Green Hall Suite 206
Alterations Project

TCNJ Advertised Bid # AB190009

PROJECT REQUIREMENTS

SCOPE OF WORK

DRAWINGS

September 24, 2018

Please place the following advertisement in the Legal Section of Classified Advertising. Please ensure that the invoice for this advertisement is prepared and an affidavit forwarded to The College of New Jersey, Office of Finance and Business Services, Administrative Services Building, Room 201, P.O. Box 7718, Ewing, NJ 08628-0718.

To be published on **September 24, 2018.** Contact person regarding placement of ad is Roselle Horodeski (609) 771-2894.

THE COLLEGE OF NEW JERSEY
ADVERTISEMENT FOR BIDS
BID #AB190009

Under the provisions of the State College Contracts Law, Chapter 64 of Title 18-A, The College of New Jersey will receive sealed bids for the **Green Hall Suite 206 Alterations Project** until **2:00 P.M. on the 25th day of October, 2018** at The College's Office of Finance and Business Services, Administrative Services Building, Second Floor, Room 201, Route 31 (Pennington Road), Ewing Township, New Jersey. At 2:00 P.M. all bids will be publicly opened and read in Room 203 of the Administrative Services Building.

The project will be bid as a Single Lump Sum.

No bidder may submit more than one bid.

Bid Documents may be obtained on/after **September 24, 2018 via our website (www.tcnj.edu/~budfin/).**

A **strongly encouraged pre-bid conference/on-site inspection** is scheduled on **October 4, 2018 at 10:00 A.M**. in Room 203 of the Administrative Services Building, located on The College's Ewing Township, New Jersey campus on Route 31 (Pennington Road).

Bidders are required to comply with the requirements of P.L. 1975 c. 127 (N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27 - Affirmative Action); the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq.; N.J.S.A. 52:25-24.2, "Statement of Stockholders Exceeding 10%"; the Public Works Contractor Registration Act (N.J.S.A. 34:11-56.48 et seq.); the New Jersey Business Registration of Public Contractors provisions (N.J.S.A. 52:32-44); Executive Order 117 and P.L. 2005 Chapter 51 (N.J.S.A. 19:44a-1 et seq.) and all amendments thereto

A bid bond is required in the amount of 10% of the total bid. Bid bond shall consist of a certified check or cashiers check to the order of The College of New Jersey, or an individual or annual bid bond issued by an insurance company or surety company authorized to do business in the State of New Jersey. The successful Bidder(s) is required to provide a Performance and Payment Bond equal to 100% of the contract. A Surety Disclosure Statement and Certification form must accompany the performance bond.

The College will award the contract to the lowest responsible bidder who satisfies the qualification criteria as set forth in the contract documents.

The College of New Jersey reserves the right to reject any or all bids or to waive any informalities in the bidding in accordance with law. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of The College of New Jersey.

Green Hall Suite 206 Alterations Project

Milestone Schedule

Date: 9/21/18

Advertise for bidding	September 24, 2018
Pre-bid/Site visit	October 4, 2018
Cut off for questions	October 11, 2018
Addendum issued	October 17, 2018
Bids Received	October 25, 2018
Notice of Intent to Award issued	October 29, 2018
End of Protest Period	November 2, 2018
Notice to proceed issued by	November 9, 2018
Security/Access Control submittal coordination meeting w/owner	December 7, 2018
All Submittals in to TCNJ & Architect before	December 14, 2018
GC to partially demo walls at existing plumbing chases	December 17-21, 2018
Hazardous Material Abatement Start in field	December 23, 2018
Hazardous Material Abatement Completed by	December 31, 2018
Cabinets delivered and installed by	March 1, 2018
Substantial Completion	March 30, 2019
Final Completion (contract closed out by)	April 30, 2019

THE COLLEGE OF NEW JERSEY
Construction Bid Proposal Form

Office of Finance & Business Services
Administrative Services Building, Rm. 201
2000 Pennington Road
Ewing, New Jersey 08628-0718

Bid Number: AB190009
Bid Due Date: October 25, 2018

Project Name: Green Hall Suite 206 Alterations

BIDDER INFORMATION

Firm Name:

Contact Person:
Address:

Telephone Number:

Fax Number:

Email Address:
Federal I.D. Number:

SOLICITATION OF CONSTRUCTION BIDS

1. **Bid proposals are solicited as follows:**
   - **A. Single Bid (Lump Sum) which combines all trades.**
     - **(1) The total number and types of trades are set forth in the Specifications.**
     - **(2) Bidder enters the Bid Price on the line provided.**
     - **(3) Pursuant to the requirements of N.J.S.A. 18A:64-76, bidder lists the names of the subcontractors on the Subcontractor Information page.**

2. **This project consists of interior Office Renovations and Alterations to Suite 206 at Green Hall in the center of The College of New Jersey's campus. New work will include but not limited to; demolition of interior walls and related construction, new kitchenette, bathroom, hazardous material remediation, mechanical, electrical and plumbing upgrades. Work will also include security upgrades, with electrical and door hardware work in this contract, and security/IT infrastructure work by TCNJ.**

   - **A. See Specifications and Drawings for Details (included in RFP package).**
   - **B. The College may issue Addenda or Clarifications which may include additions to or deletions from the scope of work; changes to the Specifications, Drawings, and proposal form; and clarifications of requirements. Bidder is advised to review all Addenda and/or clarifications carefully, and shall note the receipt of same with their bid package.**

GENERAL INSTRUCTIONS AND REQUIREMENTS

1. PRICES

A. Bidder submits prices for the Base Bid and any Alternate Proposals and Unit Prices which are listed for the contract of the bid. If there is no cost associated with the Alternate or Unit Price, bidder is required to enter "0.00" or "no change".

B. Prevailing wage rates apply (Mercer County).

C. Bid is to remain good for sixty (60) days after the Bid Due Date.

2. BOND REQUIREMENTS AND SURETY STANDARDS

A. Bidder must submit with its bid a Certified Check in the amount of ten percent (10%) of the base bid, or a Bid Bond in the amount of ten percent (10%) of the total bid.

B. The successful bidder must submit a Performance and Payment Bond equal to 100% of the contract. A completed Surety Disclosure Statement and Certification must accompany the Performance and Payment Bond.

(1) The Performance and Payment Bond form and a sample Surety Disclosure Statement and Certification form are included at the end of this Construction Bid Proposal Form.

C. All bid deposits shall be returned within three (3) days of Notice of Intent to Award, except for the successful bidder(s) whose bid security shall be returned after execution of a formal contract, and delivery of the Performance Bond/Labor and Material Bond and Certificates of Insurance.

D. Should the successful bidder fail to enter into said contract after acceptance of bid by the College, then the check or security deposited by that bidder shall, at the option of the College, be retained as liquidated damages, or if Bid Bond has been supplied, principal and surety shall be liable to the amount of the Bid Bond.

E. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified copy of their Power of Attorney to sign said bonds.

3. LICENSES, CERTIFICATIONS, REGISTRATIONS, QUALIFICATIONS

A. The bidder or, as applicable, its subcontractors shall at the time of bid have those required licenses, certifications, registrations, qualifications and the like ("LCRQ") listed below and shall present satisfactory evidence thereof upon request of the College prior to the notice of intent to award.

(1) The electrical contractor or subcontractor, as applicable, shall have a valid electrical license. (An electrical license is not required when the work is below 110Volt)

(2) The plumbing contractor or subcontractor, as applicable, shall have a valid plumbing license.

(3) The HVACR contractor or subcontractor, as applicable, shall have a valid HVACR license.

(4) The asbestos abatement contractor or subcontractor, as applicable, shall have a valid asbestos abatement license.

B. The selected bidder/contractor or, as applicable, its subcontractors shall have and shall present satisfactory evidence of all other required LCRQ noted in the Specifications after execution of contract during the submittal process and prior to the start of the applicable work, unless otherwise requested by the College or a date or event specified for that LCRQ in the Specifications.

4. SUBCONTRACTORS

A. Pursuant to New Jersey State Law (N.J.S.A. 18A-76.1), a Single Bid (Lump Sum) bidder discloses its subcontractors to whom the bidder intends to subcontract the work. The Subcontractor Information sheet is provided for this purpose.

5. Under Executive Order 34, the College is responsible for soliciting demographic information from its vendors. The College is required to seek the following information from each firm under contract with the College:

1. Is more than fifty percent (50%) of your company minority owned? (circle one) YES NO (African-American, Hispanic, Asian, and/or Native American)

2. Is more than fifty percent (50%) of your company woman owned? (circle one) YES NO

3. What is the ethnicity of the owner of your company: (check applicable according to 51% ownership)

☐ Asian American
☐ Multiple Ethnicities
☐ Non-Minority
☐ Hispanic American
☐ African American
☐ Caucasian American Female
☐ Native American
☐ Unspecified

The College is required to solicit the foregoing information. Your response, however, is **strictly voluntary**. Please be advised that any contracting decisions made by the College will **not** be influenced in any way by your decision to provide the above information.

EXECUTIVE ORDER #34: MINORITY AND WOMEN BUSINESS ENTERPRISES

On September 15, 2006, Governor Corzine signed Executive Order 34 establishing a Division of Minority and Women Business Development. The Division is charged with administering and monitoring policies, practices, and programs to ensure that minority and women business enterprises (MWBE) are afforded an equal opportunity to participate in New Jersey's purchasing and procurement processes.

State entities are required to report to the Division the ethnic and gender composition of the vendors with which those state entities do business.

6. Bidder completes Ownership Disclosure form and the Non-Collusion Affidavit form.

~~**7.** Bidders are required to be registered with the New Jersey Department of Property Management and Construction (DPMC) and possess a DPMC C008 classification at the time of bid submission.~~

8. PREVAILING WAGE AND PUBLIC WORKS CONTRACTOR REGISTRATION ACTS

- The work described in this project is subject to the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq. and the Public Works Contractor Registration Act, N.J.S.A. 34:11-56.48 et seq.
- The Public Works Contractor Registration Act requires the bidder and any subcontractors listed in the bid to be registered with the New Jersey Department of Labor and Workforce Development at the time the bid is submitted. The contractor must submit registration certificates for all listed subcontractors prior to award of the contract.
- The Contractor must comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 through 56.57. Workers employed by the Contractor or any subcontractor or sub-subcontractor in the performance of services directly on the project must be paid prevailing wages. As required by N.J.S.A. 34:11-56.27 and 56.28, this contract cannot become effective until the College obtains from the New Jersey Department of Labor and Workforce Development a determination of the prevailing wage rates applicable to the project as of the contract award date and attaches a copy to the contract. As required by N.J.S.A. 34:11-56.27, the Contractor or any subcontractor may be terminated if any covered worker is not paid prevailing wages on the project, and the Contractor and its surety shall be liable for any additional costs which result. The Contractor and its subcontractors must be registered with the New Jersey Department of Labor and Workforce Development (N.J.S.A. 34:11-56.51 et seq.), and the prevailing wage rates must be posted at the job site (N.J.S.A. 34:11-56.32). The Contractor and its subcontractors must prepare accurate certified records of wages paid for each worker on the project (N.J.S.A. 34:11-56.29), and copies for the period covered by each invoice must be attached to the invoice submitted under the contract. In accordance with N.J.S.A. 34:11-56.33, the Contractor's final invoice must include a statement of all amounts still then due to workers on the project. The Contractor is also cautioned that it must use job titles and worker classifications consistent with those approved by the Department of Labor and Workforce development, and that, if it intends to pay apprentice rates, it must comply with the Department of Labor and Workforce Development regulations at N.J.A.C. 12:60-7.1 through 7.4.
- Please refer to http://lwd.dol.state.nj.us/labor/wagehour/wagerate/wage_rates.html for official wage rate determinations for Mercer County, NJ.

9. NEW JERSEY EQUAL PAY ACT

On April 24, 2018, Governor Phil Murphy signed into law New Jersey's Diane B. Allen Equal Pay Act (P.L. 2018, c. 9) The law provides in pertinent part that as of July 1, 2018, any employer entering into a contract with the State of New Jersey or an instrumentality of the State for "qualifying services" or "public works" must provide to the Department of Labor and Workforce Development – upon commencement of the contract – wage and demographic data for all employees who are employed in connection with the contract (for public works) and for all employees (for qualifying services). This requirement DOES NOT apply to employers who are contracting with local governments (for example: municipalities and counties). The report must contain the gender, race, ethnicity, job category, compensation, and number of hours worked by each employee.

The extent of the Department of Labor and Workforce Development's responsibilities under the Equal Pay Act is the collection of data regarding compensation, hours worked, job/occupational category, job title, gender, race, and ethnicity for State contactors and making that data available to the Division on Civil Rights (DCR), within the Department of Law and Public Safety, and upon request to certain individuals. Complaints of unlawful discrimination under the Equal Pay Act should be directed to the DCR, as should any questions regarding the filing of such a complaint.

The Department of Labor and Workforce Development has issued two forms, as required by the law, to be completed by employers. The forms should be used to report the employee's wage and demographic data and can be found on the LWD website (http://www.nj.gov/labor/equalpayact). **A completed copy of the forms is not required at time of bid; however, it will be required of the bidder who receives the notice to proceed from the College. Completed forms should be emailed to: equalpayact@dol.nj.gov**

10. In order for your proposal to be accepted and deemed valid, your company/firm will be required to comply with the requirements of N.J.S.A. 19:44A-1 et seq/P.L. 2005 Ch. 51 ("Chapter 51") and Executive Order 117. Enclosed are the requirements of Chapter 51 and Executive Order 117, the forms for Certification and Disclosure. The contract that will be generated based on this bid proposal cannot be awarded without approval of the Certification and Disclosure forms by the State of New Jersey, Department of Treasury. **A completed copy of your Certification form is not required at time of bid; however, it will be required from the bidder who receives the notice of intent to award from the College prior to the execution of the contract**.

11. Vendors conducting business with any State agency including The College of New Jersey will be required to be registered with the New Jersey Division of Revenue. The vendor will be required to submit a Business Registration Certificate issued by the Department of Treasury, Division of Revenue, with the State of New Jersey prior to the award of a contract. N.J.S.A. 52:32-44. **A completed copy of your Certificate is not required at**

time of bid; however, will be required from the bidder who receives the intent to award from the College.

12. Energy Star energy efficient products: Under Executive Order #11 (Corzine), the College is required to select ENERGY STAR energy-efficient products when acquiring new energy-using products or replacing existing equipment. For products that do not have ENERGY STAR labels, vendors shall follow guidelines established by the New Jersey Clean Energy Program.

13. QUESTIONS

A. Direct inquiries and correspondence relating to this proposal form and questions regarding the technical specifications and requests for clarification must be submitted in writing via fax to **609-637-5140 or email to horodesk@tcnj.edu** and must be received **prior to 4:00 p.m. on October 11, 2018.**

B. Should any questions be received, an addendum or clarification will be available on or after **October 17, 2018 on The College's website at https://bids.tcnj.edu/. If an addendum and/or clarification is posted, it SHOULD be noted in the General Agreement section of the bidder's proposal. Failure to do so may subject Bidder to disqualification.**

14. HOW TO SUBMIT THE COMPLETED CONSTRUCTION BID PROPOSAL FORM

A. Bidder places all pages of the completed form and the requisite additional documents in an envelope, seals the envelope, and labels it with his/her firm name, address, and "Sealed Bid Enclosed for (**Bid Number and Project Name**)".

B. Bidder mails or deliver by hand the sealed bid, no later than **2:00 p.m., October 25, 2018**, to The College of New Jersey, Attention: Roselle Horodeski for (specify the Bid Number), Office of Finance & Business Services, Room 201, 2000 Pennington Road, Ewing, New Jersey 08628-0718. **At 2:00 p.m., all bids will be publicly opened and read in Room 203 of the Administrative Services Building.**

C. Contractors are advised that the U.S. Postal Service and all express mail companies deliver to The College's Mail Room or Receiving Department, not directly to the Office of Budget & Finance. The College is not responsible for lost or misdirected bids.

15. Any bid not prepared and submitted in accordance with the provisions described herein may be rejected by the College. Any bid received after the time and date specified will not be considered. No bidder shall withdraw a bid within sixty (60) days after the date of the bid opening to allow the College to determine the lowest bid that will most economically serve the intentions of this Contract.

16. Any bidder who has defaulted on any contract with the College or any other State Agency may be considered as not responsible and their bid may be rejected. THE COLLEGE OF NEW JERSEY reserves the right to exercise this option, as the College deems proper and/or necessary in its best interest.

17. Bids shall include all costs of any nature necessary to complete the project in the manner and within the time required by the contract.

18. The College reserves the right to require bidders to provide a schedule of values of their lump sum bid price upon request.

19. The College is exempt from all taxes including Federal Excise Tax, Transportation Taxes, State Excise, Sales Tax and local taxes. Rentals of equipment for 28 days or less is not exempt from any tax under the State sales tax act.

20. Before submitting his bid, the bidder shall be familiar with the Drawings, Specifications, and other Documents that will form part of the contract and shall have visited the site of the project to confirm for themselves the character and amount of work involved.

21. No bidder shall be allowed to offer more than one price on each item even though he/she may feel that he/she has two or more types or styles that will meet specifications. Bidders must determine for themselves which to offer. This may be cause for automatic rejection of bid.

22. It is understood and agreed that all prices quoted are firm and not subject to any increase during the life of the contract.

23. Should any difference arise between the contracting parties as to the meaning or intent of these instructions or specifications, the College's decision shall be final and conclusive.

24. Should the bidder discover discrepancies in this Request for Bids, the matter shall be at once brought to the attention of the College, and the discrepancies corrected by written agreement before submission of bid. The correction will be issued by addendum.

25. ACCEPTANCE/REJECTION OF BIDS

A. THE COLLEGE OF NEW JERSEY, pursuant to State College Contract Law reserves the right to accept or reject any or all items covered in the bid request, or any portion(s) thereof, re-advertise and/or take such other steps decreed necessary and in the best interest of the College in accordance with law. Where two or more bidders are tied and all other relevant factors being equal, the College reserves the right to make the award to one of the bidders.

B. The bid is irrevocable by the bidder or the bidder's representatives. The bid, and any award made to the bidder by the College, shall bind the bidder and the bidder's heirs, executors, administrators, successors or assigns.

C. Award of contract shall be made to the lowest responsible bidder, whose bid, conforming to the invitation for bids, is the most advantageous to the College.

D. The award of the contract or the rejection of the bids shall be made within sixty (60) days of the date of receiving bids, unless written extensions are requested by the College and accepted by the bidder(s). All bid securities shall be returned immediately if all bids are rejected. The successful bidder(s) to whom the award is to be made will be notified by receipt of a written "Intent to Award" from the College.

E. When award of contract is made in one fiscal year with effective date in the next fiscal year, award shall be contingent upon the availability and appropriation of sufficient funds for that purpose for the year in which said contract takes effect. When a contract shall be awarded for a period in excess of one year, said contract shall be contingent upon the annual availability and appropriation of sufficient funds for that purpose for each year of the contract term.

26. WITHDRAWAL OF BIDS

A. A written request for the withdrawal of a bid, or any part thereof, will be granted if the request is received by the College prior to the specified time of the bid opening.

B. Should the bidder refuse to perform the work for the price provided, they will forfeit their bid security and will be held liable for the difference between their low bid and the next highest/responsive bidder.

27. OSHA COMPLIANCE:

A. The Contractor shall guarantee that all materials, supplies and equipment to be provided under his contract shall meet all applicable requirements, Specifications and standards of the Federal Occupational Safety and Health Act (OSHA) of 1970 as amended to date of acceptance by the College, and shall also apply to Contractors Construction procedures.

28. APPLICABLE LAWS:

A. The following list of statutes and regulations, which may be applicable in whole or in part, is provided for the benefit of the Contractor and is not meant to be all-inclusive. In the event that other laws are applicable, it shall be the responsibility and obligation of the Contractor to ascertain and comply with them.

(1) <u>New Jersey Statutes and Regulations</u>

N.J.S.A. 10:5-31 *et seq.* and N.J.A.C. 17:27-1 *et seq.*, Affirmative Action

Prevailing Wage Act, N.J.S.A. 34:11-56.25 *et seq.*

N.J.S.A. 52:32-44, Business Registration Certificate

N.J.S.A. 34:11-56.48 *et seq.*, Public Works Contractor Registration Act

(2) <u>Federal Statutes</u>

Immigration Control and Reform Act (1986) – 8 U.S.C.A. Section 1324(a) *et seq.*

Civil Rights Act of 1964 – 42 U.S.C.A. Section 1971 *et seq.*
The Americans with Disabilities Act of 1990

29. EXAMINATION OF SITE, DRAWINGS AND SPECIFICATIONS

A. Each Bidder shall visit the site of the proposed work and fully acquaint themselves with the conditions as they exist so that they may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this Contract.

B. Bidders shall also thoroughly examine and be familiar with the Drawings and Specifications. The failure to receive or examine any form, instrument or document, or to visit the site and acquaint himself with conditions there existing shall in no way relieve any bidder from obligation with respect to his bid. By submitting a bid, the bidder agrees and warrants that he has examined the site, the Drawings and Specifications and, that the Specifications and Drawings are adequate and the required result can be produced under the Drawings and Specifications. No claim for any extra will be allowed because of alleged impossibilities in the productions of the results specified or because of unintentional errors or conflicts in the Drawings and Specifications. No change orders will be issued for items, materials or issues that existed on or with respect to the site prior to bidding.

30. DRAWINGS AND SPECIFICATIONS

A. The project shall be performed in accordance with the requirements of the Drawings and Specifications, subject to modification as provided in General Conditions. The Drawings and Specifications are intended to complement and supplement each other.

B. Any work required by either of them and not by the other shall be performed as if denoted in both. Should any work be required which is not also denoted in the Specifications or on the Drawings because of an obvious omission, but which is, nevertheless, necessary for the proper performance of the project, such work shall be performed as fully as if it were described and delineated.

31. FORM OF AGREEMENT

A. Every successful bidder shall be required to sign the standard form contract, a copy of which is attached. Any proposed language or form changes which in any way modifies the contractor's responsibilities as set forth in the Contract Documents will not be acceptable and will be deemed to constitute a bid exception.

32. MULTIPLE BIDS NOT ALLOWED:

A. No bidder is allowed to submit more than one bid from an individual, firm, partnership, corporation or association under the same or different name. This will be cause for automatic rejection of each bid.

33. SUBSTITUTIONS:

A. The bidder may include in their bid substitute materials or equipment or methods in lieu of those specified in the contract documents, but they do so at their own risk. Any substitution must be equivalent in type, function and quality to the item required in the contract. The successful bidder must submit all information required within 20 days of contract award to determine if the proposed substitute is equal to the contract requirements, and any substitution must be approved by the architect and the College.

B. The College shall have complete discretion to decide whether it will accept any substitution. No substitution shall result in any increase in the contract price or times. The successful bidder in its application for the substitution must certify in writing that the substitution is equal to what is specified in the contract documents in all material respects and will not increase the time or price of the contract work.

C. Should the substitution be rejected, the contractor will then be required to provide the specified product, material or method at no additional cost to the College and no change in the project schedule.

34. DOCUMENTS/SUBMISSIONS THAT MUST BE PROVIDED BEFORE CONTRACT AWARD:

- AFFIRMATIVE ACTION: The bidder is required to complete and submit a copy of Initial Project Workforce Report (AA-201) to the College and the Division of Public Contracts Equal Employment Opportunity Compliance verifying that the bidder is operating under a federally approved or sanctioned Affirmative Action program. The bidder also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to The College and the Division.

- CERTIFICATE OF INSURANCE: The bidder is required to submit proof of liability insurance in accordance with The College's contract.

- P.L. 2005, Chapter 51 / Executive Order 117 - Contractor Certification and Disclosure of Political Contributions:

  In order for your proposal to be accepted and deemed valid, your company/firm will be required to comply with the requirements of Chapter 51 and Executive Order 117. Enclosed are the requirements of Ch. 51 and EO 117, the forms for Certification and Disclosure. The contract that will be generated based on this bid cannot be awarded without approval of the Certification and Disclosure forms by the State of New Jersey, Department of Treasury.

- New Jersey Business Registration Certificate

- All applicable licenses, certificates, and requirements specified in the scope of work, contract documents and specifications.

The following Bidder's Checklist **is provided as an aid to the bidder. It does not in any way relieve the bidder of its responsibility to insure that its bid proposal is complete.**

a. _____ Bidder has completed the Bidder Information section and General Agreement section and filled out the receipt of addendum and clarifications.

b. _____ Bidder has completed the form of proposal and indicated base bid for either Separate Bid or Single Bid (Lump Sum all trades), prices for Alternate Proposals, and Unit Prices.

c. _____ Bidder for Single Bid (Lump Sum) has listed and has disclosed the subcontractors on the Subcontractor Information form.

d. _____ Bidder has enclosed a certified check or bid bond for ten percent (10%) of the amount of the bid.

e. _____ Bidder has completed and enclosed the Non-Collusion Affidavit.

f. _____ Bidder and each disclosed subcontractor has enclosed a copy of its **registration certificate** in accordance with the requirement of the Public Works Contractor Registration Act. (NJ Dept. of Labor and Workforce Development)

g. _____ Bidder has acknowledged the **Affirmative Action Language** in accordance with the requirements P.L. 1975 C.127. (NJAC 17:27).

h. _____Bidder has enclosed its MWBE information.

i. _____Bidder has enclosed its Electrical and Plumbing License and any other licenses, certifications, certifications, and qualifications.

j. _____Bidder has enclosed its Vendor Qualification Statement

~~**k.** _____ Bidder has included a copy of its latest Experience Modification Rating (EMR Safety Rating). The College requires an average rating over the last 5 years of 1.25 or less.~~

~~**l.** _____ Bidder has included a copy of its DPMC Notice of Classification and Total Amount of Uncompleted Contracts.~~

m. _____ Bidder has enclosed a copy of its Chapter 51 & EO117 Certification form. **A completed copy of your Certification form is not required at time of bid; however, will be required from the bidder who receives the intent to award from the College.**

n. _____ Bidder has enclosed a copy of its New Jersey Business Registration Certificate in accordance with the requirements of the New Jersey Division of Revenue. **A completed copy of your Certificate is not required at time of bid; however, will be required from the bidder who receives the intent to award from the College.**

GENERAL AGREEMENT

1. Having examined the plans and specifications with related documents and the site of the proposed work and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, the undersigned hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and at the price stated. This price covers all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

2. Bidder acknowledges receipt of the following Addendums/Clarifications:

Addendum Number _____ Date _____Addendum Number ____ Date_____
Addendum Number _____ Date _____Addendum Number ____ Date_____
Addendum Number _____ Date _____Addendum Number ____ Date_____

3. Bidder acknowledges and affirms that he/she has personal knowledge of or has obtained and reviewed a copy of the valid prevailing wage rates at the time of the bid and for the duration of the contract for all trades involved in the project for the geographical location of the project as issued by the Commissioner of the Department of Labor & Workforce Development, Trenton, NJ 08625 (609) 292-2259 or visiting the Department of Labor website at (http//lwd.dol.state.nj.us/labor/wagehour/wagerate/wage_rates.html).

4. Bidder agrees that its price is good and the bid shall not be withdrawn for a period of 60 calendar days after the scheduled Bid Due Date and Time.

5. Upon conclusion of the 5 business day protest period, Bidder will execute the formal contract within 5 business days and deliver as required in the General Conditions: a Performance and Payment Bond; Surety Disclosure and Certification Statement; and certificates of insurance for general liability, automobile and worker's compensation.

6. Bidder acknowledges work to commence on site not later than ten (10) calendar days after receipt of a Notice to Proceed.

Respectfully submitted,

(Seal if bid is by Corporation)

_____
(Signature of Principal)

_____
(Printed Name of Principal)

_____
(Title of Principal)

PRICES FOR SINGLE BID (LUMP SUM): Base Bid, Alternate Proposals, and Unit Prices
FORM OF PROPOSAL

To: **The College of New Jersey**

for: Green Hall Suite 206 Alterations

Date _____

A. BID:

1.**Base:** We, _____, the Undersigned, in accordance with the published advertisement inviting proposals, will furnish all labor, material, equipment and services necessary for the complete construction, as defined in the advertisement, specimen contract, specifications, addendums/clarifications/bulletins, drawings, and proposal, for the Contract amount indicated below for the **above noted project** in strict accordance with the Contract Documents and Addenda thereto for the total sum of:

_____Dollars $_____
(words)

General Construction (Single overall Prime Contract)

2. **Add /Deduct Alternate**

No Alternates are requested for this bid.

3. CHECK LIST FOR BIDDERS:
A check list has been provided in these specifications for the use in completing this proposal. Bidders are encouraged to reference said list to minimize the opportunity for errors by the bidder.

B. UNIT PRICES: We, the Undersigned, agree, if awarded the Contract to perform additional work or delete work at the Unit Prices set forth below or at a negotiated unit price (Unit Prices are for work that is in addition to or is deleted from the base bid work):

1. ASBESTOS ABATEMENT:

a. Removal of ACM pipe insulation $_____ per linear ft.

C. AGREEMENT: We, the Undersigned, agree, if awarded the Contract, to execute an agreement for the above stated work and compensation on the Standard Form of Agreement Between Owner and Contractor.

D. SURETY: We, the Undersigned, agree, if awarded the Contract, to execute and deliver to the Owner, prior to the signing of the Contract, the Performance and Payment Bonds as required.

- Contractor shall provide a Maintenance Bond at job completion for a period of one year for 100% of the final contract price.

E. BID SECURITY: The attached bid security is to become the Property of the Owner in the event that the Contract and bond are not executed within the time set forth, as liquidated damages for the delay and additional expense (including the difference between the price provided with said bond and the next lowest responsive bidder) to the Owner caused thereby.

Certified Check $_____
Bid Bond $_____

F. STATEMENT:

1. We, the Undersigned, acting through its authorized officers and intending to be legally bound, agree that this bid proposal shall constitute an offer by the Undersigned to enter into a Contract with the acts and things therein provided, which offer shall be irrevocable for sixty (60) calendar days from the date of opening hereof and that the Owner may accept this offer at any time during said period by notifying the Undersigned of the acceptance of said offer.

2. We, the Undersigned, acknowledge receipt of the following Addenda/Clarifications:

Addenda Number	Dated
_____	_____
_____	_____
_____	_____

The undersigned further agrees to comply with the requirements as to conditions of employment, wage rates, and hours of labor set forth in the Contract Documents.

Dated _____

Firm Name _____ Phone Number:_____

Address _____

_____

**If a corporation, give the State of Incorporation, using the phrase:
"A corporation organized under the laws of _____."
If a partnership, give names of the partners, using also the phrase:
"Co-partners trading and doing business under the firm name and style of
_____.
If an individual using a trade name, give individual name, also using the phrase:
"An individual doing business under the firm name and style of _____.

Dated: _____

STATE OF _____
SS.
COUNTY OF _____

_____ being duly sworn say that the several matters stated in this proposal are in all respects true, and that no member of the State or employee of the College are interested in any way in this proposal.

Sworn and subscribed before me _____
Bidder signs above line

this _____ day of_____ 20____

_____ _____ _____
Print Name and Title

SUBCONTRACTOR INFORMATION FOR SINGLE BID (LUMP SUM)

Pursuant to the State Colleges Contract Law, N.J.S.A. 18A:64-76.1, all bids submitted shall set forth the names and license numbers of all subcontractors to whom the bidder intends to subcontract the plumbing and gas fitting work; the refrigeration, the heating and ventilating systems and equipment; the electrical work, including any electrical power plants; tele-data, fire alarm, or security systems; the structural steel and ornamental iron work (individually, the "Trade" or collectively, the "Trades").

For each Trade listed below for which the work will be completed by a subcontractor you must list for each such subcontractor at a minimum the name and, where applicable, license number (or in lieu thereof enclose a copy of the license with this form) and preferably you will also list the subcontractor's address, telephone number, and fax number. If the work will be self-performed by the bidder, you may indicate that by inserting the name of the bidder (next to "Name"). If work by that Trade is not required per the scope of work of the project, you may indicate that by inserting "Not required" (next to "Name"). If the name of a subcontractor is not provided on this form for any one or more of the Trades, the bidder, in submitting its bid, certifies that, for such Trades, either the work will be self-performed by the bidder, or the work is not required per the scope of work.

Failure to complete this form as required may result in your bid being disqualified.

Plumbing and Gas Fitting Work

List information for Subcontractor, if any:

Name: _____

License Number: _____

Address: _____

_____

Telephone: _____

Fax: _____

Refrigeration, Heating and Ventilating Systems and Equipment

List information for Subcontractor, if any:

Name: _____

License Number: _____

Address: _____

_____

Telephone: _____

Fax: _____

Electrical Work, including any Electrical Power Plants, Tele-data, Fire Alarm, or Security Systems

List information for Subcontractor, if any:

Name: _____

License Number: _____

Address: _____

_____

Telephone: _____

Fax: _____

Structural Steel Work and Ornamental Iron Work

List information for Subcontractor, if any:

Name: _____

License Number: _____

Address: _____

_____

Telephone: _____

Fax: _____

Asbestos Abatement

List information for Subcontractor, if any:

Name: _____

License Number: _____

Address: _____

_____

Telephone: _____

Fax: _____

_____
Bidder Name

By: _____
Signature

_____
Printed Name of Signing Individual

_____
Date

SMALL BUSINESS, MINORITY AND/OR FEMALE-OWNED BUSINESS REPORTING

1. Contractor and sub-contractors are requested to check all of the following that apply to their company and, if applicable, submit a copy of their certificate(s):

A. My company is certified by the NJ Department of Treasury, Division of Revenue as a:

_____ small business_____ minority-owned business _____female-owned business

B. My company is certified by the NJ Department of Transportation as a:

_____ small business_____ minority-owned business _____female-owned business

C. My company is a _____small business_____ minority-owned or _____ female-owned but is not certified by either NJ Department.

C. _____ My company is not a small business, minority-owned or female-owned.

_____

Signed

_____

Date

PERFORMANCE BOND & PAYMENT BOND

BOND NO._____

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____ _____as Principal, and_____, a corporation of the State of _____, duly authorized to do business in the State of New Jersey, having an office at _____, are hereby held and firmly bound unto The College of New Jersey in the Penal Sum of _____ DOLLARS, for payment of which well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

SIGNED this _____ day of _____, 20_____

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT, WHEREAS, the above named Principal did on the _____ day of _____, 20_____, enter into a written contract with The College of New Jersey for _____ which said contract is made a part of this bond as set forth herein;

NOW, if the said _____ shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of the said contract; shall pay all lawful claims of sub-contractors, materialmen, laborers, persons, forms of other suppliers or teams. fuel, oils, implements or machinery furnished, used or consumed in the carrying forward, performing, or completing of said contract, we agreeing and assenting that this undertaking shall be for the benefit of any subcontractor, materialman, laborer, person, firm or corporation having a just claim, as well as for the obligee herein; then this obligation shall be void, otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulated and agrees that no modifications, omissions, or additions in or to the terms of the said contract, or in or to the plans and specifications therefore shall in any wise effect the obligation of said surety on its bond.

This bond is given in compliance with the requirements of the statutes of the State of New Jersey including N.J.S.A. 18A:64-68 and any amendments thereof.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

_____ BY:_____
Witness

_____ BY:_____
Witness as to Surety ATTORNEY-IN-FACT

Countersigned

NOTE: General Power of Attorney and the current

this _____ day of _____, 20_____

BY:_____

financial statement of the bonding company must be attached to each copy (a total of three) of the Performance Bond.

SURETY DISCLOSURE STATEMENT AND CERTIFICATION

_____, surety(ies) on the attached bond, hereby certifies(y) the following:

(1) The surety meets the applicable capital and surplus requirements of R.S. 17:17-6 or R.S. 17:17-7 as of the surety's most current annual filing with the New Jersey Department of Insurance.

(2) The capital (where applicable) and surplus, as determined in accordance with the applicable laws of the State of New Jersey, of the surety(ies) participating in the issuance of the attached bond is (are) in the following amount(s) as of the calendar year ending December 31, ____, (insert most recent calendar year for which capital and surplus amounts are available), which amounts have been certified as indicated by certified public accountants (indicating separately for each surety that surety's capital and surplus amounts, together with the name and address of the firm of certified public accountants that shall have certified those amounts):

_____

_____

_____

(3) (a) With respect to each surety participating in the issuance of the attached bond that has received from the United States Secretary of the Treasury a certificate of authority pursuant to 31 U.S.C. 9305, the underwriting limitation established therein and the date as of which that limitation was effective is as follows (indicating for each surety that surety's underwriting limitation and the effective date thereof):

_____

_____

_____

(b) With respect to each surety participating in the issuance of the attached bond that has not received such a certificate of authority from the United States Secretary of the Treasury, the underwriting limitation of that surety as established pursuant to R.S. 17:18-9 as of date on which such limitation was so established, is as follows (indicating for each such surety that surety's underwriting limitation and the date on which that limitation was established:

_____

_____

_____

(4) The amount of the bond to which this statement and certification is attached is $_____.

(5) If, by virtue of one or more contracts of reinsurance, the amount of the bond indicated under item (4) above exceeds the total underwriting limitation of all sureties on the bond as set forth in items (3) (a) or (3) (b) above, or both, then for each such contract of reinsurance:

(a) The name and address of each such re-insurer under that contract and the amount of that re-insurer's participation in the contract is as follows:

_____

_____

_____

_____

(b) Each surety that is party to any such contract of reinsurance certifies that each reinsurer listed under item (5) (a) satisfies the credit for reinsurance requirement established under P.L. 1993, c. 243 (C. 17:51B-1 *et seq.*) and any applicable regulations in effect as of the date on which the bond to which this statement certification is attached shall have been filed with the appropriate public agency.

CERTIFICATION

(to be completed by an authorized certifying agent for each surety on the bond)

I, _____ (name of agent), as _____ (title of agent)

for _____ (name of surety),

a corporation/mutual insurance company/other (indicate type of business organization by circling one) domiciled in _____ _____ (state of domicile), DO HEREBY CERTIFY that, to the best of my knowledge, the foregoing statements made by me are true, and ACKNOWLEDGE that, if any of those statements are false, this bond is VOID and I am subject to punishment.

_____
(Signature of certifying agent)

_____
(Printed name of certifying agent)

_____
(Title of certifying agent)

_____
(Date of Certification)

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE
N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127)
N.J.A.C. 17:27

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, up-grading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Dept. of LWD, Construction EEO Monitoring Program may, in its discretion, exempt a contractor or subcontractor from compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Dept. of LWD, Construction EEO Monitoring Program is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Dept. of LWD, Construction EEO Monitoring Program, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(l) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contactor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Dept. of LWD, Construction EEO Monitoring Program an initial project workforce report (Form AA 201) electronically provided to the public agency by the Dept. of LWD, Construction EEO Monitoring Program, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Division and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program for conducting a compliance investigation pursuant to **Subchapter l0 of the Administrative Code (NJAC 17:27)**.

IF AWARDED A CONTRACT YOUR COMPANY/FIRM WILL BE REQUIRED TO COMLY WITH THE AFFIRMATIVE ACTION REQUIREMENTS LISTED ABOVE.

Firm Name:_____

Signature:_____

Title:_____

Date:_____

Additional Mandatory Construction Contract Language For State Agencies, Independent Authorities, Colleges and Universities Only

The Executive Order No. 151 (Corzine, August 28, 2009) and P.L. 2009, Chapter 335 include a provision which require all state agencies, independent authorities and colleges and universities to include additional mandatory equal employment and affirmative action language in its construction contracts. It is important to note that this language is in addition to and does not replace the mandatory contract language and good faith efforts requirements for construction contracts required by N.J.A.C. 17:27-3.6, 3.7 and 3.8. The additional mandatory equal employment and affirmative action language is as follows:

> It is the policy of the **[Reporting Agency]** that its contracts should create a workforce that reflects the diversity of the State of New Jersey. Therefore, contractors engaged by the **[Reporting Agency]** to perform under a construction contract shall put forth a good faith effort to engage in recruitment and employment practices that further the goal of fostering equal opportunities to minorities and women.
>
> The contractor must demonstrate to the **[Reporting Agency]**'s satisfaction that a good faith effort was made to ensure that minorities and women have been afforded equal opportunity to gain employment under the **[Reporting Agency]**'s contract with the contractor. Payment may be withheld from a contractor's contract for failure to comply with these provisions.
>
> Evidence of a "good faith effort" includes, but is not limited to:
>
> 1. The Contractor shall recruit prospective employees through the State Job bank website, managed by the Department of Labor and Workforce Development, available online at http://NJ.gov/JobCentralNJ;
> 2. The Contractor shall keep specific records of its efforts, including records of all individuals interviewed and hired, including the specific numbers of minorities and women;
> 3. The Contractor shall actively solicit and shall provide the **[Reporting Agency]** with proof of solicitations for employment, including but not limited to advertisements in general circulation media, professional service publications and electronic media; and
> 4. The Contractor shall provide evidence of efforts described at 2 above to the **[Reporting Agency]** no less frequently than once every 12 months.
> 5. The Contractor shall comply with the requirements set forth at N.J.A.C. 17:27.

To ensure successful implementation of the Executive Order and Law, state agencies, independent authorities and colleges and universities must forward an Initial Project Workforce Report (AA 201) for any projects funded with ARRA money to the Dept. of LWD, Construction EEO Monitoring Program immediately upon notification of award but prior to execution of the contract.

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I Check the box that represents the type of business organization:

☐ Sole Proprietorship (skip Parts II and III, execute certification in Part IV)

☐ Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)

☐ For-Profit Corporation (any type) ☐ Limited Liability Company (LLC)

☐ Partnership ☐ Limited Partnership ☐ Limited Liability Partnership (LLP)

☐ Other (be specific): _____

Part II

☐ The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. (**COMPLETE THE LIST BELOW IN THIS SECTION**)

OR

☐ No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. (**SKIP TO PART IV**)

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Home Address (for Individuals) or Business Address

Part III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. **Attach additional sheets if more space is needed**.

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II **other than for any publicly traded parent entities referenced above**. The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Home Address (for Individuals) or Business Address

Part IV Certification

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the **The College of New Jersey** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with **The College of New Jersey** to notify the **The College of New Jersey** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the, permitting the **The College of New Jersey** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

TCNJ THE COLLEGE OF NEW JERSEY

NON-COLLUSION STATEMENT

Date:_____

The College of New Jersey
The Office of Budget and Finance, Department of Purchasing
Administrative Services Building, Room 201
P.O. Box 7718
Ewing, New Jersey 08628-0718

To Whom It May Concern:

This is to certify that the undersigned bidder _____ as not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the proposal submitted to The College of New Jersey on the_____ day of_____ , 20_____.

Signature:_____

Corporate Seal:

Attest by: _____

Sworn to and subscribed before me this_____day of _____ , 20____.

My commission Expires:_____

Notary Public

THIS STATEMENT MUST BE COMPLETED AND SIGNED

INFORMATION AND INSTRUCTIONS
For Completing the "Two-Year Vendor Certification and Disclosure of Political Contributions" Form

Background Information

On September 22, 2004, then-Governor James E. McGreevey issued E.O. 134, the purpose of which was to insulate the negotiation and award of State contracts from political contributions that posed a risk of improper influence, purchase of access or the appearance thereof. To this end, E.O. 134 prohibited State departments, agencies and authorities from entering into contracts exceeding $17,500 with individuals or entities that made certain political contributions. E.O. 134 was superseded by Public Law 2005, c. 51, signed into law on March 22, 2005 ("Chapter 51").

On September 24, 2008, Governor Jon S. Corzine issued E.O. 117 which is designed to enhance New Jersey's efforts to protect the integrity of procurement decisions and increase the public's confidence in government. The Executive Order builds upon the provisions of Chapter 51.

Two-Year Certification Process

Upon approval by the State Chapter 51 Review Unit, the Certification and Disclosure of Political Contributions form is valid for a two (2) year period. Thus, if a vendor receives approval on January 1, 2014, the certification expiration date would be December 31, 2015. Any change in the vendor's ownership status and/or political contributions during the two-year period will require the submission of new Chapter 51/Executive Order 117 forms to the State Review Unit. **Please note that it is the vendor's responsibility to file new forms with the State should these changes occur.**

State Agency Instructions: Prior to the awarding of a contract, the State Agency should first send an e-mail to CD134@treas.nj.gov to verify the certification status of the vendor. If the response is that the vendor is NOT within an approved two-year period, then forms must be obtained from the vendor and forwarded for review. If the response is that the vendor is within an approved two-year period, then the response so stating should be placed with the bid/contract documentation for the subject project.

Instructions for Completing the Form

NOTE: *Please refer to pages 3 and 4 "USEFUL DEFINITIONS for the purposes of Chapter 51 and Executive Order 117" for guidance when completing the form.*

Part 1: BUSINESS ENTITY INFORMATION

Business Name – Enter the full legal name of the vendor, including trade name if applicable.

Address, City, State, Zip and Phone Number -- Enter the vendor's street address, city, state, zip code and telephone number.

Vendor Email – Enter the vendor's primary email address.

Vendor FEIN – Please enter the vendor's Federal Employment Identification Number.

Business Type - Check the appropriate box that represents the vendor's type of business formation.

Listing of officers, shareholders, partners or members - Based on the box checked for the business type, provide the corresponding information. (A complete list must be provided.)

Part 2: DISCLOSURE OF CONTRIBUTIONS

Read the three types of political contributions that require disclosure and, if applicable, provide the recipient's information. The definition of "Business Entity/Vendor" and "Contribution" can be found on pages 3 and 4 of this form.

Name of Recipient - Enter the full legal name of the recipient.

Address of Recipient - Enter the recipient's street address.

Date of Contribution - Indicate the date the contribution was given.

Amount of Contribution - Enter the dollar amount of the contribution.

Type of Contribution - Select the type of contribution from the examples given.

Contributor's Name - Enter the full name of the contributor.

Relationship of the Contributor to the Vendor - Indicate the relationship of the contributor to the vendor. (e.g. officer or shareholder of the company, partner, member, parent company of the vendor, subsidiary of the vendor, etc.)

NOTE: If form is being completed electronically, click "Add a Contribution" to enter additional contributions. Otherwise, please attach additional pages as necessary.

Check the box under the recipient information if no reportable contributions have been solicited or made by the business entity. **This box must be checked if there are no contributions to report.**

Part 3: CERTIFICATION

Check Box A if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity. **(No additional Certification and Disclosure forms are required if BOX A is checked.)**

Check Box B if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity with the exception of those individuals and/or entities that submit their own separate form. For example, the representative is not signing on behalf of the vice president of a corporation, but all others. The vice president completes a separate Certification and Disclosure form. **(Additional Certification and Disclosure forms are required from those individuals and/or entities that the representative is not signing on behalf of and are included with the business entity's submittal.)**

Check Box C if the representative completing the Certification and Disclosure form is doing so on behalf of the business entity only. **(Additional Certification and Disclosure forms are required from all individuals and/or entities whose contributions are attributable to the business entity and must be included with the business entity submittal.)**

Check Box D when a sole proprietor is completing the Certification and Disclosure form or when an individual or entity whose contributions are attributable to the business entity is completing a separate Certification and Disclosure form.

Read the five statements of certification prior to signing.

The representative authorized to complete the Certification and Disclosure form must sign and print her/his name, title or position and enter the date.

State Agency Procedure for Submitting Form(s)

The State Agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms either electronically to: cd134@treas.nj.gov or regular mail at: Chapter 51 Review Unit, P.O. Box 230, 33 West State Street, Trenton, NJ 08625-0230. Original forms should remain with the State Agency and copies should be sent to the Chapter 51 Review Unit.

Business Entity Procedure for Submitting Form(s)

The business entity should return this form to the contracting State Agency.
The business entity can submit the Certification and Disclosure form directly to the Chapter 51 Review Unit only when:

- The business entity is approaching its two-year certification expiration date and is seeking certification renewal;
- The business entity had a change in its ownership structure; OR
- The business entity made any contributions during the period in which its last two-year certification was in effect, or during the term of a contract with a State Agency.

Questions & Information

Questions regarding the interpretation or application of Public Law 2005, Chapter 51 (N.J.S.A. 19:44A-20.13) or E.O. 117 (2008) may be submitted electronically through the Division of Purchase and Property website at: https://www.state.nj.us/treas/purchase/eo134questions.shtml
Reference materials and forms are posted on the Political Contributions Compliance website at: http://www.state.nj.us/treasury/purchase/execorder134.shtml

USEFUL DEFINITIONS for the purposes of Chapter 51 and Executive Order 117

- **"Business Entity/Vendor"** means any natural or legal person, business corporation, professional services corporation, limited liability company, partnership, limited partnership, business trust, association or any other legal commercial entity organized under the laws of New Jersey or any other state or foreign jurisdiction. The definition also includes (i) if a business entity is a for-profit corporation, any officer of the corporation and any other person or business entity that owns or controls 10% or more of the stock of the corporation; (ii) if a business entity is a professional corporation, any shareholder or officer; (iii) if a business entity is a general partnership, limited partnership or limited liability partnership, any partner; (iv) if a business entity is a sole proprietorship, the proprietor; (v) if the business entity is any other form of entity organized under the laws of New Jersey or any other state or foreign jurisdiction, any principal, officer or partner thereof; (vi) any subsidiaries directly or indirectly controlled by the business entity; (vii) any political organization organized under 26 U.S.C.A. § 527 that is directly or indirectly controlled by the business entity, other than a candidate committee, election fund, or political party committee; and (viii) with respect to an individual who is included within the definition of "business entity," that individual's civil union partner and any child residing with that person. [1]

- **"Officer"** means a president, vice president with senior management responsibility, secretary, treasurer, chief executive officer or chief financial officer of a corporation or any person routinely performing such functions for a corporation. Please note that officers of non-profit entities are excluded from this definition.

- **"Partner"** means one of two or more natural persons or other entities, including a corporation, who or which are joint owners of and carry on a business for profit, and which business is organized under the laws of this State or any other state or foreign jurisdiction, as a general partnership, limited partnership, limited liability partnership, limited liability company, limited partnership association, or other such form of business organization.

[1]Contributions made by a spouse, civil union partner or resident child to a candidate for whom the contributor is eligible to vote or to a political party committee within whose jurisdiction the contributor resides are permitted.

USEFUL DEFINITIONS for the purposes of Chapter 51 and Executive Order 117

- **"Contribution"** is a contribution, including an in-kind contribution, in excess of $300.00 in the aggregate per election made to or received by a candidate committee, joint candidates committee, or political committee; or per calendar year made to or received by a political party committee, legislative leadership committee, or continuing political committee or a currency contribution in any amount.

- **"In-kind Contribution"** means a contribution of goods or services received by a candidate committee, joint candidates committee, political committee, continuing political committee, political party committee, or legislative leadership committee, which contribution is paid for by a person or entity other than the recipient committee, but does not include services provided without compensation by an individual volunteering a part of or all of his or her time on behalf of a candidate or committee.

- **"Continuing Political Committee"** includes any group of two or more persons acting jointly, or any corporation, partnership, or any other incorporated or unincorporated association, including a political club, political action committee, civic association or other organization, which in any calendar year contributes or expects to contribute at least $4,300 to aid or promote the candidacy of an individual, or the candidacies of individuals, for elective public office, or the passage or defeat of a public questions, and which may be expected to make contributions toward such aid or promotion or passage or defeat during a subsequent election, provided that the group, corporation, partnership, association or other organization has been determined by the Commission to be a continuing political committee in accordance with N.J.S.A. 19:44A-8(b).

- **"Candidate Committee"** means a committee established by a candidate pursuant to N.J.S.A. 19:44A-9(a), for the purpose of receiving contributions and making expenditures.

- **"State Political Party Committee"** means a committee organized pursuant to N.J.S.A. 19:5-4.

- **"County Political Party Committee"** means a committee organized pursuant to N.J.S.A. 19:5-3.

- **"Municipal Political Party Committee"** means a committee organized pursuant to N.J.S.A. 19:5-2.

- **"Legislative Leadership Committee"** means a committee established, authorized to be established, or designated by the President of the Senate, the Minority Leader of the Senate, the Speaker of the General Assembly, or the Minority Leader of the General Assembly pursuant to N.J.S.A. 19:44A-10.1 for the purpose of receiving contributions and making expenditures.

- **"Political Party Committee"** means:

    1. The State committee of a political party, as organized pursuant to N.J.S.A. 19:5-4;
    2. Any county committee of a political party, as organized pursuant to N.J.S.A. 19:5-3; or
    3. Any municipal committee of a political party, as organized pursuant to N.J.S.A. 19:5-2

State of New Jersey
Department of the Treasury

Division of Purchase and Property
Two-Year Chapter 51/Executive Order 117 Vendor Certification and
Disclosure of Political Contributions

FOR STATE AGENCY USE ONLY

Solicitation, RFP, or Contract No._____ Award Amount_____

Description of Services _____

State Agency Name _____ Contact Person _____

Phone Number _____ Contact Email _____

☐ Check if the Contract / Agreement is Being Funded Using FHWA Funds

Please check if requesting recertification ☐

Part 1: Business Entity Information

Full Legal Business Name _____
(Including trade name if applicable)

Address _____

City _____ State _____ Zip _____ Phone _____

Vendor Email_____ Vendor FEIN (SS# if sole proprietor/natural person)_____

Check off the business type and list below the required information for the type of business selected.
MUST BE COMPLETED IN FULL

- ☐ Corporation: LIST ALL OFFICERS and any 10% and greater shareholder
- ☐ Professional Corporation: LIST ALL OFFICERS and ALL SHAREHOLDERS
- ☐ Partnership: LIST ALL PARTNERS with any equity interest
- ☐ Limited Liability Company: LIST ALL MEMBERS with any equity interest
- ☐ Sole Proprietor

Note: "Officers" means President, Vice President with senior management responsibility, Secretary, Treasurer, Chief Executive Officer or Chief Financial Officer of a corporation, or any person routinely performing such functions for a corporation.

All Officers of a Corporation or PC	**10% and greater shareholders of a corporation or all shareholder of a PC**

All Equity partners of a Partnership	**All Equity members of a LLC**

If you need additional space for listing of Officers, Shareholders, Partners or Members, please attach separate page.

IMPORTANT NOTE: You must review the definition of "contribution" and "business entity" on the Information and Instructions form prior to completing Part 2 and Part 3. The Information and Instructions form is available at: http://www.state.nj.us/treasury/purchase/forms.shtml#eo134

Part 2: Disclosure of Contributions by the business entity or any person or entity whose contributions are attributable to the business entity.

1. **Report below all contributions solicited or made during the 4 years immediately preceding the commencement of negotiations or submission of a proposal to any:**

   Political organization organized under Section 527 of the Internal Revenue Code and which also meets the definition of a continuing political committee as defined in N.J.S.A. **(See Information and Instructions form.)**

2. **Report below all contributions solicited or made during the 5 ½ years immediately preceding the commencement of negotiations or submission of a proposal to any:**

   Candidate Committee for or Election Fund of any Gubernatorial or Lieutenant Gubernatorial candidate
   State Political Party Committee
   County Political Party Committee

3. **Report below all contributions solicited or made during the 18 months immediately preceding the commencement of negotiations or submission of a proposal to any:**

   Municipal Political Party Committee
   Legislative Leadership Committee

Full Legal Name of Recipient _____

Address of Recipient _____

Date of Contribution _____ Amount of Contribution _____

Type of Contribution (i.e. currency, check, loan, in-kind) _____

Contributor Name _____

Relationship of Contributor to the Vendor _____

If this form is not being completed electronically, please attach additional contributions on separate page.

Click the "Add a Contribution" tab to enter additional contributions.

Remove Contribution

Add a Contribution

☐ Check this box only if no political contributions have been solicited or made by the business entity or any person or entity whose contributions are attributable to the business entity.

Part 3: Certification

(A) ☐ I am certifying on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity as listed on Page 1 under **Part 1: Vendor Information**.

(B) ☐ I am certifying on behalf of the business entity and all individuals and/or entities whose contributions are attributable to the business entity as listed on Page 1 under **Part 1: Vendor Information**, except for the individuals and/or entities who are submitting separate Certification and Disclosure forms which are included with this submittal.

(C) ☐ I am certifying on behalf of the business entity only; any remaining persons or entities whose contributions are attributable to the business entity (as listed on Page 1) have completed separate Certification and Disclosure forms which are included with this submittal.

(D) ☐ I am certifying as an individual or entity whose contributions are attributable to the business entity.

I hereby certify as follows:

1. **I have read the Information and Instructions accompanying this form prior to completing the certification on behalf of the business entity.**

2. **All reportable contributions made by or attributable to the business entity have been listed above.**

3. **The business entity has not knowingly solicited or made any contribution of money, pledge of contribution, including in-kind contributions, that would bar the award of a contract to the business entity unless otherwise disclosed above:**

a) Within the 18 months immediately preceding the commencement of negotiations or submission of a proposal for the contract or agreement to:

(i) A candidate committee or election fund of any candidate for the public office of Governor or Lieutenant Governor or to a campaign committee or election fund of holder of public office of Governor or Lieutenant Governor; OR
(ii) Any State, County or Municipal political party committee; OR
(iii)Any Legisative Leadership committee.

b) During the term of office of the current Governor or Lieutenant Governor to:

(i) A candidate committee or election fund of a holder of the public office of Governor or Lieutenant Governor; OR

(ii) Any State or County political party committee of the political party that nominated the sitting Governor or Lieutenant Governor in the last gubernatorial election.

c) Within the 18 months immediately preceding the last day of the sitting Governor or Lieutenant Governor's first term of office to:

(i) A candidate committee or election fund of the incumbent Governor or Lieutenant Governor; OR
(ii) Any State or County political party committee of the political party that nominated the sitting Governor or Lieutenant Governor in the last gubernatorial election.

4. **During the term of the contract/agreement the business entity has a continuing responsibility to report, by submitting a new Certification and Disclosure form, any contribution it solicits or makes to:**

(a) Any candidate committee or election fund of any candidate or holder of the public office of Governor or Lieutenant Governor; OR

(b) Any State, County or Municipal political party committee; OR
(c) Any Legislative Leadership committee.

The business entity further acknowledges that contributions solicited or made during the term of the contract/agreement may be determined to be a material breach of the contract/agreement.

5. **During the two-year certification period the business entity will report any changes in its ownership structure (including the appointment of an officer within a corporation) by submitting a new Certification and Disclosure form indicating the new owner(s) and reporting said owner(s) contributions.**

I certify that the foregoing statements in Parts 1, 2 and 3 are true. I am aware that if any of the statements are willfully false, I may be subject to punishment.

Signed Name _____ Print Name _____

Title/Position _____ Date _____

Procedure for Submitting Form(s)

The contracting State Agency should submit this form to the Chapter 51 Review Unit when it has been required as part of a contracting process. The contracting State Agency should submit a copy of the completed and signed form(s), to the Chapter 51 Unit and retain the original for their records.

The business entity should return this form to the contracting State Agency. The business entity can submit this form directly to the Chapter 51 Review Unit only when it -

- Is approaching its two-year certification expiration date and wishes to renew certification;
- Had a change in its ownership structure; OR
- Made any contributions during the period in which its last two-year certification was in effect, or during the term of a contract with a State Agency.

Forms should be submitted either electronically to:cd134@treas.nj.gov **, or regular mail at: Chapter 51 Review Unit, P.O. Box 230, 33 West State Street, Trenton, NJ 08625.**

State of New Jersey

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

Solicitation Number: _____ **Bidder/Offeror:** _____

Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that the person or entity, or one of the person or entity's parents, subsidiaries, or affiliates, is not identified on a list created and maintained by the Department of the Treasury as a person or entity engaging in investment activities in Iran. If the Director finds a person or entity to be in violation of the principles which are the subject of this law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the person or entity.

I certify, pursuant to Public Law 2012, c. 25, that the person or entity listed above for which I am authorized to bid/renew:

☐ is not providing goods or services of $20,000,000 or more in the energy sector of Iran, including a person or entity that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran, **AND**

☐ is not a financial institution that extends $20,000,000 or more in credit to another person or entity, for 45 days or more, if that person or entity will use the credit to provide goods or services in the energy sector in Iran.

In the event that a person or entity is unable to make the above certification because it or one of its parents, subsidiaries, or affiliates has engaged in the above-referenced activities, a detailed, accurate and precise description of the activities must be provided in part 2 below to the Division of Purchase and Property under penalty of perjury. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

PART 2: PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the boxes below.

EACH BOX WILL PROMPT YOU TO PROVIDE INFORMATION RELATIVE TO THE ABOVE QUESTIONS. PLEASE PROVIDE THOROUGH ANSWERS TO EACH QUESTION. IF YOU NEED TO MAKE ADDITIONAL ENTRIES, PLEASE ADD AN ADDITIONAL SHEET.

Name _____ Relationship to Bidder/Offeror _____

Description of Activities _____

_____

Duration of Engagement _____ Anticipated Cessation Date _____

Bidder/Offeror Contact Name _____ Contact Phone Number _____

Certification: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the State of New Jersey is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the State to notify the State in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the State of New Jersey and that the State at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print): _____ Signature: _____

Title: _____ Date: _____

PB-MP.1 R10/2011

MACBRIDE PRINCIPLES FORM

BIDDER'S REQUIREMENT: TO PROVIDE A CERTIFICATION IN COMPLIANCE WITH MACBRIDE PRINCIPLES AND NORTHERN IRELAND ACT OF 1989

Pursuant to Public Law 1995, c. 134, a responsible bidder selected, after public bidding, by the Director of the Division of Purchase and Property, pursuant to N.J.S.A. 52:34-12, or the Director of the Division of Building and Construction, pursuant to N.J.S.A. 52:32-2, must complete the certification below by checking one of the two representations listed and signing where indicated. If a bidder who would otherwise be awarded a purchase, contract or agreement does not complete the certification, then the Directors may determine, in accordance with applicable law and rules, that it is in the best interest of the State to award the purchase, contract or agreement to another bidder who has completed the certification and has submitted a bid within five (5) percent of the most advantageous bid. If the Directors find contractors to be in violation of the principles which are the subject of this law, they shall take such action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.

I certify, pursuant to N.J.S.A. 52:34-12.2 that the entity for which I am authorized to bid:

☐ has no ongoing business activities in Northern Ireland and does not maintain a physical presence therein through the operation of offices, plants, factories, or similar facilities, either directly or indirectly, through intermediaries, subsidiaries or affiliated companies over which it maintains effective control; or

☐ will take lawful steps in good faith to conduct any business operations it has in Northern Ireland in accordance with the MacBride principles of nondiscrimination in employment as set forth in N.J.S.A. 52:18A-89.5 and in conformance with the United Kingdom's Fair Employment (Northern Ireland) Act of 1989, and permit independent monitoring of their compliance with those principles.

I certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

Signature: _____

Print Name: _____

Title: _____

Firm Name: _____

Date: _____

VENDOR QUALIFICATION SHEETS

Vendors are requested to submit evidence of qualifications to meet all requirements as required by the Office of Finance & Business Services at The College of New Jersey by providing the information listed below.

If this information is being requested as part of an RFP or RFQ, vendors may be requested to furnish additional information for clarification purposes. This will in no way change the vendor's original proposal.

TO BE COMPLETED BY VENDOR

1. Please list the types of commodities that your company can provide.

   A.

   B.

   C.

2. The number of years your firm has been providing these services. _____ Year(s)

3. Location of vendor's office that will be responsible for managing contract/service:

   Name: _____

   Telephone: _____ Fax: _____

   Email Address: _____

   Street Address: _____

   City/State/Zip: _____

   Federal Identification Number: _____

4. Address where all purchase orders and payment are to be mailed by users of any contract(s) resulting from this proposal (if different from above).

   Purchase Orders:

   Firm Name: _____

   Street Address: _____

   City/State/Zip: _____

   Remittances:

   Firm Name: _____

   Street Address: _____

   City/State/Zip: _____

VENDOR QUALIFICATIONS- continued

5. Name of insurance company:

   Street Address: _____

   City/State/Zip: _____

   Types of Insurance: _____

6. Name of individual to contact for sales/services information:

   Name: _____

   Telephone: _____

   Email Address: _____

   Street Address: _____

   City/State/Zip: _____

7. List the names and titles of personnel who will service this contract:

   _____

   _____

   _____

8. Is your firm registered with the Secretary of State of New Jersey? **Yes_____ No_____**

9. Is your firm incorporated? **Yes_____ No_____**

   A) In What State? _____

10. Is your firm considered a small business in the State of New Jersey? **If yes, please attach a certificate or certification statement from the New Jersey Commerce and Economic Growth Commission.** If no and you would like to register, please contact the New Jersey Commerce and Economic Growth Commission at 609-777-0885.

    Small Business: **Yes_____ No_____**

    A) What category does your firm fall under?

    Gross Revenues do not exceed $500,000 _____

    Gross Revenues do not exceed $5 million _____

    Gross Revenues do not exceed $12 million _____

Under Executive Order 34, TCNJ is responsible for soliciting demographic information from its vendors. TCNJ is required to seek the following information from each firm under contract with us:

1. Is more than fifty percent (50%) of your company minority owned? (circle one) YES NO
   (African-American, Hispanic, Asian, and/or Native American)

2. Is more than fifty percent (50%) of your company woman owned? (circle one) YES NO

3. What is the ethnicity of the owner of your company: (check applicable according to 51% ownership)

   … Asian American
   … Multiple Ethnicities
   … Non-Minority
   … Hispanic American
   … African American
   … Caucasian American Female
   … Native American
   … Unspecified

TCNJ is required to solicit the foregoing information. Your response, however, is **strictly voluntary**. Please be advised that any contracting decisions made by TCNJ will **not** be influenced in any way by your decision to provide the above information.

EXECUTIVE ORDER #34: MINORITY AND WOMEN BUSINESS ENTERPRISES

On September 15, 2006, Governor Corzine signed Executive Order 34 establishing a Division of Minority and Women Business Development. The Division is charged with administering and monitoring policies, practices, and programs to ensure that New Jersey owned minority and women business enterprises (MWBE) are afforded an equal opportunity to participate in New Jersey's purchasing and procurement processes.

State entities are required to report to the Division the ethnic and gender composition of the vendors with which we do business.

VENDOR QUALIFICATIONS-

11. Please provide a list of former or present clients. Also, indicate the name of a contact person and telephone number for reference purposes. **Any personnel from The College of New Jersey listed as a reference will not be considered a valid reference.**

A. Client Name:

Contact Name:

Telephone Number:

Fax Number:

Email Address:

B. Client Name:

Contact Name:

Telephone Number:

Fax Number:

Email Address:

C. **Client Name:**

Contact Name:

Telephone Number:

Fax Number:

Email Address:

D. **Client Name:**

Contact Name:

Telephone Number:

Fax Number:

Email Address:

VENDOR QUALIFICATIONS- continued

12. Please answer the following questions related to your prior experience:

a. Has the bidder been found, though either court adjudication, arbitration, mediation, or other contractually stipulated alternate dispute resolution mechanism, to have: failed to provide or perform goods or services; or failed to complete the contract in a timely manner; or otherwise performed unsatisfactorily under a prior contract with the contracting unit? If yes, attach summary of details on a separate sheet.

Yes_____ No_____

b. Has the bidder defaulted on a contract, thereby requiring the local unit to utilize the services of another contractor to provide the goods or perform the services or to correct or complete the contract? If yes, attach summary of details on a separate sheet.

Yes_____ No_____

c. Has the bidder defaulted on a contract, thereby requiring the local unit to look to the bidder's surety for completion of the contract or tender of the costs of completion? If yes, attach summary of details on a separate sheet.

Yes_____ No_____

d. Has the bidder been debarred or suspended from contracting with any of the agencies or departments of the executive branch of the State of New Jersey at the time of contract award, whether or not the action was based on experience with the contracting unit. If yes, attach summary of details on a separate sheet.

Yes_____ No_____

Firm Name:_____

Signature:_____

Title:_____

Date:_____

CONTRACT FOR CONSTRUCTION

Agreement made on , 2018 between The College of New Jersey as the project owner, and, as the Construction Contractor

Contractor:
Address:

Project: Green Hall Suite 206 Alterations

1. **EMPLOYMENT OF CONTRACTOR/PROJECT DESCRIPTION**. The College employs the Contractor and the Contractor agrees to perform the construction for the project identified above. The project is described in the College's plans and specifications prepared by the project architect.

2. **CONTRACT DOCUMENTS**. This contract includes the plans and specifications, and also the following documents:

    1. Request for Bids
    2. Contractor's Bid
    3. General Conditions of the Contract for Construction
    4. Addenda and clarifications issued before the bid due date
    5. Project Bidding Schedule

3. **PROJECT ARCHITECT**. The project architect is responsible for the design of the project, acting as the College's representative on the project, and performing the duties of the project architect during the construction and completion of the project. The project architect is:

    AE Firm:
    Address:

4. **SCOPE OF WORK**. The Contractor shall perform the construction work specified in this contract including the contract documents. The Contractor shall assume full responsibility for constructing and completing the project and all the work in this contract and the contract documents, including providing all labor, subcontractors, materials and equipment required, and providing all supervision, management, and scheduling required in the general conditions and as noted throughout the contract documents.

5. **CONTRACT TIMES**. All dates and durations specified for the start of construction, the milestones dates specified in this contract and the substantial completion and final completion of the project are agreed to be of the essence.

    a. **CONSTRUCTION START.** The construction work shall start no later than10 calendar days after the College issues a Notice to Proceed to the Contractor.

    b. **MILESTONES.** The construction tasks or activities shall be completed within the following number of calendar days after the construction start date (the actual dates will be set forth in the Notice to Proceed):

c. SUBSTANTIAL COMPLETION. The construction work and the project shall be substantially completed, meaning capable of being reasonably utilized for the purpose intended, within _____ calendar days after the construction start date (the actual date will be set forth in the Notice to Proceed). Substantial Completion pertains to all milestone dates of the project schedule.

d. FINAL COMPLETION. The construction work, the project and the contract shall be finally completed within _____ calendar days after the construction start date (the actual date will be set forth in the Notice to Proceed). The requirements for final completion are defined in the general conditions of the contract for construction as well as the technical specifications of the project.

e. DELAYS AND EXTENSIONS OF CONTRACT DATES.

1. **Delays Warranting Extensions.** If the Contractor is unavoidably prevented from completing any part of the work within the milestone, substantial completion or final completion dates in this contract by causes beyond the control and without the fault of the Contractor or its subcontractors, those contract dates will be extended by amounts equal to the time lost due to such delays, provided the Contractor requests extensions in accordance with the general conditions. The Contractor's right to extensions, the terms and conditions of extensions, and the right to extra compensation for certain extensions shall be governed by the general conditions.

2. **Requests for Extensions.** The Contractor must provide the College with a written notice of delay and request for an extension within 24 hours of the beginning of a delay, or it will not be entitled to an extension. Written notices and requests must comply with the general conditions, and the failure to submit them will preclude the Contractor from making any claim for an extension under the contract.

f. EXTENSION TERMS. The contract dates will be extended for the delays specified in the general conditions to the extent the delays prevent completion of the work required by the contract dates and shall be calculated in accordance with the general conditions. When there is a delay warranting an extension of the contract dates, the College is not required to authorize extra compensation to fund efforts to reduce or eliminate the effect of the delay, but if the College elects to do so, and requires such efforts as a change to the contract, the Contractor shall perform the extra work and be entitled to extra compensation for it under the change order provisions in the contract and the general conditions. The possibility of additional compensation to accelerate because of delays shall not apply to delays for which the Contractor is responsible under the contract and general conditions.

6. LIQUIDATED DAMAGES FOR DELAY. If the Contractor fails to substantially complete the project by the substantial completion date specified, the Contractor shall pay the following amounts as liquidated damages for delay for each calendar day that the project is not substantially complete beyond the substantial completion date. Liquidated damages shall be established at 1/20th of 1% of the base contract amount per calendar day.

The College and the Contractor agree that the actual loss to the College from construction delays and the inability to use the project in a substantially completed state are for the most part difficult to quantify, and that the foregoing liquidated damages formula results in damages amounts that are reasonable and are not penalties and are not intended to be penalties. The College and the Contractor agree that the amount of liquidated damages per calendar day for delays in the substantial completion of the project is a reasonable estimate of the damage to the College for not being able to use the project in a substantially completed state. The College may deduct liquidated damages from payments due under this contract, but its failure to

withhold liquidated damages to assert claims for liquidated damages shall not be deemed a waiver of the College's right to withhold or to assert claims for damages for any delays which occur at any time on the project.

7. **CONTRACT PRICE**. The Contractor shall be paid $_____ for the complete performance of this contract which was proposed by the Contractor in its bid and accepted by the College. The Contractor shall be entitled to additional compensation for authorized changes which include the cost of the changes and mark-ups included in change orders approved by the College in accordance with the change order provision in the general conditions.

8. **PAYMENTS TO CONTRACTOR**. The Contractor will be paid by the College in accordance with this paragraph and the general conditions in the contract.

a. **MONTHLY PROGRESS PAYMENTS.** The College will make progress payments as the work proceeds based on written invoices submitted monthly by the Contractor and approved by the architect and the College. No payments will be made until the Contractor submits a unit schedule break down showing the portions of the total contract price for each principal category of work and value loaded CPM schedule allocating the contract price among the schedule activities. Monthly progress payment amounts shall be based on the percentages of the work completed as of the end of the pay period (less earlier payments). All payment requests or invoices and all payments shall be governed by the general conditions as well as the special requirements of this contract, including the requirement that progress payments shall be based on a unit schedule breakdown and a value loaded CPM schedule.

b. **RETAINAGE**. The College will retain 2% of the amount due on each partial payment pending completion of the contract.

Upon acceptance of the work performed pursuant to the contract, all amounts being withheld by the College shall be released and paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college, without further withholding of any amounts for any purpose whatsoever, provided that the contract has been completed as indicated. The holding and release of retainage shall be governed by the general conditions.

c. **CHANGE ORDERS.** The Contractor shall invoice for change order work in the monthly contract progress payment invoices as the change order work is performed, but only after a written change order and TCNJ issued Purchase Order has been signed by the College.

d. **FINAL PAYMENT.** Upon final completion of all work included in the contract including all change orders, upon acceptance of the work by the architect and the College, upon the satisfactory completion of all of the requirements in the general conditions for completion, and upon the issuance of the certificate of final completion, the Contractor will be paid the fully adjusted contract balance including any retainage withheld. The invoice for final payment and final payment shall also be subject to the general conditions and the special requirements of this contract.

e. **PAYMENT TERMS.** All invoices and payments shall also be subject to the general conditions, including the provisions regarding payments, and to the right of the College to withhold payments or to make deductions from payments. See also the Prevailing Wage Act requirements in paragraph 22. The College will pay proper final invoices within 30 days of their submission to the College with the approval of the architect.

f. **SUBMISSION OF INVOICES:** Prior to the submission of the invoice, the contractor will submit to the owner and architect, in draft form, a "pencil copy" of the monthly invoice for review and approval setting forth each line item the contractor intends to request payment in that invoice based on the claimed percent completed for that line item. Upon receipt of said "pencil copy", the owner and architect shall observe the work and in place and, on the basis of such observations, will either approve the amounts requested or modify the contractor's request, based on the owners independent assessment of the work in place. The owner will then return the pencil copy invoice to the contractor for the contractor to then adjust and submit the final invoice with the agreed to percentages completed per line item to the owner for payment. No invoice shall be submitted for payment until all amounts and completion percentages have been determined in this manner.

g. For the purposes of the State's Prompt Payment of Contractors and Subcontractors Act (N.J.S.A. 2A:30A-1, et seq.)

(1) An invoice will be deemed to have been received when it is received by the owner at the address designated in the pre-construction conference for receipt of the invoices.
(2) The "billing date" as that term is used in N.J.S.A. 2A:30A-2 shall be the earlier of the date upon which an invoice for payment is approved for payment or 20 days after the invoice is received, unless within such 20 day period the invoice is found to be incomplete or otherwise unacceptable and returned to the contractor, with a written explanation of deficiencies.
(3) In the event that an invoice is found to be deficient and returned to the contractor, the "billing date" shall be calculated from the date that a corrected invoice is received.
(4) Payment shall be considered to have been made on the date on which a check for such payment is dated.
(5) Payment terms (e.g. "net 20") offered by the contractor shall not govern the owners obligation to make payment.
(6) The following periods of time will not be included in the calculation of the due date of any contractor invoice:

- Anytime elapsed between receipt of an improper invoice and its return to the contractor, not to exceed 20 calendar days; or
- Any time elapsed between the owner's return of an improper invoice to the contractor and the owner's receipt of a corrected invoice.

h. **LIMITATIONS ON APPLICABILITY:** The provisions of this Article shall not govern the owner's payment obligations nor shall they supersede or modify any other contractual provision allowing the withholding of monies from the contractor to the extent that the contractor has not performed in accordance with the provisions of the contract. Nor shall this Article govern the owner's payment obligations nor supersede or modify any other contractual provision governing contractor claims for additional compensation beyond the base contract price and approved change orders.

i. **INTEREST:** Interest shall be payable on amounts due the contractor if not paid within thirty (30) calendar days after the billing date specified in the above subparagraph, as provided under the State's Prompt Payment of Contractors and Subcontractors Act. Interest on amounts due shall be payable to the contractor for the period beginning on the day after the required payment date and ending on the date on which the check for payment is drawn. Interest may be paid by separate payment to the contractor, but shall be paid within 30 days of payment of the principal amount of the approved invoice. Nothing in this article shall be construed as entitling the contractor to payment of interest on any sum withheld by the owner for any reason permitted under the contract or applicable law, or on any claim for additional compensation, over

and above sums due under the base contract or approved change orders.

j. SUSPENSION OF PERFORMANCE: A contractor not paid sums due under an approved invoice within thirty (30) days of the billing date may suspend performance without penalty for breach of contract, but only after providing the owner with seven (7) days written notice of non-payment, and only in the event that the owner fails to furnish the contractor, within that seven day period, with a written statement of the amount withheld and the reasons for the withholding. Nothing herein shall be construed to excuse the contractor's nonperformance, or to limit the owner's rights and remedies relating to such nonperformance, with regard to any monies withheld from the contractor upon the proper notice provided under this Article, or with regard to any contractor claim disputed by the owner.

k. Alternative Dispute Resolution: Disputes regarding nonpayment of a contractor's invoice under this Article may be submitted to a mediator upon agreement of the College. In such event, the College and the contractor shall share equally the fees and expenses of the selected mediator. Provided, however, that nothing herein shall be construed, in whole or in part, as a waiver, release or modification of the provisions of the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1 et seq., as it governs claims against the College.

9. CHANGES, CHANGE ORDERS AND CHANGE ORDER DELAYS. The College may at any time authorize and direct written changes in the work which change the scope of the work and which increase or decrease the contract price. All changes including adjustments of the contract price shall be governed by this paragraph and the change order provision in the general conditions. If a change issued by the College delays the completion of any activity in the project CPM schedule, the time allowed for that activity shall be extended, and if a delay in that activity delays other activities, the critical path or the completion dates in the contract, then they too will be extended. The Contractor shall make reasonable efforts in scheduling changed work so that it does not delay or extend activities in the CPM schedule critical path, including the substantial and final project completion dates. The Contractor shall also make alternate proposals for change order work which include acceleration for the changed work where feasible to achieve this goal, and shall include the cost of such efforts in its change order requests and proposals. Change orders must specify whether they result in any delay (or extension) to any activities in the schedule, including an identification of the activities and the amount of delay in each. If no delay or extension is specified in a change order, it will be deemed an agreement by the College and the Contractor that no delay or extension results from the change order.

10. CONTRACTOR'S REPRESENTATIONS. The Contractor represents to the College that it has:

a. EXAMINATION OF CONTRACT DOCUMENTS. Examined and carefully studied the contract documents and the other documents in the bid documents, and that they are sufficient for performing the contract work at the contract price.

b. EXAMINATION OF SITE. Visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect the cost, progress, and performance of the contract work.

c. FAMILIARITY WITH LAW. Familiarized itself with all federal, state, and local laws and regulations that may affect the cost, progress, and performance of the contract work.

d. FAMILIARITY WITH OTHER INFORMATION AND OTHER DOCUMENTS. Carefully studied all reports of investigations and tests of site and subsurface conditions at or contiguous to the site and all drawings of physical conditions at the site including surface or subsurface composition, water, structures and utilities at or near to the site.

e. ADDITIONAL INFORMATION NOT REQUIRED FOR BIDDING OR CONTRACT PERFORMANCE. Does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the work at the contract price.

11. ASSIGNMENT OF CONTRACT. The Contractor may not assign this contract or any rights under or interests in the contract including its right to payments under the contract.

12. CONTRACTOR PERSONNEL ASSIGNED. The College reserves the right to request and have any member of the contractor's or subcontractor's staff replaced on the project for any reason.

13. DOMESTIC MATERIALS - N.J.S.A. 52:33-2. Notwithstanding any inconsistent provision of any law, and unless the head of the department, or other public officer charged with the duty by law, shall determine it to be inconsistent with the public interest, or the cost to be unreasonable, only domestic materials shall be acquired or used for any public work.

This section shall not apply with respect to domestic materials to be used for any public work, if domestic materials of the class or kind to be used are not mined, produced or manufactured, as the case may be, in the United States in commercial quantities and of a satisfactory quality.

14. NOTIFICATIONS/AUTHORIZED REPRESENTATIVE:

a. Notice to the Contractor. Written notices to the Contractor should be addressed to:

_____
_____
_____
_____

b. Notice to the College/Authorized Representative: Written notices from the Contractor to the College should be addressed to:

The College of New Jersey
PO Box 7718,
Ewing, New Jersey 08628

The College's contracting officer hereby authorizes the Owner's project representative to receive all contract related correspondence.

15. CLAIMS BY THE CONTRACTOR.

a. GENERAL PROVISIONS APPLICABLE TO ALL CLAIMS. Claims by the Contractor against the College shall be subject to the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1 et seq. including the notice and time for suit provisions. For the purpose of determining the time within which The Contractor must file suit under the New Jersey Contractual Liability Act, 'completion of the contract' shall be deemed to have occurred upon achievement of substantial completion as defined in section 12A of these General Conditions.

The Contractor also agrees that it shall not be entitled to assert claims against the College for any compensation beyond that provided for in this contract by reason of the acts or omissions of any third parties, including but not limited to the project architect and any other contractor on this project. The Contractor also agrees that it may not assert claims for extra costs for home office expenses, home office overhead, lost profits or revenue or consequential damages as that term is defined in law. All claims shall also be subject to the terms of this contract including the general conditions, and the Contractor may not assert any claims for extra costs unless it maintains all the records of its estimated and actual costs as required by paragraph 16 and the general conditions. The Contractor also agrees that suits against the College must be pursued in the county where the project is located.

1. Notice of litigation shall be filed in writing with the other party to the Owner-Contractor Agreement and with the court having competent jurisdiction and a copy shall be filed with the Architect and the Construction Manager. The litigation shall be made within the time limits specified herewith where applicable, and in all other cases within a reasonable time after the claim, dispute and other matter in question has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

2. Unless otherwise agreed in writing, the Contractor shall carry on the Work and maintain its progress during any proceedings, and the Owner shall continue to make payments to the Contractor in accordance with the Contract Documents.

b. DELAY CLAIMS. The Contractor agrees that it may not assert claims for extra compensation by reason of any delays in its work resulting from acts or omissions of any third parties irrespective of extensions granted under paragraph 5, including but not limited to delays caused by third parties such as the project architect, other contractors, utilities and governmental authorities. The College shall only be required to pay additional compensation for delays caused by the College itself, and only to the extent required by N.J.S.A. 2A:58B-3 (delayed performance caused by the College's own negligence, bad faith, active interference or other tortuous conduct, but not for reasons contemplated by the parties and not for the negligence of others including others under contract with the College on the theory that such negligence should be imputed to the College). The College shall not be liable for any period of delay when there is a concurrent delay for which it is not responsible. Finally, the Contractor also agrees that it can only assert claims for extra costs due to delays for extra costs at the job site, and may not assert claims for extra costs for home office expenses, home office overhead, lost profit or revenue, or consequential damages as that term is defined in law.

c. CLAIMS BASED ON CONTRACT DOCUMENTS AND INFORMATION PRIOR TO BIDDING. The Contractor agrees that it can assert no claims for extra compensation beyond the bid and contract price for constructing the completed project by reason of any errors, omissions or deficiencies in the contract documents to the extent that a reasonably competent contractor should discovery the error, omission or deficiency in connection with the preparation of a bid because of its obligation to review and study the bid documents before submitting its bid, and because of its representation in paragraph 10 that it did so. In addition, the Contractor agrees that it can assert no claims for extra compensation beyond the bid and contract price for constructing the completed project by reason any lack of information affecting the construction of the project at the time of bidding, or errors in the information included or referenced in the

bid documents except to the extent permitted by Article 1 of the general conditions. The Contractor shall notify the College in writing before submitting its bid of any errors or omissions in the information provided or be precluded from seeking extra compensation or asserting a claim.

d. MEDIATION. If a dispute or claim arises out of or relates to this contract, or the breach thereof, and if the dispute cannot be settled through negotiation, the parties agree first to try in good faith to settle the dispute by mediation administered by the American Arbitration Association under its Construction Industry Mediation Rules before resorting to arbitration or litigation. The Owner reserves the right to request a mediation if it deems it necessary.

16. COST RECORDS FOR EXTRAS, AUDITS, CLAIMS: Pursuant to N.J.A.C. 17:44-2.2, the Contractor shall maintain all documentation related to products, transactions or services under this contract for a period of five years from the date of final payment. Such records shall be made available to the New Jersey Office of the State Comptroller upon request.

The Contractor shall maintain and retain weekly payroll, material, subcontractor, supplier, overhead and other cost and accounting records for the project, and for additional services or extras required by the College, including all costs which the Contractor is entitled to be paid under the contract. The Contractor shall require its subcontractors on the project to do likewise. The Contractor shall also maintain all estimates and takeoffs used in preparing and calculating its bid price. The records shall be maintained and shall be made available to the College or its representatives when requested. These records shall be maintained in accordance with generally accepted accounting principles and practices for a period of 5 years after final payment is received by the Contractor, or the duration of any dispute or lawsuit arising out of the project, whichever is later. Any failure to maintain or produce such records shall preclude the Contractor from being paid or retaining any payments which are based on costs or which should be, and expenses of it or its subcontractors including extra costs which are reflected in the records. This includes the basic contract compensation as well as extra compensation for change orders and claims of any kind.

17. INDEMNITY/LIABILITY TO THIRD PARTIES: The Contractor agrees to defend, indemnify and save harmless the College and its officers, agents, servants and employees from and against any and all suits, demands, claims, losses and damages of any kind arising out of, or claimed to have arisen out of any negligent act, error, omission or breach by the Contractor, its officers, agents, servants, employees, consultants, subcontractors or suppliers, in the performance of this contract. The Contractor shall, at its own expense, defend, and pay all charges for attorneys and all costs and other expenses arising from such suits or claims. If any judgment is rendered against the College or any of its officers, agents, servants or employees for which indemnification is required under this paragraph, the Contractor shall satisfy and discharge it. The College shall give prompt written notice to the Contractor of claims and suits for which indemnity is required in this paragraph.

18. INSURANCE BY THE CONTRACTOR: The Contractor shall procure and maintain at its own expense, insurance for damages imposed by law and assumed under this contract until at least 1 year after the completion and acceptance of the project. The insurance shall be of the kinds and in the amounts required in this paragraph, and shall be issued by insurance companies approved to do business in New Jersey. The College of New Jersey, the State of New Jersey, and the NJ Educational Facilities Authority shall be named as an additional insured on the Commercial General Liability Insurance policy. The Contractor expressly agrees that any insurance protection required by this

contract shall in no way *limit* the Contractor's obligations under this contract, and shall not be construed to relieve the Contractor from liability in excess of such coverage. Nor shall it preclude the College from taking such actions as are available to it under any other provisions of this contract or law.

a. TYPES AND MINIMUM AMOUNTS OF INSURANCE REQUIRED:

(1) Commercial General Liability Insurance (CGL). Commercial General Liability insurance ISO 1088 or later occurrence form of insurance including contractual liability with limits of at least $2,000,000 combined single limit for bodily injury and property damage liability for each occurrence. The CGL policy shall also include products/completed operations with limits of at least $2,000,000 per occurrence. This insurance shall be maintained for at least 1 year after the completion of the project.

(2) Automobile Liability Insurance. The Automobile Liability Insurance policy shall cover owned, non-owned and hired vehicles and have limits of at least $1,000,000 combined single limit for bodily injury and property damage for each occurrence.

(3) Workers Compensation/ Employer Liability. Workers Compensation Insurance shall be maintained by the Contractor and all subcontractors in accordance with the requirements of the law of New Jersey. They shall also maintain Employer's Liability insurance with limits of at least $500,000 for each occurrence.

b. EVIDENCE OF INSURANCE. The Contractor shall when this contract is signed and before beginning the work required under this contract, provide the College with valid certificates of insurance signed by an insurance provider or authorized agent or underwriter to evidence the Contractor's insurance coverage as required in this paragraph, and also copies of the policies themselves. The certificates of insurance shall specify that the insurance provided is of the types and in the amounts required in this paragraph, and that the policies cannot be canceled except after 30 days written notice to the College.

c. CANCELLATION. The certificates of insurance shall provide for 30 days written notice to the College before any cancellation, expiration or non-renewal during the term the insurance is required by this contract. The Contractor shall also be required to provide the College with valid certificates of renewal when policies expire. The Contractor shall also, when requested, provide the College with additional copies of each policy required under this contract, which are certified by an agent or underwriter to be true copies of the policies issued to the Contractor.

d. REMEDIES FOR LACK OF INSURANCE. If the Contractor fails to renew any of its required insurance policies, or any policy is canceled, terminated or modified, the College may refuse to pay monies due under this contract. The College, in its sole discretion and for its sole benefit, may use monies retained under this paragraph to attempt to renew the Contractor's insurance or obtain substitute coverage if possible for the College's sole benefit, and may invoke other applicable remedies under the contract including claims against the Contractor and its surety. During any period when the

required insurance is not in effect, the College may also, in its sole discretion, either suspend the work under the contract or terminate the contract.

19. **PAYMENT AND PERFORMANCE BOND.** The Contractor is required to furnish the College with a payment bond and a performance bond from an approved surety as described in the general conditions and bid documents. They shall conform to N.J.S.A. 2A:44-147. This contract will not become effective until these bonds are provided to and approved by the College. The bonds must also be accompanied by the surety disclosure statement and certification required by N.J.S.A. 18A:64-68.

20. **ABANDONMENT, POSTPONEMENT, TERMINATION OF PROJECT**: The College reserves the right to terminate this contract for convenience at any time by written notice to the Contractor. Unless otherwise directed, the Contractor shall immediately stop all work upon receipt of such a notice. The College also reserves the right to suspend performance and to terminate for default or improper performance by the Contractor. The rights and duties of the Contractor and the College in the event of a termination or a suspension shall be governed by the general conditions.

21. **CONTRACT TERMS, CHANGES, AND LAW:** This contract (including the completed checklist which is attached) constitutes the entire agreement between the College and the Contractor, and it shall be governed by the law of New Jersey. The terms and conditions of this contract may not be changed except by a writing signed by the Contractor and the College.

22. **PREVAILING WAGE STATUTE.** The Contractor must comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 through 56.57. Workers employed by the Contractor or any subcontractor or sub-subcontractor in the performance of services directly on the project must be paid prevailing wages. As required by N.J.S.A. 34:11-56.27 and 56.28, this contract cannot become effective until the College obtains from the New Jersey Department of Labor a determination of the prevailing wage rates applicable to the project as of the contract award date and attaches a copy to the contract. As required by N.J.S.A. 34:11-56.27, the Contractor or any subcontractor may be terminated if any covered worker is not paid prevailing wages on the project, and the Contractor and its surety shall be liable for any additional costs which result. The Contractor and its subcontractors must be registered with the New Jersey Department of Labor (N.J.S.A. 34:11-56.51 et seq.), and the prevailing wage rates must be posted at the job site (N.J.S.A. 34:11-56.32). The Contractor and its subcontractors must prepare accurate certified records of wages paid for each worker on the project (N.J.S.A. 34:11-56.29), and copies for the period covered by each invoice must be attached to the invoice submitted under the contract. In accordance with N.J.S.A. 34:11-56.33, the Contractor's final invoice must include a statement of all amounts still then due to workers on the project. The Contractor is also cautioned that it must use job titles and worker classifications consistent with those approved by the Department of Labor, and that, if it intends to pay apprentice rates, it must comply with the Department of Labor's regulations at N.J.A.C. 12:60-7.1 through 7.4.

23. **DISCRIMINATION IN EMPLOYMENT.** The Contractor and any subcontractors employed by it shall comply with N.J.S.A. 10:2-1 through 10:2-4 and N.J. S.A. 10:5-1 et seq., including N.J.S.A. 10:5-31 through 35 and the American with Disability Act, 42 U.S.C. 12101, which prohibit discrimination in employment in public contracts. The statute and the rules and regulations promulgated thereunder shall be considered to be part of this contract and binding upon the Contractor and its subcontractors. If the College is notified of any violation of the public contract awarding regulations in accordance with N.J.A.C. 17:27-7.4 concerning the financing of minority and women outreach and training programs, the College reserves the rights to deduct the outreach and training allocation from the contract. During the performance of this contract, the Contractor agrees that:

a. In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no contractor, nor any person acting on behalf of such contractor or subcontractor, shall, by reason of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex, discriminate against any person who is qualified and available to perform the work to which the employment relates;

b. No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation or sex;

c. There may be deducted from the amount payable to the contractor by the contracting public agency, under this contract, a penalty of $50.00 for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the contract; and

d. This contract may be canceled or terminated by the contracting public agency, and all money due or to become due hereunder may be forfeited, for any violation of this section of the contract occurring after notice to the contractor from the contracting public agency of any prior violation of this section of the contract.

24. **COMPLIANCE WITH PROCUREMENT STATUTES:** The Contractor warrants and represents that this contract has not been solicited or secured, directly or indirectly, in a manner contrary to the law of New Jersey, and in particular the provisions of N.J.S.A. 18A:64-6.1, 6.2 and 6.3, and that the Contractor has not and shall not violate the law of New Jersey relating to the procurement of or the performance of this contract by any conduct, including the paying of any gratuity of any kind, directly or indirectly, to any College employee or officer. Any violation of this provision shall be cause for the College to terminate this contract, to retain all unpaid and/or unearned monies, and to recover all monies paid. The Contractor shall notify the College in writing of any interest which any officer, employee or consultant of the College has in, or association with, any contractor, subcontractor, material supplier, consultant, or manufacturer, or other party which has any interest in this project.

25. **CONFLICT OF INTEREST:** a. No vendor shall pay, offer to pay, or agree to pay, either directly or indirectly, any fee, commission, compensation, gift, gratuity, or other thing of value of any kind to any State officer or employee or special State officer or employee, as defined by N.J.S.A. 52:13D-13b. and e., in the Department of the Treasury or any other agency with which such vendor transacts or offers or proposes to transact business, or to any member of the immediate family, as defined by N.J.S.A. 52:13D-13i., of any such officer or employee, or any partnership, firm, or corporation with which they are employed or associated, or in which such officer or employee has an interest within the meaning of N.J.S.A. 52:13D-13g.

b. The solicitation of any fee, commission, compensation, gift, gratuity or other thing of value by any State officer or employee or special State officer or employee from any State vendor shall be reported

in writing forthwith by the vendor to the Attorney General and the Executive Commission on Ethical Standards.

c. No vendor may, directly or indirectly, undertake any private business, commercial or entrepreneurial relationship with, whether or not pursuant to employment, contract or other agreement, express or implied, or sell any interest in such vendor to, any State officer or employee or special State officer or employee having any duties or responsibilities in connection with the purchase, acquisition or sale of any property or services by or to any State agency or any instrumentality thereof, or with any person, firm or entity with which he is employed or associated or in which he has an interest within the meaning of N.J.S.A. 52:13D-13g. Any relationships subject to this provision shall be reported in writing forthwith to the Executive Commission on Ethical Standards, which may grant a waiver of this restriction upon application of the State officer or employee or special State officer or employee upon a finding that the present or proposed relationship does not present the potential, actuality or appearance of a conflict of interest.

d. No vendor shall influence, or attempt to influence or cause to be influenced, any State officer or employee or special State officer or employee in his official capacity in any manner which might tend to impair the objectivity or independence of judgment of said officer or employee.

e. No vendor shall cause or influence, or attempt to cause or influence, any State officer or employee or special State officer or employee to use, or attempt to use, his official position to secure unwarranted privileges or advantages for the vendor or any other person.

f. The provisions cited above in paragraph 3a. through 3e. shall not be construed to prohibit a State officer or employee or special State officer or employee from receiving gifts from or contracting with vendors under the same terms and conditions as are offered or made available to members of the general public subject to any guidelines the Executive Commission on Ethical Standards may promulgate under paragraph 3c.

26. **SET-OFF FOR STATE TAX NOTICE:** Pursuant to N.J.S.A. 54:49-19, and notwithstanding any other provision of law to the contrary, Whenever any taxpayer under contract to provide goods or services to the State of New Jersey or its agencies or instrumentalities, and including the legislative and judicial branches of State government, or under contract for construction projects of the State of New Jersey or its agencies or instrumentalities, and including the legislative and judicial branches of State government, is entitled to payment for the goods or services or on that construction project and at the same time the taxpayer is indebted for any State tax, the Director of the Division of Taxation shall seek to set off so much of that payment as shall be necessary to satisfy the indebtedness. The director, in consultation with the Director of the Division of Budget and Accounting in the Department of the Treasury, shall establish procedures and methods to effect a set-off. The director shall give notice of the set-off to the taxpayer, the provider of goods or services or the contractor or subcontractor of construction projects and provide an opportunity for a hearing within 30 days of such notice under the procedures for protests established under R.S.54:49-18, but no request for conference, protest, or subsequent appeal to the Tax Court from any protest under this section shall stay the collection of the indebtedness. No payment shall be made to the taxpayer, the provider of goods or services or the contractor or subcontractor of construction projects pending resolution of the indebtedness. Interest that may be payable by the State pursuant to P.L.1987, c.184 (C.52:32-32 et seq.), to the taxpayer, the provider of goods and services or the contractor or subcontractor of construction projects shall be stayed.

THE COLLEGE OF NEW JERSEY

By_____
William Rudeau, Director of Construction

Date_____

By_____
Lloyd Ricketts, Treasurer

Date_____

By_____

Date_____

By_____
Anup Kapur, Executive Director of Procurement

Date_____

CONTRACTOR:

By_____

Title_____

Date_____

THE COLLEGE OF NEW JERSEY

December 2007

GENERAL CONDITIONS
OF THE
CONTRACT FOR CONSTRUCTION

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ARTICLE 1.CONTRACT DOCUMENTS, INTERPRETATION, INFORMATION FOR BIDDERS, CLAIMS BASED ON BID AND CONTRACT DOCUMENTS.

A. Definitions.

Definitions for the purpose of the contract include the following:

Addendum: A document issued to bidders by the College prior to the bid due date which supplements, revises or modifies the bid solicitation documents furnished for bidding purposes, and which must be identified and included in bids for the contract.

Architect: The architect (A/E) engaged by the College to design the project, to prepare the design documents and assist with bid documents, and may administer the construction contract and act as the agent of the College as described in the contract.

Bulletin: A document prepared by the architect describing proposed changes or additions to the work in the contract document which is issued after contract award. If the College decides to implement the change, it will provide the bulletin to the Contractor and ask it to submit a change order proposal or request (in accordance with the change order provision in the contract, general conditions and other sections of the bidding documents).

Change Order Proposal or Request: A written proposal or request submitted by the contractor in accordance with the change order provision of the contract, general conditions and other sections of the bidding documents, including proposals submitted in response to contract change directives which proposes cost, time and other terms under which the contractor will perform changed work under the contract. If accepted by the College, a written change order signed by the Vice President Facilities Management, Construction and Campus Safety and purchase order signed by the Contracting Officer of the College, and if accepted by the Contractor in writing, it will become part of the contract as a change order.

Contract Amendment: The contract can only be amended by (1) a written amendment identified as such which is signed by the College and the Contractor, (2) a change order signed in accordance with the contract documents, (3) a written contract change directive (CCD) issued by the College which should result in a change order unless issued to address some fault of the Contractor, (4) a written approval or acceptance by the College or the architect of a change requested by the Contractor in writing, provided the request for a change is specifically identified in a submittal.

Contract Change Directive (CCD): A contract change directive (CCD) is a written directive issued by the College which orders an addition, deletion or revision in the work, or a response to an emergency. A contract change directive does not by itself change the contract, but it should result in a change order which does change the contract price or times if warranted. A CCD should specify the terms of the change order which will result, and/or specify a deadline for the submission by the Contractor of a proper change order request, and/or contain other similar terms.

Contract Documents: The contract documents include the signed contract, the bid solicitation documents, the Contractor's bid proposal, and the contract documents listed in the contract. They include but are not limited to the general conditions, any supplemental general conditions, any addenda, plans and specifications, and change orders which are issued and approved by the College after the contract is awarded.

Contract Limit Lines: The lines shown on the contract plans which limit the boundaries of the project site, and beyond which no construction work or activities shall be performed by the Contractor unless otherwise specified in the contract documents including the plans and specifications and supplemental general conditions.

Contracting Officer: The Associate Treasurer of the College shall be the Contracting Officer in connection with the contract and the project. The Contracting Officer and other designee shall have authority to act on behalf of the College under the contract.

Field Order (FO): A written order issued by the architect or the College which requires minor changes in the work which do not result in a change in the contract price or the contract time. If the Contractor believes that a field order warrants the issuance of a change order which changes the contract times or price, it must notify the College and the architect in writing within 48 hours, and its notice must specify the terms of the change order which it believes are warranted, including specific time and price change requests.

Owner's Representative: The Owner's representative is a person or persons designated by the Owner to act on its behalf in administering the construction contract for the College. The Owner's representative may include the Director of Campus Construction, the Project Manager or an independent construction manager working for the Office of Campus Construction.

Site Superintendent: The site superintendent is a person or persons designated by the Owner to witness, observe, record and report on activities in and around the construction site. The site superintendent does not have the authority to stop or change the scope of work of the contract for construction.

Supplemental General Conditions: The part of the contract documents which amends or supplements the general conditions for the project.

B. Intent of Contract Documents.

The intent of the contract documents is to describe a functionally complete and aesthetically acceptable project to be constructed and completed by the Contractor in every detail in accordance with the contract documents. Any work, services, materials, equipment or documentation that may be reasonably inferred from the contract documents or from prevailing custom or trade usage as being required to produce a complete project shall be supplied whether or not specifically identified at no additional cost to the College. Where the contract documents describe portions of the work in general terms but not in complete detail, only the best construction practices and only materials and workmanship of the first quality are to be used. Only where the contract documents specifically describe a portion of the project as being performed by others is the contract work to be considered to include less than the entire project.

