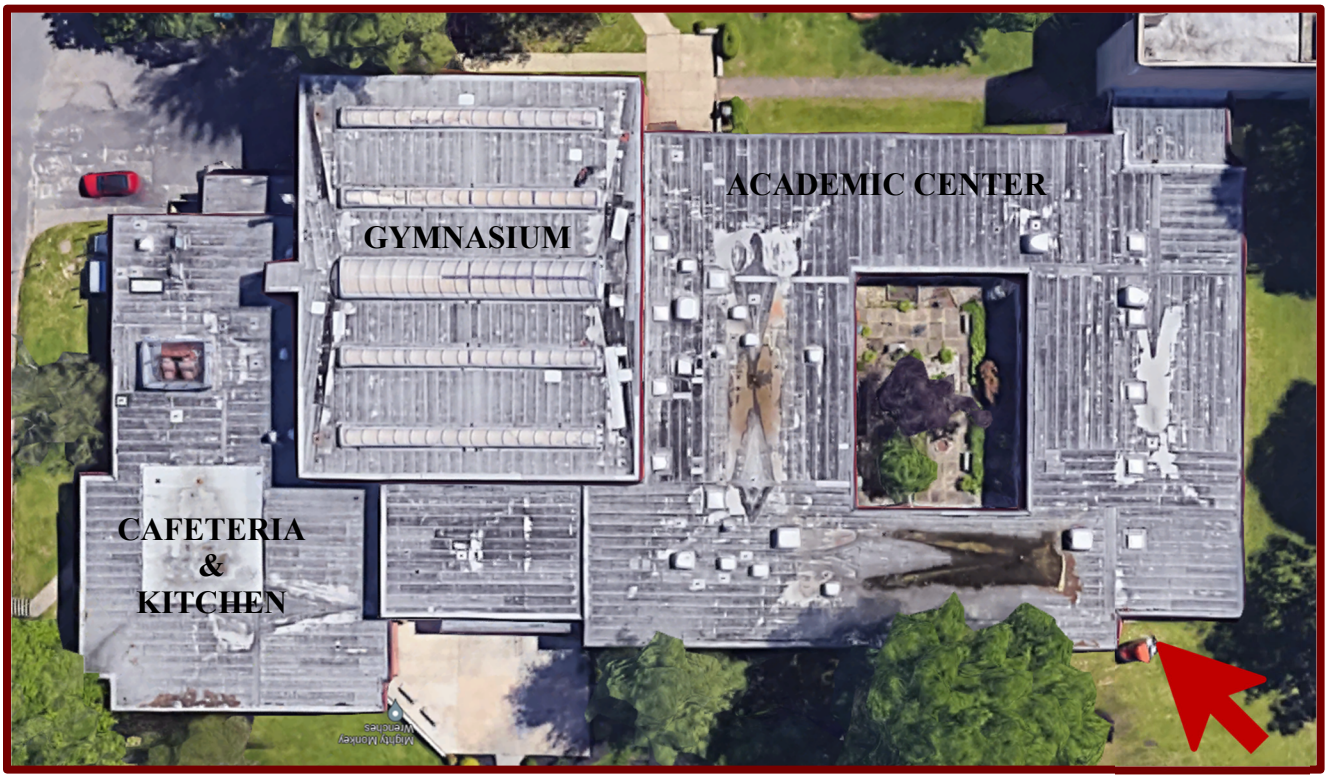
EXECUTIVE SUMMARY

- Ronald A. Sebring Associates, LLC. and Schiller and Hersh, Inc. conducted a Site Visit in early February, 2023 to perform Field Investigation of the existing HVAC and Exhaust System within the Gymnasium adjacent to Building No. 26, as well as observe the conditions pertinent to the HVAC Systems replacement.
- It was observed that the existing HVAC System in the Gymnasium consists of two (2) ceiling hung heating and ventilation units with steam heating coils and exposed supply air ductwork. Each unit serves half of the Gymnasium space. The existing HVAC System does not have any cooling properties, and only serves as a method to ventilate and heat the space.
- These HVAC and Exhaust Systems are original to the building and are well beyond their life expectancy.
- Building 26 is powered from a 4160V campus feeder that supplies buildings 1, 2, 3, 7, 18, 22, 23, 26, 27, 28, and 34, which are via PSE&G meter number 9213263.
- This building is not separately metered, we would recommend that MKSD hire an electrician to install a temporary digital logging meter on the Building 26 service, for a duration of 30-days, to measure the peak electrical load.
- It is recommended that two (2) packaged rooftop units replace the existing equipment to provide full HVAC with DX cooling and gas fired heat.
- New fire alarm duct detectors are required within the new Gymnasium ductwork associated with new rooftop units, including fire alarm wiring, fire alarm relay, and unit shut-down wiring.
- The Gymnasium has multiple skylight systems throughout the roof structure. Due to the limited space atop the Gymnasium, it is proposed that the two (2) new HVAC units be placed on the adjacent Building No.26 roof.
- The existing Roof System is beyond its serviceable life and is recommended to be replaced. Recommended options for retaining the existing roof system is also included.
- The estimated MEP associated cost to remove the existing HVAC and Ventilation System and replace with two (2) new HVAC Units is approximately $840,000.00
- The estimated Construction Cost Estimate (CCE) to remove the existing roofing system and install a new Fluid Applied Roofing System is $922,263.80. Including the MEP Work, the total CCE is $2,113,116.93.
- The estimated Construction Cost Estimate (CCE) to re-utilize the existing roofing system and install a new Fluid Applied Roofing System is $851,562.63. Including the MEP Work, the total CCE is $2,035,345.64
- The estimated Construction Cost Estimate (CCE) to remove the existing roofing system and install a new SBS Modified Roofing System is $949,997.19. Including the MEP Work, the total CCE is $2,143,623.66
- The estimated Construction Cost Estimate (CCE) to perform only the minimum required General Construction associated with the HVAC System Replacement is the total CCE is $350,143.03. Including the MEP Work, the total CCE is $1,483,784.08

EXHIBIT 'C'

INTRODUCTION

In January of 2023, Ronald A. Sebring Associates, LLC (***RASA***) was commissioned by the State of New Jersey, Department of Education (DOE) under the NJ Department of the Treasury, Division of Property Management and Construction, Agency Consultant Program, to conduct a feasibility and modernization Study for the HVAC & Exhaust Systems within the Gymnasium of the Academic Center (Building No.26) at the Marie Katzenbach School for the Deaf (MKSD) also known as the New Jersey School for the Deaf (NJSD).



Aerial View of the Academic Center, Building No.26.

As requested by the Client Agency, this Feasibility and Modernization Study includes proposed replacements and upgrades to the existing heating, ventilation, and exhaust units within the Gymnasium. The existing system is original to the Academic Center and only provides heat to the building.

A Roof and Skylight Replacement was conducted and completed at the Gymnasium Roof and the adjacent and connected Academic Center in 2020 designed and managed by Ronald A. Sebring Associates, LLC. The portion of the Academic Center directly connected to the Gymnasium was not included in this Project. During RASA's field investigation for this Study, it was observed that the current roof system at the Academic Center is beyond its serviceable life and is in need of replacement. As the proposed HVAC and Exhaust upgrades require substantial alterations to the existing roof system, recommendations and Construction Cost Estimates for the roof replacement is included within this Study.

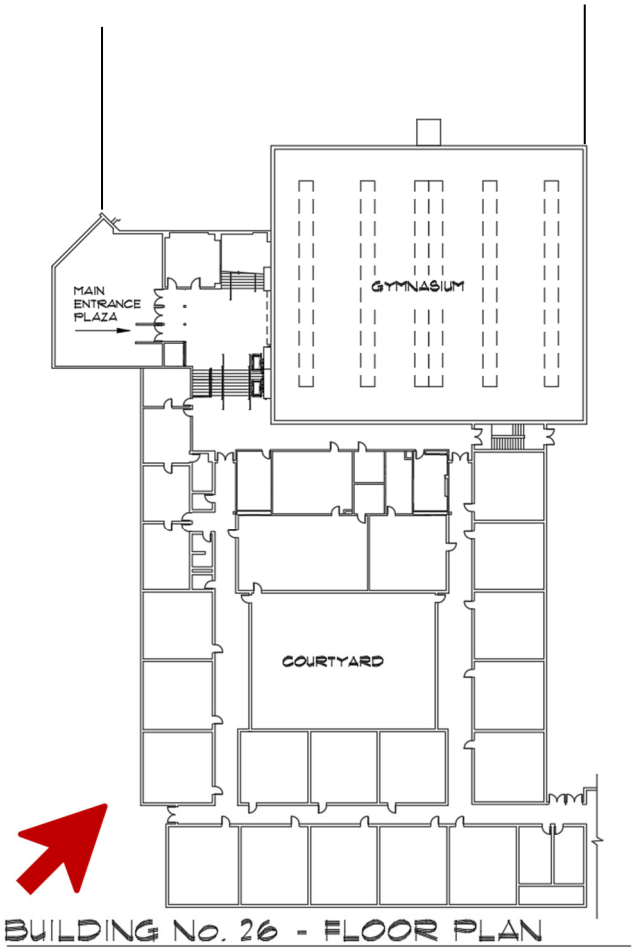
EXHIBIT 'C'

BUILDING DESCRIPTION

The Academic Center (Building No.26) at the Marie Katzenbach School for the Deaf is a one-story steel framed structure containing approximately 42,455 gross square feet, including the Gymnasium.

The building consists of multiple classrooms and offices, a center courtyard, a cafeteria and kitchen, and the Gymnasium. The exterior walls of Building No. 26 are predominantly constructed of 1-wythe brick masonry tied into 8” CMU block.

The roof system consists of K-series steel open web bar joists, Tectum decking, and a 3-ply SBS roof system. Multiple exhaust hoods and skylights, as well as one roof access hatch and large HVAC unit which services the cafeteria kitchen, are present throughout the existing roof system of the Academic Center.



Existing Roof Structure at Academic Center

EXHIBIT 'C'

The Gymnasium Roof includes multiple Kalwall Pre-Engineered “Skyroofs” skylights.

Gymnasium Rooftop

It is likely that the existing structure will require additional structure, dunnage, or reinforcing to accommodate the newly proposed HVAC and Exhaust Units. It is recommended that a structural roof load analysis and lateral stability analysis of the building be conducted by a NJ Licensed Structural Engineer to determine the required additional structure and/or reinforcement required to install the proposed HVAC and Exhaust Units.

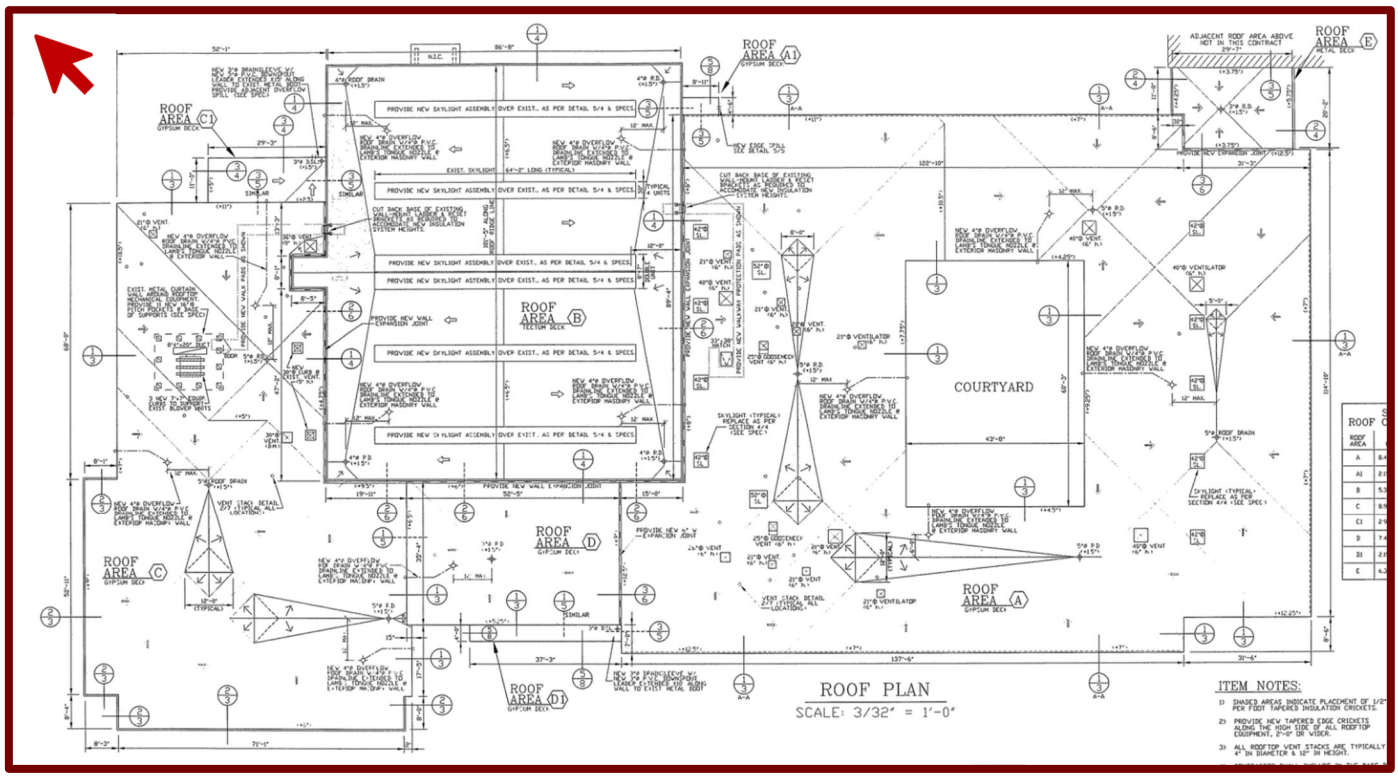
EXISTING CONDITIONS

The Gymnasium currently houses two (2) ceiling hung exhaust fans and heating ventilation units. These units currently serve as the Gymnasium’s heat source and do not provide cooling to the space. The existing systems are beyond their lifespan and are recommended to be removed.

Gymnasium Ceiling Hung HVAC

EXHIBIT 'C'

The Roof System at Building No.26 was replaced under DPMC Project E0252-00 “Emergency Roof Replacement” in 1996. The Roof is currently twenty-seven (27) years old and beyond its serviceable life. The Existing Conditions Drawings for the Emergency Roof Replacement at Building No.26, as well as the Gymnasium Roof Replacement conducted under DPMC Project E0381-00 are included in the Appendix of this Study.

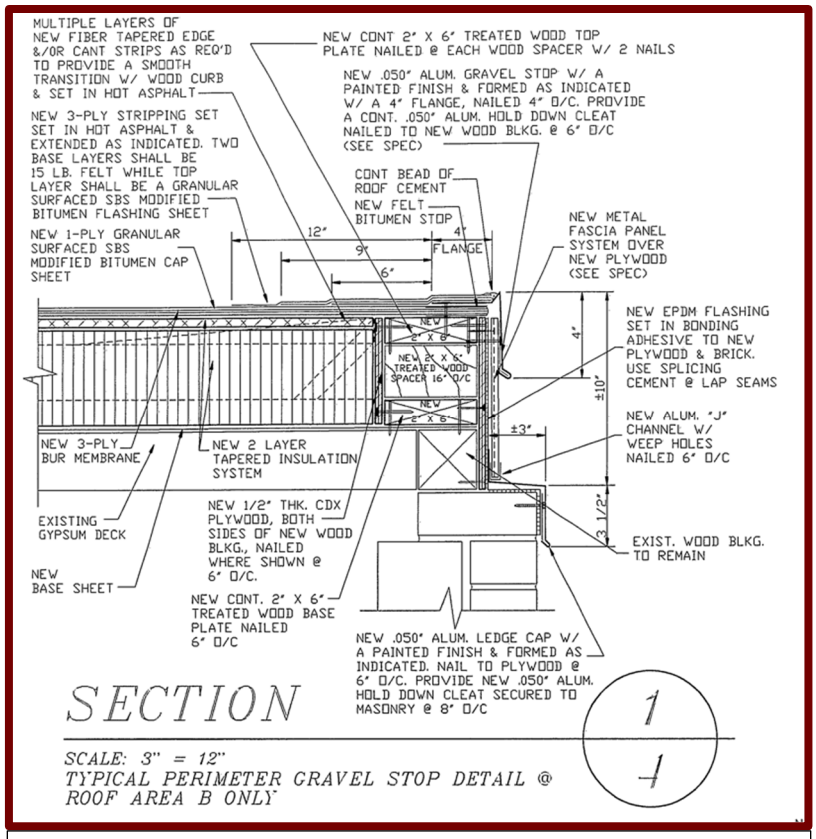


Project E0252-00 Building No. 26 Roof Replacement

The existing built-up roofing throughout the building is in poor condition. There are signs of wear and deterioration, including blisters, bubbles, soft spots, exposed roofing plies, fishmouths, alligatoring, and split-open blisters. Previous patches are present with an approximate 11’-0” x 25’-0” patch on the Southeast side of the roof above the cafeteria space.

EXHIBIT 'C'

The Existing Conditions Drawings show that the roofing system of Building No.26 consists of 1-ply granular surfaced SBS modified cap sheet, over 3- ply stripping set in hot-mopped asphalt, over layers of tapered and uniform thickness rigid insulation, over a layer of deck base sheet, over gypsum deck (Tectum). The tapered insulation provides an approximate 1/4” per foot slope to the drains as indicated by the differential in thicknesses sections on the existing conditions drawings, as well as the measurements taken onsite with a digital level.



Roof Detail from Project E0252-00

There are several intake, exhaust, and gravity vents located on the Building No. 26 Roof. Other penetrations include the roof hatch, pipe vents, and the raised curbs surrounding the HVAC unit which services the Cafeteria Kitchen. Access to the roof is through a roof hatch accessed from within the building. The roof hatches are in operable condition but are difficult to operate and lock. They should be replaced as part of any proposed roof replacement.

BUILDING CODE AND DESIGN GUIDELINES

There are requirements that will affect the design of the installation of new HVAC and Exhaust Units, as well as the Roof Replacement.

Building Code Criteria:

Area Largest Floor: 42,455 Square Feet

Use Group: E

Height: One Story, 28’-0” +/- (Gymnasium)
One Story, 16’-0” +/- (Building No.26)

Construction Classification: Type IIB

HVAC and Exhaust Unit / Roof Replacement:

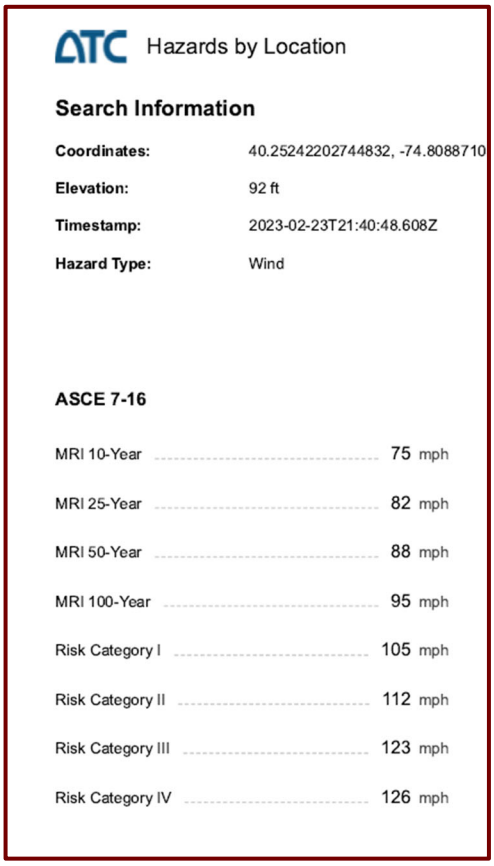
If the existing HVAC and Exhaust Units, and/or the Roof System is to be replaced, the work will need to comply with several requirements of the New Jersey Rehabilitation Code:

Structural Requirements: The proposed new HVAC and Exhaust Units will impose a greater load on the existing building structure than currently exists, or if the roof system replacement diminishes the structural capacity of the building to less than that which currently exists, the building structure will need to be evaluated and, if necessary, reinforced.

Structural Design Loading Criteria:

Risk Category = III
Basic Wind Speed = 123 MPH
The Exposure Category = "B"
Topographic Factor = 1.00
Mean Heights:
Building No. 26 = 16'-0"
Gymnasium = 28'-0"

Wind Resistance: The current Building Code is the newly adopted (as of March 5th, 2023) 2021 International Building Code, New Jersey Edition. The Building Code requires that the roofing system be designed to resist wind uplift loads in accordance with ASCE-7. Fastening will need to be in accordance with the applicable FM-Global standard based on the design uplift load and the Risk Category. The Risk Category for an assembly occupancy with greater than 300 occupants, is III. Based on review of New Jersey DCA Bulletin 03-4, the design windspeed is approximately 123 mph for Risk Category III.



ATC Hazards by Location

Search Information

Coordinates:	40.25242202744832, -74.8088710
Elevation:	92 ft
Timestamp:	2023-02-23T21:40:48.608Z
Hazard Type:	Wind

ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	82 mph
MRI 50-Year	88 mph
MRI 100-Year	95 mph
Risk Category I	105 mph
Risk Category II	112 mph
Risk Category III	123 mph
Risk Category IV	126 mph

Summary of ASCE-7 Wind Resistance Report

A copy of the ASCE-7 Wind Resistance Report for Building No. 26 and the Gymnasium is included in the Appendix "D" of this Study.

Drainage: If the proposed new roof system alters the existing drainage pattern, the existing secondary drainage system and emergency relief scuppers will need to be evaluated for adequacy and proper height above the surface of the new roof.

Fire Classification: All new roof systems should be Class A minimum.

EXHIBIT 'C'

HAZARDOUS MATERIALS

No hazardous materials testing was conducted as part of this study.

Sampling and testing of joint sealants was conducted as part of the Gymnasium and Adjacent Vocational School Roof Replacement completed in 2020. Some sealants and materials related to the existing roofing system, which was originally installed one year prior to the Building No.26 Roof System and utilized the same system, were sampled and tested. The testing revealed that:

- The white sealant at metal counterflashings contains less than 1% chrysotile asbestos
- Black Tar Roof (Field) – 3.2% Chrysotile
- Black Tar Flashing (Roof Edge/ HVAC Curbs) – 8% Chrysotile
- Black Rolled Tar Paper at Insulation – 30% Chrysotile

Due to the age of the building, it is assumed that the existing paint is lead-based. Any proposed work that will disturb painted surfaces will need to be performed in accordance with New Jersey Lead-Safe Work Practices.

While it is likely that similar hazardous materials are present within the construction present throughout Building No.26, independent hazardous materials analysis should be conducted on all materials being impacted by any future construction Projects taking place.

RECOMMENDATIONS

HVAC and Exhaust Unit Replacement

It is recommended that the existing HVAC and Exhaust Units currently servicing the Gymnasium be removed and replaced with new, modern HVAC and Exhaust systems, which include cooling components, to refurnish the space and utilize gas heat rather than the currently utilized steam coil system.

The removal of the existing HVAC and Exhaust Units will require that all previously utilized penetrations through the exterior wall be patched and sealed utilizing construction to match the existing wall construction. The sealed penetration will be required to meet or exceed the existing fire rating of the Building.

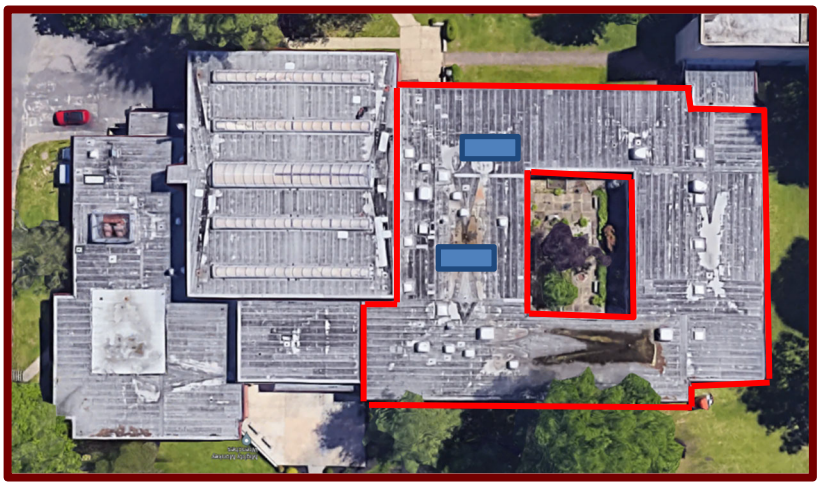
The proposed new HVAC and Exhaust Units product data and locations are included in the MEP Engineer’s assessment which is included in Appendix “B” of this Study.

There is insufficient space to locate the new HVAC Units on the Gymnasium Roof due to the current skylight construction. Therefore, the location of the new HVAC and Exhaust Units servicing the Gymnasium are proposed to be placed on the open roof area of Building No.26. As the Gymnasium is raised approximately 10'-0" +/- above the adjacent Building No. 26 roof, this will allow for the new ductwork to directly penetrate the Gymnasium exterior wall, removing any potential additional roof penetrations within the Gymnasium.

The new sidewall penetrations will be required to be fully fire rated utilizing fire penetration sealants to meet the Building Code Requirements.

Overview of Gymnasium Exterior Façade

The new HVAC and Exhaust Units are likely to exceed the structural capacity of the roof framing. This will require new steel dunnage to be installed to support the new units. The new steel roof dunnage, designed by a NJ Licensed Structural Engineer, will be able to provide a strong support system for the HVAC unit dispersing the weight throughout the roof system, while also allowing the required air flow for the HVAC unit. Steel roof dunnage will also lessen the severity of the roof penetrations required for the HVAC Unit, removing the necessity of built-up curbs.



As the HVAC Units are being placed on the Classroom/Office portion of Building No. 26, it is recommended that if a roof replacement is to take place, at a minimum, the entirety of the subject area have the roof system replaced. The total Square Footage is approximately 19,280 square feet.

Recommended Roof Area to be Replaced
(19,280 Square Feet)

EXHIBIT 'C'

Roof Replacement

Built-Up Bituminous Roofing System / SBS Modified Bitumen Roofing

Built-up bituminous roofing has been the standard for years. Today fiberglass felts have replaced organic and asbestos felts, and flexible rubber flashings have become the standard. A three-ply built-up bituminous roofing system with a styrene butadiene styrene (SBS) modified asphalt coated granule surfaced membrane cap sheet, provides redundancy in the membrane construction, reducing the chances of workmanship failures. The roofing system is easily repaired or modified, and is resistant to abrasion and damage from repairs to mechanical equipment. The life expectancy of this roofing system is between twenty (20) to (30) thirty years.

The estimated cost to install a three-ply built-up roofing system throughout Building No. 26, except the Gymnasium, with an SBS modified bitumen cap sheet is $949,997.19.

The estimated life-cycle cost to maintain a built-up roofing system is lower than single-ply roofing systems because its multiple layers provide superior puncture resistance and waterproofing. The estimated cost to maintain a built-up roofing system is $1,950.00 per year. The cost to maintain built-up roofing systems is not expected to rise exponentially year after year because it is a superior system. If maintained twice per year, the estimated cost to maintain a built-up roofing system at the Gymnasium and Building No. 26 would cost approximately $1,950.00 for each of the thirty years of service life. Therefore, the owner should expect to pay approximately $58,500.00 total to maintain a built-up SBS modified bitumen roofing system for thirty (30) years of service life.

Fluid-applied Roofing System

Unlike built-up roofing systems that rely on the ply sheets for their performance characteristics, fluid-applied roofing systems rely on the chemicals themselves for puncture resistance, elongation, and seamless waterproofing. There are several types of fluid-applied systems and some perform better than others. Types include (but are not limited to) silicone, acrylic, methacrylate, polyurethane, and polymethylmethacrylate (PMMA). Of the several types of fluid-applied systems, polyurethanes contain the superior chemical that provides high puncture resistance, seamless waterproofing, and resistance to ponding water. Polyurethane fluid-applied roofing systems are available with 20, 40, and even 60-year warranties.

A polyurethane fluid-applied roofing system can be installed as a newly constructed roofing system over traditional base systems or installed over an existing roofing system is in fair condition and contains sound, dry roofing components.

For restoration of existing roofing, manufacturer inspection will be required to determine if existing roofing is acceptable for fluid applied application prior to design. An infrared moisture survey is also required to identify any areas of the roof system that contain moisture. These areas would need to be cut out and replaced as part of the roof upgrade.

For estimating purposes, based on our observations of blisters and bubbles, it is assumed that up to 25% of the roof may contain areas requiring replacement.

The advantages of the fluid-applied restoration include:

- The thickness of the roofing will not be increased, and rooftop curbs and parapets will not need to be raised as a result.
- Lower demolition costs and disturbance since it is assumed that 80% of the existing roof will remain.
- Reduction in on-site construction duration

The estimated cost to replace the existing roofing system and install a newly constructed fluid-applied roofing system with a 20-year warranty at the Building No. 26, except the Gymnasium, is $922,263.80.