C. Interpretation of Contract Documents.

When two or more interpretations of a specification for the work are possible, the most stringent or the highest cost interpretation shall apply as determined by the Architect. The Architect (or in the absence of the Architect, the Owner) shall be the sole interpreter of the plans and specifications and the contractor's performance therewith. It is the intent of these plans and specifications to provide materials of a quality consistent with the highest standards provided under similar circumstances in the same general geographical area.

D. Law and Referenced Standards.

The Contractor is required to comply with all federal, state and local laws and regulations which apply to the project, the work and the contract. Where the contract documents refer to any publication, including but not limited to any standard, which affects any portion of the work or the project, it shall be considered to mean the edition or revision in effect on the bid due date unless otherwise specified in the contract documents. No provision in any publication including any standard shall change or affect the duties and responsibilities of the College, the Architect or the Contractor. Nor shall they create an obligation on the part of the College or the Architect to supervise or direct the Contractor's work.

E. Plans and Specifications.

The plans will include general plans and such details as deemed necessary to give a comprehensive representation of the construction required. The Contractor shall keep one set of plans available at the project site which shall be available for inspection by the College and the Architect at all times. All alterations affecting the requirements in the plans must be authorized in writing, and shall be promptly noted on the Contractor's record set of plans which are maintained at the site for inspection by the Contractor, the College and the Architect

F. Order of Precedence of Contract Documents.

Each of the contract documents is an essential part of the contract, and a requirement specified in one part of the documents is binding as if specified in all. The contract documents are intended to be complementary and to describe and provide for a complete project. If there is any conflict among the contract documents, the signed contract and all approved change orders shall control. As to the other contract documents, the order of the precedence shall be as follows:

(a) Contract
(b) Addenda
(c) Supplemental General Conditions
(d) General Conditions
(e) Specifications
(f) Plans
  i. Notes
  ii. Large Scale Details
  iii. Sections
  iv. Elevations
  v. Plans
(g) Scope of Work Description

G. Organization of Plans and Specifications.

The arrangement of the plans and the organization of the specifications into divisions, sections or articles shall not be construed by the Contractor as being intended to divide or allocate the work among subcontractors or trades or to establish the scope of the work to be performed by particular subcontractors or trades. The Owner is not liable for the Contractor dividing and separating the contract documents into individual packages to sub-contractors and therefore contract items not being figured for by the contractor accordingly. The contract documents work together as a whole, and therefore the contractor is required to coordinate the entire package with all its sub contractors.

H. Required Approvals.

In all cases where approvals or decisions under the contract documents are required from the College, the work shall not proceed without the required approvals and decisions in writing.

I. Conformity of Work to Contract Documents.

All work performed shall conform to the lines, grades, cross-sections, dimensions, material requirements, tolerances, details and other information in the contract documents. The purpose of tolerances is to accommodate occasional minor variations from the middle portion of the tolerance range which are unavoidable despite reasonable construction practices. When a maximum or minimum tolerance value is specified, the material and the work shall be controlled so that they shall not be preponderantly of borderline quality or dimension.

J. Work Involving Existing Structures.

On projects involving alterations, remodeling, repairs, installations or other work in pre-existing structures or systems, the Contractor shall by personal inspection of the existing structures and systems satisfy itself as to the accuracy of any information provided which may affect the quantity, size and/or quality of materials required for a satisfactorily completed contract and project, including information which is not identified or included in the plans and specifications. The Contractor shall provide all material and labor required to complete the work and contract based on conditions which can be reasonably observed by a competent and diligent contractor before bidding.

K. Verification of Dimensions.

The Contractor shall verify all dimensions at the job site and shall take any and all measurements necessary to verify the information in the plans. The Contractor shall properly and accurately layout and survey the work. Any errors or discrepancies affecting the layout of the work shall be reported to the Architect and the College immediately in writing. No work affected by any error or discrepancy shall proceed until such discrepancy is resolved by a written decision of the Architect with the consent of the College.

L. Manufacturer Literature.

Manufactured articles, materials and equipment shall be installed, applied, connected, erected, used, cleaned and conditioned in accordance with the manufacturer's written instructions unless otherwise specified in the contract documents. If there is any conflict between manufacturer literature and the contract documents, it shall be reported by the Contractor to the Architect and the College in writing, and the Contractor shall not proceed without a written decision by the Architect with the consent of the College.

M. Quality -- General Requirement.

Where no explicit quality or standard are specified for work, materials or equipment, they shall be new, of good quality, free of defects, suitable for their intended use, in conformity with the contract documents, and consistent with the highest quality of the surrounding work and of the construction of the project generally.

N. Examination of Contract Documents Before Bidding/Errors, etc.

The Contractor represents and warrants that before bidding it examined and carefully studied the contract documents and other documents included or referred to in the bid documents. The Contractor also represents and warrants that the documents are sufficient for bidding and performing the contract work at the contract price. Should it appear that any of the work or materials are not sufficiently or properly detailed or explained in the contract documents, the Contractor shall notify the College in writing before the bid deadline for submitting questions.

Errors, omissions, conflicts, discrepancies, inconsistencies or other defects in the contract documents or between the contract documents and any codes, standards or other applicable documents which are capable of being discovered by a diligent and competent contractor before bidding shall be reported to the College in writing before the bid deadline for submitting questions. If errors, omissions, inconsistencies or other defects in the contract documents are not discovered until after the bid due date, the Contractor shall promptly notify the College and the Architect of them, provide written recommendations regarding changes or corrections to resolve any such errors, omissions, inconsistencies or defects, and obtain the Architect’s written interpretation and approval before proceeding with the work affected.

O. Site Information.

Soil borings, test pits or other subsurface or site information regarding the physical site and subsurface conditions on or near the site may have been obtained from independent contractors for the purpose of preparing the design documents for the project rather than for the purpose of contractor estimating or bidding. Such information may be identified or included in the contract documents so that it can be reviewed by bidders during the bidding phase, but

because of the limited nature and purpose of the information, it shall not be considered to be part of the contract documents, and the Contractor must assume responsibility for interpreting and relying upon the information.

P. Sufficiency of Documents Provided for Bidding.

The Contractor represents and warrants that before bidding it carefully studied all reports, surveys and documents included or identified in the bid documents regarding observations, inspections, investigations and tests of the site and subsurface conditions at or near to the site, and all information provided to bidders regarding physical conditions at or near the site, including surface and subsurface composition, water, structures and utilities, and that it determined that no further examinations, investigations, tests, studies or data were necessary for bidding or the performance of the contract work at the contract price. If the Contractor concluded that additional information is required, it must notify the College in writing before the bid deadline for submitting questions.

Q. Examination of Site Before Bidding.

The Contractor represents and warrants that before bidding it visited the site and familiarized itself with and was satisfied as to the general, local and site conditions which may affect the cost, progress and performance of the work and the contract, and that its bid and bid price take into account all such conditions. No additional costs will be borne by the Owner for conditions that existed and were reasonably observable or described at the time of bidding.

R. Hazardous Materials On Site.

The Contractor will not be responsible for hazardous environmental conditions uncovered or discovered on the site which were not disclosed in the contract documents. If such conditions are discovered, the Contractor shall stop work and notify the College in writing immediately. The College may issue a written directive to the Contractor requiring it to stop work until the hazardous environmental condition is remedied, and the Contractor will be entitled to an extension of the contract times if an extension is warranted under the provisions of the contract and the general conditions regarding extensions. The College may also make changes in the contract in response to the conditions, and the contract will be changed in accordance with the change order provisions in the contract and the general conditions.

S. Limitation on Claims Based on Contract Documents and Information Provided for Bidding.

The Contractor may not assert claims for extra compensation beyond the bid and contract price for constructing the completed project by reason of any errors, omissions, inconsistencies, or defects in the contract documents which are discoverable by a diligent and competent contractor, because of its obligation to review and study the bid documents before submitting its bid, and because of its obligation to notify the College in writing before submitting its bid of errors, omissions, inconsistencies, and defects in the documents. This limitation on claims may be modified and further restricted in the signed contract when the contract requires the Contractor to participate in any aspect of the design phase.

The Contractor may assert claims for extensions and additional compensation in accordance with the contract and general conditions if information regarding the site which is identified in the bid or contract documents is factually inaccurate, and the inaccuracy is one which a reasonably competent and diligent contractor would not discover in preparing a bid. The Contractor may not assert a claim for an extension or extra compensation when it claims, not that the information is factually inaccurate, but rather that conclusions, inferences or judgments made in reliance on accurate information prove to be incorrect.

ARTICLE 2. THE COLLEGE.

A. General Rights and Responsibilities of the College.

The College as the owner of the project is entitled to have the Contractor perform and complete the contract work in accordance with the contract documents, including the time of completion, quality and documentation requirements of the contract. The College for its part undertakes to furnish the site, to notify the Contractor of any restrictions on the site which could affect the Contractor's performance of the contract, to obtain approvals relating to the

site which are needed for the construction to proceed, to pay the Contractor in accordance with the contract, and to act reasonably in reviewing all documentation, claims and questions properly submitted to it under the contract. The College also undertakes to provide the information and items which it expressly agrees in the contract documents to provide.

The College shall also have such other rights and responsibilities as are specified in the contract documents. The College will not supervise the Contractor's work or be responsible for the Contractor's construction means and methods, or the contractor's safety practices, or any failure of the Contractor to comply with the contract or any laws or regulations.

B. College Representative, Authority to Decide Contract Questions.

The Contracting Officer delegates its authority to the Owner's representative who is authorized to act and make decisions on behalf of the College regarding matters specified in the contract documents. However, the Owner's representative is not authorized to make or agree to changes to the contract involving time, contract price or material changes.

All changes to the contract including change orders that modify contract price, contract time or other material change to the contract must be reviewed and approved by the Contracting Officer or his/her designee. The contracting officer designates that the Vice President for Facilities Management, Construction and Campus Safety is authorized to approve change orders.

The Owner's representative, in consultation with the Architect, is authorized to decide on behalf of the College all questions regarding the quality, acceptability and rate of progress of the work, all questions regarding the interpretation of the contract documents, all questions regarding the acceptability of the performance of the contract by the Contractor, and all questions regarding the compensation due to the Contractor. Where the Owner's representative is authorized to render decisions under the contract regarding disputes or claims, he/she shall consult with the Architect and shall not act arbitrarily so as to unfairly benefit either the College or the Contractor.

C. Required Approvals.

In all cases where approvals or decisions are required from the College under the contract documents, such approvals or decisions shall be made reasonably, except in cases where a specific standard applies such as, for example, situations where the College is entitled to exercise unqualified discretion in selecting the types of materials, products or construction which it decides to procure.

D. Information Required from College.

Information which the contract documents specify the College will provide shall be provided with reasonable promptness.

E. Permits, Responsibility for.

The College will arrange and pay for permits and permit inspections, including building code permits except to the extent that the specifications specify otherwise. The Contractor will arrange for and coordinate all inspections and the dates and times for all inspections with local, state and independent agencies and include the Owner's representative or the site superintendent.

F. College Inspection of the Project.

The College shall have the right to be represented at the site by the Owner's representative(s), the site superintendent and other College employees designated by the College, the project architect, and other consultants designated by the College or the architect. They shall have the right to visit the site, inspect work and materials, inspect project documentation, conduct tests, attend meetings, meet with Contractor and subcontractor representatives, investigate problems, conduct studies, and make reports. They shall be allowed access to all parts of the work, and the Contractor shall furnish them with information and assistance when they request it.

The Contractor shall give the College and the architect timely notice of readiness of work for observation, inspection and testing, and shall cooperate with these efforts. The Contractor shall also comply with any inspection and testing procedures specified in the contract documents.

The Contracting Officer, the Architect and the Owner's representative shall have the right to direct the Contractor to remove or uncover unfinished work if deemed necessary to inspect work or materials in place.

If work is covered before it is inspected because the College, the architect or any consultant were not afforded a reasonable notice and opportunity to inspect, or where the contract documents or any law require an inspection, the Contractor shall uncover and replace work at its own expense if required to do so by the College.

If any other portion of the work not specifically required to be inspected is covered, and the College or the architect did not ask to observe or inspect the work before it was covered, the College may nonetheless ask to inspect the work. If the College does so, the Contractor shall uncover the work for inspection. If the work uncovered is found to be in accordance with the contract documents, the cost of uncovering and replacement shall be paid by the College by a change order. If the work uncovered is found not be to in compliance with the contract documents, the Contractor shall pay all costs of uncovering and replacement, and also remedy the defect or deficiency at its own cost.

The College at all times retains the right to stop all or part of the work by a written direction because of defective work until the defect is eliminated. This right shall not give rise to any duty on the part of the College to exercise the right for the benefit of the Contractor or those performing its contract.

G. College Inspectors, Duties and Limitations.

If the College designates inspectors to inspect work and materials and project documentation, they will not be authorized to alter or waive any requirements or provisions in the contract documents. The College's inspectors will not be authorized to issue instructions contrary to the contract documents or to act as foremen or employees of the Contractor. College inspectors will have the authority to reject unsuitable work or materials, subject to written confirmation by the Owner's representative. If the Contractor believes that any action of a College inspector is contrary to the contract documents, it shall notify the Owner's representative and the Architect in writing within 48 hours. The College does not undertake to have inspectors sufficient in number to inspect every item of work or material as it is provided, or to have inspectors with the expertise needed to judge every aspect of the work.

The Contractor shall remain responsible for defective work or materials irrespective of any inspections or lack of inspections during the work. If the Contractor seeks a binding determination of the acceptability of work or materials during the performance of the contract, it shall do so by making a written request for such a determination to the Owner's Representative with a copy to the Architect.

H. College Rejection of Defective Work.

The College shall have the right to reject defective work, materials, or equipment at any time, and to require the Contractor to remove and replace it at the Contractor's expense. The Contractor shall also be responsible for repairing damage to other work caused by defects or deficiencies in its work. The Owner's representative, upon consultation with the Architect may elect to accept work or materials which do not conform to the contract and to credit or reduce the

contract price, but the College shall have no contractual obligation to elect this remedy. Changes to the contract in these circumstances must be recorded via regular change order process.

ARTICLE 3. ARCHITECT

A. Architect's General Role.

The project architect is by contract with the College responsible for the design of the project. During construction, the architect is responsible for reviewing Contractor submittals to determine if they conform to the contract documents and good industry practice, to provide some level of inspection to determine if work and materials provided conform to the contract documents and good industry practice, and to review Contractor payment applications. During the performance of the work the architect may investigate any defects and deficiencies in the work or materials provided, and make recommendations to the College regarding the defects or deficiencies. The architect will conduct inspections to determine if the Contractor has achieved proper substantial and final completion and submitted all documents required at completion. The Contractor shall cooperate with and render assistance to the architect in the performance of these duties.

B. Architect's Access and Facilities.

The Contractor shall allow the architect and its consultants access to the project at all times, and shall facilitate their access to inspect work and materials and project documentation. The architect and its consultants shall be permitted to attend job meetings, scheduling meetings and other meetings at the site, and the Contractor shall facilitate their ability to do so. The Contractor shall provide an office at the site for the project architect if the specifications require it to do so.

C. Limitation of Architect's Responsibilities.

The architect will not be responsible for or have control of construction means and methods, or safety precautions and programs in connection with the work. The architect will not be responsible for or have control of acts or omissions of the Contractor, its subcontractors, or any of their agents or employees, or any other person performing any of the contract work.

D. Architect Rejection of Work.

The architect may recommend rejection of work or materials which it believes do not conform to the contract documents. Whenever the architect considers it necessary or advisable, it may recommend to the College special inspections or testing of work or materials, including completed work and materials.

E. Architect Review of Contractor Submittals.

The architect will review, approve or take other appropriate action regarding Contractor submittals, such as shop drawings, product data and samples, to assure that they conform with the design requirements and contract documents. The approval of a specific item shall not normally be deemed to constitute approval of an assembly of which the item is a component.

F. Architect Review of Contractor As-Built Plans.

The architect will periodically review the Contractors' as-built plans maintained at the site to ensure that they are up-to-date, and shall review the completed as-built plans at project completion to ensure that they are complete and are provided to the College.

G. Architect Determination of Satisfactory Completion.

The architect will conduct inspections to determine the dates of substantial and final completion and to determine if the Contractor has properly substantially and finally completed the project. The architect will obtain from the contractor all written warranties and all other documents which the Contractor is required to provide at the time of the project completion. The architect will make a recommendation to the College regarding final project and final contract acceptance.

ARTICLE 4. CONTRACTOR.

A. Contractor Responsibility for Performance of the Contract and Work.

The Contractor shall perform all of the duties in the contract documents, shall furnish the labor, materials and equipment to complete the construction of the project in accordance with the contract, and furnish all services, labor, materials and equipment necessary or appropriate to construct the project. The Contractor shall manage, supervise, schedule, direct, and inspect the work as competently, skillfully, and efficiently as possible, and shall be solely responsible for all construction means, methods, techniques, safety, security, sequences, procedures, and coordination.

The Contractor shall comply with all applicable laws, and shall establish and maintain reasonable quality assurance and safety programs in connection with its work. The Contractor shall complete the contract in compliance with the contract documents and by milestone, substantial completion and final completion dates in the contract or any authorized extensions thereof. The Contractor shall maintain good order and discipline at the site at all times.

B. Contractor Key Personnel.

The Contractor shall assign to the project a project executive, project manager, superintendent, and scheduler, and such other key personnel as are specified in the contract or as required to carry out the requirements of the project. The College has the authority to reject and have replaced any staff member of the contractor or subcontractors for any reason.

C. Contractor Supervision of Contract Work/Superintendent.

The Contractor shall supervise and be responsible for the acts and omissions of the Contractor's employees, agents, subcontractors, sub-subcontractors, suppliers and other persons performing portions of the work and the contract. The Contractor's designated project superintendent shall be at the project site at all times when work is in progress. The Contractor may designate in writing an alternate superintendent which must be approved by the College. The superintendent (or alternate) shall have full authority to represent and act for the Contractor at the site, and shall have full authority to execute orders and directives of the College without delay.

Communications to the superintendent shall be deemed to have been given to the Contractor. The superintendent shall be capable of and authorized to respond to all hazardous and unsafe conditions at the project site and to implement prompt corrective measures to eliminate all unsanitary, hazardous or dangerous conditions at the site. The College may suspend all or part of the work at the project site if the superintendent or alternate is not present at the project site, and such suspensions shall not be the basis of a claim against the College.

The superintendent shall attend all meetings at the project site including job meetings, scheduling meetings, and meetings with the College and/or the architects. The superintendent shall have a written plan which must be approved by the College for responding to emergencies when the work is not in progress. The Contractor shall also utilize qualified competent craftsmen on the project.

D. Cooperation with College and Other Contractors.

The College reserves the right to contract for and perform other or additional work on or adjacent to the project site. When separate contracts are let within the limits of the project site, or in areas adjacent to the site, the Contractor shall perform its work so as not to interfere with or hinder the progress or completion of the work being performed by other contractors. The Contractor shall also affirmatively cooperate with such other contractors and coordinate its activities with theirs, and include coordination measures in the project CPM construction schedule. The Contractor shall arrange its work and shall place and dispose of materials being used so as not to interfere with the operation of other contractors within the limits of the project site. The Contractor shall join its work with that of the other contractors in an acceptable manner and shall perform the work in proper sequence with that of other contractors.

If there is a disagreement as to the respective rights of the Contractor and others doing work within the limits of or adjacent to the project site, the College shall determine the respective rights of the contractors involved to secure the satisfactory completion of all affected work. The Contractor shall not be entitled to additional compensation beyond its contract price which may arise because of inconvenience, delay, or loss experienced by it as a result of the presence and operations of other contractors working within the limits of or adjacent to the project site.

The Owner reserves the right to occupy any portion of the Project which is ready for occupancy prior to completion and acceptance of the Project, after Local and State Construction Enforcing Agency approval.

The occupancy of any portion of the Project does not constitute an acceptance of any work nor does it waive the Owner's right to liquidated damages or constitute an acceptance of any work as the Project will be accepted as a whole and not in units. Prior to such occupancy, however, the Architect, a representative of the Owner, and the Contractor shall fully inspect the portions of the Project to be occupied, preparing a complete list of omissions of materials, faulty workmanship, or any items to be repaired, torn out or replaced. The Owner will assume responsibility for damage to premises so occupied of any items not on this list when such damage is due to greater than normal wear and tear, but does not assume responsibility for improper or defective workmanship or materials.

E. Performance of College Directives.

When the College issues a written directive to the Contractor under the authority of any provision in the contract or general conditions, the Contractor shall perform as directed in a diligent manner and without delay. Compliance with written directives shall not adversely affect the rights of the Contractor under the contract or law, but if the Contractor objects to a directive of the College, or claims that a directive infringes upon its rights or entitles it to a change order, it shall notify the College in writing within 2 business days of any directive and describe any objection it has to the directive and the reasons for its objection. Objection to a written directive does not relieve the contractor of the obligation to comply with the directive and proceed in a diligent manner to implement the directive without delay.

ARTICLE 5. PERFORMANCE OF WORK

A. Protection of Work/Materials, etc.

The Contractor, shall at its own expense, protect all finished work and materials from damage and keep them protected until the project is accepted as substantially completed, and shall repair or replace any work or material damaged before acceptance. After the project is accepted as substantially complete, the Contractor will remain responsible up through final completion for damage to work and materials caused by it or its subcontractors or others participating in the performance of its contract obligations. The Contractor shall also secure and protect its own tools, equipment, materials and supplies, and the College shall have no liability for damage, theft or injury to the Contractor's property.

B. Safety and Safety Programs.

The Contractor shall have full responsibility for safety at the project site at all times up to final completion and acceptance of the project and the contract. The Contractor shall provide for the safety of all individuals on the project site, and take measures to ensure that individuals on or near the project site are not injured by the performance of the contract. The Contractor shall establish and maintain a project safety program in accordance with all applicable laws including OSHA, good industry practice, and any additional requirements in the contract documents. If the College or the Architect become aware of an unsafe situation, the Contractor will immediately respond to remedy the safety concern.

C. Working Hours.

Except as required for the safety or protection of persons or property, or as specified in the contract documents, all work at the site shall be performed during regular working hours, and not on Saturdays, Sundays, or legal holidays without the prior written consent of the College which will not be unreasonably withheld.

D. Site Security.

The Contractor shall provide, maintain and oversee security at the site if required in the specifications. The project site shall be fenced as specified in the specifications, and the Contractor shall control access when gates are unlocked or open.

E. Site Use.

The Contractor shall confine construction equipment, storage and work to the project site absent written approval from the College. Any request by the Contractor to use areas outside the project site must be described in written form and included with the Contractor's bid.

F. Submittals (Shop Drawings, Product Data, Samples).

The Contractor shall submit to the architect with reasonable promptness a schedule for all submittals, including shop drawings, product data and samples required by the contract documents. Submittals shall be complete as to quantities, details, dimensions and design criteria. The architect will approve and the College will review submittals if they conform to the contract documents, the design concept and good industry practice. The Contractor shall note its approval of all submittals and the date for any submittals prepared by any subcontractor or supplier, and it shall be responsible for determining and verifying all materials, field dimensions, field construction criteria, and coordination requirements pertaining to the submittal.

The Contractor will not be relieved of responsibility of deviations in submittals from the requirements in the contract documents by reason of approvals of the submittals unless the Contractor specifically identifies the deviation in the submittal and the architect expressly approves and the College will review the deviation. The Contractor shall be responsible for errors or omission in its submittals. No work or materials included in a submittal shall begin until the submittal is approved by the architect and the College.

G. Layout and Dimensional Control.

The Contractor shall be responsible for locating and laying out the project components and all of the project parts on the project site in strict accordance with the plans, and shall accurately establish and maintain dimensional control. The Contractor shall employ a competent and licensed New Jersey engineer or land surveyor as appropriate to perform all layout work and to fix the level and location of excavations, footing base plates, columns, walls, floors and roof lines. The Contractor shall furnish to the College and the architect certifications that each such level is as required by the plans as the work progresses.

The plumb lines of vertical surfaces shall be tested and certified by the Contractor's engineer or surveyor as the work proceeds. The engineer or surveyor shall establish all points, lines, elevations, grades and bench marks for the proper control and execution of the work. The engineer or surveyor shall establish a single permanent benchmark to be approved by the architect, to which all three coordinates of dimensional control can and shall be based. The engineer or surveyor shall verify all College-furnished topographical and utility survey data, and all points, lines, elevations, grades and benchmarks provided.

Should any discrepancies be found between information in the plans and the actual site or field conditions, the Contractor shall notify the architect and the College in writing, and shall not proceed with any work affected until it receives written instructions from the College.

The contractor is required to provide a final "as built" survey from a New Jersey Licensed/Certified Surveyor of the project site showing all structures, elevations, grades and required information on the project site and submit to the College in CADD format.

H. Construction Access, Roads, Walks, and Parking.

The Contractor shall construct and keep all roadways, drives, walkways and parking areas within or near the site free and clear of debris, gravel, mud or any other site materials, including, for example, by the cleaning of muddy wheels and undercarriages on vehicles before they exit the site. The Contractor shall be responsible for any citations, fines, or penalties imposed on it or the College for failing to comply with applicable local rules or laws regarding its use of roads and the like.

The Contractor shall obtain permission in writing from the College before using for construction purposes any existing driveways, parking areas, walkways or areas not specifically designated for such use in the contract documents. The Contractor shall maintain such driveways and areas in good and clean condition during construction and not damage them. At final acceptance and completion, it shall leave them in the same condition as they were at the start of the work. Conditions of such facilities before use shall be photographed and otherwise documented by the Contractor. The Contractor shall not commence construction of permanent driveways, parking areas or walks on the project without the written approval of the College.

Any existing walkways, driveways, aprons, or curbs damaged by the work of this contract shall be replaced in kind immediately upon project completion, or as required to maintain campus safety and campus aesthetics.

I. Construction Site Condition, Storage, Dust Control.

The Contractor shall provide reasonable, safe and orderly storage for its equipment, tools and materials, and not unreasonably encumber the site. The Contractor shall keep the site and the project free from the accumulation of refuse, debris and scrap materials caused by its operations so that the site has a neat, orderly and workman-like appearance. Loading, cartage, hauling and dumping will be at the Contractor's expense. The Contractor shall provide at its expense temporary dust-proof partitions around areas of work in existing buildings, and where reasonably required in new building areas.

J. Photographs.

The Contractor shall provide at its expense monthly progress photographs of the project. The photographs shall be 8 inches by 10 inches and shall be submitted to the College in duplicate monthly. Unless otherwise specified in the supplemental general requirements, four photographs shall be submitted each month which provide views of the project taken from the same four points each month which should be selected by the architect.

K. Project Sign.

The Contractor shall at its expense provide, erect and maintain two project signs at the site which shall be described in the contract documents. The College will specify the locations. The sign shall be painted by a professional sign painter. No other sign will be permitted at the site. The Contractor shall remove the signs when the project is finally accepted unless the College requests that it be removed earlier.

L. Soil Conservation.

The Contractor shall employ reasonable measures to conserve the soil at the site, and determine and comply with all soil conservation measures required by the Mercer County Soil Conservation District.

Contractor shall coordinate and schedule all Soil Conservation inspections and provide the College with all site inspection notes, approvals or notices.

M. Temporary Facilities, Services, Electric, Heat and Enclosures.

The Contractor shall provide storage areas, temporary drives and sidewalks, employee parking areas, staging areas, excavation borrow/spoil areas, commercial canteen areas, field offices including a meeting room, telephones, toilet facilities, and other temporary facilities which are necessary to perform the work or which may be required by the project specifications. The Contractor shall locate these facilities on the project site, and the location shall be subject to the approval of the College.

The Contractor shall provide adequate and clean temporary toilet facilities on the project site in locations to be approved by the College, and they shall be serviced at least twice a week by a firm qualified and experienced in such functions. The Contractor shall provide such temporary electricity, water, and other utilities which are necessary to perform the work, or which may be required by the project specifications. The Contractor shall also supply such temporary enclosures and heat which are necessary to perform the work or which may be required by the project specifications. The contractor and the subcontractors will not enter or use any College facilities not required by the work of the contract.

Temporary electric and heat shall be furnished by the Contractor for the benefit of other contractors working on the project if specified in the project specifications.

The Contractor shall not anticipate using the permanent heating or air conditioning system in a building for temporary heat or air conditioning prior to the acceptance of the project as substantially complete unless specified otherwise.

Any natural gas, or combustible material, or hazardous material containers utilized by the Contractor must be stored in a safe, ventilated location approved by the College. The Contractor must also submit for approval a reasonable safety plan for the operation of temporary heat equipment.

N. Substitutions

The Contractor may include in their bid substitute materials or equipment or construction methods in lieu of those specified in the contract documents, but they do so at their own risk. Any substitution must be equal in type, function and quality to the item required in the contract. The Contractor must submit all information required within 20 days of contract award to determine if the proposed substitute is equal to the contract requirements, and any substitution must be approved by the architect and the College

The College shall have complete discretion to decide whether it will accept any substitution. No substitution shall result in any increase in the contract price or times. The Contractor in its application for the substitution must certify

in writing that the substitution is equal to what is specified in the contract documents in all material respects and will not increase the time or price of the contract work.

Should the substitution be rejected, the contractor will then be required to provide the specified product, material or method at no additional cost to the College and no change in the project schedule.

O. License Fees.

The Contractor shall be responsible for obtaining the right to use any equipment, design, device or material required to perform the contract, and to include in its contract price any license fee or royalty required.

ARTICLE 6. SUBCONTRACTORS.

A. Contractor Responsibility for Subcontracted Work.

The Contractor shall be fully responsible to the College for the proper performance of the contract irrespective of whether the work is performed by the Contractor's own forces or by subcontractors employed by the Contractor. The Contractor shall be responsible for the acts and omissions of its subcontractors and suppliers on the project and shall take appropriate measures if they are not properly supervising or performing their work.

B. Subcontractor Identification and Approval.

The Contractor shall include with its bid for the contract the names, addresses and license numbers of all subcontractors which it proposes to utilize on the project for plumbing and gas fitting work, HVAC work, electrical work, structural steel and ornamental iron work. No subcontractor may perform work on the project until it has been approved by the College.

Within 20 days after Notice to Proceed, the Contractor shall furnish to the College in writing for review by the Architect a list of the names of all Subcontractors, Sub-subcontractors, fabricators, manufacturers, sources of supply, articles, devices, fixtures, pieces of equipment, materials and processes proposed for each item of Work on List of Subcontractors, AIA Document G805. The Architect or Owner will promptly notify the Contractor in writing if either the Owner or Architect, after due investigation, has reasonable objection to any names on such list. Failure of the Owner and Architect to make objection within 10 days to any name on the list shall constitute acceptance of such name.

In submitting the names of subcontractors, the Contractor shall list 1) the name and address of the Subcontractor, 2) the name and address of all Sub-subcontractors for each significant subdivision of the trade or work 3) reference in the form of a list of at least 3 jobs similar in size and quality to this Project performed in the last 5 years, with name and location of work, dollar value and names of the Owner and Architect.

In submitting sources of supply of materials, articles and pieces of equipment including those under subcontracts and sub-subcontracts, the Contractor shall list 1) the name and address of the source of supply 2) the name of the manufacturer of the items.

If the College disapproves a proposed subcontractor, it will provide the reason for its decision in writing. The College will not be liable for any extra cost or delays caused by the reasonable disapproval of proposed subcontractors. The approval of subcontractors by the College shall not relieve the Contractor of the responsibility for complying with all of the provisions of the contract including those performed by the subcontractors. Subcontractors approved by the College may not be changed without prior notice to and approval by the College.

C. Subcontractor Qualifications.

The College may disapprove a proposed subcontractor if it has a reasonable objection to the subcontractor, or if there is evidence of poor performance on other projects or financial problems, or if the subcontractor has been suspended or debarred by any public agency within the State of New Jersey, or if the subcontractor is not properly licensed and registered to do business in New Jersey or with the New Jersey Department of Labor regarding prevailing wages, or if the subcontractor has been charged with or convicted of violating any laws including but not limited to the New Jersey Prevailing Wage Act, criminal laws, public procurement laws, anti-trust laws, election laws, laws against employment discrimination, environmental laws, tax laws, professional licensing laws, or laws regarding attempts to improperly influence College or other public officials. Subcontractors shall also utilize qualified, competent craftsmen on the project.

D. Subcontractor Compliance with Contract/Subcontractor Supervisors.

The Contractor shall require its subcontractors on the project to comply with all pertinent terms of the contract and contract documents, and shall include all appropriate terms and provisions in subcontracts on the project to achieve proper contract performance. Each subcontractor shall have competent superintendents and foremen supervising their work, and the Contractor shall take appropriate measures if they do not do so.

E. No Contract Relationship Between College and Subcontractors.

Nothing in the contract or contract documents shall create any contractual relationship or duties between the Contractor's subcontractors and the College.

ARTICLE 7. TIME, LIQUIDATED DAMAGES, DELAY CLAIMS AGAINST COLLEGE.

A. Contract Times.

The Contractor shall begin the contract work within 10 days after the issuance of a notice to proceed by the College, and shall perform the work in the contract by the dates specified in the contract, including milestone, substantial completion and final completion dates.

B. Liquidated Damages For Delay.

If the Contractor fails to substantially complete the project by the substantial completion date specified, the Contractor shall pay the amounts specified in the contract as liquidated damages for delay for each calendar day that the task remains incomplete beyond the substantial completion date.

The College and the Contractor agree that the actual loss to the College from construction delays and the inability to use the project in a substantially completed state are for the most part difficult to quantify, and that the foregoing liquidated damages formula results in damages amounts that are reasonable and are not penalties. The College and the Contractor agree that the amount of liquidated damages per calendar day for delays in the substantial completion of the project is a reasonable estimate of the damage to the College for not being able to use the project in a substantially completed state. The College may deduct liquidated damages from payments due under this contract, but its failure to withhold liquidated damages or to assert claims for liquidated damages shall not be deemed a waiver of the College’s right to withhold or to assert claims for damages for any delays which occur at any time on the project.

C. Delay Claims Against The College -- Limitations

The Contractor may not assert claims against the College for extra compensation by reason of any delays in its work resulting from acts or omissions of any third parties irrespective of extensions granted under the contract, including but not limited to delays caused by third parties such as the project architect, other contractors, utilities and governmental authorities.

The College shall only be required to pay additional compensation for delays caused by the College itself, and only to the extend required by N.J.S.A. 2A:58B-3 (delayed performance caused by the College's own negligence, bad faith, active interference or other tortuous conduct, but not for reasons contemplated by the parties and not for the negligence of others including others under contract with the College on the theory that such negligence should be imputed to the College). The College shall not be liable for any period of delay when there is a concurrent delay for which it is not responsible.

When the Contractor is entitled to extra compensation for delay under the contract and general conditions, it can only assert claims for extra costs at the job site, and may not assert claims for extra costs for home office expenses, home office overhead, lost profit or consequential losses. Any additional compensation under this paragraph shall also be subject to the provisions in the contract and general conditions regarding claims, and the provisions in the contract and general conditions regarding the maintenance and availability of cost records.

D. MEDIATION

If a dispute or claim arises out of or relates to this contract, or the breach thereof, and if the dispute cannot be settled through negotiation, the parties agree first to try in good faith to settle the dispute by mediation administered by the American Arbitration Association under its Construction Industry Mediation Rules before resorting to arbitration or litigation. The Owner reserves the right to request a mediation if it deems it necessary.

ARTICLE 8. PROJECT SCHEDULE.

A. General Schedule Requirements.

The Contractor shall schedule the construction work and determine the most feasible means and order for the work to complete the project within the times required by the contract. The Contractor shall prepare a project schedule and monthly schedule updates which must be approved by the College and the architect, and it shall perform the contract and the work in accordance with the schedule. The project schedule should include a schedule of submittals for approval. The project schedule must be submitted before any work (other than mobilization to site and general layout and site preparatory work) on the project can begin under the notice to proceed. When the Contractor's schedule is approved by the College, it shall become an additional contract document and the Contractor shall be required by the contract to comply with it. The project schedule and updates shall be used in determining the amount of the monthly progress payments to the Contractor. The College may also use the schedule and updates to determine if the Contractor is adequately planning and performing the work in accordance with the contract.

B. Form and Content of Schedule.

The Contractor shall prepare the project schedule using Critical Path Method (CPM) scheduling techniques. The Contractor shall utilize the latest revision of Primavera P3 or Microsoft Scheduling software. The Contractor shall prepare a detailed schedule which shows how it will plan, organize, execute and complete the work. The schedule shall be in the form of an activity oriented network diagram (CPM). The principles and definitions used in this section shall be as set forth in the Associated General Contractors of America (AGC) publication "Construction Planning and Scheduling", copyright 1994.

The detailed network diagram shall provide sufficient detail and clarity of form and technique so that the Contractor can plan, schedule and control its work properly, and the College and the architect can readily monitor and

follow the progress of all portions of the work. The network diagram shall comply with the limitations imposed by the scope of the work and contractually specified milestone dates and completion dates. The CPM schedule shall include the arrow or network diagram and the computer produced schedule with dates. The schedule shall include and reflect the following factors:

1. Project phasing, and contract milestones and completion dates.
2. The structural breakdown of the project.
3. The types of work to be performed and the labor trades involved.
4. Reasonable logic and activity durations.
5. Reasonable coordination of all activities.
6. Purchase, manufacture and delivery activities for all major materials and equipment.
7. Deliveries of College furnished equipment.
8. Allowances for work by separate contractors identified in writing by the College at the time of contract award.
9. Submittals and approvals of shop drawings, material samples, and other required submittals.
10. Subcontract work.
11. Crew flows and sizes (manpower).
12. Assignment of responsibility for performing all activities.
13. Access and availability to work areas.
14. Identification of interfaces and dependencies with preceding, concurrent and follow-on contractors, and sequences and interdependence of activities.
15. Testing and inspections.
16. Phased or total inspection, acceptance, and takeover by the College.
17. Utilization of schedule to determine amounts of monthly progress payments.
18. Activities required of the College and the project architect such as approvals, including reasonable durations for the activities.

Activities should be set forth in working days and have a maximum duration of 60 days, except for non-construction activities such as the procurement and delivery of materials and equipment. All durations shall be the result of definitive manpower and resource planning by the Contractor. The level of detail in the schedule shall be subject to the approval of the College. The schedule shall include a reasonable approach to achieve milestones and completion dates in the contract. Any failure of the Contractor to include any element of the work in the schedule shall not excuse the Contractor from completing that work and all of the work needed to complete the project by the completion dates in the contract.

The network diagram is to be prepared by a computer plotter. The logic diagram will be pure logic and shall not be drawn to time scale. The logic diagram shall be drawn on 30" x 42" size sheets and prepared on a tracing/mylar or similar material suitable for reproducing high quality prints.

C. Computerization of Schedule.

The mathematical analysis of the detailed network diagram shall be made by computer, and the tabulation for each activity shall include the following:

1. Activity numbers.
2. Activity descriptions.
3. Durations in work days for each activity.
4. Earliest start date (by calendar date).
5. Earliest finish date (by calendar date).
6. Latest start date (by calendar date).
7. Latest finish date (by calendar date).
8. Slack or total float in work days.

The following computer documents shall be prepared as part of the initial schedule submission and each update:

1. Activity file sort, including sorts listing activities required of the College and the project architect, such as approvals.
2. Eight week "Lookahead" detailed bar chart.
3. Eight week summary bar chart.
4. Additional computer sorts requested by the College.
5. High density floppy disks or CDs of all computer files.

D. Weather Inclusion in Schedule.

Seasonal weather conditions shall be included in the schedule, including average precipitation, temperature and other weather conditions typical in the geographic area over a 5 year period by quarterly period (spring, summer, fall, winter).

E. Schedule Updates.

The Contractor shall prepare schedule updates monthly until its contract and the project are completed. The first update shall be issued 30 calendar days after the construction start date specified in the notice to proceed. Updates shall include the following information:

1. Actual start and completion dates for activities.
2. Activity percent completion.
3. Remaining durations for activities in progress.

Each schedule update shall also include a narrative report which includes the following information:

1. Summary of work completed during update period.
2. Comparison of actual progress and status to activities and dates in original schedule.
3. Analysis of critical path including affect of activity progress on critical path.
4. Analysis of secondary critical paths, meaning float within 10 days of the project critical path.
5. Analysis of time lost or gained during the update period.
6. Identification of problem areas.
7. Identification of change orders and delays impacting or delaying the project under the project schedule.
8. Solutions or proposed solutions to current problems and delays.
9. Extensions requested by the Contractor, including activities affected and the amounts, and the reasons for the requests.
10. Extensions granted by the College for delays and changes, including the activities affected and the amounts, and any effect on the critical path and contract completion dates.
11. Delays in activities required of the College and the project architect, and activities which they are required to complete in the update period following the issuance of the update.

All schedule updates must be submitted to the College and the architect for approval. Schedule updates including the reports which are approved by the College shall be deemed to be official records of the progress and status of the project under the schedule and the contract, and may be utilized by the College in determining if the Contractor is adequately planning and performing the work under contract.

F. Meetings/Eight Week Bar Charts.

The Contractor’s project manager and scheduler shall arrange for and attend monthly progress and scheduling meetings with the College and the project architect. Monthly progress meetings shall be scheduled 3 to 7 days after monthly schedule updates and reports are issued and provided to the College and the project architect. The purpose of

these meetings will be to review past progress, current status, problem areas, delays, measures to reduce delays, future progress, and the Contractor's most recent schedule update and report. At the monthly progress meetings, the Contractor shall provide look ahead summary and detailed bar charts showing the work and activities to be performed and/or completed during the 8 week period following the schedule update.

G. Schedule Documentation for Contract Payments.

The Contractor will not be entitled to payments under the contract until a project schedule has been submitted to and approved by the College. No payment will be made under the contract if, when the payment is due, a schedule update and narrative report is due under this paragraph but has not been submitted to and approved by the College. The original CPM project schedule shall include a breakdown allocating the total contract price among the network activities in the schedule which must be approved by the College.

H. Progress, and Recovery Schedules.

The Contractor shall perform its work in accordance with the schedule. If the Contractor's work falls behind the requirements of the schedule, it shall at its own cost institute measures to improve its progress and bring its work in compliance with the schedule, including but not limited to increasing manpower, increasing work hours per shift, increasing shifts, increasing working days per week, and re-scheduling work activities to perform them concurrently where feasible.

If monthly schedule updates show that the Contractor's progress has fallen behind the project schedule so as to jeopardize the achievement of milestone or completion dates in the contract by more that 10 work days, the Contractor shall, if requested by the College in writing, prepare a recovery schedule with acceleration measures to regain the lost time, and shall proceed in accordance with the recovery schedule in additional to the project schedule at its own cost.

I. Contractor Failure to Provide Schedule Updates.

If the Contractor fails to provide monthly schedule updates and reports when required, the College can elect in it sole discretion to employ any of the following remedies: 1) not make progress payments; 2) on 10 days written notice to the Contractor, retain its own consultant to provide schedule updates and reports and deduct the cost from the contract price; 3) terminate the contract for default in accordance with the termination provision in these general conditions.

J. Scheduler Qualifications.

The Contractor must utilize a scheduler which satisfies the qualification requirements for the project. If at any time during the project it appears that the Contractor's scheduler is not competent to provide the scheduling services required in this article, the Contractor shall within 10 days after a written notice and demand from the College, retain a replacement scheduler which is competent to provide the services required. The College may also utilize any of the remedies in this article and the contract and general conditions for the Contractor's failure to provide proper schedule updates and reports.

ARTICLE 9. EXTENSIONS, COMPENSATION FOR CERTAIN EXTENSIONS.

A. Delays Warranting Extensions of Contract Dates.

If the Contractor is unavoidably prevented from completing any part of the work within the milestone, substantial completion or final completion dates in the contract by causes beyond the control and without the fault of the Contractor or its subcontractors, those contract dates will be extended by amounts equal to the time lost due to such delays, provided the Contractor requests extensions in accordance with this article. Delays warranting extensions of the contract dates include unforeseeable and unavoidable delays caused by the College, the project architect, other contractors employed by the College, utility owners or other third parties, acts of God, acts of governmental authorities, wars, abnormal weather conditions, fires, floods, earthquakes, epidemics, plagues, and other unavoidable casualties. The

contractor has 24 hours to notify the owner in writing from the start of a delay with a clear and concise reason for the delay, otherwise the delay will not be reviewed. This limited time frame is to provide the College the opportunity to immediately address the issue and limit the amount of time in the potential delay and its potential impact on the project schedule.

B. Weather Delays.

No time extensions will be granted for time lost due to normal seasonal weather conditions. To qualify for a time extension due to unusually severe or abnormal weather conditions, the Contractor must demonstrate that the weather conditions during a given quarterly period (summer, fall, winter, spring) were more severe at the project site than the previous five year average for the geographic area by quarter, and that the weather conditions critically impacted contract milestone, substantial completion or final completion dates by delaying the performance of work on the project's critical path. No time extensions will be considered for any weather conditions that do not affect work on the critical path or contract dates.

Where the cause of delay is due to weather conditions, extension of time shall be granted only for unusually severe weather, as determined by reference to historical data. The term "historical data" as used in the preceding sentence shall be construed according to this formula: Average rainfall (or snow or low temperature) for the past five years for the month in question, plus 10 percent. In other words, weather is not deemed to be unusually severe unless it is 10 percent worse than the average for that month over the last five years.

Apart from extension of time, no payment or allowance of any kind shall be made to the Contractor as compensation for damages on account of hindrance or delay from any cause in the progress of the work, whether such delay be avoidable or unavoidable. The Contractor agrees that he will make no claim for compensation, damages for any such delays, and will accept in full satisfaction for such delays said extension of time.

C. Float Time Use.

Float time in the schedule is not for the exclusive use of either the Contractor or the College. Float time is available for use by both parties to facilitate the effective use of available resources and to minimize the impact of problems and delays which may arise during construction. No time extension will be granted as a result of any problem, change order or delay which only results in the loss of available positive float on the project schedule. Float time shown on the project schedule shall not be used by the Contractor in a manner which is detrimental to the interests of the College or the project.

D. Calculation of Extensions.

Extensions will be calculated based on the effect of delays on the project schedule and the activities in the schedule. If the Contractor is entitled to an extension for a delay based on the nature of the delay under this article, the activities in the schedule affected by the delay will be extended by the amount they are affected. If extensions of activities in the project schedule affect the critical path and delay the contract milestone and completion dates, they too will be extended to the extent affected. The critical path and contract dates will only be extended to the extent that they are actually affected under the schedule by a delay for which the Contractor is entitled to an extension.

If for any scheduled activity or period there are concurrent delays which include delays for which the Contractor is entitled to an extension and delays for which the Contractor is not entitled to an extension, the Contractor will be given an extension for the delays for which it is entitled to extension so that it will not be liable to pay liquidated damages for delay, unless the College eliminates or reduces that delay. A concurrent delay will not justify an extension to the Contractor if it has minimal effect on the completion of the project, and/or if it would likely have been avoided if it had become apparent that it was having an effect on the progress of the project and the project completion date.

E. Elimination of Delays and Extensions (Acceleration).

If the effect of a delay for which the Contractor is entitled to an extension can be reduced or eliminated by changes in the schedule or other measures which have no material adverse impact on the Contractor in terms of cost or otherwise, the Contractor shall employ those measures so that no extension is required or so that a shorter extension is required. If the Contractor is entitled to extensions for delays, and if the College (in its sole discretion) notifies the Contractor in writing that it prefers to eliminate the lost time to avoid or reduce the extension required, by changes or additional efforts such as acceleration efforts, the Contractor shall perform those measures as a change to the contract to be compensated under the change order provisions of the contract and the general conditions.

F. Requests for Extensions Required.

The Contractor must provide the College with a written notice of delay and request for an extension within 24 hours of the beginning of a delay, or it will not be entitled to a review. The written notices of delay and requests for extensions must include the nature and cause of the delay, the known extent of the delay, the work activities on the project schedule affected by the delay and the extent of the affect to each, and suggestions or proposals to reduce or eliminate the delay.

G. Compensation for Certain Extensions and Limitations.

Under the contract and general conditions, the College does not assume responsibility for many types of delays, including additional costs resulting from extensions granted because of those delays. Where the College is responsible for a delay under the express terms of the contract and general conditions, it will pay extra compensation for any extension granted because of the delay.

Compensation by the College for delays (and extensions) for which it is responsible under the contract and general conditions shall only include additional costs actually incurred at the site, and shall not include home office expense, home office overhead, lost profit or consequential losses. Any additional compensation under this paragraph shall be subject to the provisions in the contract and general conditions regarding claims, and the provisions in the contract and general conditions regarding the maintenance and availability of cost records.

No compensation will be paid if an extension for a delay for which College is responsible is concurrent with another delay for which the Contractor is not entitled to an extension, or is concurrent with another delay which the Contractor is entitled to an extension but the College is not responsible for the other delay.

If the College requests a change in the contract work, potential delays and extensions which result from the change and any resulting extra compensation for the change shall be addressed under the change order provisions in the contract and the general conditions in addition to this article.

ARTICLE 10. PAYMENTS TO CONTRACTOR.

The College will pay the Contractor as full compensation for performing the contract the contract price as adjusted by approved change orders which increase or decrease the contract price. The College will do so in accordance with this article, any supplemental general conditions regarding payment, and the payment terms in the signed contract. Payment provisions in the supplemental general conditions which add to or modify this provision shall take precedence over this provision. Payment provisions in the signed contract which add to or modify payment terms shall take precedence over the supplemental general conditions and this article.

A. Monthly Progress Payments.

The College will pay the Contractor monthly progress payments as the contract work proceeds and will pay for work completed, less retainage. The Contractor shall submit monthly invoices using the College's invoice form for the work completed in each calendar month, and the monthly invoice shall be submitted in accordance with the contract. The Contractor shall be entitled to monthly progress payments based on the percentage of the contract work completed (less earlier payments), and that amount shall be based on the unit schedule breakdown and the update of the CPM for the

billing period showing schedule activities completed and progress on incomplete activities, in conjunction with the values assigned to those activities. If there is a discrepancy between the amount due based on the unit schedule breakdown and the amount due based on the CPM update, the Contractor shall only be entitled to the lesser amount unless the Owner's Representative, in his/her sole discretion, decides otherwise.

B. Unit Schedule Breakdown/CPM Activity Price Breakdown.

Before the contract is signed, the Contractor shall submit to the College and the architect a unit schedule breakdown (schedule of values) utilizing the College's form which reasonably allocates the contract price among the principal categories of work and materials in the contract. The unit schedule breakdown must be signed by the Contractor and is subject to approval by the architect and the College for use in calculating monthly progress payments under the contract. The Contractor shall not "front end load" the unit schedule breakdown. The unit schedule breakdown may include line items for mobilization, bonds and insurance.

The Contractor's proposed CPM schedule shall reasonably allocate the contract price among the activities in the schedule so that monthly CPM schedule updates can be utilized in connection with the unit schedule breakdown in determining the amount of monthly progress payments. The Contractor's unit schedule breakdown and CPM activity price breakdown must be approved by the architect and the College before any payments are made under the contract.

C. Invoices for Monthly Progress Payments: Form and Content.

The Contractor must utilize the College's invoice form and the invoice forms must be completed before they are submitted for payment. Each invoice must be signed by the Contractor, and shall certify that the work and materials represented as having been provided have been provided, and that all subcontractors and all suppliers on the project have been paid all amounts legitimately due for work and materials billed to the College in earlier invoices which were paid by the College.

Invoices for monthly project payments must include the status of the work in the unit schedule breakdown and the CPM update for the billing period which shows the activities completed or started and the value of them based on the CPM schedule. Invoices must also include certified payrolls for the Contractor and all subcontractors for the billing period, affirmative action monthly manning reports, a certification of subcontractor/supplier payments, a partial waiver of liens, a list of all materials stored to date including descriptions, values, quantities and location, and any documents required in the contract documents.

The Contractor will be entitled to have an invoice paid if the architect and the College approve the invoice including the percentage of work completed, and if the quality of the work and materials conform to the contract documents. The approval of invoices shall not waive claims for defects or deficiencies in the work or materials provided, or the right to subsequently inspect the project as a complete and functioning whole.

D. Payment for Materials and Equipment Procured But Not Installed.

The Contractor may seek payment in monthly invoices for materials and equipment delivered to the project site but not yet incorporated into the work. The Contractor shall include with its monthly invoices a list of the stored equipment, the amount and type of stored materials, and the place where they are stored. Each invoice which seeks payment for materials and equipment delivered to the project site but not installed or incorporated into the work shall include a signed bill of sale to the College and an invoice from the supplier. All risk of loss or damage for materials and equipment delivered in the project site shall remain with the Contractor.

The College will only rarely pay for material or equipment stored offsite, and only when it determines in its sole discretion that there is good cause. The College will consider no request to pay for materials or equipment stored off site unless the Contractor includes a written request for such payment with its bid for the project. If the College does agree to pay for material or equipment stored off site during the performance of the contract, it will do so when the contract is signed.

If the College does agree to pay for materials and equipment stored off site, such payments shall be subject to any conditions in the signed contract, and in all cases, a bill of sale to the College, a paid invoice, insurance and proof the storage facility is bonded will have to be provided to the College when each payment is sought. The location will have to be specified in writing and the material or equipment will have to be inspected by the College. The Contractor and it performance bond surety must agree in writing that they retain all risk of loss or damage, and each payment application must contain a consent to payments for materials stored off site signed by the Contractor's bonding company.

Payments on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing, may be made by the Owner subject to the following conditions:

Such materials or equipment shall have been fabricated or assembled specifically for the Project and delivered to storage no earlier than needed for the orderly progress of the Work as demonstrated by the Progress Schedule.

Title to such materials or equipment shall pass to the Owner pursuant to the Contractor's bill of sale which shall contain guarantee of replacement thereof in the event of damage thereto or disappearance thereof due to any cause. The Contractor shall also affirm that it will pay for such materials or equipment immediately upon receipt of payment therefore from the Owner.

In the case of off site storage, the Contractor shall also provide Consent of Surety to such payment and insurance of such materials or equipment against the perils set forth in the General Conditions both while storage and during transportation to the site. Raw materials or other materials or equipment readily duplicated or usable on other projects will be paid for only after the materials are incorporated in the construction.

E. Retainage.

The College will retain 2% of the amount due on each partial payment pending completion of the contract.

Upon acceptance of the work performed pursuant to the contract, all amounts being withheld by the College shall be released and paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college, without further withholding of any amounts for any purpose whatsoever, provided that the contract has been completed as indicated.

F. Payment for Change Order Work.

The Contractor shall invoice for change order work in the monthly contract progress payment invoices as the change order work is performed, but may only do so after a written change order has been signed by the appropriate College personnel and a purchase order issued by the College.

G. Final Payment.

Upon final completion of all work included in the contract including all change orders, upon acceptance of the work by the architect and the College, and upon the issuance of the final acceptance certificate, the Contractor will be paid the fully adjusted contract balance including any retainage. The Contractor shall submit an invoice for the final payment, and that invoice must include a release of all claims except claims expressly identified and described in the invoice including the amounts. The final invoice must be accompanied by all warranties, guarantees, manufacturer literature, approved as-built drawings, shop drawings required, and other documents which the Contractor is required by the contract to provide to the College at the time of final completion. The final invoice must also include a written signed consent to the final payment signed by the Contractor's bonding company.

H. Payment Terms.

All invoices and payments shall be subject to the terms of the contract and the general conditions, including the provisions regarding payments, and to the right of the College to withhold payments or to make deductions from payments for damages, defective work, liquidated damages, third party claims, failure to complete work, contract requirements, failure to comply with schedule obligations or other causes authorized by the contract documents. See also the Prevailing Wage Act requirements in the signed contract.

I. Payment Based on Partial Acceptance (Limitation).

The College will not accept portions of the project as substantially or finally complete unless specified elsewhere. If the specifications authorize partial acceptances, they will also specify the terms and conditions of such acceptances.

J. Failure to Pay Amounts in Dispute Not to Affect Performance.

The failure of the College to pay any amount requested by the Contractor in an invoice based on a determination that the invoice is improper or some other dispute shall not entitle the Contractor to stop or slow down the performance of the contract work.

K. Waiver of Certain Claims by College Against Contractor in Connection with Final Payment.

In its final acceptance certificate the College shall certify that it has no claims against the Contractor in connection with the performance and completion of the contract except for claims listed in the final acceptance certificate, such as claims for cost overruns, delays, or known defects. The College's certification shall not apply to or release post-completion claims, such as claims for defects or other problems in the completed project which are discovered or which become serious after project completion, warranty or maintenance claims, indemnity or contribution claims, claims for damage occurring after completion, or other claims for the performance of post-completion obligations in the contract or problems which manifest themselves after completion.

ARTICLE 11. CHANGES.

A. Changes Authorized.

The College may at any time authorize and direct changes in the work or accelerations of the work which increase or decrease the contract price. All changes including changes in the contract price shall be governed by this Article and the change provision in the contract. All changes must be in a written change order signed by the Vice President for Facilities, Construction and Campus Safety, the Owner’s Representative, the architect and the contractor. A

Purchase Order will then be issued by the College and signed by the Contracting Officer. At which time the contractor can then bill for the completed change order work. Any extensions in the contract times and increases in compensation because of extensions resulting from changes shall be governed by Article 9 regarding extensions, but the authorization for the extra compensation itself resulting from an extension must be contained in a change order which complies with this Article as well. The College may elect to have changed work on the project which is within the scope of this contract performed by another contractor. Changes in the contract shall not affect the surety bond protection or insurance coverage required by the contract.

B. Change Request or Directive.

The College may request a change in the work or materials to be provided under the contract by a written contract change directive ("CCD") signed by the Owner's Representative. If the College is of the opinion that no change in the contract price or times is required because of the change request, it shall so state in the CCD. A CCD may include provisions regarding the scope of the changed work or materials, and may also include conditions including time parameters or an upset price. A CCD may provide that specified contract work shall stop until further notice, but the Contractor shall not stop or delay any contract work because of a CCD unless the CCD provides that work should stop because of the change. A CCD may provide that the performance of changes shall not commence until a change order is issued and a subsequent purchase order is issued and signed by the Contracting Officer, or that changed work should proceed before a change order and purchase order are issued by the College to maintain the progress of the project.

C. Change Orders Which Are Protested.

If the Contractor protests the terms of a change order, it shall notify the College in writing within 2 business days of its protest. It shall describe the terms which it objects to and the reasons for its protest. It shall include supporting documentation if appropriate. The College may elect to direct the Contractor in writing to perform the change order requirements despite the protest. If it does so, the Contractor's right to pursue further relief based on the protest shall be preserved and the contractor shall immediately proceed with the change work

D. Changes Affecting Contract Times.

Changes and change orders shall not affect or extend any of the contract times unless the change order itself specifies that it changes contract times. If a change order issued by the College delays the completion of any activity in the project CPM schedule, the time allowed for that activity shall be extended, and if a delay in that activity delays other activities, the critical path or the completion dates in the contract, they too will be extended. The Contractor shall make reasonable efforts in scheduling changed work so that it does not delay or extend activities in the CPM schedule including the substantial and final project completion dates. The Contractor shall also make alternate proposals for change order work which include acceleration for the changed work where feasible to achieve this goal, and shall include the cost of such efforts in its change order requests.

Change orders must specify whether they result in any delay (or extension) to any critical path activities in the schedule, including an identification of the activities and the amount of delay in each. If no delay or extension is set forth in a change order, it will be deemed an agreement by the College and the Contractor that no delay or extension results from the change order.

E. Contractor Initiated Change Order Requests.

If the Contractor contends that any directive or communication from the College or architect, or any condition, event or circumstance entitles it to a change order changing the contract scope, terms, price or times, it shall submit a written change order request to the Owner's Representative within 5 days of the event upon which the request is based. The written request shall specify the terms of the change order requested, and include all documentation and information which the Contractor seeks to have considered in support of the request, or which is necessary to a proper consideration of the request.

F. Change Order Amounts.

All price changes or amounts in change orders shall be based on (1) lump sum, (2) actual work time and materials plus mark-ups for overhead and profit, or (3) unit prices times actual quantities which may or may not include separate mark-ups for overhead and profit. If a change order price is to be based on a lump sum price or a unit price, the College may request the submission of such documentation regarding market price or cost which it reasonably deems necessary to determine a lump sum or unit price. If a change order is based on actual work time and material costs, it will include a not-to-exceed price.

Applications for payment for change order work shall be included in monthly progress payment invoices as the change order work is performed, but only after a purchase order has been issued to the contractor by the College. For change orders based on time and material costs or unit prices times actual quantities, the time spent, material provided, and quantities performed shall be recorded in daily time slips, material invoices, and quantity of work performed tickets which are signed by a representative of the College to certify that the work and materials were provided, and the quantities. Labor costs and material costs for change orders shall be based on actual costs to the Contractor without any mark-ups except as provided in this Article.

Mark-ups may be added to time and material costs where a change order is authorized to be paid on a time and material basis, and also unit price change orders if the change order price term expressly authorizes mark-ups as a separate additional charge to be added to the unit price. When mark-ups for overhead and profit are authorized, the standard mark-up for overhead and profit shall be 15% of net costs properly invoiced in the change order. The schedule for mark ups is as follows:

- 15% of direct costs for overhead, profit, bond, and insurance for work performed directly by the contractor;
- 15% of direct costs for overhead, profit, bond, and insurance for work performed directly by the subcontractor and 5% of the direct and indirect costs of the work performed by the subcontractor for the contractor;
- 15% of direct costs for overhead, profit, bond, and insurance for work performed directly by the subcontractor's subcontractor and 5% of the direct and indirect costs of the work performed by the subcontractor's subcontractor for the subcontractor and 5% of the direct and indirect costs of the work performed by the subcontractor for the contractor;

There shall be no additional mark-ups for materials or suppliers and bond and insurance costs are included in the noted mark ups above. Refer to Division 1 specifications also for further delineation of items included in mark ups.

CONTRACTOR MUST USE THE COLLEGE OF NEW JERSEY FORM INCLUDED IN THE PAYMENT PROCEDURE DOCUMENTS.

G. Right to Audit Extra Costs (Before and After Payment).

The College reserves the right to audit all change orders and additional costs claimed and/or paid under the contract at any time.. The obligation of the Contractor, subcontractors and suppliers to establish, maintain and produce cost records and remedies for failing to do as specified elsewhere in these general conditions and the contract shall govern. If an audit reveals that actual costs invoiced to the College and/or paid by the College in change orders exceed the actual costs incurred, the Contractor shall refund the excess, or the College may deduct the excess from future payments under the contract, or the College may assert claims against the Contractor and/or its surety for such overpayments.

H. Change Orders with Both Price Increases and Decreases.

If a change order reduces the scope of the work or materials to be provided by the Contractor under the contract, the change order shall provide for a reduction in the contract price in the amount of the actual reduction in cost. If a change order results in both added costs and reduced costs, they shall be combined for a net plus or minus contract price

adjustment, and when mark-ups are applicable, they shall only be added to a net increase in the contract price which results from a combination of additions and deductions in the change order.

I. Waiver of Rights In Connection with Change Orders Issued Without Protest.

The Contractor shall not be entitled to seek any additional compensation or any extension of the contract times beyond the amounts and any extensions included in a change order signed by the College or a written change order request submitted by the Contractor to the College for approval, the intent being that the Contractor must disclose all additional costs and delays claimed to result from a change so that the College can take measures in considering the change to effect cost savings and avoid delays. The failure to include extra costs or delays in a change order request will preclude the Contractor from later claiming such costs or delays in connection with the change in any form or fashion.

ARTICLE 12. COMPLETION.

A. Substantial Completion.

When the Contractor believes that the project is substantially complete, meaning all essential requirements of the contract have been sufficiently completed so that the project can be occupied and used for its intended purpose, it can make a written request to the architect and the College to conduct an inspection and to issue a certificate of substantial completion. The Contractor's request shall list all work and contract requirements which remain to be completed or corrected and an estimate of the value of the incomplete items.

The architect and the College will conduct an inspection, and if they determine the Contractor has substantially completed the project, the College will issue a certificate of substantial completion. If they determine that the Contractor has not achieved substantial completion, the College will notify the Contractor in writing and will list the work and contract requirements which must be completed for substantial completion and provide a punchlist. They will also assign a value to the incomplete items to be added to the 2% retainage held after the certificate of substantial completion is issued. The College and the architect will re-inspect when the Contractor notifies them in writing that those items have been completed.

Any failure of the College or architect to include incomplete or deficient items in a certification of substantial completion or a notice regarding a substantial completion inspection shall not affect the Contractor's obligation to properly complete all requirements of the contract.

The College will not issue a certificate of substantial completion unless it can occupy and use the project for its intended purpose, and the Contractor agrees that the College's use and occupancy of the project shall not affect the Contractor's obligation to complete the project and contract requirements. The Contractor also agrees that its completion of the project will not unreasonably interfere with the College's occupancy and use of the project.

Unless otherwise specified in the supplemental general conditions, a certificate of substantial completion will not be issued unless an unqualified temporary or permanent certificate of occupancy is issued, and the College is able to use and occupy the project without interruption.

After substantial completion, the Contractor is relieved of the duty of maintaining and protecting the project, and of its responsibility for damage to the project occurring after substantial completion, except insofar as such damage or any repair is covered by warranty, or is caused or made necessary by the act of the Contractor or anyone for whom the Contractor is legally or contractually responsible, or is attributable to defects. The issuance of a certificate of substantial completion shall not void or alter any of the other terms of the contract documents, including but not limited to terms relating to warranties, or relieve the Contractor of its obligation to complete the work or remedy defective work or materials, unless such terms are expressly modified by the certificate of substantial completion.

Guarantee periods for equipment, workmanship and materials shall commence when the certificate of substantial completion is issued or from the completion and acceptance of equipment, workmanship or materials, which ever is later, unless otherwise specified in the supplemental general conditions or the certificate of substantial completion.

The rights of the Contractor regarding payments upon the issuance of the certificate of substantial completion shall be as provided in the payment article of these general conditions and the contract.

B. Final Completion.

The Contractor shall notify the architect and the College in writing when it has completed the project and all of the contract requirements. The architect and the College will then conduct an inspection and issue a certificate of final completion if the project and all contract requirements have been totally completed. If any items remain incomplete or unsatisfactory, the College will notify the Contractor in writing and list the incomplete or unsatisfactory items. The Contractor shall immediately complete and correct any unfinished items and notify the architect and College and request a follow-up inspection for final acceptance.

The certificate of final completion will not be issued until all documents required by the contract have been provided, including warranties, maintenance and operating instructions, certificates, insurance, shop drawings required and as-built drawings approved by the architect. Final completion must include leaving the entire project site and project clean, neat and orderly. All distortions, cracks, delaminating and deteriorations of finished surfaces must be remedied. All broken items shall be repaired. All paint spots, stains and plaster must be removed. All unused equipment and excess material shall be removed. The project and the site shall be clean and finished.

If the Contractor unreasonably delays completing and correcting items needed for the issuance of the certificate of final completion, the College may unilaterally issue a certificate of final completion which lists incomplete and defective items, and which deducts liquidated damages and the cost of remedying incomplete and defective items from the final amount due to the Contractor under the contract.

Final payment will not be made until the certificate of final completion is issued, and the final payment shall be subject to the payment provision in the contract and these general conditions.

ARTICLE 13. SUSPENSION AND TERMINATION OF CONTRACT.

A. Suspension.

The College shall have the right to stop or suspend the work in whole or in part at any time. The work may only be stopped or suspended by a written directive of the Owner's Representative, except in an emergency. The representative of the College may stop or suspend the work in whole or in part on an emergent basis, either verbally or in writing, but any such emergent suspension or stop work order shall be confirmed by a written directive from the Owner's Representative within 48 hours. The College may stop or suspend the work because of any conditions affecting health or safety on or off site, any dangerous condition, any environmental hazard, the convenience of the College, or the public interest. If a directive to stop or suspend all or part of the work includes directions to secure the site, the Contractor shall perform the work required in the directive. The Contractor shall also maintain the safety and security of the project during the suspension for the protection of the site, work in place, materials and equipment on site, persons on or near the site, and the College's property.

If all or part of the work is suspended in response to a problem or condition caused by the Contractor's performance of its contract, or parties other than the College itself, or conditions over which the College has no control, the Contractor will not be entitled to any additional compensation for the suspension. If the College directs the suspension of work because of the improper performance of the contract by the Contractor or those performing its contract, the Contractor will not be entitled to any extension of any contract dates or additional compensation by reason of the suspension. If a suspension is directed for reasons other than fault of the Contractor or others involved in its

performance of the contract, the Contractor will be entitled to an extension under and to the extent authorized in Article 9, and additional compensation under and to the extent authorized by Article 11.

B. Termination for Convenience.

The College may by a written directive terminate the contract at any time before completion for the College's convenience or where it concludes that it is in the public interest to do so. The Contractor shall complete any items of work specified in the notice of termination for convenience and any work necessary to make the site safe for all persons and property at or near the project site when the College terminates the contract for convenience under this Article.

Absent Contractor fault or violation of the contract, the Contractor shall be paid in full for all completed work, subject to the payment provisions in the contract and these general conditions. The Contractor will not be entitled to payment for costs and mark-ups for work or materials not provided before the termination, or costs for work and materials not provided unless the Contractor cannot avoid liability to pay those costs, or profit on the portion of the contract which will not be performed because of the termination, or other types of damages. The extra compensation payable to the Contractor in connection with a termination for convenience may include the cost of materials or equipment purchased for the project before termination but not installed if the Contractor cannot otherwise use or sell them.

The Contractor will also be entitled to reasonable costs in reasonable amounts for additional direct costs in connection with the termination, but not administrative, home office or overhead costs, lost profit, or consequential damages. In addition, any claims shall be subject to the provisions in the contract and general conditions regarding claims and the maintenance of cost records.

The Contractor shall also include provisions similar to this provision in subcontracts and supply contracts for the project. When a termination for convenience is directed by the College, the contract shall be closed out in accordance with the provisions of the contract and these general conditions regarding payment and project completion.

C. Termination for Cause.

The College may terminate the contract for cause if the Contractor commits substantial violations of the contract and contract documents, persistently fails to perform the work in accordance with the contract documents including the project schedule, fails to comply with applicable laws, rules or regulations, fails to pay subcontractors or suppliers to the extent reasonably required, become insolvent or becomes a debtor in a bankruptcy proceeding, fails to pay its debts, is found to have made false or misleading statements to the College in writing in obtaining the contract or payments, fails to comply with employment discrimination laws, fails to pay prevailing wages, fails to maintain or renew the required insurance, fails to maintain proper protection for the safety of persons or property on the site, fails to comply with reasonable and authorized directives of the College under the contract, or assigns its rights or interests under the contract or payments under the contract to any third party.

If the College terminates the contract for cause, it shall first send a notice of intent to terminate to the Contractor and the Contractor's surety. The notice shall direct the Contractor to remedy or eliminate the deficiency within a specified time if the problem is one that can be eliminated. If the Contractor fails to reasonably comply with the directive and notice, the College may after 10 days issue a notice of termination to the Contractor and its surety which terminates the contract effective immediately and specifies the reason for the termination.

If the contract is terminated the Contractor shall secure the site and take measures to leave the site safe for persons, material, work in place and equipment before departing the site, and shall remove all tools and equipment within 5 days of the termination effective date. The Contractor shall not remove any materials or equipment stored on site. When the contract is terminated, the Contractor shall deliver to any location designated by the College materials purchased for the project and paid for by the College, but not stored on site, together with all appropriate warranties and guaranties.

If the Contractor's surety does not takeover the completion in accordance with this Article, the College may appropriate any or all materials on the site which may be suitable and acceptable and may enter into an agreement for the completion of the project with another contractor, or use other methods to complete the project.

All damages, costs and charges incurred by the College together with the cost of completing the work, will be deducted from any monies due or which may become due to the Contractor for work completed by it before the termination. If such expenses exceed the sum available from the unpaid contract balance, the Contractor and its surety shall be liable and shall pay to the College the amount of such excess in addition to other damages.

The rights and remedies of the College in connection with a termination for cause shall be in addition to other rights and remedies which it has under law, the contract, and the Contractor's bond.

If the College terminates the contract for cause and it is subsequently determined by a court that the Contractor was not in default, or that the termination was legally unjustified, the termination will be deemed to be a termination for convenience under this Article, and the rights and remedies of the Contractor and its surety for the termination will be limited to those which exist in connection with a termination for convenience. If the College terminates the contract for cause, neither the Contractor nor the College may file a suit to recover on any claims arising out of the project before the project is substantially complete.

D. Surety Takeover Following Termination for Cause.

If the College terminates the Contractor for cause, the Contractor's performance bond surety may elect to takeover and complete the Contractor's work and obligations under its contract. If the surety elects to takeover the completion of the contract, it may only do so on the following conditions:

1. The surety must notify the College that it will takeover completion of the contract by a written notice of intent which is signed by a representative authorized to bind the surety within 5 calendar days of the surety's receipt of the College's notice of termination.

2. The surety and the College must execute a written takeover agreement within 10 days after the surety sends its notice of intent to takeover. In the agreement, the surety must agree to assume the obligation to complete the balance of the work under the contract and to perform all of the Contractor's obligations under the contract at the surety's sole cost and expense, and to utilize only contractors approved by the College which approval shall not be unreasonably withheld. The agreement shall provide that the surety is entitled to be paid the unpaid balance under the terminated Contractor's contract in accordance with and subject to the terms of the contract and general conditions.

3. The takeover agreement signed by the surety and the College must also provide that the surety is not relieved of any of its obligations under its payment and performance bond for the project, and that the College retains its right to withhold money for contract payments to compensate damages or for other reasons where authorized under the contract or the general conditions.

4. The takeover agreement signed by the surety and the College must also provide that it is without prejudice to and is subject to all of the rights and remedies of the College, the surety, and the defaulted Contractor, and the surety may not require the College to agree to a takeover agreement which seeks to extinguish any such rights.

5. The surety must also pay without delay all obligations of the terminated Contractor for work and materials on the project, subject to a reasonable allowance of time to investigate and verify claims.

ARTICLE 14. WARRANTY/DEFECTIVE WORK AND MATERIALS.

A. General Work One Year Warranty; HVAC Systems Two Year Warranty.

The Contractor warrants and guarantees for a one year period (or two year HVAC work) that all work, materials and equipment conform to the contract documents and will not fail or manifest defects, that the project and all its components will be fit for their intended functions, and that all material and equipment will be new and of good quality.

The general one year warranty period (or two year HVAC work) shall commence when the certificate of substantial completion is issued, and the one year period (or two year HVAC work) shall commence on that date for all components of the project, including any equipment activated and operated before substantial completion, such as HVAC systems, electrical systems and elevators.

During the one year warranty period (or two year HVAC work), the Contractor shall repair and remedy at its own expense any premature failure, defects or deficiencies in any work, materials or equipment which are discovered or which develop during the one year (or two year HVAC work) period, and shall do so within 5 days after receipt of a written warranty claim from the College. The Contractor shall also repair damages caused by any failure or defect covered by this warranty. A failure to provide the warranty service required shall constitute a breach of this warranty obligation as well as other applicable provisions of the contract. This warranty shall not cover failures caused by misuse or abuse by the College.

This general one year warranty (or two year HVAC work) is intended to provide the College with prompt warranty service for all aspects of the project for the one year period. It is not intended to limit or extinguish any additional warranties required by any of the contract documents, or provided by manufacturers of systems, equipment or materials provided under the contract. It is not intended to eliminate or reduce the College's rights and remedies under the contract and law for defects and deficiencies in the work, materials and equipment, the time period of the Contractor's general responsibility and liability.

B. Defective Work, Materials and Equipment.

Apart from the general one year warranty provided for in this Article, the Contractor shall be responsible for defective work, materials and equipment and any failure of these items to comply with the contract documents. This obligation shall extend beyond substantial completion, final completion and the general one year warranty in this Article.

If defects in materials or equipment or non-conforming items are discovered during construction and before completion, the Contractor shall promptly correct them at its own expense. If the Contractor fails to correct defective or non-conforming work, material or equipment in response to a written notice form the College, either during construction or after completion, the College may employ others to provide the remedial work and the Contractor and its surety shall be liable for the cost thereof and damages incurred. The Contractor and its surety shall also be liable for the cost of making good all work and material destroyed or damaged by defects or the correction of defects.

If any portion of the Contractor's contract monies remains in the custody of the College, either earned or unearned, the College may deduct money paid to others to remedy defects after notice is sent to the Contractor and damages when the Contractor fails to provide a remedy in response. The Contractor's responsibility for defects and non-conforming work, material and equipment shall not be limited in time except by law.

The Contractor's responsibility for defective work shall not be affected by either the performance or the lack of performance of inspections by the College or the architect. The issuance of payments, a certification of substantial completion or a certification of final completion shall not constitute acceptance of work, material or equipment which is deficient or not in compliance with the contract, or limit the Contractor's warranty or the other contract obligations.

ARTICLE 15. MISCELLANEOUS.

A. Insurance, Bonds, Indemnification.

The Contractor shall provide and/or maintain the insurance, bonds and indemnification required by the contract and law.

B. Prevailing Wage.

The Contractor and its subcontractors shall comply with the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 through 56.57 and the provisions in the contract regarding prevailing wages.

C. Employment Discrimination.

The Contractor and its subcontractors shall comply with all laws prohibiting discrimination against employees, and shall comply with the provision in the contract regarding employment discrimination.

D. Patents.

If any design, device, material or process covered by patents or copyright is used in the work, the Contractor shall provide for such use by a suitable agreement with the patent or copyright owner. The Contractor shall bear all costs arising from the use of patented materials, equipment, or processes and all copyrighted materials used on or incorporated in the work. The Contractor shall defend, indemnify and save harmless the College from any and all claims for infringement by reason of the use of any such patented or copyrighted items.

E. Emergencies Affecting Safety.

If there is an emergency affecting the safety of persons or property, the Contractor shall take immediate action to prevent damage, injury or loss. The Contractor shall notify the College of the situation and all actions being taken immediately or as soon as possible. If, in the opinion of the Contractor, immediate action is not required, the Contractor shall notify the College of the emergency situation and proceed in accordance with the College's instructions. However, if loss, damage, injury or death occurs that could have been prevented by the Contractor's prompt and immediate action, the Contractor shall be liable for all costs, damages, claims, actions, suits, attorney's fees and other expenses which result.

Any additional compensation or extension of time claims by the Contractor on account of emergency work shall be determined in accordance with the changes provisions of the contract documents. The Contractor shall be responsible for emergencies and costs and delays resulting therefrom which could have been foreseen or prevented with normal diligence, planning, and supervision of the work, or which are caused by the Contractor's failure properly to perform the contract.

The Contractor shall provide the College with a list of the names and telephone numbers of its employees and employees of each subcontractor designated to be contacted in case of an emergency during non-working hours. A copy of this list will shall be displayed prominently at the site so that it is visible when the site is secured and shall be provided to the College's campus police department.

F. Contractor Compliance with Law.

The Contractor shall keep fully informed of all federal, state and local laws, ordinances, regulations and orders of agencies which have jurisdiction or authority which in any manner affect those employed on the project or the project. The Contractor shall at all times observe and comply with, and cause its agents and employees to observe and comply with, all such laws, ordinances and regulations, or orders. The Contractor shall also protect and indemnify the College and its representatives against any claim or liability arising from the violation of any laws, ordinances, regulations, or orders, whether by the Contractor or its employees, agents, subcontractors at any tier, suppliers or materialmen.

G. Environmental Protection - Contractor Duty to Comply with Law.

The Contractor shall comply with all applicable federal, state and local laws and regulations and all conditions of permits pertaining to the protection of the environment. Necessary precautions shall be taken to prevent pollution of streams, lakes, ponds, rivers, wetlands, groundwater, reservoirs, and property by chemicals, fuels, oils, bitumens, or other

harmful or hazardous materials as defined by law. Nor shall the Contractor pollute the atmosphere from particulate or gaseous matter in violation of law.

H. No Personal Liability of College Officials.

In carrying out any of the provisions of the Contract, or in exercising any right or authority granted to them by or in connection with the contract, there shall be no liability upon any officer or employee of the College, either personally or as officials of the College, it being agreed that in all such functions they act only as agents and representatives of the College.

I. Recovery of Monies by College from other Contracts with the Contractor.

When the contract documents authorize the College to withhold or deduct money from any monies due to the Contractor, or require the Contractor to pay or return monies for any reason, the College may in its discretion withhold any monies due the Contractor under any other contracts between the Contractor and the College. This right shall not affect the rights of the College against the Contractor or its surety under this contract, and the College shall not be obliged to exercise this right as to any other contract as a condition of exercising its rights against the Contractor or surety under this contract.

J. Buy American Requirement.

The Contractor shall comply with N.J.S.A. 52:32-1 and N.J.S.A. 52:33-1 et seq., which prohibit the use by the Contractor or subcontractors of materials or farm products produced and manufactured outside of the United States on any public work.

K. Modification of Contract.

No modification or amendment of the contract shall be effective unless it is in writing and signed by both the College and the Contractor.

L. State Sales Tax Exemption.

Materials, supplies or services for exclusive use in constructing the project are exempt from the State sales tax. Rentals of equipment are not exempt from any tax under the State Sales Tax Act.

M. Assignment of Contract Funds and Claims Prohibited.

The Contractor shall not transfer or assign to any party any contract funds, due or to become due, or claims of any nature it has against the College without the written approval of the College. The College in its sole discretion and considering primarily the interests of the College may elect either to grant or to deny such approval.

N. Independent Contractor Status.

The relationship of the Contractor to the College is that of an independent contractor. The Contractor agrees that it shall conduct itself consistent with such status, and shall not hold itself out as or claim to be an officer, employee or agent of the College. The Contractor shall not make any claim or demand for any right or privilege applicable to officers or employees of the College, including but not limited to, workers compensation, unemployment insurance benefits, social security coverage, or retirement benefits.

O. Third Party Beneficiary Rights Not Intended.

It is specifically agreed between the College and the Contractor that no provisions of the contract documents are intended to make the public or any member thereof a third party beneficiary of the contract, or to authorize anyone not a party to the contract to maintain a suit for personal injuries, property damage or other claims under the contract. It is also the intent of the College and the Contractor that no individual or firm which supplies materials, labor, services, or equipment to the Contractor for the performance of the work shall be a third party beneficiary of the contract.

P. Gifts to College Employees and Agents Prohibited.

The Contractor shall not give any gifts of any nature, nor any gratuity in any form, nor loan any money or anything of value to any College employee or relative thereof, or any agent of the College. The Contractor shall not rent or purchase any equipment or supplies of any kind from any College employee or relative thereof or any agent of the College.

Q. Contractor Claims: Procedures and Limitations.

Claims by the Contractor against the College shall be subject to the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1, et seq. including the notice and time for suit provisions. For the purpose of determining the time within which The Contractor must file suit under the New Jersey Contractual Liability Act, 'completion of the contract' shall be deemed to have occurred upon achievement of substantial completion as defined in section 12A of these General Conditions.

The Contractor also agrees that it shall not be entitled to assert claims against the College for any compensation beyond that provided for in this contract by reason of the acts or omissions of any third parties, including but not limited to the project architect and any other contractor on the project. The Contractor may not assert claims for extra costs for home offices expenses, home office overhead, lost profits or revenue, or consequential damages as that term is defined in law. All claims shall also be subject to all other pertinent provisions of the contract and the contract documents including the general conditions. The Contractor also agrees that it may not assert any claims for extra costs or damages unless it maintains all the records of its estimated and actual costs as required by this Article. The Contractor also agrees that suits against the College must be pursued in the county where the project is located.

R. Cost Records a Condition of Receiving or Retaining Extra Compensation on Extras, Changes and Claims.

The Contractor shall maintain and retain weekly payroll, material, subcontractor, supplier, overhead and other cost and accounting records for the project, and for additional services or extras required by the College, including all costs which the Contractor is entitled to be paid under the contract. The Contractor shall require its subcontractors on the project to do likewise. The Contractor shall also maintain all estimates and takeoffs used in preparing and calculating its bid price for the contract and change orders. The records shall be maintained and shall be made available to the College or its representatives when requested. These records shall be maintained in accordance with generally accepted accounting principles and practices for a period of 3 years after final payment is received by the Contractor, or the duration of any dispute or law suit arising out of the project, whichever is later.

Any failure to maintain or produce the records required by this Article shall preclude the Contractor from claiming or being paid or retaining any payments or being paid on any claims which are based on costs, expenses or losses incurred by the Contractor or its subcontractors which should be reflected in the records required by this Article or good business practices. This record keeping requirement applies to records related to the basic contract compensation as well as extra compensation for change orders and claims of all kinds.

No claim by the Contractor against the College for payment, whether for contract work, extras, changes or claims which is based to any degree on costs which should be recorded in cost records required by this Article or good business practices may be asserted against the College to the extent the cost records do not exist or are not provided to the College upon demand.

The College reserves the right to audit the records of the Contractor and its subcontractors for up to 3 years after the final acceptance of the project, and to demand repayment by the Contractor and its surety of any overpayments discovered in an audit.

Revision Date: June 19, 2018

Green Hall Room 206 Upgrades
Security Scope of Work

1. General:

1A: The security upgrades at Green Hall 206 would require several independent contractors and vendors to work together. In addition to the general contractor, the College will engage independently with Honeywell, IT Installer and Access Control. Given below is scope of work for each for the installation of cameras, panic buttons, emergency door locks, and other scope explicitly identified below including conduit and cable. (e.g. Wiring, security panel, etc).

1B: The IT Installer will complete the installation of cabling and equipment in order to provide for the communications requirements of the security camera system, and the rough pathway requirements of the panic button security panel.

2. Security Cameras:

2A: Honeywell SOW
Provide a fully functioning security camera installation integrated into the existing campus Honeywell DVM system at the locations indicated on the design drawings including as a minimum the following:

Furnish 3 indoor rugged, high definition IP cameras for installation By Others. The 3 cameras shall be installed around the entrance to Room 206; one inside the room looking at the door and the other two in the hallway looking at the entrance door and hallway in each direction. Refer to drawings and specifications for details. The cameras will be configured and integrated into the existing Honeywell DVM system by Honeywell; network cabling and equipment to be furnished and installed By Others.

Provide 3 dedicated camera licenses for the new cameras and integrate into the existing Honeywell DVM system; obtain IP addresses and configure the DVM system. The camera set up and configuration shall be coordinated with Campus police and IT.

Honeywell shall include in their bid all equipment and Professional Services costs associated with the purchase and installation of camera system components. Once all construction is completed, Honeywell will start up the cameras in the presence of the TCNJ representatives including Campus Police and IT. Each camera will be fine-tuned to achieve the intended view. Up to two (2) motion-detection zones shall be configured per camera, fine-tuning to be completed with TCNJ representative. Honeywell shall make adjustments as necessary to provide the best possible view for each location.

2B: IT Installer SOW
The IT installer will be responsible to furnish and install all network cabling, equipment and the required network drops. The IT installer will also furnish and install all conduits and wiring associated with the camera installations. The conduit and wiring installation shall be coordinated with the general contractor.

Prior to rough-in for the camera locations, the IT Installer/Honeywell shall conduct a live-view demonstration from each proposed installation location with TCNJ representatives including Campus Police. The demonstration will use the proposed model camera hardware and software configuration to permit confirmation of the field of view conditions intended for each location.

3. Panic Buttons:

3A: Honeywell SOW
There are 3 existing panic buttons and one receiver in the room. The receiver is connected to the building fire alarm panel. Honeywell will furnish a new security alarm panel and 3 new panic buttons to replace the existing receiver and panic buttons and also provide two additional panic buttons to be installed at locations indicated on the drawings. The panic buttons are wireless and shall be programmed into the new Honeywell security system panel. Coordinate the installation of the panel and buttons with IT Installer and the general contractor.

3B: IT Installer SOW:
The IT installer will install the new Honeywell panel and relocate the existing cable and conduit, as needed, to connect to the new panel location. It will be the responsibility of the IT installer to furnish and install new cabling if the existing one needs to be extended, including final wiring connections and termination of cabling.

4. Emergency Door Lock:

4A General Contractor SOW
Contractor shall provide and install conduit and wiring and electrified door hardware for locking two doors in an emergency. The new doors shall have a chase for wiring to the electrified modus lock via a power transfer hinge. Contractor shall install the required wires and conduit as shown on the drawing and coordinate the installation with Access Control. Access Control will terminate the wiring. Contractor shall coordinate the purchase of doors and door hardware with Access Control. The contractor will also provide 120V power to the power supply from the electrical panel and provide and install all associated conduit and cable. The 120V power circuit will be shared and used for both the power supply and the Honeywell security panel which will be located at the same place.

4B Access Control SOW
Access control will provide and install the power supply with wireless relays for the emergency door lock and terminate the wiring. Access control will also provide and install the associated buttons. The buttons shall be wireless and installed at locations shown on the drawings. Access Control will also terminate the power wires at the power supply.

5. Contractor Requirements:

Contractors shall guarantee all installed work against defects in materials and workmanship for a period of one (1) year from the date of the project substantial completion.

GREEN HALL
SUITE 206
ALTERATIONS

TCNJ

PROJECT MANUAL

PREPARED BY:

Gittings Associates, PC
100B Forrestal Road
Princeton, NJ 08540

♦

Project No. 1732
July 23, 2018
Rev. 9/20/18

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(Note: Security by others – NIC)

SECTION 01 0100

SUMMARY OF WORK

PART 1- GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of the specifications, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of all work noted on the drawings and in these specifications

1. Project Location: Green Hall, The College of New Jersey, Ewing New Jersey
2. Owner: The College of New Jersey, State of New Jersey

B. Scope of Work:

1. Moving and Storing contents
2. Selective Demolition after Abatement by others.
3. Plumbing for bathroom and kitchenette
4. Electrical power, data, fire alarm, and lighting
5. General carpentry to create new copy area, kitchenette, bathroom and entry.
6. Alterations to existing HVAC and install new HVAC for conference room at attic w/ condenser at roof.
7. Roof curb and penetrations.
8. Paint
9. Blinds
10. Security

1.3 CONTRACTS

A. The project contract is between The College of New Jersey and the single prime contractor performing the work specified.

B. Definition of Extent of Contract Work: The contract documents, specifications, project drawings, manufacturer's installation handbooks, TCNJ form of agreement, and the contractors response to the RFP represent the extent of the construction contract.

1.4 CONTRACTORS USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the Work Area only for construction operations. The contractor's use of the premises is limited only by the Owner's right to perform work, retain other contractors on portions of associated projects, or to access the building for the occupants.

1. Contractor is to coordinate their work with the activities for each work location.

B. Use of the Site: Limit use of the premises to areas required for equipment and material storage and access to the roof area. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas immediately adjacent to the building where the work is being performed.

1. Owner Occupancy: Allow for Owner occupancy and use by the public.
2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials unless previously approved by the owner. Schedule deliveries to minimize space and time requirements or storage of materials and equipment on -site.
3. Burial of Waste Materials: Disposal of organic and hazardous materials on-site either by burial or burning, will not be permitted.
4. Parking is allowed for one vehicle only. There is additional parking provided at the colleges Carlton Avenue parking lot. The contractor is responsible to shuttle workers back and forth as needed.

C. Use of the Existing Building: Maintain any existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building, its contents, components, and systems and its occupants during the construction period.

PART 2 - PRODUCTS (Not Applicable)

PART 3- EXECUTION (Not Applicable)

END OF SECTION 01 1010

SECTION 01 1025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SCHEDULE OF VALUES

A. Each Contractor shall prepare a schedule of values in coordination with the preparation of progress schedule. Correlate line items with other administrative schedules and forms required for the work, including progress schedule, payment request form, listing of subcontractors, schedule of allowances if any, schedule of alternates if any, listing of products and principal suppliers and fabricators, and schedule of submittals. Break down principal subcontract amounts into multiple line items for each entity of work. Round off to nearest whole dollar, but with total equal to Contract Sum. Submit 4 copies of schedule of values to the Owner and Architect for review and approval.

- **Upon Owner/Architect approval, Owner will return the Schedule of Values to the Contractor for the Contractor to submit to the bonding company for their acceptance. Payments will not be made to the Contractor until the bonding company has provided a written acceptance to the Owner.**

B. The schedule of values shall be tabulated into subcontracts and trades with the Quantity, Labor, Material, and Total Cost indicated. The Schedule of Values shall include such items as bonds, insurance, allowances and alternates, punchlist/close out documents and shall enclose copies of invoices and/or cancelled checks from bonding and insurance agents.

C. Schedule of values shall be submitted on AIA Form G703 or similar form approved by the Architect and Owner.

D. Each Contractor's monthly application for payment shall be in the same schedule form, reflecting the same items from above. Unit costs shall be realistic for their part of the Work.

1.2 CHANGES IN THE WORK

A. When a change in the Work includes a category or categories of Work both added to and deducted from the Contract, the total quantities of added Work and of deleted Work shall be determined separately for each category and the appropriate unit price or net cost of the Work shall be applied to the difference between the two total quantities.

B. Unit prices shall be inclusive of all costs and shall be applied to units of measure as defined in the Specifications for each category of Work.

C. For all extra Work performed by the Contractor, the gross cost to the Owner shall include the net cost of the Work to the Contractor plus an allowance for overhead and profit not to exceed 15% of the net cost.

D. For all extra Work performed by a Subcontractor, the gross cost to the Owner shall include the net cost of the Work to the Subcontractor plus an allowance for overhead and profit not to exceed 15% of the net cost, plus the Prime Contractor's overhead and profit not to exceed 5% of the Subcontractor's cost.

E. Net cost of extra Work shall be the actual or pro-rated cost of:

1. Labor, including foreman, at the prevailing rate of wages, contributions and taxes.

2. Materials entering permanently into the Work, including delivery to the site.

3. The ownership or rental cost of construction equipment and expendable tools, pro-rated for the time necessary for the Work.

4. Power and consumable supplies for the operation of power equipment, pro-rated for the time necessary for the Work.

5. Insurance and Bonds.

F. Gross costs shall be net costs plus the mark up allowances described above, such mark up allowances being inclusive, of all cost of superintendence, supervision, engineering, overhead, profit, administrative and site office expenses and all other general expenses.

1.3 APPLICATIONS FOR PAYMENT

A. Except as otherwise indicated, sequence of progress payments for the Contractor shall be regular, and each shall be consistent with previous applications and payments. It is recognized that certain applications involve extra requirements, including initial applications, applications at times of substantial completion, and final payment applications.

B. Payment Application Forms: Use AIA Document G702 and G703 Continuation Sheets; available from Publications Distribution Div., The American Institute of Architects, 1735 New York Ave., N.W., Washington, D.C. 20006 (also available at most local AIA chapter offices).

C. Except as otherwise indicated, complete every entry provided on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by Architect and Owner without action. Entries shall match current data of schedule of values, progress schedules and reports. Listing shall include amounts of fully executed change orders issued prior to first day of the period of construction covered by application. Applications for payment shall include weekly payroll report. Contractor shall furnish to the Owner certified payroll reports for each payroll period with pay request, indicating name craft, social security number and actual hourly rate of wages paid to each workman employed on the project. A certified payroll record is defined as "a payroll record which is attested to by the employer, or corporate officer of such company, or an authorized agent of the employer." A payment request will not be paid until the Owner receives the certified payrolls.

D. Submit one "pencil" copy of each proposed payment application to the architect and owner, for review, not less than seven days prior to formal submissions of application.

E. Submit 4 executed copies of each payment application. Transmit with a transmittal form listing attachments, and recording appropriate information related to application.

F. Breakdown may include a line item for General Conditions. General Conditions shall include the cost of general supervision, trailers, temporary utilities and other general expenses directly related to the project and not considered overhead. The general conditions item shall be billed on monthly progress payments on a percentage of work completed.

1.4 INITIAL PAYMENT APPLICATION

A. The principal administrative actions and submittals which shall precede or coincide with submittal of the Contractor's first payment application can be summarized as follows, but not necessarily by way of limitation.

1. Listing of subcontractors and principal suppliers and fabricators.

2. Schedule of values.

3. Schedule of principal products.

4. Schedule of submittals (preliminary if not final).

5. Copies of acquired building permits and similar authorizations and licenses from governing authorities for current performance of the work.

6. Data needed by Owner to secure related insurance coverages.

7. Performance and Payment Bond.

8. Insurance Certificates.

1.5 PROGRESS PAYMENTS

A. Based upon application for payments submitted to the Architect and the Owner, by the Contractor, on or about the 25th day of each month for the period ending the last day of the previous second month, and Certificate of Payment issued by the Architect and the Owner, the Owner will make progress payments on account of the Contract Sum to the Contractor as follows:

1. On or after the 20th day of each month, the Contractor shall submit to the Architect and Owner a "pencil copy" indicating the previous payment and the proposed amounts for each line item for the current period. After review and approval or changes, the Contractor shall prepare the final billing for presentation to the Architect and Owner.

2. a. Whenever any contract, the total price of which exceeds $100,000, entered into by a State college, for the construction, reconstruction, alteration or repair of any building, structure, facility or other improvement to real property, requires the withholding of payment of a percentage of the amount of the contract, the contractor may agree to the withholding of payments in the manner prescribed in the contract, or may deposit with the State college registered book bonds, entry municipal bonds, State bonds or other appropriate bonds of the State of New Jersey, or negotiable bearer bonds or notes of any political subdivision of the State, the value of which is equal to the amount necessary to satisfy the amount that otherwise would be withheld pursuant to the terms of the contract. The nature and amount of the bonds or notes to be deposited shall be subject to approval by the State college. For purposes of this section, "value" shall mean par value or current market value, whichever is lower.

If the contractor agrees to the withholding of payments, the amount withheld shall be deposited, with a banking institution or savings and loan association insured by an agency of the Federal government, in an account bearing interest at the rate currently paid by such institutions or associations on time or savings deposits. The amount withheld, or the bonds or notes deposited, and any interest accruing on such bonds or notes, shall be returned to the contractor upon fulfillment of the terms of the contract relating to such withholding. Any interest accruing on cash payments withheld shall be credited to the State college.

b. Any contract, the total price of which exceeds $100,000, entered into by a State college involving the construction, reconstruction, alteration, repair or maintenance of any building, structure, facility or other improvement to real property, shall provide for partial payments to be made at least once each month as the work progresses, unless the contractor shall agree to deposit bonds with the State college pursuant to section 1.

c. 1. With respect to any contract entered into by a State college pursuant to section 2 for which the contractor shall agree to the withholding of payments pursuant to section 1, 2% of the amount due on each partial payment shall be withheld by the State

college pending completion of the contract.

2. Upon acceptance of the work performed pursuant to the contract for which the contractor has agreed to the withholding of payments pursuant to subsection a. of this section, all amounts being withheld by the State college shall be released and paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college, without further withholding of any amounts for any purpose whatsoever, provided that the contract has been completed as indicated. If the State college requires maintenance security after acceptance of the work performed pursuant to the contract, such security shall be obtained in the form of a maintenance bond. The maintenance bond shall be no longer than two years and shall be no more than 100% of the project costs.

d. This act shall take effect immediately. This bill supplements the "State College Contracts Law," P.L.1986, c.43 (C.18A:64-52 et seq.), and applies to any State college contract for over $100,000 which involves the construction, reconstruction, alteration or repair of any building, structure, facility or other improvement to real property. Under the provisions of this bill, whenever a contract of this type requires the withholding of payment of a percentage of the amount of the contract, the contractor would have the choice of either agreeing to a retainage deduction from each monthly progress payment, or the contractor could choose to deposit bonds in the amount necessary to satisfy the amount that otherwise would be withheld under the contract. If a contractor chooses a retainage deduction from each monthly payment, then the retainage would be limited to 2% of the amount due on each partial payment. Upon acceptance of the work performed pursuant to the contract for which the contractor has agreed to a retainage deduction, all amounts being withheld by the State college must be paid in full to the contractor within 45 days of the final acceptance date agreed upon by the contractor and the State college. The bill provides that if the State college requires maintenance security after acceptance of the work performed under the contract, the security must be obtained in the form of a maintenance bond, which is required to be no longer than two years and no more than 100% of the project costs. The provisions of this bill are similar to provisions in the "Local Public Contracts Law," P.L.1971, c.198 (C.40A:11-1 et seq.) and the "Public School Contracts Law," P.L.1977, c.114 (C.18A:18A-1 47 et seq.).

3. Upon substantial completion, the retainage shall, upon the Architect/Owner's approval, remain at 2% of the value of work completed. Final release of retained monies will occur only upon the total completion of all punch list and closeout documentation to the satisfaction of the Architect and Owner.

4. For each day's delay in the Contractor's submission of an application for payment acceptable to the Architect and Owner, the Owner may delay one day in making his progress payment.

5. Owner shall make payments within 30 days of receipt of said monthly pay requisition.

1.6 APPLICATION AT TIME OF SUBSTANTIAL COMPLETION

A. Following issuance of certificate of substantial completion on each Contractor's work, and also in part as applicable to prior certificates on portions of completed work as designated, a "special" payment application may be prepared and submitted by Contractor. The principal administrative actions and submittals which shall precede or coincide with such special applications can be summarized as follows, but not necessarily by way of limitation:

1. Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.

2. Warranties, guarantees, maintenance agreements and similar provisions of Contract Documents.

3. Test/adjust/balance records, maintenance instructions, meter readings, start up performance reports, and similar change over information germane to Owner's occupancy, use, operation and maintenance of completed work.

4. Final cleaning of the work.

5. Application for reduction (if any) of retainage, with consent of surety.

6. Advice to Owner on coordination of shifting insurance coverages, including proof of extended coverage as required.

7. Listing of Contractor's incomplete work, recognized as exceptions to certificate of substantial completion.

1.7 FINAL PAYMENT APPLICATION

A. The administrative actions and submittals which shall precede or coincide with submittal of the Contractor's final payment application can be summarized as follows, but not necessarily by way of limitation.

1. Completion of project closeout requirements.

2. Completion of items specified for completion beyond time of substantial completion, regardless of whether special payment application was previously made.

3. Assurance, satisfactory to Owner and Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.

4. Transmittal of required project construction records to Owner via the Owner.

5. Proof, satisfactory to Owner and Owner, that taxes, fees and similar obligations of Contractor have been paid.

6. Removal of temporary facilities, services, surplus materials, rubbish and similar elements.

7. Notarized consent of surety for final payment.

1.8 WAIVER OF LIENS

A. Each Contractor, for himself, and for all Subcontractors and material men, agrees that no mechanic's lien or other claim shall be filed or maintained by the Contractor or by any Subcontractor, materialmen, laborer or any other person whatsoever for, or on account of any work performed or materials furnished under this Contract. This agreement shall be an independent contract, and the Contractor shall execute and deliver a separate Waiver of Liens in form and substance satisfactory to the Architect and Owner contemporaneously with the execution of the Owner-Contractor Agreement and before any work is begun at the site.

B. In every subcontract entered into by each Contractor after execution of this Contract or in connection herewith, the Contractor shall incorporate a provision, similar to the foregoing paragraph, to the effect that neither the Subcontractor nor any party acting through or under him shall file or maintain any mechanic's lien or other claim against the Architect or Owner in connection with the Work.

END OF SECTION 01 1025

SECTION 01 1100

PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SPECIAL REQUIREMENTS

A. Schedule: Contractor shall provide a master schedule showing sequencing of work utilizing the CPM method. The Contractor shall supply a schedule with all subcontractor activities, relationships, and durations, utilizing the CPM method via SureTrak/Primavera, Version 3.0, or a Microsoft scheduling software to the Owner on a working version CDrom and coordinate their schedule with the Owner.

- The Contractor is required to update at the end of each month the CPM Schedule based on the percentage completed for each activity on the approved schedule (in concert with the submission of the percentage completed in the monthly proposed schedule of values).
- **The contractor in their bid includes a cost of $500.00 per month for this schedule submission, for the duration of construction (per the milestone schedule in the bidding documents). This only applies to projects in excess of 2 million dollars in base price price. The contractors schedule of values shall include this cost, and can only be billed for upon TCNJ's successful receipt of said schedule. Should any schedule not be received at the end of any month during construction, TCNJ will issue a deduct change order in the amount of $500.00 to the contractor.**

B. Each Contractor shall take all necessary precautions to ensure the safety of all structural elements during all phases of all work. No materials, cranes, trucks or any other construction loads shall be placed on any part of the structure until the Contractor has determined the adequacy of that structure to carry the intended load without damage or overstress.

C. Entrance into, or other use of the building will not be permitted except as may be necessary for the execution of the Work, and shall be subject to the restrictions and instructions of the Owner.

NOTE: any personnel working in any residence hall, including delivery personnel are to have a State Police Background check completed before entering any residence hall. Contractor is to provide the background check for all personnel at the kick off meeting, and/or prior to start of their work. Should a person not have a background check but is on site for a short period of time, said person shall be escorted by a TCNJ project manager/superintendent and /or a designated person that has provided the appropriate back ground check information. All back ground checks will be forwarded to TCNJ police for review and filing.

NOTE: any personnel working in a residence hall must where a badge with the name of the vendor/contractor they work for and their personal name. This badge must be worn at all times.

D. Routes of ingress and egress to areas where work is being performed shall be subject to the restrictions and instructions of the Owner.

E. Materials shall be moved through the Building using rubber tired vehicles which shall be properly controlled at all times to avoid damage to existing wall, floor or ceiling surfaces.

F. Water damage cannot be tolerated and it is incumbent upon Contractors to take any steps necessary to keep the existing premises dry at all times.

G. Any damage to the new building from heavy equipment, striking the Building or any other damage to any part of the premises shall be repaired at the expense of the Contractors.

H. All welding and cutting shall be performed by qualified and certified welders. Certificates shall be on file with the Contractor prior to commencement of any welding.

I. No work shall start before 8:30am.unless agreed to in advance with the College.

PART 2 - PRODUCTS
NOT APPLICABLE

PART 3 - EXECUTION

3.1 GENERAL

A. Contractors shall perform the work on or about the premises in a careful manner with full consideration to fire protection as required by the National Fire Protection Association Standards, National Board of Fire Underwriters and State and Local Departments having jurisdiction. Fire resistant materials shall be used for temporary enclosures.

B. Fire extinguishers approved by the Owner shall be provided by the General Contractor during the progress of the work in all work areas and as required by the Owner, the Local Fire Marshal and the National Board of Fire Underwriters. Fire extinguishers shall be maintained and inspected according to local, state and federal regulations.

C. The Contractor shall maintain an active program of fire prevention to keep workmen fire conscious during the entire life of the Contract. Designate one member of the organization to execute and coordinate fire control measures of his own organization and that of all subcontractors under his jurisdiction.

D. All sub-contractors shall cooperate with the Contractor in carrying out the above program.

E. Storage of flammable materials will not be permitted in the Building unless written permission is obtained from the Owner. Proper storage of all such materials shall be the Contractors' responsibility.

F. On-site open burning of rubbish, garbage, trade waste, leaves or plant life is prohibited.

G. Safety Program: The Contractor shall institute a safety program in accordance with OSHA and any local, state, or federal guidelines. The contractor shall name a safety officer to monitor this program and shall submit a safety report at job meetings.

H. Stockpiling: Stockpiling of materials on site will be allowed (but limited due to the limited space on this site). Such materials shall not impair or impede the functioning of the facility. Materials stored on site shall be secured to prevent loss from theft, damage, vandalism or fire. By stockpiling materials on site, the contractor assumes full responsibility for said materials, and shall protect them to the fullest extent possible. Specific locations for stockpiling materials shall be coordinated with Campus Construction.

I. Safety Barriers: The Contractor shall erect safety barriers to deter and prohibit unauthorized access to the construction site; to contain dust and debri; and to control odor and noise. Such barriers may take the form of fences and shall be clearly marked with signage prohibiting unauthorized access. Identify minimum personal protective gear required to enter. The Contractor shall be responsible for safety barriers within the building. The contractor shall be liable for damages to persons or property due to the construction process if adequate safety measures are not undertaken. The Owner and Architect shall review safety precautions for their adequacy but shall not be held liable for Contractors failure to maintain or provide adequate protection.

J. Sequencing: The Contractor will work with the Sub-Contractors to sequence the work during the submission of monthly project schedules. Contractors shall endeavor to coordinate their work efforts with the Owner's requirements. Interruptions of utility services shall be coordinated with the Architect, and Owner, but in no instance shall last longer than 2 hours.

K. Limited staging and on site parking will be provided by General Contractor. The Contractor will coordinate parking areas with all the subcontractors and Campus Construction.

1. Parking will be available at Carlton Avenue. Contractor will provide shuttle service to and from the site.

2. Contractor will be permitted to have vehicles on site with in the construction fencing only. Contractor is to provide stone in all parking areas on site to prevent the buildup of ruts and mud, thus minimizing the amount of mud leaving the site and being left behind on TCNJ roads.

L. Site Utilities: Electric power and water are available on site. Toilet facilities will be made available by the Contractor. These facilities shall remain clean by the Contractors throughout the course of the project. The Contractors shall repair and/or replace any damaged fixtures, partitions, etc. The Electrical Sub-Contractor shall tie in a temporary power panel (or panels as required) for all trades to use during construction. Interruption of building services shall not occur without prior consent and coordination by the Owner and Owner.

1. Provide portable toilets for all construction personnel.

M. Construction Lighting: The Electrical Sub-Contractor shall run sufficient strings and fixtures to maintain a 50 foot-candle/sq.ft.intensity of light throughout the project areas.

N. Dumpster Location and Cleanup: The Architect and Campus Cosntruction shall coordinate the dumpster location with the Contractors. The Contractor shall be responsible for obtaining, maintaining, and disposing of dumpsters, and shall maintain clean work areas throughout the course of the project.

- Contractor is to provide adequate manpower during the entire course of the project to maintain the site in a clean, neat and professional manner. At a minimum the contractor is to clean the entire site twice per week (on different days) by picking up all debris in and around the site. Sweeping the entire building daily is required once the floor slabs are in place. Contractor is to place garbage cans on each floor minimum 3 per floor in designated locations to assist in keeping the site clean. The owner will not tolerate a building project that is not maintained in a professional manner at all times.

3.2 PROGRESS MEETINGS

A. Progress Meetings shall be held bi-weekly at the job site at a regular time and day mutually agreed upon. The frequency may be changed by the Architect or Owner to reflect current conditions. The Contractors, those of his/their subcontractors concerned with current progress or with scheduling of future progress, the Architect, the Owner, and the Owner shall each be represented at these job meetings by persons familiar with the details of the work and authorized to conclude matters relative to work progress, establishment of progress schedules, etc., as may be necessary to expedite completion of the work.

B. The Contractors and his/their subcontractors attending these meetings shall present complete and definite reports as to the status of their respective work, conditions of product and equipment manufacturer, labor availability, productivity and cooperation, shipping data, time of completion, sequence of the work, safety program, and any other information bearing upon the execution of the

Contract or subcontract. For the Owner's convenience the Owner will chair the meetings.

3.03 MONTHLY REPORTS

A. The Contractor is to provide TCNJ a brief monthly status report on the last working day of each month dividing the status of the project into the following categories (report must be complete in all respects, piece meal submissions will not be accepted):
   a. Project overview
   b. Financial status
   c. Updated project schedule
   d. Change order request log
   e. Submittal log
   f. RFI log
   g. Owner/Architect issues that need immediate resolution
   h. Order/delivery issues

B. The Contractor is to provide TCNJ with this monthly report, and include in their bid a cost of $500.00 per month for all projects in excess of 2 million dollars base bid price for the duration of the construction period as noted in the bidding milestone schedule. This total cost will be listed in the contractor's schedule of values and can be billed for on a monthly basis only if said report is received in whole as noted above. Should TCNJ not receive said complete report a deduct change order will be issued to the contractor for $500.00 for that month.

END OF SECTION 01 1100

SECTION 01 1300

SUBMITTALS AND SUBSTITUTIONS

PART 1 – GENERAL

1.1 PROGRESS SCHEDULE / COORDINATION DRAWINGS

A. The Contractor's schedule, shall coordinate with all trades to produce a coordinated CPM via Suretrak/Primavera version 3.0 or a Microsoft scheduling program schedule indicating the start and completion dates for each portion of the work as defined by the schedule of values, with the total time as defined by the contract time and milestone dates as set forth in these specifications. The Contractor's CPM schedule shall be submitted in electronic format (Suretrak 3.0 or a Microsoft Scheduling program) to and reviewed by the Owner and Architect prior to first application for payment. Any revisions or additional information requested by the Owner or Architect shall be provided. (No payment shall be made to any Contractor not providing a schedule that reflects their entire work).
   - Also refer to Section 01100-1 – Project Procedures.

B. The Contractor shall revise the progress schedule on a monthly basis as the work progresses reflecting therein any delays, including those not within the Contractor's control, or accelerations in the progress of the work. The progress schedule, as revised for any weekly period, shall be discussed at the bi-weekly job meetings with the, Owner, the Architect, and the Contractor and the major trades in order to insure that the percentage of actual completion of any portion of the work as called for in the progress schedule for that bi-weekly period is attained. Monthly updates to the progress schedule shall be made prior to application for payment.

C. Should any delay occur in the progress of the work or any portion thereof, the Contractor shall be required to implement all necessary measures to accelerate the construction, to meet the percentages of completion dictated by the progress schedule on the applicable dates, without additional cost to the Owner.

1.2 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Shop drawings, product data and samples will not be processed by the Owner and/or Architect until the list of subcontractors, material suppliers and fabricators is submitted as required under Paragraph 3.12 of the General Conditions.
   - The successful Contractor shall submit their list of proposed substitutions within 20 calendar days of the Contract Award.
   - The Architect shall be compensated on an hourly basis for review of all shop drawings or samples that do not meet the requirements of the contract documents after two submissions. The compensation shall be deducted from the contractors contract via a deduct change order, or other means that both parties agree to.

B. Coordinate preparation and processing of submittals with performance of the work so that work will not be delayed by submittals. Allow two weeks for review/approval by the Architect for the approval process. Allow additional time if processing must be delayed to permit coordination with subsequent submittals with others.

C. Provide permanent marking on each submittal to identify Project, date, Contractor, subcontractor, submittal name, Specification section, drawing reference, and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space (5" x 7") for Architect's Action marking and space for Owner's review marking. Package each submittal appropriately for transmittal and handling. Submittals received, which are lacking the above information, will be returned without action. Submittals, which are received from sources

other than through Contractor's office, will be returned without action.

D. Each submission shall be complete, with all options clearly marked and with all components required for the assembly fully described and detailed. Submissions missing important information will be returned unchecked.

E. Transmittal Form: Submittals shall be accompanied by a transmittal form. Provide Contractor's certification on form, ready for execution, stating that information submitted complies with requirements of contract documents.
- Transmit all submittals and shop drawings to the Architect or Engineer with a copy of the transmittal to the Owner.

F. Except as otherwise indicated in individual work sections, comply with requirements specified herein for each indicated category of submittal. Provide and process intermediate submittals, where required between initial and final, similar to initial submittals.

G. Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Architect, and by Owner.

H. Do not proceed with installation of materials, products or systems until final copy of applicable shop drawings, product data and samples are in possession of Installer.

I. Provide newly prepared shop drawings, on reproducible sheets, with graphic information at accurate scale, with company name of preparer indicated. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards, and special coordination requirements. Do not allow shop drawing copies without appropriate final Action markings by Architect to be used in connection with the work.

1. Initial and Intermediate Submittals: One correctable translucent reproducible print and 5 blue line or black line prints; reproducible will be returned.
2. Final Submittal: 6 prints, plus 3 additional prints where required for maintenance manuals; 4 will be retained and remainder will be returned, one of which shall be marked up and maintained by Contractor as "Record Document".
3. Electronic submittals are acceptable in AutoCad format only. Contractor shall be responsible for printing and distribution of multiple copies as required.

J. Collect required product data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to the project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements that have been checked, and special coordination requirements. Maintain one set of product data for each submittal at project site, available for reference by Architect and others.

K. Submittals will be accepted from the Contractor only. Submittals received from other entities will be returned without review or action.
1. Submittals received without a transmittal form will be returned without review or action.
2. Transmittal form: Use a form matching the sample form attached to this section. Include the following:
   a. List of deviations.
   b. The Contractor's certification signature.
3. Fill out a separate transmittal form for each submittal; also include the following:
   a. Other relevant information.
   b. Request for additional information.

L. Do not submit product data, or allow its use on the project, until compliance with requirements of Contract Documents has been confirmed by Contractor. Submittal is for information and record

unless otherwise indicated. Initial submittal is final submittal unless returned promptly by Architect marked with an Action that indicates and observed noncompliance. Submit 6 copies, plus 3 additional copies, which will be returned, where required for maintenance manuals.

1. Electronic submittals are acceptable in 8 ½" x 11" format only.

M. Provide three (3) samples identical with final condition of proposed materials or products for the work. Include range samples, not less than 3 units, where unavoidable variations between units of each set. Provide full set of optional samples where Architect's selection is required. Prepare samples to match Architect's sample where so indicated. Include information with sample to show generic description, source or products name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and kind by Architect. Architect will not test samples, except as otherwise indicated, for compliance with other requirements, which are therefore the exclusive responsibility of the Contractor.

N. Upon receipt of a signed copy of the Architects' Waiver form, electronic copies of CAD drawings of the Contract Documents will be provided by the Architect for Contractor's use in preparing submittals. Copy of Waiver form is attached.

O. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the named product or an equivalent.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product of the manufacturer or source that complies with requirements, or an equivalent.

3. Products: Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements, or an equivalent. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.

4. Manufacturers: Where specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers' names, provide a product by one of the manufacturers listed, or an equivalent, that complies with requirements. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.

5. Product Options: Where Specification paragraphs or subparagraphs refer to "Product Options and Substitutions," indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system; provide the specific product or system or an equivalent product or system by another manufacturer. Comply with provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.

6. Basis of Design Products: Where Specification paragraphs or subparagraphs titled "Basis-of-Design Products" introduce or refer to a list of manufacturers' names, provide either the specified product or an equivalent. Drawings and Specifications indicate sizes, profiles, dimensions and other characteristics that are based on the product names. Comply with the provisions of "Product Options and Substitutions," Section 1.4 of Division 1300 of these specifications when submitting an equivalent product.

1.3 MISCELLANEOUS SUBMITTALS

A. Miscellaneous submittals related directly to the work include warranties, maintenance agreements, workmanship bonds, survey data and reports, physical work records, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, overrun stock, and similar information, devices and materials applicable to the work and not processed as shop drawings, product data or samples.

B. Refer to sections for specific general requirements on warranties, product/workmanship bonds, and maintenance agreements. In addition to copies desired for Contractor's use, furnish 2 executed copies, except furnish 3 additional copies where required for maintenance manuals.

C. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

1.4 PRODUCT OPTIONS AND SUBSTITUTIONS

A. DEFINITIONS

1. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

    a. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
    b. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
    c. Equivalent Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

2. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
3. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.
4. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
5. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
6. **Buy American Requirement: the Contractor shall comply with N.J.S.A 52:32-1 and N.J.S.A. 52:33-1 et seq., which prohibits the use by the Contractor or subcontractors of materials or farm products produced and manufactured outside of the United States on any public work.**

B. General Requirements:

1. The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to Contract Documents, where requested by Owner or Architect are changes, not substitutions. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute substitutions and do not constitute a basis for change orders. Otherwise, Contractor's requests for changes in products, materials, and methods of construction required by Contract Documents are considered requests for substitutions, and are subject to requirements hereto.
2. To the greatest extent possible, provide products, materials and equipment of a singular generic kind
   and from a single source.
3. Where more than one choice is available as options for Contractor's selection of a product or material, select an option that is compatible with other products and materials already selected. Total compatibility among options is not assured by limitations within Contract Documents, but shall be provided by Contractor. Compatibility is a basic general requirement of product/material selections.
4. Any and all contractor substitutions that require additional work by other trades not specifically called for in the documents shall be paid for by the contractor requesting the substitution if any other trade increase is required.
5. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.

C. Submittals: Submit 6 copies, utilizing Substitution Request Form, CSI Form 13.1.A, fully identified for product or method being requested for substitution, including related specification section and drawing numbers, and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's details comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected work and contractors, cost information or proposal, warranty information, compatibility with other work, approval of all authorities having jurisdiction, and Contractor's statement to the effect that proposed substitution will result in overall work equal to or better than work originally indicated.

D. Contractor's options for selecting products are limited by Contract Documents requirements, and governing regulations. Required procedures include, but are not necessarily limited to, the following for various indicated methods or specifying:

1. Single product/manufacturer name; provide product indicated or equivalent, except advise Architect before proceeding, where known that named product is not a feasible or acceptable selection.
2. Two or more product/manufacturer names; provide one of the named products or equivalent, at Contractor's option; but excluding products which do not comply with requirements. Advise Architect before proceeding.
3. Equivalent; where named products in Specifications text are accompanied by the term "or equivalent", or other language of similar effect, comply with those Contract Documents provisions concerning substitutions for obtaining Architect's approval of equivalent product.
4. Named, except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of Contract Documents. Refer requests to use products of a later or earlier model to Architect for acceptance before proceeding.
5. Where compliance with an imposed standard, code or regulation is required, selection from among products that comply with requirements including those standards, codes and regulations, is Contractor's option.
6. Provide products which comply with specific performances indicated, and which are

recommended by manufacturer, in published product literature or by individual certification, for application indicated. Overall performance of a product is implied where product is specified for specific performance.

7. Provide products that have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
8. Where matching of an established sample is required, final judgment of whether a product proposed by Contractor matches sample satisfactorily is Architect's judgment. Where no product within specified cost category is available, which matches sample satisfactorily and complies with requirements, comply with Contract Document provisions concerning substitutions for selection of a matching product outside established cost category or not complying with requirements.
9. Where specified product requirements include "...as selected from manufacturer's full range of colors, patterns, textures..." or words of similar effect, the selection of manufacturer and basic product data is to comply with requirements of the Contract, and selection shall be from the full range of products within the requirements. Where specified product requirements include "... as the industry...", or words to that effect, selection of product complying with requirements, is Architect's selection, including designation of manufacturer, where necessary to obtain desired color, pattern or texture.

E. Substitutions may be permitted by the Architect, if, in his opinion, the requirements of the proposed substitution comply with the requirements specified for the material, article or piece of equipment; however, the Architect is not required to permit substitution pursuant to the case of Whitten Corporation vs. Paddock, Incorporated, United States District Court, Massachusetts, April 12, 1974, affirmed by the Federal First Circuit Court, December 14, 1974.

F. After award of contract, the Contractor may submit substitutes to the Architect for review, fully documented and certified, and accompanied by a proposal for a reduction in the Contract Sum.

G. Contractor's request for substitution will be received and considered when extensive revisions to Contract Documents are not required and changes are in keeping with general intent of Contract Documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Architect. Otherwise, requests will be returned without action except to record noncompliance with these requirements.

1. Where request is directly related to an "equivalent" clause or other language of same effect in Contract Documents.
2. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly or coordinate various activities properly.
3. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated therewith, or cannot be warranted (guaranteed) as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial noncompliances which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such incompatibility, uncoordination, nonwarranty, noninsurability or other noncompliance as claimed.
4. Where substantial advantage is offered Owner, in terms of cost, time or other valuable considerations, after deducting offsetting responsibilities Owner may be required to bear, including additional compensation to Architect for redesign and evaluation services, increased cost of other work by Owner or separate Contractors, and similar considerations.

H. Contractor's submittal of, and Architect's acceptance of, shop drawings, product data or samples which indicate work not complying with requirements of Contract Documents, does not constitute an acceptable and valid request for, nor approval of, a substitution.

I. QUALITY ASSURANCE

Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

J. EQUIVALENT PRODUCTS

Where products or manufacturers are specified by name, Contractor must submit the following, in addition to other required submittals, to obtain approval of an unnamed product proposed as an equivalent:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those named in the specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

1.5 OPERATION AND MAINTENANCE INSTRUCTIONS AND EQUIPMENT WARRANTIES

A. The Contractor shall orient and instruct the responsible maintenance personnel designated by the Owner in the Operation of all equipment and shall provide the maintenance personnel with pertinent literature and operational manuals for all equipment. Date and time of demonstrations shall be mutually agreed upon with the Owner. Provide qualified personnel for as long as necessary to fully orient and instruct the Owner. Contractor shall videotape instruction session and provide owner with completed video.

B. The manuals shall be submitted in (quadruplicate) 3-ring loose-leaf type binders to the Architect for approval with all additional information that the Architect may request and considers necessary for the proper servicing and maintenance of all equipment. Manuals are to include plain paper copies of approved shop drawings and catalog cuts. The quality of the copies may be subject to approval by the Architect. Upon completion and approval, 3 copies will be forwarded to the Owner and one copy retained by the Architect.

C. Manuals shall include no less than the following:
   1. Operating Procedures:
      a. Typewritten procedures indicating each mode of operation of each piece of equipment or system. Procedures shall indicate the status of each component of a system in each operating mode.
      b. Procedures shall indicate names, symbol numbers, valve tags, circuit numbers, schematic control and wiring diagrams, locations of thermostats, manual starters, control cabinets, and other controls of each system.
      c. Emergency shutdown procedures for each piece of equipment or system, both automatic and manual as appropriate.
   2. Maintenance Schedule: Typewritten schedule describing manufacturer's recommended schedule of maintenance and maintenance procedures.

3. Catalog cuts and shop drawings:
    a. Catalog cuts shall clearly indicate the exact model and type of each piece of equipment installed in the Project, including all options provided.
    b. Catalog cuts shall fully describe equipment including physical, electrical, mechanical and other characteristics, performance characteristics and installation or erection diagrams.
    c. Catalog cuts shall indicate spare part numbers and name, address and telephone number of local representative or service department.
4. Typewritten list of all subcontractors on the Project including name, address, telephone number and responsibility on the Project.
5. Manuals shall be indexed with dividers indicating each system or piece of equipment.
6. Warranties, permits, inspection stickers/approvals and Certificate of Occupancy are to be included.

D. Required equipment warranties shall be submitted in three copies to the Architect.

E. The Contractor shall video tape all instructional sessions and demonstrations and provide the Owner with a copy of the videotape at the end of all demonstrations.

PART 2 - PRODUCTS
NOT APPLICABLE
PART 3 - EXECUTION

3.1 ACTION ON SUBMITTALS

A. One copy of all submissions will be returned to the Contractor for his files. The Contractor shall mark up other copies so as to conform with the copy returned to him and forward them to all interested Contractors, Subcontractors, and Suppliers.

B. The Architect will review and stamp submitted shop drawings in one of the following ways (the actual stamp may be different; below language is shown for an example only)
1. "No Exceptions Taken": Approved.
2. "Make Corrections Noted": Approved, provided the work complies with corrections marked on the submittal.
3. "Revise and Resubmit": Do not commence work of this submittal. Revise and resubmit or prepare a new submittal; comply with notations marked on submittal.
4. "Rejected": Fundamentally not in compliance. Prepare a new submittal. No notations or comments made.

C. Work shall be executed in accordance with "Approved", "Approved As Noted", or "Resubmit for Record" stamp only.

D. Architect's review of shop drawings/submittals will constitute checking for general arrangement only, and shall not relieve the Contractor of responsibility for complete compliance with Drawings and Specifications. Contractor shall be responsible for quantities and dimensions to assure a proper fit under field conditions.

3.2 DISTRIBUTION

A. Provide additional distribution of submittals, not included in foregoing copy submittal requirements, to subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in transmittal to Architect where required to receive Action marking before final distribution. Show such distributions on transmittal forms.

3.3 COLOR SELECTIONS

A. All colors for all finished surfaces and materials will be selected or approved by the Architect. The color selections will be made at **one time** to provide a complete and coordinated color schedule which, upon acceptance of the Owner, will be provided to the Contractor. Any and all specific color selections for materials not noted on drawings or in specification shall be chosen by Architect after submittal of samples.

B. It is imperative that **all** color information be submitted to the Architect by the Contractor before color selections can be made. If any color selection information is not available when colors are needed to meet the project schedule, the Architect will select colors from one of the named manufacturers in the Specifications, and the Contractor will be required to exactly match that color. A claim for delay will not be accepted if the color schedule is late due to the failure of the Contractor to provide the Architect with all required color information, nor will an extra be entertained if the selected color is not available from the manufacturer the Contractor intended to use but neglected to submit.

B. The Contractors are reminded of the requirement to declare all substitutions within 20 days of execution of their Contract as specified.

END OF SECTION 01 1300

SECTION 01 1310

QUALITY CONTROL

PART 1 - GENERAL

1.1 TRADESMEN AND WORKMANSHIP

A. Each Contractor shall ensure that tradesmen performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

B. In certain instances, specification text requires that specific work be assigned to specialists or expert entities, who shall be engaged for performance of those units of work. These shall be recognized as special requirements over which Contractor has no choice or option. These assignments shall not be confused with, and are not intended to interfere with, normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.

1.2 INSPECTION, TESTS AND REPORTS

A. Required inspection and testing services are intended to assist in determination of probable compliances of the work with requirements, but do not relieve any Contractor of responsibility for those compliances, or for general fulfillment of requirements of Contract Documents. Specified inspections and tests are not intended to limit any Contractor's quality control program. Afford reasonable access to agencies performing tests and inspections.

B. Contractors are responsible for all testing associated with their work (foundations, soils compaction, concrete, steel, roof material testing etc.) and shall submit the name of their proposed testing agency within 15 days of Notice-to-Proceed. Each Contractor is responsible to coordinate the activities of the testing agency to assure that work is tested prior to being covered up or other activities associated to the work begin.

PART 3 - EXECUTION

3.1 REPLACEMENT OF WORK

A. The Contractor shall, within 24 hours after rejection of Work, remove all materials and equipment so rejected and immediately replace said Work, at his cost, to the satisfaction of the Architect. Should the Work of the Owner or other Contractors be damaged by such removal or replacement, the Contractor shall reimburse the Owner or other Contractors for all cost incurred for correcting said damage.

3.2 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions prior to work starting: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

a. Description of the Work.
b. List of detrimental conditions, including substrates.
c. List of unacceptable installation tolerances.
d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.3 PREPARATION

A. Existing Utility Information: Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's/Owner's written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.4 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to existing conditions and dimensions. If discrepancies are discovered, notify Architect and Owner promptly.

3.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Only use the best quality tools and equipment with proper attenuations for the latest acceptable sound levels.

F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.

G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

END OF SECTION 01 1310

SECTION 01 1320

TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other Contract Documents. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication that such temporary activity is not required for successful completion of the work and compliance with requirements of Contract Documents.

B. Each Contractor is specifically assigned certain responsibilities for temporary facilities to be used by all Contractors, other entities at the site, the Owner's work forces and other personnel including occupants of the project, the Owner, the Architect, test agencies, personnel of governing authorities, and similar entities and personnel authorized to be at the project site during construction. In general, each Contractor is assigned the responsibilities for installation, operation and removal of each temporary facility which is related by recognized trades to its scope of contract work; and, except as otherwise indicated, each is responsible for costs and use charges associated therewith, including fuel, power usage, water usage and similar usage costs. The Contractor is responsible for temporary facilities not related to any other Contractor's scope of contract work and not otherwise specifically assigned, as designated by the Architect.

C. No costs or usage charges for temporary facilities are chargeable to the Owner, nor can any Contractor's cost or usage charges for temporary facilities be accepted as the basis for a change order extra. The total costs and usage charges for temporary facilities are included, collectively, in the Contract Amounts.

1.2 GENERAL REQUIREMENTS

A. Each Contractor shall provide and operate all hoists and furnish and erect all ladders and scaffolding required by him and his subcontractors, constructed to afford proper protection to craftsmen, their Work and other Work in progress and previously executed.

1.3 JOB CONDITIONS

A. Each Contractor shall establish and initiate use of each temporary facility at time first reasonably required for proper performance of the total work of project. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.

B. Each Contractor shall install, operate, maintain and protect temporary facilities in a manner and at locations that will be safe, nonhazardous, sanitary, protective of persons and property, and free of deleterious effects.

1.4 ENVIRONMENTAL PROTECTION

A. Each Contractor shall provide facilities, establish procedures, and conduct construction activities in a manner that will ensure compliance with environmental and other regulations controlling construction activities at project site. The Contractor shall designate one person, the Construction Superintendent or other, to enforce strict discipline on activities related to generation of wastes, pollution of air/water/soil, generation of noise, and similar harmful or deleterious effects which might

violate regulations or reasonably irritate persons at or in vicinity of project site. Anti-pollution measures required by D.E.P., as applicable are to be followed.

1.5 SECURITY

A. The Contractor shall maintain complete security on the site at all times during and outside of normal working hours to protect the Work and all field offices, and to secure the area of construction by restricting all trespassers.
- This means locking the doors and/or gates. A guard is not required.

1.6 TEMPORARY CONSTRUCTION FACILITIES

A. Where mud, snow, ice or other hazardous conditions exist in the purview (Scope of Work) of any Sub Contractor, the Contractor shall remove the hazards immediately and replace with suitable material for the other contractors use. If the Owner is compelled to remove the hazards with their own forces due to inaction by the Contractor, then that Contractor will be back-charged for the work performed by the Owner.

B. No welding, cutting by torch, or Work utilizing or causing flammable waste shall be done unless adequate fire protection is provided and maintained for the duration of the Work in the area of operations.

1.7 DEBRIS CONTROL (Refer to Section 01 1524 for further delineation)

A. The Contractor shall be responsible for daily cleaning up of spillages and debris resulting from his operations and from those of his Subcontractors; and shall be responsible for complete removal and disposition of hazardous and toxic waste materials. The Contractor shall provide containers at grade, sufficient for the depositing of nonhazardous/nontoxic waste materials, and shall remove such waste materials from project site at least weekly during cold weather (daily high temperatures below 50^{o}F) and at least twice weekly during mild and warm weather.
- Contractor is responsible to provide and pay for all dumpsters.

B. The Contractor shall daily clean all mud, dirt and debris resulting from all trades operations from the adjacent streets, sidewalks, drives and parking areas and shall repair all damage caused by the cleaning to the satisfaction of the Owner.

C. The Contractor is to provide and maintain appropriate means of trash disposal (i.e., chutes) to grade/dumpster. Multiple units may be required and shall be figured for in the bid.

PART 2 - EXECUTION

2.1 ENCLOSURES

A. At earliest possible date, the Contractor shall secure project area against unauthorized entrance at times when personnel are not working. Provide secure temporary enclosure at ground floor and other locations of possible entry, with locked entrances.

B. Where any form of demolition will expose the interior of the building to weather, demolition shall follow the erection of weatherproof walls by the Contractor installed inside the demolition line, sealed and flashed, as required, to keep all water from the building interior. Keep temporary weatherproofing in place until new construction has been completed to the stage where water will not enter the building.

C. The Contractor shall provide constant protection against rain, wind, storms, frost or heat to maintain the work, materials, apparatus and fixtures free from damage. At the end of each day's work, cover work likely to be damaged. During cold weather, protect work from damage by freezing and provide

such enclosures and heating apparatus as may be necessary diligently to prosecute the Work without stoppage for reason of unfavorable weather.

D. Wherever a Contractor provides openings through walls or slabs, each location shall be adequately protected at the end of each working day with temporary enclosures to make these areas tight. Openings through exterior walls shall be watertight.

E. Install an 8 foot high fence around the entire site with wind screening at dumpster staging area at location directed by Campus Construction Office. Provide gates as needed to properly access the site to complete the work. Remove the fence once the project is substantially completed. Fence is to have poles into the ground where the fence will be untouched per a period of time, and can have feet with sand bags in areas that the fence may have to be moved occasionally to not interfere with the work.

F. **For renovation projects**: **Contractor is to maintain the building in a water tight condition during all construction activities by whatever means necessary. Contractor is to never do any more removal work during any given day than that contractor can replace in the same day in order to make sure the occupants of the building will be protected from the possibility of water leakage into the building. Should any leakage occur, the contractor is to immediately make the building water tight (on a 24 hour basis) and repair any damage caused by the leakage or replace any equipment damaged by the leakage.**

2.2 TEMPORARY ELECTRICITY

A. Power is available on site.

2.3 TEMPORARY VENTILATION

A. A trade requiring ventilation for Work shall provide fans to induce circulation of air.

2.4 TEMPORARY TELEPHONES

A. Each Contractor is responsible for their own telephone service and for payment of all charges relating to that service.

2.5 TEMPORARY WATER

A. Water is available on site.

2.6 TEMPORARY SANITARY FACILITIES

A. Starting at time of start of work at project site, the Contractor shall provide and maintain self-contained toilet units of type acceptable to governing authorities, adequate, at all stages of construction, for use of personnel at project site. Provide separate facilities for male and female personnel when both sexes are working, in any capacity, at project site. Facilities shall remain in use until completion of project. Use of permanent facilities will not be permitted.

2.7 REMOVAL AND RESTORATION

A. Prior to acceptance of the Project, each contractor shall remove temporary work for which he has been responsible.

2.8 OWNER'S RIGHTS

A. If any Contractor fails to carry out his responsibilities in providing temporary facilities, as set forth above, the Owner shall have the right to take such action as he deems proper for the protection and conduct of the Work, and to deduct the cost thereof from the amount due the Contractor at fault.

B. Extended work days, hours, shifts, weekend work, etc. may be allowed upon coordination and approval by Architect, Owner at no additional cost to the Owner.

- Should the schedule begin to slip, for any reason, each contractor will be required to work additional shifts or weekends to recover the lost time. Should there be a cost to the College for this overtime work, the contractor will be required to reimburse the owner for said costs.

2.09 Parking: parking is allowed for one vehicles only. All other parking is to be at the TCNJ Carlton Avenue parking lot. The contractor is responsible to shuttle workers back and forth as needed.

END OF SECTION 01 1320

SECTION 01 1322

PHOTOGRAPHIC DOCUMENTATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following work by the General Contractor (other primes are encouraged to document the site and construction, but not required):

1. Preconstruction videotapes.

B. Related Sections include the following:

1. All of Division 1.

1.3 SUBMITTALS

A. Qualification Data: For photographer.

B. Video: Submit 3 copies of each DVD with protective sleeve or case within seven days of recording.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of photographer.
c. Name of Architect
d. Name of Contractor.
e. Date DVD was recorded.
f. Description of vantage point, indicating location, direction (by encompass point), and elevation or story of construction.

1.4 QUALITY ASSURANCE

A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction products for not less than three years.

1.5 COORDINATION

A. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to project site and use of temporary facilities, including temporary lighting required to produce clear, well-lit photographs without obscuring shadows.

1.6 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

PART 2 – PRODUCTS

2.1 PHOTOGRAPHIC MEDIA

A. Digital format as agreed to at the project kick off meeting.

PART 3 – EXECUTION

3.1 CONSTRUCTION VIDEO DVD

A. Digital Photographer: Engage a qualified commercial videographer to record construction digital recordings.

B. Preconstruction: Before starting demolition or construction record, video (digital) of Project site, interior and exterior.

1. Show protection efforts by the Contractor.

END OF SECTION 01 1322

SECTION 01 1330

CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 DEFINITION

A. Closeout is hereby defined to include general requirements near end of Contract Time, in preparation for final acceptance, final payment, normal termination of Contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Divisions 2 through 16. Time of closeout is directly related to Substantial Completion, and therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as substantially complete at different dates. That time variation, if any, shall be applicable to other provisions of this section.

B. Substantial completion shall be defined that every material item has been installed. Nothing is missing and therefore, the punch list can begin.

1.2 PREREQUISITES TO SUBSTANTIAL COMPLETION

A. Prior to requesting the Architect's inspection for certification of substantial completion, for either entire work or portions thereof, complete the following and list known exceptions in request:

1. In progress payment request coincident with or first following date claimed, show either 100% completion for portion of work claimed as substantially complete, or list incomplete items, value of incomplete items, and reasons for being incomplete.
2. Include supporting documentation for completion as indicated in these Contract Documents.

    a. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.

3. Submit statement showing accounting of changes to the Contract Sum.
4. Advise Owner of pending insurance change over requirements.
5. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.
6. All fire sprinklers, devices, alarm system, roofing system, doors, insulation, etc. requiring FM Research approval to submit certification from Factory Mutual.
7. Obtain and submit releases enabling Owner's full and unrestricted use of the work and access to services and utilities, including occupancy permits, operating certificates, and similar releases.
8. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner obtaining a signed receipt of materials delivered. Refer to individual work sections for required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
9. Complete start up testing of systems, and instructions of Owner's operating/maintenance personnel. Discontinue, or change over, and remove from project site temporary facilities and services, along with construction tools and facilities, mockups, and similar elements.
10. Complete final clean up requirements.
11. Touch up and otherwise repair and restore marred exposed finishes.
12. Inspection: Submit a written request for inspection for Substantial Completion to Project Manager. On receipt of request, Architect and Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection, the Project Manager will notify

Contractor of items, either on Contractor's list or additional items identified by Architect that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

B. Upon receipt of Contractor's request, the Project Manager and Architect will proceed with substantial completion inspection. Following inspection, the Architect will either prepare the certificate of substantial completion, or advise the Contractor of work which shall be performed prior to issuance of certificate. The work remaining to be performed shall be completed prior to the punch list for final acceptance.

C. Upon receipt of Contractor's notice that work has been completed, including all punch list items, but excepting incomplete items delayed because of circumstances acceptable to the Project Manager and Architect, the Project Manager and Architect will reinspect the work. Upon completion of reinspection, the Architect will either prepare the certificate of final acceptance or advise the Contractor of work not completed or obligations not fulfilled as required for final acceptance.

D. In the event that the work is not completed or obligations are not fulfilled as required for final acceptance and the Architect/CM is required to reinspect the work more often than the two inspections described, the Contractor shall compensate the Architect and/or the Project Manager at the rate of $500.00 for each additional site visit required for reinspections. The compensation shall be processed by change order as a deduction to the Contractor's Contract Sum, which amount will be paid to the Architect or Project Manager by the Owner, through a change order as an addition to the Architect's or Project Manager's Contract Sum.

E. Substantial Completion shall be defined for this project that every element of the project/construction and the contract, based on the contract and amended drawings and specification sections, are installed and the building is deemed complete, less repairs and/or touch up type work that would be generally referred to as punchlist work. If any components of the building, or site work associated with this contract are not installed, the project cannot be deemed substantially completed.

1.3 PREREQUISITES TO FINAL ACCEPTANCE

A. Prior to requesting Project Manager and Architect's final inspection for certification of final acceptance and final payment, complete the following and list known exceptions, in request:

1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit release of liens for all subcontractors.
3. Submit Contractor's statement that his final application, as presented, is the final bill and no other claims will be presented.
4. Submit updated final statement, accounting for additional changes to Contract Sum including change orders and allowances.
5. Submit certified copy of Architect's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect.
6. Submit one set of record documents, bound copies of maintenance/operating manuals, final project photographs, damage or settlement survey, property survey, and similar final record

information.
7. Complete final clean up requirements.
8. Touch up and otherwise repair and restore marred exposed finishes.
9. Submit notarized consent of surety to final payment.
10. Submit final liquidated damages settlement statement, if required, acceptable to Project Manager and the Owner.
11. Revise and submit evidence of final, continuing insurance coverage complying with insurance requirements.
12. A letter from the Owner's representative certifying that he has been properly instructed in the operation and maintenance of equipment by the Contractor.
13. 10% one year Maintenance Bond.
14. Underwriter's Certificate or Electrical Sub Code Official's Approval.
15. Fire Alarm Certification and Description - NFPA form 72C including local County of Chester.
16. HVAC Contractor to submit certified balancing report.
17. Final acceptance by Architect of record documents

B. Except as otherwise indicated or requested by Project Manager/Architect, remove temporary protection devices and facilities that were installed during course of the work to protect previously completed work during remainder of construction period.

1.4 CLEAN UP

A. Remove waste materials from site and dispose of in a lawful manner.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 CLEANING

A. Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.

B. After Substantial Completion of the Work, each Contractor shall do the final cleaning of the surfaces of his installations as may be required by the various Specification sections.

C. After each Contractor has cleaned their work, The General Contractor shall engage a professional cleaning service to perform final cleaning of the work consisting of cleaning each surface or unit to normal clean condition. Comply with manufacturer's instructions for cleaning operations and chemicals. The following are examples, but not by way of limitation, of cleaning levels required:

1. Remove labels that are not required as permanent labels.
2. Clean transparent materials, including mirrors and window/door glass, to a polished condition, removing substances that are noticeable as vision obscuring materials. Replace broken glass and damaged transparent materials.

3. Clean exposed exterior and interior hard surfaced finishes, to a dirt free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective conditions.
4. Wipe surfaces of mechanical and electrical equipment clean, including elevator equipment and similar equipment; remove excess lubrication and other substances.
5. Remove debris and surface dust from limited access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics and similar spaces.

6. Vacuum and clean carpeted surfaces and similar soft surfaces.
7. Clean light fixtures and lamps to function with full efficiency.
8. Clean and wax or polish all hard floors following manufacturer's instructions.
9. Clean all window surfaces inside and outside.
10. Perform final cleaning in, on and around all casework, sinks, toilets fixtures, etc.
11. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
12. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
13. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
14. Remove tools, construction equipment, machinery, and surplus material from Project site.
15. Remove snow and ice to provide safe access to building.
16. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
17. Sweep concrete floors broom clean.
18. Replace parts subject to unusual operating conditions.
19. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
20. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
21. Clean ducts, blowers, and coils if units were operated without filters during construction.
22. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
23. Leave Project clean and ready for occupancy.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 RECORD DOCUMENTS (Refer to Section 01340, project requirements for submitting Record Documents)

3.3 REMOVE TEMPORARY FACILITIES

A. At the completion of the work prior to final payment, remove all temporary facilities entirely from site, including, but not limited to, the following: Field offices, trailers, shanties, sheds, job telephone, temporary toilets, temporary enclosures, dust barriers and other temporary protection devices.

END OF SECTION 01 1330

SECTION 01 1340

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project record documents consisting of:
   a. Record drawings.
   b. Record project manual (specifications).

1.2 SUBMITTALS

A. Project Record Documents: Submit after substantial completion, but prior to final completion.

1. Record drawings: Submit in form of opaque prints.
   a. Sets shall include all drawings, whether changed or not.
2. Other record documents: Submit originals or good quality photocopies.
3. Each Sub contractor is responsible for their respective trade, record documents and record drawings. Combine with General Contractor record drawing documents for a complete set.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

3.1 MAINTENANCE OF PROJECT RECORD DOCUMENTS

A. Do not use record documents of any type for construction purposes.

B. Maintain record documents in a secure location at the site while providing for access by the contractor and the architect during normal working hours; store in a fire-resistive room or container outside of normal working hours.

C. Record information as soon as possible after it is obtained.

D. Assign a person or persons responsible for maintaining record documents.

E. Record the following types of information on all applicable record documents:

1. Dimensional changes.
2. New and revised details.
3. Revisions to electrical circuits.
4. Locations of utilities concealed in construction.
5. Particulars on concealed products which will not be easy to identify later.
6. Changes made by modifications to the contract; note identification numbers if applicable.
7. New information which may be useful to the owner, but which was not shown in either the contract documents or submittals.

3.2 RECORD DRAWINGS

A. Maintain a complete set of opaque prints of the contract drawings, marked to show changes.
B. Where the actual work differs from that shown on the drawings, mark this set to show the actual work.

1. Mark location of concealed items before they are covered by other work.
2. Mark either record contract drawings or shop drawings, whichever are best suited to show the change.

C. When the contractor is required by a provision of a modification to prepare a new drawing, rather than to revise existing drawings, obtain instructions from the architect as to the drawing scale and information required.

D. Keep drawings in labeled, bound sets.

1. Mark with red pencil.
2. Mark work of separate contracts with different colors of pencils.
3. Incorporate new drawings into existing sets, as they are issued.

E. Where record drawings are also required as part of operation and maintenance data submittals, copy marks to another opaque print obtained from the architect.

3.3 RECORD PROJECT MANUAL

A. Maintain a complete copy of the project manual, marked to show changes.

B. Where the actual work differs from that shown in the project manual, mark the record copy to show the actual work.

1. Include a copy of each addendum and modification to the contract.
2. In addition to the types of information required on all record documents, record the following types of information:
   a. Product options taken, when the specification allows more than one.
   b. Proprietary name and model number of actual products furnished, for each product, material, and item of equipment specified.
   c. Name of the supplier and installer, for each product for which neither a product data submittal nor a maintenance data submittal was specified.

3.4 TRANSMITTAL TO OWNER (through the Architect)

A. Collect, organize, label, and package ready for reference.

1. Bind print sets with durable paper covers.
2. Label each document (and each sheet of drawings) with "PROJECT RECORD DOCUMENTS - This document has been prepared using information furnished by _____" [insert the contractor's name], and the date of preparation.

B. Submit to the Project Manager for transmittal to the Architect, unless otherwise indicated.

C. Submit to the Architect four (4) sets of Operation and Maintenance Manuals in three-ring binders, by volume, and indexed per binder (with one master index) to be transmitted to the Architect/Engineer for approval: All to be submitted at one time, not piece meal. Indexing should follow the specification section numbers.

- Include all inspection/approvals/certifications
- All approved submittals and cut sheets as well as manufacturer's operation and maintenance

manuals for each section.

- Manuals are to be completed in volumes, three ring binders, starting with Division 1 and continuing through the last projects Division. The number of volumes is determined by the number of spec section the projects has and by the amount of paper/copies for complete sets of three ring binders.
- List of all contractors and vendors for the project with names, addresses and phone numbers.

END OF SECTION 01 1340

SECTION 01 1524

CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Sections include the following:

1. All of Division 1 and attached specifications and drawings that make a part of this contract.

1.3 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.4 SUBMITTALS

A. Waste Management Plan: Submit 4 copies of plan within 30 days of date established for the Notice to Proceed.

B. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

C. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

D. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

E. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1. Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste identification, and waste reduction work plan. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
2. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by Project Manager. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste

management plan during the entire duration of the Contract.

1. Comply with Division 1 Section "Temporary Facilities" for operation, termination, and removal requirements.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.

1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
2. Comply with Division 1 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Sale and Donation: Not permitted on Project site.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.

a. Inspect containers and bins for contamination and remove contaminated materials if found.

2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to present windblown dust.
3. Stockpile materials away from construction area.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste off Owner's property and transport to recycling receiving or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
B. Concrete: break up and sort rebar as best as possible. Recycle all concrete.
C. Recycle all metal products from the building before demolition (aluminum, steel etc)
D. Recycle as much product as possible and provide a complete report to TCNJ to confirm the percentage recycled on the project.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.

3.6 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials on site.

C. Burying: Do not bury waste materials on site.

D. Disposal: Transport waste materials off Owner's property and legally dispose of them.

E. Washing waste materials into sewers or drains is not permitted.

END OF SECTION 01 1524

SECTION 01 7329

CUTTING AND PATCHING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Requirements and limitations for cutting and patching of work.

B. Related sections:
1. Section 01 2500 - Substitution Procedures.

1.2 SUBMITTALS

A. Submit written request in advance of executing cutting or alteration that affects:
1. Work of Owner or separate contractor.
2. Structural integrity of project.
3. Integrity or effectiveness of weather exposed or moisture resistant elements or systems.
4. Efficiency, operational life, maintenance, or safety of operational elements.
5. Visual qualities of sight exposed elements.

B. Include in Request:
1. Identification of project.
2. Description of work affected.
3. Necessity for cutting or patching.
4. Effect of cutting or patching on work of Owner or separate contractor, or on structural, weatherproof, or visual integrity of project.
5. Description of proposed work:
   a. Scope of cutting and patching.
   b. Subcontractor and trades to execute work.
   c. Products proposed to be used.
   d. Extent of refinishing.
6. Alternate to cutting and patching.
7. Cost proposal, if applicable.
8. Written permission of any separate contractor whose work will be affected.

C. If conditions of work or schedule necessitate a change of material from that originally installed, submit substitution request in accordance with Section 01 2500.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

A. Examine existing conditions of work, including elements subject to movement or damage during cutting and patching.

B. After uncovering work, examine conditions affecting installation of new products or performance of work.

C. Provide protection for other portions of project.

D. Provide protection from elements.

3.2 CUTTING AND PATCHING

A. Execute cutting to include excavating, fitting, and patching of Work required to:
   1. Make several parts fit properly.
   2. Uncover work to provide for installation of ill timed work.
   3. Remove and replace defective work.
   4. Remove and replace work not conforming to requirements of Contract Documents.
   5. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.

B. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, and finishes.

C. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

D. Execute excavating and backfilling by methods that will prevent damage to other Work, and will prevent settlement.

E. Employ original installer or fabricator to perform cutting and patching for:
   1. Weather exposed or moisture resistant elements.
   2. Sight exposed finished surfaces.

F. Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.

G. Refinish entire surfaces as necessary to provide an even finish:
   1. Continuous surfaces: To nearest intersections.
   2. Assembly: Refinish entirely.

END OF SECTION

SECTION 02 4120

MOVING AND SELECTIVE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removal of designated building construction, equipment, and fixtures.
   2. Identification of utilities.
   3. Moving

1.2 REGULATORY REQUIREMENTS

A. Conform to applicable code for demolition work, safety of structure, and dust control.

B. Obtain required permits from authorities.

C. Notify affected utility companies before starting work and comply with their requirements.

D. Do not block egress paths or exits.

E. Conform to applicable codes when hazardous or contaminated materials are discovered. The contractor is responsible to engage a licensed abatement contractor to design, permit and abate all hazardous materials in work area as listed in Owner's report attached to this project manual.

F. Movers shall be fully insured with minimum 5 years experience.

1.3 PROJECT CONDITIONS

A. Minimize interference with streets, walks, public right-of-ways, and adjacent facilities.

B. If additional hazardous materials are discovered, notify Owner and Architect and await instructions. See Owner's report on hazardous materials in the work area.

C. If any of the following conditions are encountered, cease work immediately, notify Architect and await instructions:
   1. Structure is in danger of movement or collapse.
   2. Materials or conditions encountered differ from those designated in the Contract Documents.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 PREPARATION

A. Contractor shall pack and move all contents of existing space to a local storage area in town provided by Owner, prior to starting demolition.
B. Erect temporary partitions, barricades, warning devices, and controls.

C. Provide protective coverings, shoring, bracing, and supports for construction designated to remain.

D. Temporarily or permanently disconnect utilities as required.

3.2 Moving

A. Contractor shall pack and move all contents of existing space to a local storage area in town provided by Owner, prior to starting demolition.
B. At completion of construction, the mover shall return all furniture, equipment and contents to the completed space and unpack. Furniture not scheduled to be returned shall be delivered to Owner's surplus storage.

3.3 DEMOLITION

A. Remove existing construction to extent indicated and as necessary to join new work to existing. Do not remove more than is necessary to allow for new construction. Remove all finishes, nonstructural elements, mechanical, electrical and plumbing not required for final proposed design. Coordinate with Design Build MEP contractors.

B. Do not damage work designated to remain.

C. Minimize noise and spread of dirt and dust.

D. Assign work to trades skilled in procedures involved.

E. Plug ends of disconnected utilities with threaded or welded caps.

F. Protect and support active utilities designated to remain. Post warning signs showing location and type of utility and type of hazard.

G. Store items designated to remain property of Owner where directed by Owner.

H. Remove and dispose of waste materials off site.

END OF SECTION

SECTION 06 4100

ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Special fabricated laminate cabinet units.
2. Plastic laminate countertops.
3. Cabinet hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

B. Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA) LD-3 - High Pressure Decorative Laminates.

C. Forest Stewardship Council (FSC) STD-40-004 - Chain of Custody Standard.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings:
a. Include dimensioned plan, sections, elevations, and details, including interface with adjacent work.
b. Designate wood species and laminate finishes.
2. Samples:
a. [3 x 3] inch plastic laminate samples in each color and finish.
b. Each hardware component.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:
1. Minimum [5] years [documented] experience in work of this Section.
2. Certified under AWI/AWMAC/WI Quality Certification Program.

1.5 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of casework:
1. Temperature: [60 to 80] degrees F.
2. Humidity: [25 to 55] .

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide the following Manufacturers or approved equal- Plastic Laminate:
   1. Formica Corp. (www.formica.com)
   2. Nevamar Co. (www.nevamar.com)
   3. Wilsonart International, Inc. (www.wilsonart.com)

2.2 MATERIALS

A. Sheet Products:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 4 Premium Grade.
   2. Sheet core: [Medium density fiberboard] (no particle board)

B. Plastic Laminate: NEMA LD-3.
   1. High pressure decorative laminate:
      a. Vertical and Horizontal surfaces:
         1) Backing sheet: Grade [BGF.]
         2) Postformed surfaces: Grade [HGP.
         3) Acid resisting: Grade [LGP.]
         4) Other surfaces: Grade [HGS.]
   2. Colors:
      Cabinet faces: Wilsonart Slate D91-60 matt finish or approved equal.
      Coutertop: Wilsonart Magnolia 5012K-19 leno weave finish or approved equal.

2.3 ACCESSORIES

A. Fasteners: Type and size as required by conditions of use. Concealed.

B. Adhesives:
   1. Waterproof, [water based] [solvent release] type, compatible with backing and [veneer] [laminate] materials.

C. Finish Hardware: As scheduled at end of Section [or approved substitute].

D. Joint Sealers: Specified in Section 07 9200.

2.4 FABRICATION

A. Cabinets - Plastic Laminate Finish:
   1. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 10, [Premium] Grade.
   2. Construction type: [Frameless.]
   3. Interface style: [Overlay.]
   4. Semi-exposed surfaces: [High pressure decorative laminate.]
   5. Fit exposed and semi-exposed sheet edges with matching [laminate] edging.
   6. Fabricate drawer bodies to full depth of drawer fronts less [1/2] inch.
   7. Provide locks on 24 cabinet doors for cabinets along corridor side (24 locks)

B. Plastic Laminate Countertops:
   1. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 11, [Premium] Grade.
   2. Fabricate from sheet product with lumber fronts.
   3. Locate end joints centered or symmetrical. Join sections with concealed clamp fasteners. Locate plastic laminate butt joints minimum [2] feet away from sinks.
   4. Provide holes and cutouts for mounting of [sinks,] [trim,] [and] [accessories].
   5. Provide 4” backsplash in matching laminate at back and side walls.

C. Shop assemble for delivery to project site in units easily handled.

D. Prior to fabrication, field verify dimensions to ensure correct fit.

E. Apply plastic laminate in full uninterrupted sheets; fit corners and joints to hairline. Slightly bevel arises. Apply laminate backing sheet to reverse side of laminate faced surfaces.

F. Where field fitting is required, provide ample allowance for cutting. Provide trim for scribing and site conditions.

G. Provide cutouts and reinforcement for [plumbing,] [electrical,] [appliances,] [and] [accessories]. Prime paint surfaces of cut edges.

H. Provide laminate backsplash at back wall and all end return walls.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition cabinets to average humidity that will prevail after installation.

3.2 INSTALLATION

A. Install in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Install two rows of continuous treated wood blocking (Danbacking or equal) along all upper cabinets.

C. Set plumb, rigid and level.

D. Scribe to adjacent construction with maximum [1/8] inch gaps. Provide fillers at all end conditions at walls typical.

E. Adhere countertops, splashes, and skirts with beads of adhesive.

F. Fill joints between cabinets [, tops, splashes,] and adjacent construction with joint sealer as specified in Section 07 9200; finish flush.

3.3 FINISH HARDWARE SCHEDULE

A. FASTENERS: BOLTS, NUTS, WASHERS, LAGS, PINS AND SCREWS: SIZE AND TYPE TO SUIT APPLICATION, EXCEPT WHERE SPECIFIC TYPES ARE SHOWN.

B. SHELF STANDARDS AND RESTS: STANLEY NO. 1805 ALUMINUM MORTISE, NO. 1806 ZINC PLATED CLIPS or equal. FOUR SUPPORTS PER SHELF.

C. DRAWER AND DOOR PULLS: KRAFTMAID NO. 7086.SS, STAINLESS STEEL BAR PULL or equal.

D. CABINET LOCKS: SCHLAGE CL SERIES or equal approved by TNCJ lock shop.

E. CATCHES: STANLEY NO. SP46, WITH IMPREGNATED RUBBER MAGNET, SATIN ALUMINUM US28 or equal.

F. DRAWER SLIDES: FULL EXTENSION TELESCOPING ACTION ON PRECISION STEEL BALL BEARINGS; BHMA 100 POUND CLASS LOAD RATING; KNAPE & VOGT MANUFACTURING COMPANY, MEDIUM DUTY, MODEL NO. 8400 or equal.

G. HINGES: GRASS AMERICAN NO. 3613VS OR BLUM NO. 75M3580, CONCEALED ADJUSTABLE TYPE FOR A 95 DEGREE OPENING, NICKEL PLATED or equal.

END OF SECTION

SECTION 06 4600

WOOD TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Interior running wood trim.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Wood Protection Association (AWPA) U1 - Use Category System - User Specification for Treated Wood.

B. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

C. ASTM International (ASTM) E84 - Standard Test Method for Surface Burning Characteristics of Materials.

D. Forest Stewardship Council (FSC) STD-40-004 - Chain of Custody Standard.

1.3 SUBMITTALS

A. Submittals for Review:
1. Samples: [6] inch long samples of each profile.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications:
1. Minimum [5] years [documented] experience in work of this Section.
2. Certified under AWI/AWMAC/WI Quality Certification Program.

B. Pre-Installation Conference:
1. Convene [2] weeks prior to beginning work of this Section.
2. Attendance: Architect, [Owner,] [Contractor,] [Construction Manager,] installer, and related trades.
3. Review, discuss and resolve:
   a. Critical dimensions.
   b. Product delivery and storage.
   c. Staging and sequencing.
   d. Protection of completed work.

C. Fire Retardant Treated Products: Bear label of recognized independent testing laboratory indicating flame spread rating of [25] or less, tested to ASTM E84.

1.5 DELIVERY, STORAGE AND HANDLING

A. Do not deliver materials until proper protection can be provided, and until needed for installation.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of interior trim:
   1. Temperature: [60 to 80] degrees F.
   2. Humidity: 25 to 55 percent.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Gardenstate Lumber (www.gardenstatelumber.com)
   2. Or approved equal manufacturer with matching profile.

2.2 MATERIALS

A. Interior Trim:
   1. Graded in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 3 requirements for quality grade specified, average moisture content of [6] percent.

   2. Close grain hardwood, of quality suitable for opaque finish

2.3 ACCESSORIES

A. Fasteners: Type and size as required by conditions of use; plain steel for interior use.

B. Adhesives:
   1. Waterproof, [water based] type, compatible with trim and substrate materials.

2.4 FABRICATION

A. Quality: AWI/AWMAC/WI Architectural Woodwork Standards, Section 6, [Premium] Grade.

B. Where field fitting is required, provide ample allowance for cutting.

C. Groove back of trim applied to flat substrate, except do not groove exposed ends.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to installation, condition wood to average humidity that will prevail after installation.

3.2 INSTALLATION

A. Install in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Install in longest practical lengths.

C. Set plumb and level.

D. Miter ends, corners, and intersections.

E. Scribe to adjacent construction with maximum 1/16 inch gaps.

F. Fasten to supporting construction. Sink and fill so that holes are not visible.

END OF SECTION

SECTION 07 2115

BATT INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Acoustical Batt insulation in wall assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C665 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Wood Frame and Light Construction Buildings.
2. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.

1.3 SUBMITTALS

A. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that insulation meets fire hazard classification requirements.

1.4 QUALITY ASSURANCE

A. Fire Hazard Classification:
1. Noncombustible, tested to ASTM E136.
2. Flame spread/smoke developed rating of [25/50] or less, tested to ASTM E84.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store insulation in clean, dry, sheltered area, off ground or floor, until used. Protect against wetting and moisture absorption.

1.6 PROJECT CONDITIONS

A. Do not install insulation until building is substantially water and weather tight.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Johns Manville. (www.jm.com)
2. Rockwool (www.rockwool.com)
3. Owens Corning. (www.owenscorning.com)
4. Or Approved Equal

2.2 MATERIALS

A. Thermal Batt Insulation:

1. Thermafiber, Roxul/Rockwool, Mineralwool or equal SAFB 3” sound attenuation mineral wool at bathroom walls and office 205 perimeter walls.
2. Class A, Type I insulation per NFPA 101 and ASTM 665

PART 3 EXECUTION

3.1 INSTALLATION

A. Friction fit between framing members.

B. Butt insulation to adjacent construction. Butt ends and edges.

C. Carry insulation around pipes, wiring, boxes, and other components.

D. Ensure complete enclosure of spaces without voids.

END OF SECTION

SECTION 07 5400

THERMOPLASTIC MEMBRANE ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Cutting in new curbs and pipe flashing in existing warrantied fully adhered single ply membrane roofing.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

B. ASTM International (ASTM):
1. D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
2. D6878 - Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.
3. E108 - Standard Test Methods for Fire Tests of Roof Coverings.

C. Factory Mutual Insurance Co. (FM):
1. 4470 - Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction.
2. Property Loss Prevention Data Sheet 1-28 - Design Wind Loads.
3. Property Loss Prevention Data Sheet 1-49 - Perimeter Flashing.

D. National Roofing Contractors Association (NRCA) - Roofing and Waterproofing Manual.

1.3 SYSTEM DESCRIPTION

Design Requirements:

1.4 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate:
a. Manufacturer approved curb detail and pipe flashing detail.
2. Product Data: Manufacturer's product specifications, installation instructions, and general recommendations for each product.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:
1. Minimum 10 years [documented] experience in work of this Section.
2. Licensed or certified by roofing materials manufacturer.

B. Pre-Installation Conference:
1. Convene at site [2] weeks prior to beginning work of this Section.
2. Attendance: [Architect,] [Contractor,] [Construction Manager,] roofing applicator, roofing manufacturer's representative, and related trades.
3. Review and discuss: Contract Documents, roofing system manufacturer's literature, project

conditions, scheduling, and other matters affecting application.
4. Tour representative areas of roofing substrates; discuss substrate construction, related work, work conditions, and materials compatibility.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store materials, other than membrane, in protected, dry area, between [60 and 80] degrees F until used; provide proper ventilation.

B. Protect sheet goods from damage and wetting.

1.7 PROJECT CONDITIONS

A. Do not apply roofing to damp or frozen substrate.

B. Do not apply roofing during inclement weather or at temperatures below [40] degrees F, or above [100] degrees F or if freezing weather is anticipated within [24] hours after application. Do not use frozen materials.

1.8 WARRANTIES

A. Contractor must engage Carlisle Golden Seal Warranty certified installer to cut and flash new roof openings and maintain existing 15 year roof warranty. Contractor to notify Carlisle in writing in advance and copy Owner and Architect. The existing roof was installed 8/24/11. Serial #10072127 CMD1094316. Contractor shall provide letter from Carlisle after work is complete that work is acceptable and warranty is uncompromised.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - TPO Roofing System:
1. Carlisle Syntec, Inc. (www.carlisle-syntec.com)

B. Substitutions: Not permitted unless approved by Carlisle in writing to maintain existing warranty.

2.2 MATERIALS

A. Roof Membrane:
1. Type: ASTM D6878, reinforced thermoplastic polyolefin (TPO), ultraviolet resistant.

B. Flashing Sheet: Manufacturer's standard flashing sheet, color to match membrane.

2.3 ACCESSORIES

A. Batten Strips or Fastener Plates: Manufacturer's standard, [galvanized steel.] [hard rubber.]

B. Accessories:
1. By manufacturer of roofing system, including adhesives, tapes, solvents, sealants, water cutoff mastic, and prefabricated pipe flashings.

C. Walkway Pads: Preformed resilient pads, recommended by roofing manufacturer, minimum [1/2] inch thick.

D. Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by roofing system manufacturer, type and length suited to project conditions.

E. Insulation Fasteners: Hot-dip galvanized or fluoropolymer coated steel, approved by [FM and] roofing

system manufacturer, type and length suited to project conditions, with [galvanized steel] [plastic] plates.

F. Nailers and Curbs:
   1. Preservative treated wood
   2. Nailers: [3-1/2] inch face dimension x insulation thickness.

G. Metal Flashings: Minimum [24] gage sheet metal laminated with [TPO] membrane.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove projections that could puncture membrane from substrate.

B. Clean substrate of loose and foreign material, oil, and grease.

C. Complete roof penetrations and preparation for drains, flashings, and other penetrations prior to beginning roofing.

D. Protect adjacent and underlying surfaces.

3.2 INSTALLATION - GENERAL

A. Install roofing system in accordance with roofing system manufacturer's instructions, NRCA Manual, and approved Shop Drawings.

3.3 INSTALLATION OF FLASHINGS

A. Construct in accordance with roofing system manufacturer's standard details.

B. Juncture of Horizontal and Vertical Surfaces:
   1. Use longest practical length flashing to minimize joints.
   2. Complete splice between flashing and main roof sheet before bonding flashing to vertical surface. Extend splice [3] inches beyond fasteners that attach membrane to horizontal surface.
   3. Adhere flashing to substrate with full bed of adhesive.
   4. Fasten top of flashing at [12] inches on center maximum, under metal flashing.

C. Penetrations through Membrane:
   1. Flash pipe with premolded pipe flashings wherever possible.
   2. Where molded pipe flashings cannot be installed, use field fabricated pipe seals.
   3. Seal clusters of pipes and unusually shaped penetrations with minimum [2] [__] inch high flashing containing pourable sealer.

END OF SECTION

SECTION 07 8400

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Firestopping perimeter of and penetrations through [fire] [and] [smoke] rated assemblies.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.
2. E1966 - Standard Test Method for Fire-Resistive Joint Systems.
3. E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-Story Test Apparatus.

B. Underwriters Laboratories, Inc. (UL):
1. 1479 - Fire Tests of Through-Penetration Firestops.
2. 2079 - Fire Resistance of Building Joint Systems.

1.3 SYSTEM DESCRIPTION

A. Provide continuous protection against passage of heat, fire, smoke, and gases at perimeter of and penetrations through rated assemblies.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 5 years experience in work of this Section.

B. Firestopping: Fire resistance rating [equivalent to adjacent construction;] tested to ASTM E814, ASTM E1966, ASTM E2307, UL 1479, or UL 2079.

1.5 PROJECT CONDITIONS

A. Do not apply sealants, mortars, or putties when temperature of substrate material and surrounding air is below [40] degrees F or is anticipated to drop below that temperature within [24] hours after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Hilti, Inc. (www.us.hilti.com)
2. 3M Fire Protective Products. (www.3m.com)
3. Nelson Firestop Products. (www.nelsonfirestop.com)
4. Rectorseal. (www.rectorseal.com)
5. Specified Technologies, Inc. (www.stifirestop.com)
6. Tremco, Inc. (www.tremcosealants.com)
7. Or Approved equal

2.2 MATERIALS

A. Firestopping: One or more of the following:
   1. Silicone elastomer compound: Single or multiple component, low modulus, moisture curing silicone sealant.
   2. Ceramic sealant: Single component, moisture curing ceramic sealant.
   3. Intumescent sealant: Single component, water based intumescent sealant.
   4. Acrylic sealant: Single component acrylic sealant, suitable for painting.
   5. Putty: Single component ceramic fiber base putty or intumescent elastomer putty that expands on exposure to surface heat gain.
   6. Mortar: Hydraulic cementitious mortar.
   7. Pillows or blocks: Formed intumescent or mineral fiber pillows or blocks.
   8. Intumescent strips: Solvent free intumescent wrap strips.
   9. Mechanical devices: Incombustible fillers or silicone elastomer covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
   10. Cast-in-place devices: Containing intumescent material and smoke/water seals.

2.3 ACCESSORIES

A. Forming and Damming Materials: As recommended by firestopping manufacturer for intended use.
   1. Permanent: Mineral fiber board, mineral fiber matting, or mineral fiber putty.
   2. Temporary: Plywood, particle board, or other.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare openings to receive firestopping as directed by manufacturer:
   1. Remove incidental and loose materials from penetration opening.
   2. Remove free liquids and oil from involved surfaces and penetration components.
   3. Install damming materials to accommodate and ensure proper thickness and fire rating requirements and provide containment during installation.
   4. Remove combustible materials and materials not intended for final penetration seal system.

3.2 INSTALLATION

A. Install firestopping at perimeter of and penetrations through [fire] [and] [smoke] rated assemblies.

B. Apply materials in accordance with manufacturer's instructions.

C. Apply firestopping material in sufficient thickness to achieve required ratings.

D. Compress fibered material to achieve a density of 40 percent of its uncompressed density.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

F. Place intumescent coating in sufficient coats to achieve rating required.

G. Remove dam material after firestopping material has cured.

H. Finish exposed surfaces to smooth, flush appearance.

END OF SECTION

SECTION 07 9200

JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Joint backup materials.
2. Joint sealers.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C510 - Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants.
2. C719 - Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle).
3. C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
4. C834 - Standard Specification for Latex Sealing Compounds.
5. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
6. C920 - Standard Specification for Elastomeric Joint Sealants.
7. C1193 - Standard Guide for Use of Joint Sealants.
8. C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
9. C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
10. D2203 - Standard Test Method for Staining from Sealants.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Indicate sealers, primers, backup materials, bond breakers, and accessories proposed for use.
2. Samples:
   a. [1/2 x 1/2 x 3] inch long joint sealer samples showing available colors.]
3. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 5 years experience in work of this Section.

1.5 PROJECT CONDITIONS

A. Do not apply sealers at temperatures below [40] degrees F unless approved by sealer manufacturer.

1.6 WARRANTIES

A. Furnish [manufacturer's] [10] year warranty providing coverage for [exterior] sealers and accessories that fail to provide air and water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. BASF Building Systems. (www.buildingsystems.basf.com)
   2. Dow Corning Corp. (www.dowcorning.com)
   3. GE Silicones. (www.siliconeforbuilding.com)
   4. Pecora Corp. (www.pecora.com)
   5. Sika Corp. (www.sikausa.com)
   6. Tremco, Inc. (www.tremcosealants.com)
   7. Or Approved Equal

2.2 MATERIALS

A. Joint Sealer Type [1:]
   1. ASTM C834, single component acrylic latex, non sag.
   2. Movement capability: Plus or minus [7-1/2] percent.
   3. Color: White.

B. Joint Sealer Type [2:]
   1. ASTM C920, Grade NS, single component silicone, non sag, mildew resistant.
   2. Movement capability: Plus or minus [50] percent.
   3. Color: [To be selected from manufacturer's full color range.]

2.3 ACCESSORIES

A. Primers, Bondbreakers, and Solvents: As recommended by sealer manufacturer.

B. Joint Backing:
   1. ASTM C1330, closed cell polyethylene foam, preformed round joint filler, non absorbing, non staining, resilient, compatible with sealer and primer, recommended by sealer manufacturer for each sealer type.
   2. Size: Minimum [1.25] times joint width.

2.4 MIXES

A. Mix multiple component sealers in accordance with manufacturer's instructions.
   1. Mix with mechanical mixer; prevent air entrainment and overheating.
   2. Continue mixing until color is uniform.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove loose and foreign matter that could impair adhesion. If surface has been subject to chemical contamination, contact sealer manufacturer for recommendation.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Protect adjacent surfaces with masking tape or protective coverings.

D. Sealer Dimensions:
   1. Minimum joint size: [1/4 x 1/4] inch.
   2. Joints [1/4 to 1/2] inch wide: Depth equal to width.
   3. Joints over [1/2] inch wide: Depth equal to one half of width.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Install sealers and accessories in accordance with ASTM C1193.

C. Install acoustical sealers and accessories in accordance with ASTM C919.

D. Install joint backing to maintain required sealer dimensions. Compress backing approximately [25] percent without puncturing skin. Do not twist or stretch.

E. Use bondbreaker tape where joint backing is not installed.

F. Fill joints full without air pockets, embedded materials, ridges, and sags.

G. Tool sealer to smooth profile.

H. Apply sealer within manufacturer's recommended temperature range.

3.3 CLEANING

A. Remove masking tape and protective coverings after sealer has cured.

B. Clean adjacent surfaces.

3.4 SCHEDULE

JOINT LOCATION OR TYPE	SEALER TYPE
Interior Joints:	
Joints in [toilet rooms] [countertops] [kitchens]	2
Other joints	1

END OF SECTION

SECTION 08 1113

HOLLOW METAL FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hollow steel frames.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 08 7100 - Door Hardware.

1.2 REFERENCES

A. American National Standards Institute (ANSI)/Steel Door Institute (SDI):
1. A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finished Painted Steel for Steel Doors and Frames.
2. A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
3. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
4. A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. A250.11 - Recommended Erection Instructions for Steel Frames.

B. ASTM International (ASTM):
1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
2. A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
3. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
4. C518 - Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
5. E413 - Classification for Rating Sound Insulation.

C. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

D. Steel Door Institute (SDI) 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

E. Underwriters Laboratories (UL):
1. 10B - Standard for Fire Tests of Door Assemblies.
2. 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, elevations, dimensions, model designations, [fire] ratings, preparation for hardware, and anchoring details.
2. Product Data: Show elevations, dimensions, gages of metal, hardware reinforcing gages and locations, and anchor types.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification that products furnished comply with ANSI/SDI A250.3, ANSI/SDI 250.4, and ANSI/SDI A250.10.

1.4 QUALITY ASSURANCE

A. Frames: ANSI/SDI A250.8, Grade [III - Extra Heavy Duty.]

B. Fire Door and Frame Construction: Conform to UL [10B.] [10C.]

C. Installed Fire Rated Door and Frame Assemblies: Conform to NFPA 80.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ship door frames with removable angle spreader; do not remove until frame is installed.

B. Store doors upright in protected, dry area, off ground or floor, with at least [1/4] inch space between individual units.

C. Do not cover with non vented coverings that create excessive humidity.

D. Remove wet coverings immediately.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. Ceco Door. (www.cecodoor.com)
   2. Curries. (www.curries.com)
   3. Pioneer Industries, Inc. (www.pioneerindustries.com)
   4. Steelcraft. (www.steelcraft.com)
   5. Or approved equal

2.2 MATERIALS

A. Steel Sheet:
   1. ASTM A1008/1008M, cold rolled.

2.3 FABRICATION

A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.

B. Frames:
   1. Fabricate from minimum [18] gage sheets.

   2. Close corner joints tight with trim faces mitered and face welded, full profile welded, or continuously welded and ground smooth.
   3. Anchors:
      a. Provide one anchor at each jamb for each [30] inches of door height.
      b. Design anchors to provide positive fastenings to adjacent construction.
      c. Provide one floor anchor welded to each jamb.
   4. Where frames will be filled with concrete or grout, install silencers in frames before erection.

C. Accurately form to required sizes and profiles.

D. Grind and dress exposed welds to form smooth, flush surfaces.

E. Do not use metallic filler to conceal manufacturing defects.

F. Fabricate with internal reinforcement for hardware specified in Section 08 7100; weld in place.

G. Design Clearances:
   1. Between door and frame: Maximum 1/8 inch.
   2. Between meeting edges of pairs of doors:
      a. Fire-rated doors: 1/8 inch plus or minus 1/16 inch.
   3. Undercut:
      a. Fire-rated doors: Comply with NFPA 80.
   4. Between face of door and stop: 1/16 to 3/32 inch.

H. Manufacturing Tolerances: In accordance with SDI-117.

2.4 FINISHES

A. Dress tool marks and surface imperfections to smooth surfaces.

B. Clean and chemically treat steel surfaces.

C. Touch up damaged metallic coatings.

D. Apply manufacturer's standard rust inhibiting primer paint, air-dried or baked on, meeting requirements of ANSI/SDI A250.10.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install doors and frames in accordance with ANSI/SDI A250.11.

B. Set plumb and level.

C. Secure to adjacent construction using fastener type best suited to application.

D. Install hardware in accordance with Section 08 7100.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in primer paint to match factory finish.

END OF SECTION

SECTION 08 1433

STILE AND RAIL WOOD DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Painted Wood stile and rail doors and wood frames.
2. Factory finished stained oak stile and rail doors (See also hollow metal frames).

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 08 7100 - Door Hardware.

1.2 REFERENCES

A. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.

B. Forest Stewardship Council (FSC) STD-40-004 - Chain of Custody Standard.

C. National Fire Protection Association (NFPA) 80 - Standard for Fire Doors and Fire Windows.

D. Underwriters Laboratories (UL):
1. 10B - Standard for Fire Tests of Door Assemblies.
2. 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Show locations, elevations, dimensions, [fire ratings,] and preparation for hardware.
2. Samples:
a. [6 x 6] inch door samples showing stile, rail, and panel.
3. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL [10B.] [10C.]

B. Installed Fire Rated Door Assembly: Conform to NFPA 80.

1.5 DELIVERY, STORAGE AND HANDLING

A. Package doors in heavy plastic with identifying marks; slit plastic wrap on site to permit ventilation, but do not remove from plastic until ready to install.

B. Do not deliver doors until building is substantially water and weather tight.

C. Store doors flat and level, with spacers between doors to allow for air circulation, in protected, dry area.

D. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of doors:
1. Temperature: [60 to 80] degrees F.

2. Humidity: [25 to 55] percent.

1.6 WARRANTIES

A. Furnish [manufacturer's] 5 year warranty providing coverage against defects in materials and workmanship and warpage beyond specified amount.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Custom Wood Doors, Inc.. (www.lagdesign.com)
2. Eggers Industries. (www.eggersindustries.com)
3. Maiman. (www.maiman.com)
4. Or Approved Equal

2.2 MATERIALS

A. Stile and Rail Wood Doors:
1. Type: AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
2. Stiles and rails:
   a. Veneered] construction.
   b. Core:. [Structural Composite Lumber.]
3. Panels:
   a. [Raised] type.
   b. Panel core: [Medium Density Fiberboard.] [Structural Composite Lumber.]
4. Exposed wood: Red oak species, plain cut, of quality suitable for [transparent] finish
5. Adhesives: [Water Resistant] type.
6. Wood Frames: 1" nominal hardwood suitable for painted finish with integral stops.

2.3 FABRICATION

A. Fabricate doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
1. Grade: [Premium.]
2. Performance Level: [Extra Heavy Duty.]
3. Veneered panels: [Book] matched.

B. Prefitting; fit doors to frames at factory with following clearances:
1. [Fire] rated doors:
   a. Width: Cut lock edge only; [3/16] inch maximum.
   b. Height: Cut bottom edge only; [1] inch maximum.
2. Non-rated doors:
   a. Width: Cut hinge and lock edges equally.
   b. Height: Cut bottom edge only; maximum [3/4] inch.
3. Edge clearances:
   a. Jambs and head: [1/8] inch maximum between door and frame.
   b. Sills without thresholds: [1/8] inch maximum between door and top of finish floor.
   c. Sills with thresholds: [1/4] inch maximum between door and top of threshold.
   d. Meeting stiles of pairs: [1/8] inch maximum between doors.
4. Lock edge: Bevel [1/8] inch in 2 inches.

C. Premachining: Machine doors at factory to receive hardware specified in Section 08 7100.

2.4 FINISHES

A. Factory Finishing:

1. Factory finish doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5.
2. Color: [Custom color to be selected to match central stair doors.]
3. Sheen: [Semigloss.]

PART 3 EXECUTION

3.1 PREPARATION

A. Condition doors to average humidity that will be encountered after installation.

3.2 INSTALLATION

A. Install doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

B. Install doors plumb and level.

C. Field Fitting to Frames:
1. [Fire] [and] [Acoustic] rated doors:
   a. Width: Cut lock edge only; [3/16] inch maximum.
   b. Height: Cut bottom edge only; [1] inch maximum.
2. Non-rated doors:
   a. Width: Cut hinge and lock edges equally.
   b. Height: Cut bottom edge only; maximum [3/4] inch.
3. Edge clearances:
   a. Jambs and head: [1/8] inch maximum between door and frame.
   b. Sills without thresholds: [1/8] inch maximum between door and top of finish floor.
   c. Sills with thresholds: [1/4] inch maximum between door and top of threshold.
   d. Meeting stiles of pairs: [1/8] inch maximum between doors.
4. Lock edge: Bevel [1/8] [inch in 2 inches.
5. Do not cut doors down to opening sizes smaller than those for which they were manufactured.

D. If field cutting for height is necessary, cut bottom edge only, [3/4] inch maximum.

E. Seal field cut surfaces with [same finish as door faces.]

F. Install door hardware in accordance with Section 08 7100.

G. Installation Tolerances:
1. Warp: Maximum [1/4] inch in any 3'-0" x 7'-0" portion of door, measured with taut string or straight edge on concave face of door.

END OF SECTION

SECTION 08 3100

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Access doors and frames for wall surfaces.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

B. Underwriters Laboratories (UL) 10B - Standard for Fire Tests of Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Provide sizes, types, finishes, scheduled locations, and details of adjoining work.

1.4 QUALITY ASSURANCE

A. Fire Door Construction: Conform to UL 10B.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Acudor Products, Inc. (www.acudor.com)
2. Babcock-Davis, Inc. (www.babcockdavis.com)
3. J.L. Industries. (www.jlindustries.com)
4. Karp Associates, Inc. (www.karpinc.com)
5. Milcor. (www.milcorinc.com)
6. Nystrom, Inc. (www.nystrom.com)
7. Or approved equal

2.2 MATERIALS

A. Steel Sheet: ASTM A1008/A1008M, cold rolled.

2.3 FABRICATION

A. Fabricate door frame of steel sheet:
1. Doors 20x20 inches and smaller: Minimum [16] gage.
2. Fabricate frames with frameless drywall flanges

B. Recess door face to receive gypsum board flush with adjacent surface.

C. Weld, fill, and grind joints to flush and square appearance.

D. Hardware:
   1. Continuous steel hinges, [175] degree opening.
   2. Knob

2.4 FINISHES

A. [Other] Interior Doors: One coat rust-inhibiting primer paint, sprayed and baked.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install plumb and level in openings. Secure rigidly in place.

C. Position units where indicated or where required to provide convenient access to concealed work requiring maintenance.

END OF SECTION

SECTION 08 7100

DOOR HARDWARE

GENERAL

1.1 SUMMARY

A. Section Includes:
1. Hardware for steel and wood doors.
2. Hardware for other sections referencing this section.

1.2 REFERENCES

A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI/BHMA):
1. A156.1 - Butts and Hinges.
2. A156.2 - Bored and Preassembled Locks and Latches.
3. A156.3 - Exit Devices.
4. A156.4 - Door Controls - Closers.
5. A156.5 - Auxiliary Locks and Associated Products.
6. A156.13 - Mortise Locks and Latches.
7. A156.18 - Materials and Finishes.

B. National Fire Protection Association (NFPA):
1. 80 - Standard for Fire Doors and Windows.
2. 105 - Installation of Smoke Control Door Assemblies.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Schedule hardware by door type and location; show door size, hand, thickness, edge bevel, hardware components and quantities, keying, and finishes.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years experience in work of this Section.

B. Provide hardware labeled by recognized independent testing laboratory and meeting requirements of NFPA 80 for fire rated doors.

C. Provide smoke gasketing at fire rated doors in accordance with NFPA 105.

D. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.5 DELIVERY, STORAGE AND HANDLING

A. Pack hardware items separately, with fasteners, installation instructions, and templates.

B. Mark containers with item number corresponding to hardware schedule.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Butt Hinges (H-1) :
1. Stanley T/TA Series
2. Acceptable Alternates – Hagar, McKinney

B. Acceptable Manufacturers – Electric Butt Hinges (H-2) :
1. Corwin Russwin ETH Electric Hinge
Acceptable Alternates – None

C. Acceptable Manufacturers – Mortise Locksets (L-1, L-3, L-4)
1. Corbin Russwin – ML 2000 Series
2. Acceptable Alternates – None

D. Acceptable Manufacturers – Mortise Locksets (L-2)
1. Corbin Russwin – Electric ML03/05EU Mortise Lock + ETH Electric Hinge
2. Acceptable Alternates – None

E. Acceptable Manufacturers – Cylinders and Keying
1. Corbin Russwin – Master Ring 1060 Series
2. Acceptable Alternates - None

F. Acceptable Manufacturers – Closers (C-1):
1. LCN – 1461 Series with 90deg. stop
2. Acceptable Alternates – Corbin Russwin, Sargent

G. Acceptable Manufacturers – Wall Stop/Floor Stop (M-1):
1. Ives – WS401/402 and FS436/438
2. Acceptable Alternates – Rockwood

H. Acceptable Manufacturers – Pocket Door Sliding Track (M-2):
1. Johnson Hardware – 100PDSC Soft Close Pocket Door Hardware
2. Acceptable Alternates – None

I. Acceptable Manufacturers – Electric Door unlocking switch (M-3):
1. Coordinate with security vendor.
2. Acceptable Alternates – None

J. Acceptable Manufacturers – Acoustical seals and threshold (M-4):
1. Zero International – 328 Jambs/428A head/39A sill/68x3670x68 threshold
2. Acceptable Alternates – Reese, Pemko

2.2 MANUFACTURED UNITS

A. Butt Hinges:
1. Preferred Product: CB168-NRP
2. Description: ANSI/BHMA A156.1, full mortise type, five knuckle, non rising pin, hole in bottom tip for pin removal.
3. Weight: Heavy weight
4. Bearing type: Ball bearing.
5. Size: 4 ½ x 4 ½ .

B. Interior Locksets, Latchsets, Deadbolts, and Cylinders:
1. Preferred Products:
   a. Bathroom: ML 2030 x NSA (F19) – Newport Lever trim
   b. Classroom: ML 2055 x NSA x MR (F05) – Newport Lever trim
   c. Office: ML 2051 x NSA x MR (F04) – Newport Lever trim
   d. Storage: ML 2057 x NSA x MR x (F07) – Newport Lever trim
2. Description: ANSI A156.13, Grade 1 and ANSI/ASTM F476-84 Grade 30 UL listed
3. Chassis: cold-rolled steel, handing field-changeable without disassembly
4. Latchbolts: ¾ inch throw stainless steel anti-friction type.

5. Lever Trim: through-bolted, accessible deign, cast lever or solid extruded bar type levers. Filled hollow tube design unacceptable.
6. Spindles: security design independent break-away. Breakage of outside lever does not allow access to inside lever's hub-works to gain wrongful entry.
7. Thumbturns: accessible design not requiring pinching or twisting motion to operate
8. Strike plates: ANSI 4 7/8 x 1 ¼ curved dark bronze with 1-inch deep box construction, lips of sufficient length to clear trim and protect clothing.

C. Cylinders and Keying:
1. Tie all keyed locks into the established College Master key system
2. Requirements to be determined by the College
3. Biting list to be developed by manufacturer
4. Final cylinders to be installed by the owner's representative.
5. Contractor required to supply temporary cylinders for security

D. Closers:
1. Preferred Product: 1461 Series – 90 degree opening stop.
2. Description: All closers shall meet ANSI/BHMA A156.4, Grade 1 cycle test standards,
3. All closers specified shall contain hydraulic fluid of a type requiring no seasonal adjustments for temperatures ranging from 120 degrees F to -30 degrees F
4. All closers to have forged steel main arms.
5. All closer to have full complement, high efficiency, and low friction pinion bearings
6. All manual closers to have delayed action, dead stop, spring –assisted deceleration, track mounting and extra duty arm options available throughout product line
7. All closer to have ten year warranty
8. All closers to be mounted on least public side.

E. Floor and Wall Door Stops:
1. Preferred Product: WS401/402 Series Wall and FS436/438 Series Floor
2. Description: All stops shall meet ANSI/BHMA A156.16
3. All stops to be of cast construction

F. Electric Strikes:
1. Preferred Product: 4500 with Deadlatch Tab Option (Mortise Locksets)
2. Description: All strikes shall meet ANSI A156.5
3. Electrical voltage shall be field selectable (12VDC or 24VDC)
4. Electric strike for mortise lockset application shall install into standard ANSI 4 7/8" strike plate
5. Verify fail safe/fail secure requirements

G. Pocket Door Sliding Track:
1. Preferred Product: 100PDSC
2. Operation: Soft Open and Close
3. Commercial Grade

H. Door Seals and Threshold:
I. Preferred Product: 100PDSC Pocket Door Sliding Track:
1. Preferred Product: 328 Jambs/428A head/39A sill/68x3670x68 threshold
2. Commercial Grade

2.3 FINISHES

A. Finishes: To ANSI/BHMA A156.18.

B. Hardware Finishes per schedule, Dark Bronze

PART 3 EXECUTION

3.1 INSTALLATION

A. Install hardware in accordance with approved hardware schedule and manufacturer's instructions.

B. Locate hardware conforming with DHI-WDHS-3 standard practice.

C. Install mortise items flush with adjacent surfaces.

D. Install locksets, closers, and trim after finish painting.

E. Set thresholds in mastic and secure.

F. Mount closers so that closers and closer arms are not visible on corridor or public side of doors or on exterior of building.

G. Mounting Heights - Finished Floor to Center Line of:
   1. Locksets: [38] inches u.n.o
   2. Dead locks: per drawings.
   3. Push pad exit devices: [42] inches u.n.o.
   4. Cross bar exit devices: [38] inches u.n.o.
   5. Top hinge: Maximum [10] inches from frame head.
   6. Bottom hinge: Maximum [12-1/2] inches from floor.
   7. Intermediate hinges: Equally spaced.

H. Connect electric hardware to power supply and fire alarm and detection system as shown.

3.2 PROTECTION

A. Remove or protect hardware until painting is completed.

3.3 ADJUSTING

A. Test and adjust hardware for quiet, smooth operation, free from binding and rattling.

B. Adjust doors to operate with maximum opening forces in accordance with applicable accessibility code.
   1. Interior non-fire rated doors: [5.0] pounds.

END OF SECTION

SECTION 09 2200

METAL SUPPORT ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal stud interior partition framing.
   2. Metal interior wall furring.
   3. Suspended metal channel interior ceiling framing.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. A591/A591M - Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Weight (Mass) Applications.
   2. A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
   3. A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
   4. C645 - Standard Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
   5. C754 - Standard Practice for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wall board, Backing Board, or Water-Resistant Backing Board.

B. Gypsum Association (GA) GA-600 - Fire Resistance Design Manual.

C. Underwriters Laboratories, Inc. (UL) - Fire Resistance Directory.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Illustrate framing types, gages, and locations.

1.4 QUALITY ASSURANCE

A. Deflection Limits:
   1. Limit deflection of partitions to following limits, based on [5] PSF uniform design load.
      a. Other partitions: L/120.
      b. If partition height exceeds stud manufacturer's limiting height for applicable loading and deflection, install bracing above ceiling, decrease stud spacing, or increase stud gage.
   2. Limit deflection of ceilings to L/360.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. California Expanded Metal Company. (www.cemcosteel.com)
   2. ClarkDietrich Building Systems. (www.clarkdietrich.com)
   3. Marino Ware Industries. (www.marinoware.com)
   4. Or approved equal

2.2 MATERIALS

A. Steel: ASTM A1003/1003M, Class G40 hot dip galvanized.

2.3 COMPONENTS

A. Provide components in accordance with ASTM C645.

B. Studs: Non-load bearing rolled steel, channel shaped, punched for utility access.

C. Top and Bottom Runners:
   1. Same material and finish as studs, channel shaped.

D. Suspended Ceiling Framing: Proprietary direct suspension system consisting of T-shaped steel main and cross tees of double web design with interlocking ends manufactured specifically for suspended gypsum board ceiling applications.

2.4 ACCESSORIES

A. Fasteners: 3/8 inch long pan head screws.

B. Wire: ASTM A 641, galvanized steel.
   1. Hanger wire: 8 gage.
   2. Tie wire: 18 gage, soft annealed.

C. Wall Furring Brackets: Galvanized steel, two piece adjustable type.

D. Furring Channel Clips: Galvanized steel.

PART 3 EXECUTION

3.1 INSTALLATION OF PARTITION FRAMING

A. Install in accordance with ASTM C754 and manufacturer's instructions.

B. Attach top and bottom runner channels at ends and 16 inches on center maximum.

C. Position studs vertically in runners, spaced maximum 16 inches on center unless indicated otherwise.

D. Install deflection compensating top runner at partitions extending to structure. Cut studs 1/2 inch shorter than required length and fit into top runner. Fasten studs to top runner in manner permitting runner movement.

E. Use double studs on both sides of openings in partitions.

F. Install horizontal runner as header above openings in partitions. Install studs from header to top runner.

G. Brace furred partitions with adjustable bracket located at mid height.

H. Provide wood or metal bracing in partitions to receive and support fixtures, trim, accessories and other applied items.

I. Brace ceiling height partitions to structure at 48 inches on center maximum.

3.2 INSTALLATION OF CEILING FRAMING

A. Space hanger wires per manufacturer's instructions. Install additional hangers where required to support light fixtures and ceiling supported equipment.

B. Do not suspend hangers directly from metal deck. Attach steel channel horizontally to adjacent framing members; place hanger at regular spacing.

C. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.

D. Where ducts or other equipment prevent regular spacing of hangers:
   1. Reinforce nearest related hangers to span extra distance, or:
   2. Suspend steel channel horizontally beneath duct or equipment; place hanger at regular spacing.

END OF SECTION

SECTION 09 2900

GYPSUM BOARD

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Acoustical insulation.
2. Gypsum board.
3. Taping and bedding of gypsum board.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. ASTM International (ASTM):
1. C475 - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. C514 - Standard Specification for Nails for the Application of Gypsum Wallboard.
3. C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Board.
4. C1047 - Standard Specifications for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
5. C1178 - Standard Specification for Glass Mat Water-Resistant Gypsum Backing Panel.
6. C1396 - Standard Specification for Gypsum Board.
7. C1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
8. D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

B. Gypsum Association (GA):
1. GA-214 - Levels of Gypsum Board Finish.
2. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.
3. GA-600 - Fire Resistance Design Manual.

C. Underwriters Laboratories, Inc. (UL) - Fire Resistance Directory.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Illustrate panel product types, thicknesses, and locations; acoustical insulation; and accessories.

1.4 QUALITY ASSURANCE

A. Fire Resistance Ratings:
1. Construct assemblies to achieve fire resistance ratings indicated on Drawings, in accordance with applicable and/or referenced UL design number.
2. If requirements of assembly numbers referenced conflict with Contract Document requirements, conform to assembly requirements.

1.5 PROJECT CONDITIONS

A. Do not install gypsum board until building is substantially weathertight.

B. Maintain temperature in spaces in which work is being performed above 50 degrees F during and after installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Gypsum Panels:
1. CertainTeed Gypsum, Inc. (www.certainteed.com)
2. GP Gypsum Corporation. (www.gp.com)
3. National Gypsum Co. (www.nationalgypsum.com)
4. Temple-Inland. (www.templeinland.com)
5. USG Corporation. (www.usg.com)
6. Or Approved Equal

2.2 MATERIALS - GYPSUM PANELS

A. Regular Gypsum Board: ASTM C1396; 48 inches wide x 5/8 inch thick x maximum practical length, tapered edge.
1. Moisture resistant board at restroom.

2.3 ACCESSORIES

A. Fasteners: ASTM C1002, Type [W] [S] [G] screws,] minimum 5/8 inch penetration into framing.

B. Acoustical Insulation:
1. ASTM C665, Type I, glass fiber composition, unfaced.
2. Free from urea-formaldehyde resins, phenol, acrylics, and artificial colors.

C. Adhesive:
1. Type recommended by gypsum panel manufacturer.

D. Trim Accessories: ASTM C1047.
1. Material: Formed steel, minimum 26 gage core steel, hot dip galvanized finish, expanded flanges.
2. Corner reinforcement: GA-216, Type CB-100 x 100.
3. Casing: GA-216, Type LC.
4. Control joint.

E. Acoustical Sealer: Specified in Section 07 9200.

F. Joint Treatment Materials:
1. Reinforcing tape and joint compound; ASTM C475.

PART 3 EXECUTION

3.1 INSTALLATION OF GYPSUM PANELS

A. Install panels and accessories in accordance with ASTM C754, GA-216, and manufacturer's instructions.

B. Accurately cut panels to fit around openings and projections. Do not tear face paper or break gypsum core.

C. Apply panels at non fire-rated assemblies in most economical manner, with ends and edges occurring over supports.

D. Apply panels at fire-rated assemblies as required by design assembly.

E. Stagger joints on opposite sides of partitions.

F. Do not locate joints to align with edges of openings unless a control joint is installed.

G. Mechanically fasten single layer panels to framing. Place fasteners minimum 3/8 inch from edges of panels; drive heads slightly below surface. Stagger fasteners at abutting edges.

H. Apply face layer of double layer applications with joints offset from those in base layer; secure with mechanical fasteners to framing or with adhesive to base layer.

I. At deflection compensating head tracks, cut panels 1/2 inch short of structure at head; do not secure panels to top runner channel.

J. Treat cut edges and holes in moisture resistant gypsum board with joint sealer.

K. Where recessed items occur in fire rated partitions, box item on all sides with gypsum board as required to maintain continuity of fire rating.

3.2 INSTALLATION OF ACOUSTICAL PARTITIONS

A. Extend acoustical partitions past intersecting non-acoustical partitions.

B. Install acoustical insulation:
   1. Butt to framing members and adjacent construction.
   2. Carry around pipes, wiring, outlets, and other construction without voids.
   3. Press against one gypsum board surface to form slight air space on opposite side.

C. Seal acoustical partitions at perimeter and around penetrations:
   1. Apply continuous bead of sealer between gypsum panel edges and adjacent construction.
   2. Seal space between gypsum panels at control joints, prior to installing metal control joint.
   3. Apply sealer to penetrations through partitions.

3.3 INSTALLATION OF ACOUSTICAL INSULATION ABOVE CEILINGS

A. Install acoustical insulation in continuous layer. Butt tightly to adjacent insulation and to other construction.

B. Carry over pipes, wiring, boxes, and other construction without voids.

3.4 INSTALLATION OF ACCESSORIES

A. Install in accordance with manufacturer's instructions.

B. Install corner reinforcement at outside corners. Use single lengths where length of corner does not exceed standard length.

C. Install casings where indicated and where gypsum board abuts dissimilar materials or stops with edge exposed.

3.5 JOINT TREATMENT

A. Treat joints and fasteners in gypsum board in accordance with GA-214.

B. Levels of Finish:
   1. Surfaces in plenums Level [1] finish.
   2. Surfaces to receive flat, eggshell, paints and wall coverings: Level [4] finish.
   3. Surfaces to receive semigloss, gloss paints: Level [5] finish.

END OF SECTION

SECTION 09 3000

TILING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Marble tile floor and base finish at restroom.
2. Marble thresholds.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.
2. Section 07 9200 - Joint Sealers.

1.2 REFERENCES

A. American National Standards Institute (ANSI):
1. A108/A118/A136.1 - American National Standard for Installation of Ceramic Tile.
2. A137.1 - Specifications for Ceramic Tile.

B. ASTM International (ASTM):
1. C144 - Standard Specification for Aggregate for Masonry Mortar.
2. C150 - Standard Specification for Portland Cement.
3. C207 - Standard Specification for Hydrated Lime for Masonry Purposes.
4. C1028 - Standard Test Method for Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.

C. Tile Council of North America (TCNA) - Handbook for Ceramic, Glass and Stone Tile Installation.

D. Resilient Floor Covering Institute (RFCI) - FloorScore Certification Program.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's installation, cleaning, and maintenance instructions.
2. Samples:
a. Tile: Full size samples in each color.
b. Grout: samples showing available colors.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Static Coefficient of Friction for Floor Tile: Minimum 0.60, tested to ASTM C1028 in dry condition.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver mortar, adhesive, and grout containers bearing hallmark certifying compliance with reference standards.

B. Protect adhesive containers from freezing and overheating according to manufacturer's instructions.

1.6 PROJECT CONDITIONS

A. Environmental Requirements: Maintain minimum ambient temperature of 50 degrees F during and after installation.

1.7 MAINTENANCE

A. Extra Materials: One unopened carton of each tile.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Provide the following or an approved equal - Tile:
   1. Dal-Tile Corp. (www.daltileproducts.com)

B. Acceptable Manufacturers - Setting and Grouting Materials:
   1. Laticrete International, Inc. (www.laticrete.com)
   2. Mapei Corporation. (www.mapei.us)
   3. TEC. (www.tecspecialty.com)

C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Tile:
   1. Preferred Product: Dal-Tile Daphne White (M103) Honed
   2. Size: 12 x 12 inches x 3/8 inch thick.
   3. Edge: Square.
   4. Color: Daphne White
   5. Surface finish: Honed
   6. Trim units: Cut tile for base at restroom

2.3 ACCESSORIES

A. Latex-Portland Cement Mortar: ANSI A118.4, polymer modified dry set type.

B. Portland Cement: ASTM C150, Type 1, white color.

C. Sand: ASTM C144, clean, free of organic matter.

D. Lime: ASTM C207, Type S, hydrated.

E. Water: Clean, potable.

F. Grout:
   1. ANSI A118.7, high performance polymer modified type
   2. Color: To be selected from manufacturer's full color range.

G. Thresholds: Class A marble, honed finish, beveled both sides, radiused from bevels to vertical planes, one piece for full width of door or opening.

H. Joint Sealers: Specified in Section 07 9200.

I. Sealer: Floor tile sealer type per tile manufacturer’s recommendations

J. Waterproof Membrane:
   1. Type: Load bearing, reinforced self-adhering sheet type.
   2. Source: Ditra by Schluter or approved substitute.

PART 3 EXECUTION

3.1 PREPARATION

A. Clean surfaces to remove loose and foreign matter that could impair adhesion.

B. Remove ridges and projections. Fill voids and depressions with patching compound compatible with setting materials.

C. Allowable Substrate Tolerances:
   1. Thin set method:
      a. Maximum variation in substrate surface: 1/8 inch in 8 feet.
      b. Maximum height of abrupt irregularities: 1/32 inch.