The estimated cost to restore the existing Building No.26, except the Gymnasium, roofing system with a polyurethane fluid-applied roofing system with a 20-year warranty is $851,562.63.

The estimated life-cycle cost to maintain a polyurethane fluid-applied roofing system is lower than single-ply roofing systems because it provides zero seams, is reinforced, and includes ~78 dry mils of polyurethane. The estimated cost to maintain a fluid-applied roofing system is $2,480.00 per year. The cost to maintain fluid-applied roofing systems is not expected to rise exponentially year after year because it is a superior system. If maintained twice per year, the estimated cost to maintain a fluid applied roofing system would cost approximately $1,792.00 for each of the twenty years of service life. Therefore, the owner should expect to pay approximately $38,320.00 total to maintain a fluid-applied roofing system for twenty (20) years of service life.

Installation of Roof Curbs / Dunnage into Existing Roof System

While the current roof system installed throughout the Building No. 26, and specifically where the new HVAC Units are proposed to be installed, is beyond its serviceable life and will likely require replacement within the next five (5) years, it is also possible to install the two (2) new HVAC Units atop the existing roof utilizing roof curbs and steel reinforcement of the roof structure.

This option would allow for the overall Project cost to remain much lower than a complete roof replacement and prioritize the installation of the new HVAC and Exhaust System.

EXHIBIT 'C'

The estimated cost to implement only new roof curbs / roof structure reinforcement is $350,143.03. It is unlikely that any roofing Manufacturer warranty would be applicable for this installation.

Pedestrian Protection

The design of the HVAC and Exhaust Units and/or Roof Replacement will need to consider and provide requirements for pedestrian protection from overhead work. These measures may consist of sidewalk sheds, temporary fencing, other acceptable pedestrian barriers and signage, or a combination thereof.

Access

The contractor will require an adequate area for placement of on-site stored materials, dumpsters, temporary toilets and for access to remove curtain wall materials during demolition and for staging of materials for installation.

A sizeable Staging Area for the Contractor to utilize for equipment and materials storage, as well as a designated location for loading of materials to the roof, will also be required.

The parking area and grassy area to the north of the building is the most logical place to provide for staging for the Contractor, avoiding changes in level, landscaped areas, and primary points of staff, student, and visitor access. As part of the HVAC and Exhaust Unit Replacement and/or Roof Replacement Design, the area for staging and site access restrictions should be reviewed in detail and determined for inclusion in specifications for construction.

Manufacturer's Warranty

Based on the age of the existing HVAC and Roof Systems, the systems are no longer protected under any manufacturer's warranty coverage.

Per the DPMC Roofing Design Manual, new roofing systems will be required to have a 20-year no dollar limit manufacturer's roofing warranty covering workmanship and materials as well as a roofing contractor's 5-year performance agreement covering workmanship and materials.

New HVAC and Exhaust Unit systems can be provided with warrantees covering defects in the system and their components for up to twenty-five (25) years.

CONCLUSION

The replacement of the existing HVAC and Exhaust Units is an effective means of providing a permanent solution to the lack of cooling system within the Gymnasium, as well as solve the problems associated with the steam coil system that are occurring, and are projected to continue to occur in the future. The associated roof replacement is recommended as the existing roof is far beyond its serviceable life and the installation of new HVAC and Exhaust Units will impact the existing roof system substantially.

Schedule

The following durations should be considered in preparation of a schedule for the Project and Scope of Work:

Site Access/Approvals	14 Calendar Days
Investigation	28 Calendar Days
DPMC/DOE Review	14 Calendar Days
Design Development	42 Calendar Days
DPMC/DOE Review	14 Calendar Days
Final Design	42 Calendar Days
DPMC/DOE Review	14 Calendar Days
Final Design2	7 Calendar Days
DPMC/DOE Review	14 Calendar Days
DCA Plan Review	30 Calendar Days
Permit-Bid Documents	7 Calendar Days
Bid and Award	70 Calendar Days
Construction	180 Calendar Days
Close-out	21 Calendar Days
Total	**497 Calendar Days**

END OF STUDY

Attachments:
Appendix A - Construction Cost Estimates
Appendix B - MEP Engineer's HVAC Study
Appendix C - Existing Conditions Drawings
Appendix D - ASCE-7 Wind Speed Assessment Report
Appendix E - Photographs

Prepared 2/24/2023 by:

Ronald A. Sebring Associates, LLC
1000 Washington Street, Suite 201
Toms River NJ, 08753

EXHIBIT 'C'

APPENDIX “A”

Construction Cost Estimates

EXHIBIT 'C'

CONSTRUCTION COST ESTIMATE
BUILDING No. 26 - HVAC ONLY
MARIE KATZENBACH SCHOOL FOR THE DEAF
TRENTON, MERCER COUNTY, NEW JERSEY

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
GENERAL REQUIREMENTS (DIVISION 1)					
GENERAL REQUIREMENTS					
BOND /L.S.	1.00	$0.00	$6,000.00	$0.00	$6,000.00
PROTECTION AROUND ROOF PERIMETER /L.S.	1.00	$600.00	$1,200.00	$600.00	$1,200.00
TELESCOPING FORKLIFT / WEEK	1.00	$0.00	$708.00	$0.00	$708.00
CRANE NO OPERATOR / MONTH	1.00	$0.00	$4,400.00	$0.00	$4,400.00
CRANE OPERATOR / DAY	3.00	$0.00	$500.00	$0.00	$1,500.00
STORAGE BOX / MONTH	1.00	$0.00	$120.00	$0.00	$120.00
TEMPORARY TOILET / MONTH	1.00	$0.00	$100.00	$0.00	$100.00
TEMPORARY FENCING /L.F.	500.00	$1.37	$9.05	$685.00	$4,525.00
SUPERVISION /WEEK	3.00	$0.00	$2,150.00		$6,450.00
EXISTING CONDITIONS (DIVISION 2)					
DEMOLITION					
HAZARDOUS MATERIALS REMOVAL /L.S	1.00	$1,000.00	$3,200.00	$1,000.00	$3,200.00
RUBBISH HANDLING /C.Y.	50.00	$11.10	$20.82	$555.00	$1,041.00
DUMPSTERS /EACH	3.00	$0.00	$900.00	$0.00	$2,700.00
AREA ADJUSTMENT DIVISION 2		5.20%	0.00%	$80.86	$6,941.00
MASONRY (DIVISION 4)					
MASONRY					
INFILL ABANDONED OPENINGS /S.F	96.00	$15.85	$39.41	$1,521.60	$3,783.36
TIE-IN OF MAONRY /L.S	1.00	$850.00	$1,800.00	$850.00	$1,800.00
TOOTHING IN MASONRY /L.S.	1.00	$500.00	$1,750.00	$500.00	$1,750.00
AREA ADJUSTMENT DIVISION 4		8.25%	1.78%	$236.91	$130.53
METALS (DIVISION 5)					
METALS					
STEEL ANGLE ROOF REINFORCEMENT /L.S.	1.00	$10,000.00	$28,000.00	$10,000.00	$28,000.00
STEEL ROOF DUNNAGE /L.S.	1.00	$12,500.00	$38,000.00	$12,500.00	$38,000.00
WELDING /L.S.	1.00	$2,400.00	$6,800.00	$2,400.00	$6,800.00
AREA ADJUSTMENT DIVISION 6		8.10%	1.10%	$754.31	$72,800.00
THERMAL AND MOISTURE PROTECTION (DIVISION 7)					
ROOFING AND FLASHINGS					
ROOF DUCT CURB /EACH	2.00	$1,350.00	$2,950.00	$2,700.00	$5,900.00
ROOF EQUIPMENT CURB /EACH	8.00	$1,975.00	$4,800.00	$15,800.00	$38,400.00
INSULATION REPAIR /L.S.	1.00	$125.00	$800.00	$125.00	$800.00
ROOF BOARD REPAIR /L.S.	1.00	$175.00	$400.00	$175.00	$400.00
ROOF CAP SHEET AND INTERPLY /L.S.	1.00	$900.00	$3,500.00	$900.00	$3,500.00
STAINLESS STEEL CLAMPING RING /EACH	2.00	$25.00	$120.00	$50.00	$240.00
SEALANT /L.S.	1.00	$250.00	$975.00	$250.00	$975.00
ADJUSTABLE PIPE BOOT /EACH	2.00	$100.00	$300.00	$200.00	$600.00
CUSTOM STAINLESS STEEL FLASHING /L.S.	1.00	$1,000.00	$2,800.00	$1,000.00	$2,800.00
AREA ADJUSTMENT DIVISION 7		32.60%	14.50%	$6,911.20	$7,774.18

EXHIBIT 'C'

ITEM	QUAN.	UNIT AMOUNT LABOR	UNIT AMOUNT TOTAL	TOTAL LABOR	TOTAL TOTAL
MECHANICAL (DIVISION 22)					
HVAC / EXHAUST					
MOBILIZATION & DEMOLITION /L.S	1.00	$10,000.00	$30,000.00	$10,000.00	$30,000.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$60,000.00	$0.00	$60,000.00
NEW ROOFTOP HVAC UNITS /EACH	2.00	$26,000.00	$100,000.00	$52,000.00	$200,000.00
NEW DUCTWORK /L.S.	1.00	$45,000.00	$280,000.00	$45,000.00	$280,000.00
HVAC CONTROLS /L.S.	1.00	$8,500.00	$40,000.00	$8,500.00	$40,000.00
TESTING AND BALANCING /L.S.	1.00	$1,200.00	$10,000.00	$1,200.00	$10,000.00
NEW GAS PIPING /L.S.	1.00	$4,500.00	$20,000.00	$4,500.00	$20,000.00
AREA ADJUSTMENT DIVISION 22		24.60%	10.40%	$29,815.20	$66,560.00
ELECTRICAL (DIVISION 26)					
ELECTRICAL					
BREAKERS, CONDUITS, AND WIRING /L.S.	1.00	$9,750.00	$50,000.00	$9,750.00	$50,000.00
FIRE ALARM DEVICES AND WIRING /L.S	1.00	$1,850.00	$10,000.00	$1,850.00	$10,000.00
AREA ADJUSTMENT DIVISION 26		23.90%	12.10%	$2,330.25	$6,050.00

SUB TOTAL GENERAL CONSTRUCTION		$253,338.07
TOTAL LABOR	$178,509.00	
LABOR ADJUSTMENT FACTOR		15.00%
LABOR ADJUSTMENT AMOUNT		$26,776.35
SUBTOTAL		$280,114.42
OVERHEAD	15.00%	$42,017.16
PROFIT	10.00%	$28,011.44
TOTAL GENERAL CONSTRUCTION		**$350,143.03**
SUB TOTAL HVAC		$706,560.00
TOTAL LABOR	$151,015.20	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$24,162.43
SUBTOTAL		$730,722.43
OVERHEAD	15.00%	$109,608.36
PROFIT	10.00%	$73,072.24
TOTAL HVAC		**$913,403.04**
SUB TOTAL ELECTRICAL		$66,050.00
TOTAL LABOR	$13,930.25	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$2,228.84
SUBTOTAL		$68,278.84
OVERHEAD	15.00%	$10,241.83
PROFIT	10.00%	$6,827.88
TOTAL ELECTRICAL		**$85,348.55**
DESIGN CONTINGENCY (10%)		**$134,889.46**
TOTAL ALL TRADES		**$1,483,784.08**

EXHIBIT 'C'

CONSTRUCTION COST ESTIMATE
BUILDING No. 26 - HVAC & ROOF REPLACEMENT (SBS MODIFIED)
MARIE KATZENBACH SCHOOL FOR THE DEAF
TRENTON, MERCER COUNTY, NEW JERSEY

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
GENERAL REQUIREMENTS (DIVISION 1)					
GENERAL REQUIREMENTS					
BOND /L.S.	1.00	$0.00	$6,000.00	$0.00	$6,000.00
PROTECTION AROUND ROOF PERIMETER /L.S.	1.00	$600.00	$1,200.00	$600.00	$1,200.00
ADDITIONAL MANUFACTURERS INSPECTION /L.S	1.00		$800.00	$0.00	$800.00
MANUFACTURERS NDL ROOFING WARRANTY /S.F.	11,840.00		$1.00	$0.00	$11,840.00
TELESCOPING FORKLIFT / WEEK	3.00	$0.00	$708.00	$0.00	$2,124.00
CRANE NO OPERATOR / MONTH	1.00	$0.00	$4,400.00	$0.00	$4,400.00
CRANE OPERATOR / DAY	12.00	$0.00	$500.00	$0.00	$6,000.00
STORAGE BOX / MONTH	1.00	$0.00	$120.00	$0.00	$120.00
TEMPORARY TOILET / MONTH	1.00	$0.00	$100.00	$0.00	$100.00
TEMPORARY FENCING /L.F.	800.00	$1.37	$9.05	$1,096.00	$7,240.00
SUPERVISION /WEEK	8.00	$0.00	$2,150.00		$17,200.00
EXISTING CONDITIONS (DIVISION 2)					
DEMOLITION					
INSULATION REMOVAL /S.F	19,280.00	$0.46	$0.69	$8,868.80	$13,303.20
TAPERED INSULATION REMOVAL /B.F	41,440.00	$0.23	$0.34	$9,531.20	$14,089.60
BUILT-UP ROOF REMOVAL /S.F.	19,280.00	$0.85	$1.36	$16,388.00	$26,220.80
ASPHALT MOP COAT REMOVAL /S.F	19,280.00	$0.15	$0.24	$2,892.00	$4,627.20
HAZARDOUS MATERIALS REMOVAL /L.S	1.00	$5,000.00	$12,500.00	$5,000.00	$12,500.00
2x10 WOOD NAILERS/ L.F.	1,200.00	$0.75	$1.00	$900.00	$1,200.00
COUNTERFLASHING REMOVAL /L.F.	580.00	$1.01	$1.56	$585.80	$904.80
REMOVE ROOF DRAIN /EACH	10.00	$20.00	$30.00	$200.00	$300.00
REMOVE ROOF HATCH /EACH	1.00	$90.00	$120.00	$90.00	$120.00
RUBBISH HANDLING /C.Y.	425.00	$11.10	$20.82	$4,717.50	$8,848.50
DUMPSTERS /EACH	12.00	$0.00	$900.00	$0.00	$10,800.00
AREA ADJUSTMENT DIVISION 2		5.20%	0.00%	$2,557.01	$0.00
MASONRY (DIVISION 4)					
MASONRY (DIVISION 4)					
INFILL ABANDONED OPENINGS /S.F	96.00	$15.85	$37.41	$1,521.60	$3,591.36
TOOTHING IN MASONRY /L.S.	1.00	$500.00	$1,750.00	$500.00	$1,750.00
METALS (DIVISION 5)					
METALS					
STEEL ANGLE ROOF REINFORCEMENT /L.S.	1.00	$10,000.00	$28,000.00	$10,000.00	$28,000.00
STEEL ROOF DUNNAGE /L.S.	1.00	$12,500.00	$38,000.00	$12,500.00	$38,000.00
WELDING /L.S.	1.00	$2,400.00	$6,800.00	$2,400.00	$6,800.00
AREA ADJUSTMENT DIVISION 6		8.10%	1.10%	$754.31	$72,800.00
WOOD AND PLASTICS (DIVISION 6)					
CARPENTRY					
2x10 WOOD NAILERS /M.B.F.	3.03	$940.00	$2,975.00	$2,848.20	$9,014.25
NEW ROOF CURBS /EACH	14.00	$170.00	$212.00	$2,380.00	$2,968.00
FASTENERS /L.S.	1.00	$850.00	$3,000.00	$850.00	$3,000.00
2x4 FRT WOOD NAILERS /M.B.F.	0.37	$1,650.00	$3,950.00	$610.50	$1,461.50
AREA ADJUSTMENT DIVISION 6		43.30%	23.10%	$2,896.21	$3,798.51

EXHIBIT 'C'

ITEM	QUAN.	UNIT AMOUNT LABOR	UNIT AMOUNT TOTAL	TOTAL LABOR	TOTAL TOTAL
THERMAL AND MOISTURE PROTECTION (DIVISION 7)					
ROOF REPLACEMENT					
BASE PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.20	$23,136.00	$61,696.00
INTER-PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.20	$23,136.00	$61,696.00
GRANULE SBS CAP SHEET /S.F.	19,280.00	$1.26	$4.30	$24,292.80	$82,904.00
GRANULE SBS FLASHING /S.F.	3,150.00	$2.00	$4.50	$6,300.00	$14,175.00
SMOOTH SBS FLASHING /S.F.	3,150.00	$2.00	$4.30	$6,300.00	$13,545.00
WALKPADS /EACH	32.00	$8.00	$25.00	$256.00	$800.00
NEW CANT /L.F.	315.00	$0.75	$1.70	$236.25	$535.50
2" INSULATION /S.F	19,280.00	$0.24	$1.75	$4,627.20	$33,740.00
TAPERED INSULATION /B.F.	61,540.00	$0.21	$1.08	$12,923.40	$66,463.20
METAL COUNTER- FLASHING /L.F.	580.00	$2.66	$7.20	$1,542.80	$4,176.00
PIPE VENT FLASHING /EACH	11.00	$50.00	$110.00	$550.00	$1,210.00
NEW ROOF HATCH /EACH	1.00	$176.00	$1,025.00	$176.00	$1,025.00
NEW ROOF HATCH RAILING /EACH	1.00	$120.00	$1,500.00	$120.00	$1,500.00
NEW RAIL CURB /EACH	12.00	$25.00	$100.00	$300.00	$1,200.00
CAULKING /L.S.	1.00	$3,250.00	$11,500.00	$3,250.00	$11,500.00
AREA ADJUSTMENT DIVISION 7		32.60%	14.50%	$34,929.74	$51,644.03
MECHANICAL (DIVISION 22)					
HVAC / EXHAUST					
MOBILIZATION & DEMOLITION /L.S	1.00	$10,000.00	$30,000.00	$10,000.00	$30,000.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$60,000.00	$0.00	$60,000.00
NEW ROOFTOP HVAC UNITS /EACH	2.00	$26,000.00	$100,000.00	$52,000.00	$200,000.00
NEW DUCTWORK /L.S.	1.00	$45,000.00	$280,000.00	$45,000.00	$280,000.00
HVAC CONTROLS /L.S.	1.00	$8,500.00	$40,000.00	$8,500.00	$40,000.00
TESTING AND BALANCING /L.S.	1.00	$1,200.00	$10,000.00	$1,200.00	$10,000.00
NEW GAS PIPING /L.S.	1.00	$4,500.00	$20,000.00	$4,500.00	$20,000.00
AREA ADJUSTMENT DIVISION 22		24.60%	10.40%	$29,815.20	$66,560.00
ELECTRICAL (DIVISION 26)					
ELECTRICAL					
BREAKERS, CONDUITS, AND WIRING /L.S.	1.00	$9,750.00	$50,000.00	$9,750.00	$50,000.00
FIRE ALARM DEVICES AND WIRING /L.S	1.00	$1,850.00	$10,000.00	$1,850.00	$10,000.00
AREA ADJUSTMENT DIVISION 26		23.90%	12.10%	$2,330.25	$6,050.00

SUB TOTAL GENERAL CONSTRUCTION			$728,931.44
TOTAL LABOR	$207,109.01		
LABOR ADJUSTMENT FACTOR			15.00%
LABOR ADJUSTMENT AMOUNT			$31,066.35
SUBTOTAL			$759,997.75
OVERHEAD		15.00%	$113,999.66
PROFIT		10.00%	$75,999.78
TOTAL GENERAL CONSTRUCTION			**$949,997.19**

SUB TOTAL HVAC			$706,560.00
TOTAL LABOR	$151,015.20		
LABOR ADJUSTMENT FACTOR			16.00%
LABOR ADJUSTMENT AMOUNT			$24,162.43
SUBTOTAL			$730,722.43
OVERHEAD		15.00%	$109,608.36
PROFIT		10.00%	$73,072.24
TOTAL HVAC			**$913,403.04**

SUB TOTAL ELECTRICAL			$66,050.00
TOTAL LABOR	$13,930.25		
LABOR ADJUSTMENT FACTOR			16.00%
LABOR ADJUSTMENT AMOUNT			$2,228.84
SUBTOTAL			$68,278.84
OVERHEAD		15.00%	$10,241.83
PROFIT		10.00%	$6,827.88
TOTAL ELECTRICAL			**$85,348.55**

DESIGN CONTINGENCY (10%)		**$194,874.88**
TOTAL ALL TRADES		**$2,143,623.66**

EXHIBIT 'C'

CONSTRUCTION COST ESTIMATE
BUILDING No. 26 - HVAC & ROOF REPLACEMENT - FLUID APPLIED
MARIE KATZENBACH SCHOOL FOR THE DEAF
TRENTON, MERCER COUNTY, NEW JERSEY

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
GENERAL REQUIREMENTS (DIVISION 1)					
GENERAL REQUIREMENTS					
BOND /L.S.	1.00	$0.00	$6,000.00	$0.00	$6,000.00
PROTECTION AROUND ROOF PERIMETER /L.S.	1.00	$600.00	$1,200.00	$600.00	$1,200.00
ADDITIONAL MANUFACTURERS INSPECTION /L.S	1.00		$800.00	$0.00	$800.00
MANUFACTURERS NDL ROOFING WARRANTY /S.F.	11,840.00		$1.00	$0.00	$11,840.00
TELESCOPING FORKLIFT / WEEK	3.00	$0.00	$708.00	$0.00	$2,124.00
CRANE NO OPERATOR / MONTH	1.00	$0.00	$4,400.00	$0.00	$4,400.00
CRANE OPERATOR / DAY	12.00	$0.00	$500.00	$0.00	$6,000.00
STORAGE BOX / MONTH	1.00	$0.00	$120.00	$0.00	$120.00
TEMPORARY TOILET / MONTH	1.00	$0.00	$100.00	$0.00	$100.00
TEMPORARY FENCING /L.F.	800.00	$1.37	$9.05	$1,096.00	$7,240.00
SUPERVISION /WEEK	8.00	$0.00	$2,150.00		$17,200.00
EXISTING CONDITIONS (DIVISION 2)					
DEMOLITION					
INSULATION REMOVAL /S.F	19,280.00	$0.46	$0.69	$8,868.80	$13,303.20
TAPERED INSULATION REMOVAL /B.F	41,440.00	$0.23	$0.34	$9,531.20	$14,089.60
BUILT-UP ROOF REMOVAL /S.F.	19,280.00	$0.85	$1.36	$16,388.00	$26,220.80
ASPHALT MOP COAT REMOVAL /S.F	19,280.00	$0.15	$0.24	$2,892.00	$4,627.20
HAZARDOUS MATERIALS REMOVAL /L.S	1.00	$5,000.00	$12,500.00	$5,000.00	$12,500.00
2x10 WOOD NAILERS/ L.F.	1,200.00	$0.75	$1.00	$900.00	$1,200.00
COUNTERFLASHING REMOVAL /L.F.	580.00	$1.01	$1.56	$585.80	$904.80
REMOVE ROOF DRAIN /EACH	10.00	$20.00	$30.00	$200.00	$300.00
REMOVE ROOF HATCH /EACH	1.00	$90.00	$120.00	$90.00	$120.00
RUBBISH HANDLING /C.Y.	425.00	$11.10	$20.82	$4,717.50	$8,848.50
DUMPSTERS /EACH	12.00	$0.00	$900.00	$0.00	$10,800.00
AREA ADJUSTMENT DIVISION 2		5.20%	0.00%	$2,557.01	$0.00
MASONRY (DIVISION 4)					
MASONRY (DIVISION 4)					
INFILL ABANDONED OPENINGS /S.F	96.00	$15.85	$37.41	$1,521.60	$3,591.36
TOOTHING IN MASONRY /L.S.	1.00	$500.00	$1,750.00	$500.00	$1,750.00
METALS (DIVISION 5)					
METALS					
STEEL ANGLE ROOF REINFORCEMENT /L.S.	1.00	$10,000.00	$28,000.00	$10,000.00	$28,000.00
STEEL ROOF DUNNAGE /L.S.	1.00	$12,500.00	$38,000.00	$12,500.00	$38,000.00
WELDING /L.S.	1.00	$2,400.00	$6,800.00	$2,400.00	$6,800.00
AREA ADJUSTMENT DIVISION 6		8.10%	1.10%	$754.31	$72,800.00
WOOD AND PLASTICS (DIVISION 6)					
CARPENTRY					
2x10 WOOD NAILERS /M.B.F.	3.03	$940.00	$2,975.00	$2,848.20	$9,014.25
NEW ROOF CURBS /EACH	14.00	$170.00	$212.00	$2,380.00	$2,968.00
FASTENERS /L.S.	1.00	$850.00	$3,000.00	$850.00	$3,000.00
2x4 FRT WOOD NAILERS /M.B.F.	0.37	$1,650.00	$3,950.00	$610.50	$1,461.50
AREA ADJUSTMENT DIVISION 6		43.30%	23.10%	$2,896.21	$3,798.51

EXHIBIT 'C'

ITEM	QUAN.	UNIT AMOUNT LABOR	UNIT AMOUNT TOTAL	TOTAL LABOR	TOTAL TOTAL
THERMAL AND MOISTURE PROTECTION (DIVISION 7)					
ROOF REPLACEMENT					
BASE PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.37	$23,136.00	$64,973.60
INTER-PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.37	$23,136.00	$64,973.60
FLUID APPLIED POLYURETHANE COATING /S.F	19,280.00	$0.51	$1.67	$9,832.80	$32,197.60
PRIMER /S.F.	23,480.00	$0.51	$1.60	$11,974.80	$37,568.00
FLUID APPLIED POLYURETHANE FLASHING /S.F	3,178.00	$0.75	$1.90	$2,383.50	$6,038.20
SMOOTH SBS FLASHING /S.F.	2,284.00	$2.00	$4.51	$4,568.00	$10,300.84
WALKPADS /EACH	32.00	$8.00	$25.00	$256.00	$800.00
NEW CANT /L.F.	315.00	$0.75	$1.70	$236.25	$535.50
2" INSULATION /S.F	19,280.00	$0.24	$1.75	$4,627.20	$33,740.00
TAPERED INSULATION /B.F.	61,540.00	$0.21	$1.08	$12,923.40	$66,463.20
METAL COUNTER- FLASHING /L.F.	580.00	$2.66	$7.20	$1,542.80	$4,176.00
PIPE VENT FLASHING /EACH	11.00	$50.00	$110.00	$550.00	$1,210.00
NEW ROOF HATCH /EACH	1.00	$176.00	$1,025.00	$176.00	$1,025.00
NEW ROOF HATCH RAILING /EACH	1.00	$120.00	$1,500.00	$120.00	$1,500.00
NEW RAIL CURB /EACH	12.00	$25.00	$100.00	$300.00	$1,200.00
CAULKING /L.S.	1.00	$3,250.00	$11,500.00	$3,250.00	$11,500.00
AREA ADJUSTMENT DIVISION 7		32.60%	14.50%	$32,278.16	$49,039.22
MECHANICAL (DIVISION 22)					
HVAC / EXHAUST					
MOBILIZATION & DEMOLITION /L.S	1.00	$10,000.00	$30,000.00	$10,000.00	$30,000.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$60,000.00	$0.00	$60,000.00
NEW ROOFTOP HVAC UNITS /EACH	2.00	$26,000.00	$100,000.00	$52,000.00	$200,000.00
NEW DUCTWORK /L.S.	1.00	$45,000.00	$280,000.00	$45,000.00	$280,000.00
HVAC CONTROLS /L.S.	1.00	$8,500.00	$40,000.00	$8,500.00	$40,000.00
TESTING AND BALANCING /L.S.	1.00	$1,200.00	$10,000.00	$1,200.00	$10,000.00
NEW GAS PIPING /L.S.	1.00	$4,500.00	$20,000.00	$4,500.00	$20,000.00
AREA ADJUSTMENT DIVISION 22		24.60%	10.40%	$29,815.20	$66,560.00
ELECTRICAL (DIVISION 26)					
ELECTRICAL					
BREAKERS, CONDUITS, AND WIRING /L.S.	1.00	$9,750.00	$50,000.00	$9,750.00	$50,000.00
FIRE ALARM DEVICES AND WIRING /L.S	1.00	$1,850.00	$10,000.00	$1,850.00	$10,000.00
AREA ADJUSTMENT DIVISION 26		23.90%	12.10%	$2,330.25	$6,050.00

SUB TOTAL GENERAL CONSTRUCTION			$708,362.48
TOTAL LABOR	$196,323.73		
LABOR ADJUSTMENT FACTOR			15.00%
LABOR ADJUSTMENT AMOUNT			$29,448.56
SUBTOTAL			$737,811.04
OVERHEAD		15.00%	$110,671.66
PROFIT		10.00%	$73,781.10
TOTAL GENERAL CONSTRUCTION			**$922,263.80**