3.2 INSTALLATION

A. Install waterproof membrane in accordance with manufacturer's instructions.

B. Methods:
   1. Floors: ANSI A108.5, thin set with latex-Portland cement mortar.

C. Minimize pieces less than one half size. Locate cuts to be inconspicuous.

D. Lay tile to pattern centered in room about vanity.

E. Joint Width: 1/8 inch, plus or minus 1/16 inch.

F. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

G. Fit tile around projections and at perimeter. Smooth and clean cut edges. Ensure that trim will completely cover cut edges.

H. Install Trim:
   1. Base: Base units.

I. Install thresholds where tile abuts dissimilar floor finish. Center on door or opening.

J. Allow tile to set for a minimum of 48 hours before grouting.

K. Grout tile joints in accordance with ANSI A108.10 without excess grout.

L. Control Joints:
   1. Provide control joints at:
      a. Changes in backup material.
      b. Changes in plane.
      c. Over joints in substrate.
   2. Form joints per TCNA Method EJ-171.
   3. Install joint backing and joint sealer as specified in Section 07 9200.

M. Seal entire floor with tile manufacturer's recommended sealant.

3.3 ADJUSTING

A. Remove and replace pieces that have been damaged during installation.

3.4 PROTECTION

A. Provide protection for completed work using nonstaining sheet coverings.

B. Prohibit traffic on tile floors for minimum 3 days after installation.

END OF SECTION

SECTION 09 5100

ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Suspended metal ceiling grid system.
2. Acoustical panels.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
2. C635 - Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
3. C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
4. E1264 - Standard Classification of Acoustical Ceiling Products.

B. Ceiling and Interior Systems Construction Association (CISCA) - Ceiling Systems Handbook.

C. Underwriters Laboratories, Inc. (UL) - Fire Resistance Directory.

1.3 SUBMITTALS

A. Submittals for Review:
1. Samples:
a. 12 x 12 inch acoustical panel samples.
b. 6 inch long suspension system samples showing each profile.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that acoustical panels meet fire hazard classification requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years experience in work of this Section.

B. Fire Hazard Classification: Class A rated, tested to ASTM E1264.

1.5 PROJECT CONDITIONS

A. Environmental Requirements: Install in approximately same conditions of temperature and humidity as will prevail after installation.

1.6 MAINTENANCE

A. Extra Materials: One unopened carton of each acoustical panel.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Acoustical Units:
   1. Armstrong World Industries, Inc. (www.armstrong.com)
   2. USG Corporation. (www.usg.com)
   3. Or approved equal

B. Acceptable Manufacturers - Suspension System:
   1. Armstrong World Industries, Inc. (www.armstrong.com)
   2. USG Corporation. (www.usg.com)
   3. Or approved equal

C. Substitutions: Under provisions of Division 01

2.2 MATERIALS

A. Suspension Grid System:
   1. ASTM C635, heavy duty, die cut, interlocking ends.
   2. Grid type: Exposed T.
   3. Material: Galvanized steel
   4. Runners: 1-1/2 inches high, 15/16 inch exposed width, flush profile.
   5. Perimeter molding: Angle shape.
   6. Finish: Factory applied enamel paint, sprayed and baked, white
   7. Accessories: Stabilizer bars, clips, splices

B. Acoustical Panels:
   1. Basis of Design - Provide the following or an approved eequal: Ultima High - NRC by Armstrong or approved substitute.
   2. Size: 24 x 24 inches x 3/4 inch thick.
   3. Edge configuration: Bevealed Tegular
   4. Performance requirements: Tested in accordance with ASTM E1264.
      a. NRC: 0.80.
      b. CAC: 35.
      c. Light reflectance: LR-0.87.

2.3 ACCESSORIES

A. Support Channels:
   1. Galvanized steel; size and type to suit application.

B. Hanger Wire:
   1. ASTM A641, minimum 12 gage galvanized steel.

C. Hold Down Clips: Minimum 24 gage spring steel, manufacturer's standard profile.

D. Impact Clips: Minimum 24 gage spring steel, manufacturer's standard profile.

E. Paint: Color to match acoustical panels and suspension grid.

PART 3 EXECUTION

3.1 INSTALLATION

A. Paint existing grid to remain as noted in the drawings.

B. Install ceilings in accordance with ASTM C636 and CISCA Handbook.

C. Minimize panels less than one half size.

D. Install molding around perimeters and abutting surfaces. Miter molding at exterior corners; cut flanges and bend web to form interior corners.

E. Space hanger wires maximum 48 inches on center. Install additional hangers where required to support light fixtures and ceiling supported equipment.

F. Do not suspend hangers directly from metal deck. Attach steel channel horizontally to adjacent framing members; place hanger at regular spacing.

G. Hang suspension system independent of walls, columns, ducts, pipes, and conduit.

H. Where ducts or other equipment prevent regular spacing of hangers:
   1. Reinforce nearest related hangers to span extra distance, or:
   2. Suspend steel channel horizontally beneath duct or equipment; place hanger at regular spacing.

I. Install main tees at maximum 48 inches on center.

J. Install cross tees to form 24 x 24 inch modules. Lock cross tees to main tees.

K. Support ends of tees on flange of perimeter molding.

L. Place acoustical panels with edges resting flat on suspension grid.

M. Cutting Acoustic Units:
   1. Cut to fit irregular grid and perimeter edge trim and around penetrations.
   2. Locate cuts to be concealed.
   3. Cut and field paint exposed edges of reveal edge units to match factory edge.

N. Place hold down clips over cross tees at mid point of each module.

O. Place impact clips over cross tees at mid point of each module.

P. Lighting Fixture Protection: Form trapezoidal, five sided box of acoustical panels cut to size over each light fixture; conform to UL requirements.

Q. Installation Tolerances: Ceilings level to 1/8 inch in 12 feet measured in any direction.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions to match factory finish.

END OF SECTION

SECTION 09 6513

RESILIENT BASE

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Resilient wall base.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM) F1861 - Standard Specification for Resilient Wall Base.

B. Resilient Floor Covering Institute (RFCI) - FloorScore Certification Program.

1.3 SUBMITTALS

A. Submittals for Review:
1. Samples: 4 inch long samples showing available colors.

1.4 MAINTENANCE

A. Extra Materials: One unopened carton each profile and color.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Armstrong World Industries. (www.armstrong.com)
2. Johnsonite, Inc. (www.johnsonite.com)
3. Roppe Corp. (www.roppe.com)
4. Or approved equal

2.2 MATERIALS

A. Resilient Base:
1. Type: ASTM F1861, thermoset vulcanized rubber
2. Thickness: 0.080 inch.
3. Profile: Straight
4. Height: 4 inches.
5. Length: 120 foot rolls.
6. Color: To be selected from manufacturer's full color range.
7. Finish: Matte.

2.3 ACCESSORIES

A. Adhesive:
1. Water based, waterproof, recommended by base manufacturer.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare surfaces to receive base:
   1. Remove materials that could interfere with adhesion.
   2. Fill low spots with patching compound; finish flush with adjacent surface.
   3. Remove high spots, ridges and nibs.

3.2 INSTALLATION

A. Apply adhesive continuously to back of base.

B. Maintain top edge true to line and bottom edge in continuous contact with floor. Butt joints tight; butt base tight to adjacent construction.

C. Do not install pieces less than 6 inches long.

D. Miter and butt inside corners.

E. At outside corners “V” cut back of base to 2/3 of its thickness and bend around corner.

F. At exposed ends, install premolded units.

G. Scribe to door frames and other interruptions.

END OF SECTION

SECTION 09 6519

RESILIENT TILE FLOORING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Resilient tile flooring.
2. Reducers.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
2. E648 - Standard Test Method for Flooring Radiant Panel Test.
3. F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
4. F970 - Standard Test Method for Static Load Limit.
5. F1066 - Standard Specification for Vinyl Composition Tile.
6. F1344 - Standard Specification for Rubber Floor Tile.
7. F1700 - Standard Specification for Solid Vinyl Floor Tile.
8. F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
9. F2195 - Standard Specification for Linoleum Floor Tile.

B. Resilient Floor Covering Institute (RFCI) - FloorScore Certification Program.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Provide data on specified products, describing physical and performance characteristics.
2. Samples:
a. Flooring: 6 x 6 inch samples in each color and pattern.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that flooring meets fire hazard classification requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Fire Hazard Classification: Class I rated, tested to ASTM E648.

C. Static Coefficient of Friction: Minimum 0.5, tested to ASTM D2047.

1.5 PROJECT CONDITIONS

A. Maintain temperature in spaces to receive flooring between 70 and 90 degrees F for 24 hours before, during, and for minimum 48 hours after installation.

1.6 MAINTENANCE

A. Extra Materials: One unopened carton of each color and pattern.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Vinyl Tile Flooring:
   1. Mannington Resilient Floors. (www.mannington.com)
   2. Shaw Contract Floors.
   3. Or approved equal

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Vinyl Plank Flooring:
   1. Basis of Design: Provide the following or an approved equal: Mannington Commercial – Color Anchor – Cottontail C118
   2. ASTM F1700, Class III - Printed Film, Type B - Embossed Surface.
   3. Size:18 x 18 x 0.098 inches
   4. Wear layer: 20 mil
   5. Warranty: 10 year
   6. Static load limit: Minimum 750 PSI, tested to ASTM F970.
   7. Recycled content: 3% rapidly renewable resource content

2.3 ACCESSORIES

A. Reducer Strips: Solid vinyl or rubber composition, 1 inch wide by flooring thickness, tapered, color to be selected from manufacturer's full color range

B. Leveling Compound: White, premixed, latex based.

C. Adhesive:
   1. Water based, waterproof, recommended by flooring manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that subfloors are prepared.

3.2 PREPARATION

A. Clean substrate to ASTM F710.

3.3 INSTALLATION OF TILE

A. Install in accordance with manufacturer's instructions.

B. Mix materials from multiple containers to ensure shade variations are consistent when flooring is placed.

C. Spread only enough adhesive to permit installation of flooring before initial set.

D. Lay flooring with joints parallel to building lines to produce symmetrical pattern.

E. Install flooring to pattern directed by Architect. Allow minimum half-size units at room or area perimeter.

F. Set flooring in place; press with heavy roller to attain full adhesion.

G. Scribe flooring to walls, columns, cabinets, and other appurtenances to produce tight joints. Ensure that base, trim, plates, or escutcheons will completely cover cut edges.

H. Extend flooring into recesses and under equipment.

I. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar.

J. Install grounding tape at static-dissipating flooring in accordance with manufacturer's instructions. Ground to building ground system.

3.4 INSTALLATION OF REDUCER STRIPS

A. Install where tile stops with edge exposed; set in adhesive.

B. Center strips under doors where flooring terminates at door openings.

C. Install in longest practical lengths; butt ends tight.

D. Scribe to abutting surfaces.

3.5 ADJUSTING

A. Correct tiles that are not seated; replace damaged tiles.

3.6 CLEANING

A. Clean flooring and machine buff in accordance with manufacturer's instructions.

3.7 PROTECTION

A. Do not allow traffic on flooring until adhesive has set.

B. Cover areas subject to traffic with protective covering.

END OF SECTION

SECTION 09 6813

TILE CARPETING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Tile carpeting.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D2859 - Standard Test Method for Flammability of Finished Textile Floor Covering Materials.
2. D4258 - Standard Practice for Surface Cleaning Concrete for Coating.
3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. E648 - Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
5. E662 - Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
6. F710 - Standard Practice for Preparing Concrete to Receive Resilient Flooring.
7. F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
8. F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

B. Carpet and Rug Institute (CRI):
1. 104 - Standard for Installation Specification of Commercial Carpet.
2. Indoor Air Quality Testing Program.

C. National Fire Protection Association (NFPA) 253 - Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.

1.3 SUBMITTALS

A. Submittals for Review:
1. Shop Drawings: Indicate carpet tile locations, dye lot limitations, direction of carpet tile in each room or area, and type and location of edgings.
2. Samples:
a. Carpet tile: Full size samples in each color and pattern.
3. Warranty: Sample warranty form.

B. Quality Control Submittals:
1. Certificates of Compliance: Certification from an independent testing laboratory that carpet tiles meet fire hazard classification requirements.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section.

B. Fire Hazard Classification: Class I rated, tested to ASTM E648.]

C. Pre-Installation Conference:
1. Convene at site 2 weeks prior to beginning work of this Section.

2. Attendance: Architect, Contractor, Construction Manager, carpet tile installer, carpet tile manufacturer's representative, and related trades.
3. Review and discuss: Contract Documents, carpet tile manufacturer's literature, project conditions, scheduling, protection after installation, and other matters affecting application.

1.5 PROJECT CONDITIONS

A. Do not begin installation until painting and finishing work have been completed.

B. Environmental Requirements:
1. Temperature of spaces and subfloor between 65 and 90degrees F.
2. Humidity in spaces to receive carpet tiles between 20 and 65 percent.

1.6 WARRANTIES

A. Furnish manufacturer’s lifetime limited warranty providing coverage against:
1. Defective materials and workmanship.
2. Excessive fading.
3. Loss of static control.
4. Edge raveling.
5. Runs.
6. Loss of tuft bind strength.
7. Loss of face fiber.
8. Excessive wear.

1.7 MAINTENANCE

A. Extra Materials: One unopened carton of each tile.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Carpet Tiles:
1. Milliken
2. Or approved equal

2.2 MATERIALS

A. Carpet Tiles:
1. Preferred Product: Miliken, Collection GE IV Plan A, Color 408 Mineral Gray, 1mx1m comfort plus cushion or approved equal.

2.3 ACCESSORIES

A. Adhesive:
1. Waterproof, latex based cement formulated specifically for installing carpet tiles; recommended by carpet tile manufacturer.

B. Leveling Compound: Premixed, latex based.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that concrete floors have cured a minimum 28 days and do not exhibit negative alkalinity, carbonization, or dusting.

3.2 PREPARATION

A. Clean substrate to ASTM D4258.

3.3 INSTALLATION OF CARPET TILES

A. Install in accordance with CRI 104.

B. Install carpet tile and adhesive in accordance with manufacturers' instructions.

C. Blend carpet tiles from different cartons to ensure minimal variation in color match.

D. Lay out each room or area to minimize tiles less than one half size.

E. Cut tile clean. Fit tiles tight to intersection with vertical surfaces without gaps.

F. Lay carpet tile to uniform pattern, with tile direction parallel to next unit, set parallel to building lines.

G. Locate change of color or pattern between rooms under door centerline.

H. Fully adhere carpet tiles to substrate.

3.4 INSTALLATION OF EDGINGS

A. Install strips where carpet tiles abut dissimilar flooring materials; secure to subfloor.

B. Center strips under doors where carpet tiles terminate at door openings.

C. Install in longest practical lengths; butt ends tight.

D. Scribe to abutting surfaces.

3.5 CLEANING

A. Clean spots as recommended by carpet tile manufacturer.

B. Cut off loose threads flush with top surface.

C. Clean with commercial vacuum cleaner.

END OF SECTION

SECTION 09 9100

PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Surface preparation and field application of paints.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
1. D4442 - Standard Test Method for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
2. D6886 - Standard Test Method for Speciation of the Volatile Organic Compounds (VOCs) in Low VOC Content Waterborne Air-Dry Coatings by Gas Chromatograpy.
3. D2092 and D9092- mill phosphatized coating for painting

B. Green Seal, Inc. (GS) 11 - Standard for Paints and Coatings.

C. Master Painters Institute (MPI) - Architectural Painting Specification Manual.

D. Society for Protective Coatings (SSPC) - Painting Manual.

E. South Coast Air Quality Management District (SCAQMD) Rule 1113 - Architectural Coatings.

1.3 SUBMITTALS

A. Submittals for Review:
1. Product Data: Manufacturer's data on materials proposed for use including:
   a. Product designation and grade.
   b. Product analysis and performance characteristics.
   c. Standards compliance.
   d. Material content.
   e. Mixing and application procedures.
2. Samples:
   a. [3 x 6] inch samples of each coating system on representative substrate. Step back successive coats so that all coats remain exposed. Indicate type of material used for each coat.
   b. [12 x 12] inch texture samples on gypsum board backing.
3. Paint Schedule: Indicate types and locations of each surface, paint materials, and number of coats to be applied.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 10 years [documented] experience in work of this Section.

B. Materials, Preparation, and Workmanship: Conform to MPI Painting Manual.

1.5 DELIVERY, STORAGE AND HANDLING

A. Container Labels: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage rates, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

B. Paint Materials: Store at ambient temperature from 45 to 95 degrees F in ventilated area, or as required by manufacturer's instructions.

1.6 PROJECT CONDITIONS

A. Do not apply materials when surface and ambient temperatures or relative humidity are outside ranges required by paint manufacturer.

B. Maintain ambient and substrate temperatures above manufacturer's minimum requirements for 24 hours before, during. and after paint application.

C. Do not apply materials when relative humidity is above 85 percent or when dew point is less than 5 degrees F different than ambient or surface temperature.

D. Provide lighting level of [30] footcandles at substrate surface.

1.7 MAINTENANCE

A. Extra Materials: [1 gallon] of each color and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Benjamin Moore and Co. (www.benjaminmoore.com)
2. Sherwin Williams. (www.sherwin-williams.com)
3. Or approved equal

2.2 MATERIALS

A. Paints:
1. As scheduled at end of Section, or approved substitute.
2. Free from all forms of lead and mercury.

B. Gloss Ratings:

Gloss Designation	Units at 60 Degrees	Units at 85 Degrees
Flat	0 to 5	Maximum 10
Eggshell	10 to 25	10 to 35
Satin	20 to 35	Minimum 35
Semigloss	35 to 70	
Gloss	70 to 85	
High Gloss	Minimum 85	

2.3 ACCESSORIES

A. Accessory Materials: Paint thinners and other materials required to achieve specified finishes; commercial quality.

B. Patching Materials: Latex filler.

C. Fastener Head Cover Materials: Latex filler.

2.4 MIXES

A. Deliver paints pre-mixed and pre-tinted.

B. Uniformly mix to thoroughly disperse pigments.

C. Do not thin in excess of manufacturer's recommendations.

D. Re-mix paint during application; ensure complete dispersion of settled pigment and uniformity of color and gloss.

PART 3 EXECUTION

3.1 EXAMINATION

A. Test shop applied primer for compatibility with subsequent coatings.

B. Measure moisture content of surfaces using electronic moisture meter. Do not apply coatings unless moisture content of surfaces are below following maximums:
1. [Gypsum board]: [12] percent.
2. [Masonry] [and] [concrete]: [12] percent.
3. Wood: [15] percent, measured to ASTM D4442.
4. Concrete floors: [8] percent.

3.2 PREPARATION

A. General:
1. Protect adjacent and underlying surfaces.
2. Remove [or mask] electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
3. Correct defects and clean surfaces capable of affecting work of this section.
4. Seal marks that may bleed through surface finishes with shellac.

B. Impervious Surfaces: Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow to dry.

C. Gypsum Board:
1. Fill minor defects with filler compound. Spot prime defects after repair.
2. Apply light [orange peel] texture in accordance manufacturer's instructions.

D. Uncoated Ferrous Metals: SSPC Method SP2 - Hand Tool Cleaning or Method SP3 - Power Tool Cleaning.

E. Exposed Ductwork:
1. Remove all dirt, grease and manufacturing lubricant with a non-hydrocarbon cleaner
2. Wipe the duct dry with clean dry cloth prior to painting.

F. Interior Wood:
1. Wipe off dust and grit.
2. Seal knots, pitch streaks, and sappy sections with sealer.
3. Fill nail holes and cracks after primer has dried; sand between coats.

G. Exterior Wood:
1. Remove dust, grit, and foreign matter.

2. Seal knots, pitch streaks, and sappy sections.

H. Existing Surfaces:
1. Remove loose, flaking, powdery, and peeling paints.
2. Lightly sand glossy painted surfaces.
3. Fill holes, cracks, depressions and other imperfections with patching compound; sand flush with surface.
4. Remove oil, grease, and wax by scraping; solvent wash and thoroughly rinse.
5. Remove rust by wire brushing to expose base metal.

3.3 APPLICATION

A. Apply paints in accordance with MPI Painting Manual, [Premium] [Custom] Grade finish requirements.

B. Apply primer or first coat closely following surface preparation to prevent recontamination.

C. Do not apply finishes to surfaces that are not dry.

D. Apply coatings to minimum dry film thickness recommended by manufacturer.

E. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.

F. Apply coatings to uniform appearance without laps, sags, curtains, holidays, and brush marks.

G. Allow applied coats to dry before next coat is applied.

H. When required on deep and bright colors apply an additional finish coat to ensure color consistency.

I. Continue paint finishes behind wall-mounted accessories.

J. Sand between coats on interior [wood] [and] [metal] surfaces.

K. Match final coat to approved color samples.

L. Where clear finishes are specified, tint fillers to match wood. Work fillers into grain before set. Wipe excess from surface.

M. Prime concealed surfaces of [exterior wood] [and] [interior wood in contact with masonry or cementitious materials] with one coat primer paint.

N. Mechanical and Electrical Components:
1. Paint factory primed equipment.
2. Remove unfinished and primed louvers, grilles, covers, and access panels; paint separately.
3. Paint exposed and insulated pipes, conduit, boxes, ducts, hangers, brackets, collars, and supports unless factory finished.
4. Do not paint name tags or identifying markings.
5. Paint exposed conduit and electrical equipment in finished areas.
6. Paint duct work behind louvers, grills, and diffusers flat black to minimum of 18 inches or beyond sight line.

O. Do not Paint:
1. Surfaces indicated on Drawings or specified to be unpainted or unfinished.
2. Surfaces with factory applied finish coat or integral finish.
3. Architectural metals, including brass, bronze, stainless steel, and chrome plating.

3.4 ADJUSTING

A. Touch up or refinish disfigured surfaces.

3.5 CLEANING

A. Remove paint from adjacent surfaces.

3.6 PAINT SCHEDULE – Basis of Design

A. Types of paint listed herein are set forth as standard of quality and type of coating required for each type of surface.
   1. Paint exposed surfaces of types listed in Paint Schedule.
   2. Paint other exposed surfaces not specifically listed with not less than two coats of appropriate type of coating.

B. Prime coat consists of touch up on shop primed [and existing] surfaces with intact coatings.

SUBSTRATE	MANUFACTURER	PRIMER	TOP COATS
Interior Surfaces:			
Gypsum Board, Latex Flat Finish	Sherwin-Williams	S-W ProMar 200 Zero VOC Latex Primer, B28W8200	S-W ProMar 200 Zero VOC Latex Flat, B30-200 Series (2 – coats)
Gypsum Board, Latex egg shell Finish	Sherwin-Williams	S-W ProMar 200 Zero VOC Latex Primer, B28W8200	S-W ProMar 200 Zero VOC Latex Eg-Shel, B20-2200 Series (2 – coats)
Wood, Opaque, Latex Enamel Finish	Sherwin-Williams	S-W ProMar 200 Zero VOC Latex Primer, B28W8200	S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2200 Series (2 – coats)

SECTION 10 2813

TOILET ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Restroom accessories.
   2. Framed mirrors.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. A123/A123M - Standard Specification for Zinc (Hot-Galvanized) Coatings on Iron and Steel Products.
   2. A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
   3. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   4. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   5. B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
   6. C1036 - Standard Specification for Flat Glass.

B. Underwriters Laboratories, Inc. (www.ul.com) - Listed Products.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data:
      a. Schedule accessories by room; show plans and elevations, and identify room name and number, type and quantity of accessories, and mounting heights.
      b. Include manufacturer's brochures showing sizes, details of function, finishes, and attachment methods.
   2. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Conform to applicable accessibility code for locating accessories.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. American Standard
   2. Restoration Hardware
   3. Or approved equal

2.2 MATERIALS

A. Stainless Steel:
   1. Sheet: ASTM A666, Type 304, rollable temper.

2. Tubing: ASTM A269.

B. Galvanized Steel:
1. ASTM A1008/A1008M.

C. Mirror Glass: ASTM C1036, Type I, Class 1, Quality q1, 1/4 inch thick. Tempered at back of door.

2.3 ACCESSORIES

A. Fasteners: Stainless steel where exposed, hot dip galvanized where concealed; type best suited to substrate conditions.

2.4 FABRICATION

A. Use stainless steel for exposed surfaces; galvanized steel may be used in concealed locations.

B. Form exposed surfaces from single sheet of stock, free from joints, and flat, without distortion.

C. Weld joints of fabricated components and grind smooth.

D. Provide hangers, adapters, anchor plates, and accessories required for installation.

E. Full Length Mirrors:
1. Frame: One piece, roll formed stainless steel channel, 1/2 x ½ inch, with corners mitered
2. Mirror: Apply one coat of silver, one coat of electroplated copper, and one coat of organic mirror backing compound to back surface of glass.
3. Backing: Galvanized steel sheet.
4. Isolate glass from frame and backing with resilient, waterproof padding.
5. Mount at location indicated by Architect.

F. Shop assemble units and package complete with anchors and fittings.

2.5 FINISHES

A. Satin Nickle Typical

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Set plumb, level, square, and rigid.

C. Install wiring between power supply and [hand] [hair] dryers.

3.2 SCHEDULE (Preferred Products) Basis of Design:

MARK	DESCRIPTION	MANUFACTURER	MODEL NO.
A	Toilet Tissue Holder	American Standard	A8338230295
B	Towel Bar	American Standard	A8338024295
C	Robe Hook	American Standard	A8338210295
D	Mirror – Medicine Cabinet	Restoration Hardware	Beaded Venetian - Large

END OF SECTION

SECTION 11 3100

APPLIANCES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Dishwasher.
2. Refrigerator.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Provide product data on appliances showing materials, finishes, characteristics, limitations, and electrical characteristics.
2. Warranty: Sample warranty form.

B. Closeout Submittals:
1. Operation and Maintenance Data.

1.3 QUALITY ASSURANCE

A. Appliances: Energy Star rated.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver appliances with manufacturer's protective coverings in place; do not remove until just prior to installation.

1.5 WARRANTIES

A. Furnish manufacturer’s warranty

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Bosch
2. Whirlpool
3. Or approved equal

2.2 MANUFACTURED UNITS

A. Appliances: Scheduled at end of Section

PART 3 EXECUTION

3.1 INSTALLATION

A. Install appliances in accordance with manufacturer's instructions and approved Shop Drawings.

B. Set plumb, level, and aligned.

C. Connect to domestic water sanitary waste systems.

D. Connect to power supply.

3.2 ADJUSTING

A. Adjust appliances for proper operation.

3.3 SCHEDULE (Preferred Products) Basis of Design

APPLIANCE DESCRIPTION	MANUFACTURER	MODEL	FINISH
Dishwasher	Bosch	**SGX68U55UC**	STAINLESS STEEL
(Equivalent must meet sound rating of specified dishwashwer)			
33” Refrigerator with Top Freezer With ice maker	Whirlpool	WRT511SZDM	STAINLESS STEEL

END OF SECTION

SECTION 12 2113

HORIZONTAL LOUVER BLINDS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Horizontal slat louver blinds.
2. Operating hardware.

B. Related Sections:
1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

A. Submittals for Review:
1. Product Data: Describe blind construction and finishes.
2. Samples: [3] inch long slat samples [showing available colors.]

1.3 PROJECT CONDITIONS

A. Do not install blinds until painting and finishing work is complete.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
1. Hunter Douglas, Inc. (www.hunterdouglas.com)
2. Levolor Contract. (www.levolor.com)
3. Springs Window Fashions Division, Inc. (www.springs.com)
4. Or approved equal

2.2 Basis of Design: Springs, Bali Classic 8 guage horizontal blinds, color 629, Crystal white

2.3 FABRICATION

A. Fabricate blinds to fit openings with uniform edge clearance of [1/4] inch.

B. At openings requiring multiple blind units, provide separate blind assemblies with space of [1/4] inch between assemblies, occurring at window mullion centers.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install blinds in accordance with manufacturer's instructions.

B. Secure with concealed fasteners.

C. Place intermediate head supports at maximum [48]inches on center.

D. Installation Tolerances:

1. Maximum gap at window opening perimeter: [1/4]inch.
2. Maximum offset from level: [1/8] inch.

3.2 ADJUSTING

A. Adjust blinds for proper operation.

END OF SECTION

Structured Cabling System Specification

For

THE COLLEGE OF NEW JERSEY
SECURITY CAMERAS

Green Hall Rooms 206

2000 Pennington Road

Ewing, New Jersey 08618

Revised

March 2018

SECTION 271000 – INTERIOR STRUCTURED CABLING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. This section is only a portion of the Contract Documents. All of the Contract Documents, including Conditions of the Contract, General Requirements, Plans and Schematics apply to this section.

1.2 SECTION INCLUDES

A. Information related to interior structured cabling and ancillary physical infrastructure components.

1.3 RELATED WORK

A. Other Divisions and specifications that relate directly to work of this Division include, but are not limited to installation schematics, floor plans, and specifications. In the event of conflict between or within specifications and schematics, the more stringent and/or expensive requirement shall apply. All conflicts shall be brought to the attention of the Owner for clarification.

1.4 REFERENCED SPECIFICATIONS, STANDARDS AND CODES

A. The following documents are incorporated by reference into the Bid Specification.

1. NFPA #70 National Electric Code (NEC) 2008 Edition
2. Federal Occupational Safety and Health Act (OSHA)
3. ANSI/TIA 568-C.0 Generic Telecommunications Cabling for Customer Premises
4. ANSI/TIA 568-C.1 Commercial Building Telecommunications Cabling Standard
5. ANSI/TIA 568-C.2 Balanced Twisted-pair Telecommunications Cabling and Components Standard
6. ANSI/TIA 568-C.3 Optical Fiber Cabling Components Standard
7. ANSI/TIA 569-B Standard for Telecommunications Pathways and Spaces
8. ANSI/TIA/EIA 606-A Administration Standard for Commercial Telecommunications Infrastructure
9. ANSI J-607-A Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications
10. BICSI – Telecommunications Distribution Methods Manual, 11th Edition, 2006

1.5 SUBMITTALS

A. Documentation that may be requested prior to, and as a pre-requisite for issuing Notice to Proceed:

1. Bidder's company and their sub-contractors history and background.

2. At a minimum, three (3) references of projects completed within the prior twelve (12) months of similar scope and complexity.

3. The name, title and phone number of a reference at each of the projects.

4. Organizational chart showing the name and title of the Contractor's project team.

5. A written one- year warranty statement regarding materials and workmanship.

6. The contractor shall transmit to the Owner written extended warranties for all horizontal and backbone cabling and termination hardware installed under this contract. The warranties shall be provided by the cable manufacturer and termination hardware manufacturer for the cabling system(s) employed under this contract. The cabling installations shall be certified under the Corning EWP (backbone fiber) and TE/Commscope TE25 ND&I (copper) extended warranty programs (respectively).

7. Contractor shall submit written documentation from the UTP cabling manufacturer(s) (i.e. Corning EWP, TE/Commscope TE25 ND&I Silver, and BerkTek OneReach) that contractor's certifications are current, in good standing and that contractor is authorized to issue the required extended warranty. Contractor shall also submit written documentation that contractor has held such certifications for a continuous period of not less than two years from the date of bid submission.

B. A written extended cabling system (i.e. UTP) applications warranty provided by the structured cabling system manufacturer(s).

C. Proof of valid, current and active certification, and a minimum two-years experience prior to the start of this project from Corning for the EWP extended warranty program. Fiber cable installations using Corning product shall be certified under this extended warranty program.

D. The installation and testing of the cable plant installed under the Scope of Work described in this specification shall be under the direct supervision of lead technicians who shall be present at all times when work of this section is performed at the project site. Lead technicians shall be currently certified in the BICSI program (level Technician, or better), and currently certified by the respective UTP and/or fiber optic cabling systems manufacturer.

E. Cabling Installer must have personnel certified by BICSI on staff. Preparation of Shop Drawings, Cabling Administration Drawings, and field testing programs shall be developed by an RCDD.

F. Bidder shall submit documentation regarding the professional qualifications, by name, of each individual assigned to this project. At a minimum, such information shall include, for each individual, BICSI certification category (e.g. Apprentice, Installer or Technician), vendor training and certification and academic and vocational training.

G. Product Data

1. Each submittal package for product data shall provide a summary table of contents cover sheet including the following information for each item submitted: Part number submitted on, project specification section reference(s), submittal package identifier (e.g. submittal package date or serial number), and submittal package page number.
2. Submit for approval complete product data for all work of this Division. Data shall consist of complete product description, specifications, catalogue cuts, maintenance and care instructions and any other relevant information.

3. Contractor shall mark each product data sheet to clearly show applicable choices and options. Where the product data sheet includes information on more than one product, the specific item being submitted shall be clearly indicated. Indicative marks shall reproduce clearly in document imaging (e.g. photocopy, black-and-white scan, fax).

H. Substitutions and Deviations

1. Substitutions

a. Requests for substitution are only permitted for materials specified with an "or approved equivalent" clause or other language of same effect in the Contract Documents. No request for substitution will be entertained if this clause has not been specified.

b. All functions and features specified herein are to be provided by the contractor. Where specific manufacturer's names and model numbers are specified, such identification is to establish a benchmark of quality both in the product(s) selected and in the performance and warranty afforded to the Owner by the manufacturer upon successful completion of the cabling installation.

c. Where a contractor intends to provide goods other than those specifically identified, such "equivalent" items must be clearly identified in the bid response. "Equivalent" items included in the bid response must include written certification from the manufacturer of the substitute item stating the equivalency of each and every substituted item relative to the specified items in regard to features, function, performance and future expansion capability.

d. Contractors wishing to provide "equivalent" products for specified devices may be required to demonstrate the equivalency of the proposed substitute items to the Owner at the contractor's expense. Such proof of equivalency, in addition to the manufacturer's letter as noted above, may include the following:

   (i) An on-site, side-by-side demonstration of both the specified and proposed substitute items.

   (ii) A formal bipartisan, laboratory test report comparing the technical performance of each and every proposed substitute, versus specified item.

   (iii) Such test reports for IT System components, will include a spreadsheet comparison of all critical distortion, power, frequency response, noise and dynamic range measurements.

   (iv) The responsibility of proving the equivalency of substitute products with respect to the specified products shall lie solely with the contractor.

   (v) All costs associated with providing information or performing the above outlined tests and comparisons required to confirm the equivalency of substitute products will be at the sole expense of the contractor. Such costs may include but are not limited to:

   (vi) Independent laboratory tests

   (vii) Cost of equipment items for demonstration of specified and proposed substitute items

   (viii) Contractor incurred travel costs and miscellaneous expenses

   (ix) Professional Services Fees (architects, engineers and consultants) charged to the owner as a result of time charged to participating in the review of proposed substitute items.

e. All requests for substitution shall be made to the Construction Manager/General Contractor, accompanied by a product data sheet submittal as outlined in the Specifications. The Construction Manager/General Contractor will distribute it to the Engineer for review.

f. Neither the Engineer nor the Owner has any obligation to consider or approve requests for substitution after award of contract. Acceptance of substitutions is at the sole discretion of the Owner.

g. Substitutions may be permitted if the requirements of the proposed substitution comply with

the General Requirements and Product specifications of the Contract Documents.

2. Deviations

   a. Any deviations or changes involving extra work are not permissible without prior review and written approval by the Owner or its duly authorized representative.

I. Shop Drawings

1. Submit for approval, complete shop drawings indicating layout, details, dimensions, calculations for conduit fill, supports, locations and relationships to adjacent construction or installations.

2. Schematics or diagrams included as part of the contract documents may be used as background for drawings, but do not relieve the installer of responsibility for providing independent shop drawings depicting planned installations.

J. Samples of label texts printed on stock shall be submitted for review and acceptance as in “Shop Drawings”.

K. Acceptance of any submitted data or shop drawings for materials, equipment, apparatus, devices, arrangements and layouts shall not relieve Contractor from responsibility of furnishing the equipment required under this Specification with regard to proper dimensions, capacity, size, quantity, quality and installation details to perform the required intent of the Specification.

1.6 CONTRACTOR RESPONSIBILITIES

A. The purpose of this document and associated drawings is to provide a fully-functional, working system with the Contractor including the cost of obtaining, supplying, installing and making operational all of the components required to provide a fully-functional system whether or not such parts and accessories are explicitly described in the bid documents.

B. The Owner has specific and detailed requirements for the installation, positioning and orientation of the equipment specified in this document and shown on the drawings. The Contractor shall closely coordinate with the Owner before equipment installation.

C. The Contractor must carefully check space requirements and the physical confines of the area of work to insure that all material can be installed in the designated spaces including raceways and cable supports.

D. The Bidder/Contractor shall comply with all governing federal, state, county or local laws, statutes, regulations and ordinances.

E. The Bidder/Contractor shall not sub-contract any portion of the work required under this contract without the express written permission of the Owner. Only full-time, permanent employees of the Contractor shall be used on this project.

F. The Bidder/Contractor shall, based on prior experience with projects of similar scope, bring to the attention of the Owner and the Consultant, in writing, any items not listed in this Specification that are required to achieve the design intent of this document.

G. Every attempt will be made to provide complete written documentation for the work to be done under this contract, but the Contractor must be prepared to work from verbal directions from the Owner or Owner’s designated personnel. Such verbal communication shall be documented, in writing, without delay and circulated to all parties.

H. The Contractor will be required to meet with selected Owner and/or Consultant personnel before the start of the work to review any required changes to the Specification. If, as a result of this meeting, there is a modification of the Contractor's price, the changes shall be submitted in writing for Owner's approval. Written approval from the Owner for cost adjustments is required before any work may begin unless otherwise documented in writing.

I. It is the Contractor's responsibility to coordinate and provide for the movement of equipment, delivery of materials, access to the job site, establishing a site office (if required in the opinion of the Bidder) and other ancillary activities.

J. Unless otherwise noted, the Contractor is responsible for, and shall pay for, any and all permits and licenses required under this contract. The Contractor shall request, obtain, and schedule any and all required inspections or other regulatory coordination services as may be required.

K. To provide an engineered level of performance only products from one manufacturer shall be supplied for each element (e.g. UTP cable, termination blocks, etc.) of a functional system (e.g. horizontal UTP cable distribution) as approved by the Owner or the Owner's designated representative. Multiple manufacturers of an item will not be permitted, unless specifically approved in writing by the Owner or the Owner's designated representative.

L. This document describes equipment and performance specifications. Installation details shall be as indicated on the drawings. Any discrepancies found between the Specification and the Drawings shall be immediately brought to the attention of the Owner. Any discrepancies between the Project system requirements and the identified infrastructure required to support the system shall be registered in the form of a request for information (RFI) during the bidding process. Bidders shall be responsible for any infrastructure requirements identified in the Project documents after receipt of contract for this project.

M. The Contractor shall examine the areas to receive the work and the conditions under which the work would be performed. Contractor shall remedy conditions detrimental to the proper and timely completion of the contract. The Contractor shall not proceed until unsatisfactory conditions have been corrected.

N. The Contractor shall examine and compare the Drawings and Specifications of various trades and report any discrepancies between them to the Owner and obtain from the Owner written instructions for changes necessary in the work. The most stringent requirements shall be included in the bid.

O. The Contractor shall install and coordinate the cabling work described in this Specification with the cooperation of the other contractors that may be working on this project. Before installation, the Contractor will make provisions to avoid interference with other contractors in a manner acceptable to the Owner.

P. All repairs or changes required as a result of damage or neglect caused by the Contractor shall be corrected by the Contractor to the satisfaction of the Owner at the Contractor's own expense.

Q. The Contractor shall maintain a current copy of this Specification and associated telecommunications drawings at the job site at all times.

R. The Contractor shall maintain a complete file of shop drawings and other submissions at the job site at all times. Shop drawings and all other submissions shall be made available to the Owner at his request.

S. Not more than one week after project completion, two completely indexed sets of all manufacturer's literature and data sheets shall be provided in a high quality, 3-ring binder.

T. The Contractor shall label and document all cables, patch panels and termination blocks installed under this Specification.

U. Installation personnel shall be qualified to perform the work required. The Owner reserves the right to have the Contractor remove or replace any of Contractor's personnel at Owner's discretion.

V. Create and maintain an installation schedule with proposed manpower assignments.

W. Hazardous Construction Materials

1. Notice is hereby given that lead based paint- and/or asbestos-containing building materials may exist within campus buildings constructed prior to 1978 (or 1980 in the case of asbestos). These hazards may found in the form of or contained within construction materials, insulations, coatings, paints, plasters, and other finish materials. Notice is also given than any area or surface within campus buildings may be impacted by mold or similar microbial growth, or by contamination from insect or rodent activity.

2. The College of New Jersey has or will have conducted an HCM survey and analysis on the building components or finishes anticipated to be disturbed in the course of this construction work. Surveys for this specific scope of work are typically limited to floor, ceiling and wall finishes and construction. Any locations identified to contain hazardous materials or conditions will be identified and addressed by The College according to recommendations of the survey consultant and/or The College's Office of Occupational Safety and Environmental Services. This contract may require additional coordination with others should the actual disturbance of HCM need to be completed by others.

   a. Building locations, areas, or specific components subsequently identified as "to be avoided" shall not be disturbed in the course of work. Measures shall be taken to route around these locations and protect them from disturbance in the course of work.

   b. For building locations, areas, or specific components subsequently identified as requiring specific construction procedures to minimize the release of contaminants in the form of dust, particles, etc., the contractor shall be responsible to follow those procedures described. Typical procedure for identified areas shall include drilling or cutting via wet methods. This will specifically include continuous, low-volume application of water spray at the immediate area of material disturbance, with the concurrent application of vacuum via HEPA-equipped units for the collection any possible dust released during cutting or drilling operations, and for the collection of water and wet slurry generated during the operation. Surrounding surfaces shall be protected from water using appropriate water-proof coverings.

3. In the event the contractor discovers during the course of work previously-unidentified locations, areas, or specific components that may contain hazardous material conditions such as asbestos, lead, microbial growth, or pest waste contamination, the contractor shall immediately stop work in that area. The contractor shall immediately notify the College Project Manager to request an evaluation of the concern and recommendations for proceeding.

1.7 DEFINITIONS AND TERMINOLOGY

A. Failure to explicitly included terminology such as "provide", "install", or "furnish" shall not relieve the Bidder from the responsibility to provide a fully functional system and installation.

B. "PROVIDE," "FURNISH", "SUPPLY" To obtain, purchase, acquire, transport, deliver, place, erect, connect, test and turn over to Owner, complete and ready for normal operation, the cabling systems referred to in this document.

C. "INSTALL" To move from the property line, set in place, join, unite, fasten, link, attach, set up or otherwise connect together equipment supplied under this contract. Installation shall be considered complete when the equipment or system is ready for normal operation.

D. "WIRE," WIRING" The inclusion of all cables, fittings, conductors, connectors, connector strips, connections, terminations and cable management devices, etc. required in connection with this work.

E. "AS DIRECTED" Written communication from the Owner or its designated representative to the Contractor. If verbal, must be transmitted to the Contractor in writing without delay.

F. "CONCEALED" Embedded in masonry or other construction methods such that physical damage must be done to access the cabling or device once construction is completed.

G. "ACCESSIBLE" Embedded in the building construction, but for which an access method has been provided.

H. "READILY ACCESSIBLE" May be accessed or operated without the use of special tools or equipment (e.g. ladders).

I. "EXPOSED" Installed outside of the building finish such that it is visible to the eye.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Where particular items are explicitly identified in the specification or indicated on the drawings for a specific application, the Contractor is to use only those products or materials.

B. Where "Or Approved Equal" products are specified, only alternatives approved in writing and prior to installation, by the Owner or the Owner's designated representative, may be used.

C. Part numbers provided in this section are believed to be correct. However, if the listed part number has been changed, discontinued or superseded, the Bidder/Contractor is responsible for bringing this to the Owner's attention so that approval may be obtained for currently available products. Should a particular part number prove to be invalid, the Bidder/Contractor shall provide the Owner with product data sheets and specifications for the suggested alternate.

2.2 INSIDE PLANT HORIZONTAL CABLING

► For use in extending UTP connections to camera communications outlet locations within each building. (cable performance class (Cat 6/6A) based on design designation, or existing facility equipment)

A. Cat. 6, UTP, 4-pair, Plenum
CS-BNS TE620P-BLxx CAT6 AirES CMP UTP Cable, Blue

2.3 COPPER CABLE CONNECTORS

A. Termination, Copper, 8-position/8-pin modular jack, Cat. 6
CS-BNS 6830-1-830-07 (Green, Cat 6)
CS-BNS 6830-1-835-07 (Green, Cat 6A)

B. Termination, Copper, Wall-mount, Cat. 6/6A Horizontal Cabling

► For installation in MDF and IDF: Data Horizontal Copper Cable Termination Hardware (cable performance class (Cat 6/6A) based on design designation, or existing facility equipment)

CS-BNS 6657-2-165-40	Single UMS mounting bracket for termination blocks (Cat 6/6A)
CS-BNS 6630-2-004-05	Type 105 block label holder (Cat 6/6A)
CS-BNS 6631-3-106-08	Type 105 block label holder stock, 1 sheet, white, 26/sheet (Cat 6/6A)

CS-BNS 6468-2-060-06	Ultim8 termination block (Cat 6)
CS-BNS 6089-2-015-01	Type 105 hinged label holder (Cat 6)
CS-BNS 6631-3-100-03	Type 105 hinged label holder stock, 1 sheet, white, 50/sheet (Cat 6)

2.4 COMMUNICATIONS OUTLET HARDWARE

A. Faceplate, Plastic, 2-Gang, Ivory
CS-BNS 6644-1-164-02 (4-port)
CS-BNS 6644-1-168-02 (8-port)

B. Faceplate, Plastic, 1-Gang, Ivory
CS-BNS 6644-1-152-02 (2-port)

C. Data Jack Housing, Surface-mount, 2-port, Ivory
CS-BNS 6644-1-222-02

D. Faceplate, Blank Filler, Ivory
CS-BNS 6645-1-160-02

2.5 CAMERA UNITS

A. Camera unit models to be placed per design plans.
Furnish and install as indicated at each site installation. Required mounting accessories are included with the scope of work and shall be included in the submittal package.
1. Honeywell H4W2GR1 indoor camera
120dB WDR, IP-67/IK10 fixed mini-dome, 2.7-12mm lens, IR illum, 1080P, ONVIF, 802.3af

2.6 ANCILLARY HARDWARE AND EQUIPMENT

A. Fire-rated fitting for thru-wall or thru-floor conduit penetrations, 4” trade size conduit fitting
Wiremold FS4R-RED

B. Fire-rated fitting for thru-wall or thru-floor conduit penetrations, 2” trade size conduit fitting
Wiremold FS2R-RED

C. Firestop Caulk for floor and wall penetration annular spaces, as well as penetrations less than 2”
Specified Technologies Inc. Pensil Silicone Sealant PEN300
Or Approved Equal

D. Cable Pulling Lubricant
Cable pulling lubricants shall be selected to be compatible with application and cable to be installed, with respect to manufacturer’s requirements. In general, lubricants for interior horizontal CMR- or CMP-applications shall be drying, non-water-based.
Submit for approval

2.7 CONDUITS AND BACKBOXES FOR COMMUNICATIONS OUTLET INSTALLATIONS

A. Back boxes shall be dual gang, 5” square, 2.875” deep metal boxes, RANDL Industries product number T-55017 (1”, 1-1/4” KO on all sides) (T&B cross 82181T-1-114). Select faceplate adapter rings per application and submit for review and approval.

B. Flexible or non-flexible conduit for communications or combined communications/low-voltage applications shall be minimum 1-1/4” inch. Flexible conduit shall be type LFMC (Liquid-tight, Flexible Metallic Conduit).

C. Non-flexible conduit installed in indoor applications, whether exposed or concealed, shall be EMT, unless otherwise noted.

D. Non-flexible conduit in outdoor, exterior, "wet", or similar applications, areas or spaces, whether exposed or concealed (e.g. garages), shall be galvanized rigid conduit unless otherwise noted.

2.8 SUSPENDED CABLE DISTRIBUTION AND CABLE MANAGEMENT

► Hallway and Corridor Cable Distribution

A. Cable Distribution, Overhead
Erico (Caddy) CAT425
or Approved Equal

B. Cable Distribution Overhead
Erico (“Caddy”) CAT12
or Approved Equal

C. Cable Management Straps, Hook-and-Loop
Hubbell MCCMV-type
or Approved Equal

D. As necessary to provide for the connection of communications cable lightning protection and surge suppression elements, establish a Telecommunications Grounding System including TMGB and TGB(s) within the facility IT equipment room(s).

E. Connect the Grounding System to the main electrical system grounding electrode, at a point exterior to the electrical equipment enclosures. Install a separate, independent, insulated grounding conductor to serve as bonding conductor (BCT) back to the Grounding bus bar system in the IT equipment room(s).

F. Cable (TBB) interconnecting Telecommunications grounding system components (building electrical main ground, TMGB, TGB) shall be 4/0 minimum.

G. Telecommunications Grounding System shall comply with NEC, ANSI (in particular, ANSI J-STD-607-A), and EIA/TIA standards.

H. For all installations of cameras in the exterior, provide an insulated 12AWG (typical) stranded copper pigtail for the connection of surge suppressor modules to the Equipment Bonding Conductor (TEBC). Surge suppressor modules shall be installed at camera-end communications connections, within equipment enclosures. Coordinate locations with Owner.

I. All grounding cables shall be insulated, green or green/yellow jacket, stranded copper.

2.9 CABLE AND CONDUIT LABELS

A. Labels, Outdoor Fiber and UTP Cable Sheath, Printed, Adhesive, Self-laminating

► Label stock color and text to provide high-contrast with cable sheath
HellermannTyton CT2012X2 Telephone cable marker
HellermannTyton CT2003X2 Fiber optic cable marker

B. Labels, Horizontal Cable Sheath, Printed, Adhesive, Self-laminating

► Label stock color and text to provide high-contrast with cable sheath. Labeling surface shall accommodate label text printed minimum 9-point font. Label shall be water-proof and self-laminating, lamination extending minimum 0.25" past label text field when installed on cable sheath.
BRADY XSL-31-427-YL Vinyl self-laminating, 1"Wx1.5"L (0.5") black on yellow (UTP sheaths, typ.)
BRADY XSL-21-427-YL Vinyl self-laminating, 1"Wx1.5"L (0.75") black on yellow (PLTC sheaths, typ.)
Or Approved Equal
Note: See Part III for specifications.

C. Labels, Ceiling grid or equipment enclosures, Printed, Adhesive, Laminated

► Label stock color and text to provide high-contrast with mounting surface. Label width shall be chosen to accommodate printed text readable while standing on the ground below the labeled equipment or component.
P-TOUCH TZ-series laminated black text on white (for applying to dark-colored surfaces)
P-TOUCH TZ-series laminated white text on black (for applying to light-colored surfaces)
Or Approved Equal
Note: See Part III for specifications.

PART 3 – EXECUTION

3.1 GENERAL SUMMARY OF SCOPE OF WORK

A. Furnish shop drawings for each facility camera installation for review and approval by Owner. Shop drawings shall clearly show the proposed routing and locations of all system elements, including conduits, enclosures, cameras, etc. Camera mounting methods shall be indicated on the drawings for each location. Camera unit associations with equipment enclosures shall be indicated. As part of the Shop Drawing development process, review and coordinate with Owner in the field to determine and confirm locations of system elements. Locations shall be chosen to meet the needs of the project (e.g. camera views), and to maintain security and serviceability of the elements (e.g. location of equipment enclosures). Shop drawings shall be updated to reflect the progress and any field or coordination changes made. Shop drawings shall be provided regularly to the Owner, in CAD and PDF formats.

B. Camera locations on plan are proposed with respect to intended view. Prior to rough-in, Contractor shall field-coordinate with the Owner the actual installed location and position of each camera unit. Placement shall afford a clear, identifiable image of subjects passing through the intended field of view. Camera placement and model selection shall be conducted with consideration for tamper-resistance.

C. It is the responsibility of the contractor to ensure system operating conditions are met for each camera added or changed. This may require providing additional camera server(s) beyond what may be described in this scope. Contractor shall configure and/or augment the camera system in

order to provide the required video storage and analytics performance for all cameras installed under this scope of work. Configuration of existing system shall be reviewed to determine available capacity and expansion required; components and changes to effect required operation and expansion are included in this scope of work.

1. Video storage: 30-days of live video retention under continuous-recording conditions at full frame rate (30 frames per second).
2. Analytics: Allowance for up to (2) zones of motion detection, per camera unit. Motion detection zone use, placement and configuration are at the discretion of, and shall be coordinated and reviewed with, the Owner.
3. Furnish analysis of current system capacity and performance, and impact of proposed changes to demonstrate and document the final configuration will adequately support the cameras installed in this scope.

D. Provide and install cabling pathway hardware as required. Label each component of pathway. Label texts shall be coordinated with the Owner; Owner shall be provided up-to-date as-build or shop drawing information to facilitate the development of label texts.

E. Conduct final camera view tests at installed locations with Owner participation. Make adjustments (including both hardware and software) as necessary to achieve the required view.

3.2 SITE-SPECIFIC SUMMARY OF SCOPE OF WORK

A. Refer to project bid package description for Base and Alternate scope determination.

B. Green Hall Room 206

1. UTP cabling installation is Category 6 in these facilities.
2. Furnish and install new conduit and fittings, pull boxes, cables, connectors, cameras, etc. to provide for the security camera installation in this facility.
3. Program all cameras and integrate into Honeywell DVM system.

3.3 INSTALLATION

A. Conduit used for communications outlet installations (or in general, the conveyance of communications cable) shall have no more than 180-degrees in bends (including offsets) before an intermediate pull-box is installed.

B. All conduit bends shall be swept, manufactured bends.

C. Conduit bushings shall be installed prior to cable installation to afford cable protection during and after installation.

D. Liquid-tight flexible metallic conduit (LFMC) shall be free of burrs at cut ends and equipped with suitable throat liners to protect installed cable.

E. Field-terminated cabling, both point-to-point hybrid cables and UTP patch cords, shall have sheath ends finished with shrink tubing (diameter selected with respect to cable diameter and final shrink diameter); rip cords shall be trimmed to a minimum of 2” exposed for future access and folded back along sheath prior to heat-shrink installation.

F. Cabling, including patch cords, fiber, and/or UTP, from cameras, communications outlet locations, and/or equipment enclosures, shall be extended in conduit to accessible ceiling location in such a manner as to provide security and protection from damage and tampering. No cabling shall be exposed in an open space.

G. Nylon zip ties are not suitable for attaching or bundling communications cable. Hook-and-loop ties shall be used to attach cable to supports and for securing bundles.

H. As indicated, or as required to complete the project, install 2" or 4" penetrations through walls to provide for cabling pathway space (coordinate size selection with Owner). Install Wiremold Flamestopper fittings on both ends to complete a rated penetration assembly.

I. As indicated, or as required to complete the project, install 4" penetrations through floors to provide for cabling pathway space. Floor penetration assemblies in spaces not specifically dedicated as IT equipment M/IDF (typically storage rooms, also any room where cable damage is identified as a concern; coordinate with Owner to review specific spaces) shall consist of EMT installed through the floor and extended above finished ceiling. Install Wiremold Flamestopper fittings on both ends to complete a rated penetration assembly.

J. Annular space around any conduit penetration shall be filled on both sides with approved firestop caulk.

K. Installation of cabling, components and/or ancillary equipment within communications equipment rooms shall be coordinated with Owner. Shop drawings for all installations shall be submitted for review and acceptance prior to installation.

L. 120V power circuits and receptacles installed within the project scope of work shall be labeled at the panel, receptacle and any intermediary junction with Circuit and Panel ID, including Room number of panel or outlet at the respective opposite ends. Label shall be machine-generated, typically affixed to outlet enclosure (i.e. not faceplate).

M. Prior to camera rough-in, the contractor shall provide a per-location camera visual test and demonstration in the presence of the Owner. The contractor shall work with the Owner to determine a camera model, camera lens, and position/orientation for the camera, and demonstrate the actual camera view and location based on Owner requirements and field conditions. The contractor shall acquire owner approval for each camera configuration and installation location prior to installation. Visual demonstration tests shall utilize the camera model/elements proposed to be installed at each location. Furnish images and descriptions demonstrating the established camera view and mounting details for acceptance. Indicate the established camera locations and associated details on Shop Drawings.

N. Following the completion of camera installation and turn-up of system, contractor shall work with Owner to confirm all elements of camera installation that contribute to achieving the goal of the intended view(s) and system operation.
The elements to confirm shall include (but are not limited to), the following:
    Focus
    Zoom
    Azimuth/elevation
    Video bit rates
    Recording conditions and motion detection zones
    Camera unit configuration, per-unit and within the video system
    Camera unit ID within video system, respective of camera unit location
Execute final tuning and adjustments and confirm proper camera operation.

3.4 FINAL ACCEPTANCE AND WARRANTY

A. Final project acceptance shall include, but is not limited to:

1. Successful resolution of punch list items

2. Completion of required testing
3. Completion of camera final setup and confirmation
4. Completion of Consultant's construction administration site visits
5. Provision of complete as-build documentation depicting actual installation, including routing, locations, identifiers, etc.
6. Provision of documentation for cabling systems Certification and Warranty by each manufacturer (not Contractor)

B. The Contractor shall provide, in writing, a minimum of a one-year (1-year) [Unless Otherwise Noted] no-cost warranty policy against materials and workmanship supplied under this contract.

3.5 COPPER CABLE TESTING

A. Testing of the cabling installed under this contract shall be done in accordance with industry standard practices (e.g. BICSI, IEEE, ANSI, etc.) and the cable manufacturer's certification specifications.

B. The contractor shall provide the make, model and serial number of each piece of test equipment to be used as well as proof of calibration within thirty (30) days of the actual test date.

C. The contractor shall maintain a log documenting the name of the installer performing the test; the date and time of the test; and the specific testing device used. It is also recommended, but not required, that the contractor keep an audit trail documenting the lot from which each cable run was installed (e.g. PO number, manufacturer's date and lot code, etc.).

D. The Contractor shall deliver the test results to the Owner and Consultant after testing has been completed. Test results shall be provided in native tester format, PDF and electronic format (e.g., Excel spreadsheet or CSV file). Software required to read native tester format shall be provided free of charge.

E. Category, UTP permanent link cable shall be tested in accordance with CAT 6/6a/7/ISO-F standards. Cable shall be tested for compliance with these standards and the standards of the Manufacturer's structured cabling system extended warranty. Tests and testing documentation shall include:

1. Insertion Loss
2. NEXT
3. PSNEXT
4. ACR-N
5. PSACR-N
6. FEXT
7. ACR-F
8. PSACR-F
9. Return Loss
10. Wire Map and continuity
11. Propagation Delay
12. Delay Skew
13. Electrical length

F. The Category, UTP test equipment (tester) shall comply with the accuracy requirements for Level III field testers as defined in ANSI/TIA-1152. The tester including the appropriate interface adapter must meet the specified accuracy requirements. The accuracy requirements for the permanent link test configuration (baseline accuracy plus adapter contribution) are specified in Table 2 of ANSI/TIA-1152.

3.6 MATERIAL HANDLING

A. All materials (except bulk materials) are to be delivered in manufacturer's unopened containers, fully identified with manufacturer's name, trade name, type, class, grade, size and color as appropriate.

B. Materials shall be suitably sheltered from the damage and theft, but readily accessible for inspection. Store items subject to moisture damage in dry, clean spaces. Upon written request, Owner will try to accommodate Contractor's reasonable request for on-site storage space, but this is not guaranteed. Bidder must submit a request for on-site storage space with the bid response.

C. All materials furnished shall be new, unused, clean, undamaged, free of corrosion and free from mechanical or electrical defects.

3.7 CABLE SUPPORT

A. The Contractor shall ensure that all telecommunications cable supports are fully installed before proceeding with cable installation. At no times shall cables be installed and left unsupported.

B. Only cable support hardware described in this Specification shall be used. Except for industry standard cable-pulling equipment, temporary or ad hoc cable supports shall not be used.

C. Support hardware must be mounted securely to building structural components such as the floor slab above, structural steel, or concrete beams. Do not mount support hardware to ceiling panel supports, ductwork, piping, electrical conduit, or other non-structural members. Cables may not sag more than eight inches (8") between cable supports.

D. Cables shall not come in contact with any surface or equipment that is not part of the cable pathway system.

E. To prevent damage, plastic cable ties shall not be used to bundle, organize or manage UTP or fiber optic cables.

3.8 DAMAGE AVOIDANCE

A. Do not place unprotected telecommunications cables on the floor at any time. If cables must be placed on the floor where they may to be damaged, the Contractor shall ensure that the cables are protected from damage by substantial covers or platforms.

B. As they relate to Contractor's activities, Contractor shall maintain a clean and orderly work environment. Debris generated by the Contractor shall be disposed of properly at the end of each work shift.

C. The cable manufacturer's recommended minimum bend radius must be maintained at all times.

D. Do not exceed the maximum allowable pulling tension when installing the cable. Do not tightly coil, sharply bend or crimp cables. If the Owner has substantive reason to believe that cables have been subjected to potential damage during installation, the Owner reserves the right to require the Contractor to replace the designated cables even if such cables pass acceptance testing procedures.

E. Keep all items protected before and after installation from dust, dirt and moisture. It shall be the contractor's responsibility to ensure the integrity of these protective measures throughout the life of the project.

F. At all times during the work required under this Specification the Contractor shall protect all telecommunications equipment from damage including vandalism. Equipment in Telecommunications Rooms shall not be installed until such time as other trades have completed their work in that area so that the equipment will not need to be moved.

3.9 CABLE AND CONDUIT LABELS

A. Labeling system for horizontal cables
The following is a description of the typical labeling system anticipated to be employed for horizontal cabling installed under this contract. Details with respect to codes and identifiers will be specific to the existing installation within each building.

1. SYSTEM: Use a unique, three-syllable alphanumeric designation for each cable; label cable, faceplates, and terminations with the proper component of the designation.

   a. First syllable identifies and locates the communications equipment room where the cable originates, and is based on floor number (b=Basement, 1 =First, etc.) and compass direction of room location relative to the center of the building (N, S, E, W respectively).

   b. Second syllable identifies the primary application purpose (V for Voice or D for Data) of this cable, and identifies and locates the block within the termination field on which cable terminates (letter and two-digit number).

   c. Third syllable identifies the final room number where the cable terminates on a station jack.

   Example:

   Three-syllable identifier for data cable between First floor, West closet, terminal block B13 and office 103B:

   1W-DB13-103B

   Three-syllable identifier for voice cable between Basement floor, East closet, terminal block O03 and room 2:

   BE-VO03-002

2. WORK AREA OUTLET: Furnish and install wrap-around, self-laminating labels for cables within outlet boxes. Furnish and install label within appropriate location on faceplate. Label Text at the workstation end (and patch cords, if included) shall be the first and second syllables of the three-syllable identifier (example: 1W-DB13, BE-VO03).
3. DISTRIBUTION FRAME: Furnish and install wrap-around, self-laminating labels for cables terminated on distribution frame. Furnish and install label within labeling fixture (both sides as applicable) for termination blocks. Label text at the termination block end shall be the second and third syllables of the three-syllable identifier (example: DB13-103B, VO02-002). Furnish and install label holders and label at the beginning of each logical field on the termination frame (WORKSTATION DATA, BUILDING MANAGEMENT, WORKSTATION VOICE, VOICE RISER XXX-YYY)

4. PATCH CORDS: Furnish and install wrap-around, self-laminating labels for patch cords within scope on both ends (typically between workstation outlet location and camera). Label Text each end shall be the first, second and third syllables of the three-syllable identifier (example: 1W-DB13-103B, BE-VO03-002).

5. --GENERAL NOTE--

    a. Labeling must be coordinated with owner
    b. Owner will provide labeling schedule
    c. All labels shall remain visible, e.g. Not be painted over

B. Labeling for conduits feeding cameras shall be applied within 6” of the end of the conduit, at both ends. Label code shall include terminating room numbers and camera identifier. Coordinate with Owner.

C. Cable and equipment labels shall be sized appropriately for the item to which it will be applied and the number of characters to be displayed. Typefaces smaller than 10-point shall not be used; for maximum legibility sans-serif typefaces are preferred.

D. Labels shall be appropriately colored for maximum contrast with surface applied to. Label nomenclature shall be protected by a permanent, water-resistant, transparent top layer.

E. Work area outlets and equipment enclosures located above the ceiling, such as are provided for cameras, will be identified by a machine printed label permanently attached to the ceiling grid. Such a label will be provided in a font large enough to be read from a standing position. The background color of the label must be of a contrasting color to the ceiling elements.

F. Label texts shall be printed on single-piece stock. Adhesive stock shall be sufficiently opaque as to block out any existing line work/markings on the substrate to which it is applied.

G. When labels are applied to round objects such as cables, special attention shall be paid to ensure that the label will not unwrap itself due to stress relief.

H. Labels shall be placed on both ends of cables (no more than six-inches (6”) nor less than four-inches (4”) from the end of the outer sheath).

I. Hand-lettered labels will not be accepted upon completion of the work. Hand-lettered labels may only be used for temporary labeling required during installation. If at any time during the project a label becomes illegible, damaged or removed, the Contractor shall immediately replace it with a satisfactory new label.

END OF DOCUMENT

GREEN HALL
SUITE 206
ALTERATIONS

TCNJ

MEP PROJECT MANUAL

PREPARED BY:

McHugh Engineering Associates, Inc.
136 Poplar Street
Ambler, Pennsylvania 19002

♦

July 23, 2018
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PART 1 - GENERAL

1.01 REFERENCE

A. Requirements established within the portions of this project manual titled Division 1, General Requirements are collectively applicable to the work of this section.
B. Instructions to Bidders, Special Conditions and addenda as issued are part of this specification.
C. Plumbing drawings along with all other project drawings and specifications represent the work of this section.
D. Drawings, Contract, General Conditions and Supplementary Conditions form a part of this section, by reference thereto and shall have the same force and effect as if printed herewith in full. Failure to review these sections shall not relieve the Contractor of his responsibility to fully comply with the terms therein.

1.02 SCOPE

A. Provide labor, material, equipment and supervision necessary to install complete operating plumbing systems as indicated on the drawings and specified herein, including all work at the site and within the proposed construction areas to accomplish the required work.
B. It shall be the contractor's responsibility to coordinate his work and the work of his subcontractors to insure that all the work is covered. He shall designate who is responsible for various portions of work which may overlap so that there is complete coverage of all required work. It is the position of the owner and the A/E that all work is the responsibility of the mechanical contractor within this division of the work.
C. Contractor shall provide all demolition necessary to remove and replace, repair, install new or modify existing work whether it be walls, floors, ceilings, structure, mechanical or electrical required to install his work. Contractor shall replace all work to leave in a finished condition.
D. The plumbing contractor shall remove the portions of the existing plumbing system including fixtures, domestic water piping, soil, waste and vent piping, hangers, supports. Pipe, conduit, and wiring shall be cut back behind wall surfaces, above ceilings, and below floor levels so that a patch can be placed over the opening.
E. All work shown on the drawings and not expressly mentioned in the specifications and all work specified but not shown on the drawings, but necessary for the proper execution of same shall be performed by the contractor. It is not the intent of the drawings and specifications to describe every feature and detail of the work.
F. No additions to the contract amount will be approved for any materials, equipment, or labor to perform additional work unless it can be clearly shown to be beyond the scope and intent of the drawings and specifications.
G. Plumbing contractor's scope of work shall include but not be limited to the following:
    1. Domestic water system and insulation (See Section 22 11 16, 22 07 00 and 22 40 00).
    2. Sanitary and vent system. (See Section 22 13 00)

3. All other work in Division 22.
4. Roof penetrations for plumbing work.
5. Demolition of existing work to accommodate new work.
6. Repair existing areas affected by new construction. Patch, repair and finish to match existing.

1.03 REGULATIONS, CODES, AND STANDARDS

A. Work shall be performed in accordance with the latest adopted codes, amendments, regulations and ordinances of the authorities having jurisdiction. Observe all safety regulations including the requirements of OSHA.
B. Obtain and pay for all permits, connection charges, inspections, and certificates required to complete the work.
C. Latest editions of any referenced standards shall govern.
D. Contractor shall arrange and pay for all tests and inspections specified herein or required by above agencies and furnish required certificate of inspection to owner.
E. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirements shall be followed.

1.04 SUBMISSIONS

A. The procedure for submissions of shop drawings shall be as specified in Division 1, or as a minimum, as indicated below.
B. Furnish submissions of shop drawings and samples of materials and equipment as indicated in these sections, on the drawings, or as directed by the A\E. Submissions will be made in a timely fashion such that adequate time exists to review the drawings, or material, and arrive at the site in accordance with the project schedule.
C. Submissions will not be accepted with work defined as "By Others". Identify contractor by name and with his approval so indicated. Submissions are required prior to purchasing, fabrication, or installation of any material or equipment. Submissions shall be reviewed and certified by the submitting contractor that they are in accordance with the project documents.
D. When requested by the engineer, shop drawings shall be required to be submitted to designated agencies for review and approval prior to submission to the engineer.
E. Contractor shall arrange and pay for all tests and inspections specified herein or required by above agencies and furnish required certificate of inspection to owner.
F. Contractor to forward a copy of submittals which have electrical requirements to the Electrical Contractor (EC) for coordination of voltage, amperage, and phase. Response to be received from EC prior to ordering of equipment by mechanical contractor.
G. Submissions shall include warrantees by the manufacturer for equipment being provided. Submissions for commonly related items such as fixtures, trim, carriers, drains shall be combined in a single brochure with all items being furnished clearly identified.
H. Shop drawings and submittals shall be checked and stamped by the contractor before submitting. They shall conform to measurements made at the site, the contract requirements, and coordinated with all other trades.
I. Specific models in catalog sheets **must** be identified as well as all options, voltages, phases, etc. identified so as to be clear on what is being provided.
J. Contractor and manufacturers shall be responsible for all physical characteristics of the equipment and field verify with final locations, coordinate with floor plans, confirm service access, clearances, confirm equipment arrangements, electrical disconnect clearances, and pathways/travel/access to

the final equipment installation locations. Submission of equipment shop drawing will be deemed evidence of compliance with this requirement. If no shop drawing is submitted, contractor shall be fully responsible for a complete installation and assumes all related costs that affects the contractor and other trades.

1.05 SITE INSPECTION

A. Visit site, inspect and become aware of all conditions which may affect the work. Investigate utilities, protection requirements for adjacent facilities, storage locations, and access to the construction area.
B. Submission of bid will be deemed evidence of having complied with this request. Contractor may not request additional costs for existing conditions which were evident from inspection of the site.

1.06 SUBSTITUTIONS

A. Material and equipment specified shall be deemed as that which the bidder's quotation represents the contractor.
B. Once bids are accepted only that material and equipment listed in the specifications or added by addenda shall be acceptable. Substitution information for inclusion in an addenda must be received by the A\E at least 10 days prior to bid opening. If acceptable, an addenda will be issued which will add the additional acceptable manufacturers or materials and be available for all contractors to consider. It shall be a basic premise that a contractor is a lowest bidder because he utilized substituted materials or equipment as opposed to specified materials or equipment.
C. If the contractor submits alternate equipment, manufacturers, systems, methods, or materials, not specifically identified in the specifications, additional review and investigation time may be required by the engineer. If the engineer determines additional review time is required because of the substitution, then this will be a billable service by the engineer at the rate of $150.00/hr. for such services. Also billable will be any redesign time and revisions to drawings should they be necessary for incorporation into the work. Services will be billable to the contractor making such substitutions and will be payable prior to approval or rejection.
D. Contractor and manufacturers shall be responsible for all physical characteristics of the equipment and field verify with final locations, coordinate with floor plans, confirm service access, clearances, confirm equipment arrangements, electrical disconnect clearances, and pathways/travel/access to the final equipment installation locations. Submission of equipment shop drawing will be deemed evidence of compliance with this requirement. If no shop drawing is submitted, contractor shall be fully responsible for a complete installation and assumes all related costs that affects the contractor and other trades.

1.07 DRAWINGS AND SPECIFICATIONS

A. The drawings are generally diagrammatic and necessary field coordination and adjustment must be provided by the contractor prior to installation. Such deviations to the work to allow for coordination shall be kept to a minimum and any such deviations shall be at no extra cost.
B. When a conflict or contradiction exists either between drawings and specs or between specs or between different drawings or details, the more stringent shall apply.
C. Drawings and specifications are intended to be taken as a whole and each is to supplement the other. It is not intended that all work must be both shown on drawings and specified in the specifications.
D. An item shown on the drawings and not indicated in the specifications is to be understood to be

required for the project. An item specified and not shown on the drawings is to be understood to be required for the project.

E. The architects or engineer's interpretation of the documents shall be binding upon the contractor. If a question arises, the contractor shall ask for an interpretation prior to bidding and an answer shall be issued as an addendum to all bidders.

F. If a question arises after bidding the A/E interpretation shall govern.

1.08 MEASUREMENTS

A. Before ordering materials or commencing with any work, the contractor shall verify all measurements at the building. Coordination of equipment, materials, spaces, and dimensions are the responsibility of the contractor.

1.09 PROGRESS SCHEDULE

A. Provide a project schedule which shall show start, sequence of each type of work, milestone schedule, and completion of each type of work, with overall completion date.

1.10 COST SCHEDULE

A. Provide a detailed cost breakdown indicating labor and material amounts for various types of work.

B. AIA forms are required for this submission.

1.11 COMPLETION

A. The contractor shall deliver to the owner, with his request for final payment, copies of all manufacturer's guarantees, equipment instructional manuals, a complete set of all final shop drawings, catalog cuts, service contracts, and other items as may be required elsewhere in the documents.

1.12 OFFICE

A. The contractor shall set up his job office (desk) where directed by the owner.

1.13 STORAGE

A. Material shall be stored only where directed by the owner.

1.14 SANITARY

A. The contractor will at his own expense, provide and maintain in a sanitary condition, a portable chemical toilet.

B. Toilet will be located where directed by the owner.

PART 2 - PRODUCTS

2.01 GENERAL

A. All material shall be new and of present day manufacture.
B. All material and equipment shall be in conformance with accepted trade standards.
C. Whenever equipment or material is referred to in the singular, such as "the fan", it shall be deemed to apply to as many such items as may be necessary to complete the installation.
D. The word “provide” means “furnish and install complete, tested, and adjusted as necessary with all accessories, covers, escutcheons”. The word “piping” means pipe, fitting, controls, valves and hangers as required for a complete system.

2.02 MOTORS

A. Incorporate latest IEEE and NEMA standards.
B. All copper windings with ball bearings.
C. Indoors; drip proof, 40 degree C rise.
D. Outdoors; totally enclosed 55 degree C rise.
E. Motors to be premium efficiency with PF in excess of 0.9.

2.03 MOTOR STARTERS AND CONTACTORS

A. Fractional with horsepower up to ½ HP; electrical contract.
B. Polyphase and single phase above ½ HP: this contract.
C. Electrical contractor shall install all starters except for those provided as an integral part of equipment.
D. Polyphase starters shall be magnetic combination type, across-the-line electrically operated, electrically held, three pole assemblies, with arc extinguishing characteristics, silver to silver renewable contacts, 3 pole thermal bi-metallic, red run pilot light, individual phase protection, with overload heaters matched to motors installed and with 4 auxiliary contact, Hand-off-Auto switch, and control transformer.
E. For single phase motors above ½ HP provide magnetic combination single phase motor starters with overloads, non-fusible disconnect switch, red run pilot light, integral 120 volt control transformer with dual primary fusing auxiliary contacts.
F. Starters shall be as manufactured by G. E., Siemens, Square "D" or Cutler-Hammer or equivalent.

2.04 EQUIPMENT START UP

A. Verify that equipment is operating within warranty requirements.
B. Advise owner and A/E at least two days prior.
C. Verify proper operation. Obtain signed statement by manufacturer or his representative that equipment is operating within warranty requirements. Submit statement to A/E.

2.05 LUBRICATION

A. Lubricate all equipment in accordance with manufacturer’s instructions.
B. Lubricate prior to start up.
C. Provide one years’ supply of lubricants to the owner.

2.06 OPERATING INSTRUCTIONS AND MANUALS

A. Properly and fully instruct owner’s personnel in the operation and maintenance of all systems and equipment.
B. Insure that the owner's personnel are familiar with all operations to carry on required activities.
C. Such instruction shall be for each item of equipment and each system as a whole.
D. Manual shall include all instructions on operation, maintenance, repair parts list, lubrication requirements, brochures, catalogue cuts, wiring diagrams, control sequences, service requirements, piping diagrams, names and addresses of vendors, suppliers and emergency contacts. Three manuals shall be provided.
E. Provide to the owner any special tools necessary to operate any of the equipment.

2.07 DRAIN PANS

A. All water heaters mounted above the floor shall be provided with drain pans. Drain to suitable discharge point acceptable to owner and A/E. To be visible outfall.
B. Drains shall slope down in direction of flow at 1" per 10 feet.

PART 3 - EXECUTION

3.01 PROTECTION

A. Plug or cap open ends of piping systems and conduit.
B. Stored materials shall be covered to prevent damage by inclement weather, sun, dust, or moisture.
C. Protect all installed work until accepted in place by the owner. Cover plumbing fixtures.
D. Do not install plates, polished metal escutcheons, and other finished devices until masonry, tile, and painting operations are complete or protect otherwise.
E. Protect all existing or new work from operations which may cause damage such as hauling, welding, soldering, painting, insulating, and covering.

3.02 WORKMANSHIP

A. Install all work neat, trim, and plumb with building lines.
B. Install work in spaces allocated.
C. Cutting and patching shall be performed by skilled tradesmen normally employed for the work involved.

3.03 FASTENERS, HANGERS, AND SUPPORTS

A. Furnish and install all hangers and supports required to suspend, mount, or hang the work.
B. Furnish and install all miscellaneous steel angles, channels, beams, clips, brackets, and anchors to hang or support the work. Provide submissions for review.
C. Install concrete inserts before concrete is poured.
D. Drilled inserts shall not be loaded to more than 1/4 rated capacity with a minimum of 200 lbs.
E. Powder driven fasteners shall not be allowed for piping larger than 2", or for equipment. When used they shall not be loaded more than 1/8 rated capacity with a minimum of 200 lbs.
F. All hangers, miscellaneous steel, braces, and supports shall be galvanized, cadmium plated, or painted with corrosion resistant primer and finish coat of epoxy enamel.

G. Piping shall be supported from adjustable clevis type hangers with insulation pipe saddles at not more than 8 foot centers up to 1 1/4" dia. and 10 foot centers above 1 1/4" dia. Piping shall not support other piping.
H. Support vertical piping at floor levels. Piping shall have split rings.
I. Provide and install lintels where required for mechanical work and not indicated on architectural or structural drawings.
J. Furnish steel framing for roof openings and floor openings. Submit details for review.

3.04 SLEEVES

A. All piping passing through floors or walls shall have sleeves unless holes are cored. Sleeves shall be 16 gage galvanized steel in non-bearing walls, 10 gage galvanized steel for bearing walls, and schedule 40 galvanized pipe in floors. Sleeves shall accommodate insulation. This shall not apply to sprinkler piping.
B. Sleeves passing through foundation walls not exposed to interior spaces or sleeves passing through slab on grade may be schedule 40 PVC.
C. Wall sleeves shall finish flush with wall.
D. Floor sleeves shall extend 1 inch above floor.
E. Sleeves in walls between interior spaces and unexcavated, exterior, crawl, or backfilled spaces shall be made watertight with "Link-Seal" modular wall and casing seal. Casing shall be schedule 40 galvanized pipe with anchor flange.

3.05 PLATES

A. Furnish and install chrome plated plates wherever piping passes into finished areas.
B. Plates shall be securely fastened to piping or building construction.
C. Floor plates shall cover one inch floor extension.

3.06 OFFSETS, TRANSITIONS, MODIFICATIONS

A. Furnish and install all offsets necessary to install the work and to provide clearance for the other trades.
B. Maintain adequate headroom and clearance as directed by the A/E.
C. Ductwork transitions necessary to accommodate available space or clearance requirements shall be contract requirements.
D. Incidental modifications necessary to the installation of the systems shall be made as necessary and at the direction of the A/E.
E. Rises and drops of piping systems shall be provided as required and where directed to allow for clearances to other construction. Drains shall be installed at no additional cost to the owner. The contractor shall allow for such occurrences in his bid.
F. Piping and equipment shall be so arranged as to not pass in front of windows, doors, access panels, access doors, coil removal or filter removal space or service clearance areas. Do not install within 3'-0" clearance of electrical panel fronts.

3.07 RECESSES

A. Furnish information to the general contractor as to sizes and locations of recesses required to install panels, boxes, grilles, and other equipment or devices which are to be recessed into walls.
B. Make offsets or modifications as required to suit final locations.

3.08 LABELING

A. All equipment shall be provided with permanent black laminated white core labels with 3/8" letters.

3.09 FLASHING AND COUNTER-FLASHING

A. Roof drains and overflow drains shall have counter-flashing fittings. General contractor shall provide flashing.
B. Piping and conduit through the roof shall be flashed by the General Contractor. This contractor shall furnish counter-flashing.

3.10 ACCESS

A. Locate all equipment, valves, devices and controllers which may need service in accessible places.
B. Where access is not available; access panels shall be provided. Furnish prime painted steel access doors to the General Contractor for installation.
C. Access doors shall be 16 gauge frames and 22 gauge steel door. Access doors in fire rated walls shall have a "B" label for 1 ½ hours.
D. Maintain clearances for tube removal, coil pulls, and filter removal.

3.11 WIRING

A. Power wiring shall be provided by the Division 16 Electrical Contractor. This contractor shall furnish all 3 phase starters, pushbuttons, and controllers necessary to operate the equipment. The Electrical Contractor shall store and install the electrical devices and furnish and install the power wiring.
B. Control wiring shall be furnished and installed under Division 15 portion of the work. Wiring for controls is control wiring whether it is line voltage or low voltage.
C. All wiring shall be in accordance with the NEC.
D. Pushbuttons shall be maintain-contact type.
E. Refer to the electrical specifications for wiring methods.
F. Plenum rated cable is required for control wiring.

3.12 UTILITIES

A. Do not interrupt any utility or service without adequate previous notice and scheduling with the owner.
B. Refer to Division 1 for requirements for providing temporary utilities.

3.13 GUARANTEE

A. All work shall be guaranteed to be free from defects for a period of one year of operation from date of acceptance by the owner unless otherwise specified. Material and labor for first year warranty is to be provided.
B. Guarantee shall be extended for all non-operational periods due to failure within the guarantee period.
C. Compressor system components shall be provided with a 5 year factory warranty. Material only for years 2 through 5 is required.

3.14 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material and equipment in manufacturer's original cartons or on skids.
B. Store material in dry enclosures or under protective coverings out of way of work progress.
C. Handle so as to prevent damage to product or any surrounding material.

3.15 MANUFACTURERS' NAMES

A. Manufacturers' names are included herein to establish those suppliers who may provide products for this project subject to the requirements of the specifications. Although a manufacturer's name may appear as an acceptable supplier it is not understood that a standard product is acceptable. Products must also meet the technical, performance, and physical requirements of the project as well as being named in the specification. Any deviations from this must be acknowledged at bid time by the supplier and he shall be solely responsible for any and all costs associated with the application of his product in the project.
B. A design cannot be prepared which accommodates the installation of all suppliers and is not intended to do so. If certain modifications must be made to accommodate one particular supplier's equipment it shall be considered the contractor's responsibility to arrange for such accommodations and be financially responsible for same.

3.16 AS-BUILT DRAWINGS

A. At the completion of the work the contractor shall furnish reproducible as-built drawings to the A/E for approval. The drawings shall indicate all work installed and its actual size and location. If acceptable, the A/E will submit the as-built drawings to the owner as record drawings. If not acceptable, the A/E will return the drawing to the contractor to make corrections as required. The contractor will resubmit for approval.
B. The as-built drawings shall indicate measured dimensions of underground lines and other concealed work.

3.17 PENETRATION SEALING

A. All penetrations of fire walls, smoke walls, and floors by pipes or wiring shall be sealed to prevent the flow of gasses or smoke.
B. The sealant shall be foamed in place between the penetrant and the adjacent floor or wall with DOW Corning RTV foam or equivalent by 3M, Hilti, or Chase foam.
C. The installation shall meet the approval of the authority having jurisdiction.
D. Penetrations through rated surfaces shall have a UL rating equivalent to the adjacent surfaces.

3.18 CUTTING AND PATCHING INTERIOR SURFACES

A. Respective contractor shall install all hangers, supports, pipe sleeves in floors, walls, partitions, ceilings and roof slabs as construction progresses to permit their work to be built into place and to eliminate unnecessary cutting of construction work.
B. All cutting of concrete, or other material for the passage of piping through floors, walls, partitions and ceiling shall be done by the respective contractor where necessary to install his work. Respective contractor will close all such openings around piping with materials equivalent to that removed. All exposed surfaces shall be left in suitable condition for refinishing without further work.

C. Contractor shall patch and repair any existing openings created by the demolition work in floors, walls, partitions, and ceilings not being reused for the new construction.

3.19 INVERTS AND ELEVATIONS

A. Indicated inverts and elevations of existing utilities are approximate and based on the best information available.
B. Upon of award of contract, contractor shall verify in the field all such information and report any discrepancies before proceeding with work. Contractor shall be responsible for extra work caused by his failure to verify inverts and elevations.

3.20 CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

A. Furnish and install final connections to equipment furnished in other parts of the specification or furnished by the owner. Provide drainage connections, vent connections, water connections, fuel gas connections, gas connections to the fixtures or equipment. Plumbing connections shall include valved supplies and trapped waste connections.

3.21 CONNECTIONS TO EXISTING SYSTEMS

A. The contractor shall be responsible for connecting new systems to existing systems.
B. Arrange for outages with the owner.
C. Contractor shall shut down and drain existing systems.
D. Contractor shall cut in, weld, solder, or thread, and make connections compatible with existing systems.
E. Provide new valves at connections to existing systems.
F. Contractor shall refill existing and fill new systems.
G. Contractor shall purge air from systems, both new and existing.
H. Contractor shall place existing systems back into operation.
I. Contractor shall repair and replace any insulation damaged or removed during connection procedures.

3.22 COORDINATION DRAWINGS

A. Provide 3/8" = 1'-0" scale drawings showing all coordinated ductwork, piping, conduit, and equipment of all trades.
B. The sheet metal shop drawings may be used as the basis of these drawings.
C. Show ductwork, walls, beams, steel, drainage piping, domestic water piping, HVAC piping, sprinkler piping, light fixtures, electrical conduit and equipment.
D. Contact other disciplines and obtain information to identify fully coordinated systems.
E. Submit for review and approval to the A/E.
F. Provide all dimensional data and necessary clearances to other trades for installation of fixtures and equipment within casework and counter tops.
G. Work shall not proceed until coordination is completed and all conflicts, issues, sequences etc., are resolved.

3.23 WELDING

A. All electric power for arc welding shall be supplied by the contractor performing the work.

3.24 VEHICLES

A. Vehicle access to the site will be as directed by the owner.

3.25 RUBBISH DISPOSAL

A. Burning of debris on the site shall not be permitted. All debris, refuse, and waste shall be removed from the premises at regular intervals. No accumulation shall be permitted.

3.26 PROTECTION

A. Maintain all public walks and access ways.
B. Erect and maintain barricades, warning signs, and other protective means as may be directed by the owner for protection of all persons and property from injury or damage.

3.27 SCAFFOLDING

A. The contractor shall at his own expense, install, operate, protect, and maintain temporary services such as scaffolding, material hoists, access walks, etc., as may be required.

3.28 UTILITIES

A. The contractor may use the existing water and electric power for temporary construction needs.
B. The owner will direct where these services may be tapped.
C. Those services that are used during construction, but are to remain, shall be refurbished to as new condition before turning back to the owner.

3.29 CLEANUP

A. Remove all visible temporary tags or labels as well as any protective coverings and wrappings from fixtures and equipment.
B. Remove all spots, stains, soil, paint, spackle, and other foreign matter from all finished work.
C. Clean and polish all plumbing fixtures.
D. Remove all trash and debris from the premises.

3.30 MOUNTING HEIGHTS

A. Contractor to coordinate all mounting heights with all trades and architect prior to rough-in.

3.31 WORK COMPLETION

A. The contractor shall promptly correct work rejected by the engineer failing to conform to the requirements of the contract documents, whether discovered before or after substantial completion and whether or not fabricated, installed or completed. Costs of correcting such rejected work, including additional testing and inspections and compensation for the engineer’s services and expenses made necessary thereby, shall be at the contractor’s expense.

3.32 SHOP DRAWING REQUIREMENTS

A. The following is a list of required shop drawings for the project. Not all items may be identified, and it is the responsibility of the contractor to submit additional shop drawings where indicated in the specifications.

PLUMBING	**DATE REC'D**	**ACTION**	**DATE REC'D**	**ACTION**
COORDINATION DRAWINGS				
VALVES, STRAINERS				
BACKFLOW PREVENTORS				
PIPING/FITTINGS/LABELING				
DRAINS				
FIXTURES/TRIM/CARRIERS				
INSULATION A. HANDICAP COVERS B. DOMESTIC WATER PIPING C. TANKS D. EQUIPMENT				
AS-BUILT DRAWINGS/CAD DISK				
WARRANTIES AND GUARANTEES				
OPERATIONS AND MAINTENANCE MANUALS				
INSTRUCTIONS				
TESTS/CERTIFICATIONS				
EMERGENCY AND MANUFACTURER CONTACTS				

END OF SECTION

SECTION 22 07 00 - PLUMBING INSULATION AND COVERING

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 22 05 00 for requirements which are applicable to this section.
B. Refer to IBC 2015 Building Codes, National Standard Plumbing Code, and ASHRAE 90.1-2013.

1.02 SCOPE

A. The work included in this specification consists of furnishing all labor, materials, accessories, and equipment necessary for the insulation of all plumbing; piping and plumbing equipment. Said work shall be completed in strict accordance with the insulation section of the specifications and applicable drawings.
B. All work is subject to the terms and conditions of the contract.

1.03 SUBMITTALS

A. Submit shop drawings which indicate complete material data, a list of materials proposed, and indicate thickness and density of material for individual services.
B. Submit fabrication instructions for pipe fitting and valve insulation.
C. Submit manufacturers joining recommendations for butt joints and longitudinal seams.

1.04 QUALITY ASSURANCE

A. Install insulation in accordance with the manufacturer’s instructions.
B. Insulation shall be installed by skilled workmen regularly engaged in insulation work.
C. Protect insulation and covering until accepted in place by the owner.

PART 2 - PRODUCTS

2.01 HOT WATER PIPING

A. Includes;
   1. Domestic Hot Water Supply
   2. Domestic Hot Water Return
B. Material; Fiberglass bonded with resins to form circular pipe sleeves and pipe covering segments with factory applied all service jacket.
C. Fire Safety; U.L. listing flame spread rating of 25 and smoke developed rating of 50.
D. Thermal conductivity of 0.276 at 90 degrees F.
E. Thickness per ASHRAE STD. 90.1-2013:
   Piping System Types: PIPE SIZES / INSULATION THICKNESS

	Temp	Up to 1"	Up to 1.5"	Up to 4"	Up to 8"	8" & Up
1. Hot Water						
a) Domestic HW/HWR	100-130	1"	1"	1.5"	1.5"	1.5"

F. Joints; Pressure sealing lap strips for longitudinal joints and minimum 3" pressure sealing butt strips for circumferential joints.
G. Valves and Fittings; Fiberglass insulation of same thickness as pipe with pre-molded fitting covers.
H. Contractor shall insulate all exposed domestic water and drainage piping under all handicapped lavatories and sinks with pre-formed insulation kit with PVC jacket similar to Lav, Guard as manufactured by Truebro. There shall be no sharp or abrasive surfaces under the handicapped lavatories.
I. Manufacturer: Johns-Manville Micro-Lok, Knauf Lo Smoke PVC.

2.02 COLD WATER PIPING

A. Includes;
   1. Domestic Cold Water: 1/2" insulation
B. Material; Fiberglass bonded with resins to form circular pipe sleeves with factory applied jacket of Kraft paper bonded to aluminum foil, reinforced with fiberglass yarn. Vapor barrier.
C. Fire safety; Flame spread rating of 25 or less and a smoke density rating of 50 or less and a fuel contributed rating of 50 as tested by ASTM E 84-75.
D. Thermal Conductivity; 0.25 at 100 degrees.
E. Joints; Pressure sealing lap strips for longitudinal joints and 3 inch wide wrapping strips for butt joints. Strips shall be sealed with an adhesive meeting NFPA 90 25-50 code such as:
   1. CMC17-465
   2. H. B. Fuller Co., Foster Products Division 85-20
   As an option the contractor may utilize pressure sensitive butt strips.
F. Valves and Fittings; Fiberglass insulation of same thickness as pipe with pre-molded fitting covers. Seal edges of fitting cover with vapor barrier mastic adhesive or vapor barrier strip tape which shall overlap the insulation and fitting cover by 2 inches.
G. Manufacturer: Johns-Manville Micro-Lok, Knauf Proto Lo Smoke PVC.

2.03 MANUFACTURERS

A. Johns-Manville, Certain Teed, Owens/Corning, Knauf, Armstrong.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Do not install until all piping systems are tested.
B. Do not install until the building is closed in.
C. Perform work at ambient and equipment temperatures as recommended by the adhesive

manufacturer.

D. Work in the area which may damage the insulation shall have been completed prior to the start of insulating. The owner shall not be responsible for subsequent charges arising out of damage to insulation caused by work progressing in the area after insulation has been installed.

E. All insulation shall be continuous through wall, ceilings and floor openings except where fire safe materials are required.

F. Insulation on all cold surfaces must be applied with a continuous unbroken vapor seal. Hangers, supports, anchors, etc. that are secured directly to cold surfaces shall be adequately insulated and vapor sealed to prevent condensation.

G. Finish insulation neatly at hangers, supports, and other protrusions.

H. Secure with tacks or tape as required.

I. Install inserts on all hangers. Inserts between the pipe and pipe hanger shall consist of rigid pipe insulation of thickness equal to the adjoining insulation and shall be provided with vapor barrier where required. Insert length shall be 10" long for pipes up to and including 2-1/2" and 12" for pipes over 2-1/2".

J. Pipe insulation shall have metal shields. The shields shall be installed between hanger support and the pipe insulation. Shield shall be formed to fit the insulation and shall extend up to the center line of the pipe. Shield shall be 10" long for pipes up to and including 2-1/2" and 12" for pipes over 2-1/2"

K. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.

L. All insulation shall be secured at sufficient intervals to prevent sagging, gaps, or spaces from occurring. Any repairs necessary for 1 year due to improper installation shall be provided by Contractor at no cost to Owner.

M. Contractor shall insulate all exposed domestic water and drainage piping under all handicapped sinks with pre-formed insulation kit with PVC jacket similar to, Lav-Guard as manufactured by Truebro. There shall be no sharp or abrasive surfaces under the handicapped lavatories.

3.02 SURFACE PREPARATION

A. Pipe and equipment shall be clean, oil free, and dry prior to the application of insulation.

END OF SECTION

SECTION 22 11 16 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 22 05 00 for requirements which are applicable to this section.
B. Requirements of the National Standard Plumbing Code.
C. Requirements of the International Code, local plumbing code and the authorities having jurisdiction shall be made a part of these specifications.
D. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirements shall be followed.

1.02 SUBMITTALS

A. Submit shop drawings and manufacturers data for all materials specified herein.
B. Submit manufacturer’s certificates of conformance with referenced codes.

1.03 WORK INCLUDED

A. Revisions to existing water piping to accommodate renovations with new fixtures.
B. Testing of new piping.
C. Disinfection of new piping.
D. All domestic water piping including extension from present water service.
E. Hot water heaters, piping, circulators, and controls.
F. Miscellaneous piping and plumbing accessories specified herein or necessary to complete the work.
G. Include all labor, material and provide for the inspection and supervision of the work to insure that installations are correct and complete and that equipment installed is within manufacturer’s warranty requirements.
H. Connections to all fixtures and equipment including those furnished by others.

PART 2 - PRODUCTS

2.01 DOMESTIC WATER PIPING

A. Above ground: Hard drawn ASTM B-88 specification for seamless copper water tube, Type "L".
B. Fittings wrought copper solder joint ANSI B16.22.
C. Fittings for underground to be bronze heavy flared type.

2.02 SHOCK ABSORBERS

A. Standard: P.D.I. WH-201.
B. Manufacturer: Josam, Zurn, Wade, J. R. Smith.

2.03 HOSE BIBBS

A. Finished areas: Polished chrome plated brass. ½ inch with 3/4 inch hose connection and vacuum breaker.
B. Mechanical areas: Rough brass, ½ inch with 3/4 inch hose connection and vacuum breaker.

2.04 BACKFLOW PREVENTORS

A. Backflow preventor shall be of the reduced pressure type complete with service valves and strainer similar to Watts Regulator No. 909 SQT.

PART 3 - EXECUTION

3.01 DOMESTIC WATER PIPING

A. Extend and connect to all fixtures and outlets requiring water service.
B. Hangers and supports for copper tubing or pipe shall be copper or copper plated steel.
C. After testing, all domestic water piping shall be disinfected as herein specified.
D. Furnish and install shock absorbers on all branches to fixture groups or toilet rooms with flush valves or solenoid valves including equipment which functions with solenoid valves. Install so as to be accessible for maintenance.
E. Furnish and install isolation ball valves at main connections on all branches to groups of fixtures located by separate rooms except in back-to-back arrangements.
F. Furnish and install vacuum breakers on all outlets in the domestic water system which may have a hose attachment including wall hydrants, hose bibbs, and washer connections.
G. All piping shall be installed on the interior conditioned side of the building insulation.
H. Test piping at 150 psi for not less than 4 hours. Drop in pressure shall not be more than 1 psi. Utilize gage graduated in 1 psi increments. If the test is under the jurisdiction of a local inspector his requirements may be used provided they are not less than above. Furnish signed report of test and witness.

3.02 SOLDER JOINTS

A. Utilize 95/5 tin antimony solder ONLY. JOINTS MADE WITH 50/50 SOLDER WILL BE REQUIRED TO BE REPLACED.

3.03 BACKFLOW PREVENTORS

A. Furnish and install reduced pressure backflow preventors on any domestic water connection to another piping system. Backflow preventers shall be approved by the water company.
B. Provide means for proper disposal of any relief discharge from the backflow preventor.

3.04 CROSS CONNECTION (HOT AND COLD WATER)

A. Equipment or fixtures having single nozzle or valved discharge controls in addition to the normal hot

and cold water valved controls shall be provided with individual check valves in the supplies to prevent cross feeding through the fixture connection.

3.05 DISINFECTION

A. After final testing for leaks, all domestic cold, hot and hot recirculation water systems shall be thoroughly flushed to remove all foreign material. Before placing the system into service, engage a qualified service organization, United Water Treatment Company or approved equal, to disinfect the systems as follows:

1. Isolate existing piping systems, which need to be disinfected.
2. At a point not more than 10 feet downstream from the beginning of the new main, water entering the new main shall receive a dose of chlorine fed at a constant rate such that the water will have not less than 200 mg/L free chlorine or through a 3/4" hose connection, sufficient sodium hypochlorite will be meter pumped into system to produce a free available chlorine residual of not less than 200 mg/L.
3. Proceed upstream from the point of chlorine application opening all faucets and taps until chlorine is detected. Close faucets and connections when chlorine is evident. Tag all faucets and taps with proper labeling to ensure water is not used during sterilization procedure. The chlorine shall be applied continuously for a sufficient period to develop a solid column, or “slug,” of chlorinated water that will, as it moves through the main, expose all interior surfaces to a concentration of approximately 200 mg/L for three hours.
4. When chlorinated water has been brought to every faucet and connections with a minimum of 200 mg/L chlorine, retain this water in system for three hours.
5. Concentrated chlorine shall not be allowed to remain in the system for more than six hours. Also, special procedures shall be used to dispose of heavily concentrated chlorine in an environmentally acceptable and approved manner.
6. As the chlorinated water flows past fittings and valves, related valves, connections and/or hydrants shall be operated so as to disinfect appurtenances and pipe branches.
7. At the end of the retention period, no less than 100 ppm of chlorine shall be present at the extreme end of the system.
8. Proceed to open up all faucets and connections and thoroughly flush all new lines until the chlorine residual in the system is less than 1.0 ppm.
9. Obtain representative water samples from the system for analysis by an approved licensed independent testing laboratory.
10. Water samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulphate as required by Standard Methods for the Examination of Water and Wastewater.
11. If all samples tested for coliform organisms are negative, a letter and laboratory report shall be submitted by the contractor to the engineer, certifying successful completion of the disinfection and testing. If any samples tested indicate the presence of coliform organisms, the entire disinfection process shall be repeated.

END OF SECTION

SECTION 22 13 00 - DRAINAGE SYSTEMS

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 22 05 00 for requirements which are applicable to this section.
B. Requirements of the International codes and authorities having jurisdiction shall be made a part of these specifications.
C. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirement shall be followed.

1.02 QUALITY ASSURANCE:

A. Install piping to meet requirements of National Standard Plumbing Code.
B. Provide manufacturer's certificate that materials meet or exceed minimum requirements as specified.
C. All Piping and fittings shall be marked with the collective trademark of the Cast Iron Soil Pipe Institute.

1.03 SUBMITTALS:

A. Certificates: Submit manufacturer's certificates of conformance to applicable codes.
B. Test Reports: Submit copies of test reports.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Cast Iron no-hub ASTM-A88 and CISPI-301 with heavy duty banded stainless steel sleeves and rubber sleeve joints for all above ground sanitary drainage and storm drainage piping 2" and larger. Cast iron soil pipe and fittings shall bear the markings of the Cast Iron Soil Pipe Institute and conform to CISPI Standard 301. Copper type DWV for up to 1 1/2".
B. Dishwasher drainage piping to be cast iron no-hub.

2.02 CLEANOUTS:

A. Slab on grade; J. R. Smith 433OV with nickel bronze cover and rim.
B. Concrete Floors; J. R. Smith 4020 with nickel bronze cover. Provide flashing flange where floor is waterproofed.
C. Tile Floors; J. R. Smith 4140 with 1/8" recess. Provide flashing flange where floor is waterproofed.
D. Carpet Floors; J. R. Smith 4020 with carpet marker.
E. Walls; J. R. Smith 4510-4725 cover plate chrome finish.

F. Equivalents by Josam, Zurn, Watts and Wade are acceptable.

2.03 FLOOR DRAINS

A. Finished spaces unless otherwise noted on plans; J. R. Smith 2010-A with nickel bronze strainer. Provide trap primer connection and heel proof grate. Flashing collar. In traffic areas provide heel proof strainer.
B. Unfinished spaces; J. R. Smith 2110 with cast iron grate and flashing flange.