SUB TOTAL HVAC			$706,560.00
TOTAL LABOR	$151,015.20		
LABOR ADJUSTMENT FACTOR			16.00%
LABOR ADJUSTMENT AMOUNT			$24,162.43
SUBTOTAL			$730,722.43
OVERHEAD		15.00%	$109,608.36
PROFIT		10.00%	$73,072.24
TOTAL HVAC			**$913,403.04**

SUB TOTAL ELECTRICAL			$66,050.00
TOTAL LABOR	$13,930.25		
LABOR ADJUSTMENT FACTOR			16.00%
LABOR ADJUSTMENT AMOUNT			$2,228.84
SUBTOTAL			$68,278.84
OVERHEAD		15.00%	$10,241.83
PROFIT		10.00%	$6,827.88
TOTAL ELECTRICAL			**$85,348.55**

DESIGN CONTINGENCY (10%)		**$192,101.54**
TOTAL ALL TRADES		**$2,113,116.93**

EXHIBIT 'C'

CONSTRUCTION COST ESTIMATE
BUILDING No. 26 - HVAC & ROOF REPLACEMENT
FLUID APPLIED ROOFING SYSTEM OVER EXISTING ROOF
MARIE KATZENBACH SCHOOL FOR THE DEAF
TRENTON, MERCER COUNTY, NEW JERSEY

ITEM	QUAN.	UNIT AMOUNT		TOTAL	
		LABOR	TOTAL	LABOR	TOTAL
GENERAL REQUIREMENTS (DIVISION 1)					
GENERAL REQUIREMENTS					
BOND /L.S.	1.00	$0.00	$6,000.00	$0.00	$6,000.00
PROTECTION AROUND ROOF PERIMETER /L.S.	1.00	$600.00	$1,200.00	$600.00	$1,200.00
ADDITIONAL MANUFACTURERS INSPECTION /L.S	1.00		$800.00	$0.00	$800.00
MANUFACTURERS NDL ROOFING WARRANTY /S.F.	11,840.00		$1.00	$0.00	$11,840.00
TELESCOPING FORKLIFT / WEEK	3.00	$0.00	$708.00	$0.00	$2,124.00
CRANE NO OPERATOR / MONTH	1.00	$0.00	$4,400.00	$0.00	$4,400.00
CRANE OPERATOR / DAY	12.00	$0.00	$500.00	$0.00	$6,000.00
STORAGE BOX / MONTH	1.00	$0.00	$120.00	$0.00	$120.00
TEMPORARY TOILET / MONTH	1.00	$0.00	$100.00	$0.00	$100.00
TEMPORARY FENCING /L.F.	800.00	$1.37	$9.05	$1,096.00	$7,240.00
SUPERVISION /WEEK	8.00	$0.00	$2,150.00		$17,200.00
EXISTING CONDITIONS (DIVISION 2)					
DEMOLITION					
INSULATION REMOVAL /S.F	4,500.00	$0.46	$0.69	$2,070.00	$3,105.00
TAPERED INSULATION REMOVAL /B.F	39,750.00	$0.23	$0.34	$9,142.50	$13,515.00
BUILT-UP ROOF REMOVAL /S.F.	19,280.00	$0.85	$1.36	$16,388.00	$26,220.80
ASPHALT MOP COAT REMOVAL /S.F	19,280.00	$0.15	$0.24	$2,892.00	$4,627.20
HAZARDOUS MATERIALS REMOVAL /L.S	1.00	$5,000.00	$12,500.00	$5,000.00	$12,500.00
2x10 WOOD NAILERS/ L.F.	1,200.00	$0.75	$1.00	$900.00	$1,200.00
COUNTERFLASHING REMOVAL /L.F.	580.00	$1.01	$1.56	$585.80	$904.80
REMOVE ROOF DRAIN /EACH	10.00	$20.00	$30.00	$200.00	$300.00
REMOVE ROOF HATCH /EACH	1.00	$90.00	$120.00	$90.00	$120.00
RUBBISH HANDLING /C.Y.	425.00	$11.10	$20.82	$4,717.50	$8,848.50
DUMPSTERS /EACH	12.00	$0.00	$900.00	$0.00	$10,800.00
AREA ADJUSTMENT DIVISION 2		5.20%	0.00%	$2,183.26	$0.00
MASONRY (DIVISION 4)					
MASONRY (DIVISION 4)					
INFILL ABANDONED OPENINGS /S.F	96.00	$15.85	$37.41	$1,521.60	$3,591.36
TOOTHING IN MASONRY /L.S.	1.00	$500.00	$1,750.00	$500.00	$1,750.00
METALS (DIVISION 5)					
METALS					
STEEL ANGLE ROOF REINFORCEMENT /L.S.	1.00	$10,000.00	$28,000.00	$10,000.00	$28,000.00
STEEL ROOF DUNNAGE /L.S.	1.00	$12,500.00	$38,000.00	$12,500.00	$38,000.00
WELDING /L.S.	1.00	$2,400.00	$6,800.00	$2,400.00	$6,800.00
AREA ADJUSTMENT DIVISION 6		8.10%	1.10%	$754.31	$72,800.00
WOOD AND PLASTICS (DIVISION 6)					
CARPENTRY					
2x10 WOOD NAILERS /M.B.F.	3.03	$940.00	$2,975.00	$2,848.20	$9,014.25
NEW ROOF CURBS /EACH	14.00	$170.00	$212.00	$2,380.00	$2,968.00
FASTENERS /L.S.	1.00	$850.00	$3,000.00	$850.00	$3,000.00
2x4 FRT WOOD NAILERS /M.B.F.	0.37	$1,650.00	$3,950.00	$610.50	$1,461.50
AREA ADJUSTMENT DIVISION 6		43.30%	23.10%	$2,896.21	$3,798.51

EXHIBIT 'C'

ITEM	QUAN.	UNIT AMOUNT LABOR	UNIT AMOUNT TOTAL	TOTAL LABOR	TOTAL TOTAL
THERMAL AND MOISTURE PROTECTION (DIVISION 7)					
ROOF REPLACEMENT					
BASE PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.37	$23,136.00	$64,973.60
INTER-PLY SBS ROOFING /S.F	19,280.00	$1.20	$3.37	$23,136.00	$64,973.60
FLUID APPLIED POLYURETHANE COATING /S.F	19,280.00	$0.51	$1.67	$9,832.80	$32,197.60
PRIMER /S.F.	23,480.00	$0.51	$1.60	$11,974.80	$37,568.00
FLUID APPLIED POLYURETHANE FLASHING /S.F	3,178.00	$0.75	$1.90	$2,383.50	$6,038.20
SMOOTH SBS FLASHING /S.F.	2,284.00	$2.00	$4.51	$4,568.00	$10,300.84
WALKPADS /EACH	32.00	$8.00	$25.00	$256.00	$800.00
NEW CANT /L.F.	315.00	$0.75	$1.70	$236.25	$535.50
2" INSULATION /S.F	4,500.00	$0.24	$1.75	$1,080.00	$7,875.00
TAPERED INSULATION /B.F.	39,750.00	$0.21	$1.08	$8,347.50	$42,930.00
METAL COUNTER- FLASHING /L.F.	580.00	$2.66	$7.20	$1,542.80	$4,176.00
PIPE VENT FLASHING /EACH	11.00	$50.00	$110.00	$550.00	$1,210.00
NEW ROOF HATCH /EACH	1.00	$176.00	$1,025.00	$176.00	$1,025.00
NEW ROOF HATCH RAILING /EACH	1.00	$120.00	$1,500.00	$120.00	$1,500.00
NEW RAIL CURB /EACH	12.00	$25.00	$100.00	$300.00	$1,200.00
CAULKING /L.S.	1.00	$3,250.00	$11,500.00	$3,250.00	$11,500.00
AREA ADJUSTMENT DIVISION 7		32.60%	14.50%	$29,630.03	$41,876.48
MECHANICAL (DIVISION 22)					
HVAC / EXHAUST					
MOBILIZATION & DEMOLITION /L.S	1.00	$10,000.00	$30,000.00	$10,000.00	$30,000.00
GENERAL CONDITIONS /L.S.	1.00	$0.00	$60,000.00	$0.00	$60,000.00
NEW ROOFTOP HVAC UNITS /EACH	2.00	$26,000.00	$100,000.00	$52,000.00	$200,000.00
NEW DUCTWORK /L.S.	1.00	$45,000.00	$280,000.00	$45,000.00	$280,000.00
HVAC CONTROLS /L.S.	1.00	$8,500.00	$40,000.00	$8,500.00	$40,000.00
TESTING AND BALANCING /L.S.	1.00	$1,200.00	$10,000.00	$1,200.00	$10,000.00
NEW GAS PIPING /L.S.	1.00	$4,500.00	$20,000.00	$4,500.00	$20,000.00
AREA ADJUSTMENT DIVISION 22		24.60%	10.40%	$29,815.20	$66,560.00
ELECTRICAL (DIVISION 26)					
ELECTRICAL					
BREAKERS, CONDUITS, AND WIRING /L.S.	1.00	$9,750.00	$50,000.00	$9,750.00	$50,000.00
FIRE ALARM DEVICES AND WIRING /L.S	1.00	$1,850.00	$10,000.00	$1,850.00	$10,000.00
AREA ADJUSTMENT DIVISION 26		23.90%	12.10%	$2,330.25	$6,050.00

SUB TOTAL GENERAL CONSTRUCTION		$641,028.74
TOTAL LABOR	$196,323.73	
LABOR ADJUSTMENT FACTOR		15.00%
LABOR ADJUSTMENT AMOUNT		$29,448.56
SUBTOTAL		$681,250.10
OVERHEAD	15.00%	$102,187.52
PROFIT	10.00%	$68,125.01
TOTAL GENERAL CONSTRUCTION		**$851,562.63**

SUB TOTAL HVAC		$706,560.00
TOTAL LABOR	$151,015.20	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$24,162.43
SUBTOTAL		$730,722.43
OVERHEAD	15.00%	$109,608.36
PROFIT	10.00%	$73,072.24
TOTAL HVAC		**$913,403.04**

SUB TOTAL ELECTRICAL		$66,050.00
TOTAL LABOR	$13,930.25	
LABOR ADJUSTMENT FACTOR		16.00%
LABOR ADJUSTMENT AMOUNT		$2,228.84
SUBTOTAL		$68,278.84
OVERHEAD	15.00%	$10,241.83
PROFIT	10.00%	$6,827.88
TOTAL ELECTRICAL		**$85,348.55**

DESIGN CONTINGENCY (10%)	**$185,031.42**
TOTAL ALL TRADES	**$2,035,345.64**

EXHIBIT 'C'

APPENDIX “B”

MEP Engineer’s Assessment

EXHIBIT 'C'

Mr. Alex Clark
Ronald A. Sebring Associates, LLC
(732)701-9444 ext. 25
aclark@rasallc.com

Evaluation Report

Re: Gymnasium HVAC Study at
Marie Katzenbach School for the Deaf
S&H Project 2314A

Date: February 22, 2023

Background Information:

We performed a site visit at the Academic Building 26 at the Marie Katzenbach School for the Deaf to review the existing HVAC in the Gymnasium. The following is a study of our findings and preliminary construction costs for the replacement of the Heating and Ventilation Units and Exhaust fans with new HVAC.

Existing Conditions:

Existing Gymnasium HVAC:

- The existing system consists of two ceiling hung heating and ventilation units with steam heating coils and exposed supply air ductwork, two ceiling hung exhaust fans and perimeter wall mounted fin tube radiation. These systems are original to the building and the exhaust fans and heating and ventilation units are well past their life expectancy. Each heating and ventilation unit and exhaust fan serves half of the space. Existing units are heat only with no cooling capability.

Existing Electrical Service for Building 26 (Academic building)

- Building 26 is powered from a 4160V campus feeder that supplies buildings 1, 2, 3, 7, 18, 22, 23, 26, 27, 28, and 34, which are via PSE&G meter number 9213263. We reviewed 12-months of electric utility bills for this meter, July 2021 – June 2022, and the peak demand was 235kW. Assuming a 0.9 power factor, and the required 125% demand factor per NEC requirements for adding additional load, this equates to existing peak demand of 326.4kVA. The new electrical load associated with air-conditioning the gymnasium with two new rooftop RTU's is approximately 100kVA. Therefore, the additional load and the existing peak demand for all 11 buildings on this service would total to 426.4kVA, which is less than the 500kVA transformer at building 26. Since this building is not separately metered, we would recommend that MKSD hire an electrician to install a temporary digital logging meter on the Building 26 service, for a duration of 30-days, to measure the peak electrical load during the summer cooling months of June, July, or August. A load report from the meter should be made available to the engineer for design of the power to the new HVAC systems.

Existing Exhaust Fan


Existing Heating and Ventilation Unit

EXHIBIT 'C'

Existing Outdoor Switchboard

Existing Outdoor Switchboard

EXHIBIT 'C'

Engineering Assessment of Gymnasium HVAC Replacement:

We propose to have two packaged rooftop units to replace the existing equipment to provide full HVAC with DX cooling and gas fired heat. Existing fin tube radiation to remain. Unfortunately there are no other feasible or cost effective options for these systems given the existing conditions at the site.

The general scope requirements for unit replacements are recommended to include the following:

- Coordinate construction phasing requirements with the facility. Continued occupancy of the building may require that only (1) one Heating and Ventilation unit is replaced at a time.
- Demolition of existing heating and ventilation units and exhaust fans and associated ductwork. Patch the existing walls after demolition of the outside air intakes serving the AHUs.
- New RTUs proposed to be placed on the lower roof adjacent to the Gym and reutilize current exhaust fan openings and with new exposed round ductwork and or fabric duct routed at the same location as the demolished supply duct. New exterior ductwork from the RTUs into the building is proposed to be metal cladded duct similar to PTM Manufacturing.
    - New RTUs should incorporate the following minimum features: Equal to Aaon RN series units with fully modulating gas heat, variable compressor for first stage of cooling, hot gas reheat for active dehumidification, VFD condenser fans, single zone VAV operation and energy recovery.

- Install new natural gas piping from the service near the loading dock across the roof to the new RTUs.
- Install new temperature/humidity and CO2 sensors in the gym and integrate the new units into the existing building control system, including all graphics and alarms/alerts.
- Install two new circuit breakers in outdoor switchboard. Install new conduit and wiring to each unit from the existing outdoor switchboard to new rooftop units.
- Install new fire alarm duct detectors in new gym ductwork associated with new rooftop units, including associated fire alarm wiring, fire alarm relay, and unit shut-down wiring. Also, provide new CO detectors in the gym at breathing height near the returns and tie into the fire alarm system.
- Final testing, balancing and commissioning of the RTU systems.

See attached sketches with proposed locations of RTUs and preliminary proposed ductwork routing.

Cost Estimate for HVAC Replacement (Mechanical and Electrical):

Demolition:	$30,000
New Rooftop Units:	$200,000
Ductwork:	$280,000
Gas Piping:	$20,000
HVAC Controls:	$40,000
Testing & Balancing:	$10,000

EXHIBIT 'C'

Electrical Breakers, Conduit & Wiring:	$50,000
Fire Alarm Devices & Wiring	$10,000
General Conditions/Profit:	$60,000
Sub-Total:	$700,000
Preliminary Design Contingency (20%):	$140,000
Sub-Total Mechanical & Electrical Estimate (CCE):	**$840,000**

Energy Efficiency Analysis for Gymnasium HVAC Replacement:

RTU proposed options that increase energy efficiency:

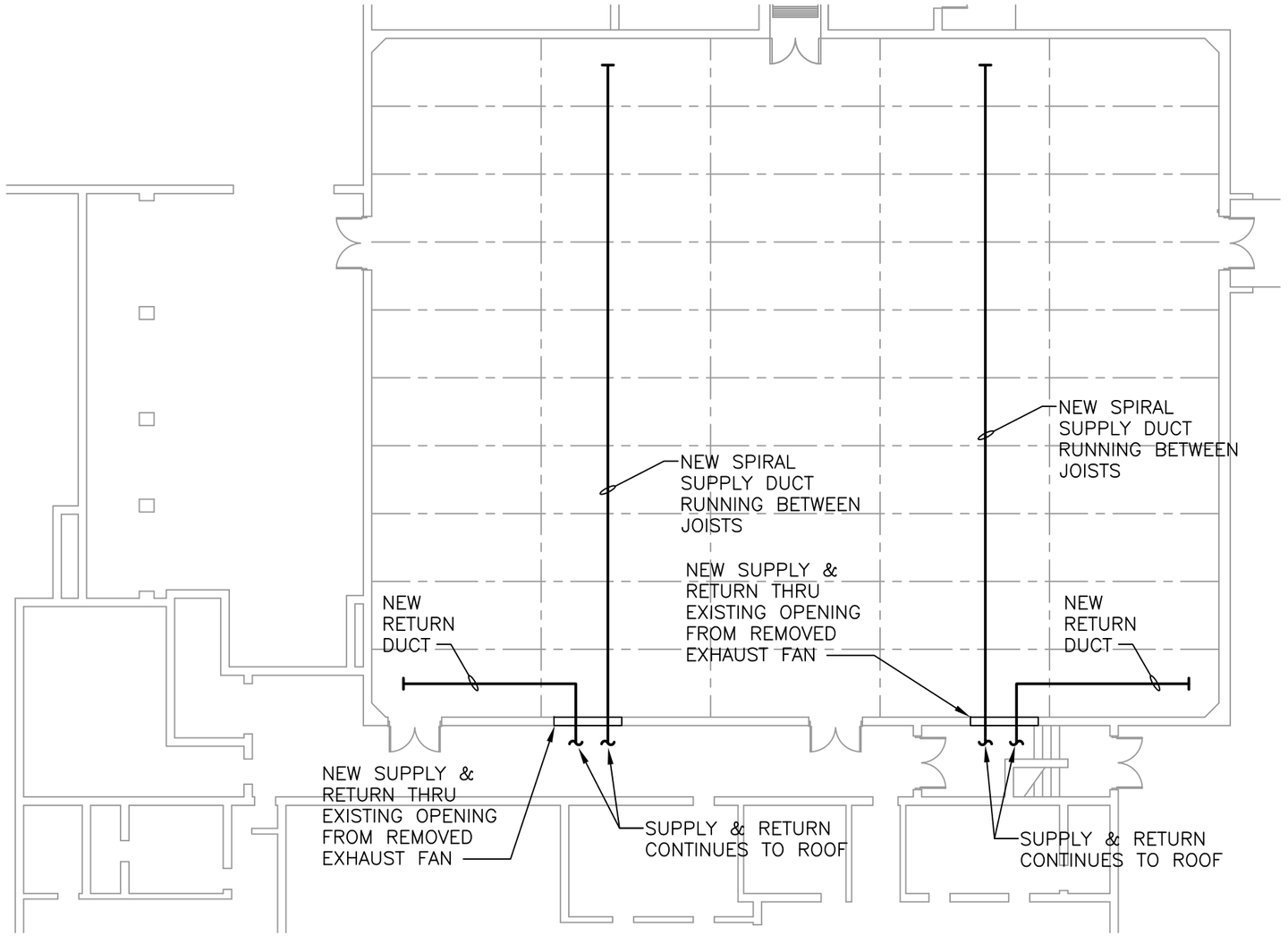
- Energy Recovery of exhaust air (Energy Recovery Wheel).
- Demand control ventilation.
- Single Zone VAV.
- VFD condenser fans for head pressure control.
- Variable capacity compressors on 1st stage of cooling.

Energy Efficiency Comparison of existing system versus proposed:

There is no comparison to offer since existing system is heat and ventilation only and new proposed system is heating, cooling and ventilation. The new RTUs will exceed the energy efficiency requirements of the applicable codes.

End of Gymnasium HVAC Study

EXHIBIT 'C'



SCHILLER AND HERSH ASSOCIATES, INC.
Consulting M/E/P Engineers
636 Skippack Pike
Suite 200
Blue Bell, PA 19422
P: 215.886.8947
F: 215.886.8956
www.schillerhersh.com

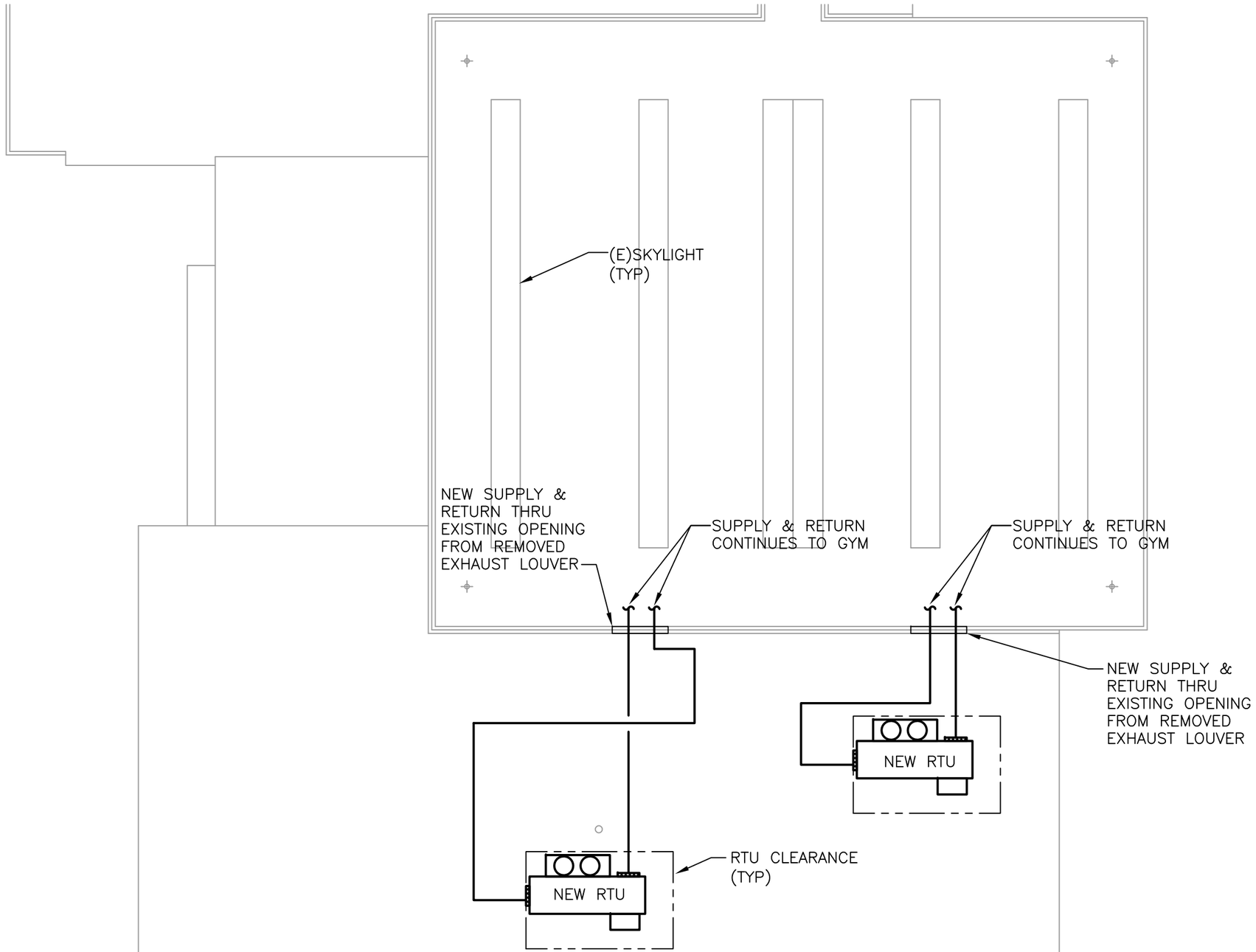
PROJECT NO.	2314A
DATE	2/20/2023
SCALE	1/16"=1'-0"
DWG REF NO.	–

GYMNASIUM HVAC STUDY AT MARIE KATZENBACH SCHOOL FOR THE DEAF

GYMNASIUM NEW WORK FLOOR PLAN

M1.1

EXHIBIT 'C'



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GYMNASIUM HVAC STUDY AT MARIE KATZENBACH SCHOOL FOR THE DEAF

GYMNASIUM NEW WORK ROOF PLAN

M1.2

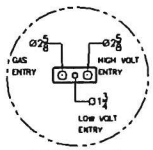
EXHIBIT 'C'

RN SERIES
C- CABINET HORIZONTAL
AIR COOLED HEATWHEEL

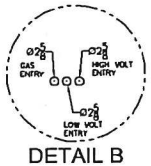
AAON®

CLEARANCES	
LOCATION	
RETURN AIR (BACK)	48
SUPPLY AIR (FRONT)	6
LEFT SIDE	6
RIGHT SIDE	60*
TOP	UNOBSTRUCTED

*CLEARANCE IS MEASURED FROM THE SIDE OF THE UNIT, NOT THE RAIN HOOD

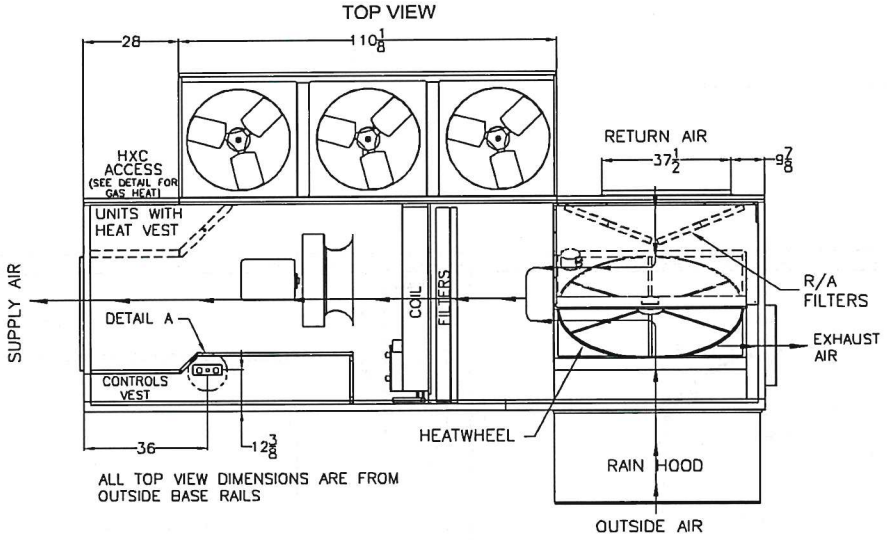


DETAIL A



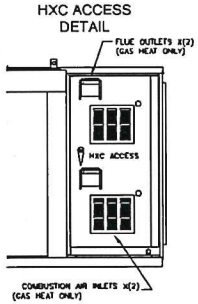
DETAIL B

TOP VIEW

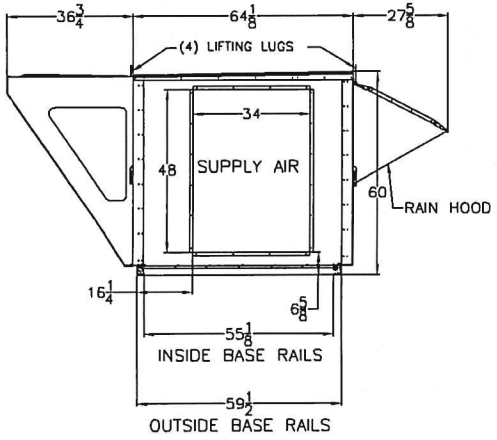


ALL TOP VIEW DIMENSIONS ARE FROM OUTSIDE BASE RAILS

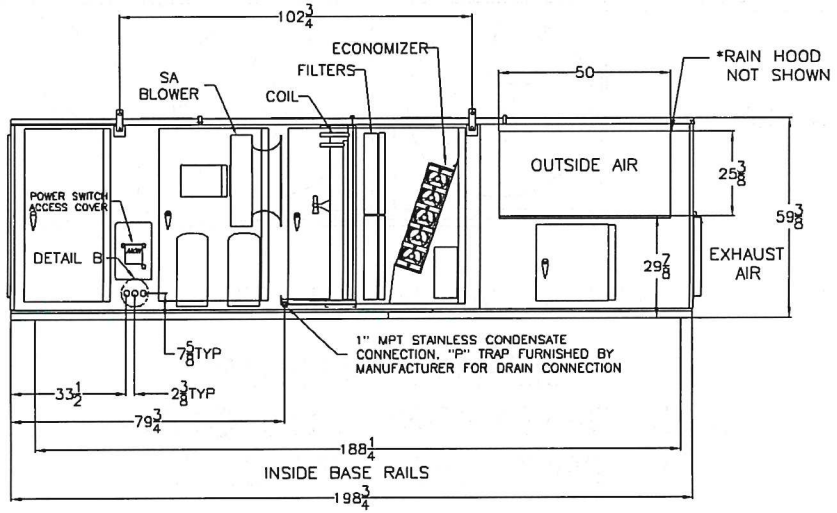
HXC ACCESS DETAIL



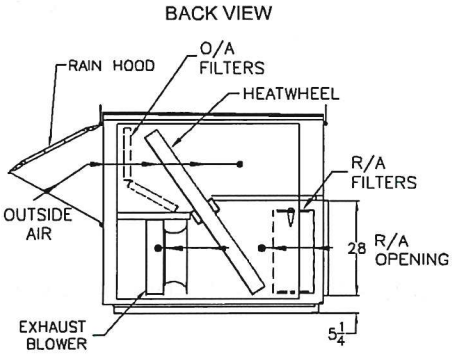
FRONT VIEW



RIGHT SIDE VIEW



BACK VIEW



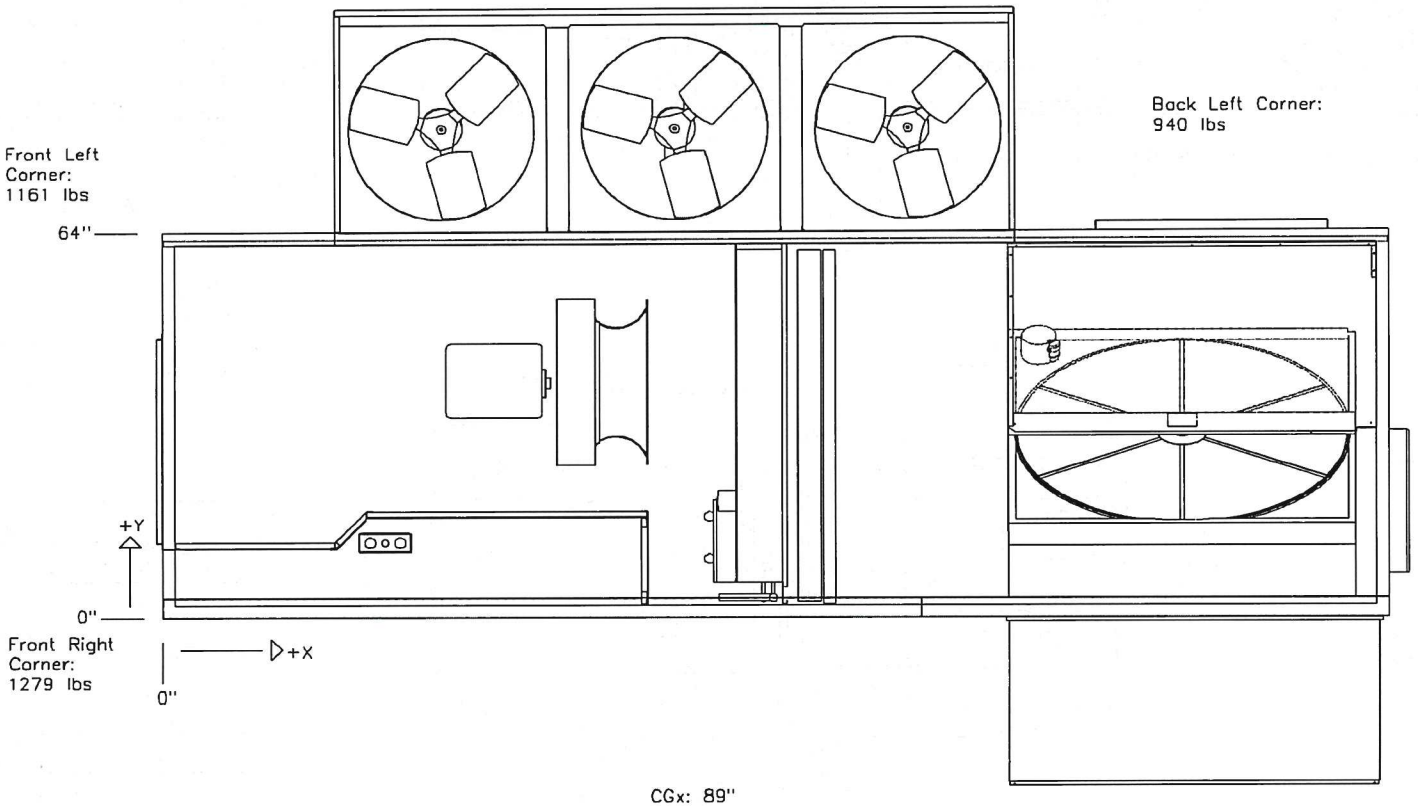
RNC-H0002 REV:C 04-11-17 AAS
ALL DIMENSIONS ARE IN INCHES
TOLERANCE IS +/- 1/4