2.04 TRAP PRIMERS

A. Smith No. 2699 cast bronze trap primer with 1/2" connections. Provide primered drains with Smith No. 2695 or 2696 cast iron trap primer adaptors.
B. Trap primers for multiple floor drains shall consist of the appropriate model with distribution unit as manufactured by Precision Plumbing Products.
C. All trap primers shall be accessibly located and installed in strict accordance with the manufacturer's recommendations.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine areas to receive piping for:
   1. Defects that adversely affect execution and quality of work.
   2. Deviations beyond allowable tolerance for piping clearances.
B. Start work only when conditions are satisfactory.

3.02 INSTALLATION

A. Piping Layout:
   1. Complete installation to present a neat, orderly appearance.
   2. Do not block openings or passageways with piping.
   3. Run piping parallel to walls of building, unless otherwise indicated.
   4. Keep piping free from contact with structure or installed items.
   5. All changes in direction to be made with "Y" branches or 1/8 bends.
   6. Provide cleanouts at base of all stacks, at changes in direction of piping and at 50 foot intervals. Cleanouts shall be line size up to 4 inch and 4 inch for piping over 4 inch.
B. Workmanship:
   1. Examine pipe and fittings before installation and assure no defective materials are incorporated.
   2. Keep inside of pipes and fittings free of dirt and debris.
   3. Installation of cast iron soil pipe to conform to Cast Iron Soil Pipe Institute Standards Handbook.
C. Placement:
   1. Vertical Piping:
      a. Secure at sufficiently close intervals to keep pipe in alignment, and to support weight

of pipe and contents.
b. Install risers, stacks, etc. as directly as possible to roof.
c. Install supports at each floor.

2. Horizontal Piping, Suspended;
   a. Support at sufficiently close intervals to prevent sagging and to maintain alignment. Not to exceed: cast iron piping to be supported at pipe joints not to exceed 10'-0" spacing. Copper and steel piping to be supported on 12' spacing. Copper tubing up to 1 1/4" to be supported on 6' spacing, over 1 1/4" to be supported on 10'-0" spacing. Other piping to be supported per manufacturer.
   b. Install hangers and supports at least 18 inches from each joint regardless of pipe length.
   c. Install hangers at the ends of all runs or branches and at each change of direction or alignment.
   d. Gasketed or mechanical joints piping shall be securely braced or clamp and rod restrained to prevent horizontal movement where the transition from the vertical of the horizontal occurs. Branches must be secured to prevent movement in any direction by use of sway bracing.
3. Horizontal Piping, Underground;
   a. Lay piping on firm bed for entire length of trench except where supports are provided.
   b. Employ partial backfilling and cradling to hold pipe in secure position during backfilling operations.
   c. Firmly brace piping laid on grade prior to embedment in concrete.
4. DWV Schedule 40;
   a. PVC pipe installation practices including support bracing and solvent welding shall be in strict conformance with the manufacturer's recommendations.
   b. Expansion joints shall be installed at every floor for waste and soil system stack, alternate floors for vent stacks rain water conductors and condensate stacks.

3.03 TESTING

A. Disconnect all equipment and devices which may be damaged by test pressures.
B. Plug or cap lines.
C. Test each piping system for leaks in accordance with the local inspector’s test code.
D. Repair all leaks noted.
E. Minimum test shall be to fill system to top vent stack and not show a drop of more than 3 inches for 1 hour. Test shall be performed before piping is concealed.
F. Secure certificate from municipal inspector of an acceptable test.

END OF SECTION

SECTION 22 40 00 - PLUMBING FIXTURES AND EQUIPMENT

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 22 05 00 for requirements which are applicable to this section.
B. Reference the requirements of the National Standard Plumbing Code.
C. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirements shall be followed.

1.02 WORK INCLUDED

A. Furnish and install plumbing fixtures, drains, trim, supplies, fastening devices, carriers, valves, and traps for a complete installation.
B. Provide connection of all services for soil, waste, vent, cold and hot water.

1.03 SUBMITTALS

A. Submit shop drawings of all materials and products described in this section and indicated on the drawings including that listed in the schedule on the drawings.
B. Fixture submittals shall include all trim associated with the china. They shall be incorporated in a single brochure with the items being furnished clearly identified.

1.04 QUALITY ASSURANCE

A. All fixtures shall be unmarked, uncracked, true, and level. All shall be warranted to not craze, color, or scale.
B. Installations shall conform to the National Standard Plumbing Code.
C. Install all materials and equipment in accordance with the manufacturer’s instructions and within the warranty requirements.
D. All handicapped fixtures and their installation shall conform to the American's with Disabilities Act and Fair Housing Amendments Act (Public Law 101-336).

PART 2 - PRODUCTS

2.01 TRAPS

A. Fixture traps shall be approved self-cleaning type with clean-outs.
B. Traps shall be chrome plated cast brass.
C. Traps for lavatories shall be 1 1/4" x 1 1/2" size.

2.02 TRIM

A. All trim including faucets, waste fittings, strainers, valves, supplies, nipples, and escutcheons shall be chrome plated cast brass.
B. Exposed water supply pipes shall be chrome plated brass with loose key angle stops.
C. Fixtures shall be selected for low water consumption and limited to 1.6 gallons per flush on toilets, 2.2 gpm for faucets, and 2.5 gpm for showers.
D. Public toilet room faucets shall be self-closing metering type when not indicated for the handicapped. Handicapped faucets shall conform to ADA requirements. Provide an approved temperature limiting device that conforms to ASSE 1070.
E. All lavatories in public toilet rooms shall have grid type strainers.
F. Waste connections for handicapped lavatories shall be offset. Contractor is to insulate all exposed domestic water and waste piping with pre-fab PVC jacketed assemblies.
G. For fixtures requiring flush valves, they shall be of the low consumption type. Selection shall be for use with the specified fixture.
H. 'Eco-drive' sensor operated flush valves and faucets shall include regenerating battery system.
I. Water cooler shall have a bottle filler on the low station.

2.03 CARRIERS

A. All wall hung fixtures shall be provided with floor mounted carriers.
B. Floor mounted carriers shall have short pattern foot supports.
C. Carriers for lavatories shall be concealed arm type.

2.04 MANUFACTURERS

A. Fixtures; Kohler, American-Standard, Crane.
B. Seats; Church, Olsonite, Sperzel, Benke, Bemis.
C. Carriers; Josam, Zurn, Wade, J.R. Smith, Watts.
D. Faucets; American-Standard, Speakman, Chicago, Kohler, Delta, Moen.
E. Supplies and Traps; McGuire, Brass Craft, Central Brass, Kohler, American-Standard.
F. Shower, Mop Receptors and Laundry Trays; Crane/Fiat, Stern/Williams.
G. Flush Valves - Sloan Royal
H. Insulation for handicapped lavatory and sink connections insulations - Truebro McGuire "pro-wrap".
· Alternate flush valve selection where budget consideration requires a lower cost valve and competitive pricing.

2.05 VACUUM BREAKERS

A. Furnish and install vacuum breakers on all fixtures, trim, or faucets arranged for the connection of hoses. Vacuum breaker shall be located on the discharge side of the valve.
B. Vacuum breakers shall be chrome plated brass where exposed and rough brass where concealed.
C. Install vacuum breakers on wall hydrants, hose bibbs, janitor sinks and wherever else required by code.

2.06 WATER CLOSET CARRIER SELECTION.

A. Carrier fitting configuration shall be suitable for the stack location shown on the drawings. Carriers to permit handicapped mounting of fixtures shall be utilized where required.

2.07 FLOOR MOUNTED FLOOR OUTLET WATER CLOSET CONNECTION

A. Smith No. 9230 cast bronze closet flange assembly complete with 5/16" bronze bolts, chromium plated nuts and washers and approved gasket.

2.08 FLAT-SLAB LAVATORIES-CONCEALED ARMS ON FLOOR SUPPORT

A. Lavatories shall be punched for Smith No. 0700-E fixture support. Fixture support shall have chromium plated threaded escutcheons and concealed arms with positive mechanical locking device. Arms shall be fully adjustable after installation of finished wall. Uprights shall be high-strength steel with block bases securely bolted to floor construction.

PART 3 - EXECUTION

3.01 INSTALLATIONS

A. Plumbing fixtures shall be installed in a manner to afford easy access for cleaning. Where practical, all piping from fixtures shall run in the most direct route to the wall.
B. Furnish and install all waste connections, traps, water supplies, final connections, etc., to equipment furnished under other portions of the specifications.
C. Make final connections to all soil, waste, vent, and water piping to the fixtures.
D. Fixtures shall be set level and in proper alignment with adjacent walls and fixtures.
E. All wall hung fixture carriers to be securely anchored to the slab.
F. Attach floor mounted water closets to floor with wax seal and lag screws. Do not use lead flashing to hold closet in place.
G. Securely bolt all fixtures to the building construction and unless special hangers are indicated, provide hangers and/or carriers designed specifically for the fixtures by the fixture manufacture.
H. Caulk all wall hung fixtures between fixture and wall with sealant specified in Section 07900. Provide sealant at all points where mop receptor meets walls and floor.
I. Install electric water coolers with "P" trap and water shutoff valve within cabinet.
J. Contractor shall insulate all exposed domestic water and drainage piping under all handicapped lavatories and sinks with pre-formed insulation kit with PVC jacket similar to, Lav-Guard as manufactured by Truebro. There shall be no sharp or abrasive surfaces under the handicapped lavatories.
K. Contractor shall provide an offset tailpiece for the handicapped lavatory's drain piping to create space for wheelchair access.

3.02 MOUNTING HEIGHTS

A. Mount fixtures with the following heights above finished floor, except where noted otherwise.

Water Closet:	
Standard	15 inches to top of bowl rim
Handicapped	17 - 19 inches to top of seat

Lavatory:

Standard	31 inches to top of basin rim
Handicapped	34 inches to top of basin rim or 29 inches to underside of basin apron

Water Closet Flush Valves:

Standard	11 inches minimum above bowl rim
Handicapped	Center line of flush valve shall not exceed 44" above fin. fl. Flush valve handle shall extend toward the wide side of stall.

Water Closet Tank Type - Trip Lever

Standard	Per manufacturer
Handicapped	Locate on tank side toward wide side of stall.

END OF SECTION

DIVISION 23 - HVAC

SECTION 23 05 00 - STANDARD CONDITIONS FOR HVAC

PART 1 - GENERAL

1.01 REFERENCE

A. Requirements established within the portions of this project manual titled Division 1, General Requirements are collectively applicable to the work of this section.
B. Instructions to Bidders, Special Conditions and addenda as issued are part of this specification.
C. Mechanical, Plumbing, and HVAC drawings along with all other project drawings and specifications represent the work of this section.
D. Drawings, Contract, General Conditions and Supplementary Conditions form a part of this section, by reference thereto and shall have the same force and effect as if printed herewith in full. Failure to review these sections shall not relieve the Contractor of his responsibility to fully comply with the terms therein.

1.02 SCOPE

A. Provide all labor, material, equipment, and supervision necessary to extend and modify the existing heating system in its entirety including, but not limited to; hot water supply and return piping, controls, supports, hangers, and all associated insulation, equipment pads, and accessories. Patch and repair openings in walls, floors, and ceilings, for piping and equipment that was removed. Pipe, conduit, ductwork and wiring shall be cut back behind wall surfaces, above ceilings, and below floor levels so that a patch can be placed over the opening.
B. Provide labor, material, equipment and supervision necessary to install complete operating mechanical systems as indicated on the drawings and specified herein, including all work at the site and within the proposed construction areas to accomplish the required work.
C. It shall be the contractor’s responsibility to coordinate his work and the work of his subcontractors to insure that all the work is covered. He shall designate who is responsible for various portions of work which may overlap so that there is complete coverage of all required work. It is the position of the owner and the A/E that all work is the responsibility of the mechanical contractor within this Division of the work.
D. Contractor shall provide all demolition necessary to remove and replace, repair, install new or modify existing work whether it be walls, floors, ceilings, structure, mechanical or electrical required to install his work. Contractor shall replace all work to leave in a finished condition.
E. All work shown on the drawings and not expressly mentioned in the specifications and all work specified but not shown on the drawings, but necessary for the proper execution of same shall be performed by the contractor. It is not the intent of the drawings and specifications to describe every feature and detail of the work.
F. No additions to the contract amount will be approved for any materials, equipment, or labor to perform additional work unless it can be clearly shown to be beyond the scope and intent of the drawings and specifications.
G. HVAC contractor's scope of work shall include but not be limited to the following:
    1. Air distribution system, associated ductwork, devices, equipment and insulation.

2. Condensate drainage system (air conditioner units). Condensate pumps.
3. Roof penetrations for mechanical work and all associated roof work.
4. Exhaust systems.
5. Demolition of existing work for new work.
6. Test Balance & Adjust.
7. Repair existing areas affected by the new construction. Patch, repair and finish to match existing.
8. Automatic Temperature Control System.
9. All other work identified in Division 23 and/or on the mechanical drawings except that identified as plumbing or fire protection work.
10. Contractor shall not utilize new HVAC equipment for temporary heating purposes. Temporary heating is to be provided as described under the architect's general conditions. Contractor is to protect all HVAC equipment during construction and cover all ductwork openings.

1.03 REGULATIONS, CODES, AND STANDARDS

A. Work shall be performed in accordance with the latest adopted codes, amendments, regulations and ordinances of the authorities having jurisdiction. Observe all safety regulations including the requirements of OSHA.
B. Obtain and pay for all permits, connection charges, inspections, and certificates required to complete the work.
C. Latest editions of any referenced standards shall govern.
D. Contractor shall arrange and pay for all tests and inspections specified herein or required by above agencies and furnish required certificate of inspection to owner.
E. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirements shall be followed.

1.04 SUBMISSIONS

A. The procedure for submissions of shop drawings shall be as specified in Division 1, or as a minimum, as indicated below.
B. Furnish submissions of shop drawings and samples of materials and equipment as indicated in these sections, on the drawings, or as directed by the A\E. Submissions will be made in a timely fashion such that adequate time exists to review the drawings, or material, and arrive at the site in accordance with the project schedule.
C. Submissions will not be accepted with work defined as "By Others". Identify contractor by name and with his approval so indicated. Submissions are required prior to purchasing, fabrication, or installation of any material or equipment. Submissions shall be reviewed and certified by the submitting contractor that they are in accordance with the project documents.
D. When requested by the engineer, shop drawings shall be required to be submitted to designated agencies for review and approval prior to submission to the engineer.
E. Contractor shall arrange and pay for all tests and inspections specified herein or required by above agencies and furnish required certificate of inspection to owner.
F. Contractor to forward a copy of submittals which have electrical requirements to the Electrical Contractor (EC) for coordination of voltage, amperage, and phase. Response to be received from EC prior to ordering of equipment by mechanical contractor.
G. Submissions shall include warrantees by the manufacturer for equipment being provided. Submissions for commonly related items such as fixtures, trim, carriers, drains shall be combined in

a single brochure with all items being furnished clearly identified.

H. Shop drawings and submittals shall be checked and stamped by the contractor before submitting. They shall conform to measurements made at the site, the contract requirements, and coordinated with all other trades.

I. Specific models in catalog sheets **must** be identified as well as all options, voltages, phases, etc. identified so as to be clear on what is being provided.

1.05 SITE INSPECTION

A. Visit site, inspect and become aware of all conditions which may affect the work. Investigate utilities, protection requirements for adjacent facilities, storage locations, and access to the construction area.

B. Submission of bid will be deemed evidence of having complied with this request. Contractor may not request additional costs for existing conditions which were evident from inspection of the site.

1.06 SUBSTITUTIONS

A. Material and equipment specified shall be deemed as that which the bidder's quotation represents.

B. Once bids are accepted only that material and equipment listed in the specifications or added by addenda shall be acceptable. Substitution information for inclusion in an addenda must be received by the A\E at least 10 days prior to bid opening. If acceptable, an addenda will be issued which will add the additional acceptable manufacturers or materials and be available for all contractors to consider. It shall be a basic premise that a contractor is a lowest bidder because he utilized substituted materials or equipment as opposed to specified materials or equipment.

C. If the contractor submits alternate equipment, manufacturers, systems, methods, or materials, not specifically identified in the specifications, additional review and investigation time may be required by the engineer. If the engineer determines additional review time is required because of the substitution, then this will be a billable service by the engineer at the rate of $150.00/hr. for such services. Also billable will be any redesign time and revisions to drawings should they be necessary for incorporation into the work. Services will be billable to the contractor making such substitutions and will be payable prior to approval or rejection.

D. If the contractor elects to submit alternate equipment, manufacturers, systems, methods, or materials, not specifically identified in the drawings and specifications, it is the contractor's responsibility to coordinate the work with other trades and pay for any associated costs with the substitution or change.

1.07 DRAWINGS AND SPECIFICATIONS

A. The drawings are generally diagrammatic and necessary field coordination and adjustment must be provided by the contractor prior to installation. Such deviations to the work to allow for coordination shall be kept to a minimum and any such deviations shall be at no extra cost.

B. When a conflict or contradiction exists either between drawings and specs or between specs or between different drawings or details, the more stringent shall apply.

C. Drawings and specifications are intended to be taken as a whole and each is to supplement the other. It is not intended that all work must be both shown on drawings and specified in the specifications.

D. An item shown on the drawings and not indicated in the specifications is to be understood to be required for the project. An item specified and not shown on the drawings is to be understood to be required for the project.

E. The architects or engineer's interpretation of the documents shall be binding upon the contractor. If a question arises, the contractor shall ask for an interpretation prior to bidding and an answer shall be issued as an addendum to all bidders.
F. If a question arises after bidding the A/E interpretation shall govern.

1.08 MEASUREMENTS

A. Before ordering materials or commencing with any work, the contractor shall verify all measurements at the building. Coordination of equipment, materials, spaces, and dimensions are the responsibility of the contractor.

1.09 PROGRESS SCHEDULE

A. Provide a project schedule which shall show start, sequence of each type of work, milestone schedule, and completion of each type of work, with overall completion date.

1.10 COST SCHEDULE

A. Provide a detailed cost breakdown indicating labor and material amounts for various types of work.
B. AIA forms are required for this submission.

1.11 COMPLETION

A. The contractor shall deliver to the owner, with his request for final payment, copies of all manufacturer's guarantees, equipment instructional manuals, a complete set of all final shop drawings, catalog cuts, service contracts, and other items as may be required elsewhere in the documents.

1.12 OFFICE

A. The contractor shall set up his job office (desk) where directed by the owner.

1.13 STORAGE

A. Material shall be stored only where directed by the owner.

1.14 SANITARY

A. The contractor will at his own expense, provide and maintain in a sanitary condition, a portable chemical toilet.
B. Toilet will be located where directed by the owner.

PART 2 - PRODUCTS

2.01 GENERAL

A. All material shall be new and of present day manufacture.
B. All material and equipment shall be in conformance with accepted trade standards.
C. Whenever equipment or material is referred to in the singular, such as "the fan", it shall be deemed to apply to as many such items as may be necessary to complete the installation.
D. The word “provide” means “furnish and install complete, tested, and adjusted as necessary with all accessories, covers, escutcheons”. The word “piping” means pipe, fitting, controls, valves and hangers as required for a complete system.

2.02 MOTORS

A. Incorporate latest IEEE and NEMA standards.
B. All copper windings with ball bearings.
C. Indoors; drip proof, 40 degree C rise.
D. Outdoors; totally enclosed 55 degree C rise.
E. Motors over 10 HP to be premium efficiency with PF in excess of 0.9.

2.03 MOTOR STARTERS AND CONTACTORS

A. Fractional with horsepower up to ½ HP; electrical contract.
B. Polyphase and single phase above ½ HP: this contract.
C. Electrical contractor shall install all starters except for those provided as an integral part of equipment.
D. Polyphase starters shall be magnetic combination type, across-the-line electrically operated, electrically held, three pole assemblies, with arc extinguishing characteristics, silver to silver renewable contacts, 3 pole thermal bi-metallic, red run pilot light, individual phase protection, with overload heaters matched to motors installed and with 4 auxiliary contact, Hand-off-Auto switch, and control transformer.
E. For single phase motors above ½ HP provide magnetic combination single phase motor starters with overloads, non-fusible disconnect switch, red run pilot light, integral 120 volt control transformer with dual primary fusing auxiliary contacts.
F. Starters shall be as manufactured by G. E., Siemens, Square "D", Cerus or Cutler-Hammer.

2.04 EQUIPMENT START UP

A. Verify that equipment is operating within warranty requirements.
B. Advise owner and A/E at least two days prior.
C. Verify proper operation. Obtain signed statement by manufacturer or his representative that equipment is operating within warranty requirements. Submit statement to A/E.

2.05 LUBRICATION

A. Lubricate all equipment in accordance with manufacturer’s instructions.
B. Lubricate prior to start up.
C. Provide one year’s supply of lubricants to the owner.

2.06 OPERATING INSTRUCTIONS AND MANUALS

A. Properly and fully instruct owner’s personnel in the operation and maintenance of all systems and equipment.

B. Insure that the owner's personnel are familiar with all operations to carry on required activities.
C. Such instruction shall be for each item of equipment and each System as a whole.
D. Manual shall include all instructions on operation, maintenance, repair parts list, lubrication requirements, brochures, catalogue cuts, wiring diagrams, control sequences, service requirements, piping diagrams, names and addresses of vendors, suppliers and emergency contacts. Three manuals shall be provided.
E. Provide to the owner any special tools necessary to operate any of the equipment.

2.07 DRAIN PANS

A. Provide auxiliary galvanized steel condensate drain pan with 1" MPT drain connection for all interior fan coil units, cooling coils, heat pumps, and any other cooling equipment requiring condensate removal. Drain to suitable discharge point acceptable to owner and A/E. Drain lines shall be separate and independent of A/C unit drain system unless provided with interlocked water sensing switch.
B. Drains shall slope down in direction of flow at 1" per 10 feet.

PART 3 - EXECUTION

3.01 PROTECTION

A. Cover duct openings during construction.
B. Plug or cap open ends of piping systems and conduit.
C. Stored materials shall be covered to prevent damage by inclement weather, sun, dust, or moisture.
D. Protect all installed work until accepted in place by the owner. Cover plumbing fixtures and lighting fixtures.
E. Do not install plates, polished metal escutcheons, thermostats, and other finished devices until masonry, tile, and painting operations are complete or protect otherwise.
F. Protect all existing or new work from operations which may cause damage such as hauling, welding, soldering, painting, insulating, and covering.

3.02 WORKMANSHIP

A. Install all work neat, trim, and plumb with building lines.
B. Install work in spaces allocated.
C. Cutting and patching shall be performed by skilled tradesmen normally employed for the work involved.

3.03 FASTENERS, HANGERS, AND SUPPORTS

A. Furnish and install all hangers and supports required to suspend, mount, or hang the work.
B. Furnish and install all miscellaneous steel angles, channels, beams, clips, brackets, and anchors to hang or support the work. Provide submissions for review.
C. Install concrete inserts before concrete is poured.
D. Drilled inserts shall not be loaded to more than 1/4 rated capacity with a minimum of 200 lbs.
E. Powder driven fasteners shall not be allowed for piping larger than 2", or for equipment. When used

they shall not be loaded more than 1/8 rated capacity with a minimum of 200 lbs.

F. All hangers, miscellaneous steel, braces, and supports shall be galvanized, cadmium plated, or painted with corrosion resistant primer and finish coat of epoxy enamel.

G. Piping shall be supported from adjustable clevis type hangers with insulation pipe saddles as indicated in the piping system specification sections. Piping shall not support other piping.

H. Support vertical piping and ductwork at floor levels. Piping shall have split rings. Ductwork shall have 1 1/2" angle iron frames.

I. Provide and install lintels where required for mechanical work and not indicated on architectural or structural drawings.

J. Furnish steel framing for roof openings and floor openings. Submit details for review.

3.04 SLEEVES

A. All piping passing through floors or walls shall have sleeves unless holes are cored. Sleeves shall be 16 gage galvanized steel in non-bearing walls, 10 gage galvanized steel for bearing walls, and schedule 40 galvanized pipe in floors. Sleeves shall accommodate insulation. This shall not apply to sprinkler piping.

B. Sleeves passing through foundation walls not exposed to interior spaces or sleeves passing through slab on grade may be schedule 40 PVC.

C. Wall sleeves shall finish flush with wall.

D. Floor sleeves shall extend 1 inch above floor.

E. Sleeves in walls between interior spaces and unexcavated, exterior, crawl, or backfilled spaces shall be made watertight with "Link-Seal" modular wall and casing seal. Casing shall be schedule 40 galvanized pipe with anchor flange.

3.05 PLATES

A. Furnish and install chrome plated plates wherever piping passes into finished areas.

B. Plates shall be securely fastened to piping or building construction.

C. Floor plates shall cover one inch floor extension.

3.06 OFFSETS, TRANSITIONS, MODIFICATIONS

A. Furnish and install all offsets necessary to install the work and to provide clearance for the other trades.

B. Maintain adequate headroom and clearance as directed by the A/E.

C. Ductwork transitions necessary to accommodate available space or clearance requirements shall be contract requirements.

D. Incidental modifications necessary to the installation of the systems shall be made as necessary and at the direction of the A/E.

E. Rises and drops of piping systems shall be provided as required and where directed to allow for clearances to other construction. Drains shall be installed at no additional cost to the owner. The contractor shall allow for such occurrences in his bid.

F. Ductwork, piping, conduit, and equipment shall be so arranged as to not pass in front of windows, doors, access panels, access doors, coil removal or filter removal space or service clearance areas. Do not install within 3'-0" clearance of electrical panel fronts.

3.07 RECESSES

A. Furnish information to the general contractor as to sizes and locations of recesses required to install panels, boxes, grilles, and other equipment or devices which are to be recessed into walls.
B. Make offsets or modifications as required to suit final locations.

3.08 EQUIPMENT SETTING

A. Furnish and install as a minimum, spring vibration isolators under any equipment 5 HP and over and rubber-in-shear vibration isolation under all equipment less than 5 HP. This shall apply to residential installations.

3.09 LABELING

A. All equipment, panels, controls, safety switches, and devices shall be provided with permanent black laminated white core labels with 3/8" letters.
B. This shall also apply to all controllers, remote start/stop push buttons, equipment cabinets, and where directed by the A/E.
C. This shall not apply to local room thermostats and light switches.

3.10 FLASHING AND COUNTERFLASHING

A. Piping and conduit through the roof shall be flashed by the General Contractor. This contractor shall furnish counterflashing.
B. Ductwork through the roof and roof mounted duct connected equipment shall be provided with prefabricated roof curbs. General contractor shall flash. This contractor shall counterflash.
C. Structural dunnage for roof mounted equipment shall be flashed and counterflashed. Prefabricated roof curbs may be utilized.

3.11 ACCESS

A. Locate all equipment, valves, devices and controllers which may need service in accessible places.
B. Where access is not available; access panels shall be provided. Furnish prime painted steel access doors to the General Contractor for installation.
C. Access doors shall be 16 gauge frames and 22 gauge steel door. Access doors in fire rated walls shall have a "B" label for 1 ½ hours.
D. Maintain clearances for tube removal, coil pulls, and filter removal.

3.12 WIRING

A. Power wiring shall be provided by the Division 26 Electrical Contractor. This contractor shall furnish all 3 phase starters, pushbuttons, and controllers necessary to operate the equipment. The Electrical Contractor shall store and install the electrical devices and furnish and install the power wiring.
B. Control wiring shall be furnished and installed under Division 23 portion of the work. Wiring for controls is control wiring whether it is line voltage or low voltage.
C. All wiring shall be in accordance with the NEC.
D. Pushbuttons shall be maintain-contact type.
E. Refer to the electrical specifications for wiring methods.
F. Plenum rated cable is required for control wiring.

3.13 UTILITIES

A. Do not interrupt any utility or service without adequate previous notice and scheduling with the owner.
B. Refer to Division 1 for requirements for providing temporary utilities.

3.14 CUTTING AND PATCHING EXTERIOR SERVICES

A. This contractor shall be responsible for returning disturbed areas to original condition where excavation for utilities has been required.
B. Cut and patch paved areas to match original surfaces.
C. Properly tamp backfill before finishing surfaces.
D. Concrete pavements and curbs shall be formed and poured to match adjacent areas.
E. Grass areas shall be sodded and maintained until established growth is achieved.

3.15 GUARANTEE

A. All work shall be guaranteed to be free from defects for a period of two years of operation from date of acceptance by the owner unless otherwise specified. Material and labor for first year warranty is to be provided.
B. Guarantee shall be extended for all non-operational periods due to failure within the guarantee period.
C. Compressors and refrigeration system components shall be provided with a 5 year factory warranty. Material only for years 2 through 5 is required.

3.16 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material and equipment in manufacturer’s original cartons or on skids.
B. Store material in dry enclosures or under protective coverings out of way of work progress.
C. Handle so as to prevent damage to product or any surrounding material.

3.17 MANUFACTURERS’ NAMES

A. Manufacturers’ names are included herein to establish those suppliers who may provide products for this project subject to the requirements of the specifications. Although a manufacturer’s name may appear as an acceptable supplier it is not understood that a standard product is acceptable. Products must also meet the technical, performance, and physical requirements of the project as well as being named in the specification. Any deviations from this must be acknowledged at bid time by the supplier and he shall be solely responsible for any and all costs associated with the application of his product in the project.
B. A design cannot be prepared which accommodates the installation of all suppliers and is not intended to do so. If certain modifications must be made to accommodate one particular supplier’s equipment it shall be considered the contractor’s responsibility to arrange for such accommodations and be financially responsible for same.

3.18 AS-BUILT DRAWINGS

A. At the completion of the work the contractor shall furnish reproducible as-built drawings to the A/E for approval. The drawings shall indicate all work installed and its actual size and location. If

acceptable, the A/E will submit the as-built drawings to the owner as record drawings. If not acceptable, the A/E will return the drawing to the contractor to make corrections as required. The contractor will resubmit for approval.

B. The as-built drawings shall indicate measured dimensions of underground lines and other concealed work.

3.19 PENETRATION SEALING

A. All penetrations of fire walls, smoke walls, and floors by ducts, pipes, conduit, or wiring shall be sealed to prevent the flow of gasses or smoke.
B. The sealant shall be foamed in place between the penetrant and the adjacent floor or wall with DOW Corning RTV foam or equivalent by 3M, Hilti, or Chase foam.
C. The installation shall meet the approval of the authority having jurisdiction.
D. Penetrations through rated surfaces shall have a UL rating equivalent to the adjacent surfaces.
E. All other penetrations of walls either above ceilings or exposed shall be closely sealed around the penetration with caulking or packing to prevent flow of air or sound through the wall.

3.20 CUTTING AND PATCHING INTERIOR SURFACES

A. Respective contractor shall install all hangers, supports, pipe sleeves in floors, walls, partitions, ceilings and roof slabs as construction progresses to permit their work to be built into place and to eliminate unnecessary cutting of construction work.
B. All cutting of concrete, or other material for the passage of piping and ductwork through floors, walls, partitions and ceiling shall be done by the respective contractor where necessary to install his work. Respective contractor will close all such openings around piping, ductwork, and conduit with materials equivalent to that removed. All exposed surfaces shall be left in suitable condition for refinishing without further work.
C. Contractor shall patch and repair any existing openings created by the demolition work in floors, walls, partitions, and ceilings not being reused for the new construction.

3.21 INVERTS AND ELEVATIONS

A. Indicated inverts and elevations of existing utilities are approximate and based on the best information available.
B. Upon of award of contract, contractor shall verify in the field all such information and report any discrepancies before proceeding with work. Contractor shall be responsible for extra work caused by his failure to verify inverts and elevations.

3.22 CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS

A. Furnish and install final connections to equipment furnished in other parts of the specification or furnished by the owner. Provide drainage connections, vent connections, water connections, fuel gas connections, duct connections, gas connections to the fixtures or equipment. Plumbing connections shall include valved supplies and trapped waste connections.

3.23 CONNECTIONS TO EXISTING SYSTEMS

A. The contractor shall be responsible for connecting new systems to existing systems.
B. Arrange for outages with the owner.

C. Contractor shall shut down and drain existing systems.
D. Contractor shall cut in, weld, solder, or thread, and make connections compatible with existing systems.
E. Provide new valves at connections to existing systems.
F. Contractor shall refill existing and fill new systems.
G. Contractor shall purge air from systems, both new and existing.
H. Contractor shall place existing systems back into operation.
I. Contractor shall repair and replace any insulation damaged or removed during connection procedures.

3.24 COORDINATION DRAWINGS

A. Provide 3/8" = 1'-0" scale drawings showing all coordinated ductwork, piping, conduit, and equipment of all trades.
B. The sheet metal shop drawings may be used as the basis of these drawings.
C. Show ductwork, walls, beams, steel, drainage piping, domestic water piping, HVAC piping, sprinkler piping, light fixtures, electrical conduit and equipment.
D. Contact other disciplines and obtain information to identify fully coordinated systems.
E. Submit for review and approval to the A/E.
F. Provide all dimensional data and necessary clearances to other trades for installation of fixtures and equipment within casework and counter tops.
G. Work shall not proceed until coordination is completed and all conflicts, issues, sequences etc., are resolved.

3.25 WELDING

A. All electric power for arc welding shall be supplied by the contractor performing the work.

3.26 VEHICLES

A. Vehicle access to the site will be as directed by the owner.

3.27 RUBBISH DISPOSAL

A. Burning of debris on the site shall not be permitted. All debris, refuse, and waste shall be removed from the premises at regular intervals. No accumulation shall be permitted.

3.28 PROTECTION

A. Maintain all public walks and access ways.
B. Erect and maintain barricades, warning signs, and other protective means as may be directed by the owner for protection of all persons and property from injury or damage.

3.29 SCAFFOLDING

A. The contractor shall at his own expense, install, operate, protect, and maintain temporary services such as scaffolding, material hoists, access walks, etc., as may be required.

3.30 UTILITIES

A. The contractor may use the existing water and electric power for temporary construction needs.
B. The owner will direct where these services may be tapped.
C. Those services that are used during construction, but are to remain, shall be refurbished to as new condition before turning back to the owner.

3.31 CLEANUP

A. Remove all visible temporary tags or labels as well as any protective coverings and wrappings from fixtures and equipment.
B. Remove all spots, stains, soil, paint, spackle, and other foreign matter from all finished work.
C. Clean and polish all plumbing fixtures.
D. Remove all trash and debris from the premises.

3.32 MOUNTING HEIGHTS

A. Contractor to coordinate all mounting heights with all trades and architect prior to rough-in.
B. Maximum thermostat mounting height (top of thermostat) in accordance with ADA

1. Side reach: 48" A.F.F.
2. Forward reach: 48" A.F.F.

3.33 WORK COMPLETION

A. The contractor shall promptly correct work rejected by the engineer failing to conform to the requirements of the contract documents, whether discovered before or after substantial completion and whether or not fabricated, installed or completed. Costs of correcting such rejected work, including additional testing and inspections and compensation for the engineer's services and expenses made necessary thereby, shall be at the contractor's expense.

3.34 SHOP DRAWING REQUIREMENTS

A. The following is a list of required shop drawings for the project. Not all items may be identified and it is the responsibility of the contractor to submit additional shop drawings where indicated in the specifications.

HVAC	**DATE REC'D**	**ACTION**	**DATE REC'D**	**ACTION**
COORDINATION DRAWINGS				
PIPING				
VIBRATION ISOLATION				
INSULATION A. Piping B. Ductwork C. Equipment				
SHEET METAL DRAWINGS				

HVAC	**DATE REC'D**	**ACTION**	**DATE REC'D**	**ACTION**
FANS (EXHAUST)				
SPLIT SYSTEMS				
FIRE DAMPERS				
VOLUME DAMPERS				
GRILLES, REGISTERS, DIFFUSERS				
LOUVERS/ROOF CAPS				
EQUIPMENT CURBS				
AUTOMATIC TEMPERATURE CONTROL A. DEVICES B. WIRING DIAGRAMS C. SEQUENCES				
TEST, BALANCE AND ADJUST REPORT				
AS-BUILT DRAWINGS				
WARRANTIES AND GUARANTEES				
OPERATIONS AND MAINTENANCE MANUALS				
INSTRUCTIONS				
EMERGENCY AND MANUFACTURER CONTACTS				

END OF SECTION

SECTION 23 05 48 - VIBRATION ISOLATION

PART 1 - GENERAL

NOTE: CONTRACTOR IS TO FURNISH AND INSTALL A VIBRATION ISOLATING DEVICE ON ALL MACHINE, MOTOR, AND CIRCULATING PIECES OF EQUIPMENT.
IF A VIBRATION ISOLATING DEVICE IS OMITTED FROM THE DRAWINGS, THE CONTRACTOR IS TO MAKE AN ALLOWANCE TO INSTALL ONE.

1.01 REFERENCE

A. Refer to section 23 05 00 for requirements which are applicable to this section.

1.02 WORK INCLUDED

A. Provide all labor, material, equipment, and supervision necessary to select, provide, and install vibration isolation devices as described herein and required for equipment on the project.

1.03 SUBMITTALS

A. Submit shop drawings of all isolators, rails, hangers, mountings, connectors, hoses, and anchors specified herein.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturer's warranty requirements.
B. Install equipment in accordance with manufacturer’s instructions.

PART 2 - PRODUCTS

2.01 NEOPRENE PADS

A. Roof mounted condensing units and floor mounted air handling units or furnaces shall be mounted on neoprene waffle pads. Pads shall be 5/16" thick type "W" as manufactured by Mason Industries Vibration Eliminator Company or Amber Booth.
B. Application: Roof mounted condensing units up to 5 tons shall be mounted on curbs with neoprene pads.

2.02 SPRING AND NEOPRENE HANGERS

A. Vibration hangers shall contain a steel spring and 0.3" deflection neoprene element in series. The neoprene element shall be molded with a rod insulation bushing that passes through the hanger box

lower hole. The hole sizes shall be large enough to permit the hanger rod to swing through a 30 degree arc before contacting the hole and short circuiting the spring. Springs shall have a minimum additional travel to solid equal to 50% of the rated deflection. Submittals shall include a scale drawing of the hanger showing the 30 degree capability.

B. Hangers shall be type 30N as manufactured by Mason Industries, Inc. or equivalent by Vibration Eliminator Company or Amber Booth.

C. Application: Below 5 ton horizontal suspended fan/coil units, in-line exhaust fans.

PART 3 - EXECUTION

3.01 NEOPRENE PADS

A. Cut pads of size to fit base area of equipment. Install between roof curb or floor and equipment base.

3.02 SPRING AND NEOPRENE HANGERS

A. Hangers shall have a maximum rated deflection of 1.18" for equipment 20 lbs. and under and 1.75" for equipment over 20 lbs.

B. Average neoprene deflection shall be between 0.35" and 0.4".

END OF SECTION

SECTION 23 05 93 - TESTING, BALANCING AND ADJUSTING FOR HVAC

PART 1 - GENERAL

1.01 CONDITIONS

A. HVAC equipment shall be completely installed and in continuous operation prior to testing, balancing, and adjustment.
B. Test, balance, and adjust shall be performed when outside conditions approximate design conditions.
C. Make at least two inspections of the mechanical systems during construction to verify that balancing procedures may be accomplished.
D. Refer to Section 23 05 00 for additional requirements of this section.
E. Should corrective measures caused by faulty installation require retesting, adjusting, and balancing, such work shall be at no additional expense to the Owner.
F. A complete set of approved mechanical-equipment shop drawings shall be obtained from the Mechanical Contractor. A complete set of as-built mechanical drawings shall be provided by the Mechanical Contractor.
G. All TBA work, is to be performed in compliance with the Standard Procedure Manual published by the TBA organization affiliated with the Contractor.
H. Contractor to identify TB&A subcontractor within 30 days after award of Contractor.
I. Testing, Balancing and Adjusting contractor to coordinate and perform balancing of the HVAC systems with the mechanical contractor prior to ceilings being closed up and scaffolding being removed.

1.02 ENGINEER QUALIFICATIONS

A. Include proof of registration in the state of building location and record of at least five years of experience in the mechanical contracting industry engaged in HVAC testing, balancing, and adjusting.
B. The testing, balancing, and adjustment organization shall be a certified member of NEBB or AABC and all testing, balancing, and adjusting shall be in accordance with the associated standards. Such firm shall have at least one certified TB&A supervisor.

1.03 INSTRUMENTATION

A. Contractor shall provide all necessary instrumentation, tools, ladders, etc. to complete his work.
B. Instrumentation shall be in accordance with AABC, NEBB, or SMACNA requirements and shall be calibrated to the accuracy standards demanded by these organizations. Copies of current calibration certificates shall be available to the Engineer on request.
C. Flow-measuring hoods (manufactured, not fabricated) will be acceptable for measurement of ceiling diffuser performance only.
D. Contractor shall assume full responsibility for safekeeping of all instrumentation during the course of work.

1.04 ADJUSTMENT TOLERANCE

A. Contractor shall adjust all equipment in accordance with the capacities shown on the drawings, with permissible tolerances as follows:

Supply fans	+5% to 10%
Return exhaust fans	+5% to 10%
Diffusers/supply grilles	0% to +10%
Return grilles	0% to -10%
Exhaust grilles	0% to -10%

1.05 SHEAVE CHANGE

A. Allow for one sheave change for 50% of the HVAC systems to be tested and adjusted. Replacement sheave shall be furnished and installed by the mechanical contractor. Sheave shall be adjusted by the TBA contractor.

PART 3 - EXECUTION

3.01 AIR SYSTEMS – PRE AND POST CONSTRUCTION REPORTS ARE REQUIRED

A. Furnish all labor, materials, instruments, and equipment to test, adjust, and balance systems in accord with the values shown on the drawings.
B. Provide total and static pressure readings, traverse at fan inlets and outlets.
C. Provide temperature measurements of inlets and outlets of HVAC units, DB and WB both heating and cooling.
D. Measure and record amps, rpm, at fans and HVAC units.
E. Provide two sets of data, one during design heating temperatures, and one during design cooling temperatures.
F. Provide heating and air conditioning unit performance measurements determining total BTU's available during heating and cooling.
G. Measure quantity of outside air in CFM at minimum damper position.
H. Any holes or openings which were made for test readings are to be sealed. Repair any insulation disturbed by TB&A procedures.
I. Identify Total CFM as sum of diffusers, registers, and grilles for each supply, return, and exhaust system.
J. In all cases, air volumes shall be adjusted by means of manual dampers in the ductwork, not by integral dampers in the terminal outlets or inlets.
K. Duct damper positions shall be marked with permanent ink markers or black spray paint after the final setting has been made.
L. If the unit cannot reach design with furnished sheave, notify mechanical contractor to furnish and install a suitable sheave such that design can be reached.
M. Allow for 2 passes for each heating and cooling season

3.02 CEILING ACCESS

A. As pertains purely to T&A work, Contractor shall be fully responsible for removal and reinstallation of ceiling tile and replacement of any tile damaged by T&A technicians.

3.03 SUBMISSION OF REPORTS

A. Submit reports on approved forms.
B. Submit three reports to A/E for review and acceptance.
C. Report shall be certified by an AABC or NEBB member and bear the seal of the organization.

END OF SECTION

SECTION 23 07 00 - HVAC INSULATION AND COVERING

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 23 05 00 for requirements which are applicable to this section.
B. Insulation to be in accordance with ASHRAE 90.1-2013.

1.02 SCOPE

A. The work included in this specification consists of furnishing all labor, materials, accessories, and equipment necessary for the insulation of all heating and air conditioning systems. Said work shall be completed in strict accordance with the insulation section of the specifications and applicable drawings.
B. All work is subject to the terms and conditions of the contract.

1.03 SUBMITTALS

A. Submit shop drawings which indicate complete material data, a list of materials proposed, and indicate thickness and density of material for individual services.
B. Submit fabrication instructions for pipe fitting and valve insulation.
C. Submit manufacturers joining recommendations for butt joints and longitudinal seams.

1.04 QUALITY ASSURANCE

A. Install insulation in accordance with the manufacturer’s instructions.
B. Insulation shall be installed by skilled workmen regularly engaged in insulation work.
C. Protect insulation and covering until accepted in place by the owner.

PART 2 - PRODUCTS

2.01 COLD WATER PIPING

A. Includes;
   1. Fan/coil condensate drains: 1" insulation
B. Material; Fiberglass bonded with resins to form circular pipe sleeves with factory applied jacket of Kraft paper bonded to aluminum foil, reinforced with fiberglass yarn. Vapor barrier.
C. Fire safety; Flame spread rating of 25 or less and a smoke density rating of 50 or less and a fuel contributed rating of 50 as tested by ASTM E 84-75.
D. Thermal Conductivity; 0.25 at 100 degrees.
E. Joints; Pressure sealing lap strips for longitudinal joints and 3 inch wide wrapping strips for butt joints. Strips shall be sealed with an adhesive meeting NFPA 90 25-50 code such as:

1. CMC17-465
2. H. B. Fuller Co., Foster Products Division 85-20

As an option the contractor may utilize pressure sensitive butt strips.

F. Valves and Fittings; Fiberglass insulation of same thickness as pipe with pre-molded fitting covers. Seal edges of fitting cover with vapor barrier mastic adhesive or vapor barrier strip tape which shall overlap the insulation and fitting cover by 2 inches.

G. Manufacturer: Johns-Manville Micro-Lok HP, Knauf Proto Lo Smoke PVC.

2.02 DUCT INSULATION - INTERIOR – CONCEALED

A. Includes: All supply, return, and outside air ductwork.
1. All supply air ductwork.
2. All outside air ductwork.
3. All return air ductwork.
4. Supply ductwork in unconditioned spaces.
5. Return ductwork in unconditioned spaces.
6. Soundtraps if adjacent ductwork is lined or insulated.
7. Duct heating coils if adjacent ductwork is lined or insulated.

* NOTE: Refer to Section 23 31 13 which defines Lining Requirements. Insulation indicated is in addition to internal lining.

B. Material; Flexible vapor seal duct insulation with foil scrim kraft facing consisting of aluminum foil reinforced with fiberglass scrim to a U.L. rated kraft, 0.75 lb. density, .02 perms.

C. Fire safety; Flame spread rating of 25 or less and a smoke density rating of 50 or less as tested by ASTM E 84-75.

D. In conditioned space thickness is 2" inches, equaling an installed “R” value of 4.2. In unconditioned space/outdoors, thickness is 3", equaling an installed “R” value of 8.3.

E. Application; All joints shall be sealed with a 3 inch wide strip of same material applied with H. B. Fuller Co., Foster Products Division 85-75. For ducts over 18" wide insulation shall be secured on bottom at 18" centers to reduce sagging.

F. Manufacturer: Johns-Manville 800 Series Flexible Spin-Glass.

2.03 REFRIGERANT PIPING

A. Includes;
1. Refrigerant lines - interior
2. Refrigerant lines - exterior

B. Material; Elastomeric thermal insulation with exposed closed cell structure, pipe size 1 ½" or less = 1", pipe size larger than 1 ½" = 1 ½" (interior and exterior).

C. Fire safety; Flame spread rating of 25 or less and a smoke density rating of 50 or less as tested by ASTM E 84-75.

D. Thermal conductivity not to exceed .25 BTU per inch/h-Ft2 -°F.

E. Joints; Butt joints and seams are to be sealed with contact adhesive as per manufacturer’s specifications. Seams are to be sealed with an adhesive meeting NFPA 90 25-50 such as CMC 17-465, H. B. Fuller Co., Foster Products Division 85-20 or approved equal. As an option the contractor may utilize pressure sensitive butt strips. Seal all edges.

F. Manufacturer: Armacell AP Armaflex or approved equal.

G. All exposed refrigerant piping, power, and control wiring extending from the building to the remote condensing unit shall be protected and insulated with split type insulation with PVC jacket and cemented joints.

2.04 MANUFACTURERS

A. Johns-Manville, Certain Teed, Owens/Corning, Knauf, Armstrong.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Do not install until all piping systems and ductwork are tested.
B. Do not install until the building is closed in.
C. Perform work at ambient and equipment temperatures as recommended by the adhesive manufacturer.
D. Work in the area which may damage the insulation shall have been completed prior to the start of insulating. The owner shall not be responsible for subsequent charges arising out of damage to insulation caused by work progressing in the area after insulation has been installed.
E. All insulation shall be continuous through wall, ceilings and floor openings except where fire safe materials are required.
F. Insulation on all cold surfaces must be applied with a continuous unbroken vapor seal. Hangers, supports, anchors, etc., that are secured directly to cold surfaces shall be adequately insulated and vapor sealed to prevent condensation.
G. Finish insulation neatly at hangers, supports, and other protrusions.
H. Secure with tacks or tape as required.
I. Install inserts on all hangers. Inserts between the pipe and pipe hanger shall consist of rigid pipe insulation of thickness equal to the adjoining insulation and shall be provided with vapor barrier where required. Insert length shall be 10" long for pipes up to and including 2-1/2" and 12" for pipes over 2-1/2".
J. Pipe insulation shall have metal shields. The shields shall be installed between hanger support and the pipe insulation. Shield shall be formed to fit the insulation and shall extend up to the center line of the pipe. Shield shall be 10" long for pipes up to and including 2-1/2" and 12" for pipes over 2-1/2"
K. Repair separation of joints or cracking of insulation due to thermal movement or poor workmanship.
L. All insulation shall be secured at sufficient intervals to prevent sagging, gaps, or spaces from occurring. Any repairs necessary for 1 year due to improper installation shall be provided by Contractor at no cost to Owner.

3.02 SURFACE PREPARATION

A. Pipe, duct, and equipment shall be clean, oil free, and dry prior to the application of insulation.

END OF SECTION

SECTION 23 09 33 - ELECTRIC - AUTOMATIC TEMPERATURE CONTROL

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to section 23 05 00 for requirements which are applicable to this section.
B. Refer to International Mechanical Code.

1.02 WORK INCLUDED

A. Provide all labor, material, equipment, and supervision necessary to install a complete, functioning, Automatic Temperature Control system.
B. Power wiring will be provided under the Electrical portion of the work.
C. Control wiring shall be furnished under this portion of the work. Control wiring is line voltage or low voltage if it performs as control wiring. Electrical for operation of valves and dampers is control wiring.
D. Arrange for electrical power for control equipment with electrical contractor. Allow for compensation to the electrical contractor to install a power source which may be required.
E. The mechanical contractor shall be responsible for the complete coordination of all parts of the ATC system whether they be part of packaged control systems within units or built up systems by ATC providers. It is the intent that all systems, subsystems be coordinated and provided to produce the following sequences.

1.03 SUBMITTALS

A. Submit shop drawings of all components.
B. Submit manufacturers' data sheets of valve Cv performance.
C. Submit design data and sequence descriptions for systems.
D. Submit wiring diagrams of electrical or electronic control systems.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturer's warranty requirements.
B. Work shall be performed by skilled tradesmen normally engaged in the control systems trade.

1.05 BUILDING AUTOMATION SYSTEM

A. The contractor is required to allow for future connection of all new air handlers and exhaust fans to the existing campus Honeywell system. The graphics shall match the campus requirements.

PART 2 - PRODUCTS

2.01 CONTROL DEVICES - GENERAL

A. All control devices and products used in the control system shall be first-line products, manufactured for the application as used.
B. All thermostats shall have guards. Thermostat guards shall be plastic or metal covers to prevent tampering with the instrument. Provide substantial, locked, opaque cover, hinged to a base which is secured to the wall, not to the thermostat base.
C. HVAC units shall be provided with economizer controls where indicated on the drawings or elsewhere in these specifications or on any system 5 tons or over. Enthalpy selection system shall consist of one enthalpy transmitter in the outside air, one enthalpy transmitter in the return air, and a relay to select the lower of the two enthalpies. In operation, the signal from the two enthalpy transmitters shall be compared by the differential switching relay so that when the outside air enthalpy is lower than the return air enthalpy, the temperature control system shall modulate the outside, return, and relief dampers to supply up to 100% outside air for "free cooling". When the outside air enthalpy is higher than the return air, the system shall position to minimum outside air. The use of separate temperature and humidity transmitters to arrive at enthalpy will not be acceptable. Outside air transmitter shall not be damaged by operation during fog conditions.

2.02 CONTROL DEVICES - ELECTRICAL

A. All electrical wiring for the control system shall be as specified in the Electrical Section of the Specifications and as required by local codes. The wiring shall be by this contractor.
B. Electric thermostats shall be low-voltage, modulating type to control modulating devices, or low- or line-voltage type with heat anticipator for two-position controls. Provide locking covers.

2.03 ACCEPTABLE MANUFACTURERS

A. Control equipment shall be manufactured by a company regularly engaged in production of this type equipment, as shown on the drawings, or equivalent equipment by Honeywell, Johnson Controls, Alerton, Invensys, Delta, or prior approved equals.

2.04 DAMPER AND VALVE ACTUATORS

A. All damper actuators (motors) installed in conjunction with an Air
B. Handler/HVAC unit must be of the spring return, 2 position, occupied/unoccupied type, or modulating where an economizer cycle is required.
C. Combustion air damper actuators shall be of the 2 position, spring return type.

2.05 RELAYS AND SIGNAL TRANSMITTERS

A. All necessary relays, contacts, and interface devices shall be furnished to make the system a full and operable system.

2.06 MOTOR OPERATED DAMPERS

A. The motor operated dampers shall be of the parallel blade type for all 2-position applications such as the combustion air dampers and of the opposed blade type for all modulating applications including the outside air dampers for the heating, air conditioning, and ventilating units.
B. The damper frames shall be extruded aluminum not less than, 08” thick, thermally broken, roll-formed channel with prepunched slotted mounting holes. The damper blades shall be extruded aluminum insulated R-2.29

C. Bearings shall be composed of a Celcon inner bearing with aluminum hexagon blade pivot pin, rotating within a poly carbonate outer bearing inserted in the frame. The dampers shall be equal to Tamco series 9000 ECT for parallel blade dampers and for opposed blade dampers.
D. Dampers shall have a closed leakage rate of not more than 1.4 CFM per sq. ft. for 3'x3' damper at 1" S.P leakage class 1A.

PART 3 - EXECUTION

3.01 INSTALLATION

A. All control equipment shall be installed as recommended by the manufacturer and as required for service in the field. No equipment shall be concealed or covered by other equipment unless adequate provisions are made for service and replacement.
B. All wiring shall be run in neat, straight lines to present a finished appearance. Multiple runs shall be supported on brackets and spaced to give access to each line.
C. All wires shall be color-coded and numbered on both ends of each conductor for easy identification. Colors and numbers shall not change in the middle of a run, unless an accessible junction box is provided. Provide numbered terminal strips in all control panels.
D. Wiring diagrams shall be prepared for all electrical connections, showing the actual wire number and terminal identification as installed. No less than three copies of such diagrams shall be delivered to the engineer as-built drawings.
E. Installation of all equipment shall be made by qualified mechanics familiar with control systems, forces involved, and their operation. Any work not neatly installed shall be removed and replaced.
F. All connections shall be made by technicians who are familiar with the operation of the equipment and the intent of the control designer.
G. After all equipment is mounted and connected, the control engineer shall inspect the system and verify the correct operation and connection of all equipment. Any equipment found to be installed improperly or connected incorrectly shall be changed as required. After the system is installed correctly, all instruments shall be calibrated and set points fixed at the correct setting.

3.02 TESTING

A. At the time of final review, the control contractor shall instruct the owner in the proper operation and maintenance of the system as installed and demonstrate how the system is designed to perform.
B. At completion of the training, the contractor shall submit a letter stating the owner has received proper training, date, time, and location of training and name of the trainee.
C. Any system found to be out of calibration or functioning improperly at this time shall be corrected immediately and the correct functions of the entire system demonstrated to the satisfaction of the engineer.

PART 4 - SEQUENCES

4.01 SYSTEM OPERATION

A. All systems (each system) shall be started and stopped by an individual 24/7 programmable thermostat.
B. On system start-up, for systems of 1,000 CFM or greater, the outside air dampers shall remain tightly closed until the return air temperature is within 5° F (2° C) of the design space temperature on either heating or cooling, unless the cooling system is operating on "free cooling".
C. All systems (each system):
   1. Occupied cycle: The motorized outside air damper shall be open to its minimum airflow setting.
   2. Unoccupied cycle and Evening Hours: The motorized outside air damper shall be closed.

4.02 EXHAUST FANS

A. Ceiling-mounted exhaust fans shall be controlled with the lights in the area served or an individual local switch as indicated on the drawings.

4.03 SPLIT SYSTEM HVAC UNIT

A. Provide a 24hr/7day programmable thermostat for control of occupied/ night setback temperatures.
B. During the occupied cycle the thermostat shall be manually indexed to the cooling position. On a rise in space temperature the first stage of refrigeration shall be energized. On a continued rise in temperature the second stage shall be energized. On a fall in space temperature the reverse shall occur.
C. During the unoccupied cycle the fan, and furnace shall be energized to maintain a reduced space temperature.

END OF SECTION

SECTION 23 23 00 - REFRIGERANT PIPING SYSTEM

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to section 23 05 00 for requirements which are applicable to this section.
B. Refer to 2014 ASHRAE Refrigerant Handbook, applicable ANSI safety codes, and IBC 2009 Code.
C. Refer to manufacturers sizing requirements and piping recommendations.

1.02 WORK INCLUDED

A. Provide all labor, material, equipment, and supervision necessary to furnish and install refrigeration equipment, piping, and accessories, and to place DX systems into operation.
B. PHFA Requirement: Exposed refrigerant piping, power, and control wiring extending from the building to the remote condensing units shall be protected and insulated with split type insulation with PVC jacket and cemented joints.

1.03 SUBMITTALS

A. Submit shop drawings of refrigeration accessories.
B. Submit piping diagrams of manufacturer’s recommendations for piping installation.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturer's warranty requirements.
B. Install systems and equipment in accordance with International code.

PART 2 - PRODUCTS

2.01 REFRIGERATION PIPING

A. Piping shall be ACRL Type tubing with forged fittings brazed with silver solder. Piping shall comply with ASTM B 280. Refrigerant piping must be absolutely clean. Utilize precleaned and sealed tubing by the manufacturer, if required for warranty, or utilize the following cleaning sequence:

1. Draw clean, lint less cloth through tubing.
2. Draw clean, lint less cloth saturated with Refrigerant 113 or Virginia #10 Degreasing Solvent through tubing several times until cloth comes through clean.
3. Draw clean, lint less cloth saturated with compressor oil and squeezed dry through tubing.
4. Draw clean, lint less, dry cloth through tubing.

2.02 FILTER-DRIER

A. Brass, sweat fittings, porous core with high affinity for water, acid neutralizing, filter media.
B. Sporlan or equal.
C. One per system.

2.03 SIGHT GLASS

A. Sight glass to be "DRI-EYE" Type.
B. Brass, sweat fittings, removable cap over glass.
C. Mueller Brass Co. or equal.
D. One per system.

2.04 SERVICE VALVES

A. Brass, sweat fittings, back seating, with seal cap.
B. Mueller Brass Co., Superior Valve Co., Henry, or equal.
C. At each equipment connection. Condensing unit and fan/coil.

2.05 RELIEF VALVES

A. Furnish and install refrigerant pressure relief valves on the high and low pressure sides of each condensing unit.
B. Valves shall be brass and as manufactured by Mueller, Spartan, Superior, Henry, or equal.
C. One per system.

PART 3 - EXECUTION

3.01 PIPING & FITTINGS - INSTALLATION

A. Provide oil trap at base of risers of hot gas and suction risers when risers are over 8 feet vertically. All refrigerant risers shall be evaluated for requirement of oil traps. Traps shall be constructed from a street elbow and regular elbow keeping horizontal down to a minimum.
B. Piping is to slope down 1/2 inch per 10 feet from AHU to compressor.
C. Provide double risers for unloading compressors.
D. The liquid line shall contain properly sized manual shutoff valves at the evaporator and condenser units, refrigerant charging valves, filter dryer with isolation valve, solenoid valve, sight glass, and expansion valve.
E. The suction line is to be insulated with a minimum of 5/8" molded Armaflex. Contractor is to seal all end joints, longitudinal joints, and fittings with a sealant.
F. Support refrigerant tubing at 6 foot intervals up to 1 1/4" diameter and at 6 foot intervals over 1 1/4" diameter. Contractor is to install hangers prior to insulating.
G. Refrigerant pipe sizing shall be in accordance with manufacturer's recommendations.

3.02 SWEAT JOINTS

A. Cut square with miter box or tubing cutter, and ream to remove burrs.

B. Outside of tubing and inside of joint to be burnished.
C. Fill tubing and joints with inert gas, nitrogen or carbon dioxide.
D. Brazing flux applied to joint brought to brazing temperature. Apply silver solder for copper to brass and Sil-fos for copper to copper joints.
E. Remove coil from solenoid valves before brazing.
F. Remove glass from sight glass before brazing.

3.03 TESTING

A. Refer to manufacturer's instructions or as described below:
B. Plug control and relief valves to prevent damage. Close valves at compressor suction and discharge.
C. Open liquid line shutoff valve and liquid line solenoid valve. Connect dry nitrogen to charging valve, pressurize to 150 psi or to local code pressure in prescribed increments "for safety".
D. Tap each joint to check for leakage that may start from subsequent vibration. Brush connections with soap to locate leaks.
E. Repair joints by total disassembly, cleaning, and rebrazing.
F. Retest.
G. Bleed nitrogen from system.
H. Charge refrigerant to pressures established by manufacturer. Check for leaks at joints with halide torch or leak detector.
I. Leave test on for 24 hours. Allow for 3 psi change due to 10 degrees temperature change. Observe no appreciable change in pressure.
J. Test complete, witness, date, and record.

3.04 EVACUATION

A. Refer to manufacturer's instructions or as described below:
B. Install vacuum gauges to liquid and suction lines.
C. Connect vacuum pump and run until 29" Hg is registered.
D. Close suction valve or pump.
E. Charge to atmospheric pressure with dry nitrogen.
F. Re-evacuate.
G. Vacuum system to maintain 29.7" Hg for 2 hours with vacuum pump off.
H. Evacuation complete, witness, date, record.

3.05 CHARGING

A. Refer to manufacturer's instructions or as described below:
B. Check for entire system to be operational, lubricated, proper oil levels, gauges operational, voltage at motors, belts on, etc.
C. Energize crankcase heater for 24 hours.
D. Charge high side through liquid line charging valve.
E. Start system.
F. Continue to charge until estimated refrigerant charge has entered the system.
G. Observe liquid flow and pressures. Add refrigerant as necessary.
H. Allow to run until sight glass is clear. Check for overcharging pressures.
I. Leave system operate for 48 hours of test run.
J. Charging complete, witness, date, record.

3.06 SYSTEM CHECKOUT

A. Refer to manufacturer's instructions or as described below:
B. Adjust pressure switches, low pressure, high pressure for cut in and cut-out settings.
C. Check each interlock function.
D. Measure temperature and pressure of suction gas near the remote bulb of expansion valve.
E. Utilize test quality gauges. Check super heat against manufacturer's recommendations.
F. Check compressor oil level.
G. Check amps on each leg of compressor, not to exceed 2% variation.
H. Check volts on each leg of compressor, not to exceed 2% variation.
I. Check all belts, bearings, motor rotations, dampers, controls, bolt tightness, etc.
J. Lubricate all required points.
K. Check out complete, witness, date, record. Refrigeration System Report is to include settings of controls and safety devices, including relief valves.

END OF SECTION

SECTION 23 31 13 - DUCTWORK

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Construct rectangular ductwork to meet all functional criteria defined in Section VII, of the SMACNA "HVAC Duct Construction Standards Metal and Flexible" latest edition. This shall be subsequently referred to as the SMACNA Manual. All ductwork must comply with all local, state and federal code requirements.
B. Refer to Section 23 05 00 for requirements which are applicable to this section.
C. The SMACNA Manual, ASHRAE Handbooks, International Mechanical Code, and NFPA Pamphlet 90A shall apply to this work.
D. Provide labor, material, equipment, and supervision necessary to install a complete air handling system as indicated on the drawings and specified herein.
E. Contractor is to furnish and install volume dampers in all supply, return, exhaust, and outside air branch ductwork. If these are omitted from the drawings, the contractor is to make an allowance to install them.

1.02 SUBMITTALS

A. Ductwork shop drawings must be properly submitted. Any ductwork installed without prior approval by the engineer and found to be incorrect, shall be replaced at the expense of the contractor.
B. Submit shop drawings of all sheet metal for review. Drawings shall be not less than 1/4" scale and show all light fixtures, steel, piping, conduit, equipment and architectural features. It is unacceptable to resubmit and modify McHugh design documents for sheet metal drawing purposes.
    1. Indicate structural steel and elevation of bottom of beams and joists or floor to bottom dimension.
    2. Indicate ductwork elevation and/or floor to bottom of duct. Verify ductwork fits in available space.
    3. Indicate waste and storm piping where it occurs in the area of ductwork.
    4. Locate electrical gear on plan. Ductwork is not to run above panels.
    5. Ductwork is to be shown double line with indicated width and height. Allowance to be made for lining and/or insulation.
    6. Duct sizes shown on contract drawings may be flattened to a 4 to 1 ratio when necessary to establish clearance. Such transitions are to be included in the contract price.
    7. Ductwork fabrication shall not proceed until shop drawings are submitted for review.
    8. All dampers, grilles, registers, diffusers, access panels, louvers, coils, filters, and other components of the system are to be indicated.
    9. Provide detail of fire damper assembly.
    10. Provide drawing sections when requested by the engineer. Coordinate sheet metal drawings with light fixture layout and sprinkler system piping and heads and shown on the drawing.
C. Submit manufacturer’s literature and performance data of equipment and devices for review.
D. Samples: Furnish at request of A/E.
E. Contractor to coordinate work with sprinkler piping and head locations.

1.03 QUALITY ASSURANCE

A. The contractor must comply with the enclosed specification in its entirety. If on inspections, the specifier finds changes have been made without prior approval, the contractor will make the applicable changes to comply with this specification, at the contractor's expense.
B. At the discretion of the specifier, sheet metal gauges, and reinforcing may be checked at various times to verify all duct construction is in compliance.

1.04 GAUGES

A. All supply exhaust, relief, transfer, return ductwork: 1" w.g.

PART 2 - PRODUCTS

2.01 DUCTWORK - SMACNA STANDARDS

A. All sheet metal supply, exhaust, relief, outside and return ductwork shall be formed from galvanized steel sheet unless otherwise specified.
B. Galvanizing shall conform to SMACNA Standards.
C. Exposed rectangular ductwork in finished areas shall have drive slip joints on transverse seams and Pittsburgh lock joints on longitudinal seams.
D. Round ductwork shall be spiral wound with snap lock seams in accordance with SMACNA standards, double wall, 1" insulation, perforated liner.

2.02 ROUND AND FLAT OVAL DUCTS

A. All ductwork in moist areas (Toilet Rooms, locker rooms, kitchens, etc) shall be aluminum construction with aluminum hangers, supports, and fasteners

2.03 FIBERGLASS DUCTBOARD

A. Fiberglass ductboard is not acceptable.

2.04 SEALERS

A. Duct sealer shall be flexible, water-based, adhesive sealant designed for use in all pressure duct systems. After curing, it shall be resistant to ultraviolet light and shall seal out water, air and moisture. Sealer shall be UL listed and conform to ASTM E84. Sealer shall be Ductmate PROseal or an approved equal.
B. All joints shall be sealed.

2.05 DUCTWORK HANGER/SUPPORT

A. Hang and support ductwork as defined by SMACNA, Section IV 1995 Manual, Section Edition, or as defined within. Hanger spacing not to exceed 8'.
B. Not Permitted: Sheetmetal screws in a metal deck. Gripple quick hanger or similar type.

2.06 ACCESS DOORS IN DUCTWORK

A. Access doors shall be hinged, or Ductmate Sandwich Type Access Doors manufactured by Ductmate Industries, Inc or equivalent. Doors shall be of adequate size to allow easy access to hardware which needs to be maintained.

2.07 TURNING VANES

A. Turning vanes shall be Harper single wall turning vanes fabricated from the same material as the duct. Tab spacing shall be SMACNA standard. Rail systems with non-standard tab spacing's shall not be accepted. All tabs shall be used, do not skip tabs. Mounting rails shall have friction insert tabs which align the vanes automatically. Vanes shall be subjected to tensile loading and be capable of supporting 250 lbs. when fastened per the manufacturer's instructions. Approved Systems: Ductmate PRO-Rail or equivalent.

2.08 SOUND ATTENUATING DUCT LINING

A. Includes:
   1. Return ductwork: Line the first 10'-0" of the main return ductwork extending from the air handling units.
   2. All outside air ductwork.
   3. All transfer air ductwork.
   4. No kitchen supply and return ductwork shall be lined.

   ** NOTE: Refer to ductwork insulation specification (23 07 00) for insulation requirements. Lining indicated is in addition to insulation requirements.

B. Duct liner shall have a flame spread of not over 25, a fuel contributed of not over 50 and a smoke developed of not over 50.

C. Liner shall be minimum 1 inch thick, 1.5 Lbs./Cu. Ft. density with a thermal conductance of .24 at 50 deg. F. mean temperature. (Conductance: BTU/Sq. Ft./F/Hr.).

D. Liner shall not spall or deteriorate at air velocities to 4000 FPM when installed in accordance with the manufacturer's recommendations.

E. Liner shall be Johns-Manville Linacoustic or approved substitute by Owens-Corning, CertainTeed, or Knauf. Observe all installation instructions.

F. Any ductwork in unconditioned spaces or outdoors shall have insulation totaling R-8.3.

2.09 FLEXIBLE INSULATED DUCTWORK

A. Contractor may utilize flexible factory insulated ductwork for short connections from trunk ducts to diffusers when concealed. Lengths shall not exceed 4 feet.

B. Pressure rating: Minimum 10" w.g.

C. Outer Jacket: Aluminum equivalent to Flexmaster 5M 4.2 vapor barrier

D. Insulation for ductwork in conditioned spaces: R-4.2.

E. Insulation for ductwork in unconditioned spaces/outdoors - R-8.

F. Liner: Wire with laminated mylar

G. Manufacturer: Atco, Flexmaster. Or prior approved equal.

H. Applies to supply ductwork only. Exhaust and return ductwork to be rigid ductwork.

I. Flexible insulated ductwork to comply with 25/50 flame spread and smoke density ratings.

2.10 FLEXIBLE CONNECTIONS

A. Between all fans, air handlers, A/C units and ductwork.

B. Material: Woven fiberglass with mounting accessories.
C. Minimum 1" and maximum 4" between adjacent sections.

2.11 DAMPERS

A. Location: Where required to control flow of air or to balance air systems. Additionally, includes at each supply/return/outside/exhaust air branch ductwork, each air device, individual duct risers, branch ductwork off duct risers, VAV box inlet.
B. Type: Opposed blade, bearings at each end, adjustment quadrant and locking device for ducts over 1 square foot. Under 1 square foot dampers may be single blade with locking device.
C. Leakage: 10 cfm maximum at 4" S.P. for 4 Sq. Ft. damper.
D. Material: galvanized steel in galvanized steel ductwork, extruded aluminum in aluminum ductwork.

PART 3 - EXECUTION

3.01 DUCTWORK

A. Dimensions on drawings are inside of lining.
B. Ducts shall be concealed unless otherwise indicated.
C. Changes in direction shall be made with radius bends or turning vanes.
D. Ducts shall be cross-broken, or machine grooved over 18 inches in width.
E. Supports: Galvanized steel per SMACNA.
F. Longitudinal joints; Pittsburg Lock or Inside Groove.
G. Connections to wall louvers shall be sloped down to louver connection to prevent water draining into interior.
H. All ducts to have nested takeoffs, 45 degree cants, or adjustable turning vanes at all branch duct takeoffs.

3.02 ACCESS DOORS

A. Furnish and install at all fire dampers, heating coils, humidifiers, filters, smoke dampers, valves, volume dampers and wherever indicated on the drawings.
B. Minimum 12" x 12" double thick 22 gauge with 1" fiberglass, fully gasketed and with cam lock or latches.

3.03 LOUVERS

A. Ductwork to an intake or exhaust louver shall slope down to the louver as to prevent water entering the ductwork.

3.04 LEAK SEALING

A. All joints shall be sealed to prevent leakage.
B. Systems shall be sealed with high velocity duct sealant.

END OF SECTION

SECTION 23 34 00 - FANS AND ROOF VENTS

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 23 05 00 for requirements which are applicable to this section.
B. Refer to NFPA Codes and in particular Pamphlet 90A and 96 for requirements which are applicable to the work of this section.

1.02 SUBMITTALS

A. Submit shop drawings and catalog cuts of all items specified in this section.
B. Submit performance data and electrical requirements of all items.

1.03 QUALITY ASSURANCE

A. Insure that all items are installed in accordance with the manufacturer's recommendations.
B. Items are required to be wired in accordance with the National Electrical Code and be installed in conformance with the requirements of International Mechanical Code and the authorities having jurisdiction.

PART 2 - PRODUCTS

2.01 CEILING EXHAUST FANS

A. Furnish and install recessed ceiling exhaust fans of the size and capacity indicated on the drawings. Fans shall be UL listed and have steel centrifugal wheels, galvanized steel housing, backdraft damper, and thermal overload motor protection.
B. The fan shall be removable from casing, be sound attenuated, and be complete with matching grille.
C. Application Manufacturers; Panasonic, Nutone, and Broan.

2.02 ROOF VENTS - HOOD TYPE

A. Furnish and install gravity roof vents as indicated on the drawings.
B. Roof vent shall be fabricated from aluminum sheet with welded seams. Top shall be sloped for drainage. Inside of hood shall be insulated with 1" fiberglass to prevent condensation dripping.
C. Vent shall be provided with matching self-flashing roof curb with interior insulation. Curb shall be minimum 12" high.
D. Vents shall be provided with snow/insect screen for intakes.
E. Provide motor operated dampers in throat which shall be ATC controlled.
F. Hood shall be hinged for access to damper.

G. Manufacturers: Cook, Carnes, Penn Barry, Acme, Greenheck, Jenn.

PART 3 - EXECUTION

3.01 COORDINATION

A. Coordinate wall, roof, and ceiling opening locations and sizes with the general contractor.
B. Coordinate all electrical requirements with the electrical contractor.

3.02 INSTALLATION

A. Cooperate with the roofing contractor in the setting and flashing of the roof fans and roof vents. Each fan and vent shall be carefully set, flashed and counter flashed to provide a watertight roof penetration. The architect must approve the installation prior to acceptance of the installation.
B. The ceiling exhaust fan shall be supported from construction above, not ceiling tiles or ceiling runners or grids. Connect to ductwork and extend ductwork to the perimeter of the building.
C. Each fan shall be connected to ductwork with a flexible connection.
D. The contractor shall be responsible for all control wiring associated with interlocking the fans with the air conditioning systems. Control wiring shall be in accordance with the National Electrical Code.
E. Install fans with vibration isolating mounts wherever horsepower is 1/2 or over.
F. Verify wall opening or roof opening size before proceeding.
G. Verify electrical branch wiring, circuit breaker and safety switch before proceeding.
H. Install in accordance with manufacturer's recommendations.
I. Any steel shall be primed with Rustoleum and coated with 2 coats of enamel paint.
J. Wire in accordance with the N.E.C. Provide local wall switch where directed by the Architect or Owner if not specified in 23 09 00 have ATC control.

END OF SECTION

SECTION 23 37 00 - AIR DISTRIBUTION DEVICES

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 23 05 00 for requirements which are applicable to this section.
B. The SMACNA Low Velocity Duct Manual, ASHRAE Handbooks, International Mechanical Code, and NFPA Pamphlet 90A shall apply to this work.
C. Refer to Section 23 31 13 Ductwork.

1.02 WORK INCLUDED

A. Provide labor, material, equipment, and supervision necessary to install a complete air handling system with all supply and return distribution devices as indicated on the drawings and specified herein.
B. Contractor is to furnish and install a volume damper in all supply, return, exhaust, and outside air branch ductwork. If these are omitted from the drawings, the contractor is to make an allowance to install one.

1.03 SUBMITTALS

A. Submit manufacturer's literature and performance data of equipment and devices for review.
B. Samples; Furnish at request of A/E.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with manufacturer's warranty requirements.
B. Provide adequate supervision of labor force to see that installations are correct.

PART 2 - PRODUCTS

2.01 AIR DIFFUSERS

A. Furnish and install terminal air diffusers of the size and capacity indicated on the drawings.
B. Room terminal air velocity shall not exceed 50 fpm. NC level shall not exceed 30. Air static pressure drop shall not exceed 0.10" wg.
C. SQUARE PLAQUE DIFFUSER shall be steel construction, formed back cone of one piece seamless construction with round inlet collar, an inner plaque assembly that shall drop no lower than ¼" below the ceiling plate. The inner plaque assembly shall be completely removable. Price Model SPD, Titus Omni, or equivalent by listed manufacturers.
D. Each diffuser shall have a mounting flange specifically selected for the particular type of ceiling finish. Contractor to coordinate with architectural ceiling details.
E. Furnish and install equalizing grids and turning vanes at duct connection.

F. Face size shall be 12" x 12" for up to 150 cfm and 24" x 24" for all other sizes.
G. Manufacturers; Carnes, Tuttle and Bailey, Krueger, Nailor Hart, Metal Aire, Anemostat Price, or prior approved equal.
H. Performance shall be tested in accordance with ASHRAE 70-2006.
I. Where other than 360 degree pattern is required, provide sectorizing baffles to control air flow.
J. Perforated face ceiling diffusers are not acceptable
K. With earthquake tabs.

2.02 REGISTERS AND GRILLES

A. Furnish and install where indicated on the drawing.
B. Registers and grilles shall be steel with #26 white finish.
C. Registers shall have opposed blade volume control.
D. Registers and grilles shall have separable frames, or removable cores, with extruded aluminum blades on 1/2" centers for return and exhaust and 3/4" centers for supply, single set at 45 degrees for return or exhaust and double deflection adjustable for supply. Reinforced corners, mitered.
E. Furnish and install turning vanes for connections to ducts.
F. Where registers or grilles are located low near floor they shall be heavy duty 14 gauge steel with fixed 45 degree blades on 1/2" centers. In damp areas, they shall be extruded aluminum.
G. Where drawings indicate linear return grilles they shall be linear extruded aluminum with 1/8" bars 3/4" long on 1/4" centers.
H. Manufacturers: Same as diffusers.
I. Provide separable frames in drywall, plaster, or masonry construction.

2.03 LOUVERS

A. Louvers shall be extruded aluminum with 12 gauge blades and frames 2" deep up to 12" in height. 4" deep from 12" to 36" in height, and 6" deep above 36" in height. Louvers shall be storm proof design and shall not pull rain through the blades at the capacity required by the system.
B. Furnish a bird screen on each louver mounted at the inside face.
C. Frames shall be miter welded with reinforced corners.
D. Louver finish shall be determined by the architect. Contractor to coordinate
E. Manufacturer; Arrow, Airstream Products Co., Air Balance, Arrow, American Warming and Ventilating, Ruskin, Greenheck and Pottorff, United Enertech.

2.04 AIR FILTERS

A. Refer to drawings and schedules for certain air filtration requirements for various systems.
B. These filters are to be installed in air handling equipment if the equipment is capable of receiving them. If not, the contractor shall install the filters in a filter frame with gasketed doors on the entering side of the unit. The filter frame in either case shall provide an air tight fit with gaskets.
C. The filter shall meet a minimum of MERV (8) @ 2000 cfm (500 fpm) per ASHRAE Standard 52.2-2007 and shall be required to meet the same MERV-A value when tested per “Appendix j” of the aforementioned Standard. A filter with a MERV -A value lower than the MERV rating is not acceptable.
D. Manufacturers: CAMFIL/FARR Co., ECO Air Filters, Flanders, American Air Filter.

PART 3 - EXECUTION

3.01 GRILLES, REGISTERS, DIFFUSERS

A. Device face shall be flush with wall, ceiling or floor.
B. Supports: Galvanized steel per SMACNA.

3.02 LOUVERS

A. Louvers shall be set plumb in wall openings left by general contractor.
B. Coordinate openings with G. C.
C. Louvers shall be anchored in masonry construction.
D. Frames shall be caulked water tight. Color of caulking shall be acceptable to the architect
E. Connections to wall louvers shall be sloped down to louver connection to prevent water draining into interior.

3.03 FILTERS

A. All filters shall be clean prior to acceptance by the owner. Renewable media filters shall be replaced with new filters. Cleanable filters shall be removed and cleaned just prior to acceptance.
B. Provide one spare set of replaceable filters for each system to the owner prior to acceptance of the work.

END OF SECTION

SECTION 23 81 26 - SPLIT SYSTEM AIR CONDITIONING UNITS

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to section 23 05 00 for requirements which are applicable to this section.
B. All equipment shall be installed in accordance with the requirements of SMACNA, ASHRAE, ARI, and meet their standards of performance. Equipment shall be UL listed.

1.02 WORK INCLUDED

A. Provide labor, material, equipment, and supervision necessary to install and place into operation the equipment and systems described herein.

1.03 SUBMITTALS

A. Submit shop drawings of all items, components, and systems described in this section. Submit manufacturer’s data sheets, wiring diagrams, installation instructions, and certificates of conformance to applicable codes.
B. Submit color samples of finishes to the architect for approval.
C. Submit refrigerant piping diagram showing line sizes, traps, slopes, valves, etc. as required and specifically adapted for this installation.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturer's warranty requirements.
B. Install systems and equipment in accordance with the manufacturer's instructions.

PART 2 - PRODUCTS

2.01 SPLIT SYSTEMS UP TO 5 TONS, CONDENSING UNITS

A. Air cooled, factory assembled, weatherproof cabinet, standard operation 40 to 120 degrees, filter drier, U.L. listed, ARI rated to Standard 210.B. Cabinet zinc coated steel with baked enamel finish, removable end panels, hermetic compressor, temperature and pressure overloads, pressure relief valve, internal spring vibration isolation, sound muffling, crankcase heater, copper tube aluminum fin condenser coil, coil guard, factory pressure tested, quick connect couplings.
B. Balanced aluminum condenser fan, permanently lubricated direct drive motor, thermal overload.
C. Manufacturers: Trane, Lennox, York.

2.02 SPLIT SYSTEMS UP TO 5 TONS, FAN/COIL UNITS

A. Steel cabinets, phosphatized, baked enamel, 1/2 inch fiberglass lining, insulated drain pan, throwaway filters.
B. Multi-speed direct drive motors, thermal overload, run capacitor.
C. Low voltage control terminal strip, transformer, fan relay.
D. Aluminum fin copper tube coil, capillary tube or expansion valve refrigerant device, quick connect coupling, charged with R-410A.

PART 3 - EXECUTION

3.01 SPLIT SYSTEMS

A. Coordinate locations of units with General Contractor and other trades to maintain adequate access for service.
B. Coordinate the electrical requirements of the unit with the electrical contractor prior to ordering or installing the equipment.
C. Furnish and install all controls and control wiring. Wiring shall be in accordance with the NEC. Control wiring above the roof shall be in galvanized steel conduit with watertight fittings.
D. Installations shall be in accordance with the instructions of the manufacturer and meet all requirements.
E. Protect and be responsible for equipment until accepted in place by the owner.
F. Units shall be arranged for horizontal discharge. Horizontal discharge units shall be suspended on spring vibration isolating hangers with a minimum of 1 inch deflection.
G. Provide condensate drain and discharge to a suitable discharge point which shall be acceptable to the owner and A/E.
H. Contractor is to interlock the air handling unit controls with the remote condensing unit and gas furnace. Contractor is to furnish and install an air proving switch or current sensor at the air handler’s blower and be interlocked with the associated condensing unit and gas burner controls to shut down if power to the blower is disconnected.

3.02 GENERAL

A. Any equipment mars, blemishes, scratches, abrasions or other surface imperfections shall be sanded, primed, and refinished to match adjacent surfaces.
B. No equipment will be accepted by the owner which has rust, corrosion, or otherwise in progress.
C. Equipment shall not be used for temporary heat unless separately negotiated with the owner.
D. All filters shall be new at time of acceptance by the owner.
E. All bare ferrous metal shall be painted prior to acceptance.
F. Equipment shall be in perfect working order prior to acceptance.

END OF SECTION

DIVISION 26 - ELECTRICAL

SECTION 26 00 00 - STANDARD CONDITIONS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.01 REGULATIONS, CODES, STANDARDS

A. Reference Codes, applicable sections of the following codes and standards shall be considered as binding to the work of this project:

NEMA	National Electrical Manufacturers' Association
NEC	National Electrical Code (NFPA 70) - 2014 Edition
NECA	National Electrical Contractors' Association
NEIS	National Electrical Installation Standards
EGSA	Electrical Generating Systems Association
IBC	International Building Code
NFPA	National Fire Protection Association
IEEE	Institute of Electrical and Electronics Engineers
UL	Underwriter's Laboratories, Inc.
IES	Illuminating Engineering Society
OSHA	Occupational Safety and Health Administration
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
FM	Factory Mutual
IRI	Industrial Risk Insurers
ISO	Insuring Services Office
IPCEA	Insulated Power Cable Engineers Assoc.
ADA	Americans with Disability Act
NETA	International Electrical Testing Association

B. All local codes to be incorporated.
C. Latest adopted codes and latest editions of standards shall be the basis of conformance.
D. Obtain and pay for all permits and inspections, and any associated charges.
E. Inspection Agency Certificate of Inspection to be provided at completion of the work. Inspection by Middle Dept or other local inspection agency.
F. Drawings, Contract, General Conditions and Supplementary Conditions form a part of this section, by reference thereto and shall have the same force and effect as if printed herewith in full. Failure to review these sections shall not relieve the Contractor of his responsibility to fully comply with the terms therein.
G. Where the contract documents are more stringent but not in conflict with the applicable codes, the more stringent requirements shall be followed.

1.02 SUBMITTALS

A. The procedure for submissions of shop drawings shall be as specified in Division 1, or as a minimum, as indicated below.
B. Furnish submissions of shop drawings and samples of materials and equipment as indicated in

these sections, on the drawings, or as directed by the A\E. Submissions will be made in a timely fashion such that adequate time exists to review the drawings, or material, and arrive at the site in accordance with the project schedule.

C. Submissions will not be accepted with work defined as "By Others". Identify contractor by name and with his approval so indicated. Submissions are required prior to purchasing, fabrication, or installation of any material or equipment. Submissions shall be reviewed and certified by the submitting contractor that they are in accordance with the project documents.

D. When requested by the engineer, shop drawings shall be required to be submitted to designated agencies for review and approval prior to submission to the engineer.

E. Contractor shall arrange and pay for all tests and inspections specified herein or required by above agencies and furnish required certificate of inspection to owner.

F. Performance test data and wiring diagrams of all electrical equipment.

G. Submissions shall include warrantees by the manufacturer for equipment being provided. Submissions for commonly related items such as fixtures, trim, carriers, shall be combined in a single brochure with all items being furnished clearly identified.

H. Shop drawings and submittals shall be checked and stamped by the contractor before submitting. They shall conform to measurements made at the site, the contract requirements, and coordinated with all other trades.

I. Specific models in catalog sheets **must** be identified as well as all options, voltages, phases, etc. identified so as to be clear on what is being provided.

J. Contractor and manufacturers shall be responsible for all physical characteristics of the equipment and field verify with final locations, coordinate with floor plans, confirm service access, clearances, confirm equipment arrangements, electrical disconnect clearances, and pathways/travel/access to the final equipment installation locations. Submission of equipment shop drawing will be deemed evidence of compliance with this requirement. If no shop drawing is submitted, contractor shall be fully responsible for a complete installation and assumes all related costs that affects the contractor and other trades.

1.03 SUBSTITUTIONS

A. Substitution of other than specified manufacturers shall not be allowed after bid date.

B. Prior approval is required for other manufacturers. If the contractor wishes alternate materials or equipment be considered, he must submit information at least 10 days before bid date. If acceptable, an addendum will be issued which will allow the contractor to utilize the alternate.

C. Samples shall be provided when directed by the architect or engineer.

D. If the contractor submits alternate equipment, manufacturers, systems, methods, or materials, not specifically identified in the specifications, additional review and investigation time may be required by the engineer. If the engineer determines additional review time is required because of the substitution, then this will be a billable service by the engineer at the rate of $150.00/hr. for such services. Also, billable will be any redesign time and revisions to drawings should they be necessary for incorporation into the work. Services will be billable to the contractor making such substitutions and will be payable prior to approval or rejection.

E. If the contractor elects to submit alternate equipment, manufacturers, systems, methods, or materials, not specifically identified in the drawings and specifications, it is the contractor’s responsibility to coordinate the work with other trades and pay for any associated costs with the substitution or change.

F. Contractor and manufacturers shall be responsible for all physical characteristics of the equipment and field verify with final locations, coordinate with floor plans, confirm service access, clearances, confirm equipment arrangements, electrical disconnect clearances, and pathways/travel/access to

the final equipment installation locations. Submission of equipment shop drawing will be deemed evidence of compliance with this requirement. If no shop drawing is submitted, contractor shall be fully responsible for a complete installation and assumes all related costs that affects the contractor and other trades.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials and equipment in manufacturer's original cartons or on skids.
B. Store materials in dry enclosure out of way of work progress.
C. Protect equipment, fixtures, and lenses after placement.

1.05 REFERENCE

A. Requirements established within the portions of this Project Manual titled Division 1, General Requirements are collectively applicable to the work of this section.
B. Instructions to Bidders, Special Conditions and Addenda as issued are part of this specification.
C. Electrical drawings along with all other project drawings represent the work of this Division.
D. Drawings, Contract, General Conditions and Supplementary Conditions form a part of this section, by reference thereto and shall have the same force and effect as if printed herewith in full. Failure to review these sections shall not relieve the Contractor of his responsibility to fully comply with the terms therein.

1.06 WORK SUMMARY

A. Provide labor, materials, equipment and supervision necessary to install complete operating electrical systems as indicated on the drawings and specified herein, including all work at the site and within the proposed construction areas to accomplish the require work.
B. Contractor shall provide all demolition necessary to remove, replace, repair, install new or modify existing work whether it be walls, floors, ceilings, structure, mechanical or electrical required to install his work. Contractor shall replace all work to leave in a finished condition. Pipe, conduit, ductwork and wiring shall be cut back behind wall surfaces above ceilings and below floor levels so that a patch can be placed over the opening.
C. Demolition:
    1. Contractor shall disconnect and remove the entire existing electrical system including panels, fixtures, transformer, conduit, wiring, supports, fasteners, starters, fire alarm devices and wiring, telephone equipment and wiring, battery packs, switches, outlets and devices within the renovation area.
    2. Electrical contractor shall verify all existing conditions prior to commencing work.
    3. Remove branch circuits back to the power source or the nearest device to remain active. Restore all circuits interrupted by the demolition work to maintain circuit continuity.
    4. Tag all circuits which become spares as a result of demolition. Update the effected panelboard directories.
    5. Relocate existing branch circuits which interfere with new construction whether specifically identified or not. Refer to architectural drawings for new walls, structure, millwork, etc. which may require existing conduit, wire, etc. to be relocated.
    6. It is the intent that power remain active in adjacent areas during the construction. Contractor is to modify existing wiring arrangement to comply.
    7. All equipment and appurtenances removal are to be disposed of properly. Refer to local, state and federal requirements.

D. All work shown on the drawings and not expressly mentioned in the specifications and all work specified but not shown on the drawings, but necessary for the proper execution of same shall be performed by the contractor. It is not the intent of the drawings and specifications to describe every feature and detail of the work.
E. No additions to the contract amount will be approved for any materials, equipment, or labor to perform additional work unless it can be clearly shown to be beyond the scope and intent of the drawings and specifications.
F. Roof penetration for electrical work and all associated roof work.
G. Provide 3 phase, 4 wire electrical service of the size as indicated on the drawings at 208Y/120 V with distribution to all equipment 208V, lighting and general purpose receptacles at 120V.
H. Provide new devices to existing addressable fire alarm system with horn/strobes, detectors, strobes, and all associated controls and appurtenances.
I. Provide exit and emergency lighting throughout with emergency power supply in addition to normal power.
J. Provide power to HVAC and plumbing equipment as necessary to have complete operating systems.
K Provide lighting throughout.
L. Provide grounding system for facility in accordance with the National Electrical Code.
M. Base bid is to provide all primary cable, transformer coils, busways, switchboards, panelboards and all feeders as copper conductors. Alternate bid is to provide all as aluminum conductors of equivalent current carrying capacity.
N. Provide code required signage (i.e., NEC 110.34, NEC 700.8, and 695.4 B3).
O. Provide third party certification of all packaged systems by a Nationally Recognized Testing Laboratory (NRTL) in accordance with OSHA Federal Regulations 29CFR1910.303 and .399 as well as Pamphlet #70 and National Electrical Code Article 90-7.
P. Refer to Commissioning of Systems Specification for additional scope of work.

1.07 SITE INSPECTION

A. Visit site, inspect, and become aware of all conditions which may affect the work. Investigate utilities, protection requirements for adjacent facilities, storage locations, and access to the construction area.
B. Submission of a bid will be deemed evidence of having compiled with this requirement. Contractor may not request additional costs for existing conditions which were evident from inspection of the site.
C. Before ordering materials or commencing with any work, the contractor shall verify all measurements at the building. Coordination of equipment, materials, spaces, and dimensions are the responsibility of the contractor.

1.08 UTILITY CONNECTION AND CHARGES

A. The contractor shall be responsible for coordination of the work with the Electric Utility Company. Make arrangements in a timely fashion for connection of the service.
B. The Electrical Contractor shall be responsible for utility connection charges, meter charges, and other installation charges as may be applied, by the local utility company.
C. Contact the utility company during the bidding period for connection charges and include same with bid.
D. Provide connections, terminations, hand holes, manholes, pads, transformers, vaults, conduits, wiring, and all required materials and labor as may be required by the utility company to obtain service for the facility. Any costs for service work shall be included with the bid.

1.09 DRAWINGS AND SPECIFICATIONS

A. Drawings and specifications are intended to be taken as a whole and each is to supplement the other. It is not intended that all work must be both shown on drawings and specified in the specifications.

B. An item shown on the drawings and not indicated in the specifications is to be understood to be required for the project. An item specified and not shown on the drawings is to be understood to be required for the project.

C. If there is a conflict between the drawings and specifications it is to be understood that the stricter or more expensive interpretation shall govern. Also, if a conflict exists between specification sections or between drawing plans and details, it is to be understood that the stricter or more expensive interpretation shall govern.

D. The architects or engineer's interpretation of the documents shall be binding upon the contractor. If a question arises, the contractor shall ask for an interpretation prior to bidding and an answer shall be issued as an addendum to all bidders.

E. If a question arises after bidding the A/E interpretation shall govern.

F. The drawings are generally diagrammatic and necessary field coordination and adjustment must be provided by the contractor prior to installation. Such deviations to the work to allow for coordination shall be kept to a minimum and any such deviations shall be at no extra cost.

1.10 MINIMUM INTEGRATED EQUIPMENT SHORT CIRCUIT RATING:

A. Where the contract documents indicate secondary service from the utility Company (208/120V, 3 phase) available short circuit currents including system motor contribution (amperes RMS symmetrical) at the line terminals of the UL service entrance labeled main distribution panelboard or switchboard, shall be in accordance with the following tabulation:

Service	Minimum Service Entrance	Panelboard Rating	Transformer Rating
KVA	%Z	208/120	480/277
75	1.5	14,500	10,000
112.5	1.5	22,000	10,000
150	1.5	29,000	13,000
225	1.5	43,000	19,000
300	1.5	58,000	25,000
500	1.5	96,000	42,000
750	5.5	42,200	18,000
1000	5.5	56,100	24,500
1500	5.5	85,000	37,000
2000	5.5		49,000
2500	5.5		51,000
3000	5.5		73,500

B. The Integrated Equipment short circuit rating of the MDP or switchboard shall meet or exceed the tabulated minimum values. This shall be construed to mean that the equipment withstand capability

(bus bracing), and interrupting capacities of main and feeder devices, shall each meet or exceed the tabulated minimum values.

C. Service transformer ratings shall be as indicated on the drawings. If said ratings are not indicated, the contractor shall contact the engineer and/or utility company for clarification.

D. The only deviations from this tabulation that are permissible shall be the results of a short circuit study (if and as specified in Section 26 05 73 Power System Studies), or documented data from the utility company.

1.11 PROGRESS SCHEDULE

A. Provide a project schedule which shall show start, sequence of each type of work, milestone schedule, and completion of each type of work, with overall completion date.

1.12 COST SCHEDULE

A. Provide a detailed cost breakdown indicating labor and material amounts for various types of work.

B. AIA forms are required for this submission.

1.13 OFFICE

A. The contractor shall set up his job office (desk) where directed by the owner.

1.14 STORAGE

A. Material shall be stored only where directed by the owner.

1.15 SANITARY

A. The contractor will at his own expense, provide and maintain in a sanitary condition, a portable chemical toilet.

B. Toilet will be located where directed by the owner.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials and equipment shall be new and in present production of major manufacturers.

B. All materials and equipment shall be in conformance with accepted trade standards as a minimum. Where specifications exceed any minimum standard, the specifications shall govern.

C. Reference of equipment in the singular shall be deemed to apply to as many such items as may be required to complete the work.

D. The word “provide” means “furnish and install complete, tested, and adjusted as necessary with all accessories, circuiting, switching, lenses, mounting hardware, cover plates, hangers and supports”.

2.02 FASTENERS AND SUPPORTS

A. All work shall be securely fastened to building construction.
B. Utilize toggle or machine bolts in hollow construction.
C. Utilize machine screws for steel construction.
D. Utilize expansion shields for masonry construction.
E. Utilize lag bolts for wood construction.
F. All fasteners shall be galvanized or plated with rustproof finish.
G. Maximum load on fasteners shall be at a safety factor of 4 to 1 for a tested sample.

2.03 MOTOR STARTERS AND CONTACTORS

A. Single phase manual motor starters with overloads shall be provided under the electrical portion of the work for fractional horsepower motors up to ½ HP.
B. Polyphase motor starters and motor starters above ½ HP shall be furnished under other portions of the work.
C. The starters in A or B above shall be installed under the electrical portion of the work.
D. Polyphase starters shall be magnetic combination type, across-the-line electrically operated, electrically held, three pole assemblies, with arc extinguishing characteristics, silver to silver renewable contacts, 3 pole thermal bi-metallic, red run pilot light, individual phase protection, with overload heaters matched to motors installed and with 4 auxiliary contacts, Hand-Off-Auto switch, and control transformer.
E. For single phase motors above ½ HP provide magnetic combination, single phase motor starters with overloads, non-fusible disconnect switch, red run pilot light, integral 120 volt control transformer with dual primary fusing, auxiliary contacts.
F. Starters shall be as manufactured by G.E., Cutler Hammer, Siemens, Square D or Allen Bradley.
G. Contactors shall be across the line, electrically operated, mechanically held 3 pole assemblies for tungsten and ballast lighting loads. Acceptable manufacturers: GE, Cutler Hammer, Siemens, Square D or Allen-Bradley.
H. Manual motor starters without overloads in NEMA 1 enclosure equal to G. E. Type TC shall be used for the following load:
    1. 30 amperes or less continuous
    2. 1 hp or less at 120 volts
    3. 2 hp or less at 240 volts

2.04 MANUFACTURERS' NAMES

A. Manufacturers' names are included herein to establish those suppliers who may provide products for this project subject to the requirements of the specifications. Although a manufacturer's name may appear as an acceptable supplier it is not understood that a standard product is acceptable. Products must also meet the technical, performance, and physical requirements of the project as well as being names in the specification. Any deviations from this must be acknowledged at bid time by the supplier and he shall be solely responsible for any and all costs associated with the application of his product in the project.
B. A design cannot be prepared which accommodates the installation of all suppliers and is not intended to do so. If certain modifications must be made to accommodate one particular supplier's equipment it shall be considered the contractor's responsibility to arrange for such accommodations and be financially responsible for same.

PART 3 - EXECUTION

3.01 WELDING

A. All electric power for arc welding shall be supplied by the contractor performing the work.

3.02 VEHICLES

A. Vehicle access to the site will be as directed by the owner.

3.03 RUBBISH DISPOSAL

A. Except for items or materials identified to be reused, salvaged, reinstalled, or otherwise indicated to remain properly of the owner or tenant, demolished materials shall become the contractor's property and shall be removed, recycled or disposed from the project site in an appropriate and legal manner.
B. Burning of debris on the site shall not be permitted. All debris, refuse, and waste shall be removed from the premises at regular intervals. No accumulation shall be permitted.

3.04 WORKMANSHIP

A. Maintain all public walks and access ways.
B. Erect and maintain barricades, warning signs, and other protective means as may be directed by the owner for protection of all persons and property from injury or damage.
C. Plug or cap open ends of piping systems and conduit.
D. Stored materials shall be covered to prevent damage by inclement weather, sun, dust or moisture.
E. Protect all installed work until accepted in place by the owner. Protect lighting fixtures.
F. Do not install plates, covers, and other finished devices until masonry, title, and painting operations are complete or protect otherwise.
G. Protect all existing or new work from operations which may cause damage such as hauling, welding, soldering, painting, insulation and covering.
H. All devices and exposed raceways are to be plumb and true. All exposed raceways in finished areas are to be coordinated with the architect/engineer prior to installation.

3.05 SCAFFOLDING

A. The contractor shall at his own expense, install, operate, protect, and maintain temporary services such as scaffolding, material hoists, access walks, etc., as may be required.

3.06 SITE UTILITIES

A. The contractor may use the existing water and electric power for temporary construction needs.
B. The owner will direct where these services may be tapped.
C. Those services that are used during construction, but are to remain, shall be refurbished to a new condition before turning back to the owner.

3.07 CLEAN-UP

A. Remove all visible temporary tags or labels as well as any protective coverings and wrappings from

fixtures and equipment.

B. Remove all spots, stains, soil, paint, spackle, and other foreign matter from all finished work.

C. Remove all trash and debris from the premises.

3.08 LUBRICATION

A. Furnish and install and maintain all required lubrication of any equipment operated prior to acceptance by the owner. Lubrication shall be as recommended by the equipment manufacturer.

B. Provide one year's supply of lubricants to owner at date of acceptance.

C. Verify that required lubrication has taken place prior to any equipment start up.

3.09 EQUIPMENT START UP

A. Verify proper installation by manufacturer or his representative.

B. Advise A/E 2 days prior to actual start up.

C. Verify proper operation. Obtain signed statement by manufacturer or his representative that equipment is operating within warranty requirements. Submit statement to A/E.

3.10 OPERATING INSTRUCTIONS AND MANUALS

A. Properly and fully instruct owner's personnel in the operation and maintenance of all systems and equipment.

B. Insure that the owner's personnel are familiar with all operations to carry on required activities.

C. Such installation shall be for each item of equipment and each system as a whole.

D. Provide report that instruction has taken place. Include in the report the equipment and/or systems instructed, date, contractor, owners personnel, vendor, and that a full operating and maintenance manual has been reviewed.

E. Manual shall include all instructions on operation, maintenance, repair parts list, lubrication requirements, brochures, catalogue cuts, wiring diagrams, piping diagrams, control sequences, service requirements, names and addresses of vendors, suppliers and emergency contacts. 3 manuals shall be provided to owner.