CONDENSER FAN CONFIGURATION
11 - 20 TON - 2 FANS
25 & 30 TON - 3 FANS

EXHIBIT 'C'

RNC HORIZONTAL CABINET
AIR COOLED CONDENSING UNIT
WITH HEATWHEEL

RNA-020-C-0-8-DAA0A-DB1L0:0Z-DRAK-QAA-0000-CLBK-EC-000E-H0-E0-0-BR0-EB-N000-00-000-B00F00-C00A00-000000X



Disclaimer:
This weight estimate does not account for any SPAs.

EXHIBIT 'C'

APPENDIX “C”

Existing Conditions Drawings

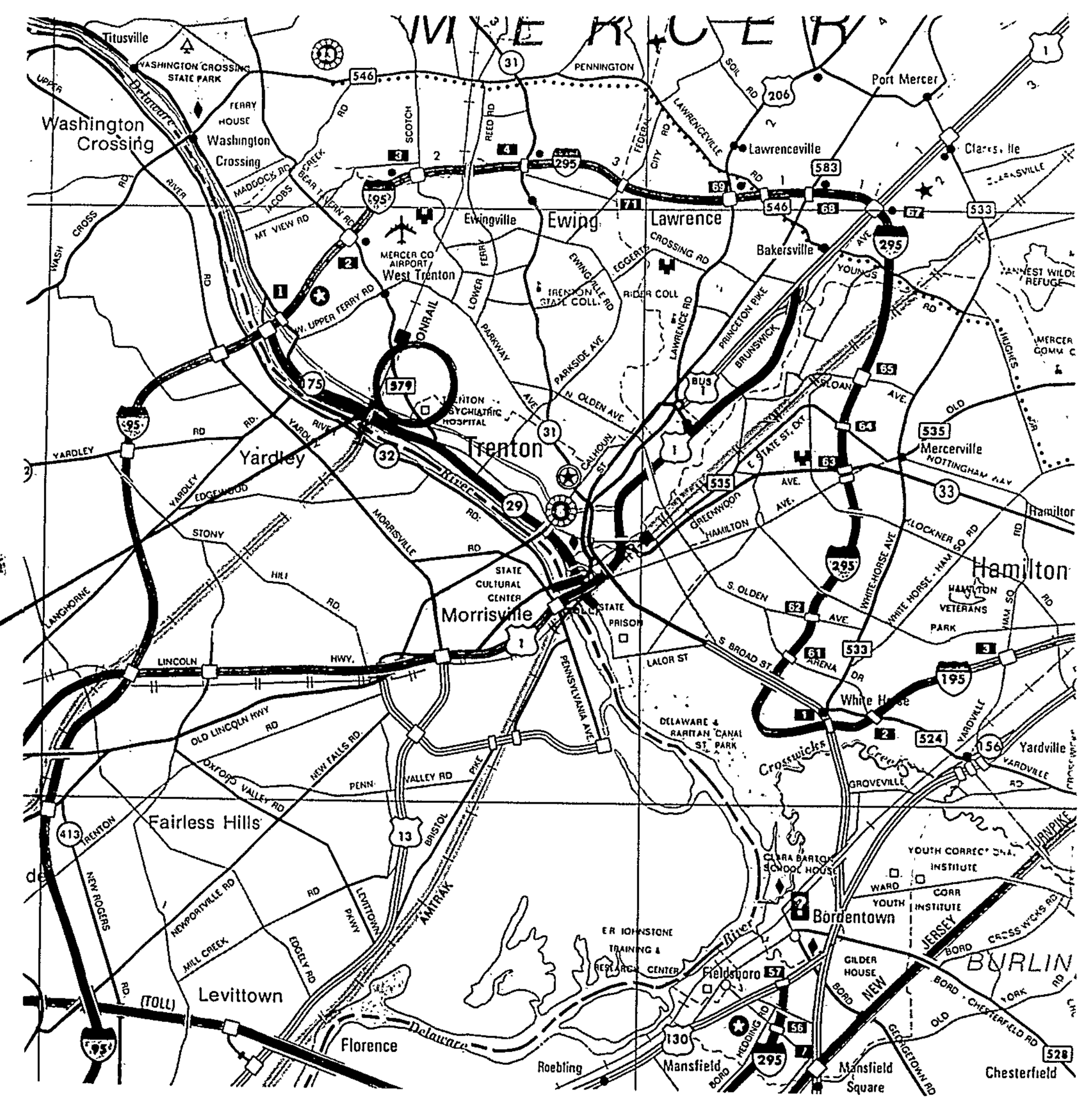
EXHIBIT 'C'

STATE OF NEW JERSEY

HONORABLE CHRISTINE TODD WHITMAN
Governor

EMERGENCY ROOF REPLACEMENT
MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL, BUILDING NO. 26
320 SULLIVAN WAY
WEST TRENTON, NEW JERSEY
DBC PROJECT NO. E0252-00

LOCATION MAP



MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL, BUILDING NO. 26
320 SULLIVAN WAY
WEST TRENTON, NEW JERSEY

DEPARTMENT OF TREASURY
Brian W. Clymer, State Treasurer

DEPARTMENT OF EDUCATION
Leo Klagholz, Commissioner

DIVISION OF BUILDING AND CONSTRUCTION
Russell R. Hart, Director

Paul Staudt Jr., RA, State Architect

________________________ DATE

ARMM ASSOCIATES, INCORPORATED
P.O. BOX 229
GLOUCESTER CITY, NEW JERSEY 08030

GENERAL NOTES

The contractor will inform the owner in advance of the section of roof to be worked on the following day so that the owner's personnel may make proper preparations to protect equipment and records from the dirt and debris which may fall

The grounds, including lawns, shrubs and buildings will be protected from all damage All which is damaged will be repaired to the satisfaction of the owner

No roof area will be left uncompleted overnight The contractor will construct as specified watertight waterstops at the end of each day's work or at the sign of inclement weather

It will be the contractor's responsibility to collect and account for all identification passes which may be issued to his personnel either at the end of the contract or when no longer required The contractor will comply with all security regulations currently enforced by the owner and/or township Contractor's personnel will not be permitted inside the building at anytime except with the permission of the owner

The owner and the owner's representatives will have free access to all portions of the work site at all times for the purpose of monitoring the work

The contractor will maintain one set of these plans and associated specifications on the roof at all times for reference while his forces are working on the roof

During construction, the contractor will maintain a clearly delineated set of marked prints of the contract drawings denoting any changes (either field or by amendment) in design or materials. Upon completion of the work, the contractor will provide one complete set of marked as-built drawings to the owner

Existing curb heights for ventilators, skylights etc are indicated on the roof plan thusly, (8") All curb heights shall be a minimum of 8" high after the insulation and membrane are installed If the existing curb heights are inadequate then the contractor will provide additional treated wood blocking secured to the top of the curbs to maintain a minimum of 8" flashing height

Store materials to prevent damage Stock insulation on supports to allow air to pass under the insulation and to prevent surface water from having contact with the insulation Cover insulation with canvas tarps, (do not use polyethylene film) ventilate to prevent heat buildup

In the event it becomes necessary to apply a two-ply membrane system to cover insulation because of inclement weather or unforeseen job conditions. The roofing contractor will still be responsible for applying an additional three plies over the previously installed temporary roofing

ABBREVIATIONS

A/C	AIR CONDITIONER	LT	LIGHT
A.S.	ALONG SLOPE	MAX	MAXIMUM
ALUM	ALUMINUM	MIN	MINIMUM
BLKG	BLOCKING	M.R.V.	MOISTURE RELIEF VENT
CEM	CEMENT	MECH.	MECHANICAL
C.I.	CAST IRON	MTL	METAL
CO	CLEAN OUT	O/C	ON CENTER
C.S.B.	CONCRETE SPLASH BLOCK	OVFL.	OVERFLOW
		O.H.	OVERHANG
COP	COPPER	O.S.	OFFSET
D	DOWN	OZ.	OUNCE
DM	DECK MOUNT	PLYW.	PLYWOOD
ø	DIAMETER	P.P.	PITCH POCKET
D.S.	DOWN SPOUT	PREFAB.	PREFABRICATED
D.SL.	DRAIN SLEEVE	R	RIDGE
E.J.	EXPANSION JOINT	RA	ROOF AREA
		RD	ROOF DRAIN
E.S.	EDGE SCUPPER	SECT	SECTION
EXIST	EXISTING	SL	SKYLIGHT
FT	FOOT	SPEC	SPECIFICATION
GNV	GOOSE NECK VENTILATOR	⌷	SQUARE
		S.S.	STAINLESS STEEL
GV	GRAVITY VENT	T&B	TOP & BOTTOM
GYP	GYPSUM	T&G	TONGUE & GROOVE
H.	HEIGHT	TYP	TYPICAL
H.P.	HOT PIPE	TWS	THRU- WALL SCUPPER
INS	INSULATION	V	VALLEY
JT	JOINT	VENT	VENTILATOR
L	LEAD	V.S.	VENT STACK
LB.	POUND	W/	WITH
L.C.C.	LEAD-COATED COPPER	WD	WOOD
		WH	WEEP HOLE

DRAWING LIST

OWNER:
STATE OF NEW JERSEY
HONORABLE CHRISTINE TODD WHITMAN, GOVERNOR
DEPARTMENT OF TREASURY
GENERAL SERVICES ADMINISTRATION
DIVISION OF BUILDING & CONSTRUCTION
CN 235
TRENTON, NEW JERSEY 08625-0235

JOB TITLE: EMERGENCY ROOF REPLACEMENT
MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL BUILDING NO. 26
WEST TRENTON, NEW JERSEY

SHEET TITLE: PROJECT COVER SHEET

REF. NO. 96038

SHEET NO. 0896089

RUSSELL R. HART, DIRECTOR

PAUL STAUDT JR., RA, STATE ARCHITECT

DBC PROJECT NO. E0252-00

CONSULTANT:
ARMM ASSOCIATES, INC.
P.O. BOX 229
GLOUCESTER CITY, NEW JERSEY 08030

DRAWING NUMBER: 1 OF 8

N.J. Masonry & Roofing, In
2720 Sherman Avenue
Camden New Jersey 08

ASBUILTS

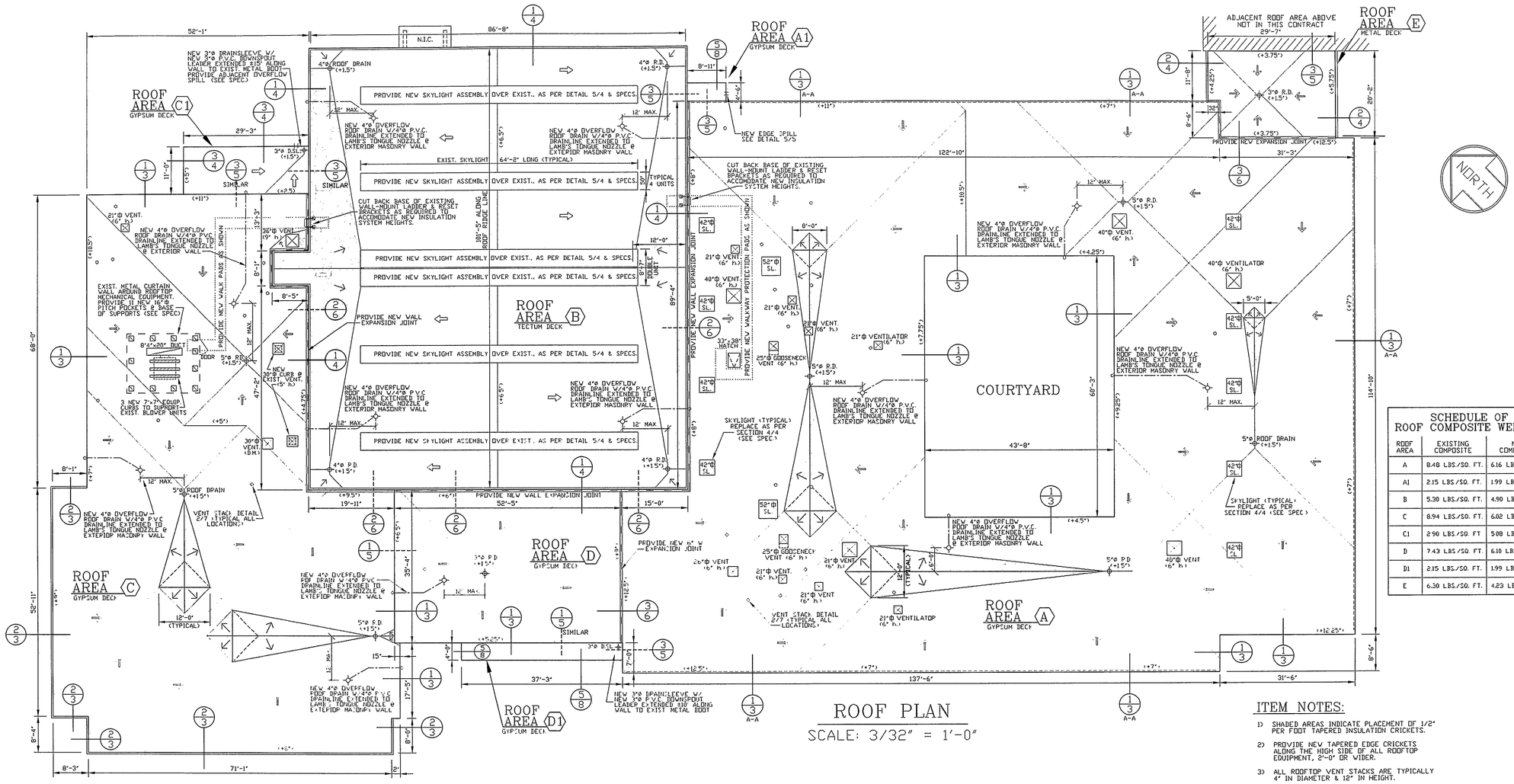
EDWARD J. ZINSKI, DIRECTOR
NJ #35608

DATE 8-19-96

DRAWN BY: D.D.T. | APPROVED BY: F.J.M. | SCALE. AS NOTED

24X

EXHIBIT 'C'



ROOF PLAN

SCALE: 3/32" = 1'-0"

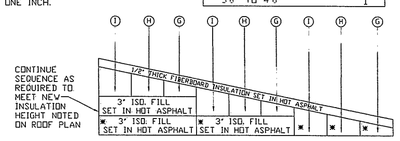
SCHEDULE OF ROOF COMPOSITE WEIGHTS		
ROOF AREA	EXISTING COMPOSITE	NEW COMPOSITE
A	8.48 LBS./SQ. FT.	6.16 LBS./SQ. FT.
A1	2.15 LBS./SQ. FT.	1.99 LBS./SQ. FT.
B	5.30 LBS./SQ. FT.	4.90 LBS./SQ. FT.
C	8.94 LBS./SQ. FT.	6.02 LBS./SQ. FT.
C1	2.90 LBS./SQ. FT.	5.08 LBS./SQ. FT.
D	7.43 LBS./SQ. FT.	6.10 LBS./SQ. FT.
D1	2.15 LBS./SQ. FT.	1.99 LBS./SQ. FT.
E	6.30 LBS./SQ. FT.	4.23 LBS./SQ. FT.

ITEM NOTES:

1) SHADED AREAS INDICATE PLACEMENT OF 1/2" PER FOOT TAPERED INSULATION CRICKETS.
2) PROVIDE NEW TAPERED EDGE CRICKETS ALONG THE HIGH SIDE OF ALL ROOFTOP EQUIPMENT, 2'-0" OR WIDER.
3) ALL ROOFTOP VENT STACKS ARE TYPICALLY 4" IN DIAMETER & 12" IN HEIGHT.
4) CONTRACTOR SHALL INCLUDE IN THE BASE BID THE PROVISION OF TEN (10) 3"x4"x3/4" THICK PROTECTION PADS, IN ADDITION TO THOSE SHOWN ON THE ROOF PLAN. PLACEMENT OF THE TEN EXTRA PADS SHALL AS DIRECTED BY THE OWNER.

1/2" THICK HIGH-DENSITY FIBERBOARD INSULATION SET IN HOT ASPHALT OVER 1/4" PER FOOT TAPERED ISOCYANURATE INSULATION W/A MINIMUM THICKNESS OF ONE INCH.

4' x 4' PANELS	LABEL
1.0" TO 2.0"	G
2.0" TO 3.0"	H
3.0" TO 4.0"	I

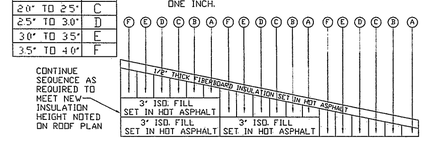


* ON ROOF AREA E, BASE LAYER OF ISOCYANURATE INSULATION SHALL BE MECHANICALLY-ATTACHED TO THE EXIST. METAL DECK

1/4" PER FOOT TAPERED ISOCYANURATE INSULATION SYSTEM
NOT TO SCALE
ALL ROOF AREAS EXCEPT AREAS A1, B, C1 & D1

1/2" THICK HIGH-DENSITY FIBERBOARD INSULATION SET IN HOT ASPHALT OVER 1/8" PER FOOT TAPERED ISOCYANURATE INSULATION W/A MINIMUM THICKNESS OF ONE INCH.

4' x 4' PANELS	LABEL
1.0" TO 1.5"	A
1.5" TO 2.0"	B
2.0" TO 2.5"	C
2.5" TO 3.0"	D
3.0" TO 3.5"	E
3.5" TO 4.0"	F



1/8" PER FOOT TAPERED ISOCYANURATE INSULATION SYSTEM
NOT TO SCALE
ROOF AREAS B & C1 ONLY

DRAWING LEGEND

- VENTILATOR
- ROOF HATCH (ROOF AREA A)
- ROOF DRAIN/DRAINSLEEVE
- OVERFLOW DRAIN
- OVERFLOW OR EDGE SPILL
- OVERFLOW DRAINLINE W/NOZZLE FITTING
- BLOWER UNITS W/ EQUIPMENT CURBS (ROOF AREA C)
- WALL-MOUNT LADDER (ROOF AREA B)
- TAPERED INSULATION SLOPED @ 1/8" PER FT.
- TAPERED INSULATION SLOPED @ 1/4" PER FT.
- TAPERED CRICKET SLOPED @ 1/2" PER FT.
- PERIMETER W/LEDGE
- PITCH POCKET
- VENT STACK
- UNIT CURTAIN WALL (ROOF AREA C)
- DUCT THRU-ROOF (ROOF AREA C)
- EXPANSION JOINT
- ROOF OVERHANG (ROOF AREA A)
- WALKWAY PADS
- SKYLIGHT
- ROOF DETAIL DESIGNATION
- NEW INSULATION TAPER SYSTEM HEIGHT
- EXISTING ROOFTOP UNIT HEIGHT

OWNER:
STATE OF NEW JERSEY
HONORABLE CHRISTINE TODD WHITMAN, GOVERNOR
DEPARTMENT OF TREASURY
GENERAL SERVICES ADMINISTRATION
DIVISION OF BUILDING & CONSTRUCTION
CN 235
TRENTON, NEW JERSEY 08625-0235

RUSSELL R HART, DIRECTOR
PAUL STAUDT JR., RA, STATE ARCHITECT
DBC PROJECT NO. E0252-00

N.J. Masonry & Roofing, Inc.
2720 Sherman Avenue
Camden, New Jersey 08105

JOB TITLE: EMERGENCY ROOF REPLACEMENT
MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL BUILDING NO 26
WEST TRENTON, NEW JERSEY

SHEET TITLE: ROOF PLAN & DETAILS
REF. NO. 96038
SHEET NO. 0896090

CONSULTANT:
ARMM ASSOCIATES, INC.
P.O. BOX 229
GLOUCESTER CITY, NEW JERSEY 08030

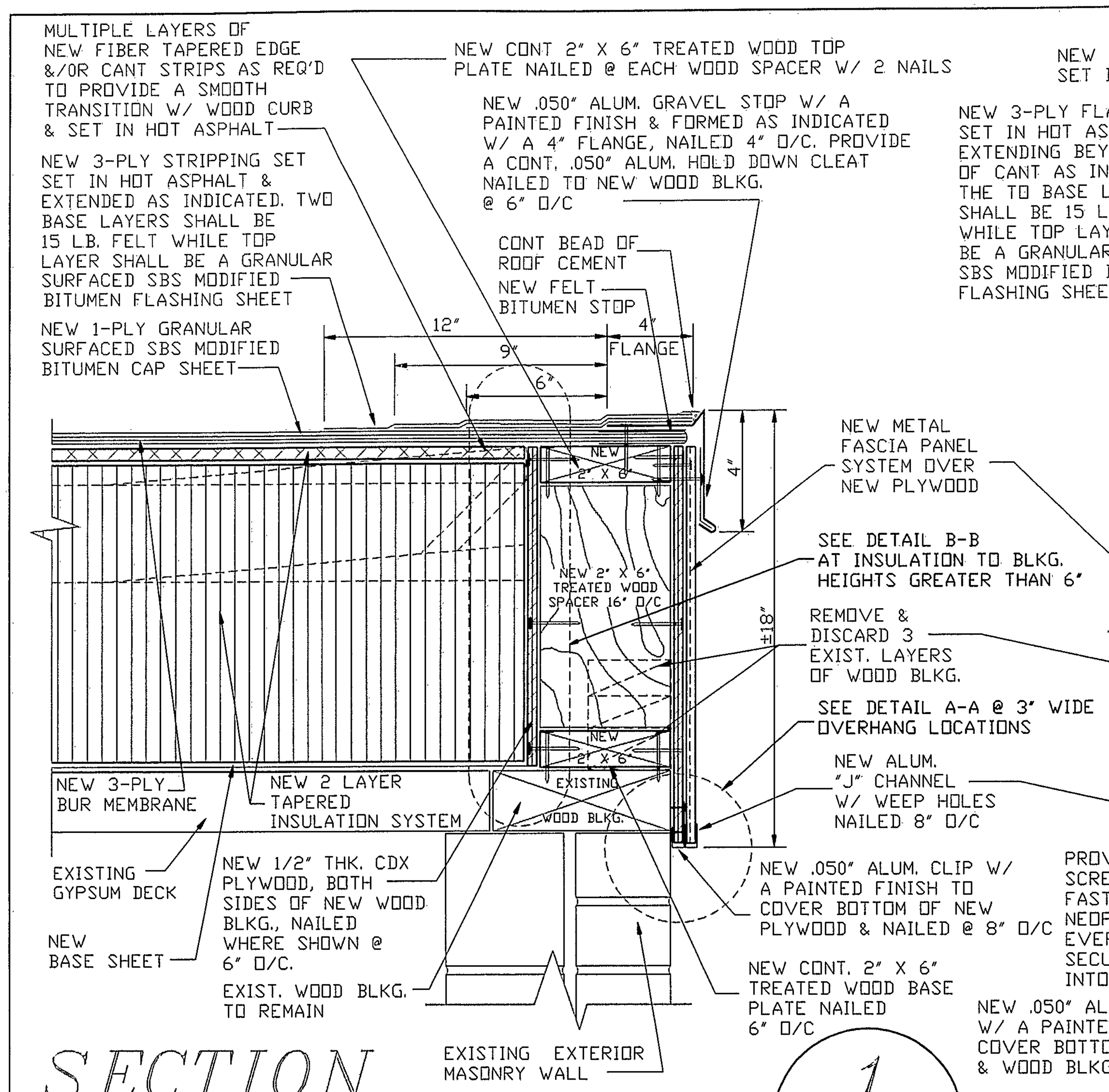
EDWARD J. ZINSKI, DIRECTOR
NJ #35608

DRAWING NUMBER: 2 OF 8
DATE 8-19-96

DRAWN BY: D.D.T. | APPROVED BY: F.J.M. | SCALE: AS NOTED

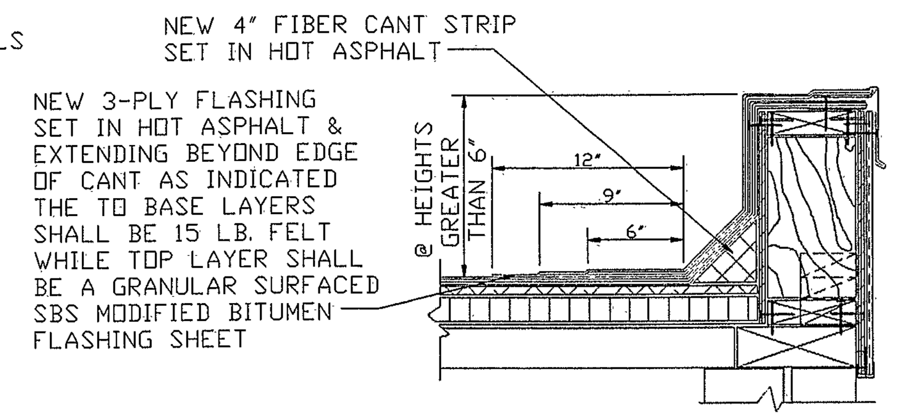
24X

EXHIBIT 'C'

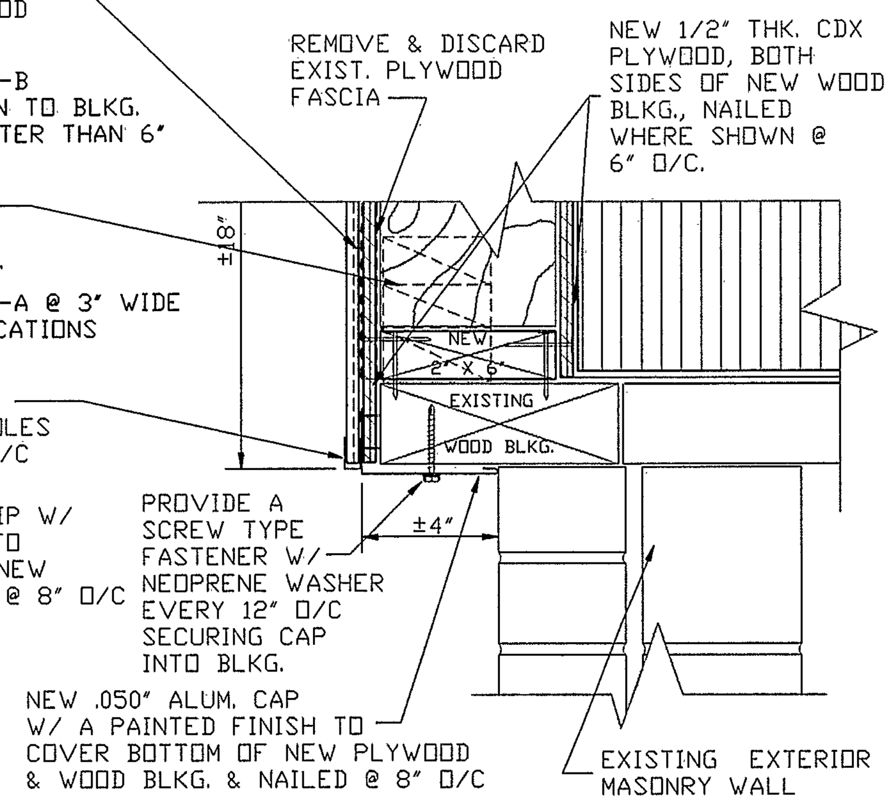


SECTION 1/3

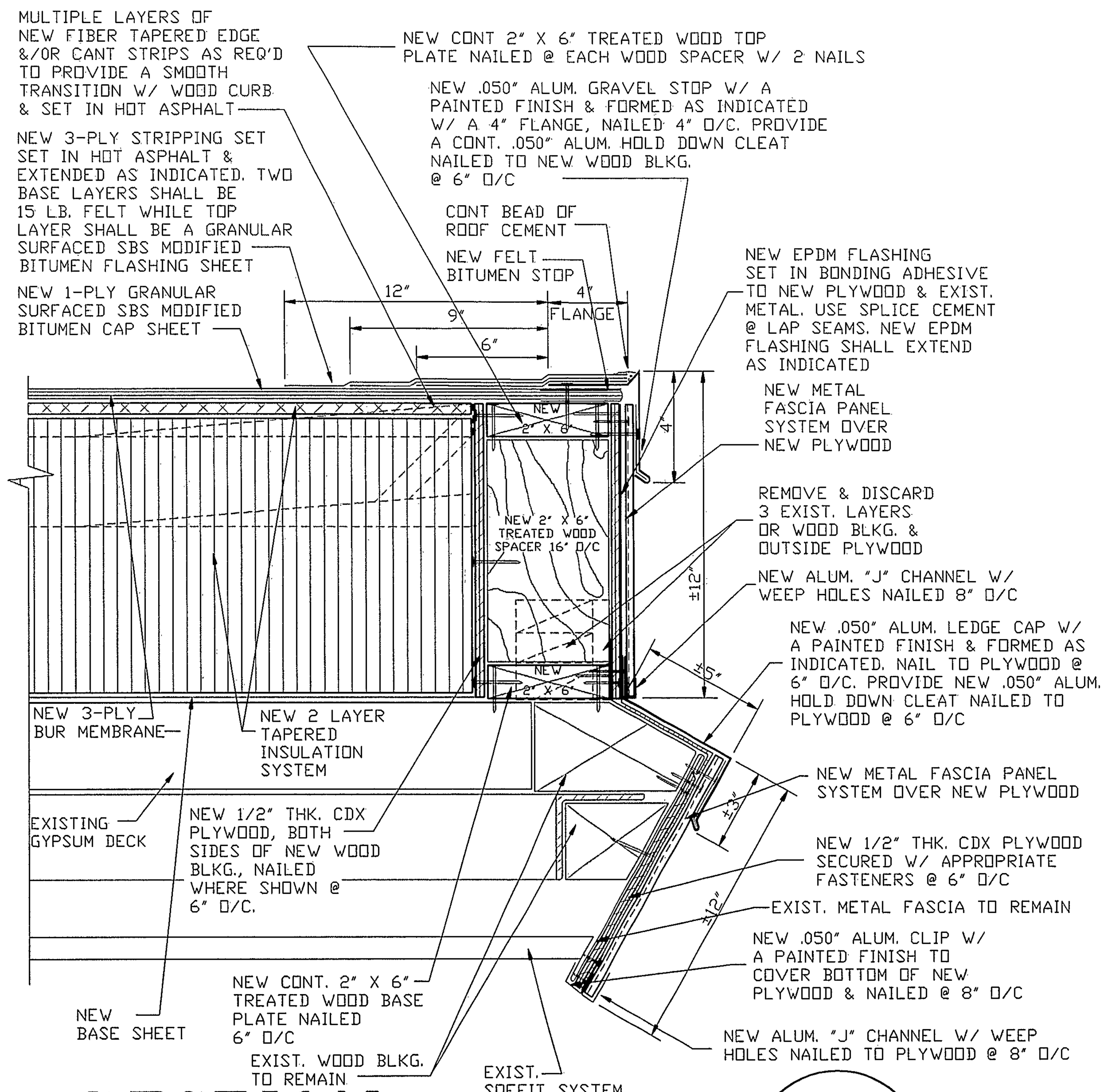
SCALE: 3" = 12"
TYPICAL PERIMETER GRAVEL STOP DETAIL @ ROOF AREAS A, C & D



DETAIL B-B
AT INSULATION TO BLKG. HEIGHTS GREATER THAN 6"
SCALE: 1 1/2" = 12"

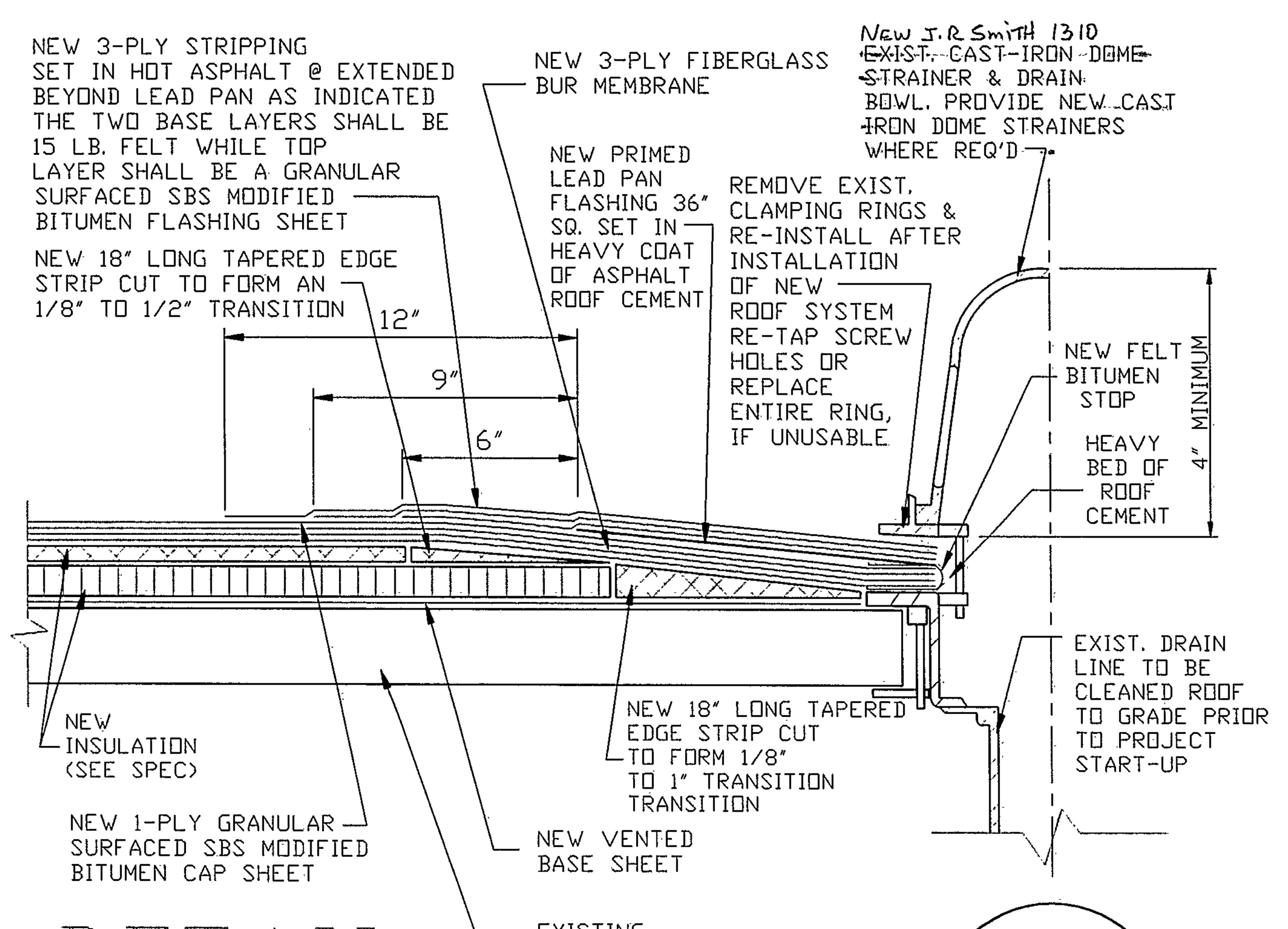


DETAIL A-A
AT OVERHANG LOCATIONS
SCALE: 3" = 12"



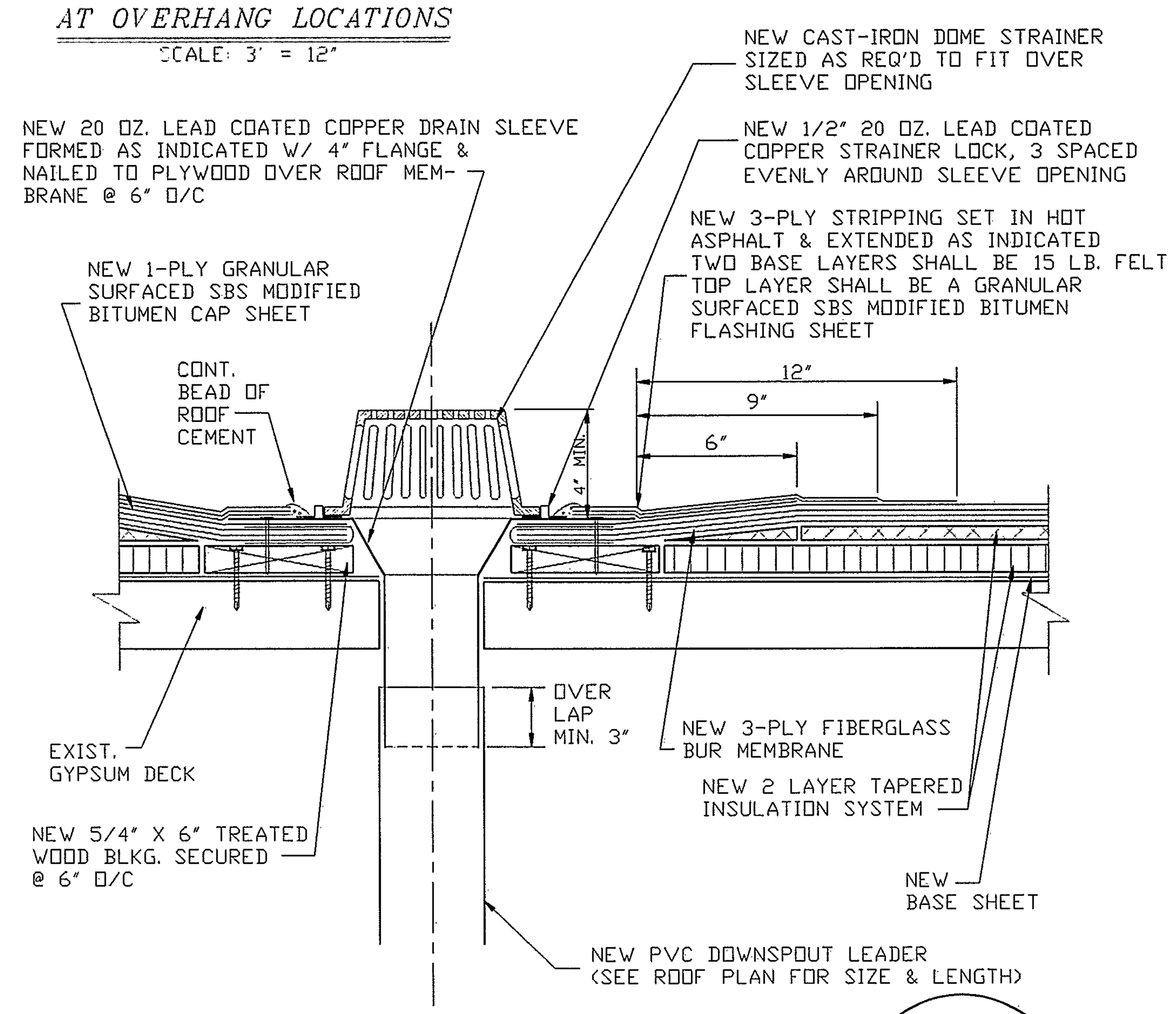
SECTION 2/3

SCALE: 3" = 12"
TYPICAL PERIMETER GRAVEL STOP DETAIL @ ROOF AREA C ONLY



DETAIL 3/3

SCALE: 3" = 12"
TYPICAL ROOF DRAIN DETAIL
ALL ROOF AREAS EXCEPT A1, C1 & D1



SECTION 4/3

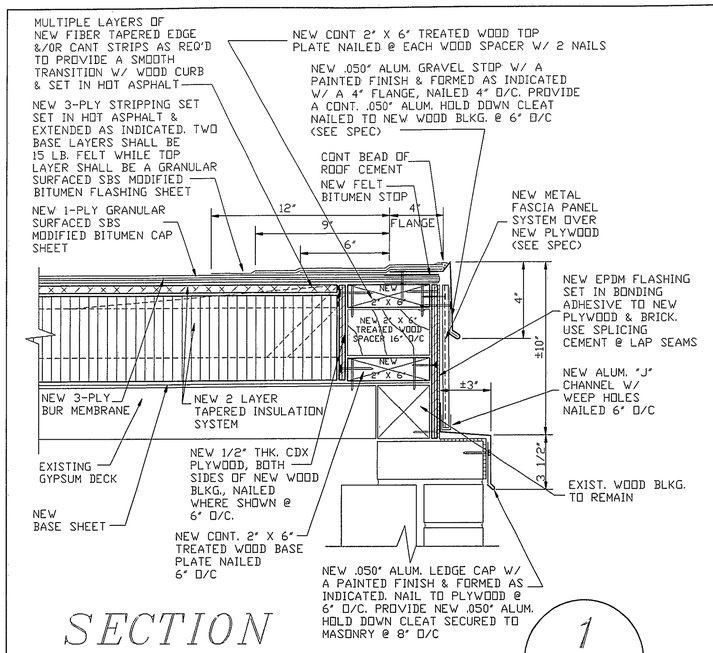
SEE ROOF PLAN FOR SLEEVE SIZE

SCALE: 3" 12"
TYPICAL DRAIN SLEEVE DETAIL @ ROOF AREA C1 ONLY

OWNER: STATE OF NEW JERSEY HONORABLE CRISTINE TODD WHITMAN, GOVERNOR DEPARTMENT OF TREASURY DIVISION OF BUILDING & CONSTRUCTION CN 235 TRENTON, NEW JERSEY 08625-0235	JOB TITLE: EMERGENCY ROOF REPLACEMENT MARIE H. KATZENBACH SCHOOL FOR THE DEAF ACADEMIC HIGH SCHOOL BUILDING NO 26 WEST TRENTON, NEW JERSEY
RUSSELL R. HART, DIRECTOR	SHEET TITLE: ROOF DETAILS — REF. NO. 96038 — SHEET NO. 0896091
PAUL STAUDT JR, RA, STATE ARCHITECT	CONSULTANT: ARMM ASSOCIATES, INC. P.O. BOX 229 GLOUCESTER CITY, NEW JERSEY 08030 — DRAWING NUMBER: 3 OF 8
DBC PROJECT NO. E0252-00	EDWARD J ZINSKI, DIRECTOR NJ #35608 — DATE 7-26-96
N.J. Masonry & Roofing, In 2720 Sherman Avenue Camden, New Jersey 08... As Built	
DRAWN BY: JWM — APPROVED BY: FJM	SCALE: AS NOTED

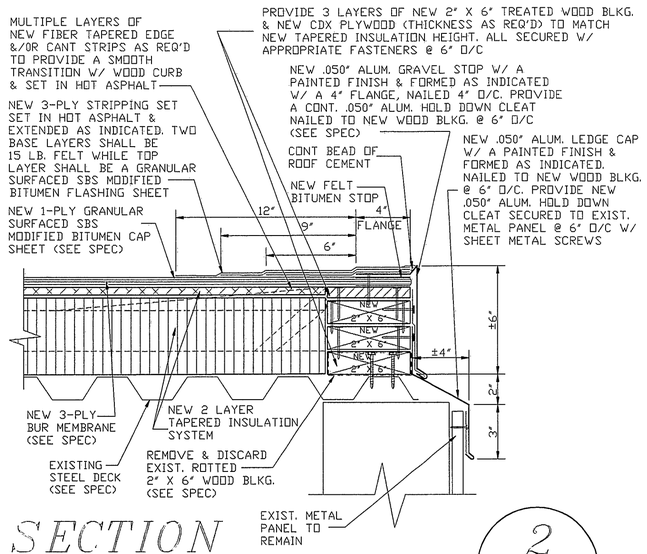
24X

EXHIBIT 'C'



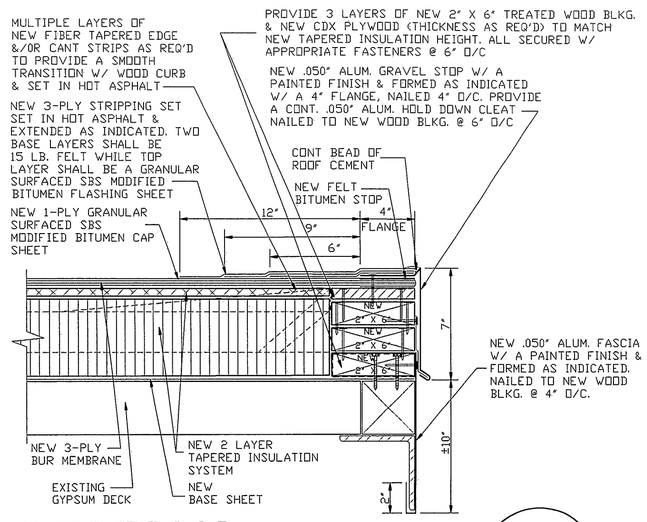
SECTION 1/4

SCALE: 3" = 12"
TYPICAL PERIMETER GRAVEL STOP DETAIL @ ROOF AREA B ONLY



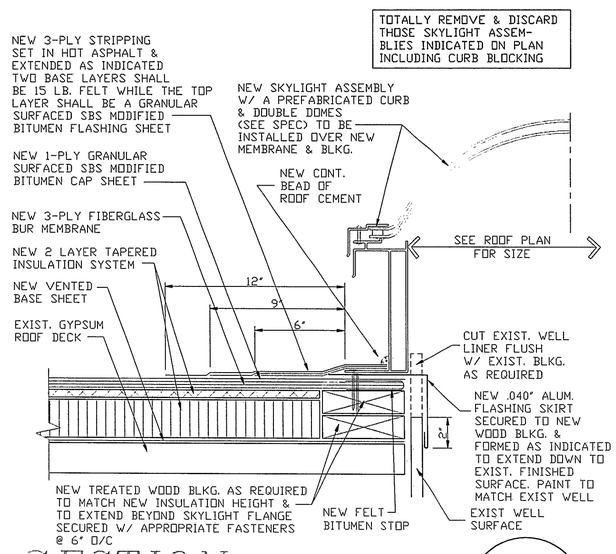
SECTION 2/4

SCALE: 3" = 12"
TYPICAL PERIMETER GRAVEL STOP DETAIL @ ROOF AREA E ONLY



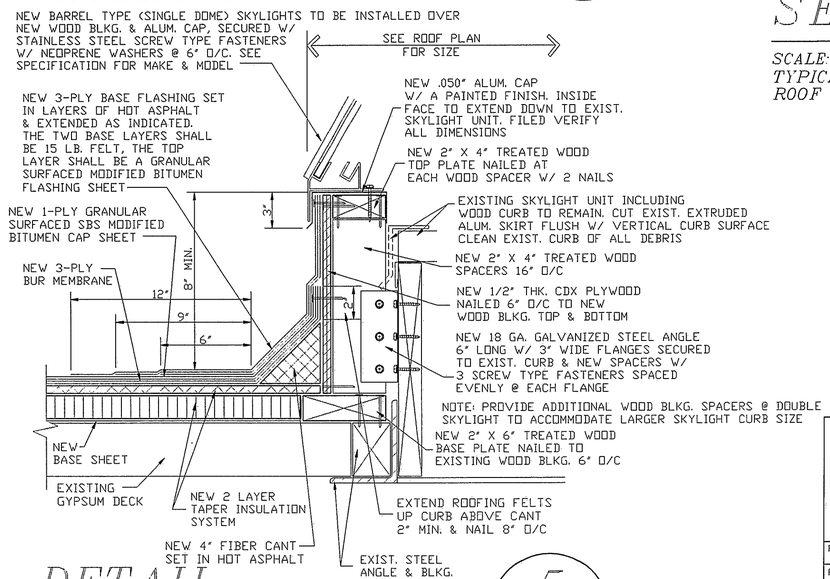
SECTION 3/4

SCALE: 3" = 12"
TYPICAL PERIMETER GRAVEL STOP DETAIL @ ROOF AREA C1



SECTION 4/4

SCALE: 3" = 12"
TYPICAL SKYLIGHT ASSEMBLY DETAIL



DETAIL 5/4

DRAWING NOT TO SCALE
NEW SKYLIGHT DOME DETAIL
ROOF AREA B

OWNER:
STATE OF NEW JERSEY
HONORABLE CRISTINE TODD WHITMAN, GOVERNOR
DEPARTMENT OF TREASURY
DIVISION OF BUILDING & CONSTRUCTION
CN 235
TRENTON, NEW JERSEY 08625-0235

RUSSELL R. HART, DIRECTOR
PAUL STAUDT JR., RA, STATE ARCHITECT
DBC PROJECT NO. E0252-00

J.J. Mongony & Roofing, Inc
2720 Sherman Avenue
Camden New Jersey 08105

JOB TITLE: EMERGENCY ROOF REPLACEMENT
MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL BUILDING NO 26
WEST TRENTON, NEW JERSEY

SHEET TITLE: ROOF DETAILS
REF. NO. 96028
SHEET NO. 0896092

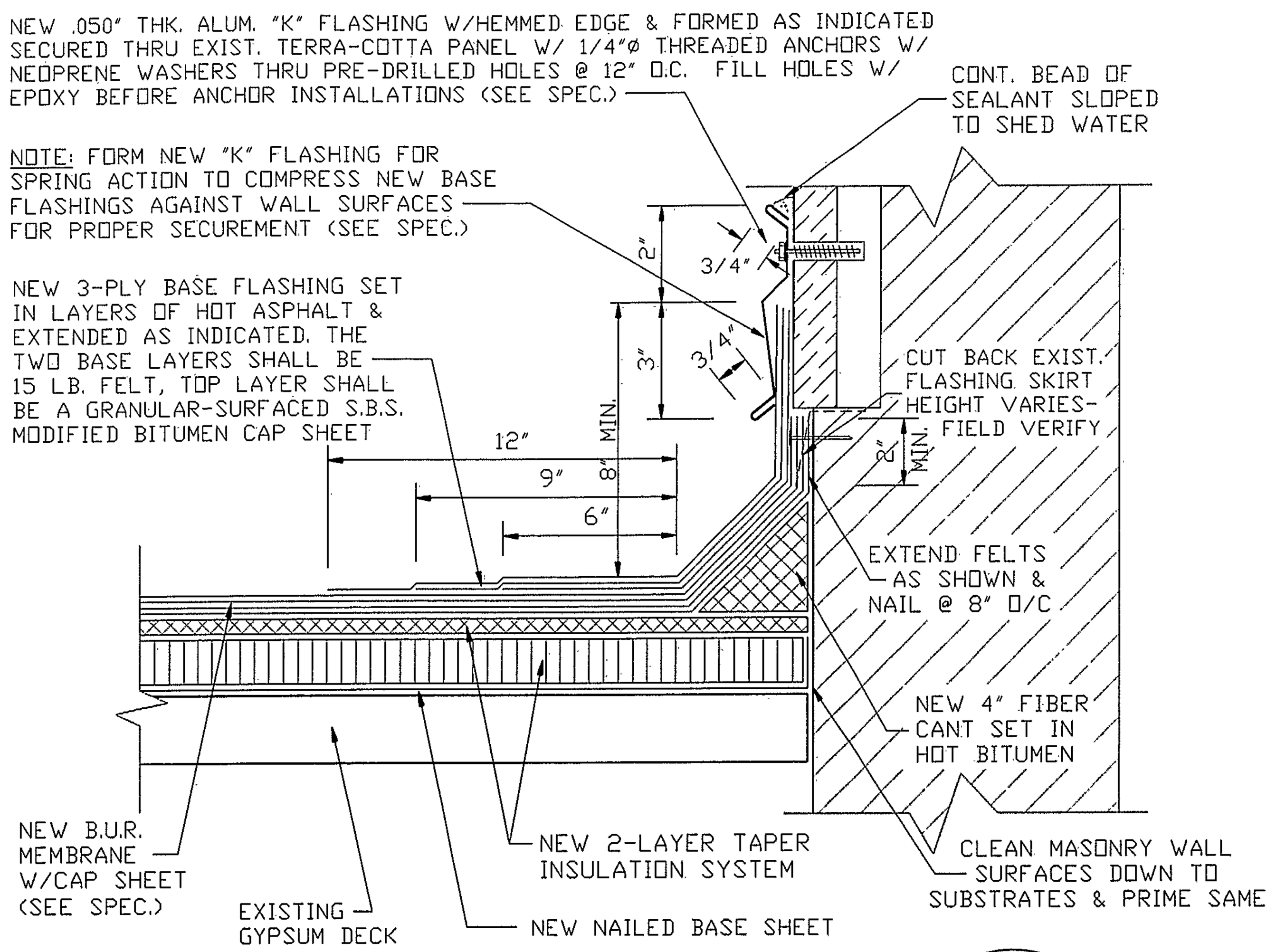
CONSULTANT:
ARMM ASSOCIATES, INC.
P.O. BOX 229
GLOUCESTER CITY, NEW JERSEY 08030
EDWARD J ZINSKI, DIRECTOR
NJ #35608

DRAWING NUMBER: 4 OF 8
DATE 8-19-96

DRAWN BY: JWM | APPROVED BY: FJM | SCALE: AS NOTED

24X

EXHIBIT 'C'