F. Submit manuals for review prior to operating instruction period. Manuals shall be 8 1/2" x 11" with hard cover suitably bound.

G. Provide to the owner any special tools necessary to operate any of the equipment.

3.11 PENETRATION SEALING

A. All penetrations of Natatorium walls, fire walls, smoke walls, and floors shall be sealed around conduits and wiring to prevent the flow of gases or smoke.

B. The sealant shall be foamed in place between the conduit or wiring and the adjacent walls and floors with DOW Corning RTV foam or Fire Stop Caulk.

C. All penetrations through roof structure shall be coordinated with other trades to minimize the potential for water seepage and leakage through such penetrations.

D. When electrical boxes located on opposite side of a fire resistance rated wall assembly are within 24" horizontally of each other, both devices are to be wrapped with Spec Seal Putty Pads as manufactured by Specified Technologies, Inc. or approved equivalent.

3.12 EQUIPMENT SETTING

A. Furnish and install as a minimum, a 4" thick concrete pad beneath all floor mounted equipment.
B. Furnish and install as a minimum, spring vibration isolators under any equipment 10 HP and over and rubber-in-shear vibration isolation under all equipment less than 10 HP.
C. Reinforce concrete with No. 4 rods 12' on center both ways.
D. Pad to have 3/4" dowels into concrete at 1 per 4 square feet.

3.13 INSTALLATION MOUNTING HEIGHTS

A. To be verified by Architect, but in general shall be as follows (top of device elevation above finished floor):

Lighting switches, controls:	3 ft. 10 in.
Duplex receptacles:	1 ft. 8 in.
Duplex receptacles over counters:	+8" above countertop
Telephone data wall plate and modular jack, desk phone:	1 ft. 8 in.
Telephone, data wall plate and modular jack, wall phone:	3 ft. 10 in.
Special outlets:	As required for equip.
Fire alarm annunciating devices:	85"
Fire alarm manual pull stations:	3 ft. 10 in.
Clock receptacles:	As indicated on dwgs.
CATV wall plates and modular jacks:	1 ft. 8 in.
CATV wall plates and modular jacks mounted near ceiling:	Coordinate mounting height with Architect.
Thermostats (forward reach):	3 ft. 10 in.
Thermostats (side reach):	3 ft. 10 in.
Thermostats with lockable cover:	4 ft. 6 in.

Requirements of the Americans with Disability Act and/or ANSI A117.1 shall be met.
B. Structural and mechanical details shall be coordinated before roughing in.

3.14 COORDINATION

A. Coordinate with work of other trades prior to installation.
B. Arrange for minor variations for complete coordinated installation. Provide all necessary offsets to install the work and to provide clearances for other trades.

3.15 CUTTING AND PATCHING

A. Provide for cutting and patching for all electrical work.
B. Patching to be performed by tradesmen skilled in the particular trade.
C. Contractor shall patch and repair any existing openings created by the demolition work in floors, walls, partitions, and ceilings not being reused for the new construction.

3.16 BALANCING AND TESTING

A. Electrically balance connected loads in panels.

B. The entire wiring system shall be tested to be free from grounds and faults.
C. Identify all circuits and all phase wiring at terminations.

3.17 EQUIPMENT FURNISHED BY OTHERS

A. This contractor shall make final electrical connections to equipment furnished by other contractors or the owner.
B. Provide electrical service and disconnects as required by code to supply such equipment.

3.18 EXCAVATION, SHORING, PUMPING, BACKFILLING

A. Perform all excavation required to install the work. Deposit excavated material as so not to create a slide hazard.
B. Maintain excavations free of water.
C. Backfill with clean material and pneumatically tamp in 8 inch layers. Remove excess material, including rock, from site or as directed by the A/E.
D. Return to original conditions any areas disturbed for excavation.
E. Install all work neat, trim, and plumb with building lines.
F. Install work in spaces allocated.
G. Cutting and patching shall be performed by skilled tradesmen normally employed for the work involved.

3.19 RECESSES

A. Furnish information to the General Contractor as to sizes and locations of recesses required to install panels, boxes, grilles, and other equipment or devices which is to be recessed in walls.
B. Make offsets or modifications as required to suite final locations.

3.20 LABELING

A. All equipment panels, controls, safety switches, and devices shall be provided with permanent black laminated micarta white core labels with 3/8-inch letters.
B. This shall also apply to all controllers, remote start/stop pushbuttons, equipment cabinets, and where directed by the A/E.
C. This shall not apply to individual room thermostats, and local light switches.

3.21 GUARANTEE

A. All work shall be guaranteed to be free from defects for a period of 1 year of operation from date of acceptance by the owner unless otherwise specified.
B. Guarantee shall be extended for all non-operational periods due to failure within the guarantee period.

3.22 AS BUILT DRAWINGS

A. At the completion of the work and prior to final payment, the contractor shall furnish a reproducible as-built drawing to the A/E for approval. The drawings shall indicate all work installed and its actual size, location and identify all systems installed with locations of concealed devices, conduit, piping and other equipment and complete wiring diagrams of all systems. If acceptable, the A/E will submit

the as-built drawings to the owner as record drawings. If not acceptable, the A/E will return the drawing to the contractor to make corrections as required. The contractor will resubmit for approval.

B. The as-built drawings shall indicate measured dimensions of underground lines and other concealed work.

3.23 SAMPLE CONSTRUCTION

A. (One double and one single patient room) (one apartment) (one tenant space) shall be constructed and approved by the owner, architect/engineer and local code officials (electrical inspector or underwriter, building code official, fire marshal) before all other rooms are constructed.
B. This room shall represent the standard against which all others will be constructed.
C. Installation will include all units, ducts, piping, wiring, fixtures, devices, etc. which are required for complete rooms.

3.24 WORK COMPLETION

A. The contractor shall promptly correct work rejected by the engineer or failing to conform to the requirements of the contract documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected work, including additional testing and inspections and compensation for the engineer's services and expenses made necessary thereby, shall be at the contractor's expense.

3.25 SHOP DRAWING REQUIREMENTS

A. The following is a list of required shop drawings for this project.

ELECTRICAL	**DATE REC'D**	**ACTION**	**DATE REC'D**	**ACTION**
Basic Materials and Equipment (Section 26 05 00 and 26 27 00)				
Panelboards (Section 26 24 16)				
Surge Suppression (Section 26 43 13)				
Lighting (Section 26 50 00 and 26 09 00)				
Fire Alarm and Detection Systems (Section 28 30 00)				
As-Builts				
Warranties				
Maintenance Manuals				
Instructions				
Ground Test				

END OF SECTION

SECTION 26 01 26 - EXISTING EQUIPMENT TO BE REUSED

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to section 26 00 00 for requirements which are applicable to this section.
B. Refer to National Electrical Testing Association Standards, particularly NETA MTS-1997 and NETA ATS-1999.

1.02 WORK INCLUDED

A. Provide all labor, material, equipment, and supervision necessary to refurbish existing equipment as specified herein and place into operation.
B. All work and accessories required to perform the intended work is to be included in the scope of work.

1.03 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturer's recommendations.
B. Install systems and equipment in accordance with present applicable codes.
C. Provide adequate supervision of labor force to see that installations are complete and correct.
D. Testing Agency’s Field Supervisor and/or Technicians are to be certified according to NETA ETT-2000.

1.04 SCOPE

A. It is the intent to totally refurbish existing equipment to as-new operating condition and efficiency. All parts to be made operable, corrosion removed, repainted, adjusted, cleaned, lubricated, and repaired as necessary.
B. Schedule outages with Owner - Minimize downtown. Have parts and supplies for repairs available beforehand.

PART 2 - PRODUCTS

2.01 PARTS

A. Replacement parts shall be manufactured by the original equipment supplier or approved substitute. Any substitute to be submitted to the engineer before use.

PART 3 – EXECUTION

3.01 PANELS BOARDS, SWITCH BOARDS, LOAD CENTERS

A. Visually inspect enclosures, bus and all cable terminations. Report signs of cable overheating, insulation degradation, excessive moisture, rust, etc.
B. Clean, wire brush and paint with Rustoleum/Gavanoleum to match existing, all corroded and rusted areas.
C. Undo cable terminations, as necessary, clean with approved electrical cleaner, and reconnect to manufacturers recommended torque.
D. Replace existing circuit breakers with new breakers of similar AIC ratings. This applies to all circuit breakers 100 Amps or less and more than 20 years old.
E. Switchboard fused switches are to be cycles on/off several times to ensure operability. Lubricate pivot point as necessary as recommended by the manufacturer.
F. Provide fuse clamps to each fused switchboard switch in excess of 100 Amps.

END OF SECTION

SECTION 26 24 16 - PANELBOARDS

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 26 00 00 for additional requirements of this section.
B. Refer to requirements of the National Electrical Code, UL, and the NFPA.

1.02 WORK INCLUDED

A. Provide all labor, material, equipment and supervision necessary to furnish and install panelboards as specified.

1.03 SUBMITTALS

A. Submit manufacturers shop drawings of all equipment specified in this section.

1.04 QUALITY ASSURANCE

A. Verify that all equipment is installed in accordance with the manufacturers' warranty requirements.

PART 2 - PRODUCTS

2.01 DISTRIBUTION PANELBOARDS (MDP or PP)

A. GENERAL - Furnish and install distribution and power panelboards as indicated in the panelboard schedule and where shown on the plans. Panelboards shall be equipped with thermal-magnetic, molded case circuit breakers of frame and trip ratings as shown on the schedule.
B. BUSSING ASSEMBLY AND TEMPERATURE RISE - Panelboard bus structure and main lugs or main breaker shall have current ratings as shown on the panelboard schedule. Bus shall be plated copper.
C. CIRCUIT BREAKERS - Circuit breakers shall be equipped with individually insulated, braced and protected connectors. Circuit breakers shall be flush with each other. Tripped indication shall be clearly shown. Provisions for additional breakers shall be such that no additional connectors will be required to add breakers. Mechanical lugs are to be copper. For 480 V applications over 1000
D. EQUIPMENT SHORT CIRCUIT RATING (FULLY RATED) - Each panelboard shall have a short circuit current rating equal to or greater than the integrated equipment rating shown on the panelboard schedule or on the plans. Panelboards shall be marked with their maximum short circuit current rating at the supply voltage and shall be UL listed.
E. CABINET - Panelboard assembly shall be enclosed in a steel cabinet. The rigidity and gauge of steel to be as specified in UL Standard 50 for cabinets. The size of wiring gutters shall be in accordance with UL Standard 67. Cabinets to be equipped with latch and tumbler-type lock on

door of trim. Doors over 48" long shall be equipped with three-point latch and vault lock. All locks shall be keyed alike. End walls shall be removable. Fronts shall be of code gauge steel. Baked enamel finish electro-deposited over cleaned phosphatized steel.

F. SAFETY BARRIERS - The panelboard interior assembly shall be dead front with panelboard front removed. Main lugs or main breakers shall have barriers on five sides. The barrier in front of the main lugs shall be hinged to a fixed part of the interior. The end of the bus structure opposite the mains shall have barriers.

G. UL LISTING - Panelboards shall be listed by Underwriters Laboratories and shall bear the UL label. When required, panelboards shall be suitable for use as service equipment.

H. NAMEPLATES - Provide laminated black phenolic resin with white core with 3/16 inch high engraved lettered nameplates for each circuit breaker to indicate the feeder, panelboard and equipment served. Mounted, with plated screws, adjacent to or on front of the breaker.

I. Panelboards shall be by Square D, Siemens, Cutler Hammer or GE.

2.02 LIGHTING & RECEPTACLE PANELS (LP or RP)

A. GENERAL - Furnish and install circuit breaker lighting panelboards as indicated in the panelboard schedule and where shown on the plans. Panelboards shall be equipped with thermal-magnetic molded case circuit breakers with frame and trip ratings as shown on the schedule.

B. CIRCUIT BREAKERS - Shall be quick-make, quick-break, thermal-magnetic, trip indicating and have common trip on all multipole breakers. Trip indication shall be clearly shown by the breaker handle taking position between "ON" and "OFF" when the breaker is tripped. Branch circuit breakers feeding convenience outlets shall have sensitive instantaneous trip settings of not more than 10 times the trip rating of the breaker to prevent repeated arcing shorts resulting from frayed appliance cords. Single pole 15 and 20 ampere circuit breakers shall be UL listed as "Switching Breakers" at 120V AC and carry the SWD marking. UL Class A ground fault circuit protection shall be provided on 120V AC branch circuits as specified on the plans or panelboard schedule. This protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection for branch circuit wiring. Tripping of a branch circuit breaker containing ground fault circuit interruption shall not disturb the feeder circuit to the panelboard. A single pole circuit breaker with integral ground fault circuit interruption shall require no more panelboard branch circuit space than a conventional circuit breaker. A UL listed combination arc fault circuit interrupter (AFCI) shall be provided for all 120V, 15 or 20 Amp branch circuits as indicated on the plans or panelboard schedule or as required by the National Electrical Code. This protection shall be an integral part of the branch circuit breaker which also provides overload and short circuit protection for the branch circuit wiring. This breaker shall require no more panelboard branch circuit space than a conventional circuit breaker. Connections to the bus shall bolt-on.

C. PANELBOARD BUS ASSEMBLY - Bus bar connections to the branch circuit breakers shall be the "distributed phase" or "phase sequence" type. Single phase, three-wire panelboard bussing shall be such that any two adjacent single pole breakers are connected to opposite polarities in such a manner that two pole breakers can be installed in any location. Three phase, four-wire bussing shall be such that any three adjacent single pole breakers are individually connected to each of the three different phases in such a manner that two or three pole breakers can be installed at any location. All current carrying parts of the bus assemble shall be plated copper. Mains ratings shall be shown in the panelboard schedule or on the plans.

D. WIRING TERMINALS - Terminals for feeder conductors to the panelboard mains and neutral shall be UL listed as suitable for the type of conductor specified. Terminals for branch circuit wiring, both breaker and neutral, shall be UL listed as suitable for the type of conductor specified.

E. CABINETS AND FRONTS - The panelboard bus assemble shall be enclosed in a steel cabinet.

The size of the wiring gutters and gauge of steel shall be in accordance with NEMA and UL Standards. The box shall be fabricated from galvanized steel or equivalent rust resistant steel. Fronts shall include doors and have flush, cylinder tumbler-type locks with catches and spring-loaded stainless steel door pulls. Doors shall be mounted with completely concealed steel hinges. Fronts shall not be removable with door in the locked position. A circuit directory frame and card with a clear plastic covering shall be provided on the inside of the door. Fronts shall be of code gauge steel.

Front panel cover is to be door in door construction with piano hinge.

F. EQUIPMENT SHORT CIRCUIT RATING (FULLY RATED) - Each panelboard shall have a short circuit current rating equal to or greater than the integrated equipment rating shown on the panelboard schedule or on the plans. Panelboards shall be marked with their maximum short circuit current rating at the supply voltage and shall be UL listed.
G. UL LISTING - Panelboards shall be listed by Underwriters Laboratories and bear the UL label. Equal panelboards may be provided by Square D, G.E., Cutler Hammer, or Siemens.
H. ELECTRONIC GRADE - Panels indicated to be electronic grade to have 200% rated neutrals, and an isolated ground bar in addition to the equipment ground bar.

PART 3 - EXECUTION

3.01 PANELS

A. Tops not to exceed 72 inches above floor.
B. Provide labeling and complete directories.
C. Ductwork or piping shall not pass over panels.
D. Space shall be clear 36" in front of panel floor to structural slab or roof above.
E. All conduit entering the panel shall have a screwed hub with an insulated bushing and no sharp edges.
F. Wires shall be labeled and neatly arranged in the wiring gutters with wires cut to proper lengths and neatly racked.
G. Electronic grade panels shall have feeder neutrals rated at 200% to maintain the UL listing of the panel and be provided with isolated ground conductor back to service entrance or feeder transformer.

3.02 GROUNDING

A. All panels shall be grounded to the building equipment grounding system per NEC 408.40. Ground resistance shall not exceed NEC values.

END OF SECTION

SECTION 26 27 00 - BASIC MATERIALS AND EQUIPMENT FOR METAL RACEWAY SYSTEMS

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 26 00 00 for additional requirements of this section.
B. Refer to NECA 1-2000 for general installation requirements.

1.02 SUBMITTALS

A. Submit shop drawings and manufacturers catalog sheets of all specified items unless waived by the engineer.
B. Submit switches and receptacles as a minimum.

PART 2 - PRODUCTS

2.01 RIGID METAL CONDUIT (GRS)

A. Material; Steel, Zinc coated Fed. Spec. WW-C-581d, ANSI C801.
B. Fittings; Malleable iron, Threaded
C. NEC; Article 344
D. Application; Indoor, above ground, enamel coated, all occupancies not subject to severe corrosive influences.
E. Manufacturer; Hubbell, Allied Tube and Conduit Corp. or approved equal.

2.02 ELECTRICAL METALLIC TUBING (EMT)

A. Material; Galvanized steel, U.L. labeled, Fed. Spec. WWC-563 (latest revision), ANSI C80.3.
B. Fittings; Threadless compression type for up to 1 1/4", set screw for 1 ½" and larger. Installation in accordance to Article 358 of the National Electrical Code and U.L. general information card #FJMX.
C. NEC; Article 358
D. Application; Exposed and concealed work not subject to physical damage.
E. Manufacturer; Hubbell, Allied Tube and Conduit Corp. or approved equal.

2.03 FLEXIBLE METAL CONDUIT

A. Material; Hot dipped galvanized interlocking convolutions of steel tape in circular cross section. Fed. Spec. WW-C-566.
B. Fittings; Hot dipped galvanized steel
C. NEC; Article 360
D. Application; All areas other than wet locations, hoistways, hazardous locations, below ground, and areas with exposure to oil, gasoline, or other materials having an adverse effect on rubber.

E. Manufacturer; Electri-flex Company Liquatite Type BR, Hubbell, Allied Tube and Conduit Corp., AFC or approved equal.

2.04 RIGID NON-METALLIC CONDUIT (SCHEDULE 40 PVC)

A. Material; U.L. 651, ANSI/NEMA TC-2, Fed. Military Spec. WC-1094A, 90 deg. wire rated and sunlight resistant.
B. Fittings; PVC, same as above.
C. NEC; Article 352
D. Application; In walls, floors, ceilings, wet locations, underground, and locations subject to severe corrosive influences.
E. Manufacturer; Carlon Schedule 40 electrical conduit or approved equal.

2.05 LIQUATITE FLEXIBLE METAL CONDUIT

A. Material: Hot dipped galvanized interlocking convolutions of steel tape in circular cross section with PVC jacket.
B. Fittings: Hot dipped galvanized steel.
C. NEC Article 350 (LFMC)
D. Application: All areas other than elevator hoistways, hazardous locations and where subject to physical damage.
E. Manufacturers: Electriflex Company Liquatite Type LT, Hubbell, Allied Tube and Conduit Corp., AFC or approved equal.

2.06 CONDUCTORS

A. Type; THHN, 98% conductivity copper, 600 volt, dry locations. Type THWN for wet locations. Conductors shall be U.L. listed.
B. Equipment terminations for circuits rated 100 Amps or less (#14 AWG - #2 AWG) shall be rated 60 degrees C (140 degrees F). Equipment termination for circuits rated over 100 Amps (#1 or larger) shall be rated 75 degrees C (167 degrees F). Refer to NEC for allowable exceptions. 90 degrees C (194 degrees F) rated conductors shall be used as indicated on the drawings or as indicated within these specifications.
C. Solid copper conductors for #10 and #12 wire size. #8 and larger shall be stranded copper.
D. Separate green ground conductor for all 480 volt circuits including branch, homerun, and feeders.
E. All conductors shall be color coded as follows:
120/208 Volt Systems

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	Grey or Natural White

F. Minimize size conductor shall be #12 AWG except that #14 AWG shall be used for control wiring. All circuit conductors shall be run in the same raceway system.
G. A grounding conductor shall be provided to each electrical device in accordance with the National Electrical Code.
H. Conductor sizes shall be as shown on drawings and/or specified in this specification.
I. Conductors shall not be installed in raceways until construction is advanced to allow conductors to be installed completely without damage to conductors and there is not possibility of water or other contaminants entering the raceway system. Conductors shall be installed between convenient

terminating points.

J. An approved pulling compound shall be used to assist in pulling of conductors.

K. Aluminum Alloy Conductors for Distribution Feeder Applications:
   1. Distribution feeder conductor's sizes #6 AWG to 1000 Kcmil may be copper (Base Bid) or aluminum alloy (Alternate). Aluminum alloy conductors shall be compact standard conductors of a recognizable Aluminum Association 8000 Series aluminum alloy conductor material (AA-8000 series alloy). AA-8000 series alloy conductor must be Alcan Cable Stabiloy or approved equal.
   2. Compliance with the elongation requirement per Table 10.1 of UL Standard 1581 for stranded AA-8000 series aluminum alloy conductors shall be determined on wires taken from the conductor after stranding by manufacturer.
   3. Insulation:
      a. For use in raceways: Type XHHW-2, temperature rating 90o C.
      b. For use in cable trays: Sizes #1/0 AEG and larger. Type XHHW-2, temperature rating 90o C and marked: "SUN RES", "VW-1"", "GASOLINE AND OIL-RESISTANT II", "FOR CT USE".

L. Manufacturers: Alpha Wire, Southwire, Tamaqua Cable, Triangle Wire & Cable, American Insulated Wire, BICC, General Cable or approved equal.

2.07 JUNCTION BOXES

A. Material; Galvanized steel, accessible.
B. Manufacturers; Keystone, Hubbell, Penn Panel and Box Co, or approved equal
C. NEC; Article 314

2.08 OUTLET AND SWITCH BOXES

A. Material; Galvanized steel with knockouts to suit raceway system.
B. Manufacturer; Crouse Hinds Co., Steel City Div., Raco Inc., or approved equal.

2.09 WALL PLATES - THERMOSET PLASTIC - RESIDENTIAL GRADE

A. Wall plates shall be standard size, thermoset plastic, residential grade.
B. Plates shall be provided for all switches, receptacles, blanks, telephone, and special purpose outlets.
C. Plates may be of modern design having rounded edges and corners and be complete with color-matched mounting screws.
D. Plates must be of one design throughout the building and shall conform to UL, CSA, and NEMA standards.
E. Engraving shall be done by plate manufacturer in accordance with the schedule.
F. Acceptable Manufactures: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton or approved equal.

2.10 WALL PLATES - STAINLESS STEEL - TYPE 302 - CORROSIVE/DAMPNESS/FOOD SERVICE DUTY

A. Wall plates shall be Pass and Seymour Sierra Series "S", Type 430 Stainless Steel, or "S-N" line Type 302 Stainless Steel or equal and will conform to UL and NEMA standards.
B. Plates must be provided for all switches, receptacles, blanks, telephone and special purpose outlets.

C. Plates shall be of a modern design, having rounded edges and corners and be complete with finish-matching mounting screws.
D. Engraving shall be done by plate manufacturer in accordance with the schedule.
E. Plates must be of one design throughout the building.
F. Acceptable Manufacturers: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton, or approved equal.

2.11 RECEPTACLES - STANDARD DUTY - COMMERCIAL/SPECIFICATION GRADE

A. All thermoplastic nylon body construction.
B. Impact-resistant nylon face.
C. One-piece triple-wipe brass power contact.
D. Available with side and back wire capable of accepting #14 - #10 AWG copper or copper-clad wire.
E. Terminal compartments isolated from each other for positive conductor containment.
F. Automatic grounding clip assures grounding to metallic boxes.
G. Easily accessible break off tabs to facilitate split circuit wiring.
H. Plated steel strap for corrosion resistance.
I. Combination phillips/slotted head screws backed out for ease of installation.
J. In compliance with UL 498.
K. Pre-wired pigtail connectors that accommodate Fed. Spec. receptacles are approved. Must be crimped and welded terminal right angle application within the connector.
L. Receptacle shall be Federal Specification, WC896 compliant. Marking should be clearly identifiable on face or strap.
M. Acceptable Manufacturers: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton or approved equal.
N. Leviton 5362/5361, 20 Amp, ivory, white, grey, black, brown or almond.

2.12 RECEPTACLES - DECORA - SPECIFICATION GRADE

A. Impact-resistant nylon face.
B. One-piece, triple-wire brass power contacts.
C. Corrosion resistant, plated, wrap-around steel strap locked into assembly to prohibit strap from bending away from body.
D. Terminal compartments isolated from each other for positive conductor containment.
E. Available in hospital grade & specification grade.
F. Heavy-duty compact design for easier installation and long lasting performance.
G. Automatic grounding clip standard for positive ground to metal boxes.
H. All devices fit standard #26 opening wall plate.
I. Side and backwire accepts #14 - #10 AWG.
J. In compliance with UL 498.
K. Pre-wired pigtail connectors that accommodate Fed. Spec. receptacles are approved. Must be crimped and welded terminal right angle application within the connector.
L. Receptacle shall be Federal Specification, WC896 compliant. Marking should be clearly identifiable on face or strap.
M. Acceptable manufacturers: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton, or approved equal.
N. Leviton 16352, 20 amp, white, ivory, grey, black or almond.

2.13 GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES - STANDARD GRADE

A. Side or screw pressure plate back wire with #14 or #12 AWG solid or y-stranded copper wire.
B. Extra-long strap.
C. High-impact resistant thermoplastic construction.
D. Ground screw with a wire guide channel.
E. Dual-direction test and reset buttons.
F. Line and load terminations supplied backed out, and ready to wire.
G. 2 back wire holes per terminal.
H. Ultrasonic welding of face to back body.
I. Mis-wire label applied to load terminals.
J. GFCI Receptacle shall have SafeLock™ protection. If critical components are damaged and ground fault protection is lost or if mis-wired, power to receptacle is disconnected.
K. Class A rated GFCI
L. 1 ½ HP rating on Motor Control GFCI switch (2081 series).
M. Button colors match the device face.
N. Supplied with matching wall plate.
O. In compliance with UL-943, UL-498, UL-508.
P. Pre-wired pigtail connectors that accommodate Fed. Spec. receptacles are approved. Must be crimped and welded terminal right angle application within the connector.
Q. Receptacle shall be Federal Specification, WC896 compliant. Marking should be clearly identifiable on face or strap.
R. Acceptable Manufacturers: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton, or approved equal
S. Leviton 6898, 20 amp, ivory, white, almond, or mahogany.

2.14 RECEPTACLES - FLOOR OUTLET

A. Solid brass covered plate with matching flush fitting brass cap.
B. Receptacle made of durable thermoplastic.
C. Supplied with foam rubber gasket. O-ring and metal 18" cubic box.
D. In compliance with UL 498.
E. Pre-wired pigtail connectors that accommodate Fed. Spec. receptacles are approved. Must be crimped and welded terminal right angle application within the connector.
F. Receptacle shall be Federal Specification, WC896 compliant. Marking should be clearly identifiable on face or strap.
G. Acceptable manufacturers: Cooper Wiring Devices, Pass & Seymour, Hubbell, Leviton, or approved equal.
H. Leviton 5362/5361, 20 Amp, ivory, white, grey, black, brown, or almond.

2.15 AC MOTOR RATED SWITCH

A. 30 A and/or 40 A, 600 V AC rated.
B. Double pole or triple pole, single-throw.
C. UL 508, UL 94 (flammability) Listed.
D. All molded parts are made of thermoplastic material to assure superior resistance to repeated impact, chemical degradation, extreme temperature fluctuations, tracking and arcing.
E. Positive-contact design enhances fast make/slow break mechanism by minimizing bounce and arcing upon contact closure and teasing upon separation.
F. Free-travel toggle design protects closed contacts from accidental disengagement and contact

teasing.

G. Silver alloy contacts provide maximum conductivity and prolonged service life.
H. Side and back wire terminal screws accept up to #10 AWG solid copper wire.
I. For standard #8 AWG wire, remove terminal clamp and use ring terminal.
J. Oversized #10, triple-combination, vibration-resistant terminal screws.
K. Mounting yoke is made from nickel-plated brass for superior corrosion resistance.
L. Insulating barriers between terminal screws provide isolation from each phase.
M. Device are permanently marked with catalog number, amperage, voltage and horse-power ratings to assist with identification.
N. Large toggle provides positive actuation, even when operated with gloved hand.
O. Leviton MS302 (30 A, 2 P), MS 303 (30 A, 3 P), MS402 (40 A, 2 P) or MS403 (40 A, 3 P) or equivalent by Cooper Wiring Devices, Pass & Seymour, Hubbell.

2.16 SURFACE METAL RACEWAY AND WIREWAY

A. Provide surface metal raceway system complete with all fittings, wiring, devices, etc. Surface raceway shall have baked enamel finish.
B. These raceways are permitted only in dry locations where not subject to severe physical damage and must have metal not less than .04 inches thick. Do not use in hoistways and in any hazardous classified areas.
C. The number, type, and size of conductors permitted in raceway shall be clearly marked on raceway or on shipping label.
D. Splices and taps may be made providing raceway has an accessible removable cover.
E. Wireway made of 14 gauge sheet metal forming a square trough with hinged cover and complete with couplings, 90 deg. elbows, tees, junction boxes, end plates, and supports may be used for surface wiring at load centers and other locations to the extent permitted by the NEC.
F. Wireways in sizes 2 1/2" x 2 1/2" up to 12" x 12" square may be used; however, no conductor larger than that which the wireway is designed shall be installed therein. Wireway shall not contain more than thirty current carrying conductors at any cross-section and the sum of cross-sectional areas of all contained conductors at any cross-section shall not exceed 20% of the interior cross-sectional area of wireway.
G. Wireways shall be treated with rust resistant primer and finished gray baked enamel.

2.17 MC CABLE

A. Type; UL listed Type MC Cable with galvanized steel armor outer casing, color coded circuit conductors, insulated green grounding conductor. Each conductor insulated with thermoplastic insulation.
B. NEC; Article 330, 518 and to comply with Federal Specification J-C-30B.
C. Manufacturers: AFC Cable Systems MC, Alean Cable, BICC, Tamaqua Cable, or approved equal.

2.18 FIRE ALARM MC CABLE

A. Type; UL listed Type MC Cable with galvanized steel armor outer casing, bare grounding conductor, color coded circuit conductors. Each conductor insulated with thermoplastic insulation.
B. NEC; Article 760 and to comply with Federal Specification J-C-30B.
C. Manufacturer: AFC Cable Systems Fire Alarm Cable or approved equal.

2.19 3 SERVICE FURNITURE FEED POKE-THRU (3" FLOOR CORE)

A. Flush poke-thru for telephone, data, and power (up to 10 wire) feeds to furniture partitions.
B. Communication adapter for protection of communications cables.
C. Up to 4 hour UL Listed fire rating as indicated on drawings or specifications.
D. Wiremold RC700 - 6A series flush poke-thru.
E. Acceptable manufacturers: Wiremold, Hubbell, Thomas & Betts or approved equal.

2.20 (COMMUNICATIONS)(POWER)(FLUSH) POKE-THRU

A. (Flush)(Pedestal) fire rated poke-thru with 3" core.
B. Accepts up to 4 Category 5 jacks, as well as 2 Category 3 jacks.
C. UL Listed up to four hour fire rating.
D. Wiremold RC900 Series Poke-Thru.
E. Acceptable Manufacturers: Wiremold, Hubbell, Crouse Hinds, Thomas & Betts or approved equal.

2.21 INDOOR OCCUPANCY SENSORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1. Hubbell Lighting.
    2. Leviton Mfg. Company Inc.
    3. Lithonia Lighting; Acuity Lighting Group, Inc.
    4. Novitas, Inc.
    5. RAB Lighting, Inc.
    6. Sensor Switch, Inc.
    7. TORK.
    8. Watt Stopper (The).
    9. Pass & Seymour
    10. or approved equal
B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.
    1. Operation: Unless otherwise indicated, turn lights on when covered area is occupied and off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
    2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
    3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
    4. Mounting:
        a. Sensor: Suitable for mounting in any position on a standard outlet box.
        b. Relay: Externally mounted through a 0.5" knockout in a standard electrical enclosure.
        c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
    5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
    6. Bypass Switch: Override the on function in case of sensor failure.
    7. Automatic Light-Level Sensor: Adjustable from 2 - 200 fc; keep lighting off when selected lighting level is present.
C. PIR Type: Ceiling mounting; detect occupancy by sensing a combination of heat and movement in

area of coverage.

1. Detector Sensitivity: Detect occurrences of 6" minimum movement of any portion of a human body that presents a target of not less than 36 sq. in.
2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft. when mounted on a 96" high ceiling.
3. Detection Coverage (Corridor): Detect occupancy within 90' when mounted on a 10' high ceiling.

D. Ultrasonic Type: Ceiling mounting; detect occupancy by sensing a change in pattern of reflected ultrasonic energy in area of coverage.

1. Detector Sensitivity: Detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches.
2. Detection Coverage (Small Room): Detect occupancy anywhere within a circular area of 600 sq. ft. when mounted on a 96-inch high ceiling.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch high ceiling.
4. Detection Coverage (Large Room): Detect occupancy anywhere within a circular area of 2000 sq. ft. when mounted on a 96-inch high ceiling.
5. Detection Coverage (Corridor): Detect occupancy anywhere within 90 feet when mounted on a 10-foot high ceiling in a corridor not wider than 14 feet

E. Dual-Technology Type: Ceiling mounting; detect occupancy by using a combination of PIR and ultrasonic detection methods in area of coverage. Particular technology or combination of technologies that controls on-off functions shall be selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch high ceiling.

PART 3 - EXECUTION

3.01 WIRING DEVICES

A. Lighting outlet boxes to have fixture studs - 3/8 inch.
B. Exterior boxes shall be gasketed and watertight.
C. Switch and device plates to be mounted with all 4 corners touching adjacent surface.
D. All devices to be installed true and plumb.
E. Switch plates and receptacles shall not be placed back to back in adjacent rooms. Offset locations a minimum of 3 inches to restrict noise transfer. This shall also apply to TV outlets, telephone outlets, and data outlets.
F. All devices on opposite side of a fire resistance rated wall assembly are to be separated by a horizontal distance of not less than 24 inches.
G. Ground fault circuit interrupters shall be provided on all outdoor receptacle circuits, receptacle circuits within toilet and bath rooms, areas in close proximity to water, and wherever else indicated

on the drawings or required by Code. While-in-use type covers are to be used in exterior wet locations.

H. Tamper resistant receptacles are to be installed in day care areas, pediatric health care, psychiatric care as well as where indicated on the drawings. Refer to NEC 406.11 and 517.18 (C).

I. Arc fault circuit interrupters shall be provided on all 15 Amp & 20 Amp receptacle circuits in dwelling unit bedrooms.

J. Dimmer switch devices shall be appropriately sized for derating when a minimum of two or more are ganged together in a common wall box.

3.02 WIRING METHODS

A. Exposed interior wiring, panel feeders, home runs, equipment feeders; EMT. EMT conduit shall be securely fastened at intervals not exceeding 10 feet and within 3' of all boxes. NOTE: Exposed means all wiring which is not installed within walls, above suspended ceilings, or within a pre-manufactured raceway. Any raceway that is to be exposed in a finished area is to be coordinated with the architect/engineer prior to installation.

B. Concealed branch circuiting above suspended ceilings, and in stud partitions; MC Cable. MC Cable shall be securely fastened at intervals not exceeding 4.5 feet, and within 12" of all boxes or fittings. All home runs shall be in EMT.

C. Wiring in concrete slabs or decks is not permitted unless approved by the architect or structural engineer.

D. Exposed exterior wiring; Intermediate rigid conduit

E. Wiring below concrete slabs in earth; PVC conduit. * Provide GRS conduit sweep elbow through concrete slab.

F. Service wiring; PVC conduit encased in 2" of reinforced concrete from utility transformer or pole to the building (below slab is not required to be encased).

G. Concrete encasement; 2" minimum cover around each conduit requiring encasement. Reinforcement consisting of 4" x 4" No. 4 wire mesh on top level of conduit.

H. Emergency feeder from generator set (if outside building) to building; PVC conduit encased in 2" of concrete, IMC within building.

I. Minimum conduit size is 3/4".

J. Flexible connections to all motors. Maximum length of flexible conduit is to be 36".

3.03 RACEWAY SYSTEMS

A. All secondary wiring shall be installed in rigid metal conduit, electrical metallic tubing, or MC Cable as specified in these Specifications.

B. Electrical metallic tubing shall be employed in lieu of rigid metal conduit in all locations except:
   1. Underground
   2. In gravel, cinder, concrete, or other sub-base floor construction. PVC may be used under floor.
   3. Horizontal runs in concrete floor slabs. PVC may be used in slabs.
   4. Where subject to possible mechanical injury
   5. In masonry construction below finished grade. PVC may be used.
   6. Vertically in poured concrete walls
   7. For service work
   8. For main distribution feeders

C. All raceway components shall be fastened at intervals not exceeding 8'-0".
   1. Conduits shall not fasten or come in contact with piping of other trades as installed in this

building.

2. Conduit shall be separated not less than 6 inches from any water, steam or gas lines as may be installed in the building.

D. Conduits and raceway systems shall be run concealed in walls, partitions and floor slabs. Conduit which must be exposed shall be arranged as to not pass in front of windows, doors, access panels, access doors, sky lights, HVAC equipment access for coil removal or filter removal or required service clearances.

E. Pulling fittings shall be provided for any conduit run which exceeds 200 feet in length.

F. All high voltage conduits (all conduit serving equipment over 600V) are to be painted red and labeled “HIGH VOLTAGE” on 10' intervals. This does not apply to conduit below grade.

G. All exposed fire alarm conduits are to be painted red, unless directed otherwise by the architect. This is to include the 120 V feed to the control panel. Junction boxes are to be labeled “FIRE ALARM.”

H. All emergency circuits (MC cable and conduit) are to be painted red unless directed otherwise by the architect. Junction boxes are to be labeled “EMERGENCY XXXV.” Appropriate voltage is to be indicated.

I. All conduits and raceway components installed under this Section for completion by others shall be provided with a pull wire affixed at both ends of conduit.

J. Insulating bushings shall be used on all conduit terminations entering enclosures, boxes and panels to protect the conductor from damage during installation.

3.04 POWER WIRING

A. Wire between motors, starters, disconnects and source.

B. Verify proper motor rotation. Check for smooth operation.

C. Furnish and install weatherproof disconnects, as indicated.

D. All panel feeders shall be run in EMT raceway system.

E. All wiring to roof top units, fans, and H&V units shall be installed complete between panel, disconnect switches and motor or unit connections.

F. Disconnects shall be mounted adjacent to electrical and mechanical equipment. Indoor installations shall utilize NEMA 1 enclosures. Outdoor installations shall utilize NEMA 3R enclosures.

3.05 GROUNDING

A. All electrical equipment and systems shall be grounded.

B. Grounding system shall consist of a ground bus bar connected to a driven ground rod. Utilize ground type clamp fitting.

C. All connections to conduit, equipment and devices shall be made with compression type connections.

D. The grounding system shall comply with the NEC.

E. All outside lighting fixtures and poles shall be grounded.

F. All equipment and devices shall be grounded in accordance with the manufacturers recommendations.

G. The ground system shall have a resistance of 25 ohms or less in compliance with the NEC. Utilize the fall of point method.

H. Furnish a ground system test report at the completion of the work.

I. Substation area grounding shall be in accordance with local utility company standards.

END OF SECTION

SECTION 26 50 00 - LIGHTING

PART 1 - GENERAL

1.01 REFERENCE

A. Refer to Section 26 00 00 for other requirements of this Section.
B. All work to conform to the National Electrical Code.
C. Refer to standards of the Illuminating Engineering Society.
D. All exit and emergency lighting shall comply with NFPA Life Safety Code 101, ADA, and other local codes as may apply.

1.02 SCOPE

A. Remove existing lighting system within the renovated area. Remove fixtures, mountings, outlets, wiring, conduit, switches and controls unless otherwise indicated.
B. Furnish and install a complete and operating lighting system in new and renovated spaces, including all fixtures, wiring, lamps, and ballasts.
C. All lighting outlets shall have a fixture. If a fixture designation is missing, furnish and install a fixture in similar use in the project.
D. All fixtures shall have a home run. If these are omitted on the drawings the contractor shall allow for a home run to the nearest appropriate panel.
E. All rooms are to be provided with lighting controls. Provide manual switch and code required control devices as appropriate.
F. Provide exit and emergency lighting as required by Code in all spaces to meet requirements of the AHJ. Allow for 10 additional fixtures to be installed where directed by the AHJ.

1.03 MOUNTING

A. The contractor shall be responsible for selecting particular mounting arrangements of fixtures to suit the construction or ceiling types. Contractor or his agent shall review architectural drawings to establish ceiling types prior to preparing shop drawings for submission. It is NOT to be understood that the fixture schedule accounts for the mounting types. Frequently ceiling types are changed after the fixture schedule has been completed.
B. Fixtures shall be mounted on structurally secure supports. The contractor shall provide miscellaneous steel supports to span between structural elements to provide a base of support for the fixtures at the locations shown on the drawings. Refer to architectural and structural drawings for locations of beams, joists, purlins, etc.
C. Exterior fixtures shall be mounted with anchor bolts of suitable size secured into concrete bases. The mounting arrangement shall be capable of withstanding a continuous wind of 100 mph with gales to 130 mph. EPA of fixture shall be rated with pole to provide required performance.

1.04 APPROVALS

A. Furnish shop drawings and catalog cuts of all fixtures for review by the engineer prior to ordering.
B. Provide samples of any particular fixture or fixtures when requested by the owner, architect, or

engineer.

C. Provide a point by point lighting level calculation for parking areas, areas when requested by the engineer, and for high profile areas (i.e., main lobbies, atriums, pools, gymnasiums, etc.), when an alternate manufacturer or fixture is being presented for approval. Calculation shall be provided by the manufacturer or the local manufacturer's representative. Footcandle levels are to be indicated at a maximum of 10' intervals (outside) or 5' intervals (inside). A drawing is to be provided at the same scale as the contract documents.

PART 2 - PRODUCTS

2.01 FIXTURES

A. Fixtures shall be complete with wiring, lamp holders, lamps, reflectors, glassware, canopies, shades, bases, pendants, etc.
B. Fixtures shall be wired with type AF fixture wire.
C. Pendants and canopies of the type required for the particular fixture and mounting shall be provided.
D. Plastic lenses shall not be used. Provide either virgin acrylic, high impact polycarbonate or tempered glass or as specified in the fixture schedule.
E. Any exposed fixture housing surface, trim frame, door frame and lens frame shall be free of light leaks either between fixture components or between fixture and adjacent surface.
F. Hinged door closure frames shall operate smoothly and easily without binding when installed and latches shall function easily by finger action without the use of tools.
G. Recessed incandescent fixtures installed in an insulated ceiling shall be listed for use in insulated ceilings.
H. Fixtures in pool environments (or similar condition) shall be fabricated with stainless steel and utilize stainless steel hardware. The fixtures shall be fully gasketed with an Ingress Protection Classification of at least IP-64 in addition to the requirements listed in the Lighting Fixture Schedule.
I. Fixtures in kitchens, showers, and other damp areas shall be gasketed, vapor tight, and fabricated with aluminum instead of steel. These fixtures shall have pressure clamping devices in lieu of latches.
J. Fixtures located in other harsh environments are to be of suitable construction and finish for the intended environment in addition to the requirements listed in the Lighting Fixture Schedule.
K. All fixture lenses shall, from the manufacturer, be shipped within a protective covering, i.e. plastic bag, paper wrapped, to prevent dust, dirt, smudges prior to final acceptance.
L. Ballasts shall be easily serviceable when installed and shall not be mounted to removable reflectors or wire way covers.

2.02 COMPACT FLUORESCENT BALLAST

A. The electronic ballast shall be furnished with poke-in wire trap connectors, color coded to ANSI standard C82.11.
B. The electronic ballast shall operate from a line voltage range of 108 - 305 volts, 50/60 Hz.
C. The electronic ballast input current shall have Total Harmonic Distortion (THD) of less than 10% when operated at the nominal line voltage (120V, 277V) with primary lamp(s) and have a Power Factor greater than 96%.
D. The electronic ballast shall have a Programmed-Start type system.

E. The electronic ballast shall have a lamp end-of-life detection and shutdown circuit.
F. The electronic ballast shall be sound rated A.
G. The electronic ballast output frequency to the lamps shall be above 65kHz to minimize interference with infrared control systems and eliminate visible flicker.
H. The electronic ballast shall meet ANSI C82.11, where applicable and withstand transients specified in ANSI C62.41, Location Category A3.
I. The electronic ballast shall be Underwriters Laboratories (UL) Listed (Class P) and CSA Certified where applicable and rated for use in air handling spaces.
J. The electronic ballast shall carry a five year warranty from the date of manufacture for operation at a case temperature of 75°C or less. When operated at a case temperature between 75°C and 85°C, the warranty shall be three years from the date of manufacture.
K. Ballast shall be Advance Smartmate or equivalent by Universal Lighting Technologies, Osram, Lutron, or Robertson.

2.04 LAMPS

A. LED: ENERGY STAR Certified, NRTL compliant, FM Global compliant. Recessed luminaires shall comply with NEMA LE4, CRI: 80, CCT: 3500 K. Lamps dimmable from 100 percent to 0 of maximum light output, 50,000 lamp rated life, internal driver must be UL Listed, dimmable with any standard dimmer switch, smooth flicker free dimming.
B. Fluorescent: F32T8, 32 watt, 2900 lumens, 3500 K, 20,000 hr, 85 CRI, unless indicated otherwise in fixture schedule.
C. Compact fluorescent: As indicated in the fixture schedule.
D. Manufacturers; Philips, G.E., Osram Sylvania, Inc., Panasonic, Venture or equivalent
E. Contractor is to coordinate lamp color for all fixtures. Lamp color is to be similar in all spaces.

2.05 EMERGENCY LIGHTING UNITS

A. General requirements: Self-contained units, thermoplastic enclosure, comply with UL 924. Units include the following features:
    1. Battery: Sealed, maintenance-free, lead-acid type with minimum 10 year nominal life and special warranty, 12 volt, remote capacity as required.
    2. Charger: Fully automatic, solid-state type with sealed transfer relay.
    3. Operation: Relay automatically turns lamp on when supply circuit voltage drops to 80 percent of nominal voltage or below. Lamp automatically disconnects from battery when voltage approaches deep-discharge level. When normal voltage is restored, relay disconnects lamps, and battery is automatically recharged and floated on charger.
    4. Wire Guard: Where indicated, heavy-chrome-plated wire guard arranged to protect lamp heads or fixtures.
    5. Integral Time Delay Relay: Arranged to hold unit on for fixed interval after restoring power after an outage. Provides adequate time delay to permit high-intensity-discharge lamps to restrike and develop adequate output.
    6. Test switch and LED pilot light
    7. Self-diagnostic circuitry.
B. Manufacturers: Emergi-Lite, Dual-Lite, Chloride or equivalent

2.06 EMERGENCY FLUORESCENT POWER SUPPLY UNIT

A. Internal Type: Self-contained, modular, battery-inverter unit factory mounted within fixture body.

Comply with UL 924.

1. Test Switch and Light-Emitting Diode Indicator Light: Visible and accessible without opening fixture or entering ceiling space.
2. Battery: Sealed, maintenance-free, nickel-cadmium type with minimum 10-year nominal life.
3. Charger: Fully automatic, solid-state, constant-current type.
4. Operation: Relay automatically energizes lamp from unit when normal supply circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamp and battery is automatically recharged and floated on charger.
5. Light output:
    a. Full light output, parallel connected lamps for T5, T8 or T12 applications.
    b. Minimum 750 lumens for compact fluorescent lamps.

B. Manufacturer: Bodine B30 or B33 Series or prior approved equivalent for T5, T8 and T12 applications. Bodine B75C, B84CG, B94CG, B426, B4CFG or BDL94C or prior approved equivalent for compact fluorescent applications.

2.07 EXIT SIGNS

A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction. Refer to Lighting Fixture Schedule on drawings.

B. Internally lighted Signs:

1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
2. Self-Powered Exit Signs (Battery Type) Integral automatic charger in a self-contained power pack.
    a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
    f. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

PART 3 - EXECUTION

3.01 FIXTURES

A. All recessed fluorescent troffers (2' x 2', 2' x 4', and 1’ x 4') and recessed fixtures weighing up to 20 lbs. are to be installed in grids with mounting clips and with grid secured at diagonal corners of fixture to the building structure. (4' x 4') fixtures to be secured at 4 corners.

B. Recessed fixtures between 20 and 50 pounds are to have, in addition to above, 12 gauge steel safety chains at opposite corners hung slack from the building structure. Fixtures above 50 pounds to be independently supported directly from the structure with approved hangers and angular sway bracing according to manufacturer's installation guidelines.
C. Surface mounted and pendant fixtures under 15 pounds can be supported directly from the outlet box when all of the following apply: screws pass through round holes and not key slots in the fixture body, the outlet box is attached to a main ceiling runner, and the outlet box is supported vertically from the building structure.
D. Surface fixtures between 15 and 50 pounds shall be bolted to the ceiling independent of the outlet box. Fixtures over 50 pounds shall be secured to the building structure using a manufacturer's approved mounting method.
E. Fixtures to be set plumb.
F. Provide six foot flexible leads on recessed fixtures to allow easy removal.
G. Recessed fixtures to be set with mounting frames.
H. Coordinate final location of all fixtures with other disciplines to avoid interferences and potential obstructions as the work progresses.
I. Fixtures used for temporary lighting during construction shall be re-lamped prior to acceptance of the lighting system.
J. Fixtures shall be cleaned and free of all dirt, dust, smudges and surface imperfections just prior to final acceptance.
K. Fixtures which are recessed in a fire rated ceiling shall be provided with an enclosure around the fixture which shall maintain the fire rating integrity of the ceiling system. The installation of the enclosure shall meet the requirements of the authority having jurisdiction. The fixture shall be insulation rated for higher temperature operation.
L. All recessed or surface mounted fixtures on or in sloped ceilings shall have sloped ceiling adapters to allow for vertical light distribution.
M. Recessed fluorescent fixtures installed in an insulated ceiling shall have a bent chicken wire "insulation spacer hat" to maintain required 3" clearance per NEC.

3.02 SWITCHING

A. Provide lighting control switch legs to wall switches for all fixtures except for those operated by pull chains or integral switches.
B. Provide LED bulbs for all fixtures with dimming switches.
C. Provide 3-way or 4-way control where indicated and for rooms with more than one entrance.
D. Provide multiple level lighting switching for 3 or 4 lamp fluorescent fixtures. Provide inboard/outboard ballast switching allowing fixtures to have two levels of lighting.

END OF SECTION

SECTION 28 30 00 - FIRE ALARM SYSTEM

1.0 This section is intended to define the general installation and testing requirements for the various fire alarm systems at the College of New Jersey. At a minimum, Local and National Codes that govern the layout and installation of the system shall be used during the design process.

2.0 References: National Fire Protection Association (NFPA):

A. 70 National Electrical Code (NEC).
B. 72 National Fire Alarm Code.
C. 90A Installation of Air Conditioning and Ventilating systems.

3.0 Underwriters' Laboratories (UL): Construct all fire alarm and fire detection equipment in accordance with the following publications:

A. 268 Smoke detectors for Fire protective Signaling Systems.
B. Fire Protection Equipment Directory.
C. Electrical Construction Materials Directory.
D. 38 Manually Actuated Signaling Boxes for Use with Fire-Protective Signaling Systems.
E. 464 Audible Signal Appliances.
F. 521 Heat Detectors for Fire Protective Signaling Systems.
G. National Electrical Manufacturers Association (NEMA): SB4.
H. Factory Mutual (FM) System: Approval Guide.
I. Local Fire Codes.
J. Americans With Disabilities Act.

4.0 Quality Assurance:

A. Existing systems: All items of the fire alarm system shall be listed as a product of the same manufacturer as the existing system. Substitutes will not be accepted.
B. New System: All items of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters Laboratories, Inc. and shall bear the "UL" label. All control equipment to be listed under UL as a single control system.

5.0 System Description:

A. General: Operation shall be such that actuation of any initiating device (manual station, automatic sprinkler system, automatic smoke detector, heat detector, etc.) shall cause the system to enter alarm mode. The system shall be electrically supervised for all initiating circuits, alarm signal sounding circuits and power supply circuits.
B. Operation: The actuation of any manual or automatic device shall cause a signal to sound at Energy Management at Central Utilities and Campus Police, The College of New Jersey's Monitoring System. General evacuation shall be initiated automatically.
    1. Initiating devices shall provide the appropriate pre-alarm, supervisory, or trouble signals.

C. All alarm initiating devices shall indicate individually on each alphanumeric display. Devices will have a descriptive message and condition message and will identify the area causing an alarm or trouble condition, geographically by floor.

6.0 Alarm Zones: Each manual pull station, area or duct smoke detector, heat detector, sprinkler system water flow switch, and tamper switch shall annunciate as an individual point.

7.0 Coordination: Submit design to insurance underwriter for review and approval prior to bidding documents.

A. At no time shall an existing fire alarm system be put out of service without notifying The College of New Jersey and the Insurance Underwriter. Either a firewatch shall be maintained when an existing system is shut down, or a temporary system installed. The College of New Jersey will notify the Insurance Underwriter and College of New Jersey Police will notify the Fire Department.

B. The fire alarm system shall be tied into the College of New Jersey's monitoring system in the main power plant and Admin Service Building. This connection shall include all work (surge suppression devices, wiring, control modules, programming, etc.) to tie into the existing Honeywell Campus Reporting System via the Honeywell Automated Building Central System.

8.0 Products: Manufacturer all system components shall be the standard product of Honeywell, Siemens or Simplex. Alternates will not be accepted.

A. Fire Alarm Control Panel: The fire alarm control panel shall be Honeywell FS-90 or XLS 1000 or equivalent. The final panel type shall be coordinated with The College of New Jersey and is dependent on the size and type of the project.

B. Control Panel shall comply with all the applicable requirements of UL 864. The loss of primary power or the sequence of applying primary or emergency power, shall not affect the transmission of alarm supervisory or trouble signals.

9.0 Addressable Devices:

A. Communication with Addressable Devices: The system must provide communication with all initiating and control devices individually. All of these devices are to be individually annunciated at the control panel and the remote annunciator. Annunciation shall include the following conditions for each point.
   1. Alarm.
   2. Open.
   3. Short.
   4. Ground.
   5. Device fail/or incorrect device.

B. All addressable devices shall have the capability of being disabled or enabled individually. Identification of Addressable Devices:
   1. Each addressable device shall be uniquely identified by an address code. The use of jumpers to set address will not be acceptable due to the potential of vibration and poor contact. Device identification schemes that do not use uniquely set addresses but rely on electrical position along the communication channel are unacceptable. The system shall accommodate the addition of an addressable device between existing devices and shall not require reprogramming existing devices.

10.0 Manual Pull Stations:

A. The stations will be red with painted white, raised lettering. The station will mechanically latch upon operation and remain so until manually reset by opening with a key common to all system locks. Pull stations will be double action.
B. The front of the station is to be hinged to a backplate assembly and must be opened with a key to reset the station. The key shall be common with the control panels. Stations which use allen wrenches or special tools to reset, will not be accepted.
C. ADA Strobe: Strobes shall be of the synchronized type. Candela ratings shall be in accordance with ADA, UL 1971 and NFPA-72 requirements.
D. Horns shall provide a sound of 96 dBA at 10'. In residential units, the sound level shall be a minimum of 70 dBA at the pillow and field testing shall confirm sound levels prior to installation horns.

11.0 System Expansion:

A. Provide audible and visual circuit loading such that all devices receive full power and such that no circuit contains more than 60 percent of the manufacturer’s rated capacity of devices.
B. Provide addressable circuit loading such that no addressable circuit or loop contains more than 75 percent of the manufacturer’s rated capacity of devices.

12.0 Emergency Power Supply: Power Requirements:

A. Provide sufficient standby battery capacity to operate the entire system upon loss of normal power for a period of 24 hours in a standby mode plus 10 minutes in alarm mode. In addition, provide an additional 20 percent spare standby battery capacity. All battery charging, and recharging operations shall be automatic. Batteries shall be brought from fully discharged to fully charged condition within 48 hours.
B. Batteries: Storage batteries shall be sealed, lead calcium type requiring no additional water.
C. Battery charger shall be completely automated with high/low charging rate. Charger shall be located in FACP.
D. Power supply shall be connected to the building’s emergency circuits.

13.0 Heat Detectors: Automatic heat detectors shall be of the analog addressable type with fixed temperature/rate-of-rise sensors as required by application.

14.0 Smoke Detector: Ceiling mounted smoke detector shall be of the analog addressable photoelectric type with plug-in base and auxiliary relay contacts.

15.0 Remote Annunciator: Alphanumeric liquid crystal display (LCD) type.

16.0 Identification and Labeling - Conductors:

A. All circuit conductors shall be identified within each enclosure where a tap, splice or termination is made.
B. Each cable shall be identified as to service within each enclosure, pull box and junction box.
C. Conductor and cable identification shall be by single piece, plastic coated self-laminating printed markers, or by heat-shrink type sleeves. Markers shall be attached in a manner that will not permit accidental detachment.

D. All cables shall be installed in conduit.

17.0 Training:

A. Training sessions shall be held for College of New Jersey employees. All training shall be held in a classroom type atmosphere. The amount of training and the duration of each training session shall be coordinated with The College of New Jersey. Training manuals shall be provided for all attendees.

18.0 Testing - General:

A. Testing of the fire alarm system shall meet the requirements set forth in NFPA 72. Testing shall be performed in the presence of The College of New Jersey.
B. Each portion of the fire alarm system shall be tested prior to being placed into service.
C. At the conclusion of the work and prior to final payment, a complete system acceptance test shall be conducted. Tests shall include interfaces from the fire alarm system to the elevator system, door interlocks, and other interconnected systems. The system shall not be accepted until all testing is complete and the entire system is fully functional.

19.0 Software: Three (3) copies of the software shall be given to the College of New Jersey representatives to distribute to Jim Cassidy, College of New Jersey Facilities Electric Shop, and operating personnel.

21.0 Locations of devices: According to NFPA 72 and other applicable codes and standards.

22.0 In mechanical rooms no smoke detectors shall be installed. Provide only heat detectors and horn strobes.

23.0 Minimum amount of smoke detectors required by code. Only photoelectric smoke detectors are permitted in College of New Jersey Buildings.

24.0 All devices shall be accessible in lobbies or high reach areas. Beam detectors shall be installed in areas where area smoke detectors cannot be easily reached for service and maintenance.

25.0 Horn strobes must be audible or visible in all parts of building including mechanical rooms, etc. The use of horns should be limited in exit stairwells, especially in high rise buildings where building occupants must remain in the stairwells while existing during an emergency. Strobes should be considered as an alternate.

26.0 Performance testing is the responsibility of the installer and will be witnessed by The College of New Jersey. The installer shall provide all equipment required for testing and provide three (3) copies of the point list and set of location plans to The College of New Jersey.

27.0 When connecting to an existing system:

A. During the design process advice and permission shall be obtained from The College of New Jersey.
B. Recertification and testing of the entire building’s fire alarm system will be required.

END OF SECTION

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www.pennoni.com

TECHNICAL SPECIFICATIONS

ASBESTOS ABATEMENT
GREEN HALL ROOM 206

The College of New Jersey
Green Hall
Ewing, New Jersey

Prepared for:

The College of New Jersey
2000 Pennington Road
Ewing, New Jersey 08618

Project No. TCNJX18001

June 18, 2018

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END OF SECTION

PROJECT DIRECTORY

PROJECT NAME:	Asbestos Abatement Green Hall – Suite 206 The College of New Jersey
PROJECT LOCATION:	The College of New Jersey 2000 Pennington Road Ewing, New Jersey 08614 Green Hall – Suite 206
BUILDING OWNER:	The College of New Jersey 2000 Pennington Road Ewing, New Jersey 08614 Contact: Lynda Rothermel (609) 954-4398
ASBESTOS SAFETY CONTROL MONITOR:	Pennoni Associates, Inc. 515 Grove Street, Suite 1B Haddon Heights, New Jersey 08035 License # 00102 Contact: R. Alan Lloyd, CIH, CSP (856) 547-0505 Office (856) 547-9174 Fax
PROJECT DESIGNER:	Pennoni Associates, Inc. 515 Grove Street, Suite 1B Haddon Heights, New Jersey 08035 Jeremy Humble Certificate # ACC-0917-10-003
DATE OF CONTRACT DOCUMENTS:	July 12, 2018

SECTION 01013

SUMMARY OF WORK

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings, general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 PROJECT/WORK IDENTIFICATION

A. The Project name is Asbestos Abatement of Suite 206 in Green Hall on the campus of The College of New Jersey.

Site locations are as follows:

The College of New Jersey
Green Hall – Suite 206
2000 Pennington Road
Ewing, New Jersey 08614

The contract documents have been prepared by the Owner's Environmental Consultant, Pennoni Associates Inc., and are dated July 12, 2018.

B. The scope of the project includes the complete removal and proper off-site disposal of identified asbestos-containing materials located on the 2nd floor room areas designated on the drawings. Removal activities shall be conducted as described in this specification and accompanying drawings in preparation of planned renovation activities. **All abatement activities will be regulated and governed by N.J.A.C. 5:23-8. The building will be OCCUPIED during abatement activities.**

Table 2 – Identified Asbestos-Containing Materials
Green Hall, Suite 206
Ewing, New Jersey

Homogenous Material	Location	Approx. Quantity
7. Tar Paper Backing associated with non-ACM Brown Sheet Flooring	Conference Room	30 SF
	Toilet	24 SF
	Work Room	100 SF
	Total	**154 SF**
10. Floor Leveler	President's Area	800 SF
	Total	**800 SF**
Pipe insulation and Elbows (assumed behind sheetrock walls)(	President's Area	100 LF
	Total (estimated)	**100 LF**

SF – Square Feet, LF – Linear Feet, EA – Each

ABATEMENT SCOPE OF WORK: (occupied friable abatement)

- Contractor will remove all sheet flooring under full containment from the listed designated rooms.
- Contractor will remove all floor leveling compound under full containment from the listed designated rooms.
- General Contractor will remove interior walls to expose presumed location of asbestos pipe insulation. If asbestos pipe is present Contractor will remove under full containment.
- Fire warning controls, fire alarms, sensors and any other security control equipment located within the work areas shall be properly covered.

C. Section 3.4 - Summary of Work, provides estimated quantities of asbestos-containing materials to be removed. The Contractor is responsible to determine exact quantities of asbestos-containing materials and scope of work as outlined in the specification and drawings prior to the submission of their bid.

D. Contract Documents: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

1. Applicable codes and regulations
2. Notices and permits
3. Existing site conditions and restrictions on use of the site
4. Work performed prior to work under this Contract
5. Alterations and coordination with existing work
6. Work to be performed concurrently by the Owner
7. Work to be performed concurrently by separate contractors
8. Work to be performed subsequent to work under this Contract
9. Alternates
10. Allowances

E. Summary by References: Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, Drawings, addenda and modifications to the contract documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. Work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.

F. General and Administrative Requirements are set forth in the following specification sections:

1. 01013 SUMMARY OF THE WORK
2. 01043 PROJECT COORDINATION
3. 01091 DEFINITIONS AND STANDARDS
4. 01301 SUBMITTALS

G. Abatement Work requirements are set forth in the following specification sections, listed here according to the sequence of the work:

1. 01092 CODES, REGULATIONS, AND STANDARDS - Sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to

governmental agencies before start of work.

2. 01503 TEMPORARY FACILITIES - Sets forth the support facilities needed such as electrical and plumbing connections for the decontamination units and office space for the AST.
3. 01526 TEMPORARY ENCLOSURES - Details the requirements for the sheet plastic barriers isolating the work area from the balance of the building.
4. 01410 AIR MONITORING - Describes air monitoring by Owner's Asbestos Safety Control Monitor (ASCM) so that the building beyond the work area will remain uncontaminated. Air monitoring to determine required respiratory protection is the responsibility of the Contractor.
5. 01513 TEMPORARY PRESSURE DIFFERENTIAL & AIR FILTRATION SYSTEM - Sets forth the procedures to set up the air filtration units and ventilation of the work area.
6. 01560 WORKER PROTECTION - Sets forth the procedures and equipment for adequate worker protection.
7. 01562 RESPIRATORY PROTECTION - Sets forth the procedures and equipment required for adequate protection against inhalation of airborne asbestos fibers.

H. Asbestos Removal Work Procedures are described in the following specification sections:

1. 02081 REMOVAL OF ASBESTOS
2. 02084 DISPOSAL OF ASBESTOS-CONTAINING WASTE MATERIAL.

I. Decontamination of the Work Area after completion of abatement work is described in the following sections:

1. 01711 PROJECT DECONTAMINATION - Describes the sequence of cleaning and decontamination procedures to be followed during removal of the sheet plastic barriers isolating a work area.
2. 01714 WORK AREA CLEARANCE - Describes the analytical methods used to determine if the work area has been successfully cleaned of contamination.

1.3 PROJECT COORDINATION

A. The Asbestos Contractor shall coordinate all Asbestos Abatement work with the ASCM in accordance with Section 01043 – Project Coordination.

B. The Asbestos Contractor shall not perform any work in the absence of the Asbestos Safety Control Monitor’s Asbestos Safety Technician, who shall decide in his absolute discretion as to the meaning and applicability of any part of the Asbestos Abatement Specification.

1.4 INSPECTION

A. Prior to commencement of work, the Contractor shall inspect areas in which work will be performed. Prepare a listing of damages to structure, surfaces, equipment or surrounding properties, which could be misconstrued as damage resulting from the work. Photograph or videotape existing conditions as necessary, to document conditions. Submit to ASCM prior to starting work.

1.5 POTENTIAL ASBESTOS HAZARD

A. The disturbance or dislocation of asbestos-containing materials may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the jobsite of the seriousness of the hazard and of proper work procedures, which must be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate continuous measures as necessary to protect all building occupants from the potential hazard of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

1.6 STOP WORK

A. If the Owner or ASCM presents a written stop work order, immediately and automatically stop all work. Do not recommence work until authorized in writing by ASCM.

1.7 ASBESTOS-CONTAINING MATERIALS

A. The following asbestos-containing materials are to be removed as part of this scope of work. If any other materials are found, which are suspected of containing asbestos (i.e. floor tile, pipe insulation, pipe fittings, etc.), notify the ASCM immediately both verbally and in writing. Do not proceed with any additional work without written approval. Summary tables of materials, estimated quantities and locations of asbestos materials to be removed is also included under 3.4 of this Section.

1. Sheet flooring
2. Leveling compound

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 OWNER OCCUPANCY

A. The buildings **will be occupied** during abatement activities. Cooperate fully with other personnel that may be working at the site. Perform all work so as not to interfere with other personnel.

B. All Asbestos Abatement work shall be performed in accordance with these specifications, and all federal, state and local regulations, as applicable.

3.2 CONTRACTOR USE OF PREMISES:

A. Use of the Site: Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

1. Keep existing driveways and entrances serving the premises clear and available to the Owner at all times. Do not use these areas for parking or storage of materials.
2. Do not unreasonably encumber the site with materials or equipment.
3. Lock automotive type vehicles, such as passenger cars and trucks and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place or accessible to unauthorized persons.

B. Contractor's Use of the Existing Building(s): Maintain existing building(s) in a safe and weather tight condition throughout the construction period.

1. Smoking or open fires will not be permitted within the building.
2. Keep means of egress clear of rubbish, construction materials and asbestos waste.

3. The use of existing toilets within the building will be allowed at the Owner's discretion.

3.3 WORK TO BE PERFORMED BY OTHERS:

A. The Owner will coordinate with the Contractor to facilitate shut down, blanking off and lockout of all HVAC, electrical, mechanical and security equipment and systems located within and/or servicing the work area(s) as feasible.

3.4 SUMMARY OF WORK

A. The scope of the Project includes the complete removal and off-site disposal of certain identified asbestos-containing materials. The asbestos-containing materials are summarized in the following summary tables and on the attached drawings. The tables are provided to supply Contractors with information to aid in the bidding process. The quantities listed are only estimated and it is the contractor's responsibility to verify the actual quantities prior to submitting a bid. The tables shall in no way limit the scope of work. The Contractor shall be responsible to fully investigate the scope of work and provide a bid proposal based on all existing conditions.

B.

Table 2 – Identified Asbestos-Containing Materials
Green Hall, Suite 206
Ewing, New Jersey

Homogenous Material	Location	Approx. Quantity
7. Tar Paper Backing associated with non-ACM Brown Sheet Flooring	Conference Room	30 SF
	Toilet	24 SF
	Work Room	100 SF
	Total	**154 SF**
10. Floor Leveler	President's Area	800 SF
	Total	**800 SF**
Pipe insulation and Elbows (assumed behind sheetrock walls)(	President's Area	100 LF
	Total (estimated)	**100 LF**

SF – Square Feet, LF – Linear Feet, EA – Each

C. The Contractor shall:

1. Make all required notifications, obtain all permits and pay all fees associated with the work.
2. Remove all identified asbestos-containing materials in strict accordance with all applicable federal, state and local regulations and this specification.
3. Dispose of all asbestos-containing materials in strict accordance with N.J.D.E.P. rules and regulations, N.J.A.C. 7:26, and this specification.
4. Coordinate with the Facilities Manager for the shutdown, blanking off and lockout all HVAC, electrical, mechanical and security equipment and systems located within and/or servicing the work area locations where feasible.
5. Provide personnel and waste decontamination facilities where indicated on the contract drawings. The Contractor shall be responsible to make all connections and disconnections to existing electrical panels and water sources. The Contractor shall provide the necessary equipment to supply the decontamination unit with hot water.
6. Vent all HEPA-equipped air filtration units to the exterior of the building or as indicated on the Contract Drawings. The Contractor shall remove doors and/or windows as required and construct plywood manifold systems to allow for exhaust ducts to run to the building exterior.
7. Install scaffolding as necessary to access the work.

8. Remove and dispose of asbestos-containing materials as indicated on the Contract Drawings and described herein.
9. Clean and decontaminate the work areas as per this specification.
10. Contractor to remove boiler and hot water heater from site.
11. Route all waste directly to the secured dumpster/truck.
12. Coordinate the location of dumpsters with the ASCM. All asbestos dumpsters shall be the enclosed lockable type and shall be kept locked when left unattended.
13. The Contractor shall be required to achieve the post abatement, air monitoring clearance criteria as specified in Section 01714, Work Area Clearance.

3.5 SCHEDULE

The following schedule shall govern work of this contract:

1. **To Be Determined.**

END OF SECTION

SECTION 01043

PROJECT COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

1.2 SUMMARY:

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
   1. Notifications.
   2. Permits and Fees.
   3. Administrative and supervisory personnel.
   4. Pre-Construction meeting.
   5. Progress Meetings.
   6. Documentation required at work site.
   7. Coordination of Subcontractors and other trades.
   8. Requirements for the Contractor's Construction Schedule are included in Section “Submittals”.

1.3 NOTIFICATIONS:

A. The Contractor shall make all required notifications associated with his contract to include, but not limited to those listed in Section 01902 Codes, Regulations and Standards.

1.4 PERMITS AND FEES:

A. The Contractor shall obtain all required Permits, and pay all fees associated with his contract to include, but not limited to those listed in Section 01092 Codes, Regulations and Standards.

1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL:

A. General Superintendent: Provide on a twenty-four hour a day on call basis, a General Superintendent who is experienced in administration and supervision of asbestos abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person is the Competent Person as required by OSHA in 29 C.F.R. 1926 for the Contractor and is the Contractor's Representative's responsible for compliance with all applicable Federal, State, and Local Regulations, and this specification. This person shall have completed a course at an E.P.A. Training Center or an equivalent certified course in asbestos abatement procedures and have had a minimum of three years of on-the-job training and meet any additional requirements set forth in 29 C.F.R. 1926 for a Competent Person and this specification. The responsibilities of the General Superintendent shall include but not be limited to the following:

   1. The General Superintendent shall submit special reports directly to the Owner within one day of occurrence. A copy shall be submitted to the Owner's Representative, Project Consultants, and others affected by the occurrence.

   2. When an event of unusual and significant nature occurs at the site (e.g. failure of negative pressure system, rupture of temporary enclosures), prepare and submit a special report

listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise the Owner in advance at the earliest possible date.

B. Project Supervisor: Provide a full-time Project Supervisor who is certified and fully knowledgeable in the use of equipment and situations unique to that worksite. A separate individual shall be required to fulfill this function for each work shift that exceeds ten hours within any twenty-four hour period. The responsibilities of the Project Supervisor shall include but not be limited to the following:

1. Ensure that the individuals are wearing all proper personal protective equipment as outlined in Sections 01560 - 01562 of this specification and are trained in their use.

2. Ensure that precautions have been taken to prevent heat stress and other emergencies from occurring (e.g. selecting light-weight protective clothing, reducing the work rate, and providing adequate fluid breaks).

1.6 PRE-CONSTRUCTION MEETING:

A. The Contractor shall attend pre-construction meeting(s) scheduled by the ASCM. These meetings shall be attended by the Owner and/or the Owner's Representative, and the Contractor’s OSHA Monitoring Firm. At this meeting, the Contractor shall present in detail the following:

1. A detailed plan for preparation of each work area.
2. Description of protective clothing and approved respirators (by NIOSH and the Project Consultants) to be used.
3. Delineation of responsibility of work site isolation.
4. Explanation of the decontamination sequence.
5. Description of all removal methods to be used.
6. Explanation of the handling of asbestos-contaminated waste.
7. Proof of workers' medical exams substantiated by reports signed by the physician.
8. Description of the final clean up procedures to be used.
9. Proposed waste disposal site and proof of transporter registration. If a change in either of these items occurs during the course of the project, the Contractor shall notify the ASCM.
10. A sample of the waiver form to be used for all authorized visitors to the site.
11. Explanation of air filtration systems to be used for personnel protection, building protection, and environmental protection.
12. List of equipment on hand or to be obtained, how to be used, and the operation of each to include impact on the personnel, building environmental, and work environment.
13. Plan of action in the event of an emergency (Asbestos Spill Plan, fire routes, etc.).
14. A Detailed Work Schedule, with start and completion dates for all phases of asbestos abatement, to include, but not limited to, Worksite Preparation, Pre-inspection, Removal, Clean-up, Pre-encapsulation Inspection, Encapsulation, Clean-up Inspection, Final Cleaning, Disposal, Final Inspection, Post-testing, Analysis and Post State Inspection.

B. The Quality Assurance Air Monitoring Firm shall present in detail an explanation of air monitoring procedures to be used on behalf of the Owner. The Contractor (or independent air monitoring laboratory employed on his behalf) shall present in detail how compliance with OSHA monitoring requirements shall be fulfilled.

C. Asbestos work shall not proceed until the Owner, ASCM, and the Contractor agree on the details listed in this article.

1.7 PROGRESS MEETINGS:

A. The Contractor shall attend prescheduled Progress Meetings. These shall be scheduled by the ASCM. These meetings shall also be attended by Owner's Representative and the ASCM. Any such meetings shall serve to update all items discussed in the Pre-Construction meeting.

1.8 DOCUMENTATION REQUIRED AT WORK SITE:

A. One copy of each regulation cited in Section 01092 shall be available in the Contractor's business office and one copy of each shall be maintained in view at the job site.

B. The Contractor shall display copies of the required letters of Notification, Permits, and Variances.

C. Additional documentation required of the Contractor and to be available at the job site shall include:

1. List of emergency telephone numbers to include:
   a. The ASCM and AST.
   b. E.P.A.
   c. O.S.H.A.
   d. D.E.P.
   e. D.O.H.
   f. Fire Department.
   g. Police Department.
   h. Local Hospital.
   i. Emergency Squad.
   j. DCA Asbestos Safety Unit.
   k. Contractors Project Supervisor and General Superintendent.

2. The Contractor shall establish written work area emergency procedures and shall have such procedures posted in view and also inside each work area. In case of an emergency, decontamination procedures shall not impede emergency procedures.
3. List or personnel including all new employees.
4. A Daily Log of all persons entering the work area, including all visitors. The Log shall include the full name and certification number of all employees, and the time when they enter and exit the work area. Non-employees of the Asbestos Contractor shall be required to sign an acceptable waiver form. The waiver form shall be approved by the ASCM.
5. The Daily Log shall include a record of start and stop times, any work area problems encountered, any corrective action, and estimated amount of asbestos waste generated.
6. The Contractor shall be responsible for obtaining a copy of the daily monitoring logs from their air testing firm and maintaining this with the Daily Log at the job site.
7. Copies of Daily Log forms shall be given to the ASCM at the end of each week's work.

D. Work schedules and updated progress charts depicting all phases of work and completion deadlines.

E. Copy of Waste Hauler's Certificate and copy of all landfill receipts.

1.9 COORDINATION OF SUBCONTRACTORS AND OTHER TRADES:

A. The Contractor shall work in complete cooperation and coordination with any Subcontractors or any other trades that may be involved in other work within or related to the site.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01091

DEFINITIONS AND STANDARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including the drawings. (Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon.) Certain terms used in Contract Documents are defined in this article.

B. General Requirements: The provisions or requirements of Division-1 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.

1.3 GENERAL DEFINITIONS:

A. Definitions contained in this Article are not necessarily complete, but are general to the extent that they are not defined more explicitly elsewhere in the Contract Documents.

1. Building Owner: The person in whom legal title to the premises is vested unless the premises are held in land trust, in which instance the Building Owner means the person in whom beneficial title is vested.
2. Contractor: A public authority or any other governmental agency or instrumentality thereof, self-employed person, company, unincorporated association, firm, partnership, or corporation and any owner or operator thereof, which engages in an asbestos project or employs persons engaged in an asbestos project.
3. Indicated: This term refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in Specifications, and similar requirements in Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help locate the reference; no limitation on location is intended except as specifically noted.
4. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the Owner Representative", "requested by the "Owner's Representative", and similar phrases. However, no implied meaning shall be interpreted to extend the Owner's Representative's responsibility into the Contractor's area of construction supervision.
5. Approve: The term "approved," where used in conjunction with the Owner Representative's action on the Contractor's submittals, applications, and requests, is limited to the responsibilities and duties of the Architect stated in General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.
6. Regulation: The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.
7. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.

8. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations."
9. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
10. Installer: An "Installer" is an entity engaged by the Contractor, either as an employee, subcontractor or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
11. The term "experienced," when used with the term "Installer" means having a minimum of 5 previous Projects similar in size and scope to this project, and familiar with the precautions required, and has complied with requirements of the authority having jurisdiction.
12. Project Site is the space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction as part of the project. The extent of the project site is shown on the Drawings.
13. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the project site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests.
14. Owner's Representative: This is the entity described as the "Architect" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." All references to Architect or Engineer in the Contract Documents in all cases refer to the Owner's Representative. The Owner's Representative will represent the Owner during construction and until final payment is due. The Owner's Representative will advise and consult with the Owner. The Owner's instructions to the Contractor will be forwarded through the Owner's Representative.
15. Project Administrator: This is the entity described as the "Project Representative" in AIA Document A201 "General Conditions of the Contract for Construction," or is the entity described as "Engineer" in Engineers Joint Contract Document Committee (EJCDC) Document 1910-8 "Standard General Conditions of the Construction Contract." The Project Administrator is a full time representative of the Owner at the job site with authority to stop the work upon verbal order if requirements of the Contract Documents are not met, or if in the sole judgement of the Project Administrator, Owner's Representative, Owner, the interests of the Owner, safety of any person or the Owner's property are jeopardized by the work.
16. General Superintendent: This is the Contractor's Representative at the work site. This person will generally be the Competent Person required by OSHA in 29 CFR 1926.

1.4 DEFINITIONS RELATIVE TO ASBESTOS ABATEMENT:

A. Definitions:

1. Abatement: Any and all procedures physically taken to control fiber release from asbestos-containing materials. This includes removal, encapsulation, enclosure and repair.
2. Abatement Activities: All activities from the initiation of work area preparation through successful clearance air monitoring performed at the conclusion of an asbestos project.
3. Accredited or Accreditation (when referring to a person or laboratory): A person or laboratory accredited in accordance with Section 206 of Title II of the Toxic Substances Control Act (TSCA).
4. Action Level: An airborne concentration of asbestos of 0.1 fibers per cubic centimeter (f/cc) of air calculated as an eight-hour time-weighted average.

5. Aerosol: A system consisting of particles, solid or liquid, suspended in air.
6. Aggressive Sampling: A method of sampling in which the individual collecting the air sample creates activity by the use of mechanical equipment during the sampling period to stir up settled dust and simulate activity in that area of the building.
7. Airlock: A system for permitting entrance and exit while restricting air movement between a contaminated area and an uncontaminated area. It consists of two curtained doorways separated by a distance of at least four feet such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the second doorway, thereby preventing flow-through contamination.
8. Air Cell: Insulation normally used on pipes and duct work that is comprised of corrugated cardboard which is frequently comprised of asbestos combined with cellulose or refractory binders.
9. Air Monitoring: The process of measuring the fiber content of a specific volume of air.
10. Air Sampling: The process of measuring the fiber content of a known volume of air collected during a specific period of time. The procedure utilized for asbestos follows the NIOSH Standard Analytical Method 7400, or the provisional transmission electron microscopy methods developed by the USEPA which are utilized for lower detectability and specific fiber identification.
11. Ambient Air Monitoring: Measurement or determination of airborne asbestos fiber concentrations outside but in the general vicinity of the worksite.
12. Amended Water: Water to which a surfactant has been added to decrease the surface tension to 35 or less dynes.
13. Approved Safety and Health Program: A Program certified by the Commissioner providing training in the handling and use of asbestos-containing material, and safety and health risks inherent in such handling and use, together with methods for minimizing the exposure of workers and the public to asbestos fibers, and instruction in all applicable federal, state and local laws and regulations pertaining to asbestos-related work.
14. Area Air Sampling: Any form of air sampling or monitoring where the sampling device is placed at some stationary location.
15. Asbestos: The asbestiform varieties of serpentine (chrysotile), riebecktite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.
16. Asbestos-Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.
17. Asbestos-Containing Building Material (ACBM): Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.
18. Asbestos-Containing Waste Material: Any material which is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a work area for disposal.
19. Asbestos-Contaminated Objects: Any objects which have been contaminated by asbestos or asbestos-containing material.
20. Asbestos debris: Pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.
21. Asbestos Handler: An individual who disturbs, removes, encapsulates, repairs, or encloses friable asbestos material. This individual shall have completed an approved training course and be fully certified.

22. Asbestos Handler Supervisor: An individual who supervises the handlers during an asbestos project and ensures that proper asbestos abatement procedures as well as individual safety procedures are being adhered to. This individual shall have completed approved training courses and be fully certified.
23. Asbestos Inspection Report: A report on the condition of a building or structure in relation to the presence and condition of asbestos therein.
24. Asbestos investigator: A certified individual having satisfactorily demonstrated his or her ability to identify the presence and evaluate the condition of asbestos in a building or structure.
25. Asbestos Removal Plan: A plan which will be undertaken so as to prevent asbestos from becoming airborne in the course of the alteration, renovation, modification or demolition of any building or structure.
26. Asbestos Safety Control Monitor: A business entity authorized pursuant to N.J.A.C. 5:23-8 to ensure compliance with the Asbestos Hazard Abatement Subcode.
27. Asbestos Safety Technician: A person licensed by New Jersey Department of Community Affairs who continuously monitors and inspects the asbestos abatement work. This person shall be required to be on the jobsite during all phases of the asbestos abatement project.
28. Asbestos Spill Plan: This is to be implemented immediately in the event of failure. This includes, but is not limited to, a HEPA vacuum, extra trash bags, mops, sponges, buckets, etc., for rapid cleanup.
29. Authorized Visitor: The Owner, the Owner's Representative, testing lab personnel, the Architect/Engineer, emergency personnel or a representative of any federal, state and local regulatory or other agency having authority over the project.
30. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.
31. Baseline Monitoring: A measurement or determination of airborne asbestos fiber concentrations inside the work area and outside the building prior to starting the abatement activities.
32. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.
33. Calibration: The determination within specific limits of the true value of the scale reading or indication of an instrument.
34. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.
35. Certified Industrial Hygienist (C.I.H.): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.
36. Certified Safety Person (C.S.P): An individual having a bachelor's degree from an accredited college or university and a minimum of four years of experience as a safety professional and who has successfully completed both levels of the examination administered by the Board of Certified Safety Professionals and who is currently certified.
37. Clean room: An uncontaminated area or room which is part of the worker decontamination enclosure system with provisions for storage of workers' street clothes and protective equipment.
38. Clearance Air Monitoring: The employment of aggressive sampling techniques with a volume of air collected to determine the airborne concentration of residual fibers, and shall be performed as the final abatement activity.
39. Containment: An area which has been sealed with polyethylene sheeting to prevent contamination of asbestos to the outside environment.

40. Controlled Area: An area which can be separated off from occupied areas of the building for the purpose of controlling fiber release to the occupied areas of the building. This area is controlled so as to limit access and to ensure that, when accessed, all appropriate health and safety protocols are utilized.
41. Curtained Doorway: A device which consists of at least three overlapping sheets of plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached at the bottom to ensure that the sheets hang straight and maintain a seal over the doorway when not in use.
42. Decontamination Unit: A serial arrangement of rooms or spaces for the purpose of separating the work area from the building environment upon entering the work area and for the cleaning of persons, equipment, and contained waste prior to returning to the clean environment.
43. Demolition: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.
44. Disposal Bag: A properly labeled 6 mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site.
45. Disturb: Any action taken which may alter, change, or stir, such as but not limited to the removal, encapsulation, enclosure or repair of asbestos-containing material.
46. Encapsulant: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.
    a. Bridging encapsulant: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
    b. Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
    c. Removal encapsulant: a penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather that for in situ encapsulation.
47. Encapsulation: Treatment of asbestos-containing materials, with an encapsulant.
48. Enclosure: The construction of an air-tight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.
49. Equipment Room: A contaminated area or room which is part of the worker decontamination enclosure system with provisions for the storage of contaminated clothing and equipment.
50. Fiber: An acicular single crystal or a similarly elongated polycrystalline aggregate which displays some resemblance to organic fibers by having such properties as flexibility, high aspect ratio, silky luster, axial lineation, and others, and which has attained its shape primarily through growth rather than cleavage.
51. Fiber Count: Average number of fibers in a cubic centimeter of air (f/cc).
52. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.
53. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
54. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.
55. Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
56. Friable Material Containment: The encapsulation or enclosure of any friable ACM in a facility.

57. Glovebag: A sack (typically constructed of 6 mil transparent polyethylene or polyvinylchloride plastic) with inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.
58. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.
59. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.
60. High-efficiency particulate air filter (HEPA): Refers to a filtering system capable of trapping and retaining 99.97 percent of all mono-dispersed particles 0.3 um in diameter or larger.
61. High Volume Sampling Pump: An instrument used to draw ambient air over a filter at a flow rate between ten (10) and thirty (30) liters per minute. The high volume sampling pumps are generally utilized for background or baseline samples, environmental samples, decontamination unit samples, and post-abatement samples.
62. Holding Area: A small chamber in the equipment decontamination enclosure located between the washroom and an uncontaminated area.
63. Homogeneous Work Area: A portion of the work area which contains one type of asbestos-containing material and/or where one type of abatement is used.
64. Incidental Exposure: Occupational exposure to asbestos fibers caused to oneself by disturbing ACM during the performance of one's job, except during the performance of an asbestos project or minor project.
65. Industrial Hygiene: That science and art devoted to the recognition, evaluation and control of those environmental factors or stresses, arising in or from the work place, which may cause sickness, impaired health and well being, or significant discomfort and inefficiency among workers or among the citizens of the community.
66. Industrial Hygienist: An individual having a college or university degree or degrees in Engineering, Chemistry, Physics, or Medicine or related Biological Sciences who, by virtue of special studies and training must have been sufficient in all of the above cognate sciences to provide the following abilities:
    a. To recognize the environmental factors and to understand their effect on people and their well being.
    b. To evaluate, on the basis of experience and with the aid of quantitative measurement techniques, the magnitude of these stresses in terms of ability to impair people's health and well being.
    c. To prescribe methods to eliminate, control or reduce such stresses when necessary to alleviate their effects.
67. Isolation Barrier: The construction of partitions, the placement of solid materials, and the plasticizing of apertures to seal off the work place from surrounding areas to contain asbestos fibers in the work area.
68. Large Asbestos Project: The removal, enclosure, or encapsulation within one year of 160 square feet or more of asbestos-containing material used on an equipment, wall, or ceiling area; or involves the removal or encapsulation, using a liquid material applied by a pressurized spray, within one year of 260 linear feet or more of asbestos-containing material on covered piping.
69. Log: An official record of all activities that occurred during the project and it shall identify the Building Owner, Agent, Contractor, and Workers, and other pertinent information (e.g., equipment malfunctions, contamination beyond the work area, etc.).
70. Low Volume Sampling Pump: An instrument used to collect air samples at rates ranging from one (1) to three (3) liters per minute. The low volume sampling pump, also known as

the personal sampling pump, is essentially utilized for personal samples and work area samples.

71. Minor Asbestos Project: Corrective action using recommended work practices to minimize the likelihood of fiber release from damaged areas of asbestos ceilings, pipe and boiler insulation which involves the removal, repair, encapsulation or enclosure of 25 square feet or less of asbestos-containing material used on an equipment, wall or ceiling area, or involves the removal or encapsulation, using a liquid material applied by a pressurized spray, of 10 linear feet or less of asbestos-containing material on covered piping within one year from the start of the initial abatement work. The repair, enclosure and encapsulation by methods other than pressurized spray of any amount of asbestos-containing material, used to cover piping, shall also be a minor asbestos hazard abatement project.
72. Movable Object: A unit of equipment or furniture in the work area which can be removed from the work area.
73. Negative Air Pressure Equipment: A portable local exhaust system equipped with HEPA filtration. The system shall be capable of creating a negative pressure differential between the outside and inside of the work area.
74. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.
75. Negative Pressure Ventilation System: A pressure differential and ventilation system.
76. Occupied Area: An area of the worksite where abatement is not taking place and where personnel or occupants normally function or where workers are not required to use personal protective equipment.
77. Outside Air: The air outside the work place.
78. Permissible Exposure Limit: The permitted exposure to a particular concentration of a substance as specified by OSHA. The current permissible exposure limit for asbestos is 0.1 f/cc for an eight-hour (8) time-weighted average.
79. Personal Air Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.
80. Personal Protective Equipment (PPE): Appropriate protective clothing, gloves, eye protection, footwear, head gear and approved respiratory protection.
81. Plasticize: To cover walls and floors with plastic sheeting as herein specified or by using approved spray plastics.
82. Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential with the inside of the Work Area at a lower pressure than any adjacent area, and which cleans re-circulated air or generates a constant air flow from adjacent areas into the Work Area.
83. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.
84. Qualitative Fit Test: The individual test subject's responding (either voluntarily or involuntarily) to a chemical challenge outside the respirator facepiece. Three of the most popular methods include:
    a. Irritant smoke test.
    b. Odorous vapor test.
    c. Taste test.
85. Quantitative Fit Test: Exposing the respirator wearer to a test atmosphere containing an easily detectable, nontoxic aerosol, vapor or gas as the test agent. Instrumentation, which

samples the test atmosphere and the air inside the facepiece of the respirator, is used to measure quantitatively the leakage into the respirator. There are a number of test atmospheres, test agents, and exercises to perform during the tests.

86. Removal: The stripping of any asbestos-containing materials from surfaces or components of a facility or taking out structural components in accordance with 40 CFR 61 Subparts A and M.
87. Replacement Material: Any material used to replace ACM that contains less than .01% asbestos by weight.
88. Repair: Returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.
89. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.
90. Shift: A worker's, or simultaneous group of worker's, complete daily term of work.
91. Shower Room: A room between the clean room and the equipment room in the worker decontamination enclosure with hot and cold running water controllable at the tap and arranged for complete showering during decontamination.
92. Small Asbestos Project: The removal, enclosure or encapsulation within one year of more than 25 and less than 160 square feet of asbestos-containing material used on an equipment, wall or ceiling area; or involves the removal or encapsulation, using a liquid material applied by a pressurized spray within one year of more than 10 and less than 260 linear feet of asbestos-containing material on covered piping.
93. Staging Area: The work area near the Waste Decontamination Chamber where containerized asbestos waste has been placed prior to removal from work area.
94. Strip: To remove friable Asbestos materials from any part of the facility.
95. Structural Member: Any load-supporting member of a facility, such as beams and load-supporting walls, or any non-load supporting member, such as ceiling and non-load supporting walls.
96. Surface Barriers: The plasticizing of walls, floors, and fixed objects within the work area to prevent contamination from subsequent work.
97. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
98. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.
99. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.
100. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.
101. Wet Methods: The use of amended water or removal encapsulants to minimize the generation of fibers during ACM disturbance.
102. Work Area: The area where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.
103. Worker: Certified asbestos handler and/or asbestos handler supervisor.
104. Work Place: The work area and the decontamination enclosure system(s).

105. Work Site: Premises where asbestos abatement activity is taking place, and may be composed of one or more work areas.

1.5 SPECIFICATION FORMAT AND CONTENT EXPLANATION:

A. This Article is provided to help the user of these Specifications understand the format, language, implied requirements, and similar conventions. None of the explanations shall be interpreted to modify the substance of Contract requirements.

B. Specification Format: These Specifications are organized into Divisions, Sections or Trade Headings based on the Construction Specifications Institute's 16-Division format and the MASTERFORMAT numbering system. This organization conforms generally to recognized construction industry practice.

C. Specification Content: This Specification has been produced employing conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Language used in the Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and where the full context of the Contract Documents so indicates.
2. Imperative Language is used generally in the Specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities which must be fulfilled indirectly by the Contractor, or by others when so noted.

D. Assignment of Specialists: The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and the assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

1. This requirement should not be interpreted to conflict with enforcement of building codes or regulations governing the work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

E. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

1.6 DRAWING SYMBOLS:

A. Graphic symbols used on the Drawings are those recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.

B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical Drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by more specific symbols recommended by technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Owner's Representative for clarification before proceeding.

1.7 INDUSTRY STANDARDS:

A. Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the Project Site for reference.

1. Referenced industry standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.
2. Unreferenced industry standards are not directly applicable to the work, except as a general requirement of whether the work complies with recognized construction industry standards.

B. Publication Dates: Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

C. Updated Standards: At the request of the Owner's Representative, Contractor or authority having jurisdiction, submit a Change Order proposal where applicable code or standard has been revised and reissued after the date of the Contract Documents and before performance of Work affected. The Owner's Representative will decide whether to issue a Change Order to proceed with the updated standard.

D. Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Owner's Representative for a decision before proceeding.

E. Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Owner's Representative for decision before proceeding.

F. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entities' construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
2. Although copies of standards needed for enforcement of requirements may be part of required submittals, the Owner's Representative reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

G. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of Contract Documents:

1. AIHA - American Industrial Hygiene Association 475 Wolf Ledges Parkway Akron, OH 44311 216/762-7294.

2. AIA - American Institute of Architects 1735 New York Ave. NW Washington, DC 20006 202/626-7474.
3. ANSI - American National Standards Institute 143O Broadway New York, NY 10018 212/354-3300.
4. ASHRAE - American Society for Heating, Refrigerating, and Air Conditioning Engineers 1791 Tullie Circle NE Atlanta, GA 30329 404/636-8400.
5. ASME - American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017 212/705-7722.
6. ASPE - American Society of Plumbing Engineers 3716 Thousand Oaks Boulevard, Suite 210,Westlake, CA 91362 805/495-7120.
7. ASTM - American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103 215/299-5400.
8. AWCI - Association of the Wall and Ceiling Industries- International 25 K Street, NW Washington, DC 20002 202/783-2924.
9. CFR - Code of Federal Regulations Available from Government Printing Office; Washington, DC 20402 (usually first published in Federal Register) 202/783-3238.
10. CGA - Compressed Gas Association 1235 Jefferson Davis Highway Arlington, VA 22202 703/979-0900.
11. CS - Commercial Standard of NBS (U.S. Dept. of Commerce) Government Printing Office Washington, DC 20402 202/377-2000.
12. DOT - Department of Transportation 400 Seventh St., SW Washington, DC 20590 202/426-4000.
13. EPA - Environmental Protection Agency 401 M St.,SW Washington, DC 20460 202/382-3949.
14. FS - Federal Specification (General Services Admin.) Obtain from your Regional GSA Office, or purchase from GSA Specifications Unit (WFSIS) 7th and D Streets, S.W. Washington, DC 20406 202/472-2205 or 2140.
15. GA - Gypsum Association 1603 Orrington Ave. Evanston; IL 60201 312/491-1744.
16. GSA - General Services Administration F St. and 18th St., NW Washington, DC 20405 202/655-4000.
17. IEEE - Institute of Electrical and Electronic Engineers 345 E. 47th Street New York, NY 10017 212/705-7900.
18. MIL - Military Standardization Documents (U.S. Dept. of Defense) Naval Publications and Forms Center, 5801 Tabor Ave. Philadelphia, PA 19120.
19. MSHA - Mine Safety and Health Administration, Approval and Certification Center, P.O. Box 251, Route 1, Triadelphia, WV 26059.
20. NBS - National Bureau of Standards (U.S. Dept. of Commerce) Gaithersburg, MD 20234 301/921-1000.
21. NEC - National Electrical Code (by NFPA).
22. NESHAP - National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).
23. NIOSH - National Institute for Occupational Safety and Health CDC - NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226
24. NFPA - National Fire Protection Association Batterymarch Park Quincy, MA 02269 617/770-3000.
25. NRCA - National Roofing Contractors Association 6250 River Road Rosemont, IL 60018 312/318-6722.
26. OSHA - Occupational Safety & Health Administration (U.S. Dept. of Labor) Government Printing Office Washington, DC 20402 202/783-3238.

27. PS - Product Standard of NBS (U.S. Dept. of Commerce) Government Printing Office Washington, DC 20402 202/783-3238.
28. RFCI - Resilient Floor Coverings Institute 966 Hungerford Drive, Suite 12-B Rockville, MD 20805 301/340-8580.
29. UL - Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062 312/272-8800.

H. Trade Union Jurisdictions: The Contractor shall maintain, and require subcontractors to maintain, complete current information on jurisdictional matters, regulations and pending actions, as applicable to construction activities. The manner in which Contract Documents have been organized and subdivided is not intended to indicate trade union or jurisdictional agreements.

1. Discuss new developments at project meetings at the earliest feasible dates. Record relevant information and actions agreed upon.
2. Assign and subcontract construction activities, and employ tradesmen and laborers in a manner that will not unduly risk jurisdictional disputes that could result in conflicts, delays, claims and losses.

1.8 SUBMITTALS:

A. Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01092

CODES, REGULATIONS, AND STANDARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

1.2 SUMMARY:

A. This section sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the Owner and which either must be applied for and received, or which must be given to governmental agencies before start of work.

1. Requirements include adherence to all work practices and procedures set forth in applicable codes, regulations and standards and this specification.
2. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

1.3 CODES AND REGULATIONS:

A. General Applicability of Codes and Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor is responsible for providing medical examinations and maintaining medical records of personnel as required by the applicable Federal, State, and local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

C. Federal Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

D. OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

1. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 58 of the Code of Federal Regulations
2. Respiratory Protection Title 29, Part 1910, Section 134 of the Code of Federal Regulations
3. Construction Industry Title 29, Part 1926, of the Code of Federal Regulations
4. Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the Code of Federal Regulations
5. Hazard Communication Title 29, Part 1910, Section 1200 of the Code of Federal Regulations
6. Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the Code of Federal Regulations

E. DOT: U. S. Department of Transportation, including but not limited to:
   1. Hazardous Substances Title 29, Part 171 and 172 of the Code of Federal Regulations

F. EPA: U. S. Environmental Protection Agency (EPA), including but not limited to:
   1. Asbestos Abatement Projects; Worker Protection Rule Title 40 Part 763, Sub-part G of the Code of Federal Regulations
   2. Asbestos Hazard Emergency Response Act (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E of the Code of Federal Regulations
   3. Training Requirements of (AHERA) Regulation Asbestos Containing Materials in Schools Final Rule & Notice Title 40, Part 763, Sub-part E, Appendix C of the Code of Federal Regulations.
   4. National Emission Standards for Hazardous Air Pollutants (NESHAP) National Emission Standard for Asbestos Title 40, Part 61, Sub-part A, and Sub-part M (Revised Sub-part B) of the Code of Federal Regulations

G. State Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
   1. Uniform Construction Code Act. (New Jersey S.A. 52-17D-119 et. seq., P.L. 1984)
   2. Asbestos Control and Licensing Act. (NJSA 34:5A-32 et. seq., P.L. 1984)
   3. Asbestos Hazard Abatement Subcode for Educational Facilities - Subchapter 8. N.J.A.C. 5:23-8 New Jersey Department of Community Affairs Division of Housing and Development Bureau of Construction Code Enforcement CN 805 Trenton, New Jersey 08625-0805
   4. Asbestos Licenses and Permits N.J.A.C. 12:120-1,2,3,4,5,7 and 8:60-1,2,3,4,5,7 New Jersey Department of Labor Division of Workplace Standards CN 504 Trenton, New Jersey 08625-0504
   5. Asbestos Training Courses N.J.A.C. 8:60-2 and 6, and 12:120-2 and 6 New Jersey Department of Health Asbestos Control Project, Training Unit CN 360 Trenton, NJ 08625-0360
   6. Solid Waste Management Act. (NJSA 13:1E-1, 13:109,et.seq.,as amended)
   7. Disposal Regulations N.J.A.C. 7:26 New Jersey Department of Environmental Protection Division of Waste Management Bureau of Field Operations CN 028 Trenton, NJ 08625-0805
   8. Control and Prohibition of Air Pollution by Toxic Substances, New Jersey Department of Environmental Protection, New Jersey Administrative Code. Title 7, Chapter 27, Subchapter 17, effective date: December 17, 1979.
   9. Asbestos Subchapter of the New Jersey Safety and Health Standards for Public Employees, NJAC 12:100 et. seq.

H. Local Requirements: Abide by all local requirements which govern asbestos abatement work or hauling and disposal of asbestos waste materials.

1.4 STANDARDS:

A. General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.

B. Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all standards pertaining to work practices, hauling, disposal, and protection of

workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the Owner and Owner's Representative harmless for failure to comply with any applicable standard on the part of himself, his employees, or his subcontractors.