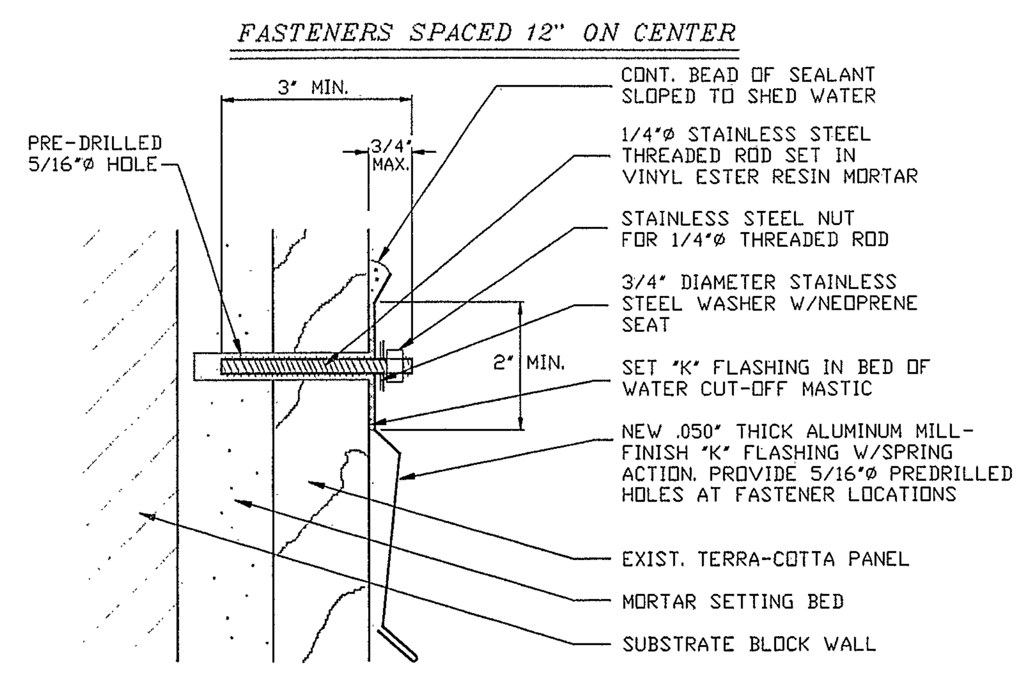
SECTION 1/5

SCALE: 3" = 12"

WALL FLASHING DETAIL @ ROOF AREA C

SIMILAR @ ROOF AREA D1

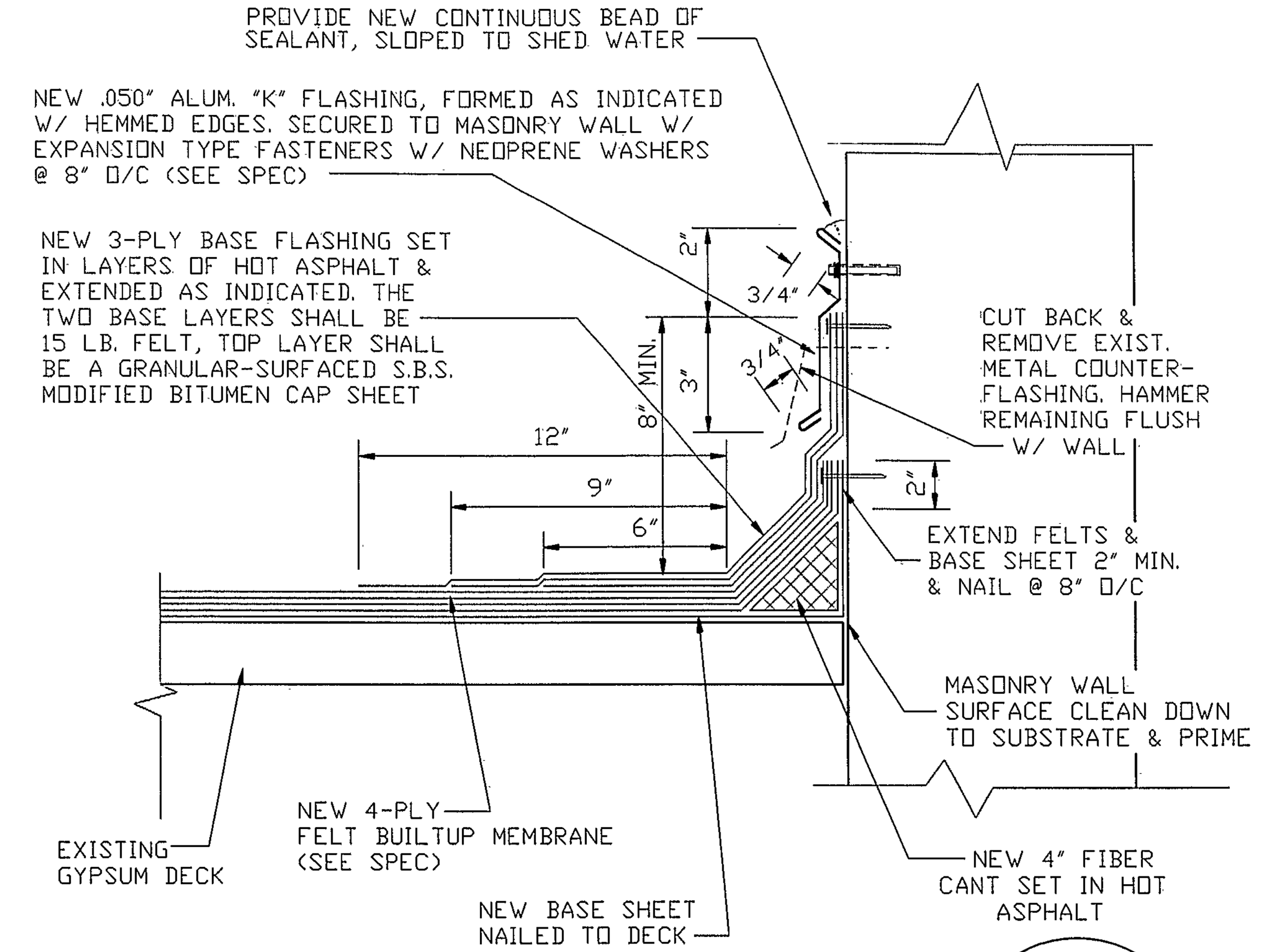
NOTE: FOR NEW MEMBRANE & FABRIC BASE FLASHING NOTES FOR ROOF AREA D1, SEE DETAIL 3/5.



DETAIL 2/5

SCALE: 1/2" = 1"

"K" FLASHING SECUREMENT TO TERRA-COTTA PANELS - ROOF AREAS C & D1

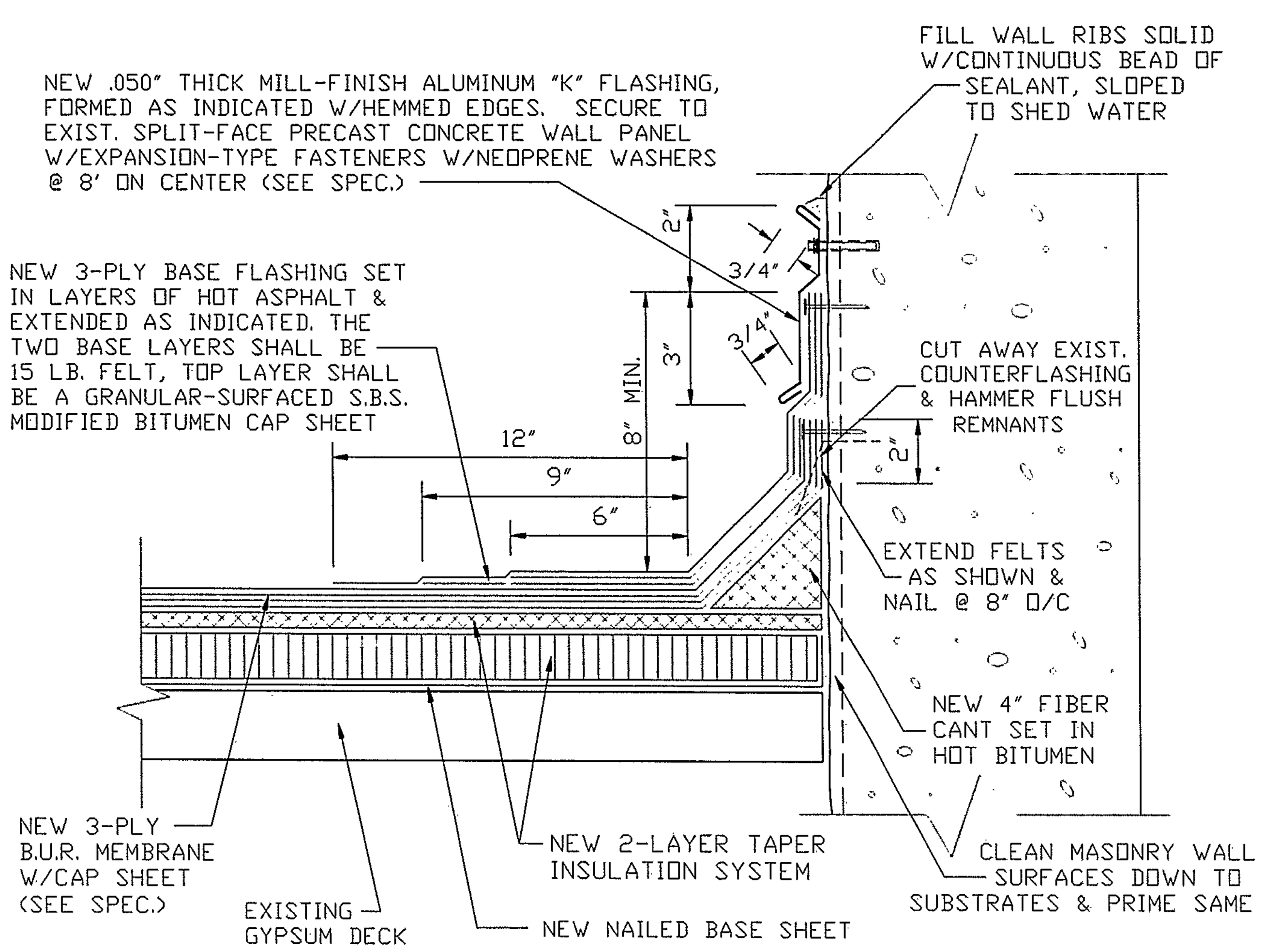


SECTION 3/5

DRAWING NOT TO SCALE

WALL FLASHING DETAIL

CANOPY ROOF AREAS A1 & D1

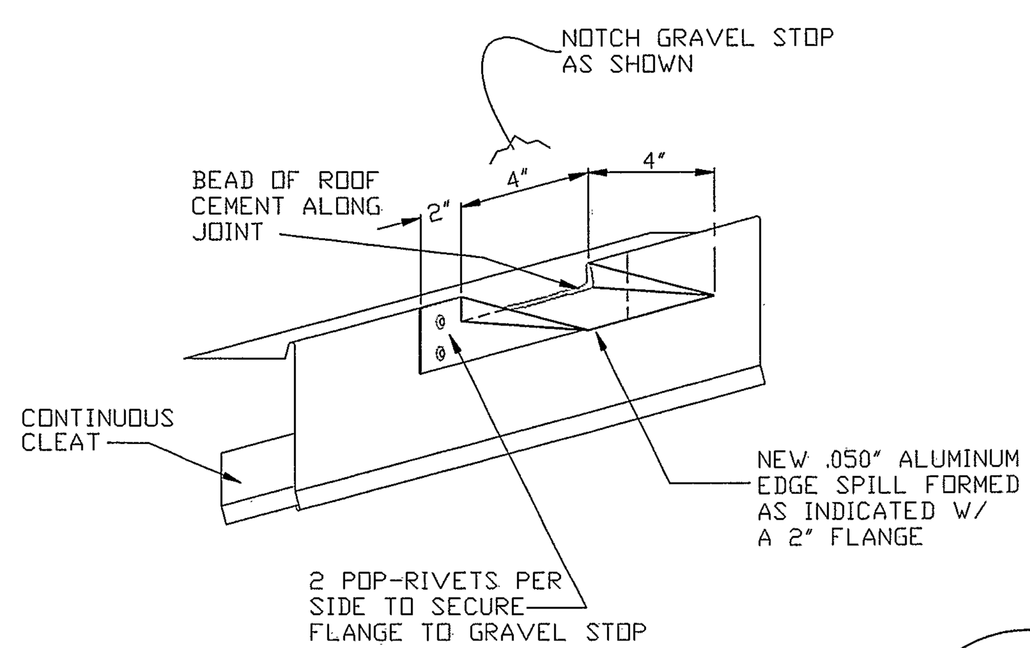


SECTION 4/5

SCALE: 3" = 12"

WALL FLASHING DETAIL @ ROOF AREA E

SIMILAR @ ROOF AREA C1

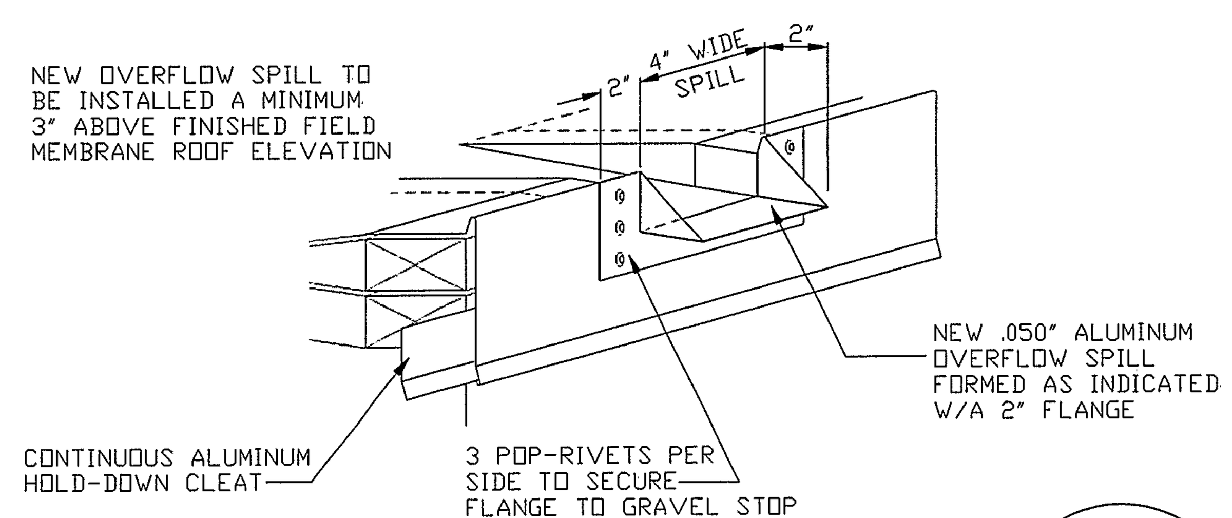


DETAIL 5/5

SCALE: 3" = 12"

EDGE SPILL

CANOPY ROOF AREA A1



DETAIL 6/5

SCALE: 3" = 12"

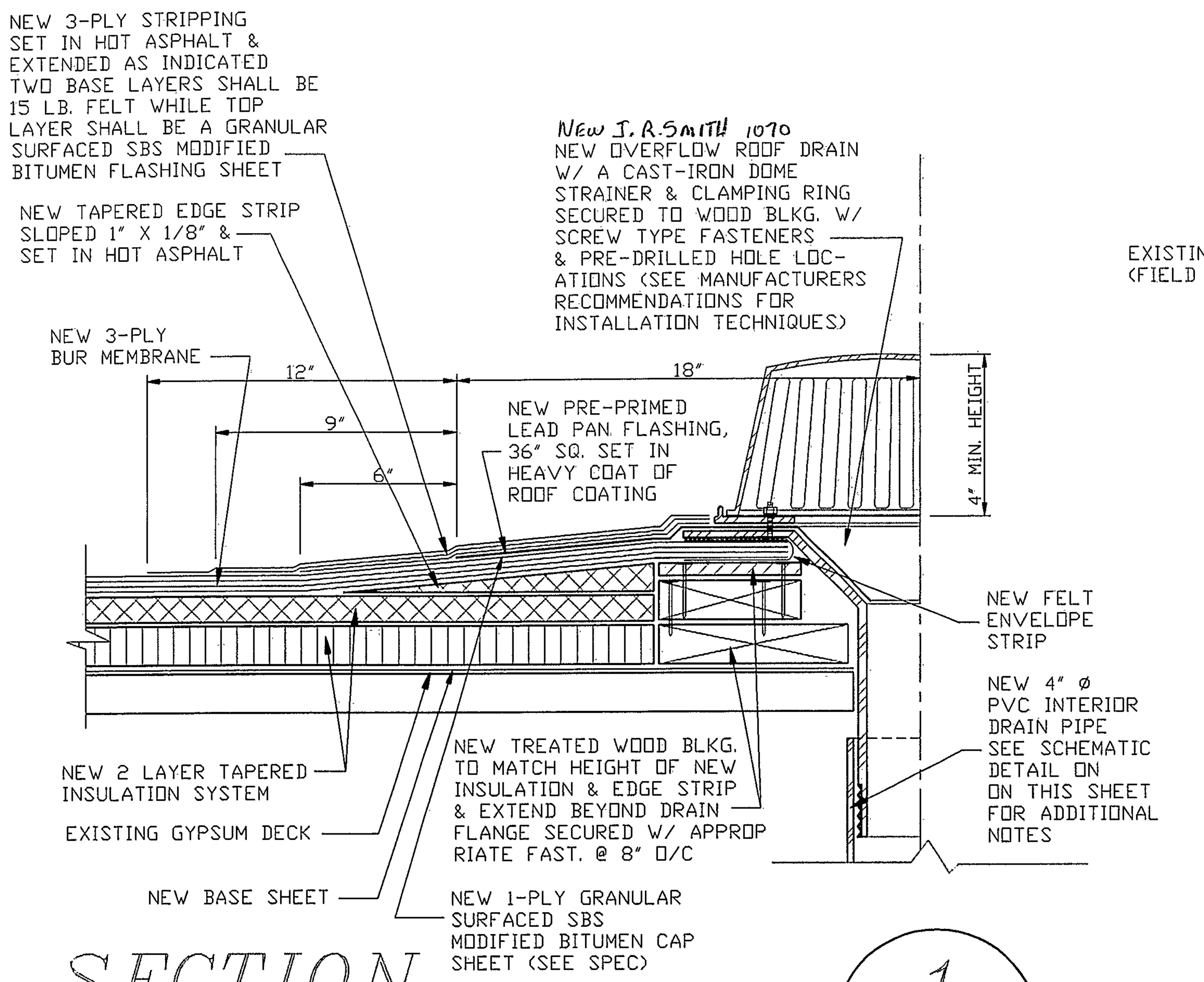
OVERFLOW EDGE SPILL

CANOPY ROOF AREA C1

OWNER: STATE OF NEW JERSEY HONORABLE CRISTINE TODD WHITMAN, GOVERNOR DEPARTMENT OF TREASURY DIVISION OF BUILDING & CONSTRUCTION CN 235 TRENTON, NEW JERSEY 08625-0235	JOB TITLE: EMERGENCY ROOF REPLACEMENT MARIE H. KATZENBACH SCHOOL FOR THE DEAF ACADEMIC HIGH SCHOOL BUILDING NO. 26 WEST TRENTON, NEW JERSEY	
RUSSELL R. HART, DIRECTOR	SHEET TITLE: ROOF DETAILS	REF. NO. 96038
PAUL STAUDT JR., RA, STATE ARCHITECT		SHEET NO. 0896093
DBC PROJECT NO. E0252-00	CONSULTANT: ARMM ASSOCIATES, INC. P.O. BOX 229 GLOUCESTER CITY, NEW JERSEY 08030	DRAWING NUMBER: 5 OF 8
Camden, New Jersey	EDWARD J. ZINSKI, DIRECTOR NJ #35608	DATE 8-19-96
DRAWN BY: D.D.T.	APPROVED BY: F.J.M.	SCALE: AS NOTED

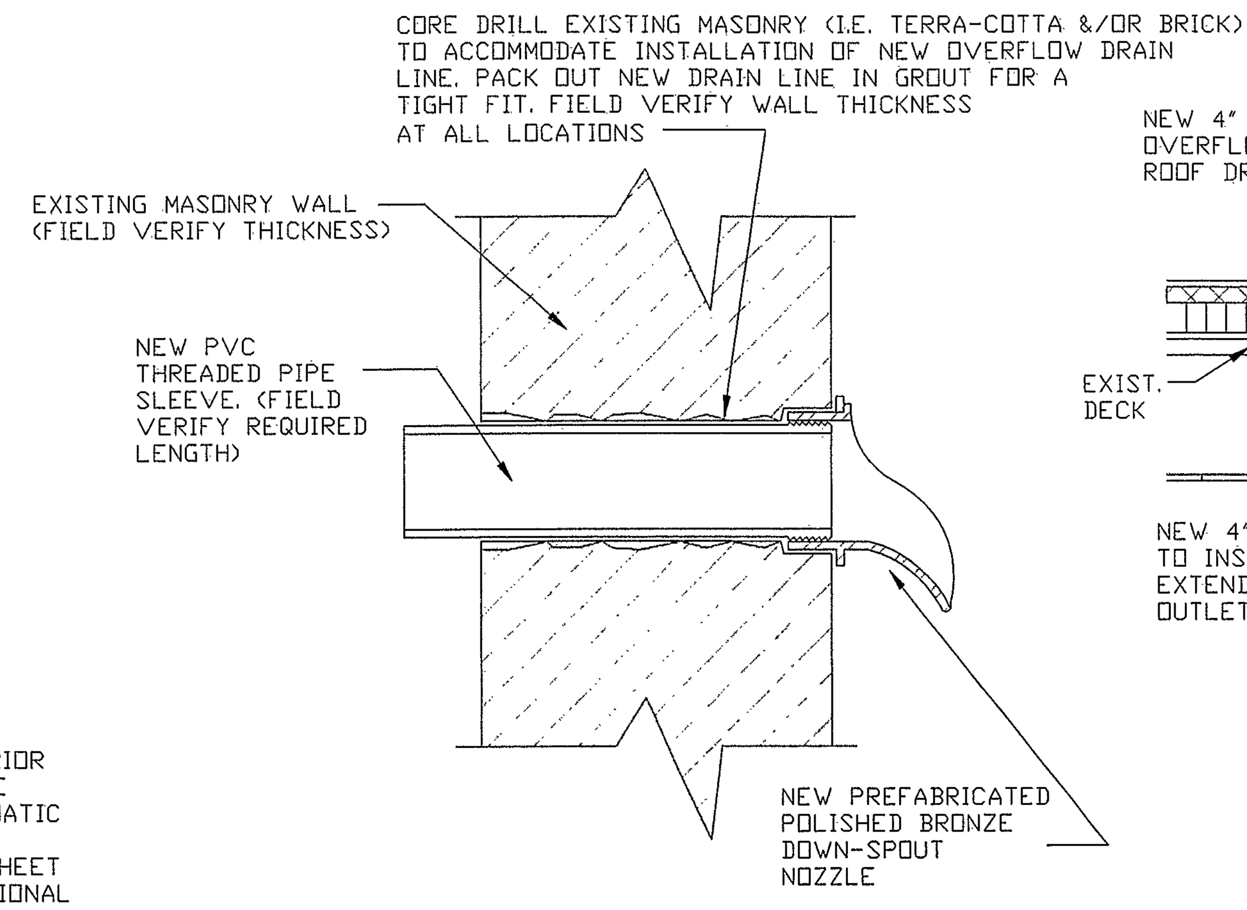
24X

EXHIBIT 'C'

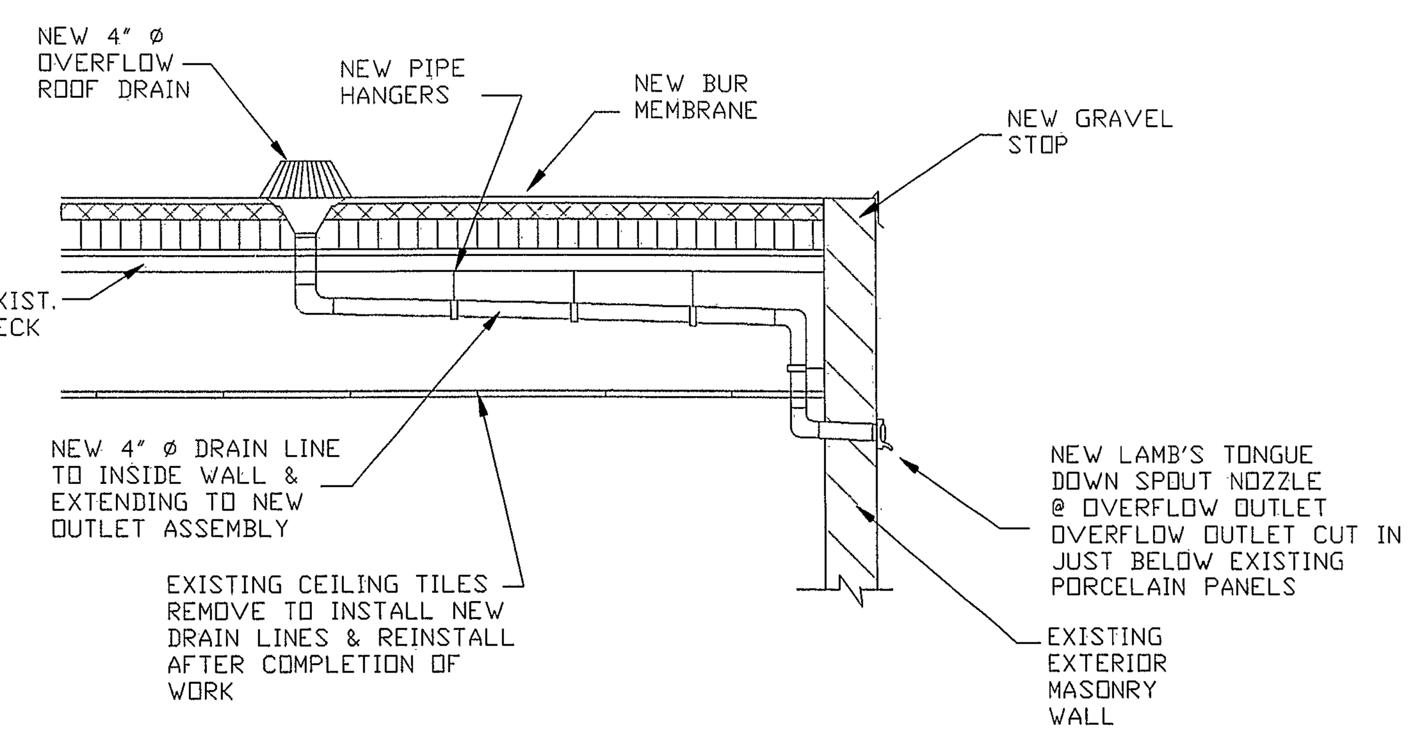


SECTION 1/6

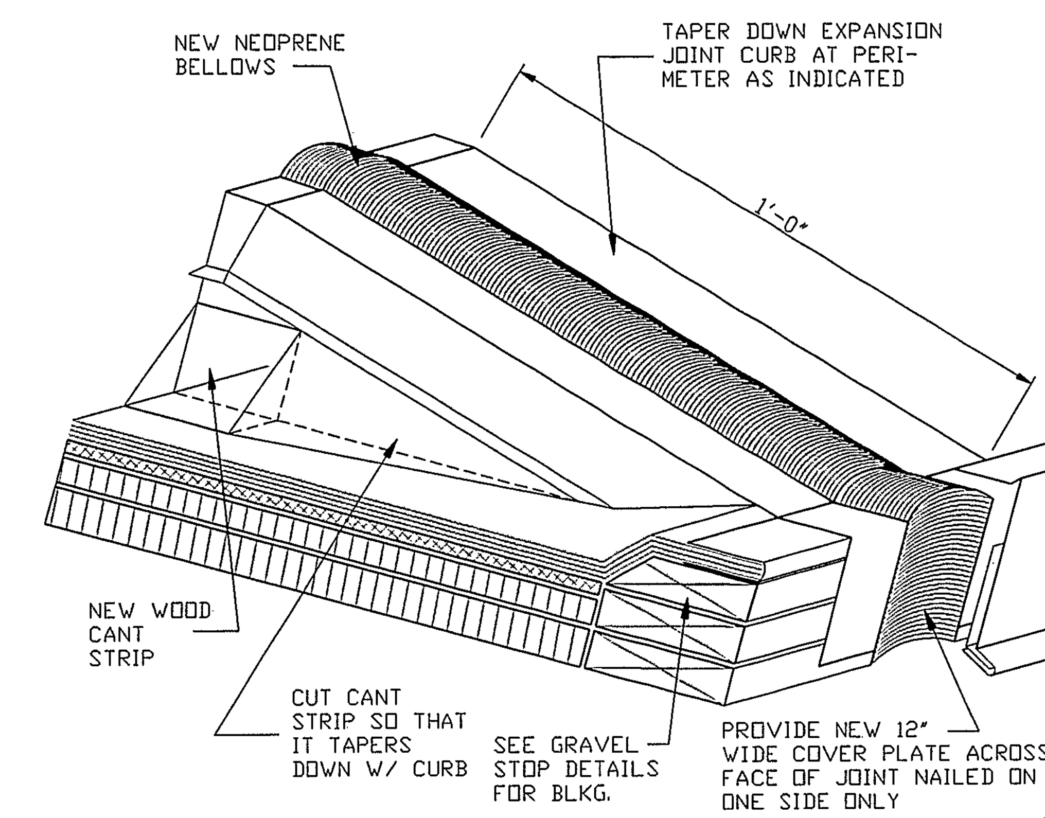
SCALE: 3" = 12"
TYPICAL OVERFLOW DRAIN DETAIL
(SEE ROOF PLAN FOR LOCATIONS)



LAMB'S TONGUE NOZZLE DETAIL
DRAWING NOT TO SCALE

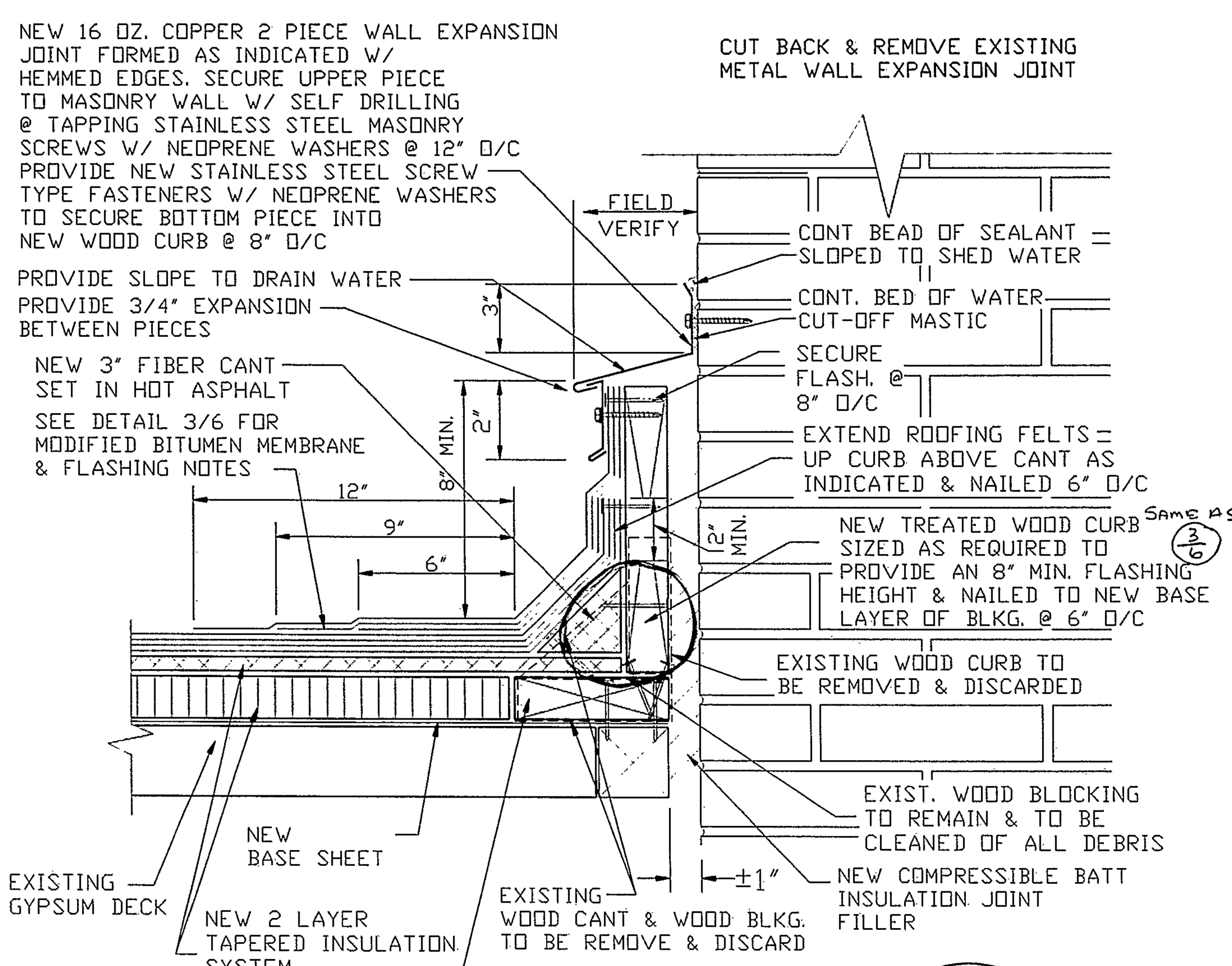


NEW OVERFLOW DRAIN PIPING SCHEMATIC
DRAWING NOT TO SCALE



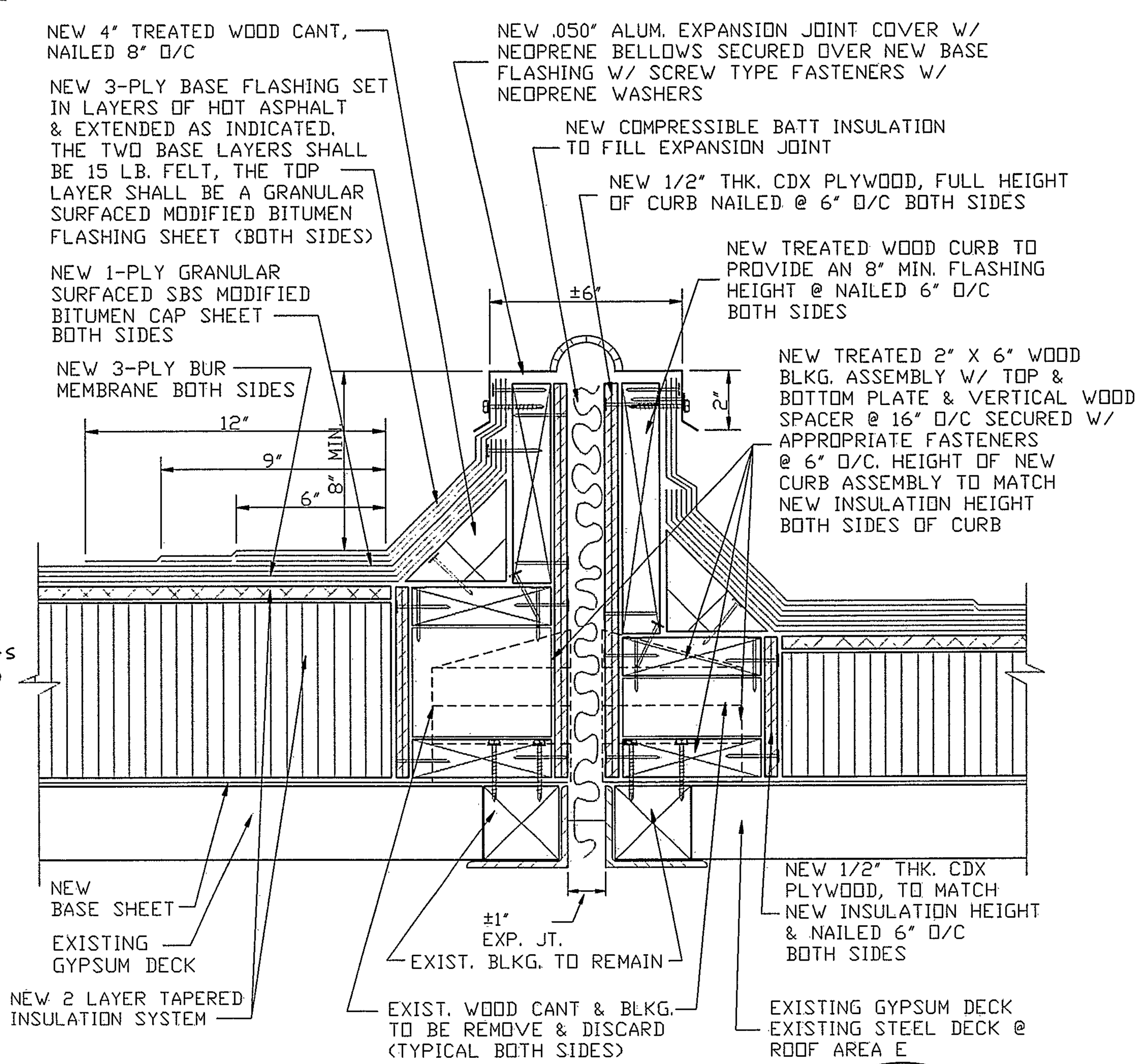
SECTION 4/6

DRAWING NOT TO SCALE
EXPANSION JOINT TERMINATION



SECTION 2/6

SCALE: 3" = 12"
WALL EXPANSION JOINT DETAIL
(SEE ROOF PLAN FOR LOCATION)



SECTION 3/6

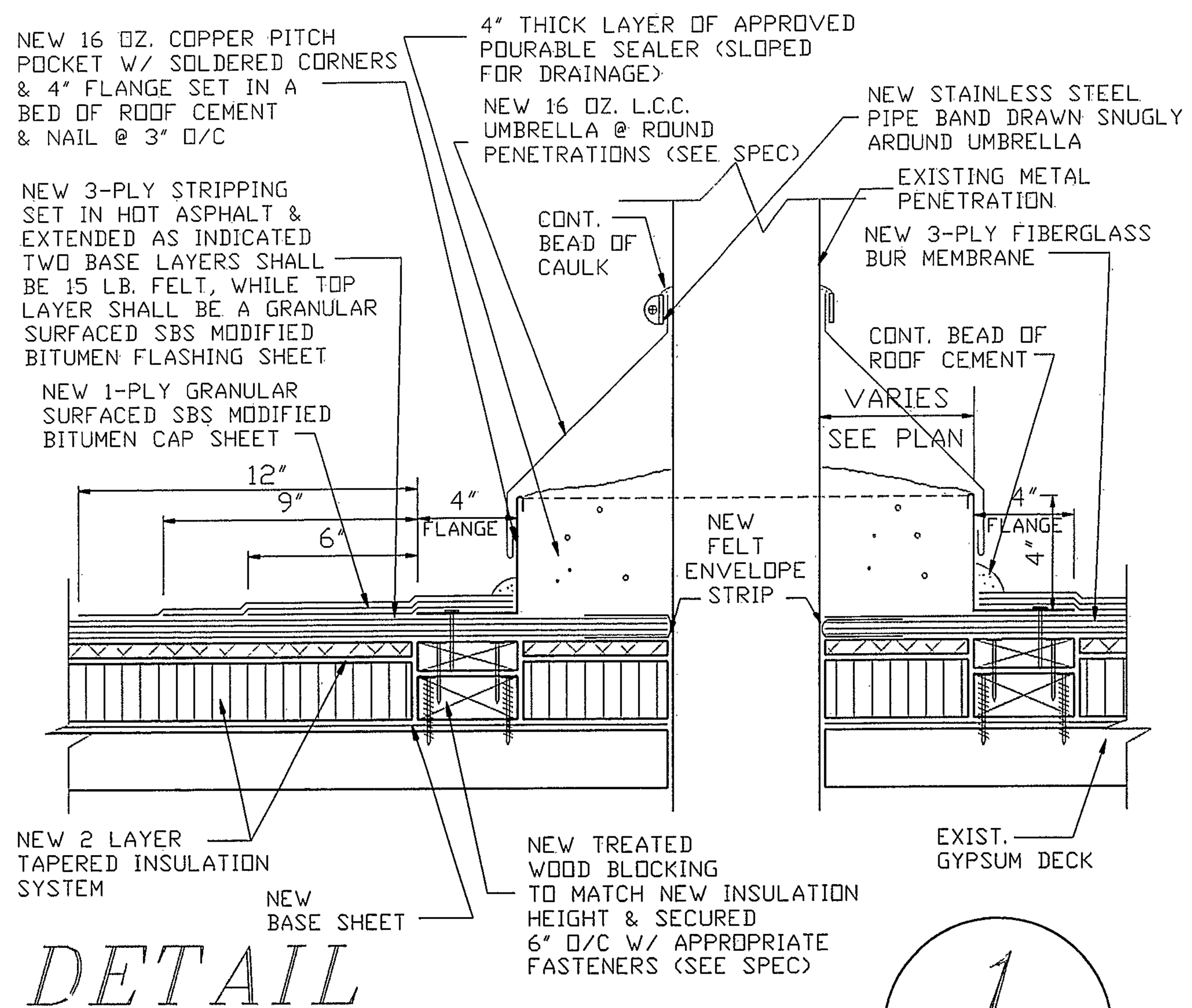
SCALE: 3" = 12"
TYPICAL EXPANSION JOINT DETAIL
(SEE ROOF PLAN FOR LOCATION)

OWNER: STATE OF NEW JERSEY HONORABLE CRISTINE TODD WHITMAN, GOVERNOR DEPARTMENT OF TREASURY DIVISION OF BUILDING & CONSTRUCTION CN 235 TRENTON, NEW JERSEY 08625-0235	JOB TITLE: EMERGENCY ROOF REPLACEMENT MARIE H. KATZENBACH SCHOOL FOR THE DEAF ACADEMIC HIGH SCHOOL BUILDING NO 26 WEST TRENTON, NEW JERSEY	
RUSSELL R. HART, DIRECTOR	SHEET TITLE: ROOF DETAILS	REF. NO. 96038 SHEET NO. 0896093
PAUL STAUDT JR., RA, STATE ARCHITECT	CONSULTANT: ARMM ASSOCIATES, INC. P.O. BOX 229 GLOUCESTER CITY, NEW JERSEY 08030	DRAWING NUMBER: 6 OF 8
DBC PROJECT NO. E0252-00	EDWARD J. ZINSKI, DIRECTOR NJ #35608	DATE 8-19-96
DRAWN BY: JWM	APPROVED BY: FJM	SCALE: AS NOTED

24X

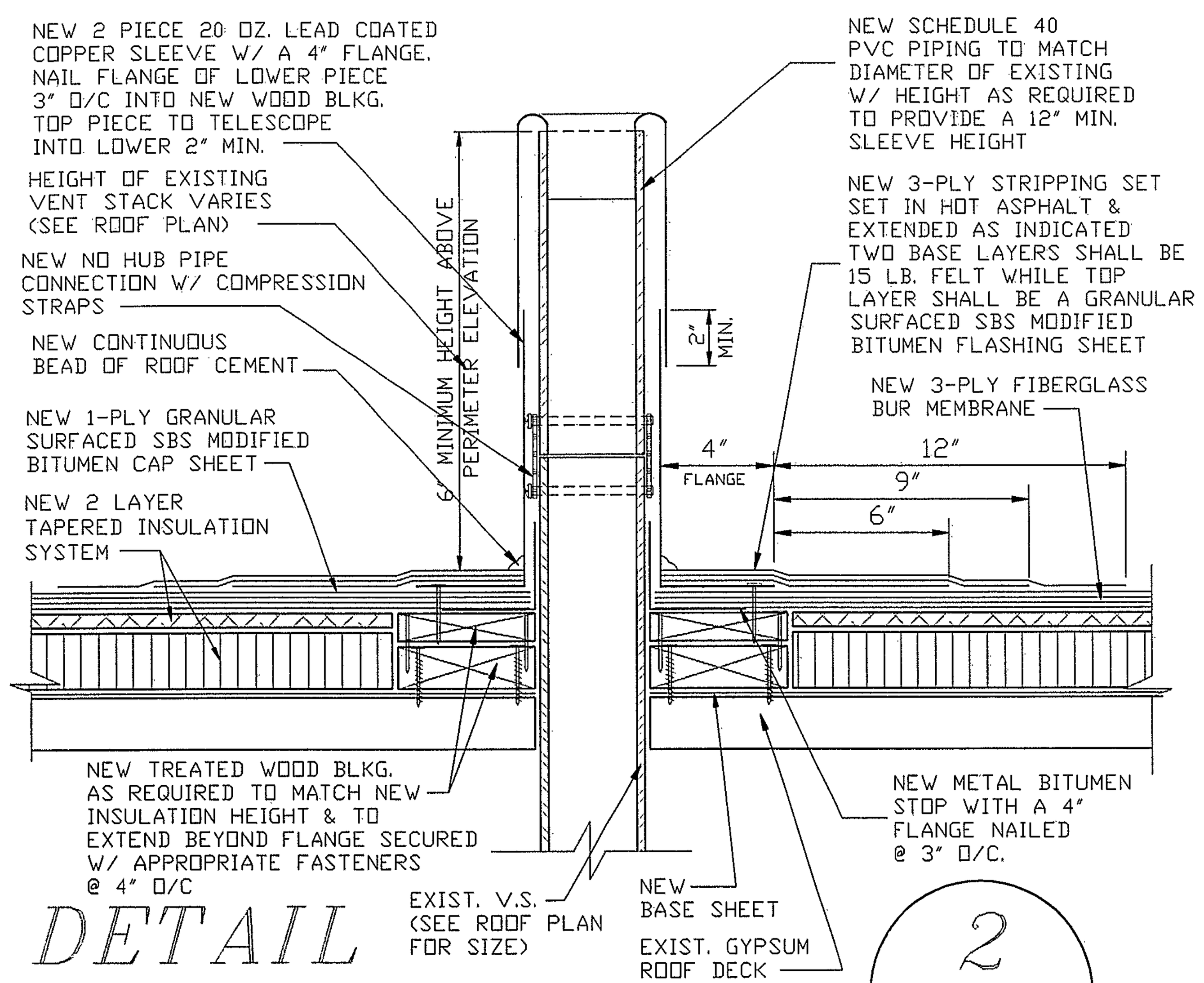
EXHIBIT 'C'

THIS IMAGE WAS DIGITIZED FROM MICROFILM AT A SCALING VALUE OF 16X AND MAY NOT MATCH ORIGINAL MICROFILM REDUCTION VALUE SHOWN ON BOTTOM OF IMAGE.