C. Standards: which apply to asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

1. American National Standards Institute (ANSI) 1430 Broadway New York, New York 10018 (212)354-3300E
    a. Fundamentals Governing the Design and Operation of Local Exhaust Systems Publication Z9.2-79
    b. Practices for Respiratory Protection Publication Z88.2-80
2. American Society for Testing and Materials (ASTM) 100 Bar Harbor Drive, Conshohocken, PA 19428 (610)832-9585
    a. Safety and Health Requirements Relating to Occupational Exposure to Asbestos E 849-82

1.5 EPA GUIDANCE DOCUMENTS: discuss asbestos abatement work or hauling and disposal of asbestos waste materials listed below for the Contractor's information only. These documents do not describe the work and are not a part of the work of this contract. EPA maintains an information number (800) 334-8571, publications can be ordered from (800) 424-9065 (554-1404 in Washington, DC):

A. Asbestos-Containing Materials in School Buildings - A Guidance Document. Part 1 & 2. (Orange Books) EPA C00090 (out of print)

B. Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA 560/5-85-024

C. Friable Asbestos-Containing Materials in Schools: Identification and Notification Rule (40 CFR Part 763)

D. Evaluation of the EPA Asbestos-in-Schools Identification and Notification Rule. EPA 560/5-84-005

E. Asbestos in Buildings: National Survey of Asbestos-Containing Friable Materials. EPA 560/5-84-006

F. Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018

G. Asbestos Waste Management Guidance. EPA 530-SW-85-007

H. Asbestos Fact Book. EPA Office of Public Affairs. Asbestos in Buildings. Simplified Sampling Scheme for Friable Surfacing Materials

I. Commercial Laboratories with Polarized Light Microscopy Capabilities for bulk asbestos identification

J. A Guide to Respiratory Protection for the Asbestos Abatement Industry. EPA-560-OPTS-86-001

1.6 NOTICES:

A. U.S. ENVIRONMENTAL PROTECTION AGENCY

1. Send Written Notification as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M) to the regional

Asbestos NESHAP Contact at least 10 days prior to beginning any work on asbestos-containing materials. Send notification to the following address:

a. REGION 2: Asbestos NESHAP Contact, Division of Enforcement & Compliance Assistance, Asbestos Removal – 21st Floor, 290 Broadway, New York, NY 10007.

2. Notification: Include the following information in the notification sent to the NESHAP contact:
   a. Name and address of owner or operator.
   b. Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.
   c. Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities in which the amount of friable asbestos materials is less than 260 linear feet on pipes and less than 160 square feet on other facility components, explain techniques of estimation.
   d. Location of the facility being demolished or renovated.
   e. Scheduled starting and completion dates of demolition or renovation.
   f. Nature of planned demolition or renovation and method(s) to be used.
   g. Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61 Subpart M).
   h. Name and location of the waste disposal site where the friable asbestos waste material will be deposited.
   i. For facilities being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, the name, title, and authority of the State or local governmental representative who has ordered the demolition.

B. STATE AND LOCAL AGENCIES:

1. Send written notification as required by state and local regulations prior to beginning any work on asbestos-containing materials.

1.7 PERMITS:

A. The Contractor shall obtain all required Permits, and pay all Fees associated with his contract.

B. All asbestos containing waste is to be transported by an entity maintaining a current “Industrial waste hauler permit” specifically for asbestos-containing materials, as required for transporting of waste asbestos-containing materials to a disposal site.

1.8 LICENSES:

A. Licenses: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

1.9 POSTING AND FILING OF REGULATIONS:

A. Posting and Filing of Regulations: Post all notices required by applicable federal, state and local regulations. Maintain two (2) copies of applicable federal, state and local regulation and standard. Maintain one copy of each at job site. Keep on file in Contractor's office one copy of each.

1.10 SUBMITTALS:

A. Before Start of Work: Submit the following to the Owner's Representative for review. No work shall begin until these submittals are returned with Owner's Representative's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

B. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:

1. State and Local Regulations: Submit copies of codes and regulations applicable to the work.
2. Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.
3. Permits: Submit copies of current valid permits required by state and local regulations.
4. Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01301

SUBMITTALS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this Section.

1.2 SUMMARY:

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:
   1. Contractor's construction schedule.
   2. Submittal schedule.
   3. Daily construction reports.
   4. Shop Drawings.
   5. Product Data.
   6. Miscellaneous Submittals.

B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
   1. Permits.
   2. Applications for Payment.
   3. Performance and Payment Bonds.
   4. Insurance Certificates.
   5. List of Subcontractors.

1.3 SUBMITTAL PROCEDURES:

A. Coordination: Transmit each submittal sufficiently in advance of performance of related activities to avoid delay.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE:

A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within 10 days of the date established for "Commencement of the Work".
   1. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
   2. Indicate completion and Clearance of each Work Area in Advance of the date established for Substantial Completion. Allow time for testing and other Owner's Representative's procedures necessary for certification of Clearance and Substantial Completion.

B. Phasing: Provide notations on the schedule to show how the sequence of the work is affected by requirements for phased completion.

C. Work Stages: Indicate important stages of construction for each major portion of the work, including testing and installation.

1. Preparation of the Work Area.
2. Asbestos Removal.
3. Clearance Testing.
4. Substantial Completion.

D. Area Separations: Provide a separate time bar to identify each Work Area or major construction area for each major portion of the work. Indicate where each element in an area must be sequenced or integrated with other activities.

E. Distribution: Following response to the initial submittal, print and distribute copies to the Owner's Representative, Owner, subcontractors, and other parties required to comply with scheduled dates.

F. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE:

A. Listing: Below is a listing of the principal submittals required for the work. This listing is not necessarily complete, nor does the listing reflect the significance of each submittal requirement. The listing is included only for the convenience of users of the Contract Documents.

1.6 PRODUCT DATA:

A. Collect Product Data into a single submittal. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard wiring diagrams and performance curves.

B. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
   1. Manufacturer's printed recommendations.
   2. Compliance with recognized trade association standards.
   3. Compliance with recognized testing agency standards.
   4. Application for testing agency labels and seals.

C. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.

D. Submittals: Submit 1 copy of each required submittal.

1.7 MISCELLANEOUS SUBMITTALS:

A. Material Safety Data Sheets: Process material safety and data sheets as “product data.”
B. Closeout Submittals: Refer to section "Project Closeout" and to individual sections of these specifications for specific submittal requirements of project closeout information.
C. Record Documents: Furnish set of original documents as maintained on the project site.

PART 2 PRODUCTS (Not Applicable).

PART 3 EXECUTION (Not Applicable).

END OF SECTION

SECTION 01410

AIR MONITORING

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.

B. Air Monitoring: Work area clearance is described in Section 01714 Work Area Clearance.

1.2 DESCRIPTION OF THE WORK:

A. Not in Contract Sum: This section describes work being performed by the Asbestos Safety Control Monitoring Firm (ASCM). This work is not in the Contract Sum.

B. This section describes air monitoring carried out by the ASCM to verify that the building beyond the work area and the outside environment remains uncontaminated. This section also sets forth airborne fiber levels both inside and outside the work area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.

C. Air monitoring required by OSHA is work of the Contractor and is not covered in this Section. The Abatement Contractor is responsible for providing daily OSHA compliance monitoring as per 29 C.F.R. 1926.1101. OSHA monitoring shall be included in the Asbestos Contractor’s Contract Sum.

1.3 AIR MONITORING:

A. Work Area Isolation: The purpose of the ASCM's air monitoring is to detect faults in the work area isolation such as:
   1. Contamination of the building outside of the work area with airborne asbestos fibers.
   2. Failure of filtration or rupture in the differential pressure system.
   3. Contamination of air outside the building envelope with airborne asbestos fibers.

B. Should any of the above occur, immediately cease asbestos abatement activities until the fault has been corrected. Do not recommence work until authorized by the ASCM.

1.4 WORK AREA AIRBORNE FIBER COUNT:

A. The ASCM will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

1.5 WORK AREA CLEARANCE:

A. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the ASCM will sample and analyze air per Section 01714 Work Area Clearance.

B. The ASCM will be conducting air monitoring throughout the course of the project.

1.6 STOP ACTION LEVELS:

A. Inside Work Area:

1. Maintain an average airborne count in the work area of less than the Stop Action Level given below for the type of respiratory protection in use. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8-hour period exceeds the Stop Action Level, stop all work except corrective action, leave pressure differential and air circulation system in operation and notify the ASCM . After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by ASCM.

STOP ACTION LEVEL (f/cc)	IMMEDIATE STOP LEVEL (f/cc)	MINIMUM RESPIRATOR REQUIRED	PROTECTION FACTOR
0.5	1.0	Half-face Respirator	50

2. If airborne fiber counts exceed Immediate Stop Level given above for type of respiratory protection in use for any period of time cease all work except corrective action. Notify the ASCM. Do not recommence work until fiber counts fall below Stop Action Level given above for the type of respiratory protection in use. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by the ASCM.

B. Outside Work Area:

1. If any air sample taken outside of the Work Area exceeds the base line established below or is greater than 0.010 f/cc or if any sample collected inside the clean room of the decontamination unit exceeds 0.02 f/cc as determined by PCM analysis, immediately and automatically stop all work except corrective action. The ASCM shall inspect and determine the source of the high reading and so notify the Contractor in writing.
2. If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:
    a. Immediately erect new critical barriers as set forth in Section 01526 Temporary Enclosures to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, floor).
    b. Decontaminate the affected area in accordance with Section 01712 Cleaning & Decontamination Procedures.
    c. Require that respiratory protection as set forth in Section 01562 Respiratory Protection be worn in affected area until area is cleared for re-occupancy in accordance with Section 01714 Work Area Clearance.
    d. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.
    e. If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a Shower Room and Changing Room as set forth in Section 01563 Decontamination Units at entry point to affected area.
    f. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within

the entire area as set forth in Section 01714 Work Area Clearance.

3. If the high reading was the result of other causes initiate corrective action as determined by the ASCM.

C. Effect on Contract Sum: Complete corrective work with no change in the Contract Sum if high airborne fiber counts were caused by Contractor's activities or negligence. The Contract Sum and schedule will be reviewed and may be adjusted for additional work caused by high airborne fiber counts beyond the Contractor's control.

1.7 ANALYTICAL METHODS:

A. The following methods will be used by the ASCM in analyzing filters used to collect air samples. Sampling rates may be varied from printed standards to allow for high volume sampling.

1. Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 methodology.
2. Transmission Electron Microscopy (TEM) will be performed using the AHERA guidelines found in 40 CFR Part 763 Appendix A sub part E.

1.8 SAMPLE VOLUMES:

A. General: The number and volume of air samples taken by the ASCM will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical method used and the site conditions.

1.9 SCHEDULE OF AIR SAMPLES:

A. Daily:
1. From start of work of Section 01526 Temporary Enclosures through the work of Section 01711 Project Decontamination, the ASCM may be taking the following samples on a daily basis:
a. In the immediate area of the abatement work: Samples taken in this area should represent, with reasonable accuracy, the airborne concentration of asbestos fibers which may reach the breathing zone of removal personnel. One asbestos worker shall be required to wear a personal exposure sampling device or a proximity sample simulating the breathing zone of removal personnel. A low volume sampler shall be employed drawing a minimum sample volume of 180 liters. Two (2) samples shall be taken per work shift.
b. Inside the Work Area: Two (2) samples shall be taken per work shift. A low volume sampler shall be employed, drawing a minimum sample volume of 180 liters.
c. Outside the Work Area, but inside the building: Two (2) samples shall be taken per work shift. A high volume sampler shall be employed, drawing a sufficient sample volume to reach a detection limit of 0.010 f/cc. The sampling device shall be placed in locations where potential contamination could occur (e.g. outside entrances and exits to the Work Area) and shall be moved periodically to assess the potential for contamination of adjacent areas at all critical points in the containment system. Special attention shall be given to locations where exhaust ducts from air filtration devices run through occupied areas of the building.
d. In the Clean Room of the Personnel/Waste Decontamination Unit: A minimum of one (1) sample shall be taken in the Decontamination Unit Clean Room per work shift. A high volume sampler shall be employed drawing a sufficient sample volume to reach a detection limit of 0.010 f/cc. The sample(s) shall be taken at a time when activity levels are expected to be at their peak (e.g. shift breaks).

e. Downwind of Air Filtration Unit Exhaust: Where feasible due to on site conditions, one (1) sample shall be taken per work shift to evaluate potential fiber escape through the Air Filtration Device. A high volume sampler shall be employed drawing a sufficient sample volume to reach a detection limit of 0.010 f/cc.

f. The Analytical Method for all daily environmental monitoring shall be Phase Contrast Microscopy (PCM) (NIOSH 7400).

B. Additional samples may be taken at the ASCM's discretion. If airborne fiber counts exceed allowable limits, additional samples will be taken as necessary to monitor fiber levels.

1.10 LABORATORY TESTING:

A. The services of a testing laboratory may be employed by the ASCM to perform laboratory analyses of the air samples. A microscope and technician may be set up at the job site, or samples will be sent by courier so that verbal reports on air sample results can be obtained within 4 hours of the start time of the samples. The Contractor shall have access to all air monitoring tests and results.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 ADDITIONAL TESTING:

A. The Contractor may conduct his/her own air monitoring and laboratory testing. If he/she elects to do this, the cost of such air monitoring and laboratory testing shall be at no additional cost to the Owner.

3.2 PERSONAL MONITORING:

A. The ASCM shall not perform air monitoring to meet Contractor's OSHA requirements for personnel sampling or any other purpose.

END OF SECTION

SECTION 01503

TEMPORARY FACILITIES

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

A. General: Provide temporary connection to existing building utilities or provide temporary facilities as required herein or as necessary to carry out the work.

1.3 SUBMITTALS:

A. Before the Start of Work: Submit the following to the Owner's Representative for review. Begin no work until these submittals are approved by the Owner's Representative.
   1. Scaffolding: Submit list of rolling and fixed scaffolding intended for use on the project. Submit sufficient detail to indicate compliance with applicable worker safety regulations or other requirements.
   2. Hot water heater: Submit manufacturers name, model number, size in gallons, heating capacity, power requirements.
   3. Decontamination Unit Sub-panel: Submit product data.
   4. Ground Fault Circuit Interrupters (GFCI): Submit product data.
   5. Lamps and Light Fixtures: Submit product data.
   6. Self-Contained Toilet Units: Provide product data and name of subcontractor to be used for servicing self-contained toilets. Submit method to be used for servicing.
   7. First Aid Supplies: Provide list of contents of first aid kit. Submit in form of check list.
   8. Fire Extinguishers: Provide product data. Submit schedule indicating location at job site.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT:

A. General: Provide new or used materials and equipment that are undamaged and in serviceable condition. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

2.2 SCAFFOLDING:

A. Provide all scaffolding, ladders and/or staging, etc. as necessary to accomplish the work of this contract. Scaffolding may be of suspension type or standing type such as metal tube and coupler, tubular welded frame, pole or outrigger type or cantilever type. The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions.

B. The rungs of all metal ladders, etc. shall be equipped with an abrasive non-slip surface.

C. All surfaces subject to foot traffic shall have a nonskid surface. Surfaces shall be cleaned as required to remove slippery materials.

D. At the completion of the removal work, all construction aids shall be cleaned within the work area (encapsulated for wood) and wrapped in one layer of six (6) mil polyethylene sheeting and sealed before removal from the work area.

2.3 WATER SERVICE:

A. Temporary Water Service Connection: All connections to the Owner's water system shall include backflow protection. Valves shall be temperature and pressure rated for operation of the temperatures and pressures encountered. After completion of use, connections and fittings shall be removed without damage or alteration to existing water piping and equipment. Leaking or dripping valves shall be piped to the nearest drain or located over an existing sink or grade where water will not damage existing finishes or equipment.

B. Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit. Provide fittings as required to allow for connection to existing wall hydrants or spouts, as well as temporary water heating equipment, branch piping, showers, shut-off nozzles and equipment.

C. Hot Water Heater: Provide UL rated 30 gallon electric hot water heater to supply hot water for the Decontamination Unit shower. Activate from 30 amp circuit breaker located within the Decontamination Unit subpanel. Provide with relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with type L copper. Drip pans shall consist of a 12" X 12" X 6" deep pan, made of 19 gauge galvanized steel, with handles. A 3-quart kitchen saucepan may be substituted for this purpose. Drip pan shall be securely fastened to the hot water heater with bailing wire or similar material. Wiring of the hot water heater shall be in compliance with NEMA, NECA, and UL standards.

D. Hot Water: May be secured from the building hot water system, provided backflow protection is installed at the point of connection as described in this section under Temporary Water Service connection, and if authorized in writing by the Owner's Representative.

2.4 ELECTRICAL SERVICE:

A. General: Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

B. Temporary Power: Provide service to Decontamination Unit subpanel with minimum 60 amp, 2 pole circuit breaker or fused disconnect connected to the buildings main distribution panel. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

C. Voltage Differences: Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

D. Ground Fault Protection: Equip all circuits for any purpose entering Work Area with ground fault circuit interrupters (GFCI). Locate GFCI's exterior to Work Area so that all circuits are protected prior to entry to Work Area. Provide circuit breaker type ground fault circuit interrupters (GFCI) equipped with test button and reset switch for all circuits to be used for any purpose in work area, decontamination units, exterior, or as otherwise required by national electrical code, OSHA or other authority. Locate the panel exterior to Work Area.

E. Electrical Power Cords: Use only grounded extension cords; use "hard service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect

separate lengths of electric cords, if single lengths will not reach areas of work.

F. Lamps and Light Fixtures: Provide general service incandescent lamps or fluorescent lamps of wattage indicated or required for adequate illumination as required by the work or this section. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide vapor tight fixtures in work area and decontamination units. Provide exterior fixtures where fixtures are exposed to the weather or moisture. Use of building lighting fixtures is strictly prohibited.

2.5 TEMPORARY HEAT:

A. Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the fuel being consumed. Use steam or hot water radiation heat where available, and where not available use electric resistant fin radiation supplied from a branch circuit with ground fault circuit interrupter.

2.6 FIRST AID:

A. Comply with governing regulations and recognized recommendations within the construction industry.

2.7 FIRE EXTINGUISHERS:

A. Provide Type “A” fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type “ABC” dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case. The fire extinguishers shall comply with the applicable recommendations of NFPA Standard 10 “Standard for Portable Fire Extinguishers”. Provide not less than one extinguisher in each work area in the equipment room of the decontamination unit and one outside the work area in the clean room. Distance between fire extinguishers within the work area shall not exceed seventy-five (75) feet.

PART 3 EXECUTION

3.1 SCAFFOLDING:

A. During the erection and/or moving of scaffolding, care must be exercised so that the polyethylene floor covering is not damaged.

B. Clean as necessary, debris from non-slip surfaces.

C. At the completion of abatement work clean all construction aids within the work area, wrap in one layer of 6 mil polyethylene sheeting and seal before removal from the Work Area.

3.2 INSTALLATION, GENERAL:

A. Use qualified tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work.

B. Require that tradesmen accomplishing this work be licensed as required by local authority for the work performed.

C. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

D. The Contractor shall coordinate with the Building Owner for connection to existing building utilities. No connections shall be executed without prior approval of the building owner.

3.3 WATER SERVICE:

A. Water connection (without charge) to Owner's existing potable water system is the responsibility of the Contractor. Install using vacuum breakers or other backflow preventer as required by local authority. Hot water shall be supplied at a minimum temperature of 100 F. Supply hot and cold water to the Decontamination Unit in accordance with Section 01516. In addition, water shall be supplied for all worksite uses.

B. Maintain hose connections and outlet valves in leak proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.

3.4 ELECTRICAL SERVICE:

A. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.

B. Lockout all existing power to or through the work area as described below. Unless specifically noted otherwise existing power and lighting circuits to the Work Area are not to be used. All power and lighting to the Work Area and Decontamination facilities are to be provided from temporary electrical panel described below.

1. Lockout power to Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation “DANGER circuit being worked on”. Lock panel and have all keys under control of the Owner's designated Representative.
2. Lockout power to circuits running through Work Area wherever possible by switching off all breakers serving these circuits. Label breakers with tape over breaker with notation “DANGER circuit being worked on”. Sign and date danger tag. Lock panel and turn keys over to the Owner's Representative for control. If circuits cannot be shut down for any reason, label at intervals 4’-0” on center with tags reading, “DANGER live electric circuit. Electrocution hazard”.

C. Provide temporary electrical panel sized and equipped to accommodate all electrical equipment and lighting required by the work. Connect temporary panel to existing building electrical system. Protect with circuit breaker or fused disconnect. Locate temporary panel as directed by Owner or Owner's Representative.

D. Upon request provide and bear all costs associated with off-hour or twenty-four (24) hour electrical service to the work area as required by the Building Owner for Air Monitoring services.

E. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be at least exposed to damage from construction operations.

F. Circuit Protection: Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel. Do not use outlet type GFCI devices.

G. Temporary wiring in the Work Area shall be type UF non-metallic sheathed cable located overhead and exposed for surveillance. Do not wire temporary lighting with plain, exposed

(insulated) electrical conductors. Provide liquid tight enclosures or boxes for wiring devices.

H. Number of Branch Circuits: Provide sufficient branch circuits as required by the work. All branch circuits are to originate at temporary electrical panel. At minimum provide the following:

1. One Circuit for each HEPA filtered fan unit.
2. For power tools and task lighting, provide one temporary 4-gang outlet in the following locations. Provide a separate 110-120 Volt, 20 Amp circuit for each 4-gang outlet (4 outlets per circuit).
    a. One outlet in the work area for each 2500 square feet of work area
    b. One outlet at each decontamination unit, located in equipment room
3. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use while conducting air sampling during the work as follows:
    a. One in each work area
    b. One at clean side of each Decontamination Unit.
    c. One at each exhaust location for HEPA filtered fan units
4. 110-120 volt 20 amp branch circuits with 4-gang outlet for Owner's exclusive use for conducting final air sampling as set forth in Section 01714 Work Area Clearance as follows:
    a. Five inside work area
    b. Two outside work area in location designated by Owner's Representative

3.5 TEMPORARY LIGHTING:

A. Lockout: Lock out all existing power to lighting circuits in Work Area as described in section 01526 Temporary Enclosures. Unless specifically noted otherwise existing lighting circuits to the Work Area are not to be used. All lighting to the Work Area and Decontamination facilities is to be provided from temporary electrical panel described above.

B. Provide the following or equivalent where natural lighting or existing building lighting does not meet the required light level.
    a. One 200-watt incandescent lamp per 1000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature. In corridors and similar traffic areas provide one 100-watt incandescent lamp every 50 feet. In stair ways and at ladder runs, provide one lamp minimum per story, located to illuminate each landing and flight. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.

C. Provide lighting in areas where work is being preformed as required to supply a 100 foot candle minimum light level.
D. Provide lighting in any area being subjected to a visual inspection as required to supply a 100 foot candle minimum light level.
E. Provide lighting in the Decontamination Unit as required to supply a 50 foot candle minimum light level.
F. Provide sufficient lighting circuits as required by the work. All lighting circuits are to originate at temporary electrical panel.
G. Protect each circuit with a ground fault circuit interrupter (GFCI) of proper size located in the temporary panel.

3.6 TEMPORARY HEAT:

A. General: Provide temporary heat where indicated or needed for performance of work.

B. Maintain a minimum temperature of 70 degrees F where finished work has been installed.

C. Maintain a minimum temperature of 75 degrees F in the shower of the decontamination unit.

D. Maintain a minimum temperature of 70 degrees F in the Work Area at all times that work is being performed. At all other times and at the completion of removal work, but before the start of reconstruction work, maintain a minimum temperature of 50 degrees F.

E. Maintain a minimum temperature of 70 degrees F in the Work Area at all times during and after removal work.

3.8 FIRE EXTINGUISHERS:

A. Fire Extinguishers: Comply with the applicable recommendations of NFPA Standard 10 “Standard for Portable Fire Extinguishers”. Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher in each Work Area in the Equipment Room and one outside Work Area in the Clean Room.

END OF SECTION

SECTION 01513

TEMPORARY PRESSURE DIFFERENTIAL & AIR FILTRATION SYSTEM

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 MONITORING:

A. The Contractor shall supply a digital manometer with a continuous recorder (e.g. strip chart) and alarm for the purpose of continuously monitoring and recording the pressure differential between the Work Area and the building outside of the Work Area. The Contractor shall be solely responsible for providing competent individual(s), currently licensed by the New Jersey Department of Labor to perform asbestos work to observe and monitor the work area(s) and digital manometer readings during all non-working hours including nights, weekends and holidays. This individual shall be authorized and capable of investigating and remediating any drop in the pressure differential system between the work area(s) and the building outside the work area.

1.3 SUBMITTALS:

A. Before Start of Work: Submit design of pressure differential system to the ASCM for review. Do not begin work until the submittal is approved. Include in the submittal:

1. Number of HEPA-equipped air filtration units required and the calculations necessary to determine the number of machines.
2. Description of projected air flow within Work Area and methods required to provide adequate air flow in all portions of the work area.
3. Anticipated pressure differential across Work Area enclosures.
4. Description of methods of testing for correct air flow and pressure differentials.
5. Manufacturer's product data on the HEPA-equipped air filtration units to be used.
6. Location of the machines in the Work Area.
7. Method of supplying adequate power to the machines and designation of building electrical panel(s) which will be supplying the power.
8. Description of work practices to insure that airborne fibers travel away from workers.
9. Manufacturer's product data on equipment used to monitor pressure differential between inside and outside of Work Area.

B. On a weekly basis: Submit the printout from the pressure differential monitoring equipment. Mark the printout with date and start time for each day. Use printout paper that indicates elapsed time in intervals no greater than hours. Indicate on each days' record, times of starting and stopping abatement work, type of work in progress, breaks for lunch and other purposes, periods of stop work, and filter changes. Cut printout into segments by day, attach to 8 ½" by 11" paper. Label with project name, Contractor name and date.

1.4 QUALITY ASSURANCE:

A. Monitor pressure differential at Personnel and Equipment Decontamination Units with one or more digital manometers equipped with a continuous recorder. Manometers shall be equipped with a

warning buzzer which will sound if pressure differential drops below negative 0.03 inches of water column.

PART 2 PRODUCTS

2.1 HEPA-EQUIPPED AIR FILTRATION UNITS:

A. General: Supply the required number of HEPA-equipped air filtration units to the site in accordance with these specifications. A minimum of one additional unit shall be installed as a backup to be used during primary unit filter changing and upon unit failure. Use units that meet the following requirements:

1. Cabinet: Constructed of durable materials able to withstand damage from rough handling and transportation. The width of the cabinet should be less than 30 inches to fit through standard-size doorways. Provide units whose cabinets are:
    a. Factory-sealed to prevent asbestos-containing dust from being released during use, transport, or maintenance.
    b. Arranged to provide access to and replacement of all air filters from intake end.
    c. Mounted on casters or wheels.
2. Fans: Rate capacity of fan according to usable air-moving capacity under actual operating conditions.
3. HEPA Filters: Provide units whose final filter is the HEPA type with the filter media (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.
    a. Provide units with a continuous rubber gasket located between the filter and the filter housing to form a tight seal.
    b. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 µm dioctylphthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.
    c. Provide filters that are marked with: the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.
    d. Pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. Provide units with the following pre-filters:
        i. First-stage pre-filter: low-efficiency type (e.g., for particles 100 µm and larger).
        ii. Second-stage (or intermediate) filter: medium efficiency (e.g., effective for particles down to 5 µm).
    e. Provide units with pre-filters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps.
4. Instrumentation: Provide units equipped with:
    a. Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed.
    b. A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge affixed near the gauge for reference, or the Magnehelic reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at that point.
    c. Elapsed time meter to show the total accumulated hours of operation.

5. Safety and Warning Devices: Provide units with the following safety and warning devices:
    a. Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter.
    b. Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge.
    c. Warning lights to indicate normal operation (green), too high a pressure drop across the filters (i.e., filter overloading) (yellow), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge) (red).
    d. Audible alarm if unit shuts down due to operation of safety systems.

6. Electrical components: Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit is to be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.
7. Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
    a. Aerospace America, Inc. “Aero-Clean 2000” 900 Truman Parkway P.O. Box 189 Bay City, Michigan 48707A
    b. Asbestos Control Technology, Inc. “Micro-Trap” P.O. Box 183 Maple Shade, NJ 08052
    c. Control Resource Systems, Inc. “Hog” 2000 670 Mariner Drive Michigan City, Indiana 46360
    d. Global Consumer Services, Inc. “Red Baron” 1721 N. Highland Avenue Los Angeles, CA 90028
    e. Tri-Dim Filter Corporation “ACCU-2M” 1431 West Lake Street Chicago, Illinois 60607

PART 3 EXECUTION

3.1 PRESSURE DIFFERENTIAL ISOLATION:

A. Isolate the Work Area from all adjacent areas or systems of the building with a Pressure Differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the Work Area.

B. Relative Pressure in Work Area: Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of negative 0.05 inches of water, at a minimum.

C. Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation. The number of units will increase with increased make-up air or leaks into the Work Area. Determine the number of units required for pressure isolation by the following procedure:
    1. Establish required air circulation in the work area, personnel and equipment decontamination units.
    2. Establish isolation by increased pressure in adjacent areas or as part of seals where required.
    3. Exhaust a sufficient number of units from the work area to develop one complete air exchange every fifteen (15) minutes.

4. The required number of units is the number determined above plus one additional unit.

D. Vent HEPA filtered fan units to outside of building unless authorized in writing by ASCM.
   1. Mount units to exhaust directly or through disposable ductwork.
   2. Use only new ductwork except for sheet metal connections and elbows.
   3. Use ductwork and fittings of same diameter or larger than discharge connection on fan unit.
   4. Use spiral wire-reinforced flex duct in lengths not greater than 50 feet.
   5. If direction of discharge from fan unit is not aligned with duct use sheet metal elbow to change direction. Use six feet of spiral wire-reinforced flex duct after direction change.

3.2 AIR CIRCULATION IN THE WORK AREA:

A. Air Circulation: For purposes of this section air circulation refers to either the introduction of outside air to the Work Area or the circulation and cleaning of air within the Work Area.

B. Air circulation in the Work Area is a minimum requirement intended to help maintain airborne fiber counts at a level that does not significantly challenge the work area isolation measures. The Contractor may also use this air circulation as part of the engineering controls in his worker protection program.

C. Determining the Air Circulation Requirements: Provide a fully operational air circulation system supplying a minimum of four (4) air changes per hour.

D. Determine Number of Units needed to achieve required air circulation according to the following procedure:
   1. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total air circulation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by the air change rate and multiplying by 60.

      Air Circulation Required in Cubic Feet of Air per Minute (CFM) =

      $$\frac{\text{Volume of work area(CF)}}{} \quad X \quad \frac{\text{Number of air changes per hour}}{\text{60 (minutes per hour)}}$$

   2. Divide the air circulation requirement (CFM) above by capacity of HEPA filtered fan unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machine's labeled operating characteristics.

      $$\text{Number of Units} = \frac{\text{Air circulation Requirement(CFM)}}{\text{Capacity of Unit with Loaded Filters (CFM)}}$$

   3. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

3.3 EXHAUST SYSTEM:

A. Pressure differential isolation and air circulation in the Work Area are to be accomplished by an exhaust system as described below.

B. Exhaust all units from the Work Area to meet air circulation requirement of this section.

C. Location of HEPA-equipped air filtration units: Locate fan unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses Work Area as much as possible. This may be accomplished by positioning the HEPA filtered fan unit(s) at a maximum distance from the worker

access opening or other makeup air sources.

D. Place the intake portion of the unit or its exhaust duct through an opening in the plastic barrier or wall covering. Seal the plastic sheeting around the unit or exhaust duct with tape.

E. Vent to Outside of Building, unless authorized in writing by the ASCM.

F. Decontamination Units: Arrange Work Area and decontamination units so that the majority of make-up air comes through the Decontamination Unit.

G. Supplemental Makeup Air Inlets: Provide where required for proper air flow through the Work Area in location approved by the ASCM by making openings in the plastic sheeting that allow air from outside the building into the Work Area. Locate auxiliary makeup air inlets as far as possible from the fan unit(s) (e.g., on an opposite wall), off the floor (preferably near the ceiling), and away from barriers that separate the Work Area from occupied clean areas. Cover with flaps to reseal automatically if the pressure differential system should shut down for any reason. Spray flap and around opening with spray adhesive so that if flap closes meeting surfaces are both covered with adhesive. Use adhesive that forms contact bond when dry.

3.4 AIR CIRCULATION IN DECONTAMINATION UNITS:

A. Pressure Differential Isolation: Continuously maintain the pressure differential required for the work area in the:
   1. Personnel Decontamination Unit: across the Shower Room with the Equipment Room at a lower pressure than the Clean room.
   2. Equipment Decontamination Unit: Across the Holding Room with the Wash Room at a lower pressure than the Clean Room.

B. Air Circulation: Continuously maintain air circulation in Decontamination Units at same level as required for Work Area.

C. Air Movement: Arrange air circulation through the Personnel Decontamination Unit so that it produces a movement of air from the Clean Room through the Shower Room into the Equipment Room.

3.5 USE OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM:

A. General: Each unit shall be serviced by a dedicated minimum 115V-20A circuit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed under requirements of Section 01503 “Temporary Facilities”. Do not use existing branch circuits to power fan units.

B. Testing the System: Test pressure differential system before any asbestos-containing material is wetted or removed. After the Work Area has been prepared, the decontamination facility set up, and the fan unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of pressure differential system to Asbestos Safety Technician.

C. Demonstrate Condition of Equipment for each HEPA filtered fan unit and pressure differential monitoring equipment including proper operation of the following:
   1. Squareness of HEPA Filter.
   2. Condition of seals.
   3. Proper operation of all lights.
   4. Proper operation of automatic shut down if exhaust is blocked.
   5. Proper operation of alarms.

6. Proper operation of magnehelic gauge.
7. Proper operation and calibration on pressure monitoring equipment.

D. Demonstrate Operation of the pressure differential system to the Asbestos Safety Technician will include, but not be limited to, the following:
   1. Plastic barriers and sheeting move lightly in toward Work Area.
   2. Curtain of decontamination units move lightly in toward Work Area.
   3. There is a noticeable movement of air through the Decontamination Unit.
   4. Use smoke tube to demonstrate air movement from Clean Room through Shower Room to Equipment Room.
   5. Use smoke tubes to demonstrate a definite motion of air across all areas in which work is to be performed.
   6. Use a differential pressure meter or manometer to demonstrate the required pressure differential at every barrier separating the Work Area from the balance of the building, equipment, ductwork or outside.

E. Modify the Pressure Differential System as necessary to demonstrate successfully the above.

F. Use of System During Abatement Operations:
   1. Start fan units before beginning work (before any asbestos-containing material is disturbed). After abatement work has begun, run units continuously to maintain a constant pressure differential and air circulation until decontamination of the work area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.
   2. Do not shut down air pressure differential system during encapsulating procedures, unless authorized by the ASCM. Supply sufficient pre-filters to allow frequent changes.
   3. Start abatement work at a location farthest from the fan units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and fan units are operating again.
   4. At completion of abatement work, allow fan units to run as specified under Section 01711 - Project Decontamination, to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the Work Area with clean makeup air. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.

G. Dismantling the System:

   1. When a final inspection and the results of final air tests indicate that the area has been decontaminated, fan units may be removed from the Work Area. Before removal from the Work Area, remove and properly dispose of pre-filter, decontaminate exterior of machine and seal intake to the machine with 6 mil polyethylene to prevent environmental contamination from the filters.

END OF SECTION

SECTION 01514

CONTINGENCY PLAN FOR OCCUPIED BUILDINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section covers the responsibilities of the Owner, Contractor and Asbestos Safety Control Monitor for the safe performance of asbestos abatement activities conducted in occupied facilities. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to this section.

1.2 NOTIFICATIONS

A. The building Owner shall notify building occupants in writing 20 business days prior to the commencement of an asbestos abatement project. The building owner shall outline in writing any procedures and/or precautions that are deemed necessary in order to protect the health, safety and welfare of the occupants. This notification shall include, but not be limited to: relocation plans, if any; entrances and exits that may temporarily be blocked and alternate routes to be used; the name and telephone number of the owner's representative for the occupant to call in case of an emergency or to answer any questions with regard to the project. This notification shall accompany the application for a construction permit for asbestos abatement and shall be filed with the enforcing agency.

B. This notification shall be posted seven days prior to the preparation of the work area, in visible locations, for the benefit of the affected occupants of the work place, and in areas immediately adjacent to the asbestos abatement project. It shall be the Owner’s responsibility to ensure that these postings are maintained throughout the project.

1.3 CONTINGENCY PLAN

Contingency plan during abatement shall be implemented as described below. These are the minimum requirements that shall be enforced by the Asbestos Safety Control Monitor (ASCM). These requirements shall not limit the ASCM from instituting additional requirements, if necessary, for the protection of the building occupants.

A. If the pressure differential drops below negative 0.05 inches w.c.; the following procedures shall be implemented:

1. The asbestos safety technician and the Contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the pressure loss.

2. The Contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to re-establish an acceptable pressure differential.

B. If the pressure differential drops below negative 0.01 w.c., the following procedures shall be implemented:

1. The Contractor shall cease abatement activity in the work area.

2. The ASCM shall notify the building Owner to evacuate the pressurized space(s). The pressurized space(s) shall include all space outside the work area which is

pressurized to maintain the required pressure differential relative to the work area and is isolated from the rest of the building in terms of airflow. The pressurized space may include the entire building exclusive of the work area or any part of the building that is pressurized to isolate it from the work area.

3. The asbestos safety technician and the Contractor supervisor shall investigate and evaluate the engineering controls and determine the source of the pressure loss.

4. The Contractor shall institute corrective action such as: additional sealing, critical barrier maintenance and construction, changing of exhaust unit filters, adjustment of make-up air, operation of additional exhaust units or other necessary measures to re-establish an acceptable pressure differential.

5. Re-occupancy on any given day/shift shall not be permitted in any area unless a pressure differential of 0.05 w.c. or greater is re-established.

6. If a pressure differential of 0.05 w.c. or greater is not re-established within 24 hours of the first reading below 0.01 w.c., then the building shall be evacuated.

C. If air fiber concentrations exceed 0.010 f/cc; the following procedures shall be implemented:

1. The asbestos safety technician and the Contractor supervisor shall investigate and evaluate the engineering controls to determine the source of the high air level.

2. An additional/second PCM air sample shall be taken. The additional/second PCM sample may be split, and if the result of the air sample is less than or equal to 0.010 f/cc, the contingency plan is terminated. If the result of the air sample exceeds 0.010 f/cc, the Contractor, in consultation with the ASCM, shall choose the option of cleaning and retesting by PCM analysis or analyzing the split sample by TEM analysis. If the result of the TEM analysis exceeds 0.010 f/cc, then cleaning shall be undertaken.

3. The ASCM firm in consultation with the building Owner and the Contractor shall make the decision as to the timing of the cleaning activity.

4. Cleaning shall include, but not be limited to, wet wiping and misting the air. Cleaning the affected area shall be continued outside the containment and PCM sampling shall also be continued until the result in the area is equal to or less than 0.010 f/cc by either PCM or TEM analysis.

5. If laboratory analysis of air samples does not yield a reading less than or equal to 0.010 f/cc within 24 hours of receipt of the first test result above 0.010 f/cc, then the building shall be evacuated.

6. Re-occupancy shall not be permitted in any area where PCM analysis reveals results greater than 0.010 f/cc, unless TEM results indicate asbestos fibers are equal to or less than 0.010 f/cc. In the case of re-occupancy, an accredited laboratory shall analyze all air samples used to make the determination to allow reentry.

D. If a power outage occurs during active abatement work, the building occupants shall be evacuated until the air samples determine that the occupied spaces are safe, and power has been restored. If a power outage occurs when the building is unoccupied, occupancy will not be permitted until air samples determine that the spaces to be occupied are safe and power has been restored.

E. Security shall be required as follows: In high risk areas, the Owner shall provide a 24 hour security guard to ensure protection against damage or vandalism to separation barriers, engineering systems, monitoring devices, or other equipment.

F. The Owner shall provide continuous unlimited access for the asbestos safety technician in all occupied spaces for installation, maintenance, and data collection from monitoring equipment.

END OF SECTION

SECTION 01526

TEMPORARY ENCLOSURES & WORK AREA PREPARATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 SUBMITTALS:

A. Before Start of Work submit the following to the ASCM for review. Do not begin work until these submittals are approved by the ASCM.

B. For Spray Cement, submit the following:
   1. Product description including major components and solvents.
   2. Manufacturer's installation instructions. Indicate portions applicable to the project.
   3. Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for spray cement material proposed for use during the work. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

C. Sheet Plastic: For fire retardant plastic submit test reports on NFPA 701 test.

D. Signs: Submit samples of signs to be used.

PART 2 PRODUCTS

2.1 SHEET PLASTIC:

A. Polyethylene Sheeting: Provide flame-resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick as indicated, frosted or black as indicated.

B. Provide materials that meet the following fire safety requirements:
   1. When wet or being installed:
      a. Do not create combustible vapors.
      b. Have no flash point.
      c. Are not noxious.
   2. When dry, material must have a Class A rating as a building material and meet the following requirements when tested in accordance with ASTM E-84.
      a. Flame Spread no greater than 20.
      b. Fuel Contributed 0.
      c. Smoke Developed no more than 110.
   3. Deliver materials to the job site in unopened, factory labeled containers.

2.2 MISCELLANEOUS MATERIALS:

A. Duct Tape: Provide duct tape in 2” or 3” widths as indicated, with an adhesive which is formulated to

stick aggressively to polyethylene sheeting.

B. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to polyethylene sheeting.

PART 3 EXECUTION

3.1 SEQUENCE OF WORK:

A. Carry out work of this section sequentially. Complete each activity before proceeding to the next.
   1. The Work Area shall mean the location where asbestos-abatement work occurs. It is a variable of the extent of work of the Contract. It may be a portion of a room, a single room, or a complex of rooms. A “Work Area” is considered contaminated during the work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-control work.
   2. The Contractor shall inspect each work location with the ASCM. The Contractor and ASCM shall agree on conditions of materials and worksite and select the appropriate abatement procedures. Should the ASCM and Contractor not be in agreement, the Building Owner and ASCM shall make the final decision.
   3. Completely isolate the Work Area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Section 01711. Perform all such required cleaning or decontamination at no additional cost to owner.
   4. Each work area location shall be pre-cleaned as per Section 01013. Respirators and protective equipment are required as per Sections 01560 and 01562.
   5. Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated prior to completion of Work Area isolation.
   6. Stationary restroom equipment (toilets, sinks, etc.) shall be completely covered with two (2) layers of polyethylene sheeting, at least 6 mil in thickness, securely taped in place with duct tape and individually sealed. Such equipment shall be considered outside the work area unless covering plastic or seal is breached.
   7. Disable ventilating systems or any other system bringing air into or out of the Work Area. Disable system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.
   8. Lockout power to the Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation “DANGER circuit being worked on”. Lock panel and have all keys under control of the Owner's designated Representative.
   9. Lockout power to circuits running through work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation “DANGER circuit being worked on”. Lock panel and have all keys under control of the Owner's designated representative. If circuits cannot be shut down for any reason, label at intervals 4'-0” on center with tags reading, “DANGER live electric circuit. Electrocution hazard”. Label circuits in hidden locations but which may be affected by the work in a similar manner.

3.2 EMERGENCY PRECAUTIONS:

A. The Contractor shall prepare a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modification or abridgment of decontamination or work area isolation. Note that nothing in this

Specification should impede safe exiting or providing of adequate medical attention in the event of an emergency.

B. The Contractor shall provide barricades and adequate protection to safely prevent accidental entrance to the abatement area by any building occupants. Signage shall be posted in visible locations a sufficient distance to allow an individual to take all necessary protective precautions prior to being exposed to airborne asbestos fiber concentrations.

C. Before the Contractor starts actual abatement of asbestos material, the local fire department and ambulance crews shall be notified, by the Contractor, as to the dangers of entering the work area. The Contractor shall make every effort to help these agencies and form plans of action should their personnel need to enter the contaminated area.

D. Local medical emergency personnel, both ambulance crews and hospital emergency room staff, shall be notified, by the Contractor, as to the possibility of having to handle injured work persons who are contaminated with asbestos dust. They shall be advised on safe decontamination procedures.

E. First aid shall comply with the governing regulations and all recognized recommendations within the construction industry.

F. Except as otherwise indicated, submit special reports directly to the Owner within one day of occurrence requiring special report, with copy to Owner's Representative, Project Consultants and others affected by occurrence.

3.3 EMERGENCY EXITS:

A. Provide emergency exits and emergency lighting as set forth below:
   1. Emergency Exits: At each existing exit door from the Work Area provide the following means for emergency exiting:
      a. Arrange exit door so that it is secure from outside the Work area but permits exiting from the Work Area.
      b. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1” wide. Hang a razor knife on a string beside outline. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Paint words “EMERGENCY EXIT” inside outline with luminescent paint in letters at least one foot high and 2" thick.
      c. Provide lighted, battery powered exit sign at each exit.

3.4 CONTROL ACCESS:

A. Isolate the Work Area to prevent entry by building occupants into Work Area or surrounding controlled areas. Accomplish isolation by the following:
   1. Coordinate with the Asbestos Safety Technician the doors and other openings that must be secured to isolate Work Area.
   2. After receiving authorization from the Asbestos Safety Technician, lock all doors into Work Area. If doors cannot be locked, chain shut. Cover any signs that direct emergency exiting, either outside or inside of Work Area, to locked doors. Do not obstruct doors required for emergency exits from Work Area or from building.
   3. After receiving authorization from the Asbestos Safety Technician, construct partitions or closures across any opening into Work Area. Partitions are to be a minimum of 8 feet high. All isolation barrier construction shall conform to the requirements set forth in NJAC 5:23-8.19.
   4. Fabricate partitions from 2 X 4 wood studs with ½” plywood on one face. Brace at 16” on

center.

B. Locked Access: Arrange Work Area so that the only access into Work Area is through lockable doors to personnel and equipment decontamination units.

C. Provide Warning Signs at each locked door leading to Work Area reading as follows: Print text in both English and Spanish:

LEGEND	NOTATION
KEEP OUT	3” Sans Serif Gothic or Block
BEYOND THIS POINT	1” Sans Serif Gothic or Block
ASBESTOS ABATEMENT WORK	1” Sans Serif Gothic or Block
IN PROGRESS	1” Sans Serif Gothic or Block
BREATHING ASBESTOS DUST MAY BE	14 Point Gothic
HAZARDOUS TO YOUR HEALTH	

D. Immediately inside doors and outside critical barriers post an approximately 20 inch by 14 inch manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

3.5 LEGEND:

A. Provide spacing between respective lines at least equal to the height of the respective upper line.

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
IN THIS AREA
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

3.6 RESPIRATORY AND WORKER PROTECTION:

A. Before proceeding beyond this point in providing Temporary Enclosures:
   1. Provide Worker Protection per Section 01560
   2. Provide Respiratory Protection per Section 01562

B. Provide Personnel Decontamination Unit per Section 01563

3.7 CRITICAL BARRIERS:

A. Completely Separate the Work Area from other portions of the building, and the outside by closing all openings with two (2) layer sheet plastic barriers at least 6 mil in thickness each.

B. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the Work Area with two (2) layers of polyethylene sheeting at least 6 mil in thickness each, individually taped securely in place with duct tape. Maintain seal until all work including Project Decontamination is completed.

C. Provide two (2) layers of Sheet Plastic barriers at least 6 mil in thickness as required to seal openings completely from the Work Area into adjacent areas. Individually seal the perimeter of each sheet plastic barrier with duct tape and spray cement.

D. Mechanically Support sheet plastic independently of duct tape or spray cement seals so that seals do not support the weight of the plastic sheeting. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Owner's Representative:

1. Plywood squares 6” x 6” x 3/8” held in place with one 6d smooth masonry nail or electro-galvanized common nail driven through center of the plywood and duct tape on plastic so that plywood clamps plastic to the wall. Locate plywood squares at each end, corner and at maximum 4 feet on centers.
2. Nylon or polypropylene rope or wire with a maximum unsupported span of 10 feet, minimum ¼” in diameter suspended between supports securely fastened on either side of opening at maximum 1 foot below ceiling. Tighten rope so that it has 2” maximum dip. Drape plastic over rope from outside Work Area so that a two foot long flap of plastic extends over rope into Work Area. Staple or wire plastic to itself 1” below rope at maximum 6” on centers to form a sheath over rope. Lift flap and seal to ceiling with duct tape or spray cement. Seal loop at bottom of flap with duct tape. Erect entire assembly so that it hangs vertically without a “shelf” upon which debris could collect.

E. Provide Pressure Differential System per Section 01513.

F. Clean equipment, housings and ducts of any overspray materials prior to erection of any Critical Barrier that will restrict access.

3.8 PREPARE AREA:

A. Scaffolding: If fixed scaffolding is to be used to provide access, HEPA vacuum and wet clean area prior to scaffolding installation.

B. Remove all electrical and mechanical items, such as lighting fixtures, clocks, diffusers, registers, escutcheon plates, etc. which cover any part of the surface to be worked on with the work.

C. Remove all general construction items such as cabinets, casework, door and window trim, moldings, ceilings, trim, etc., which cover the surface of the work as required to prevent interference with the work. Clean, decontaminate and reinstall all such materials, upon completion of all removal work with materials, finishes, and workmanship to match existing installations before start of work.

D. Clean all furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning, as specified in Section 01712 Cleaning and Decontamination Procedures, prior to being moved or covered. All equipment, furniture, etc. is to be deemed contaminated unless specifically declared as uncontaminated on the drawings or in writing by ASCM.

E. Clean all surfaces in the Work Area with a HEPA filtered vacuum or by wet wiping prior to the installation of the primary barrier.

3.9 PRIMARY BARRIER:

A. Protect building and other surfaces in the Work Area from damage from water and high humidity or from contamination from asbestos-containing debris, slurry or high airborne fiber levels by covering with a primary barrier as described below.

B. Sheet Plastic: Protect floor surfaces in the Work Area with two (2) layers of six (6) mil plastic sheeting and wall surfaces with one (1) layer of six (6) mil. thick plastic sheeting, or as otherwise directed on the Contract Drawings.

1. Cover Floor of Work Area with 2 individual layers of polyethylene sheeting, each at least 6 mil in thickness. The first layer shall extend up the wall at least 12 inches. The second layer shall extend up the wall at least 24 inches. Form a sharp right angle bend at the junction of the

floor and wall so that there is no radius which could be stepped on causing the wall attachment to be pulled loose. Both spray-glue and duct tape all seams in floor covering. Sheeting shall be sized to minimize seams. Install sheeting so that top layer can be removed independently of bottom layer.

2. Cover carpeting with three (3) layers of polyethylene sheeting at least 6 mil in thickness. Place corrugated cardboard sheets between the top and middle layers of polyethylene floor sheeting.
3. Cover all walls in the Work Area including “Critical Barrier” sheet plastic barriers with one layer of polyethylene sheeting, at least 6 mil in thickness, mechanically supported and sealed with duct tape and spray-glue, so as to overlap floor sheeting by at least 18 inches in the same manner as “Critical Barrier” sheet plastic barriers. Tape all joints including the joining with the floor covering with duct tape.
4. All vertical and horizontal surfaces except those of asbestos-containing materials shall be sealed with polyethylene sheeting.
5. Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide ¾” exterior grade plywood treads securely held in place, over the plastic. Do not cover rungs or rails with any type of protective materials.
6. Repair of Damaged Polyethylene Sheeting: Remove and replace plastic sheeting which has been damaged by removal operations or where seal has failed allowing water to seep between layers. Remove affected sheeting and wipe down entire area. Install new sheet plastic only when area is completely dry.

3.10 STOP WORK:

A. If the Critical or Primary barrier falls or is breached in any manner stop work immediately. Do not resume work until authorized in writing by the Asbestos Safety Technician.

3.11 EXTENSION OF WORK AREA:

A. Extension of Work Area: If a Critical Barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add the affected area to the Work Area, enclose it as required by this Section of the specification and decontaminate it as described in Section 01711 Project Decontamination.

3.12 SECONDARY BARRIER:

A. Use a secondary layer of plastic as a drop cloth to protect the primary layer from debris generated by the asbestos abatement work as specified in the appropriate work sections.

3.13 EXTERIOR ENCLOSURES:

A. Construct exterior enclosures utilizing rigid construction consisting of nominal 2x4 inch studs spaced 16 inches on center and covered with a minimum of one-half inch plywood or approved equal framing and board covering. The approved enclosure shall be covered with two (2) layers of 6 mil polyethylene sheeting.

END OF SECTION

SECTION 01560

WORKER PROTECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. This section describes the equipment and procedures required for protecting workers and site visitors against asbestos contamination and other workplace hazards except for respiratory protection.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Respiratory Protection is specified in Section 01562.

1.4 WORKER TRAINING:

A. AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

B. State and Local License: All workers are to be trained, certified and accredited as required by state or local code or regulation.

C. Train, in accordance with 29 CFR 1926, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures. Include but do not limit the topics covered in the course to the following:
   1. Methods of recognizing asbestos.
   2. Health effects associated with asbestos.
   3. Relationship between smoking and asbestos in producing lung cancer.
   4. Nature of operations that could result in exposure to asbestos.
   5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
      a. Engineering controls.
      b. Work practices.
      c. Respirators.
      d. Housekeeping procedures.
      e. Hygiene facilities.
      f. Protective clothing.
      g. Decontamination procedures.
      h. Emergency procedures.
      i. Waste disposal procedures.
   6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134.
   7. Appropriate work practices for the work.

8. Requirements of medical surveillance program.
9. Review of 29 CFR 1926.
10. Pressure Differential Systems.
11. Work practices including hands on or on-job training.
12. Personal Decontamination procedures.
13. Air monitoring, personal and area.

1.5 MEDICAL EXAMINATIONS:

A. Provide medical examinations for all workers who may encounter an airborne fiber concentration level of 0.1 fibers per cubic centimeter (f/cc) or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber concentration data, provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall as a minimum meet OSHA requirements as set forth in 29 CFR 1926 In addition, provide an evaluation of the individuals' ability to work in environments capable of producing heat stress in the worker.

1.6 SUBMITTALS:

A. Before Start of Work: Submit the following to the Owner's Representative for review, if requested. Do not start work until these submittals are approved by the ASCM.

B. AHERA Accreditation: Submit copies of certificates from an EPA-approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, April 30, 1987.

C. State and Local License: Submit evidence that all workers have been trained, and are currently certified and accredited as required by state or local code or regulation.

D. Report from Medical Examination: Conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:
   1. Name and Social Security Number
   2. Physicians Written Opinion from examining physician including at a minimum the following:
      a. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
      b. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
      c. Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
   3. Copy of information that was provided to physician in compliance with 29 CFR 1926
   4. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

E. Notarized Certifications: Submit certification signed by an officer of the abatement contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.

PART 2 EQUIPMENT

2.1 PROTECTIVE CLOTHING:

A. Provide fire-retardant “Tyvek” disposable protective clothing consisting of full-body coveralls, head covers, and boots as required by the most stringent OSHA standards applicable to the work and as manufactured by DuPont or approved equal. Eye protection, gloves, and safety shoes shall be worn. They shall be in accordance with ANSI Z89.1 (1969) and ANSI Z41.1 (1967).

B. Coveralls: Provide disposable full-body coveralls and disposable head covers, and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the Work Area.

C. Goggles: Provide eye protectives (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the work.

D. Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area. Do not remove gloves from Work Area, dispose of as asbestos-contaminated waste at the end of the work.

2.2 ADDITIONAL PROTECTIVE EQUIPMENT:

A. Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Owner's Representative, Project Consultants, and other authorized representatives who may inspect the jobsite. Provide two (2) respirators and six (6) complete coveralls and where applicable provide six (6) respirator filter changes per day. Sufficient HEPA cartridges for powered air-purifying respirators shall be provided for the workers to change during the work shift. No HEPA cartridges shall be used longer than three (3) eight (8) hour work shifts. The respirators shall be worn at all times when in the contaminated area. There shall be no exceptions.

PART 3 EXECUTION

3.1 GENERAL:

A. Provide worker protection as required by the most stringent OSHA and/or EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.

B. Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

3.2 DECONTAMINATION PROCEDURES:

A. Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area:
   1. Air-Purifying Respirators: Require that all workers use the following decontamination procedure as a minimum requirement whenever leaving the Work Area:
      a. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
      b. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering. The following procedure is required as a minimum:

1) Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.
2) With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR. Pay particular attention to seal between face and respirator and under straps.
3) Take a deep breath, hold it and/or exhale slowly, completely wet hair, face, and respirator. While still holding breath, remove respirator and hold it away from face before starting to breath.
4) Carefully wash face piece of respirator inside and out.
5) If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the unit). Thoroughly wash blower unit and hoses. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this may short out and destroy the battery.
6) Shower completely with soap and water.
7) Rinse thoroughly.
8) Rinse shower room walls and floor prior to exit.

c. Proceed from shower to Clean Room and change into street clothes or into new disposable work items.

B. Remote Shower: The procedures above are to be used if the decontamination facility is used as a remote shower. If a worker cannot gain direct access to the Equipment Room require that he enter Decontamination Unit and proceed directly through Shower Room to Equipment Room. Decontamination procedure is then completed as required above.

C. Within the Work Area: Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above, then dress in street clothes before entering the non-Work Areas of the building.

END OF SECTION

SECTION 01562

RESPIRATORY PROTECTION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

A. Instruct and train each worker involved in asbestos abatement or maintenance and repair of friable asbestos-containing materials in proper respiratory use and require that each worker always wear a respirator, properly fitted on the face in the Work Area from the start of any operation which may cause airborne asbestos fibers until the Work Area is completely decontaminated. Use respiratory protection appropriate for the fiber levels encountered in the work area or as required for other toxic or oxygen-deficient situations encountered.

1.3 STANDARDS:

A. Except to the extent that more stringent requirements are written directly into the Contract Documents, the following regulations and standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies were bound herewith. Where there is a conflict in requirements set forth in these regulations and standards, meet the more stringent requirement.

1. OSHA - U.S. Department of Labor Occupational Safety and Health Administration, Safety and Health Standards 29 CFR 1910, Section 1101 and Section 1910.134. 29 CFR 1926.58
2. CGA - Compressed Gas Association, Inc., New York, Pamphlet G-7, “Compressed Air for Human Respiration”, and Specification G-7.1 “Commodity Specification for Air”
3. CSA - Canadian Standard Association, Rexdal, Ontario, Standard Z180.1-00, “Compressed Breathing Air”
4. ANSI - American National Standard Practices for Respiratory Protection, ANSI Z88.2-1992
5. NIOSH - National Institute for Occupational Safety and Health
6. MSHA - Mine Safety and Health Administration

1.4 SUBMITTALS:

A. Before Start of Work submit the following to the Owner's Representative for review. Do not begin work until these submittals are approved by the ASCM.

B. Product Data: Submit manufacturer's product information for each component used, including NIOSH and MSHA Certifications for each component in an assembly and/or for entire assembly.

C. System Diagram: When a Type “C” supplied air respiratory system is required by the work, submit drawing showing assembly of components into a complete supplied air respiratory system. Include diagram showing location of compressor, filter banks, backup air supply tanks, hose line connections in Work Area(s), routing of air lines to Work Area(s) from compressor.

D. Operating Instruction: Submit complete operating and maintenance instructions for all components and systems as a whole. Submittal is to be in bound manual form suitable for field use.

E. Respiratory Protection Program: Submit Contractor's written respiratory protection program manual as required by OSHA 1926.58.

F. Resume information: Submit resume and information on training for individual monitoring the operation of supplied air respiratory systems. Submit training certifications where applicable.

1.5 DELIVERY:

A. Deliver replacement parts, etc., not otherwise labeled by NIOSH or MSHA to job site in manufacturer's containers.

PART 2 EQUIPMENT

2.1 AIR PURIFYING RESPIRATORS:

A. Respirator Bodies: Provide half face or full face type respirators. Equip full face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.

B. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for “Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists” and color coded in accordance with ANSI Z228.2 (1998). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

C. Non-permitted respirators: Do not use single use, disposable or quarter face respirators.

PART 3 EXECUTION

3.1 GENERAL:

A. Respiratory Protection Program: Comply with ANSI Z88.2 - 1992 “Practices for Respiratory Protection” and OSHA 29 CFR 1910 and 1926.

B. Require that respiratory protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.

C. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Section 01714.

D. Regardless of Airborne Fiber Levels: Require that the minimum level of respiratory protection used shall be half-face air-purifying respirators with high efficiency (HEPA) filters.

E. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose.

3.2 FIT TESTING:

A. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a Certified Industrial Hygienist. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing have been provided.

B. On a Weekly Basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

C. Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1992).

3.3 TYPE OF RESPIRATORY PROTECTION REQUIRED:

A. Provide respirator protection as follows:
   1. Negative pressure air-purifying respirators for all preparation, glove bag removal and Category I removal activities.
   2. Powered Air-Purifying Respirators: PAPR, positive pressure, full-face, or half-face respirators (if half-faced respirators are used, eye protection shall be provided by the Contractor).

3.4 PERMISSIBLE EXPOSURE LIMIT (PEL):

A. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1 fibers/cubic centimeter.

3.5 RESPIRATORY PROTECTION FACTOR:

A. Respirator Type Protection Factor
   1. Air purifying: PF=10 - Negative pressure respirator High Efficiency filter half face-piece
   2. Air purifying: PF=10 - Negative pressure respirator High Efficiency filter full face-piece
   3. Powered Air Purifying (PAPR): PF=50 - Positive pressure respirator High Efficiency filter Half or Full face-piece

3.6 AIR PURIFYING RESPIRATORS:

A. Air purifying - half or full face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior body of respirator, including head straps be washed each time a worker leaves the Work Area.

B. Powered air purifying full-face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced after 40 hours of use. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, and be washed each time a worker leaves the Work Area. Caution should be used to avoid shorting battery pack during washing. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

END OF SECTION

SECTION 01563

DECONTAMINATION UNITS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. Refer to Section 01503 Temporary Facilities for electrical requirements and requirements relative to connection of decontamination facilities to building systems such as water and electrical.

1.3 SUBMITTALS:

A. Before the Start of Work: Submit the following to the ASCM for review. Do not begin work until these submittals are approved by the ASCM.

   a. Personnel Decontamination Unit: Provide shop drawing showing location and assembly of personnel decontamination units.

   b. Equipment Decontamination Unit: Provide shop drawing showing location and assembly of equipment decontamination units.

   c. Shower Pan: Provide shop drawing.

   d. Shower Walls: Provide product data.

   e. Shower Head and Controls: Provide product data.

   f. Filters: Provide product data and shop drawing of installation on decontamination unit.

   g. Hose Bib: Provide product data.

   h. Shower Stall: for Wash Down Station provide product data and shop drawing showing and modifications.

   i. Elastomeric membrane: Provide product data.

   j. Lumber: Provide product data on fire resistance treatment.

   k. Sump Pump: Provide product data.

   l. Signs: Submit samples of signs to be used.

PART 2 PRODUCTS

A. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 6-mil thick as indicated, clear, frosted, or black as indicated.

B. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6-mil thick as indicated, frosted or black as indicated.

C. Reinforced Polyethylene Sheet: Where plastic sheet is the only separation between the Work Area and building exterior, provide translucent, nylon reinforced, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6 mil thick as indicated, frosted or black as indicated.

D. Duct Tape: Provide duct tape in 2” or 3” widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

E. Spray Adhesive: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

F. Shower Pan: Provide one piece stainless steel shower pan with a minimum 6” depth, or approved equal.

G. Shower Walls: Provide 8' long by approximately 7' high walls fabricated from rigid, impervious, waterproof material, either corrugated fiberglass roofing or equivalent. Structurally support as necessary for stability.

H. Shower Head and Controls: Provide a factory-made shower head producing a spray of water which can be adjusted for spray size and intensity. Supply shower with water mixed from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.

I. Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the Work Area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.

1. Primary Filter - Passes particles 20 microns and smaller.
2. Secondary Filter - Passes particles 5 microns and smaller.

J. Hose Bib: Provide heavy bronze angle type with wheel handle, vacuum breaker, and ¾” National Standard male hose outlet.

K. Shower Stall: For Wash Down Station provide leak tight shower enclosure with integrated drain pan fabricated from fiberglass or other durable waterproof material, approximately 3' x 3' square with minimum 6' high sides and back. Structurally support as necessary for stability. Equip with hose bib, as specified in this section, mounted at approximately 4'-0” above drain pan. Connect drain to a reservoir, pump water from reservoir through filters to a drain or store and use for amended water. Mount filters inside shower stall on back wall beneath hose bib.

L. Elastomeric membrane: Provide uniform flat sheets of flexible sheet roofing material fabricated from EPDM (ethylene propylene diene monomers) or Neoprene (polychloroprene), in a nominal 45 mil thickness.

M. Lumber: Provide kiln dried lumber of any grade or species.

N. Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3” remains between top of liquid and top of sump pan.

PART 3 EXECUTION

3.1 PERSONNEL DECONTAMINATION UNIT:

A. Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Clean Room, Shower Room, Equipment Room. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any

purpose. Provide temporary heating and lighting within Decontamination Units as necessary to provide safe and comfortable conditions. Decontamination chamber doors shall be of sufficient height and width to enable replacement of equipment that may fail and to safely stretcher or carry an injured worker from the site without destruction of the chamber or unnecessary risk to the integrity of the work area. Such doors must be at least four (4) feet wide, and the distance between sets of flaps must be at least four (4) feet.

B. Clean Room: Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.
   1. Construct using two (2) layers of opaque polyethylene sheeting, at least 6-mil in thickness, to provide an airtight seal between the Clean Room and the rest of the building.
   2. Locate so that access to Work Area from Clean Room is through Shower Room.
   3. Separate Clean Room from the building utilizing three (3) overlapping sheets of 6-mil polyethylene sheeting, weighted at the bottom.
   4. Require workers to remove all street clothes in this room, dress in clean, disposable coveralls, and don respiratory protection equipment. Do not allow asbestos-contaminated items to enter this room. Require Workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.
   5. Maintain floor of clean room dry and clean at all times. Do not allow overflow water from shower to wet floor in clean room.
   6. Damp wipe all surfaces twice after each shift change with a disinfectant solution.
   7. Provide posted information for all emergency phone numbers and procedures.
   8. Provide 1 storage locker per employee.

C. Shower Room (contaminated area): Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading to the Work Area from the Clean Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.
   1. Construct room by providing a shower pan and 2 shower walls in a configuration that will cause water running down walls to drip into pan. Install a freely draining wooden floor in shower pan at elevation of top of pan.
   2. Separate this room from the rest of the building with airtight walls fabricated of two (2) layers of opaque 6-mil polyethylene.
   3. Separate this room from the Clean Room utilizing three (3) overlapping sheets of 6-mil polyethylene sheeting, weighted at the bottom.
   4. Provide splash proof entrances to Clean Room with doors of flapped polyethylene.
   5. Provide shower head and controls supplied with hot and cold water adjustable within the shower.
   6. Provide a continuously adequate supply of liquid bath soap and shampoo and maintain in sanitary condition.
   7. Provide a continuously adequate supply of disposable bath towels.
   8. Arrange so that water from showering does not splash into the Clean or Equipment Rooms.
   9. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area.
   10. Used filters shall be disposed of as asbestos-containing waste material.
   11. Provide hose bib.

D. Equipment Room (contaminated area): Require work equipment, footwear and additional contaminated work clothing to be left here. This is a change and transit area for workers.

1. Separate this room from the Shower Room and the Work Area utilizing three (3) overlapping sheets of 6-mil polyethylene sheeting, weighted at the bottom.
2. Separate this room from the rest of the building with airtight walls fabricated of two (2) layers of opaque 6-mil polyethylene.
3. Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every shift change expected. Roll the drop cloth layer of plastic from Equipment Room into Work Area after each shift change. Replace before next shift change with a clean drop cloth. Provide a minimum of two (2) layers of plastic at all times. Use only clear plastic to cover floors.

E. Decontamination Sequence: Require that all workers and authorized visitors adhere to the following sequence when entering or leaving the Work Area.
   1. All individuals that enter the work area shall sign the entry log, located in the clean room, upon each entry and exit.
   2. Entering Work Area: Worker enters Clean Room and removes street clothing, puts on clean disposable overalls and respirator, and passes through the Shower Room into the Equipment Room.
      a. Any additional clothing and equipment left in Equipment Room needed by the worker are put on in the Equipment Room.
      b. Worker proceeds to Work Area.
   3. Exiting Work Area:
      a. Before leaving the Work Area, require the worker to remove all gross contamination and debris from the outside of the respirator, and protective clothing by wet wiping and HEPA vacuuming.
      b. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.
      c. Extra work clothing such as boots, hard hats, goggles, gloves are to be stored in contaminated end of the Equipment Room.
      d. Disposable coveralls are placed in a bag for disposal with other material.
      e. Require that Decontamination procedures found in Section 01560 be followed by all individuals leaving the Work Area.
      f. After showering, the worker moves to the Clean Room and dresses in either new coveralls for another entry or street clothes if leaving.

3.2 CONSTRUCTION OF THE DECONTAMINATION UNITS:

A. Walls and Ceiling: Construct airtight walls and ceiling using two (2) layers of polyethylene sheeting, at least 6-mil in thickness. Attach to existing building components or a temporary framework.

B. Floors: Use two (2) layers (minimum) of 6-mil polyethylene sheeting to cover floors in all areas of the Decontamination Units. Use only clear plastic to cover floors.

C. Flap Doors: Fabricated from three (3) overlapping sheets with openings a minimum of four feet (4') wide. Configure so that sheeting overlaps adjacent surfaces. Weigh sheets at bottoms so that they quickly close after being released. Put arrows on sheets to indicate direction of overlap and/or travel. Provide a minimum of four feet (4') between entrance and exit of any room. Provide a minimum of four feet (4') between doors to airlocks.

D. If the Decontamination area is located at the exterior of the building, adjacent to occupied areas of the building or within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the decontamination unit with a protective shell as follows.

1. Decontamination unit shall be framed with 2”x4” (min) fire-rated lumber at 16” on center.
2. Walls and roof shall be covered with ½” (min) fire-rated plywood and all seams shall be caulked and sealed so as to provide an airtight barrier.
3. The decontamination unit entrance shall be fitted with a lockable, louvered door.
4. Two (2) layers of 6-mil polyethylene shall be applied to both sides of the airtight plywood enclosure.

E. Visual Barrier: Where the Decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants. Where the area adjacent to the Decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with wood or metal studs covered with minimum 1/4 inch thick hardboard or 1/2 inch plywood. Where the solid barrier is provided, sheeting need not be opaque.

F. Alternate methods of providing Decontamination facilities may be submitted to the Owner's Representative for approval. Do not proceed with any such method(s) without written authorization of the Owner's Representative.

G. Electrical: Provide subpanel at Clean Room to accommodate all removal equipment. Power subpanel directly from a building electrical panel. Connect all electrical branch circuits to a ground-fault circuit protection device.

3.3 CLEANING OF DECONTAMINATION UNITS:

A. Clean debris and residue from inside of Decontamination Units on a daily basis or as otherwise indicated on Contract Drawings. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

B. If the Clean Room of the Personnel Decontamination Unit becomes contaminated with asbestos-containing debris, abandon the entire Decontamination Unit and erect a new Decontamination Unit. Use the former Clean Room as an inner section of the new Equipment Room.

3.4 SIGNS:

A. Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

1. Provide signs in both English and Spanish.
2. Legend:

DANGER - ASBESTOS
CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

3. Provide spacing between respective lines at least equal to the height of the respective upper line.
4. Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:
5. Provide signs in both English and Spanish.

LEGEND	NOTATION
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4" Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE AREA	3/4" Block
ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK AREA AND BEFORE ENTERING THE CHANGE AREA	3/4" Block

END OF SECTION

SECTION 01711

PROJECT DECONTAMINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification Sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

A. General: Decontamination of the Work Area following asbestos abatement.
   1. If the asbestos abatement work is on damaged or friable materials the work is a three step procedure with two cleanings of the Primary Barrier plastic prior to its removal and one cleaning of the room surfaces to remove any new or existing contamination. Unless specifically indicated otherwise all materials are considered damaged or friable for purposes of this section.
   2. Operation of the pressure differential system is used to remove airborne fibers generated by the abatement work.

1.3 RELATED WORK SPECIFIED ELSEWHERE:

A. Removal of Gross Debris is integral with the performance of abatement work and as such is specified in the appropriate work section(s) of these specifications:
   1. Section 02081 Removal of Asbestos-Containing Materials.

B. Work Area Clearance: Air testing and other requirements which must be met before release of Contractor and re-occupancy of the work area are specified in Section 01714 Work Area Clearance.

PART 2 PRODUCTS

2.1 GENERAL:

A. Encapsulant shall be an asbestos binding compound such as Serpiflex Shield from Grace Construction Products or approved equal.

PART 3 EXECUTION

3.1 GENERAL:

A. Work of This Section includes the decontamination of air in the Work Area which has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to friable asbestos-containing materials in the space.

B. Work of This Section includes the cleaning, decontamination, and removal of temporary facilities installed prior to abatement work, including:
   1. Primary and Critical Barriers erected by work of Section 01526.
   2. Decontamination Unit erected by work of Section 01563.
   3. Pressure Differential System installed by work of Section 01513.

C. Work of this Section includes the cleaning, and decontamination of all surfaces (ceiling, walls, floors) of the Work Area, and all furniture or equipment in the Work Areas.

3.2 START OF WORK:

A. Previous Work: During completion of the asbestos abatement work specified in other sections, the Secondary Barrier of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.

B. Start of Work: Work of this section begins with the cleaning of the Primary Barrier. At start of work the following will be in place:

1. Primary Barrier: Two layers of polyethylene sheeting on floor and one layer on walls and ceilings.
2. Critical Barrier: An airtight barrier between the Work Area and other portions of the building or the outside.
3. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings.
4. Decontamination Units: For personnel and equipment in operating condition.
5. Pressure Differential System: In operation.

3.3 FIRST CLEANING:

A. First Cleaning: Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. (Note: A HEPA vacuum may fail if used with wet material.) Do not perform dry dusting or dry sweeping. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

B. Remove All Filters in Air Handling System(s) and dispose of as asbestos-containing waste in accordance with requirements of Section 02084 Disposal of Asbestos-Containing Waste Material.

C. Wait twelve (12) hours to allow HEPA-equipped air filtration units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period. Maintain Pressure Differential System in operation for the entire period.

D. After completion of the first cleaning operation of the facility, the Contractor shall give written notification to the Asbestos Safety Technician (AST) that a pre-encapsulation inspection is needed.

E. The AST shall perform a visual inspection of the work area to ensure that it is dry and dust free.

F. After approval by the AST, the Contractor shall spray coat all dried exposed surfaces with a sealant. The surfaces to be coated shall include the polyethylene which has been used to cover walls, floors, ceilings and non-removable fixtures and equipment.

G. Encapsulation of substrate: Perform encapsulation of substrate or installation of spray-applied finishes or fireproofing, where required, at this time. Maintain Pressure Differential System in operation during encapsulation work. Perform work only after meeting the following requirements:

1. Surfaces to be covered have met the requirements for a visual inspection in this section.

H. After the encapsulation of the polyethylene, the first layer shall be carefully removed and rolled up with the contaminated portion inside. All equipment, machinery, scaffolding, tools, etc. within the

isolated work area shall be cleaned with amended water, moved to the equipment room, and properly removed from the work area.

3.4 SECOND CLEANING:

A. Second Cleaning: Carry out a second cleaning of all surfaces in the work area in the same manner as the first cleaning.

B. Removal of Primary Barriers:
   1. Immediately following the second cleaning of the remaining layer of Primary plastic, remove all Primary Barrier sheeting and Material Decontamination Unit, if there is one, leaving only:
      a. Critical Barrier: Which forms the sole barrier between the Work Area and other portions of the building or the outside.
      b. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.
      c. Decontamination Unit: For personnel, in operating condition.
      d. Pressure Differential System: Maintain in continuous operation.

3.5 FINAL CLEANING:

A. Final Cleaning: Carry out a final cleaning of all surfaces in the Work Area in the same manner as the previous cleanings.

B. The Contractor shall request that a final clean up inspection be performed to insure all visible asbestos has been removed, the area is dust free and that the work area may have Post Removal Sampling. The AST and the Contractor shall perform a complete visual inspection of the entire work area including:
   1. Decontamination Unit.
   2. Primary seals and critical barriers over ventilation openings, doorways, windows, and other openings.

C. Look for debris from any sources, residue on surfaces, dust or other matter. If any such debris, residue, dirt or other matter is found, repeat the final cleaning and continue decontamination procedure from that point.

D. When the area is visually determined to be clean and dry, post removal air sampling shall be performed.

E. During inspection time allow HEPA-equipped air filtration units to clean air of airborne asbestos fibers. Use oscillating fans as necessary to assure circulation of air in all parts of Work Areas during this period. Maintain Pressure Differential System in operation for the entire period.

F. The polyethylene sheeting used to maintain critical barriers between work areas and clean areas such as doorways, windows and air vents shall be sprayed with encapsulant, but not removed until air monitoring is completed and satisfactory results have been received. (Lockback)

3.6 VISUAL INSPECTION:

A. Temporary lighting: Provide a minimum of 100 foot candles of lighting on all surfaces in the areas to be subjected to visual inspection. Provide hand held lights providing 150 foot candles at 4 feet capable of reaching all locations in work area.

B. Lifts: Provide ladders, scaffolding, and lifts as required to provide access to all surfaces in the area to be subjected to visual inspection. Access is to allow touching of all surfaces.

3.7 FINAL AIR SAMPLING:

A. After the work area is found to be visually clean, air samples will be taken and analyzed in accordance with the procedures for PCM or TEM set forth in Section 01714 Work Area Clearance:
   1. If Release Criteria are not met, repeat Final Cleaning and continue Decontamination Procedure from that point.
   2. If Release Criteria are met, proceed to work of this Section on Removal of Work Area Isolation.

3.8 REMOVAL OF WORK AREA ISOLATION:

A. After all requirements of this section and Section 01714 Work Area Clearance have been met:
   1. Shut down and remove the Pressure Differential System. Seal HEPA-equipped air filtration units, HEPA vacuums and similar equipment with 6-mil polyethylene sheet and duct tape to form a tight seal at intake end before being moved from Work Area.
   2. Remove Personnel Decontamination Unit.
   3. Remove the Critical Barriers separating the Work Area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection. If significant quantities, as determined by the Owner's Representative, are found then the entire area affected shall be decontaminated as specified herein.
   4. Remove all equipment, materials, and debris from the work site.
   5. Dispose of all asbestos-containing waste material as specified in Section 02084 Disposal of Asbestos Containing Waste Material.

3.9 SUBSTANTIAL COMPLETION OF ABATEMENT WORK:

A. Asbestos Abatement Work is Substantially Complete upon meeting the requirements of this section and Section 01714 Work Area Clearance, including submission of:
   1. Certificate of Visual Inspection.
   2. Receipts Documenting proper disposal as required by Section 02084 Disposal of Asbestos-Containing Waste Material.
   3. Punch list detailing repairs to be made and incomplete items.

END OF SECTION

SECTION 01714

WORK AREA CLEARANCE

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division - 1 Specification Sections, apply to work of this section.

1. Visual Inspection: required as a prerequisite of air testing, is set forth in Section 01711 Project Decontamination.
2. Air Monitoring: performed by the ASCM during abatement work, is described in Section 01410 Test Laboratory Services.

1.2 SUMMARY:

A. Not in Contract Sum:

1. This section describes work being performed by the ASCM. This work is not in the Contract Sum.
2. This Section sets forth required post-abatement airborne asbestos concentrations in the Work Area and describes testing procedures the ASCM will use to measure these levels.

1.3 CONTRACTOR RELEASE CRITERIA:

A. The Asbestos Abatement Work Area is cleared when the Work Area is visually clean and airborne asbestos structure concentrations have been reduced to the level specified below.

1. TEM clearance criteria shall be ≤ 70 structures per millimeter squared (S/mm^2) average for all collected samples.

1.4 CLEARANCE CRITERIA FAILURE:

A. Costs associated with the initial round of clearance sampling for each work area are not part of, and shall not be included in the Asbestos Contractor's Contract Sum.

B. In the event of clearance criteria failure, the Asbestos Contractor shall re-clean the work area in accordance with the specification and as directed by the Asbestos Safety Technician. All re-cleaning activities shall be performed at the Asbestos Contractor's expense. Additionally, all costs associated with subsequent clearance testing shall be deducted from the Asbestos Contractor's Contract Sum. The unit price schedule for air monitoring and analytical services are as follows:

- AST Labor - $95.00/hour
- PCM Sample - $20.00/sample
- TEM Sample - $85.00/sample

1.5 VISUAL INSPECTION:

A. Work of this Section will not begin until the visual inspection described in Section 01711 Project Decontamination is complete and has been certified by the Project Administrator.

1.6 AIR MONITORING:

A. To determine if the elevated airborne asbestos structure concentration encountered during abatement operations has been reduced to the specified level, the ASCM will secure samples and analyze them according to the following procedures:

1. PCM samples will be secured and analyzed as indicated below.
2. Transmission Electron Microscopy will be performed using the analysis methodology set forth in the AHERA regulation 40 CFR Part 763 Appendix A, SUBPART E.
3. Work Area Clearance: upon meeting the PCM Clearance or TEM Clearance requirements the work of Section 01711 Project Decontamination can continue.

1.7 SCHEDULE OF AIR SAMPLES:

A. General: The number and volume of air samples taken and analytical methods used by the ASCM will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used and site conditions.

1.8 LABORATORY TESTING:

A. PHASE CONTRAST MICROSCOPY: The services of a testing laboratory will be employed by the ASCM to perform laboratory analysis of the air samples. A microscope and technician may be set up at the job site, or samples will be sent by courier, so that verbal reports on daily air samples can be obtained within 24 hours. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the ASCM, the Owner and the Contractor.

B. TRANSMISSION ELECTRON MICROSCOPY: The services of a testing laboratory will be employed by the ASCM to perform laboratory analysis of the clearance air samples. Samples will be transported or sent by overnight mail, so that verbal reports on clearance air samples can be obtained within 24 hours. A complete record, certified by the testing laboratory, of all air monitoring tests and results will be furnished to the ASCM, the Owner and the Contractor.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

END OF SECTION

SECTION 02081

REMOVAL OF ASBESTOS-CONTAINING MATERIAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. Installation of Critical and Primary Barriers, and Work Area Isolation Procedures are set forth in Section 01526 Temporary Enclosures.

B. Project Decontamination procedures after removal of the Secondary Barrier are specified in Section 01711 Project Decontamination.

C. Disposal of asbestos-containing waste is specified in Section 02084 Disposal of Asbestos-Containing Waste Material.

1.3 SUBMITTALS:

A. Before Start of Work: Submit the following to the Owner's Representative for review. Do not start work until these submittals are approved by the ASCM.

1. Surfactant: Submit product data, use instructions and recommendations from manufacturer of surfactant intended for use. Include data substantiating that material complies with requirements.
2. Removal Encapsulant: Submit product data, use instructions and recommendations from manufacturer of removal encapsulant intended for use. Include data substantiating that material complies with requirements.
3. NESHAP Certification: Submit certification from manufacturer of surfactant or removal encapsulant that, to the extent required by this specification, the material, if used in accordance with manufacturer's instructions, will wet Asbestos-Containing Materials to which it is applied as required by the National Emission Standards for Hazardous Air Pollutants (NESHAP) Asbestos Regulations (40 CFR 61, Subpart M).
4. Material Safety Data Sheet: Submit the Material Safety Data Sheet, or equivalent, in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200) for each surfactant, encapsulating material and solvent proposed for use on the work. Include a separate attachment for each sheet indicating the specific worker protective equipment proposed for use with the material indicated.

PART 2 PRODUCTS

A. Wetting Materials: For wetting prior to disturbance of Asbestos-Containing Materials use either amended water or a removal encapsulant:

1. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2. Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of Asbestos-Containing Material. Use a material which results in wetting of the

Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50% polyoxyethylene ester and 50% polyoxyethylene ether in five gallons of water.

B. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.

C. Duct Tape: Provide duct tape in 2” or 3” widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene.

D. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

E. Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled as required by Section 02084 Disposal of Asbestos-containing Waste Material.

F. Fiberboard Drums: Provide heavy duty leak tight fiberboard drums with tight sealing locking metal tops.

G. Paper board Boxes: Provide heavy duty corrugated paper board boxes coated with plastic or wax to retard deterioration from moisture. Provide in sizes that will easily fit in disposal bags.

PART 3 EXECUTION

3.1 WORKER PROTECTION:

A. Before beginning work with any material for which a Material Safety Data Sheet has been submitted provide workers with the required protective equipment. Require that appropriate protective equipment be used at all times.

3.2 GENERAL PROCEDURES FOR THE REMOVAL OF ASBESTOS-CONTAINING MATERIALS:

A. Preparation work for the removal of the identified asbestos-containing materials shall utilize Full Containment with three-stage personnel decontamination units, air filtration units and digital negative air pressure differential monitoring systems as indicated on the contract drawings, and shall be in accordance with N.J.A.C. 5:23-8.15 and N.J.A.C. 5:23-8.19, and shall be performed utilizing respiratory protection and proper Personal Protective Equipment (PPE). Preparation work shall only be deemed to be complete and acceptable following a satisfactory inspection by the AST and/or New Jersey Department of Community Affairs representative. Approval to proceed with removal activities shall be required in writing prior to commencing removal activities.

B. Removal of asbestos-containing materials, (i.e. floor tile, transite and associated mastic) shall utilize wet methods prior to stripping and/or tooling to reduce fiber dispersal into the air.

C. Removal of residual mastic from concrete flooring will be done utilizing a shot-blast method to remove all mastic residue from the concrete surface. Areas where the shot-blast cannot remove the mastic will be done by utilizing a mixture of hand tools using wet methods, HEPA shrouded tools to grind the material off, and/or chemical strippers.

D. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for amended water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written

instructions. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

E. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

F. Asbestos-containing material, removed by hand tools, shall be manually removed by scraping or cutting the saturated material from the base substrate.

G. Removal of the asbestos material shall be done in small sections by two-person teams, on staging platforms if needed. The wet material from each section shall be packed and sealed into labeled 6-mil polyethylene bags. When possible, one worker shall remove and hand sections of asbestos material to the other worker who shall then place the material into labeled 6-mil polyethylene bags.

H. Asbestos-containing and asbestos-contaminated materials located more than ten (10) feet above the floor shall be dropped into dust free enclosed inclined chutes, or dropped onto scaffolding, or containerized at that height for eventual disposal. Maximum inclination for chutes shall not exceed 60 degrees from horizontal. Asbestos-containing materials shall not be dropped or thrown to the floor from more than ten (10) feet. Asbestos-containing materials shall be handled carefully. No asbestos is permitted to drop directly to the floor. Any unnecessary agitation of the material is strictly prohibited.

I. All asbestos-containing and asbestos-contaminated materials shall be removed. The Contractor shall take care that all asbestos has been removed from fasteners, channels of support systems, construction blocks, ductwork and piping, and all other hard to reach places.

J. As a method of organizing the asbestos removal work, workers shall begin working on the areas nearest to the decontamination unit and work toward the air filtration units.

K. Operations shall be continuous so that once an area is started it shall be worked on to the first wet wipe. The wet material from each section shall be packed and sealed into labeled 6-mil polyethylene bags and double bagged with visible labels prior to starting the next section. Water-soaked fallen material shall be picked up while wet to prevent water loss due to evaporation.

L. Maintain good housekeeping so as not to accumulate loose asbestos.

M. Reach the clean wipe state as quickly as possible.

N. Remove the residues as quickly as possible so as not to walk or track through it, thus grinding it to smaller, more potentially dangerous sizes.

O. Place the asbestos into labeled 6-mil polyethylene bags as quickly as possible so as not to allow asbestos to dry out and become airborne. Bags shall be handed down or chuted down carefully from one worker to another.

P. Contaminated material containing sharp edged items shall be cut to size while adequately wet, placed in small cardboard boxes or burlap bags and then double bagged, or alternatively double bagged and then placed within 6-mil lined fiber drums, the integrity of which is the Contractor's responsibility.

Q. Bags/drums shall be marked with the labels prescribed by 40 CFR Part 61 Section 61.150 of the EPA regulations. The outside of all containers shall be wet cleaned or HEPA vacuumed before leaving the work area.

R. After removal, the underlying material shall be brushed with a stiff, nylon bristle brush. Wire

brushes are not permitted; asbestos fiber bundles break into smaller more hazardous fiber sizes when a wire brush is utilized. After the material is brushed, it shall be wet wiped with amended water. Only 100% removal will be accepted.

END OF SECTION

SECTION 02084

DISPOSAL OF ASBESTOS-CONTAINING WASTE

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to work of this section.

B. Section 01092 Codes and Regulations - Asbestos Abatement describes applicable federal, state and local regulations.

1.2 DESCRIPTION OF THE WORK:

A. This section describes the disposal of Asbestos-Containing Materials. Disposal includes proper packaging of asbestos-containing waste materials.

1.3 SUBMITTALS:

A. Before Start of Work: Submit the following to the ASCM for review. Do not start work until these submittals are approved by the ASCM.
   1. Copy of state or local license for waste hauler.
   2. Name and address of landfill where non-friable and friable asbestos-containing waste materials are to be buried. Include contact person and telephone number.
   3. Chain of Custody form and form of waste manifest proposed.
   4. Sample of disposal bag and any added labels to be used.

B. Submit copies of all manifests and disposal site receipts to the ASCM on a weekly basis.

PART 2 PRODUCTS

2.1 Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled with four labels with text as follows:

A. First Label:

CAUTION: CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

B. Second Label: Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication Standard:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLLITE, OR
ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

C. Third Label: Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised February 17, 1987:

RQ HAZARDOUS
SUBSTANCE
SOLID, NOS,
ORM-E, NA 9188
(ASBESTOS)

D. Fourth Label: Provide in accordance with 40 CFR Part 61 Asbestos NESHAP revision; Final Rule dated November 20, 1990.

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PART 3 EXECUTION

3.1 GENERAL:

A. The transportation and disposal of non-friable and friable asbestos-containing materials shall be performed in strict accordance with New Jersey Department of Environmental Protection Regulations (N.J.S.A. 7:26).

B. Comply with the following sections during all phases of this work:
   1. Section 01560 Worker Protection - Asbestos Abatement.
   2. Section 01562 Respiratory Protection.

C. All waste is to be hauled by a waste hauler with all required licenses from all state and local authority with jurisdiction.

D. Load out of waste material shall occur at times of least occupancy of the buildings. Load all asbestos-containing waste material in disposal bags or leak-tight drums. All materials are to be contained in one of the following:
   1. Two 6 mil disposal bags.
   2. Two 6 mil disposal bags and a fiberboard drum.

E. Protect interior of truck or dumpster with 6 mil polyethylene sheeting.

F. Carefully load containerized waste into fully enclosed dumpsters, trucks or other appropriate vehicles for transport. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.

G. Do not store containerized materials outside of the Work Area. Take containers from the Work Area directly to a sealed truck or dumpster.

H. Do not transport disposal bagged materials on open trucks. Label drums with same warning labels as bags. Uncontaminated drums may be reused. Treat drums that have been contaminated as asbestos-containing waste and dispose of in accordance with this specification.

I. Advise the landfill operator or processor, at least ten days in advance of transport, and the quantity of material to be delivered.

J. At a disposal site unload containerized waste. Sealed plastic bags may be carefully unloaded from the truck. If bags are broken or damaged, return to work site for re-bagging. Clean and decontaminate entire truck and contents.

K. Retain receipts from landfill or processor for all disposed materials.

L. At completion of hauling and disposal of each load submit copy of waste manifest, chain of custody form, and landfill receipt to the ASCM.

END OF SECTION

GENERAL NOTES OCCUPIED FACILITY

1. ALL ASBESTOS REMOVAL SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, GUIDELINES, REGULATIONS, ORDERS AND DIRECTIVES, INCLUDING, WITHOUT LIMITATION, THOSE OF THE RESPONSIBLE NEW JERSEY AGENCIES; U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA), U.S. DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH), AND THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION.

2. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, FACILITIES, EQUIPMENT, SERVICES, ETC. NECESSARY TO PERFORM THE WORK REQUIRED FOR ASBESTOS ABATEMENT IN ACCORDANCE WITH THE PROJECT MANUAL, EPA, OSHA REGULATIONS AND NIOSH RECOMMENDATIONS, STATE OF NEW JERSEY REGULATIONS AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL GOVERNMENT REGULATIONS.

3. CONTRACTOR SHALL DEVELOP AND IMPLEMENT A WRITTEN STANDARD PROCEDURE FOR ABATEMENT WORK TO ENSURE MAXIMUM PROTECTION AND SAFEGUARDS FROM ASBESTOS EXPOSURE OF THE WORKERS, VISITORS, EMPLOYEES, GENERAL PUBLIC, AND THE ENVIRONMENT.

4. CONTRACTOR SHALL PROVIDE 24-HOUR SECURITY SUCH THAT ALL UNAUTHORIZED PERSONNEL ARE PROHIBITED FROM ENTERING THE WORK AREA. CONTRACTOR SHALL ALSO PROVIDE AN INDIVIDUAL THAT IS CURRENTLY LICENSED TO PERFORM ASBESTOS WORK TO MONITOR THE AIR PRESSURE DIFFERENTIAL SYSTEM DURING ALL NON-WORKING HOURS INCLUDING WEEKENDS AND HOLIDAYS.

5. CONTRACTOR SHALL PROVIDE SIGNS, LABELS, WARNINGS, AND POSTED INSTRUCTIONS THAT ARE NECESSARY TO PROTECT, INFORM AND WARN PEOPLE OF THE HAZARD FROM ASBESTOS EXPOSURE. POST IN A PROMINENT AND CONVENIENT PLACE FOR THE WORKERS AND A COPY OF THE LATEST APPLICABLE REGULATIONS FROM OSHA, EPA, AND NIOSH.

6. THE CONTRACTOR SHALL PROVIDE ALL ELECTRICAL, WATER, AND WASTE CONNECTIONS, TIE-INS, EXTENSIONS, AND CONSTRUCTION MATERIALS, SUPPLIES, ETC., AS REQUIRED TO COMPLETE THE ASBESTOS REMOVAL.

7. CONTRACTOR SHALL PROVIDE TEMPORARY ELECTRIC AND LIGHTING THROUGHOUT HIS WORK AREAS AS REQUIRED, IN ACCORDANCE WITH OSHA REGULATIONS AND THE STATE OF NEW JERSEY SUB-CHAPTER 8.

8. CONTRACTOR SHALL COMPLETELY PROTECT ALL CONTROL PANELS, ELECTRICAL PANELS, EQUIPMENT, ETC. WITHIN THE WORK AREAS.

9. CONTRACTOR SHALL PROVIDE COMPLETE ISOLATION AND PROTECTION FOR ALL UNINSULATED AND/OR NON-ASBESTOS INSULATED MECHANICAL EQUIPMENT.

10. CONTRACTOR SHALL SEAL ALL GRILLES, VENTS, DIFFUSERS, ETC. IN EACH WORK AREA AS REQUIRED BY THE CONTRACT DOCUMENTS AND AS NECESSITATED BY FIELD CONDITIONS.

11. CONTRACTOR SHALL PROVIDE ALL WORKERS, OWNER'S REPRESENTATIVE OR HIS DESIGNEE, THE CONSULTANT AND HIS TECHNICIAN WITH THE PROPER OSHA APPROVED FALL PROTECTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO, FULL BODY HARNESS EQUIPPED WITH ADEQUATE LANYARDS WHERE APPLICABLE IN ACCORDANCE WITH OSHA REGULATIONS. CONTRACTOR SHALL ALSO PROVIDE ALL NECESSARY SAFETY TRAINING AND PROCEDURES ASSOCIATED WITH FALL PROTECTION EQUIPMENT AND SHALL INSURE THAT ALL FALL PROTECTION EQUIPMENT IS PROPERLY WORN AND UTILIZED AT ALL TIMES WHILE IN THE AREA WITH NO EXCEPTIONS.

12. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING AND/OR REPAIRING ANY EQUIPMENT, MATERIALS, INSULATION, FURNISHINGS, BUILDING STRUCTURE, ETC., DAMAGED DURING THE COURSE OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.

13. CONTRACTOR SHALL PROVIDE AS MANY SHIFTS OF WORKERS AS WILL BE NECESSARY TO COMPLETE THE JOB IN THE AMOUNT OF TIME SPECIFIED IN THE CONTRACT DOCUMENTS.

14. CONTRACTOR SHALL PROVIDE ALL SCAFFOLDING EQUIPMENT, TOOLS, TRANSPORTATION EQUIPMENT, VACUUM EQUIPMENT, SPRAYERS, ETC. AS REQUIRED AND/OR AS NECESSARY TO COMPLETE ALL WORK REQUIRED BY THE CONTRACT DOCUMENTS.

15. CONTRACTOR SHALL COMPLETELY ISOLATE THE WORK AREAS AS DESCRIBED IN THE CONTRACT DOCUMENTS. ALL CRITICAL BARRIERS, DECOMTAMINATION UNITS, PLASTIC SHEETING, AIR FILTRATION DEVICES, RESPECTIVE MANIFOLDS, ETC. ARE TO BE IN PLACE AND APPROVED BY THE AST PRIOR TO ASBESTOS REMOVAL.

16. CONTRACTOR SHALL LOCATE AND SEAL ALL PENETRATIONS THROUGH THE WORK AREA BUT NOT LIMITED TO PIPE, DUCT, CONDUIT, CHASES, SHAFTWAYS, AND OPENINGS IN FIRE WALLS OR DECKS BETWEEN FLOORS AS REQUIRED BY THE FIELD CONDITIONS.

17. OCCUPANCY BARRIERS ARE TO BE CONSTRUCTED OF WOOD: 2" X 4" FRAME AT 16" O.C. WITH ½" PLYWOOD SHEATHING, OR COMPARABLE METAL STUD FRAMING AND ½" GYPSUM SHEATHING, SEALED ON BOTH SIDES WITH 2 LAYERS OF 6 MIL. THICK POLYETHYLENE SHEETING AND CAULK ALL JOINTS.

18. WHERE COMPLETE AND SOLID DOORS EXIST, CRITICAL BARRIERS MAY INCLUDE THE CLOSING AND LOCKING OF DOORS, SEALING WITH DUCT TAPE AND APPLYING 2 LAYERS OF 6 MIL. POLYETHYLENE SHEETING ON BOTH SIDES. (NOT APPLICABLE TO OCCUPANCY BARRIERS)

19. ALL LUMBER AND POLYETHYLENE MATERIALS USED FOR THIS PROJECT ARE TO BE FIRE RESISTANT.

20. CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE COMPLETE SHUT DOWN OF ALL HVAC UNITS WHICH SERVICE THE WORK AREAS.

21. CONTRACTOR SHALL CONSTRUCT DECONTAMINATION UNITS AT LOCATIONS INDICATED ON DRAWINGS. DECONTAMINATION UNITS SHALL BE CONSTRUCTED AS PER NEW JERSEY SUB-CHAPTER 8 AND OSHA REGULATIONS. DECONTAMINATION UNITS SHALL BE CONSTRUCTED OF 2" X 4" WOOD FRAMING OR COMPARABLE METAL FRAMING 16" O.C. AND SEALED WITH 2 INDIVIDUAL LAYERS OF 6 MIL. THICK POLYETHYLENE SHEETING.

22. SHOWER AND WASTE WATER SHALL BE TREATED AND DISPOSED AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

23. CONTRACTOR SHALL PROVIDE PORTABLE CABINET-MOUNTED AIR FILTRATION DEVICES (AFD) EQUIPPED WITH HEPA FILTRATION AT 99.97% EFFICIENCY, TO 3 MICRONS. THE NUMBER OF AFD'S SHALL BE IN SUCH A MANNER AS TO INSURE A MINIMUM OF FOUR (4) COMPLETE AIR CHANGES PER HOUR AND MAINTAIN A MINIMUM NEGATIVE PRESSURE DIFFERENTIAL OF 0.05 INCHES OF WATER COLUMN.

24. CONTRACTOR SHALL EXHAUST PORTABLE AFD UNITS AT THE LOCATIONS INDICATED ON THE CONTRACT DRAWINGS. HE SHALL PROVIDE AND INSTALL A WOODEN MANIFOLD IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ALL PORTABLE AFD'S SHALL EXHAUST OUTSIDE THE BULDING, UNLESS OTHERWISE APPROVED BY THE CONSULTANT.

25. CONTRACTOR SHALL BE RESPONSBILE FOR ALL NECESSARY CONNECTIONS, FASTENERS, FLEXIBLE DUCT, MANIFOLD, SUPPORTING SUSPENSION, ETC. FROM AFD UNITS TO EXHAUST LOCATIONS. INSTALLATION OF AFD'S SHALL COMPLY WITH CONSULTANT'S INSTRUCTIONS AND MANUFACTURER'S REQUIREMENTS.

26. CONTRACTOR SHALL REMOVE ALL ASBESTOS-CONTAINING MATERIALS FROM EACH WORK AREA INDICATED ON THE CONTRACT DRAWINGS.

27. CONTRACTOR SHALL APPLY ONE COAT OF SEALANT OVER ALL SURFACES FROM WHICH ASBESTOS CONTAINING MATERIALS HAVE BEEN REMOVED IN ACCORDANCE WITH THE PROJECT SPECIFICATION AND NEW JERSEY SUB-CHAPTER 8 REGULATION.

28. ALL ROUTES THROUGH THE BUILDING TO BE USED FOR THE TRANSPORTATION OF CONTAMINATED WASTE, SHALL BE AS INDICATED ON THE DRAWINGS, UNLESS OTHERWISE APPROVED BY THE CONSULTANT. CONTRACTOR SHALL UTILIZE ENCLOSED MOBILE CONTAINERS FOR TRANSPORTING ALL WASTE MATERIALS ALONG ROUTES THROUGH THE BUILDING AND TO THE DUMPSTER AS DESCRIBED IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE AST.

29. EVERY EFFORT HAS BEEN MADE BY THE CONSULTANT TO LOCATE ALL ASBESTOS-CONTAINING MATERIALS ON THESE DRAWINGS. CONTRACTORS ARE RESPONSIBLE FOR VISITING THE JOB SITE AND DETERMINING EXACT QUANTITIES OF ASBESTOS MATERIALS TO BE REMOVED PRIOR TO THE SUBMISSION OF THEIR BID.

30. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE PRIOR TO SUBMISSION OF BID, AND REPORT ANY DISCREPANCIES TO THE CONSULTANT IN WRITING. DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALES SHOWN ON DRAWINGS, GENERAL NOTES, AND PROJECT SPECIFICATIONS.

31. THESE DRAWINGS WERE PREPARED FROM ORIGINALS PROVIDED BY THE OWNER. THEY ARE FOR USE AND GENERAL GUIDANCE OF THE OWNER, CONSULTANT OR CONTRACTOR. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING "AS-BUILT" CONDITIONS. OWNER AND CONSULTANT ASSUME NO RESPONSIILITY FOR THE ACCURACY OF "AS-BUILT" CONDITIONS NOR DIMENSIONS SHOWN.