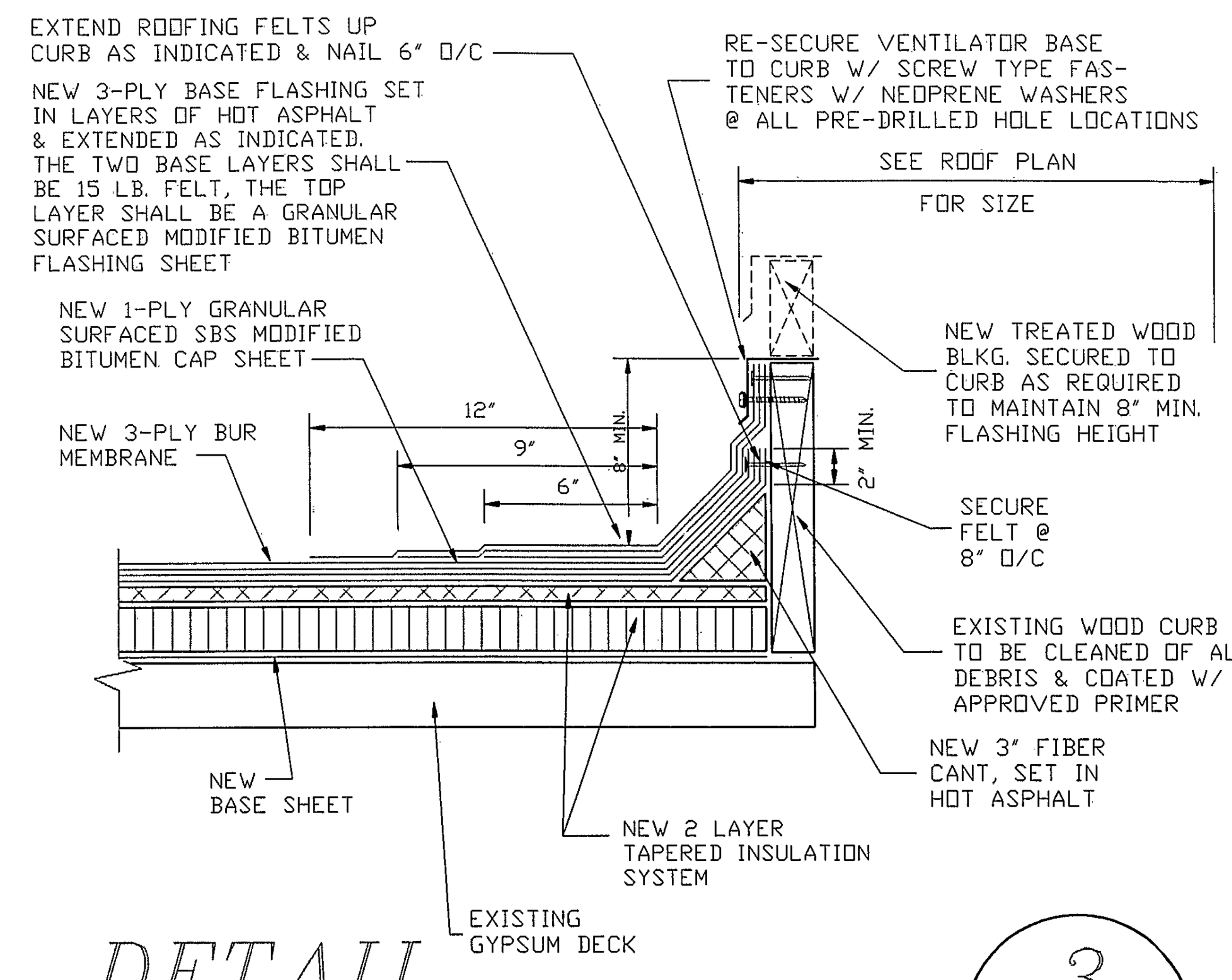
DETAIL 1/7

SCALE: 3" = 12"
TYPICAL PITCH POCKET DETAIL



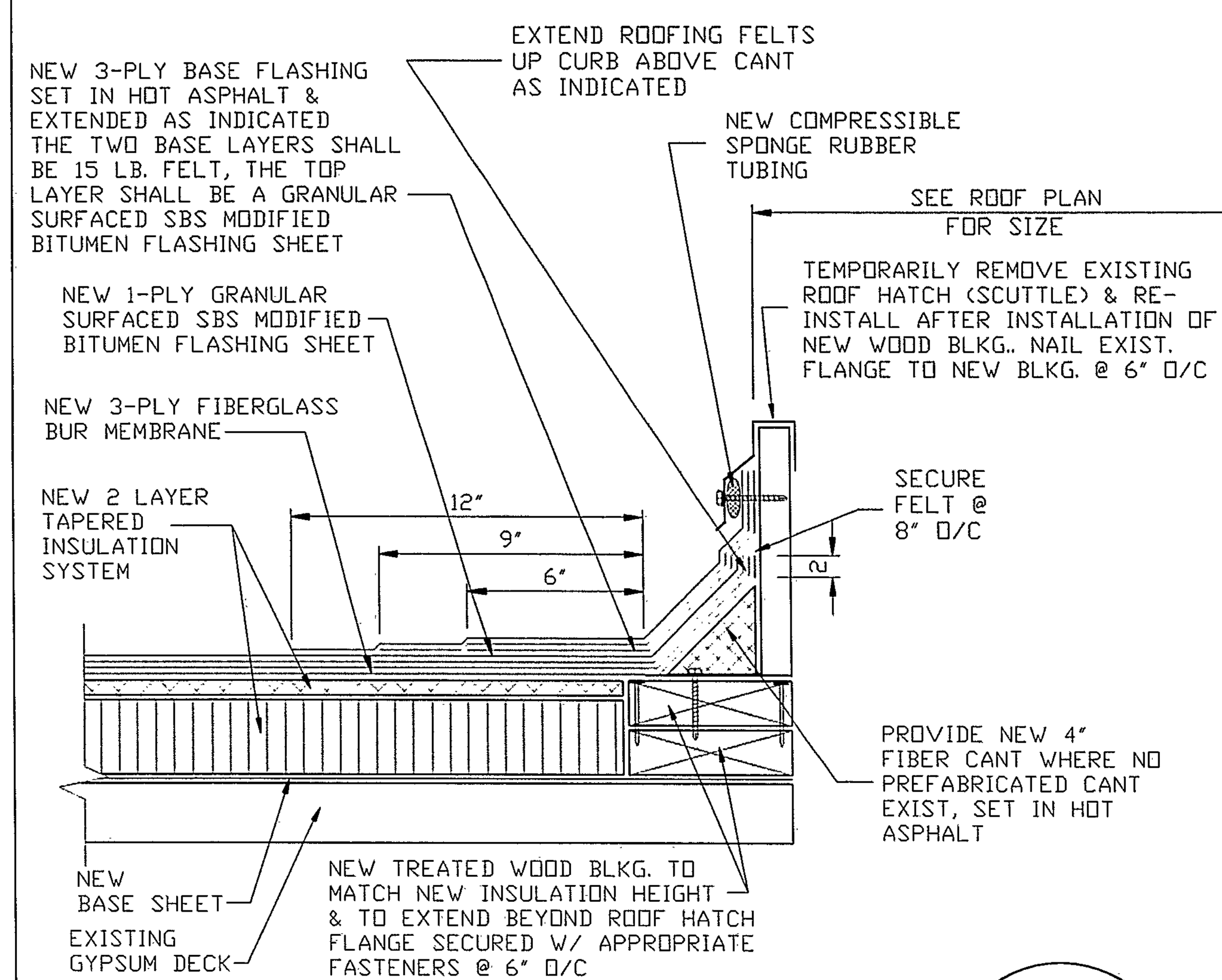
DETAIL 2/7

SCALE: 3" = 12"
TYPICAL VENT STACK DETAIL



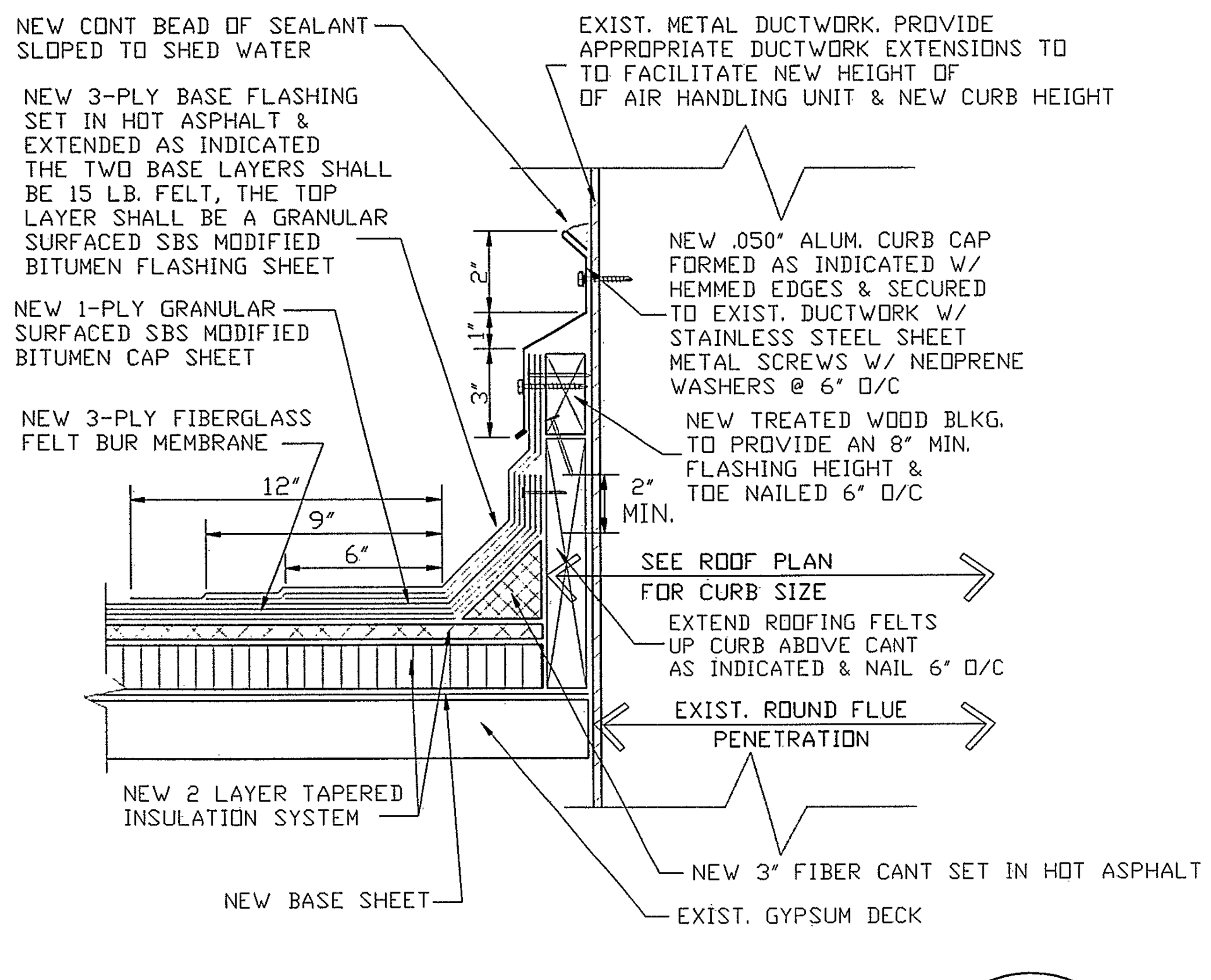
DETAIL 3/7

SCALE: 3" = 12"
TYPICAL WOOD CURB DETAIL
@ VENTILATORS



DETAIL 4/7

SCALE: 3" = 12"
NEW ROOF HATCH (SCUTTLE) DETAIL



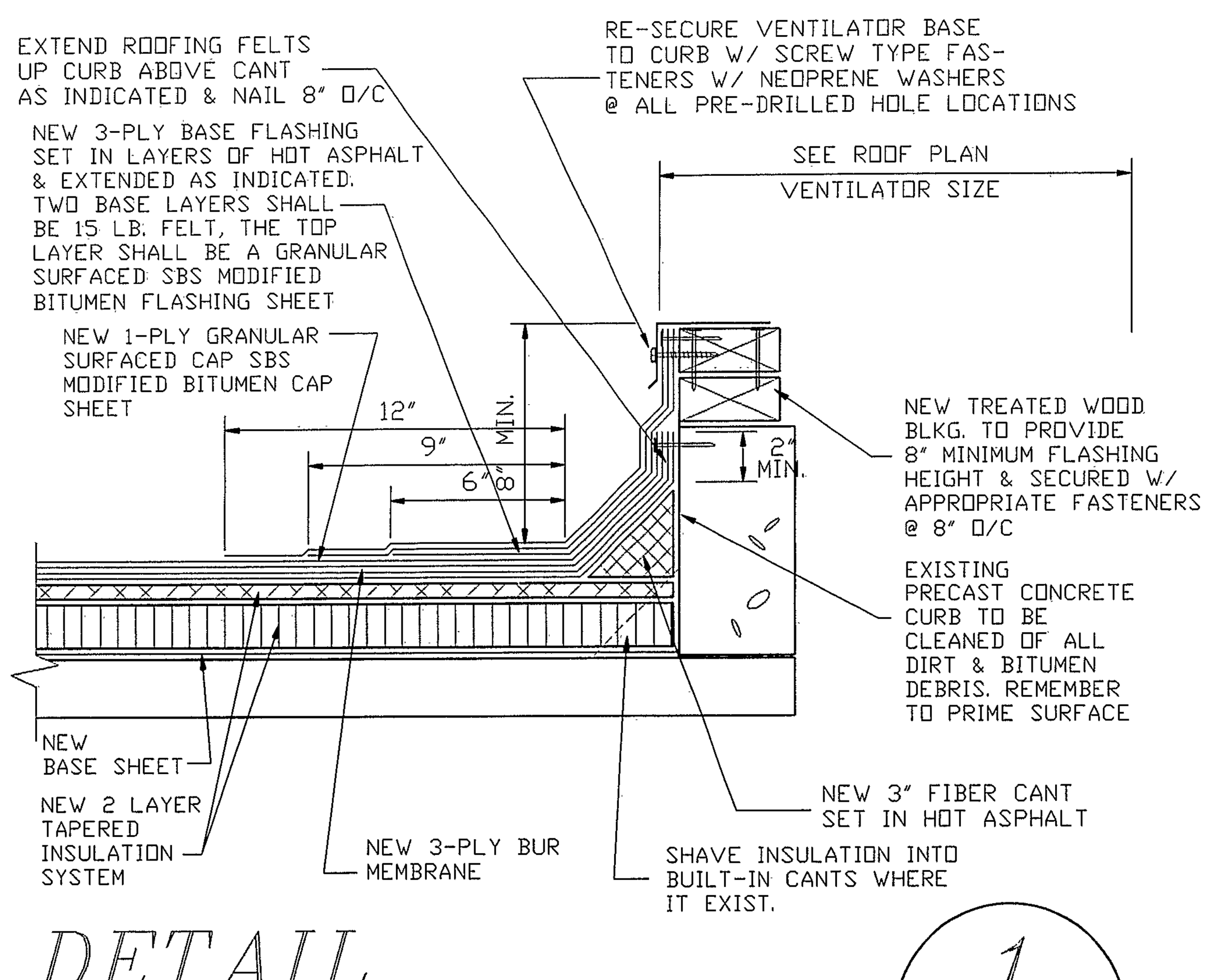
DETAIL 5/7

SCALE: 3" = 12"
TYPICAL DETAIL @ DUCTWORK CURB

OWNER: STATE OF NEW JERSEY HONORABLE CRISTINE TODD WHITMAN, GOVERNOR DEPARTMENT OF TREASURY DIVISION OF BUILDING & CONSTRUCTION CN 235 TRENTON, NEW JERSEY 08625-0235	JOB TITLE: EMERGENCY ROOF REPLACEMENT MARIE H. KATZENBACH SCHOOL FOR THE DEAF ACADEMIC HIGH SCHOOL BUILDING NO. 26 WEST TRENTON, NEW JERSEY
RUSSELL R. HART, DIRECTOR	SHEET TITLE: ROOF DETAILS — REF. NO. 96038 — SHEET NO. 0896095
PAUL STAUDT JR., RA. STATE ARCHITECT	CONSULTANT: ARMM ASSOCIATES, INC. P.O. BOX 229 GLOUCESTER CITY, NEW JERSEY 08030 — DRAWING NUMBER: 7 OF 8
DBC PROJECT NO. E0252-00	EDWARD J. ZINSKI, DIRECTOR NJ #35608 — DATE 8-19-96
DRAWN BY: JWM	APPROVED BY: FJM — SCALE: AS NOTED

24X

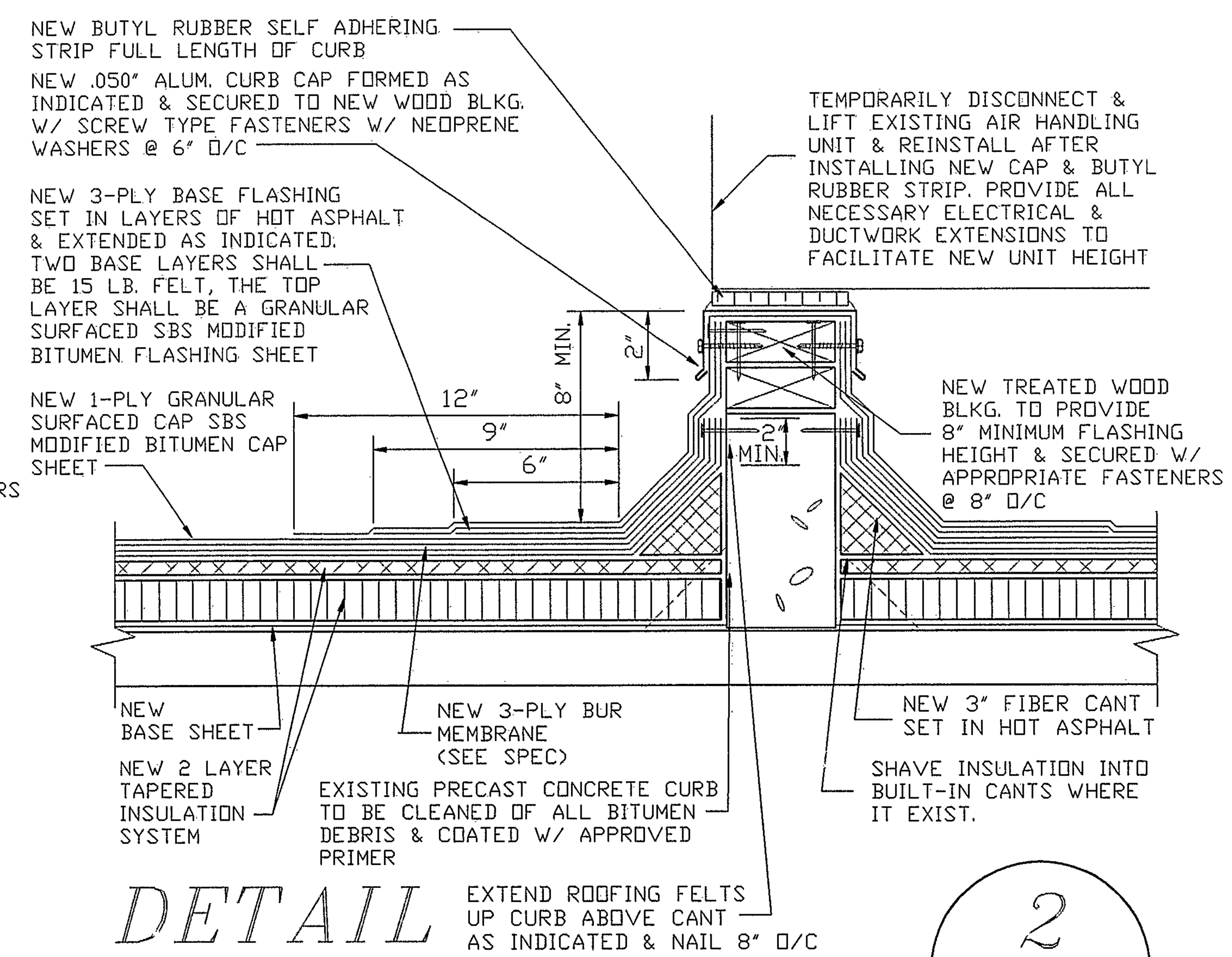
EXHIBIT 'C'



DETAIL 1/8

SCALE: 3" = 12"

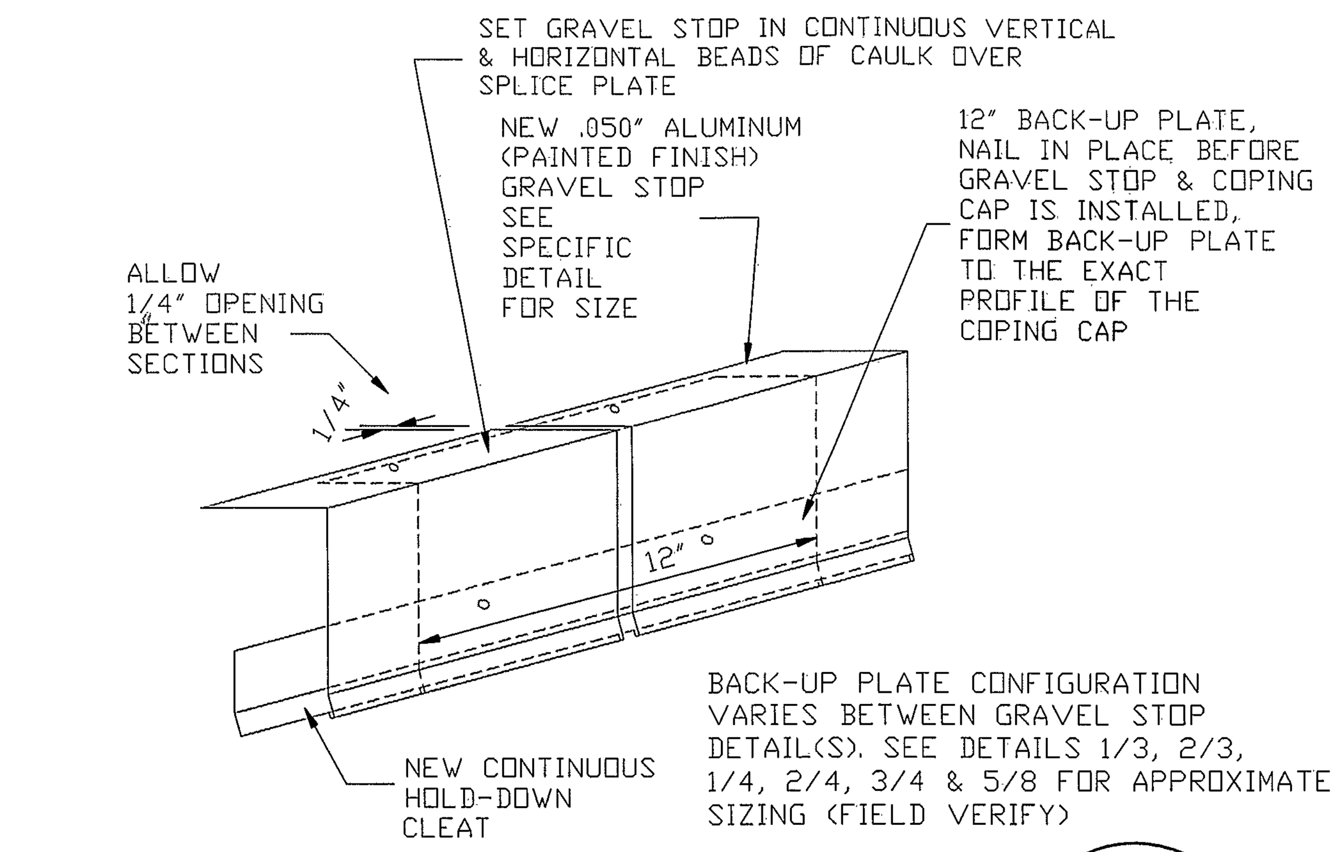
CONCRETE VENTILATOR CURB DETAIL



DETAIL 2/8

SCALE: 3" = 12"

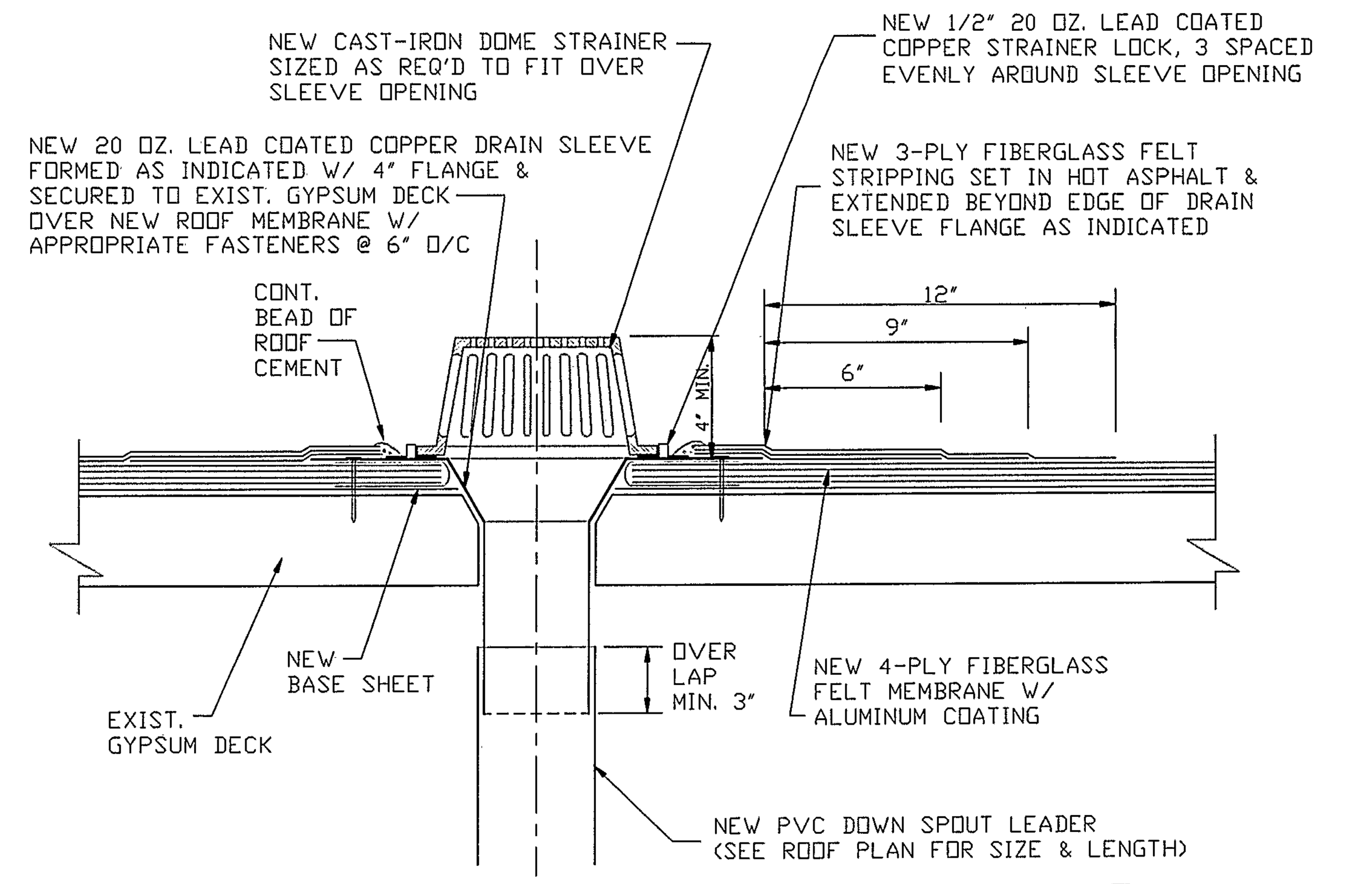
TYPICAL EQUIPMENT CURB DETAIL



DETAIL 3/8

DRAWING NOT TO SCALE

BACK-UP PLATE DETAIL

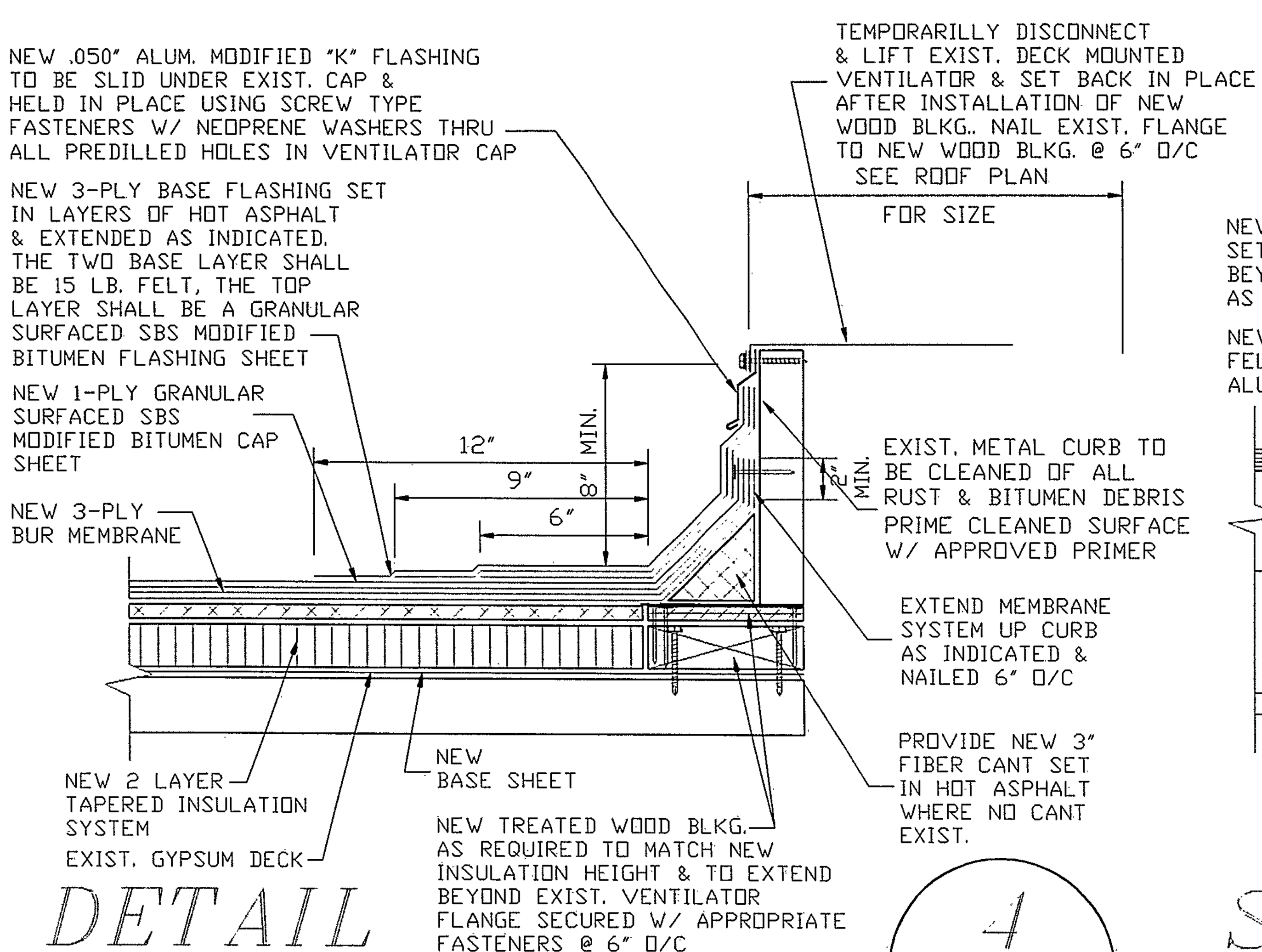


SECTION 6/8

SEE ROOF PLAN FOR SLEEVE SIZE

SCALE: 3" = 12"

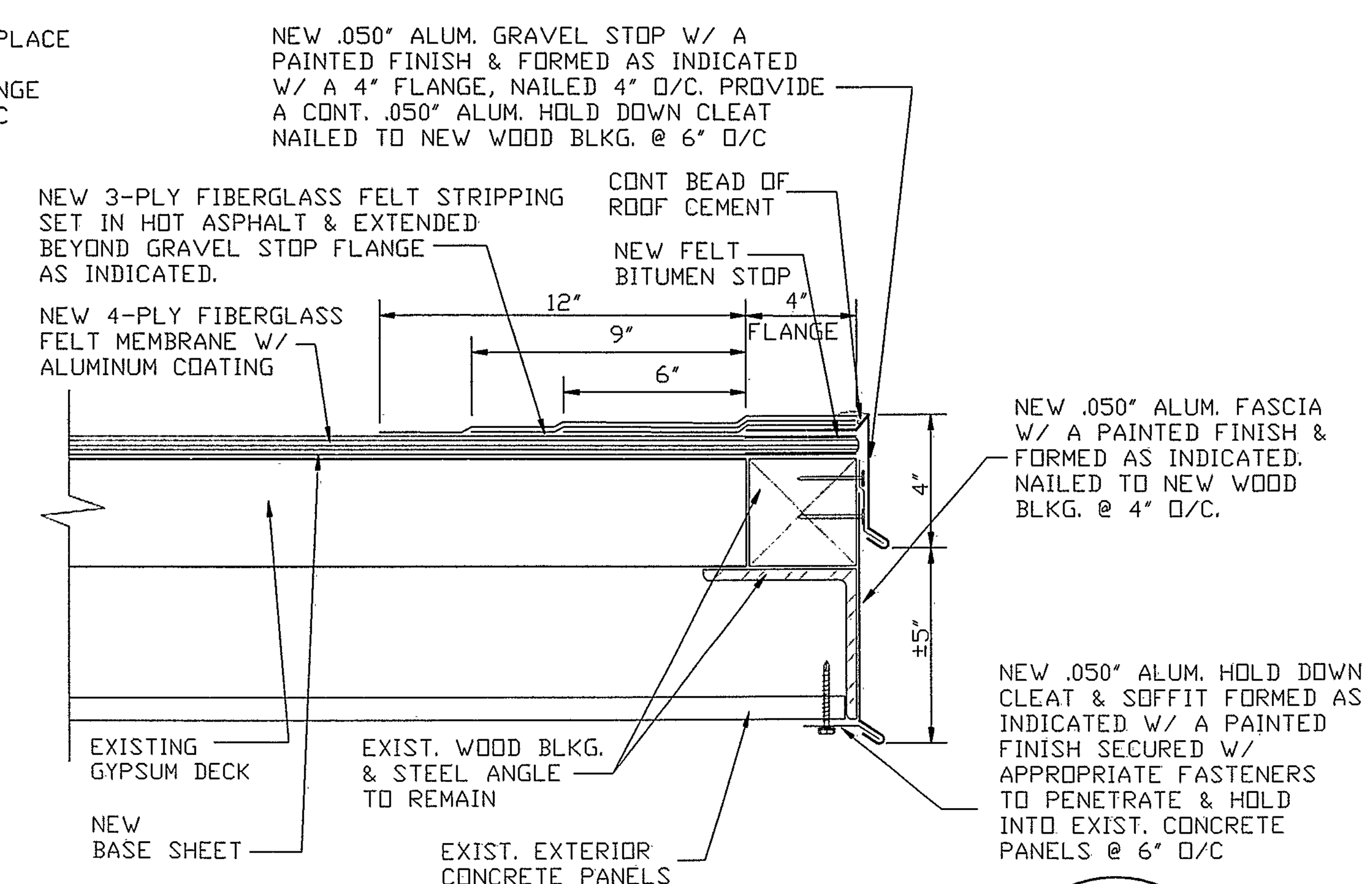
TYPICAL DRAIN SLEEVE DETAIL @ ROOF AREA D1 ONLY



DETAIL 4/8

SCALE: 3" = 12"

TYPICAL METAL CURB DETAIL @ ROOF VENTILATORS



SECTION 5/8

SCALE: 3" = 12"

TYPICAL PERIMETER GRAVEL STOP DETAIL ROOF AREAS A1 & D1

OWNER:
STATE OF NEW JERSEY
HONORABLE CRISTINE TODD WHITMAN, GOVERNOR
DEPARTMENT OF TREASURY
DIVISION OF BUILDING & CONSTRUCTION
CN 235
TRENTON, NEW JERSEY 08625-0235

RUSSELL R HART, DIRECTOR
PAUL STAUDT JR., RA, STATE ARCHITECT
DBC PROJECT NO. E0252-00

M.J. Masonry & Roofing, In
2720 Sherman Avenue
Camden New Jersey
AS BUILT

JOB TITLE: EMERGENCY ROOF REPLACEMENT
MARIE H. KATZENBACH SCHOOL FOR THE DEAF
ACADEMIC HIGH SCHOOL BUILDING NO 26
WEST TRENTON, NEW JERSEY

SHEET TITLE: ROOF DETAILS

REF. NO. 96038
SHEET NO. 0896096

CONSULTANT:
ARMM ASSOCIATES, INC.
P.O. BOX 229
GLOUCESTER CITY, NEW JERSEY 08030

EDWARD J ZINSKI, DIRECTOR
NJ #35608

DRAWING NUMBER: 8 OF 8
DATE 8-19-96

DRAWN BY: JWM | APPROVED BY: FJM | SCALE: AS NOTED

24X

EXHIBIT 'C'


340'-2"±
16'-2"±
284'-4"±
15'-0"±
24'-8"±
10'-5"±
3'-5 9/16"±
3'-0"±
5'-0"±
16'-0"±
10'-4"±
73'-2"±
141'-10"±
3'-11"±
49'-0"
63'-10"±
64'-9"±
195'-0"±
31'-0"±
61'-8 1/4"±
13'-0"±
41'-11"±
24'-6"±
11'-0"±
26'-7"
19'-0"±
83'-0"±
93'-0"±
3 1/2"

EXHIBIT 'C'

5-Hole Structural Engineering, Inc.
3 Quail Run
South Burlington, VT 05403
(802) 338-0233

EXHIBIT 'C'

APPENDIX “D”

ASCE-7 Wind Speed Assessment Report

EXHIBIT 'C'

This is a beta release of the new ATC Hazards by Location website. Please contact us with feedback.

The ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Hazards by Location

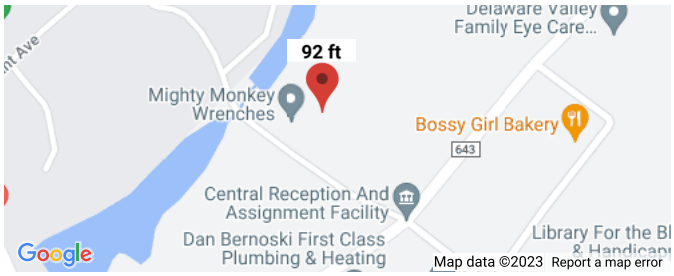
Search Information

Coordinates: 40.25242202744832, -74.80887105949402

Elevation: 92 ft

Timestamp: 2023-02-23T21:40:48.608Z

Hazard Type: Wind



ASCE 7-16

MRI 10-Year	75 mph
MRI 25-Year	82 mph
MRI 50-Year	88 mph
MRI 100-Year	95 mph
Risk Category I	105 mph
Risk Category II	112 mph
Risk Category III	123 mph
Risk Category IV	126 mph

ASCE 7-10

MRI 10-Year	76 mph
MRI 25-Year	84 mph
MRI 50-Year	90 mph
MRI 100-Year	96 mph
Risk Category I	105 mph
Risk Category II	115 mph
Risk Category III-IV	120 mph

ASCE 7-05

ASCE 7-05 Wind Speed	92 mph

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Please note that the ATC Hazards by Location website will not be updated to support ASCE 7-22. Find out why.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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EXHIBIT 'C'

APPENDIX “E”

Photographs

EXHIBIT 'C'

Overview Of Gymnasium

Overview of Roof and Proposed HVAC Unit Location

EXHIBIT 'C'

Overview of Roof and Proposed HVAC Unit Location

Existing Exhaust Ventilation Penetration at Gymnasium Roof

EXHIBIT 'C'

Roof Structure

EXHIBIT 'C'