32. ALL AREAS OF THIS BUILDING WITH THE EXCEPTION OF THE DESIGNATED WORK AREAS SHALL REMAIN OCCUPIED WITH OTHER TRADE WORKERS AND BUILDING PERSONNEL THROUGHOUT THE ABATEMENT PROJECT.

LEGEND

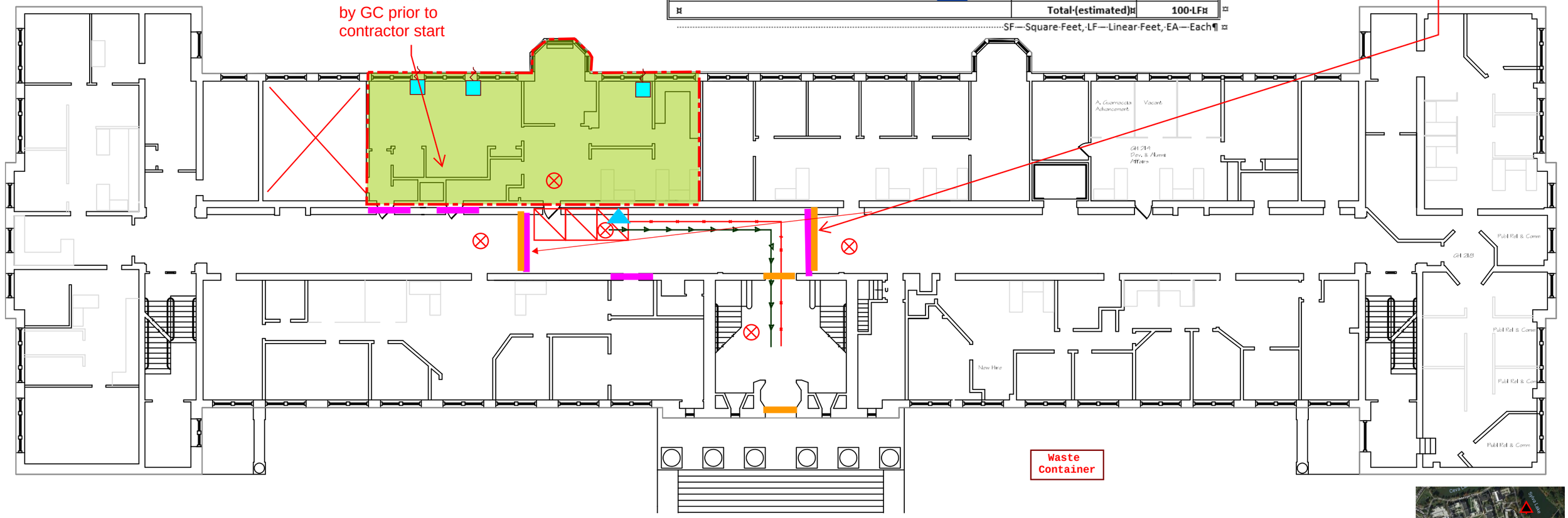
- 3 STAGE DECONTAMINATION UNIT
- AIR FILTRATION UNIT
- EMERGENCY EXIT AND/OR CONTRACTOR EGRESS
- WORKER INGRESS/EGRESS
- WASTE ROUTE
- AIR SAMPLING LOCATION
- MANOMETER LOCATION
- SEPARATION BARRIER
- WORK AREA LIMITS FOR FULL CONTAINMENT

Table 2 – Identified Asbestos-Containing Materials
Green Hall, Suite 206
Ewing, New Jersey

Homogenous Material	Location	Approx. Quantity
7. Tar Paper Backing associated with non-ACM Brown Sheet Flooring	Conference Room	30 SF
	Toilet	24 SF
	Work Room	100 SF
	Total	**154 SF**
10. Floor Leveler	President's Area	800 SF
	Total	**800 SF**
Pipe insulation and Elbows (assumed behind sheetrock walls)	President's Area	100 LF
	Total (estimated)	**100 LF**

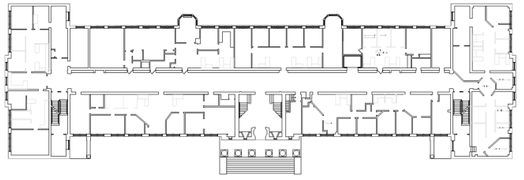
SF – Square Feet, LF – Linear Feet, EA – Each

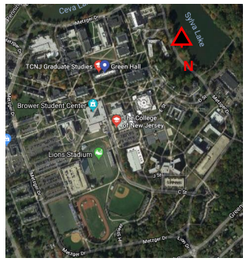
Note: Upper deck is curved ceiling with an asbestos popcorn ceiling. Contractor will need to be able to seal area off as per Subchapter 8 regulations.



ABATEMENT SCOPE OF WORK: (occupied friable abatement)

- Contractor will remove all sheet flooring under full containment from the listed designated rooms.
- Contractor will remove all floor leveling compound under full containment from the listed designated rooms.
- General Contractor will remove interior walls to expose presumed location of asbestos pipe insulation. If asbestos pipe is present Contractor will remove under full containment.
- Fire warning controls, fire alarms, sensors and any other security control equipment located within the work areas shall be properly covered.





Pennoni

PENNONI ASSOCIATES INC.
515 Grove Street, Suite 1B
Haddon Heights, NJ 08035
T 856.547.0505 **F** 856.547.9174

THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NEW JERSEY 08033
GREEN HALL - ROOM 206
ACM ABATEMENT AREA

PROJECT	TCNJX18001
DATE	7/12/18
DRAWING SCALE	NTS
DRAWN BY	BDC
APPROVED BY	

ASB-1

SHEET 1 OF 2

LEGEND

- 3 STAGE DECONTAMINATION UNIT
- AIR FILTRATION UNIT
- EMERGENCY EXIT AND/OR CONTRACTOR EGRESS
- WORKER INGRESS/EGRESS
- WASTE ROUTE
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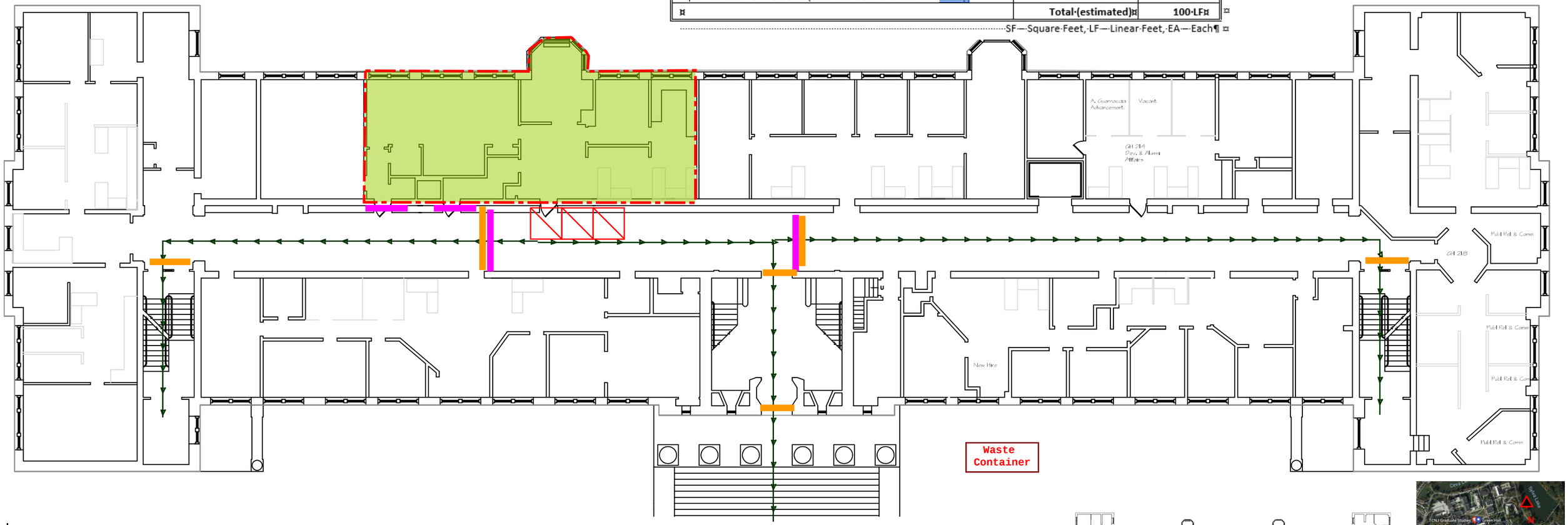

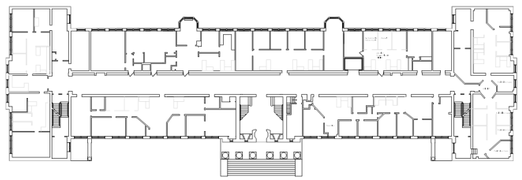

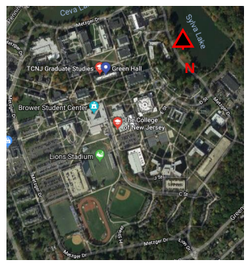

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THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NEW JERSEY 08033
GREEN HALL - ROOM 206
EGRESS DIAGRAM

PROJECT	**TCNJX18001**
DATE	**7/12/18**
DRAWING SCALE	**NTS**
DRAWN BY	**BDC**
APPROVED BY	

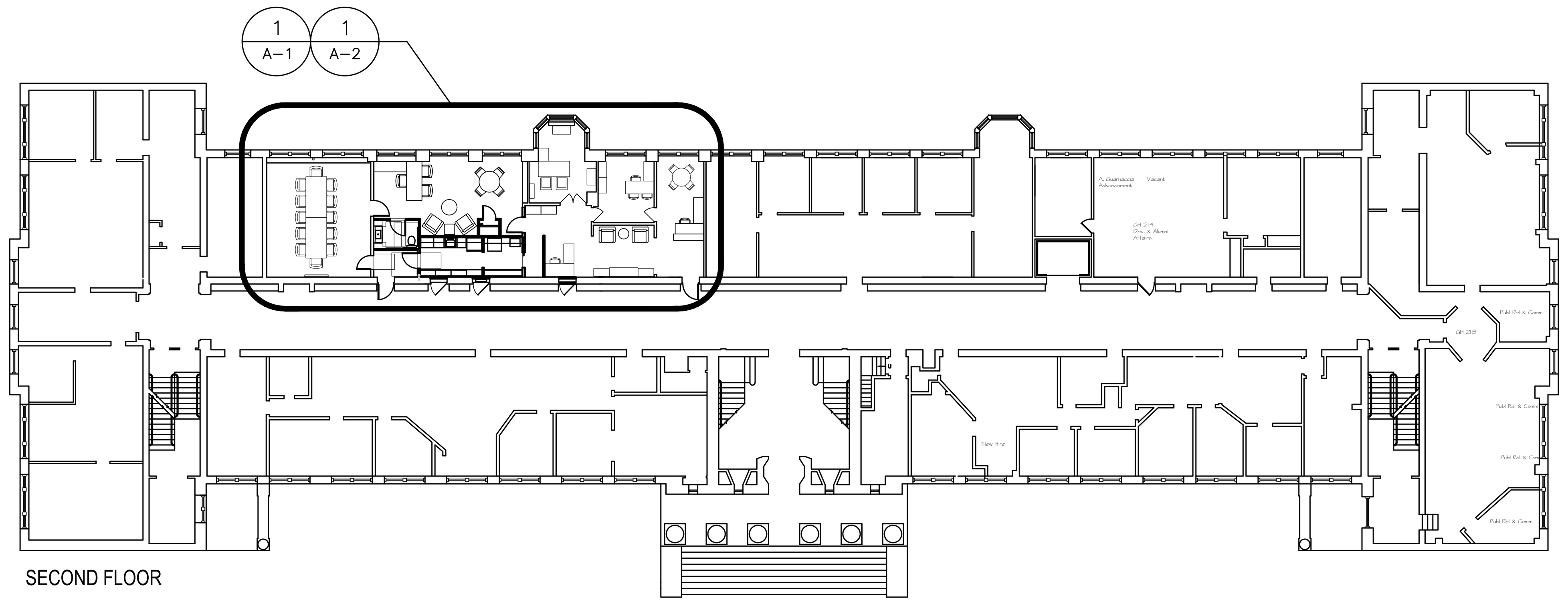
ASB-2

THE COLLEGE OF NEW JERSEY

GREEN HALL

ALTERATIONS TO PRESIDENT'S OFFICE SUITE 206

EWING, NEW JERSEY



SECOND FLOOR

07-23-18 CONSTRUCTION DOCUMENTS

ARCHITECT

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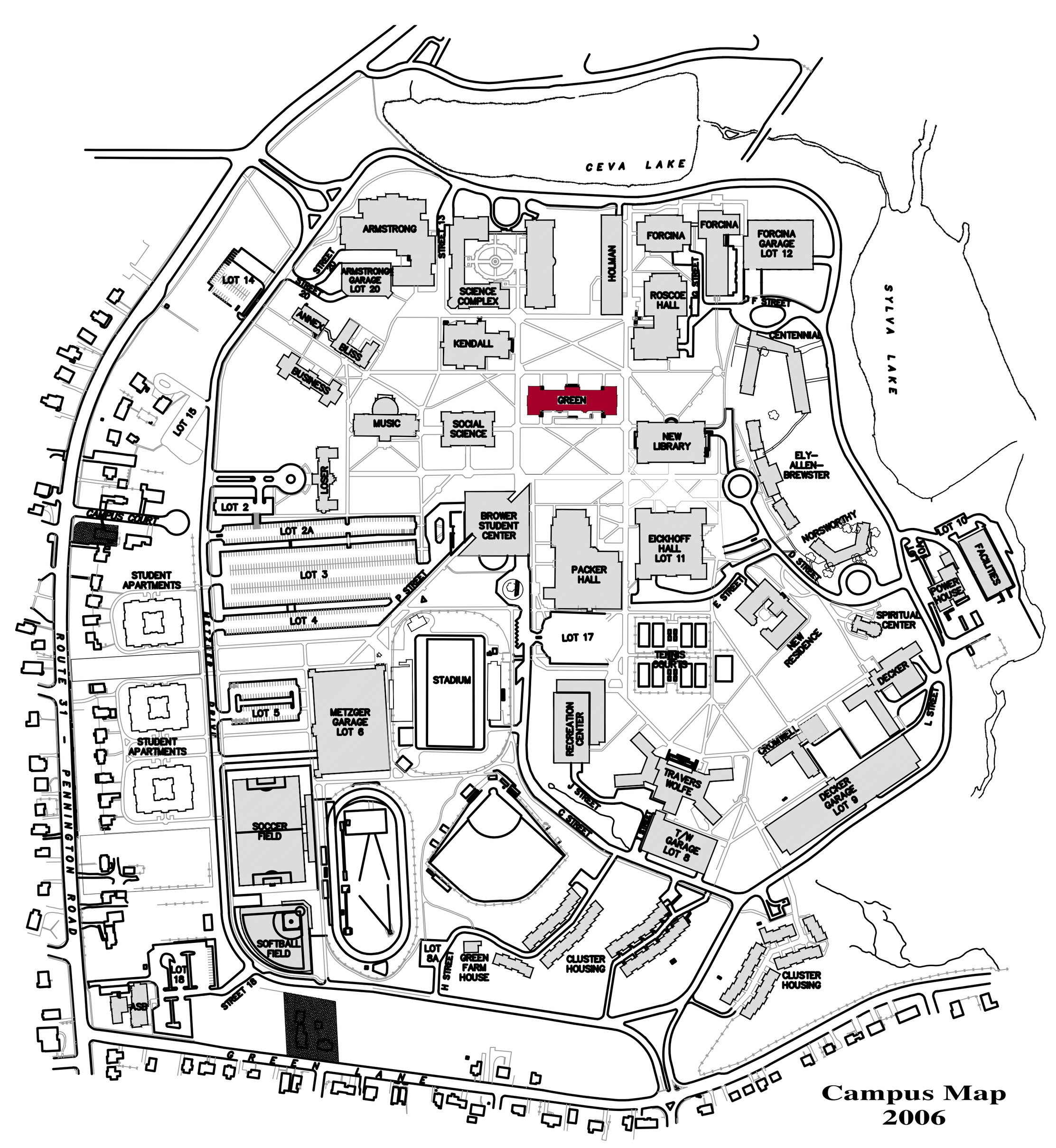
100B Forrestal Road Princeton, New Jersey 08540
P: 609.452.7545 F: 609.452.7546 E:Office@gittingsassociates.com
Contact: William Gittings

CONSULTING ENGINEER

McHUGH ENGINEERING ASSOCIATES, INC.

136 Poplar Street Ambler, Pennsylvania 19002
P: 215.641.1158 E: afoley@mchugh.com
Contact: Andrew Foley



KEY MAP

MATERIAL SYMBOLS

BRICK	POROUS FILL/ GRAVEL
CMU – CONCRETE MASONRY UNIT	PLYWOOD
CONCRETE	QUARRY / CERAMIC TILE
EARTH/ COMPACTED FILL	STEEL
GLASS	STONE
GYPSUM BOARD / PLASTER	WOOD BLOCKING/ ROUGH FRAMING
INSULATION – BATT	WOOD FINISHED
INSULATION – RIGID	WOOD SHIM

ABBREVIATIONS

A
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AL/ALUM	ALUMINUM
ALT	ALTERNATE
ANOD	ANODIZED
AP	ACCESS PANEL
ARCH	ARCHITECT (URAL)
AVG	AVERAGE
&	AND
@	AT

B
BD	BOARD
BET	BETWEEN
BLD	BUILDING
BLKG	BLOCKING
BM	BEAM
BOTT	BOTTOM
BRG	BEARING

C
CP	CARPET
CEM	CEMENT (ITIOUS)
CER	CERAMIC
CJ	CONTROL JOINT
CL	CENTER LINE
CL	CLOSET
CLG	CEILING
COL	COLUMN
CLR	CLEAR (ANCE)
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS (ATION)
CONTR	CONTRACT (OR)
COORD	COORDINATE
CORR	CORRIDOR
CRS	COURSE (S)
CTR	CENTER

D
DBL	DOUBLE
DEMO	DEMOLISH, DEMOLITION
DEPT	DEPARTMENT
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DN	DOWN
DR	DOOR
DTL	DETAIL
DWG	DRAWING
DWR	DRAWER

E
EA	EACH
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDD (ED), (ING)
EMER	EMERGENCY
ENCL	ENCLOSE (URE)
ENGR	ENGINEER (ED)
EQ	EQUAL
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EXH	EXHAUST
EXP JT	EXPANSION JOINT
EXT	EXTERIOR

F
FAB	FABRICATION/FABRICATE
FBO	FURNISH BY OTHERS
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FE&C	FIRE EXINGUISHER AND CABINET
FFL	FINISH FLOOR LEVEL
FHC	FIRE HOSE CABINET
FIN	FINISH (ED)
FL CO	FLOOR CLEANOUT
FLR	FLOOR (ING)
FO	FACE OF
FPRF	FIREPROOF (ING)
FR	FIRERAT (ING), (ED)
FTG	FOOTING
FURN	FURNITURE
FURR	FURRED (ING)

G
GA	GAGE, GAUGE
GLAV	GALVANIZED
GC	GENERAL CONTRACTOR
GFRC	GLASS FIBER REINFORCED CONCRETE
GFRG	GLASS FIBER REINFORCED GYPSUM
GFRP	GLASS FIBER REINFORCED PLASTER
GL	GLASS, GLAZING
GR	GRAD (E), (ING)
GVL	GRAVEL
GYP	GYPSUM
GYP BD(GWB)	GYPSUM BOARD

H
HB	HOSE BIB
HC	HANDICAPPED
HDR	HEADER
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HANDRAIL
HT	HEIGHT
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWH	HOT WATER HEATER

I
IN	INCH
INCL	INCLUDE (D), (ED)
INFO	INFORMATION
INSUL	INSULATE (D), (ION)
INT	INTERIOR
INTERM	INTERMEDIATE
INV	INVERT

J
JAN	JANITOR
JC	JANITOR'S CLOSET
JST	JOIST
JT	JOINT

K
KIT	KITCHEN

L
L	ANGLE
LAV	LAVATORY
LAM	LAMINATE (D)
LB	POUND
LG	LONG/LENGTH
LH	LEFT HAND
LP	LOW POINT
LT	LIGHT
LVR	LOUVER

M
MAS	MASONRY
MAT	MATERIAL (S)
MAX	MAXIMUM
MECH	MECHANIC (AL)
MEZZ	MEZZANINE
MFR	MANUFACTURE (ER)
MIN	MINIMUM
MIR	MIRRORED
MISC	MISCELLANEOUS
MLWK	MILLWORK
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL

N
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE

O
OC	ON CENTER (S)
OD	OUTSID DIAMETER
OH	OVERHEAD
OPG	OPENING (S)
OPP	OPPOSITE
OPP HD	OPPOSITE HAND
OPR	OPERABLE
ORNA	ORNAMENTAL

P
PBD	PARTICLE BOARD
PLAM	PLASTIC LAMINATE
PL	PLASTER
PLYWD	PLYWOOD
PNL	PANEL
PORT	PORTABLE
PREFIN	PREFINISHED
PREFAB	PREFABRICATED
PT	PRESSURE TREATED
PTD	PAINTED
PVC	POLYVINYL CHLORIDE

Q
QTY	QUANTITY

R
R	RISER
RAD	RADIUS
RD	ROOF DRAIN
RDR	READER
REF	REFERANCE, REFRIGERATOR
REFL	REFLECTED
REG	REGISTER
REINF	REINFORCE (D), (ING), (MENT)
REQD	REQUIRED
REV	REVISION (S), REVISED
RH	RIGHT HAND
RM	ROOM
RO	ROUGH OPENING

S
S	SOUTH
SCR	SCRIBE
SECT	SECTION
SF	SQUARE FEET
SGL	SINGLE
SH	SHELF, SHELVING
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION (S)
SQ	SQUARE
SS	STAINLESS STEEL
STC	SOUND TRANSMISSION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SYM	SYMMETRY (ICAL)
SYS	SYSTEM (S)

T
T (TR)	TREAD
THK	THICK (NESS)
TOS	TOP OF STRUCTURE/STEEL
TOW	TOP OF WALL
TRTD (TRD)	TREATED
TYP	TYPICAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE

U
UC	UNDERCUT
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY

V
VB	VABOR BARRRIER
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VIF	VERIFY IN FIELD

W
W/	WITH
WC	WATER CLOSET
WD	WOOD
WDW/ WIN	WINDOW
W GL	WIRE GLASS
WM	WIRE MESH
W/O	WITHOUT
WPT	WORKING PT
WSCT	WAINSCOT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WILDED WIRE MESH

DRAWING LIST

ARCHITECTURAL

SHEET #	SHEET TITLE
C–1	COVER
A–0	DETAILS, SCHEDULES
A–1	DEMOLITION PLANS
A–2	FLOOR AND CEILING PLANS
A–3	ROOF PLANS AND DETAILS
A–4	INTERIOR ELEVATIONS
A–5	INTERIOR ELEVATIONS

MEP

SHEET #	SHEET TITLE
H.001.0	COVER SHEET
DH.101.0	SECOND FLOOR DEMO PLAN
H101.0	FLOOR PLAN
H.201.0	DETAILS & SCHEDULES MECH/PLUMB
H.201.1	DETAILS & SCHEDULES MECH
P.001.0	COVER SHEET
DP.101.0	SECOND FLOOR DEMO PLAN
P.101.0	FLOOR PLAN
P.201.0	DETAILS AND SCHEDULES
E.001.0	COVER SHEET
DE.101.0	SECOND FLOOR DEMO PLAN
E.101.0	FLOOR PLAN
E.101.1	FLOOR PLAN SECURITY PLAN
E.201.0	DETAILS AND SCHEDULES

APPLICABLE CODES:

UNIFORM CONSTRUCTION CODE (UCC) N.J.A.C. 5:23	
N.J.A.C. 5:23 REHABILITATION SUBCODE – ALTERATION	
INTERNATIONAL BUILDING CODE (IBC) NEW JERSEY	2015
N.J.A.C. BARRIER FREE SUBCODE AND ICC/ANSI A117.1	2009
NATIONAL ELECTRIC CODE (NEC)	2014
NATIONAL STANDARD PLUMBING CODE	2015
INTERNATIONAL MECHANICAL CODE	2015
INTERNATIONAL FUEL GAS CODE	2015

BUILDING INFORMATION:

USE GROUP: B
CONSTRUCTION TYPE: 3B
SUBCODE TYPE OF WORK: ALTERATION
BUILDING AREA: 21,433 SQ. FT. (LARGEST FLOOR)
WORK AREA: 2,238 SQ. FT. (AT SECOND FLOOR)
SPRINKLERED: BASEMENT LEVEL

DRAWING SYMBOLS

NEW DOOR (DOOR NUMBER, DOOR SIZE)	BUILDING ELEVATION (SHEET NUMBER)
EXISTING DOOR TO REMAIN	BUILDING SECTION (SHEET NUMBER)
NEW MTL STUD WALL	SECTION DETAIL (SHEET NUMBER)
NEW CMU WALL	DETAIL (SHEET NUMBER)
EXISTING WALL TO REMAIN	WALL TYPE
WALL TO BE DEMOLISHED	INTERIOR ELEVATIONS (SHEET NUMBER)
ELEVATION MARKER	ROOM NUMBER (ROOM NAME)
TOILET AND BATH ACCESSORIES	FIRE EXTINGUISHER (BRACKET MOUNTED)
EXTERIOR TAG	FIRE EXTINGUISHER/HOSE CABINET (SURFACE MOUNTED)
INTERIOR TAG	FIRE EXTINGUISHER/HOSE CABINET (SEMI–RECESSED)
WINDOW TYPE	INTERIOR FINISHES (FLOOR, BASE, WALL, CEILING)
DRAWING REVISION	

GITTINGS ASSOCIATES, PC
A R C H I T E C T S

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P: 609.452.7545 F: 609.452.7546 office @ gittingsassociates.com www.gittingsassociates.com

TCNJ THE COLLEGE OF NEW JERSEY
2000 PENNINGTON ROAD
EWING, NEW JERSEY 08618

GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: MD
Checked By: BG

Project No: 1732
Date: 07-23-18

WILLIAM G. GITTINGS, AIA
NJ License AI 13047

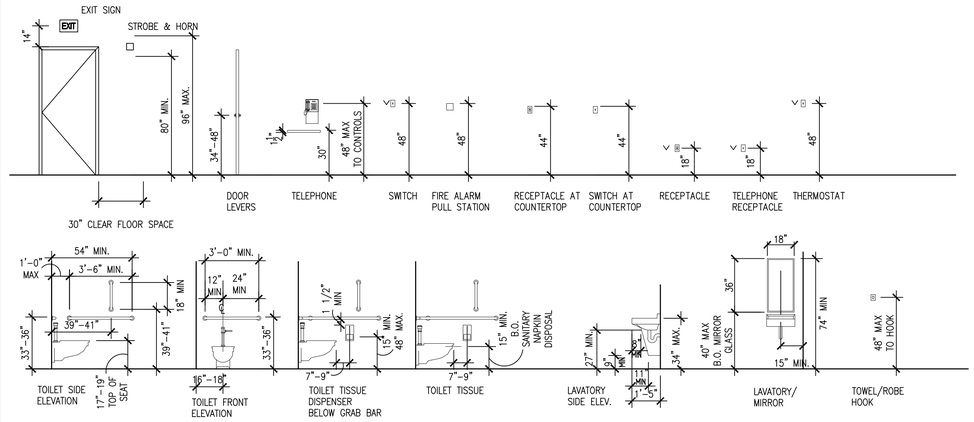
Revision No	Date	Description

COVER SHEET

C-1

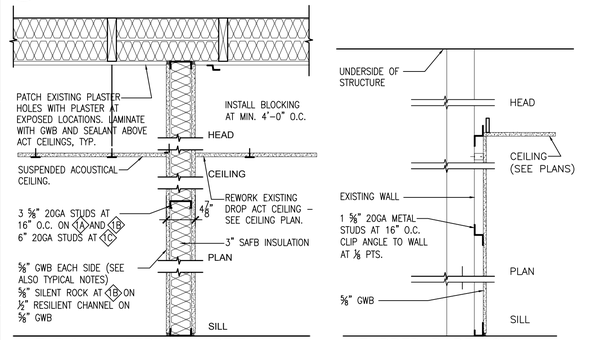
1 OF 7 SHEETS

Gittings Associates, P.C. 7/20/2018 8:36 AM 1732 C–1.dwg



1 TYPICAL MOUNTING HEIGHTS NOTE: ALL □IMENSIONS ARE TO □INISH

SCALE: 1/□" = 1'-0"

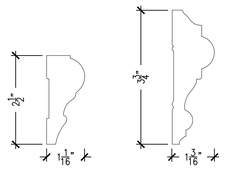


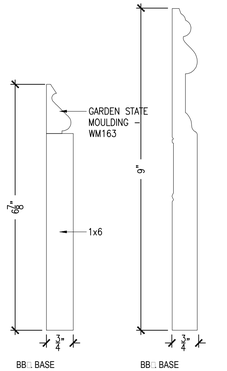
1 TYPICAL INTERIOR PARTITION

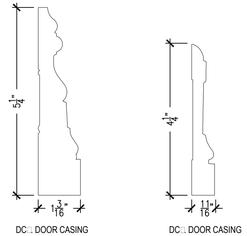
2 FURRED PARTITION

2 TYPICAL □ ALL TYPES

SCALE: 1" = 1'-0"

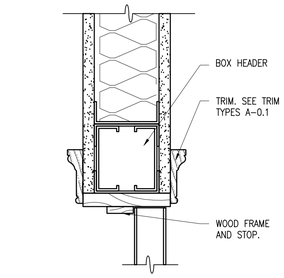






□ TYPICAL TRIM PRO□ILES

SCALE: □"=1'-0"



□ □OOR HEA□ AN□ □AMB □TL

SCALE: □" = 1'-0"

DOOR SCHEDULE

DOOR NUMBER	DOOR REQ'D RATED	DOOR FINISH	DOOR SIZE (W X H) OPNG.	DOOR THICKNESS	DOOR MATERIAL	DOOR ELEVATION	FRAME MATERIAL	FRAME FINISH	HARDWARE SET No. SEE SCHEDULE	JAMB/ HEAD DETAIL #	NOTES
001	45	STAINED OAK	3'-0"X7'-0" VIF	1 ¾"	OAK	B	HM	PTD	6		
002		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	3	4/A-0	
003		PTD	2'-6"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	3	4/A-0	
004		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	4	4/A-0	
005		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	5		
006		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	3	4/A-0	
007	45	STAINED OAK	3'-0"X7'-0" VIF	1 ¾"	OAK	B	HM	PTD	⚠2 6		
008		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	2	4/A-0	
009		PTD	3'-0"X7'-0"	1 ¾"	WOOD PANELED	A	WD	PTD	7	4/A-0	

NOTE: AT ALL ACCESSIBLE NEW DOORS, ALL HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERABLE PARTS SHALL BE MOUNTED AND SHAPED IN ACCORDANCE WITH ICC/ANSI A117.1–2009

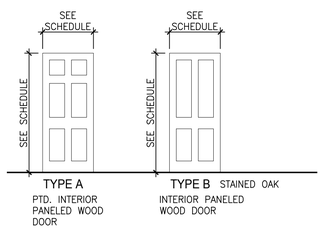
HARDWARE SCHEDULE

SET #	LOCKSET	EXIT DEVICE	HINGES	CLOSER	HOLD OPEN	OTHER
1	L–3		H–1	C–1		
2	L–1		H–1	C–1 ⚠2		M–1
3	L–3		H–1			M–1
4	L–4		H–1			
5						M–2
6	L–2		H–1, H–2 ⚠1	C–1		M–3
7	L–1		H–1			M–1/M–4

NOTE: DOORS 001 AND 007 WILL HAVE ELECTRIC STRIKE AND WILL BE LOCKABLE BY DOOR LOCK BUTTONS.

HARDWARE KEY

TYPE	DESCRIPTION	FINISH
L–1	MORTISE LOCKSET – (OFFICE)	DARK BRONZE
L–2 ⚠2	ELECTRIC MORTISE LOCK – CORBIN RUSSWIN ML03/05 EU	DARK BRONZE
L–3	MORTISE LOCKSET – (CLASSROOM INTRUDER)	DARK BRONZE
L–4	MORTISE LOCKSET – (BATHROOM)	DARK BRONZE
C–1	CLOSER WITH 90° STOP	DARK BRONZE
H–1	(1 ½ PAIRS PER DOOR)	DARK BRONZE
H–2 ⚠1	ELECTRIC TRANSFER HINGE	DARK BRONZE
M–1	WALL STOP/FLOOR STOP	DARK BRONZE
M–2	SLIDING DOOR TRACK + ADA PULL	DARK BRONZE
M–3 ⚠2	REMOTE UNLOCKING SWITCH FOR DOOR 007	DARK BRONZE
M–4	ACOUSTICAL HEAD, JAMB AND SILL SEALS WITH THRESHOLD	DARK BRONZE



□ □OOR SCHE□ULE AN□ TYPE

SCALE:1/□" = 1'-0"

TYPICAL NOTES:

1. ALL HARDWARE TO BE VERIFIED TO MATCH THE COLLEGE STANDARDS.
2. COORDINATE KEYING WITH OWNER.
3. PROVIDE IVES DOOR STOP OR APPROVED EQUAL AT ALL DOORS.
4. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.

TYPICAL FIRE BLOCKING:

INSTALL FIRE BLOCKING IN COMBUSTIBLE CONSTRUCTION TO CUT OFF CONCEALED DRAFT OPENINGS BETWEEN VERTICAL AND HORIZONTAL SPACES (IE: AT WALL TO FLOORS) AND IN HORIZONTAL FURRED WALLS OR COMBUSTIBLE CONCEALED SPACES NOT EXCEEDING 10 FEET INTERVALS.

ACCEPTABLE FIRE BLOCKING MATERIALS:

A. 2x LUMBER NAILED IN PLACE. CAULK GAPS WITH HILTI FS ONE OR APPROVED EQUAL.

B. ¾" PLYWOOD STRUCTURAL PANELS NAILED IN PLACE. DOUBLE LAP AT JOINTS. CAULK GAPS WITH HILTI FS ONE OR APPROVED EQUAL.

C. MINERAL WOOL BLANKETS (THICKNESS FILLING CAVITY) HELD SECURELY IN PLACE WITH WIRE MESH NAILED TO FRAMING.

D. ⅝" GWB NAILED TO FRAMING. FIRE TAPE OR DOUBLE LAP JOINTS. CAULK GAP WITH HILTI FS ONE OR APPROVED EQUAL.

TYPICAL PARTITION NOTES

A. ALL GWB TO BE ⅝" TYPE 'X' U.N.O.

B. BATHROOMS: (1) LAYER 5/8" MOISTURE/MILDEW RESISTANT GYPSUM BOARD AT ALL PAINTED SURFACES. RUN WATERPROOF/CRACK SUPPRESSION MEMBRANE 4" UP WALLS AT TILE BASE.

C. ALL ACOUSTICAL INSULATION TO BE 3" THERMA FIBER MINERAL BATT .

D. PROVIDE APPROVED THROUGH–PENETRATION FIRE STOP SYSTEM AT ALL FLOOR PENETRATIONS AND THROUGH FIRE RATED WALL ASSEMBLIES, TYPICAL.

E. PROVIDE FIRE RATED SEALANT AT TOP AND BOTTOM EDGES OF GYP. BOARD.

F. SEE PLANS AND SCHEDULE FOR ALL FINISHES, TYPICAL.

G. ALL CORNER BOARDS TO BE VINYL NO COAT. ALL GWB EDGING TO BE VINYL NO METAL.

H. ALL INTERIOR LAYOUT DIMENSIONS ARE TO FACE OF FINISH AT EXISTING PLASTER TO REMAIN. FACE OF STUDS AT NEW WORK – NOT FINISH (UNO).

I. REVIEW ALL NOTES BEFORE COMMENCING WORK.

J. DO NOT SCALE DRAWINGS. WRITTEN DIMENSIONS GOVERN, PARTITION LOCATION, DIMENSIONS AND TYPES, DOOR AND WINDOW LOCATIONS SHALL BE AS SHOWN ON CONSTRUCTION PLAN. IN CASE OF CONFLICT, NOTIFY ARCHITECT FOR WRITTEN CLARIFICATION PRIOR TO PROCEEDING WITH CONSTRUCTION. CONSTRUCTION PLANS BY ARCHITECT SUPERSEDES OTHER PLANS.

K. DIMENSIONS MARKED "CLEAR" SHALL BE MAINTAINED AND SHALL ALLOW FOR THICKNESS OF FINISHES INCLUDING CARPET, CERAMIC, TILE, VCT, ETC.. CONTRACTOR SHALL NOT ADJUST DIMENSIONS WITHOUT WRITTEN INSTRUCTION FROM THE ARCHITECT. WHERE DIMENSIONS ARE NOT INDICATED, CONTACT ARCHITECT FOR CLARIFICATION.

L. CONTRACTOR SHALL LAYOUT PARTITIONS FOR ARCHITECT TO REVIEW FOR DESIGN INTENT DO NOT PROCEED WITH INSTALLATION OF STUDS WITHOUT THIS REVIEW APPROVAL. CONTRACTOR SHALL COORDINATE AND VERIFY CONDITIONS TO ENSURE PROPER FIT. REVIEW FOR DESIGN INTENT DOES NOT RELEASE CONTRACTOR FROM THE RESPONSIBILITY TO MAINTAIN CRITICAL DIMENSIONS AND CLEARANCES AS SHOWN ON PLANS.

M. DIMENSIONS SHOWN AS V.I.F. SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD BY LAYING OUT THE PARTITIONS. CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY DISCREPANCY IN DIMENSIONS PRIOR TO PROCEEDING WITH THE WORK IN THAT AREA.

N. CONTRACTOR SHALL PROVIDE/COORDINATE PLACEMENT OF BLOCKING FOR ALL BATHROOM ACCESSORIES AND KITCHEN CABINETS PRIOR TO CLOSING WALLS.

O. "ALIGN" WHEN USED, INDICATES THAT THE FINISHED ADJACENT SURFACES MUST BE IN THE SAME PLANE. ALIGN TAKES PRECEDENCE OVER DIMENSIONS.

TYPICAL FINISH □ TRIM NOTES

A. BEFORE STARTING ANY WORK, SURFACES TO RECEIVE PAINT AND FINISHES SHALL BE EXAMINED CAREFULLY FOR DEFECTS. WORK SHALL NOT PROCEED UNTIL SUCH DAMAGES ARE CORRECTED. THE GENERAL CONTRACTOR SHALL BE FULLY RESPONSIBLE TO INSPECT AND ENFORCE SATISFACTORY WORK AS REQUIRED HEREIN.

B. APPROVED MANUFACTURER'S STANDARD SPECIFICATIONS AND RECOMMENDATIONS FOR PREPARATION AND APPLICATION OF PRODUCTS ARE HEREBY MADE A PART OF THIS CONTRACT AND SHALL BE ADHERED TO ALL CASES.

C. SURFACES SHALL BE CLEANED, DRIED, AND PROTECTED FROM DAMPNESS. SURFACES SHALL BE SMOOTH, EVEN, TRUE TO PLANE AND FREE OF ANY FOREIGN MATERIAL.

D. HM DOOR FRAMES TO BE PAINTED SEMI–GLOSS; COLOR TO MATCH TRIM.

E. PATCH, PREP AND PAINT ENTIRE WALLS AND CEILING AFFECTED BY WORK, FROM CORNER TO CORNER.

F. PAINTING OR OTHER FINISHING SHALL NOT BE DONE UNDER CONDITIONS UNSUITABLE FOR EXECUTION OF WORK. AIR SHALL BE FREE FROM DUST AND DIRT TO PREVENT LODGING OF FOREIGN MATTER IN FRESH PAINT.

G. WHENEVER NECESSARY TO OBTAIN REQUIRED RESULTS, A WHOLE WALL SHALL BE REFINISHED RATHER THAN SPOT FINISHING WHERE A PORTION OF FINISH HAS BEEN DAMAGED OR IS UNSATISFACTORY.

H. MAKE EDGE OF PAINT ADJOINING OTHER MATERIALS OR COLORS SHARP AND CLEAN AND WITHOUT OVERLAP.

I. ADJACENT SURFACES TO BE FLUSH WITH INCONSPICUOUS PATCHES, SEAMS AND TRANSITIONS BETWEEN SURFACES.

J. JUST PRIOR TO FINAL INSPECTION, THOROUGHLY CLEAN ALL ROOMS AFFECTED BY CONSTRUCTION.

TYPICAL CONSTRUCTION NOTES

A. IF DOCUMENTS VARY WITH ONE ANOTHER ON A PARTICULAR ITEM OR ITEMS, CONTRACTOR SHALL BASE PROPOSAL ON THE BETTER QUALITY OR MORE EXPENSIVE OF THE CONDITIONS. ITEMS OR EQUIPMENT SPECIFIED UNDER ONE TRADE SHALL BE BINDING AS IF SPECIFIED UNDER ALL APPLICABLE TRADES.

B. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTION AND/OR MISALIGNMENT IN ACCORDANCE WITH APPLICABLE CODES, STANDARDS, AND GOOD PRACTICE.

C. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, AND FOR THE COORDINATION OF AND FOR THE WORK PERFORMED BY HIS SUBCONTRACTORS.

D. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY DURING THE PROJECT FOR WORKERS AND THE PUBLIC. PROVIDE ADEQUATE BARRIERS AND COVERAGE AS REQUIRED. CONTRACTOR SHALL POST AND MAINTAIN EMERGENCY EGRESS AT ALL TIMES.

E. THE CONTRACTOR SHALL NOT PROCEED WITH WORK FOR WHICH HE/SHE EXPECTS ADDITIONAL COMPENSATION BEYOND THE CONTRACT AMOUNT WITHOUT WRITTEN AUTHORIZATION. FAILURE TO OBTAIN SUCH AUTHORIZATION SHALL INVALIDATE A CLAIM FOR EXTRA COMPENSATION.

F. THE CONTRACTOR SHALL COORDINATE FIRE ALARM AND UTILITY SHUTDOWNS WITH TCNJ.

G. WORK AREAS SHALL REMAIN SECURE AND LOCKABLE DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE, WHERE NECESSARY, TEMPORARY LOCKABLE DOORS TO PROVIDE THE OWNER CONSTANT ACCESS TO SPACES NOT UNDER CONSTRUCTION. CONTRACTOR SHALL PROVIDE OWNER WITH KEYS FOR TEMPORARY DOORS.

H. REVIEW ALL NOTES BEFORE COMMENCING WORK.

I. CONTRACTOR TO PROVIDE A LIST OF EMERGENCY CONTACTS.

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: MD
Checked By: BG
Project No: 1732
Date: 07-23-18

WILLIAM G. GITTINGS, AIA
NJ License AI 13047

Revision No	Date	Description
⚠1	09–07–18	DCA COMMENTS
⚠2	09–20–18	SECURITY

DETAILS AND SCHEDULES

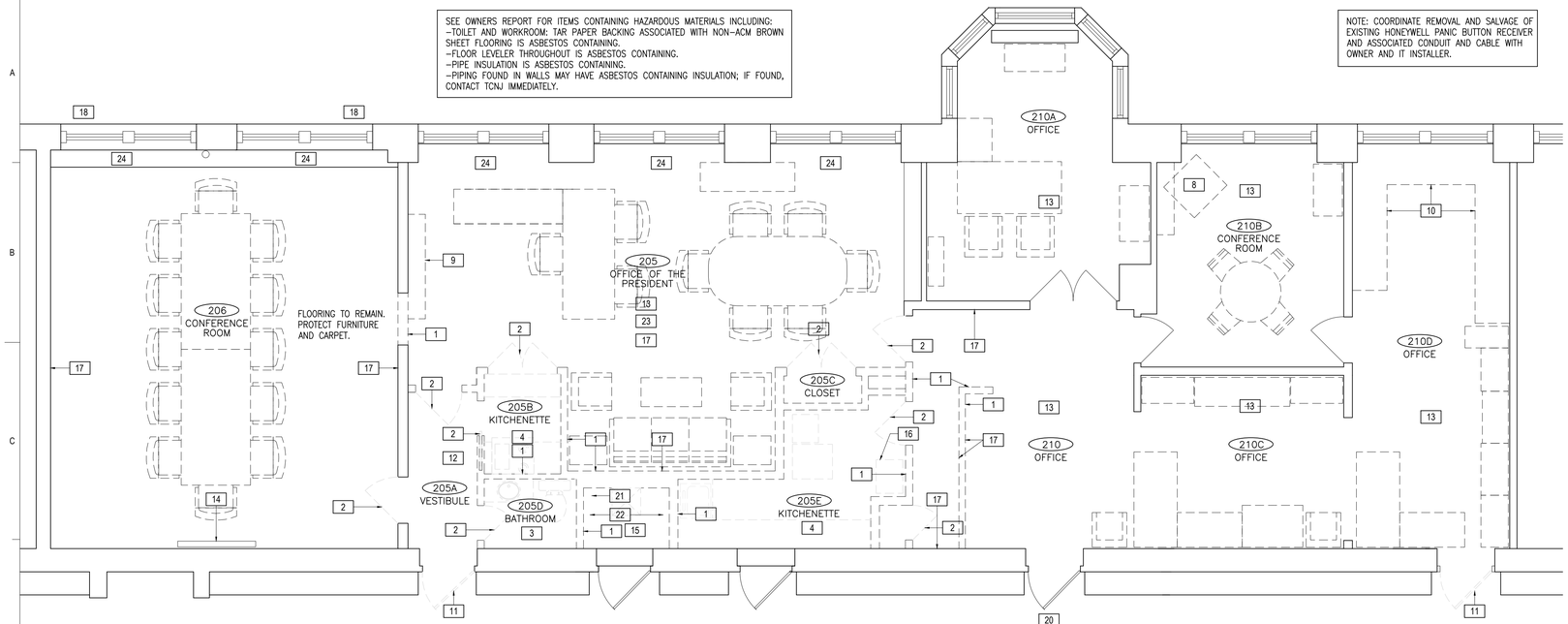
A-0

2 OF 7 SHEETS

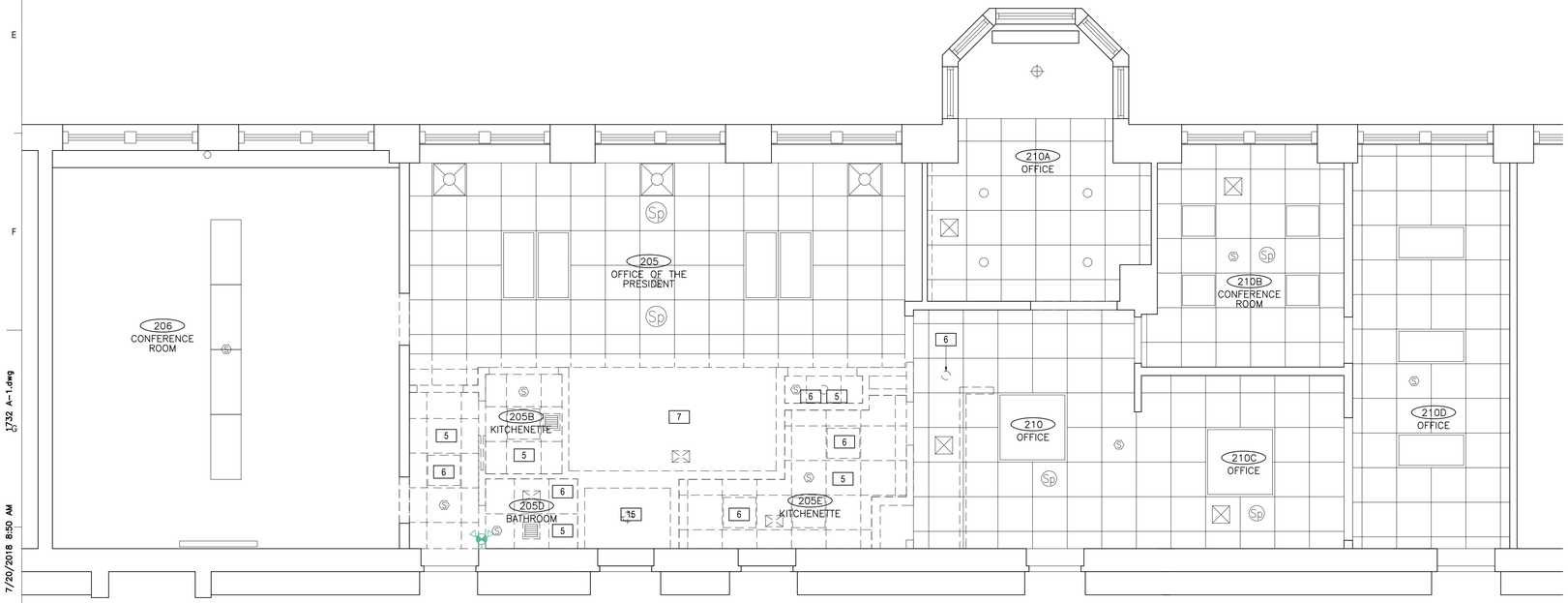
1732 A-0.dwg 7/23/2018 12:21 PM Gittings Associates, P.C.

SEE OWNERS REPORT FOR ITEMS CONTAINING HAZARDOUS MATERIALS INCLUDING:
-TOILET AND WORKROOM: TAR PAPER BACKING ASSOCIATED WITH NON-ACM BROWN SHEET FLOORING IS ASBESTOS CONTAINING.
-FLOOR LEVELER THROUGHOUT IS ASBESTOS CONTAINING.
-PIPE INSULATION IS ASBESTOS CONTAINING.
-PIPING FOUND IN WALLS MAY HAVE ASBESTOS CONTAINING INSULATION; IF FOUND, CONTACT TCNJ IMMEDIATELY.

NOTE: COORDINATE REMOVAL AND SALVAGE OF EXISTING HONEYWELL PANIC BUTTON RECEIVER AND ASSOCIATED CONDUIT AND CABLE WITH OWNER AND IT INSTALLER.



1 FLOOR PLAN - DEMOLITION
SCALE:1/8" = 1'-0"



2 CEILING PLAN - DEMOLITION
SCALE:1/8" = 1'-0"

DEMOLITION GENERAL NOTES

1. REFER TO SPECIFICATION SECTION "SECTION SELECTIVE DEMOLITION" FOR DEMOLITION PROCEDURES AND REQUIREMENTS. DEMOLITION WORK INDICATED IS INTENDED TO BE REPRESENTATION OF THE PROJECT SCOPE, AND IS NOT INTENDED TO BE COMPLETE REPRESENTATION OF ALL SELECTIVE DEMOLITION WORK REQUIRED FOR THE PROJECT. INCIDENTAL WORK MAY BE NECESSARY TO ACCOMPLISH WORK NOT EXPLICITLY SHOWN, BUT IS A PART OF THE CONTRACT.
2. CONTRACTOR SHALL INSPECT AND DOCUMENT THE CONDITION OF THE PROPOSED WORK AREA, WORK ACCESS AREAS, AND STAGING AREAS PRIOR TO START OF DEMOLITION. CONTRACTOR SHALL REPORT ANY EXISTING DAMAGE TO OWNER AND ARCHITECT WITH PHOTOGRAPHS PRIOR TO STARTING CONSTRUCTION. ANY DAMAGE IN AREAS USED BY THE CONTRACTOR AND NOT REPORTED, SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL EXPENSE TO OWNER.
3. PROVIDE REMOVAL OF ALL BUILDING COMPONENTS NEEDED TO CONSTRUCT THE PROPOSED RENOVATIONS
4. REMOVE ALL WALLS AND DOORS SHOWN AS DASHED.
5. COORDINATE DEMOLITION WITH INTENDED CONSTRUCTION. NOTIFY ARCHITECT OF ALL DISCREPANCIES.
6. REMOVE ALL ELECTRICAL, PLUMBING, FIRE PROTECTION, ALARMS AND HVAC NECESSARY FOR DEMOLITION AND FOR FINAL LAYOUT.
7. WHERE EXISTING CABINETS ARE INDICATED TO BE REMOVED, COMPLETELY REMOVE ALL FURRING STRIPS, BLOCKING AND ANCHORS TO STUD WALL CONSTRUCTION.
8. MINIMIZE DISTURBANCE OF EXISTING MATERIALS AND SURFACES TO REMAIN. ANY DAMAGE TO EXISTING CONSTRUCTION TO REMAIN SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. REPAIR OF THIS DAMAGE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
9. COORDINATE PROPOSED DUMPSTER LOCATIONS, DELIVERY AREAS, AND ACCESS WITH OWNER PRIOR TO STARTING WORK. PROTECT EXISTING PAVING, CURBS, WALKWAYS, AND LANDSCAPING.
10. CONTAIN WORK AREAS AND PROVIDE DUST CONTROL DURING DEMOLITION. NOTIFY OWNER OF HEALTH AND SAFELY OF ANY SUSPECTED HAZARDOUS MATERIALS PRIOR TO REMOVING MATERIAL.
11. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF MATERIALS IN LEGAL MANNER ACCORDING TO ALL STATE AND FEDERAL REGULATIONS. CONTRACTOR TO FOLLOW ALL DEP LEAD SAFE PRACTICES.

TYPICAL DEMOLITION NOTES:

A. REMOVE ALL INTERIOR DOORS/FRAMES SHOWN DASHED.
B. REMOVE ALL WALLS SHOWN DASHED.
C. PROVIDE ALL CUTTING AND PATCHING REQUIRED FOR MEP WORK.
D. REMOVE ALL WIRING, LIGHTING, FIXTURES AND DEVICES, HEATER AND PLUMBING SYSTEMS. SEE MEP DWGS. FOR ADDITIONAL DEMO.
E. SALVAGE SOUND SYSTEM FOR REINSTALLATION.

DEMOLITION WORK NOTES

1 REMOVE ALL WALLS SHOWN DASHED, TYP.
2 REMOVE DOOR, FRAME AND HARDWARE SHOWN DASHED, TYP.
3 REMOVE EXISTING FIXTURES, FINISHES, AND ALL ASSOCIATED PLUMBING/ELECTRICAL. ALSO SEE MEP DRAWINGS. ABATE PER PENNONI DOCUMENTS.
4 REMOVE EXISTING KITCHENETTE AND ALL ASSOCIATES PLUMBING/ELECTRICAL. ALSO SEE MEP DRAWINGS. REMOVE FLOORING TO SUBFLOOR. ABATE MATERIALS PER PENNONI DOCUMENTS.
5 REMOVE EXISTING CEILING TILES AND CEILING GRID.
6 REMOVE EXISTING LIGHT FIXTURES AND MEP DEVICES SHOWN DASHED. ALSO SEE MEP DRAWINGS. INSTALL MATCHING CEILING TILE.
7 REMOVE SOFFITS AND VALANCES SHOWN DASHED. SEE PROPOSED CEILING PLAN.
8 REMOVE EXISTING EQUIPMENT. SALVAGE FOR RELOCATION.
9 REMOVE EXISTING BOOKSHELF.
10 REMOVE EXISTING MILLWORK.
11 REMOVE DOOR SLAB (FRAME TO REMAIN). ENTRY TO BE SECURED.
12 REMOVE FLOORING.
13 MOVE FURNITURE, CONTENT AND EQUIPMENT. REMOVE CARPET/GLUE. ABATE PER PENNONI DOCUMENTS.
14 PROTECT EXISTING MONITOR TO REMAIN.
15 REMOVE FLOOR, SLOP SINK, CONDUITS AND PIPING AT JANITOR CLOSET.
16 RELOCATE BELL SYSTEM PRIOR TO DEMOLITION. PROTECT THROUGHOUT CONSTRUCTION.
17 REMOVE AND PROTECT EXISTING ARTWORK TO BE REINSTALLED.
18 REMOVE WINDOW AC UNIT.
19 NOT USED.
20 REMOVE SIGNAGE.
21 REMOVE EXISTING PLUMBING VENT + HOT WATER LINE TO BE RELOCATED.
22 REMOVE EXISTING DATA LINE CONDUITS. CUT INACTIVE LINE AFTER TCNJ RELOCATES ACTIVE LINES.
23 REMOVE ALL EXISTING BASE BOARD.
24 REMOVE ALL WINDOW TREATMENTS.

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: MD
Checked By: BG

Project No: 1732
Date: 07-23-18

WILLIAM G. GITTINGS, AIA
NJ License AI 13047

Revision No	Date	Description

DEMOLITION PLANS

A-1

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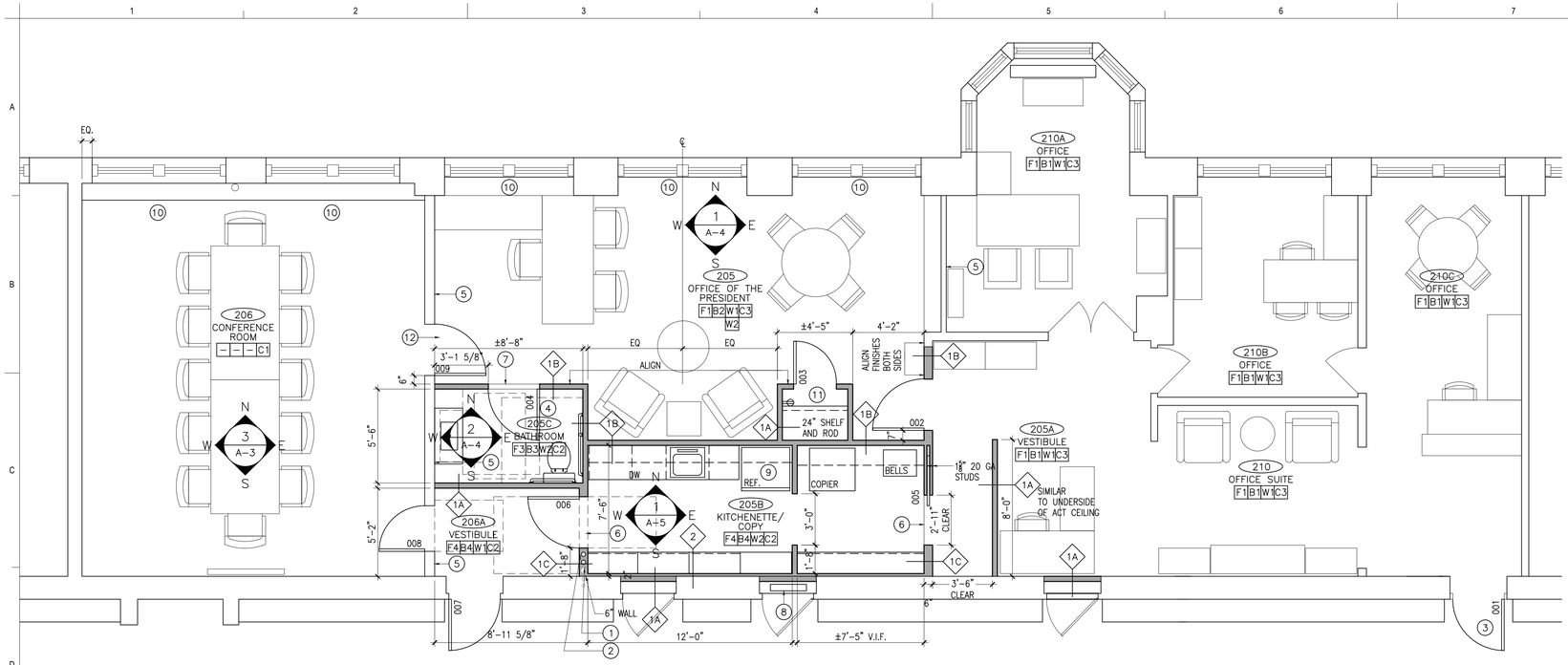
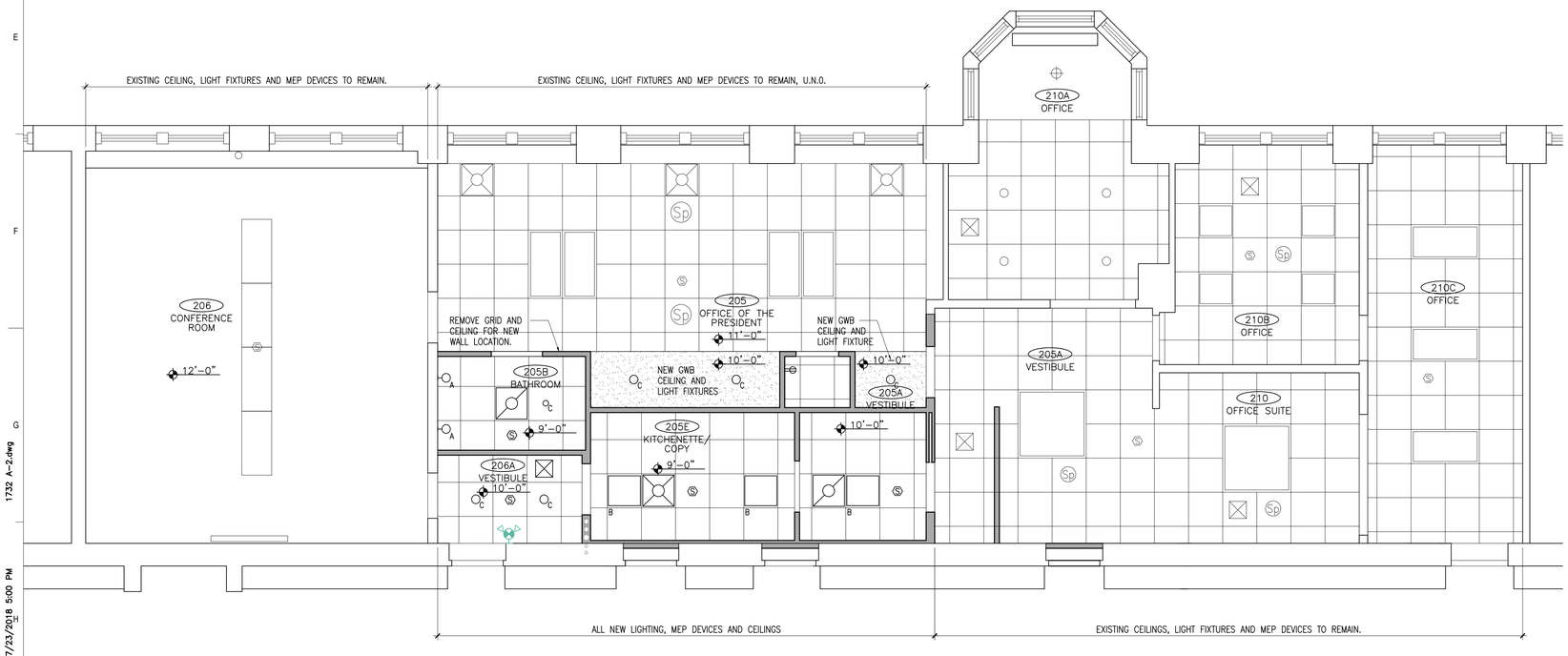


1 FLOOR PLAN
SCALE:1/□" = 1'-0"



2 CEILING PLAN
SCALE:1/□" = 1'-0"

TYPICAL WORK NOTES:

A. COORDINATE WORK IN ALL AREAS WITH OWNERS IN ADVANCE. PROVIDE PROTECTION OF EXISTING CONDITIONS TO REMAIN.

B. PROVIDE CUTTING AND PATCHING FOR ALL MECHANICAL WORK. SEE MEP DRAWINGS.

C. FIRESTOP ALL FLOOR, CEILING AND WALL PENETRATIONS WITH HILTI FS ONE OR EQUAL.

D. CONTRACTOR RESPONSIBLE FOR ALL MOVING OF FURNITURE OUT OF SPACE AND MOVING FURNITURE AND EQUIPMENT BACK INTO SPACE. FURNITURE TO BE RELOCATED TO ROSCOE WEST HALL FOR STORAGE.

E. COORDINATE AND PROVIDE BLOCKING AT ALL MILLWORK AND BATHROOM ACCESSORIES.

F. EXTEND ALL ROOM FINISHES INTO CLOSETS.

G. MOVE BACK/REINSTALL ALL FURNITURE/EQUIPMENT SHOWN, UNLESS FURNITURE TO BE REPLACED BY COLLEGE.

PLAN WORK NOTES

1. (2)3" CONDUITS FROM BASEMENT TO ATTIC WITH PULL BOX AT FIRST FLOOR CLOSET AND SECOND FLOOR CEILING.
2. RELOCATE WASTE STACK, HOT WATER PIPE, AND SANITARY VENT PIPE. SEE ALSO MEP DRAWINGS.
3. RELOCATE WALL SIGN ABOVE NEW ENTRY.
4. INSTALL FULL LENGTH MIRROR ON BACK OF DOOR, 24"X76".
5. INSTALL 3" SAFB ACOUSTICAL INSULATION AND RE-DRYWALL GWB TO UNDERSIDE OF EXISTING UPPER PLASTER CEILING ABOVE EXISTING ACT CEILING. ACOUSTICAL CAULK JOINTS.
6. RUBBER FLOOR TRANSITION.
7. MARBLE THRESHOLD.
8. NEW ELECTRICAL PANEL LOCATION.
9. INSTALL ICE MAKER IN REF.
10. INSTALL NEW BLINDS AT WINDOWS.
11. RELOCATE EXISTING STEREO SYSTEM. COORDINATE TO EXISTING SPEAKER WIRING.
12. PATCH WALL/DOOR AND TRIM.

FINISH SCHEDULE

SYMBOL	DESCRIPTION
FLOOR	
F1	CARPET TYPE 1 – PREP AND FLASH PATCH
F2	(NOT USED)
F3	TILE – ON WATERPROOFING/CRACK SUPPRESION
F4	LVT – ON FLASH PATCH
BASE/TRIM	
B1	WOOD BASE BB1 + DOOR CASING DC2 (PATCH TO MATCH EXISTING)
B2	WOOD BASE BB2 + CHAIR RAIL CR1 + PICTURE RAIL PR1 + DOOR CASING DC1
B3	TILE BASE
B4	RUBBER BASE
WALLS	
W1	PATCH/PREP AND PAINT GWB/PL – RE-GLUE LOOSE WALL COVERING
W2	PAINTED GWB
CEILING	
C1	CUT, PATCH AND PAINT EXISTING PLASTER
C2	2x2 ACT TYPE 1
C3	EXISTING GRID & CEILING TILES

*SEE TYPICAL NOTES AND TYPES ON A-0

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GREEN HALL
ALTERATIONS TO SUITE 206

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Checked By: BG
Project No: 1732
Date: 07-23-18

WILLIAM G. GITTINGS, AIA
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Revision No	Date	Description

FLOOR AND CEILING PLANS

A-2

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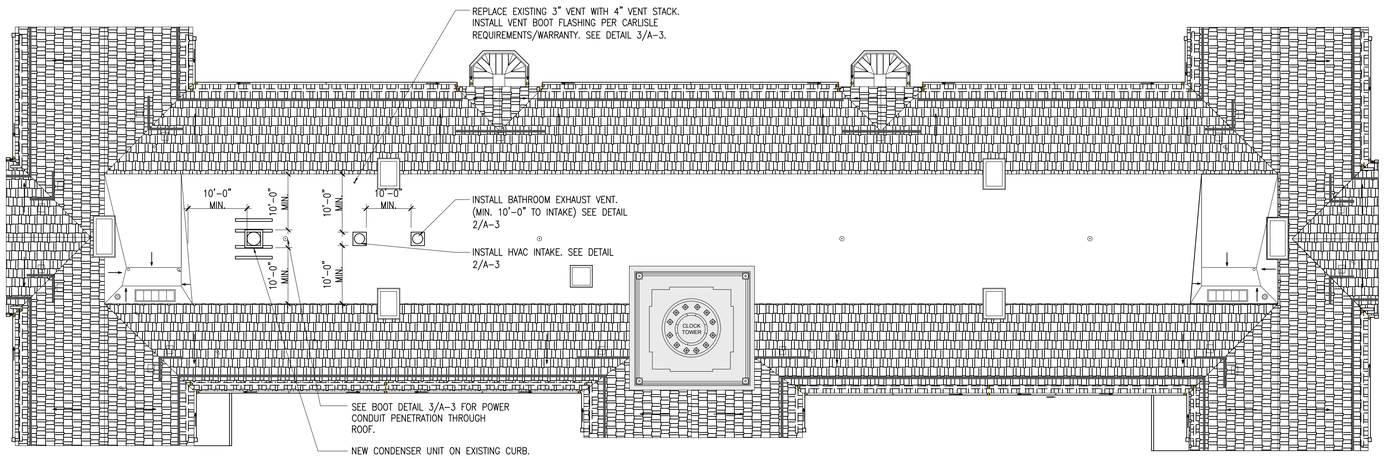
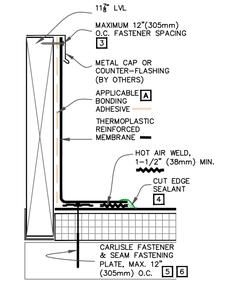


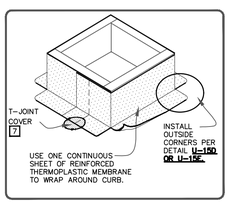
ROOFING NOTE:
SEE SPECIFICATIONS FOR COPY OF EXISTING ROOF WARRANTY'S. NOTIFY MANUFACTURER BEFORE START UP AND PERFORM ALL WORK ACCORDING TO MANUFACTURER INSTALLATION TO MAINTAIN WARRANTY. PROVIDE LETTER FROM ROOFING MANUFACTURER APPROVING WORK AND CONTINUANCE OF WARRANTY.

1 ROOF PLAN
SCALE: 1/16" = 1'-0"

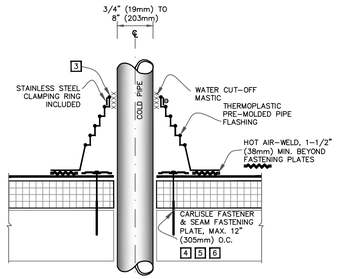
NOTES:

1. WHEN USING TPO MEMBRANE, BONDING ADHESIVE IS NOT REQUIRED WHEN THE FLASHING HEIGHT IS 12" (305mm) OR LESS AND THE MEMBRANE IS FASTENED "AS SHOWN" ON TOP OF THE CURB. WHEN CARLISLE TERMINATION BAR IS USED BENEATH THE COUNTER-FLASHING, BONDING ADHESIVE CAN BE ELIMINATED WHEN THE MEMBRANE HEIGHT IS 18" (457mm) OR LESS.
2. APPLICABLE BONDING ADHESIVE FOR PVC OR TPO. IN CASE OF TPO, CAV-GRIP ADHESIVE MAY ALSO BE USED ON VERTICAL PORTION.
3. WHEN MECHANICAL FASTENERS ARE USED TO PENETRATE THE METAL COUNTER-FLASHING, USE EPDM WASHERS. APPLY WATER CUT-OFF MASTIC UNDER THE COUNTER-FLASHING OR CAULK THE FASTENER HEADS.
4. APPROXIMATELY 1/8" (3mm) DIAMETER BEAD OF CUT-EDGE SEALANT IS REQUIRED ON CUT EDGES OF REINFORCED TPO MEMBRANE.
5. REFER TO CARLISLE SPECIFICATIONS FOR ACCEPTABLE CARLISLE FASTENERS AND PLATES.
6. MECHANICAL SECUREMENT MAY BE INSTALLED INTO THE VERTICAL SUBSTRATE.
7. WHEN USING 80 MIL (2.03mm) THICK CURB FLASHING, THE INTERSECTIONS BETWEEN SPLICES MUST OVERLAID WITH A THERMOPLASTIC "T-JOINT" COVER.





2 U-□A - CURB □LASHING
SCALE: □" = 1'-0"

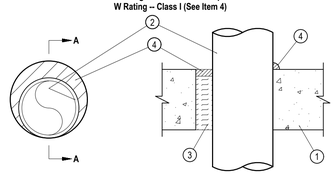


NOTES:

1. REMOVE ALL EXISTING LEAD AND FLASHING MATERIAL BEFORE INSTALLING PRE-MOLDED PIPE FLASHING.
2. TEMPERATURE OF THE PIPE PENETRATION MUST NOT EXCEED 140°F (60°C) WHEN USING PVC AND 160°F (71°C) WHEN USING TPO FLASHING.
3. PIPE SEAL MUST HAVE INTACT RIB AT TOP EDGE, REGARDLESS OF PIPE DIAMETER.
4. INSTALL A MINIMUM OF 4 FASTENERS AND PLATES AROUND THE PIPE, EQUALLY SPACED. IF FASTENERS AND PLATES CANNOT BE INSTALLED AS SHOWN, THEY MAY ALSO BE POSITIONED OUTSIDE THE PIPE MAXIMUM 12" (305mm) O.C. AND FLASHED WITH THERMOPLASTIC REINFORCED MEMBRANE / TPO CUT-EDGE SEALANT. REFER TO **DETAIL U-8B.**
5. FASTENERS AND PLATES ARE NOT REQUIRED ON ADHERED SYSTEMS UNLESS PIPE DIAMETER EXCEEDS 18" (457mm).
6. ON MECHANICALLY FASTENED SYSTEMS, HP-X FASTENERS AND PIRANHA PLATES OR HP-XTRA FASTENERS AND PIRANHA XTRA PLATES ARE REQUIRED OVER STEEL AND WOOD DECKS. ON CONCRETE DECKS, CD-10 OR HD 14-10 FASTENERS ARE USED WITH PIRANHA PLATES.

□ U-□A - PRE-MOL□E□ PIPE □LASHING
SCALE: □" = 1'-0"

System No. C-AJ-1149
F Rating – 2 Hr
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/sq ft
L Rating At 400 F – 4 CFM/sq ft
W Rating – Class I (See Item 4)

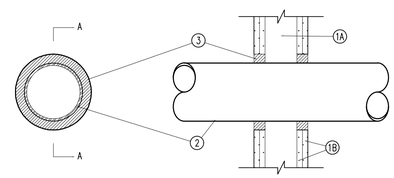


SECTION A-A

1. Floor or Wall Assembly -- Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks *. Max diam of opening is 12 in. See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrants -- One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be 0 in. (point contact) to max 1-1/4 in. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe -- Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe -- Nom 10 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit -- Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.
3. Packing Material -- Min 3 in. thickness of min 4 pcf mineral wool batt insulation for nom 4 in. diam (and smaller) pipes, conduits or tubings and a min 4 in. thickness of min 4 pcf mineral wool batt insulation for pipe greater than nom 4 in. diam, firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.
4. Fill, Void or Cavity Material* -- Sealant -- Min 1/2 in. thickness of fill material applied within the annulus, flush with the top surface of floor or both surfaces of wall. At the point of contact location between pipe and concrete, a min 1/2 in. diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall. W Rating applies only when CP601S or CP604 sealant is used.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP601S, CP604, CP606 or FS-ONE Sealant
   *Bearing the UL Classification Mark

FIRE STOPPING AT CONCRETE OR MASONRY FLOOR/ROOF ASSEMBLY

System No. W-L-1054
F Ratings – 1 and 2 Hr (See Items 1 and 3)
T Rating – 0 Hr
L Rating At Ambient – Less Than 1 CFM/Sq Ft
L Rating At 400 F – 4 CFM/Sq Ft



SECTION A-A

1. Wall Assembly -- The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
   A. Studs -- Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. wider and 4 to 6 in. higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. clearance is present between the penetrating item and the framing on all four sides.
   B. Gypsum Board* -- 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 32-1/4 in. for steel stud walls. Max diam of opening is 14-1/2 in. for wood stud walls. The F Rating of the firestop system is equal to the fire rating of the wall assembly.
2. Through-Penetrants -- One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. The annular space shall be min 0 in. to max 2-1/4 in. Pipe may be installed with continuous point contact. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
   A. Steel Pipe -- Nom 30 in diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe -- Nom 30 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit -- Nom 4 in diam (or smaller) steel electrical metallic tubing or 6 in. diam steel conduit.
   D. Copper Tubing -- Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe -- Nom 6 in. diam (or smaller) regular (or heavier) copper pipe.
3. Fill, Void or Cavity Material* -- Sealant -- Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At the point or continuous contact locations between pipe and wall, a min 1/2 in. diam bead of fill material shall be applied at the pipe wall interface on both surfaces of wall.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-One Sealant
   *Bearing the UL Classification Mark

FIRE STOPPING AT GWB/STUD ASSEMBLY

□ TYPICAL □IRE STOPPING □ETAILS
SCALE: N□T□S□

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: MD
Checked By: BG
Project No: 1732
Date: 07-23-18

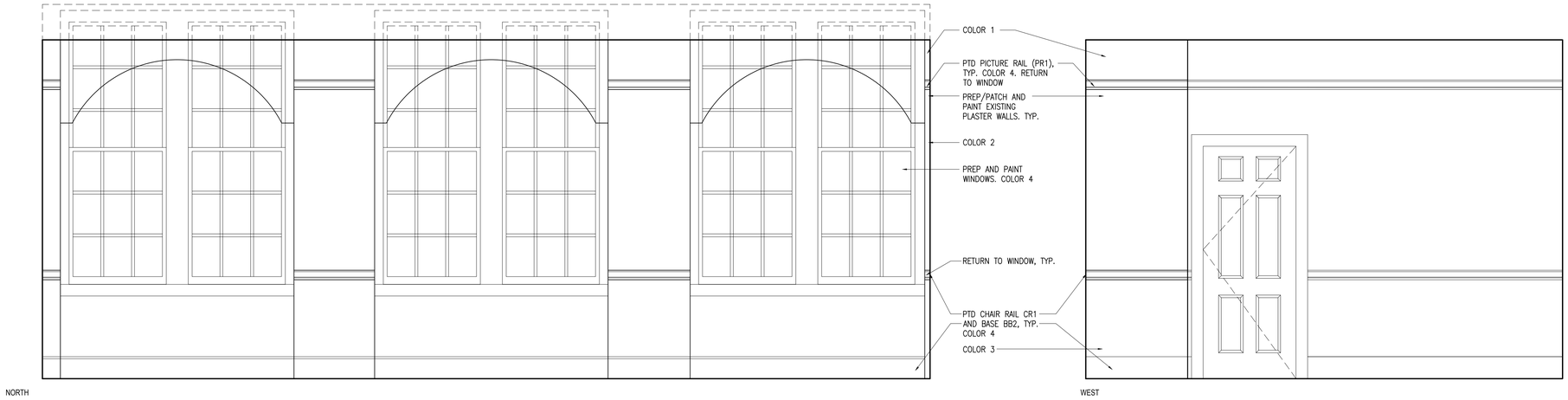
WILLIAM G. GITTINGS, AIA
NJ License AI 13047

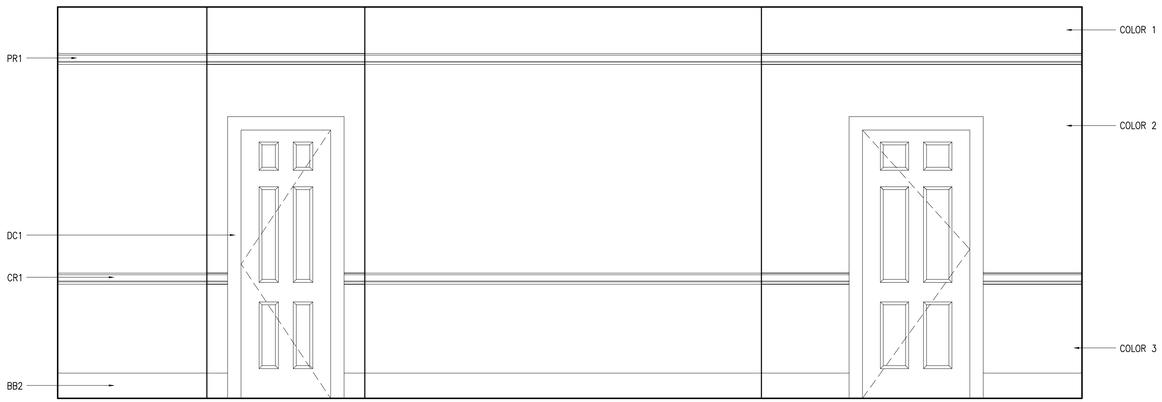
Revision No	Date	Description

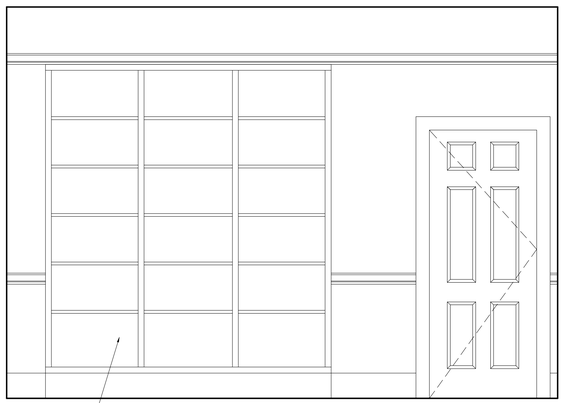
ROOF PLAN AND DETAILS

A-3

5 OF 7 SHEETS

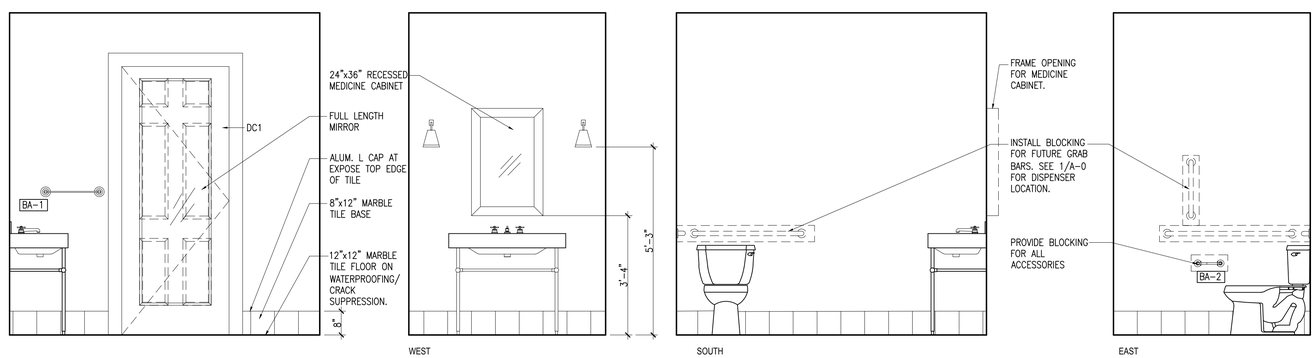






1 PRESI□ENT'S O□□ICE INTERIOR ELEVATIONS

SCALE:1/2" = 1'-0"



2 PRESI□ENT'S O□□ICE BATHROOM INTERIOR ELEVATIONS

SCALE:1/2" = 1'-0"

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GREEN HALL

ALTERATIONS TO SUITE 206

Drawn By: MD
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WILLIAM G. GITTINGS, AIA
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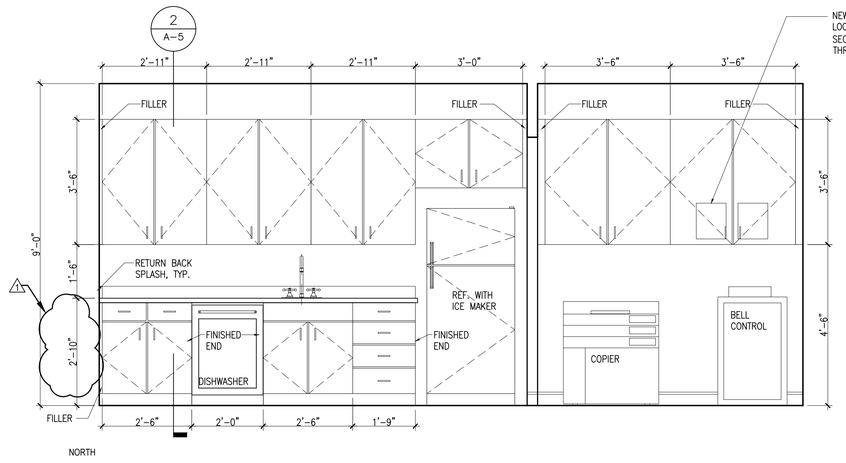
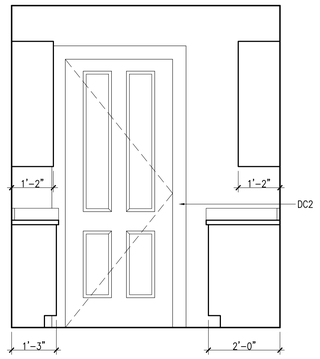
Revision No	Date	Description

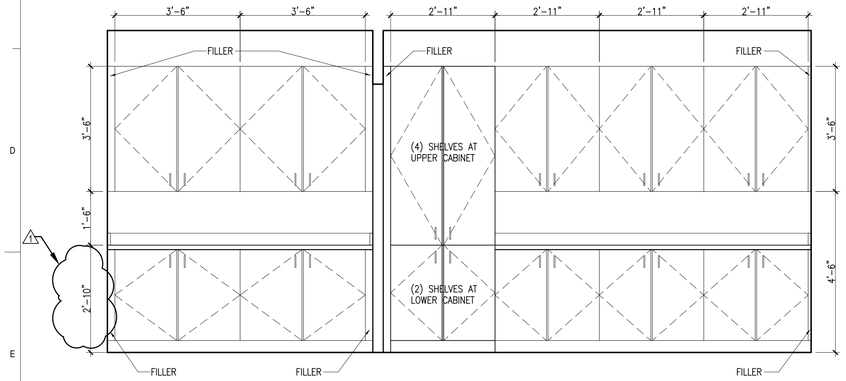
INTERIOR ELEVATIONS

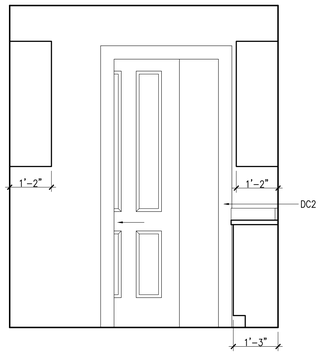
A-4

6 OF 7 SHEETS

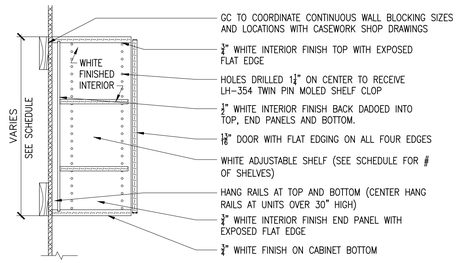


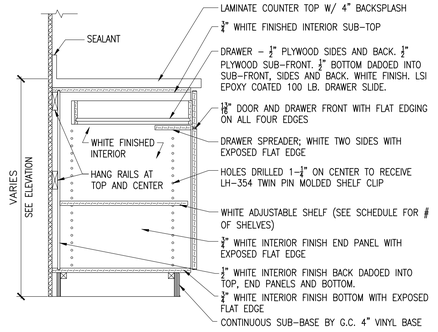






1 KITCHENETTE INTERIOR ELEVATIONS
SCALE:1/2" = 1'-0"





COUNTER LAMINATE: WILSONART MAGNOLIA 5012K-19 LENO WEAVE FINISH OR APPROVED EQUAL.
MILLWORK LAMINATE: WILSONART SLATE D91-60 MATTE FINISH OR APPROVED EQUAL.
PULLS: KRAFTMAID NO. 7086 STAINLESS STEEL BAR PULL OR APPROVED EQUAL.

2 SECTION THROUGH TYPICAL CABINETS
SCALE: 1" = 1'-0"

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: MD
Checked By: BG
Project No: 1732
Date: 07-23-18

WILLIAM G. GITTINGS, AIA
NJ License AI 13047

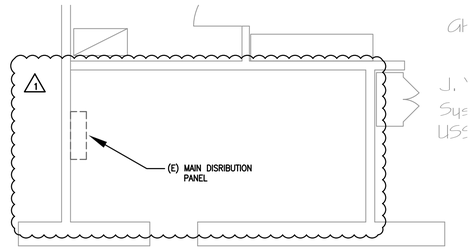
Revision No	Date	Description
1	09-07-18	DCA COMMENTS

INTERIOR ELEVATIONS

A-5

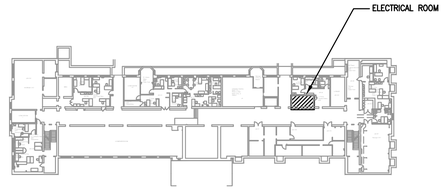
7 OF 7 SHEETS

1732 A-5.dwg
7/23/2018 1:47 PM
mknap



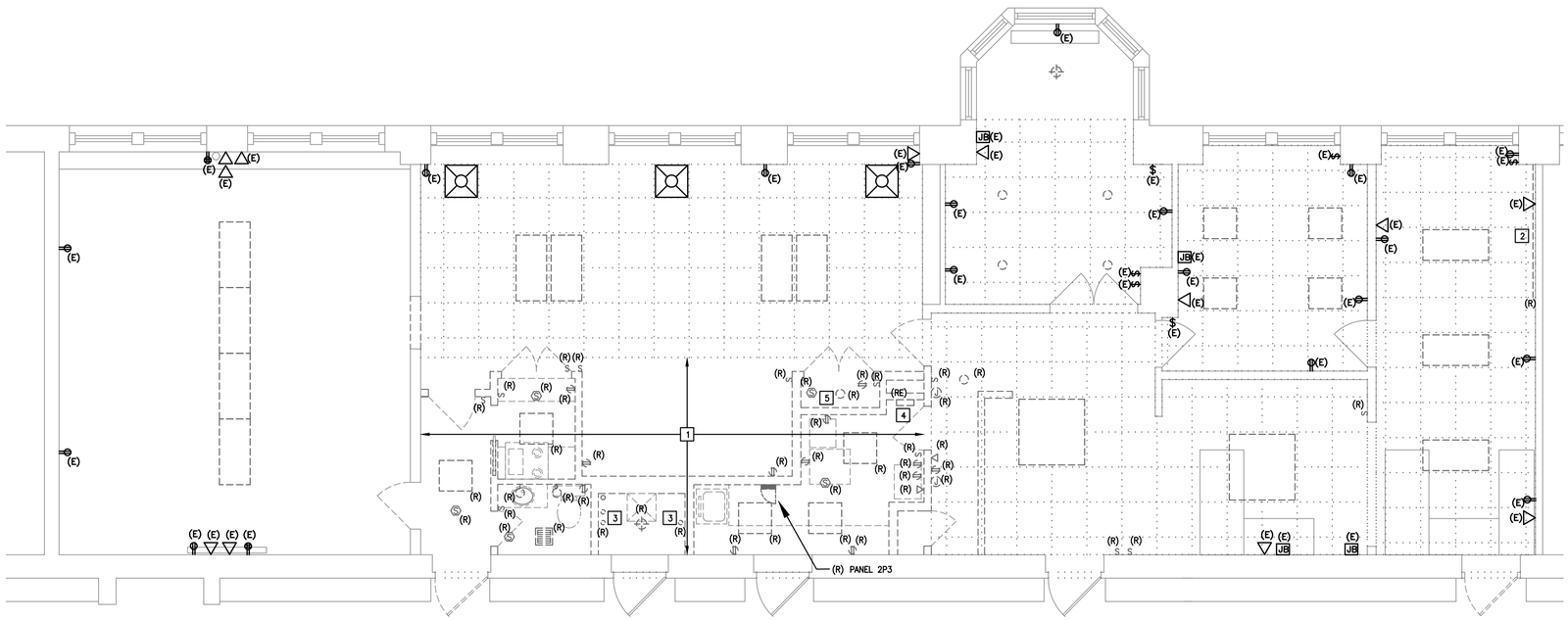
PARTIAL LOWER LEVEL PLAN – ELECTRICAL

SCALE: 1/4"=1'-0"



KEY PLAN – LOWER LEVEL

SCALE: N.T.S.



SECOND FLOOR DEMO PLAN – ELECTRICAL

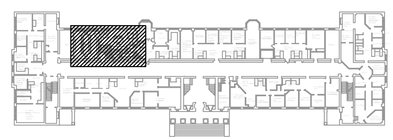
SCALE: 1/4"=1'-0"

DEMOLITION NOTES:

1. ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN FIELD PRIOR ANY WORK.
2. REMOVE ALL WIRING DEVICES, LIGHTING FIXTURES AND SWITCHES WITH ASSOCIATED WIRING AND CONDUITS IN AREAS OF RENOVATION UNLESS NOTED OTHERWISE.
3. REMOVE BRANCH CIRCUITS BACK TO POWER SOURCE OR TO ITS NEAREST ACTIVE DEVICE. RESTORE ALL CIRCUITS INTERRUPTED BY DEMOLITION WORK TO MAINTAIN CIRCUIT CONTINUITY.
4. ALL POWER SHUTDOWNS SHALL BE SCHEDULED AND COORDINATED WITH OWNER.
5. IT IS THE INTENT FOR POWER TO REMAIN ACTIVE IN THE ADJACENT AREAS DURING CONSTRUCTION. CONTRACTOR TO MODIFY EXISTING WIRING ARRANGEMENT TO COMPLY.
6. IT IS THE INTENT TO REMOVE ALL ELECTRICAL DEVICES WHICH INTERFERE WITH THE NEW CONSTRUCTION WORK OR DEMOLITION WORK WHETHER SPECIFICALLY IDENTIFIED OR NOT.
7. ALL EXISTING LIGHTING FIXTURES WITHIN DEMOLITION AREA TO BE REMOVED.
8. COORDINATE REMOVAL OF HONEYWELL PANIC BUTTON RECEIVER AND ASSOCIATED CONDUIT AND CABLE WITH OWNER AND IT INSTALLER.

ELECTRICAL DRAWING NOTES:

1. REMOVE ALL LIGHTING FIXTURES, SWITCHES, RECEPTACLES, AND BRANCH CIRCUITS WITHIN SPACE BACK TO ELECTRICAL PANEL, AND REMOVE ELECTRICAL PANEL, AND FEEDERS BACK TO MAIN DISTRIBUTION PANEL LOCATED IN ELECTRICAL ROOM. CONFIRM PANEL FEED ROUTING PRIOR TO DEMOLITION. CONFIRM PANEL ONLY FEEDS THIS SUITE.
2. REMOVE POWER STRIP.
3. REMOVE (2) CONDUITS AFTER COLLEGE RELOCATES ACTIVE LINES. ALL DEAD LINES TO BE REMOVED WHERE ACCESSIBLE AND CUT.
4. REMOVE AND RELOCATE EXISTING BELL SYSTEM AND CONTROLS.
5. REMOVE STEREO SYSTEM, AND SAVE FOR REINSTALLATION.



KEY PLAN – SECOND FLOOR

SCALE: N.T.S.

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NOTICE

THE SCHEDULES AND DRAWINGS REPRESENT ONLY CERTAIN REQUIREMENTS OF THE PROJECT. THERE ARE ADDITIONAL REQUIREMENTS IN THE SPECIFICATIONS BOOKLET WHICH THE CONTRACTOR IS BOUND TO PROVIDE. A SUPPLIER OR CONTRACTOR'S PRICING, WHICH IS BASED ONLY ON DRAWINGS OR SCHEDULES, MAY LEAVE IMPORTANT COSTS UNACCOUNTED FOR WHICH WILL ULTIMATELY BE THE CONTRACTOR OR SUPPLIER'S RESPONSIBILITY TO PROVIDE.

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

Project No: 1732
Date: 07-23-18

MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
	07/23/18	ISSUED FOR DCA
1	09/20/18	SECURITY

SECOND FLOOR DEMO PLAN - ELECTRICAL

DE.101.0

ISSUED FOR DCA

ABBREVIATIONS

ABS	ABSOLUTE	EWH	ELECTRIC WATER HEATER	NL	NIGHT LIGHT
AC	ALTERNATING CURRENT	EWT	ENTERING WATER TEMPERATURE	N.O.	NORMALLY OPEN
AD	AREA DRAIN	EXP	EXPANSION	NO.	NUMBER
AFF	ABOVE FINISHED FLOOR	EXP JT	EXPANSION JOINT	NTS	NOT TO SCALE
AGF	AIR GAP FITTING	EXT	EXTERIOR	OA	OUTSIDE AIR
AHU	AIR HANDLING UNIT	°F	DEGREE FAHRENHEIT	OD	OUTSIDE DIAMETER
AMP	AMPERE	F	FIRE PROTECTION WATER SUPPLY	OD	OVERFLOW DRAIN
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FCO	FLOOR CLEANOUT	%	PERCENT
APP	APPROVED	FD	FLOOR DRAIN	PCR	PUMPED CONDENSATE RETURN
APPROX	APPROXIMATE	FDC	FIRE DEPARTMENT CONNECTION	PD	PUMPED DRAIN
AV	ACID VENT	FHC	FIRE HOSE CABINET	PDI	PLUMBING & DRAINAGE INSTITUTE
AVG	AVERAGE	FHV	FIRE HOSE VALVE	PG	PRESSURE GAUGE
B.O.P.	BOTTOM OF PIPE	FIN	FINISH	PH	PHASE-ELECTRICAL
BFP	BACKFLOW PREVENTION DEVICE	FF	FINISHED FLOOR	PIV	POST INDICATOR VALVE
BFV	BUTTERFLY VALVE	FLFD	FUSIBLE LINK FIRE DAMPER	PLBG	PLUMBING
BHP	BRAKE HORSEPOWER	FLR	FLOOR	PP	POLYPROPYLENE PIPE
BLDG	BUILDING	FO	FUEL OIL	PRV	PRESSURE REDUCING VALVE
BLV	BALANCING VALVE	FPM	FEET PER MINUTE	PSF	POUNDS PER SQUARE FOOT
BTU	BRITISH THERMAL UNIT	FPS	FEET PER SECOND	PSI	POUNDS PER SQUARE INCH
BV	BALL VALVE	FS	FLOW SWITCH	PVC	POLYVINYL CHLORIDE PIPE
BWV	BACKWATER VALVE	FT	FEET	QT	QUART
CA	COMPRESSED AIR	FU	FIXTURE UNIT	(R)	REMOVE EXISTING
C TO C	CENTER TO CENTER	FV	FLUSH VALVE	(RE)	RELOCATE EXISTING
CD	CONDENSATE DRAIN	G	NATURAL GAS	RA	RETURN AIR
CFH	CUBIC FEET PER HOUR	GA	GAUGE	RD	ROOF DRAIN
CFM	CUBIC FEET PER MINUTE	GAL	GALLONS	R&D	RESEARCH & DEVELOPMENT
CHWR	CHILLED WATER RETURN	GALV	GALVANIZED	REQ	REQUIRED
CHWS	CHILLED WATER SUPPLY	GPD	GALLONS PER DAY	RG	RETURN AIR GRILLE
CI	CAST IRON	GPH	GALLONS PER HOUR	RH	RELATIVE HUMIDITY
CISP	CAST IRON SOIL PIPE	GPM	GALLONS PER MINUTE	RM	ROOM
CISPI	CAST IRON SOIL PIPE INSTITUTE	GR	GRAINS OF MOISTURE	RPM	REVOLUTIONS PER MINUTE
CKT	CIRCUIT	GRD	GROUND	RR	RETURN AIR REGISTER
CLG	CEILING	GWH	GAS WATER HEATER	RWC	RAINWATER CONDUCTOR
CO	CLEANOUT	H	ENTHALPY	RZBP	REDUCED PRESSURE ZONE BFP
CO_2	CARBON DIOXIDE	HB	HOSE BIBB	SA	SHOCK ABSORBER
COL	COLUMN	HC	HANDICAP	SAN	SANITARY WASTE
COND	CONDENSATE	HD	HEAD	SCH	SCHEDULE
CONN	CONNECTION	HP	HORSEPOWER	SD	SUPPLY AIR DIFFUSER
CONT	CONTINUED	HPCR	HIGH PRESSURE CONDENSATE RETURN	SF	SQUARE FEET
CONTR	CONTRACTOR	HPSS	HIGH PRESSURE STEAM SUPPLY	SH	SHOWER
CP	CONTROL PANEL	HR	HOUR	SP	STANDPIPE
CR	CONDENSER RETURN	HS	HOSE STATION	SPD	SURGE PROTECTION DEVICE
CS	CONDENSER SUPPLY	HT	HEIGHT	SPEC	SPECIFICATION
CU FT	CUBIC FEET	HTR	HEATER	SPR	SPRINKLER
CU IN	CUBIC INCHE	HVAC	HEATING VENTILATION AIR CONDITIONING	SQ	SQUARE
CV	CHECK VALVE	HW	HOT WATER (DOMESTIC)	SR	SUPPLY AIR REGISTER
CW	COLD WATER (DOMESTIC)	HWR	HOT WATER RETURN (DOMESTIC)	SS	STAINLESS STEEL
DB	DECIBEL	HWR	HOT WATER RETURN	STD	STANDARD
DB	DRY BULB	HWS	HOT WATER SUPPLY	STL	STEEL
DCBP	DOUBLE CHECK BACKFLOW PREVENTER	HZ	FREQUENCY-ELECTRICAL	STR	STRAINER
DD	DECK DRAIN	ID	INSIDE DIAMETER	STRUC	STRUCTURAL
DEG	DEGREE	ID	INDIRECT DRAIN	SUCT	SUCTION
DFU	DRAINAGE FIXTURE UNIT	IE	INVERT ELEVATION	SV	SANITARY VENT
DI	DEIONIZED WATER	IW	INDIRECT WASTE	SWV	SANITARY WASTE VENT
DIA	DIAMETER	KW	KILOWATT	T&P	TEMP. & PRESSURE RELIEF VALVE
DIS	DISTILLED WATER	KWH	KILOWATT HOUR	TEMP	TEMPERATURE
DISCH	DISCHARGE	LAT	LEAVING AIR TEMPERATURE	THERM	THERMOMETER
DN	DOWN	LAV	LAVATORY	T.O.P.	TOP OF PIPE
DP	DEEP	LBS	POUNDS	TP	TRAP PRIMER
DS	DOWNSPOUT	LF	LINEAR FEET	TYP	TYPICAL
DSP	DRY STANDPIPE	LL	LOW LEVEL	UL	UNDERWRITER'S LABORATORY
DTR	DUAL TEMPERATURE RETURN	LP	LIQUID PROPANE	UTIL	UTILITY
DTS	DUAL TEMPERATURE SUPPLY	LPCR	LOW PRESSURE CONDENSATE RETURN	VAC	VACUUM
DTTV	DOUBLE THICK TURNING VANES	LPCS	LOW PRESSURE CONDENSATE SUPPLY	VAV	VARIABLE AIR VOLUME
DVC	DRY VACUUM CLEANING	LWT	LEAVING WATER TEMPERATURE	VB	VACUUM BREAKER
DWG	DRAWING	MAU	MAKE-UP AIR UNIT	VD	VOLUME DAMPER
DWR	DOMESTIC WATER RISER	MAX	MAXIMUM	VEL	VELOCITY
(E)	EXISTING	MECH	MECHANICAL	VERT	VERTICAL
EA	EXHAUST AIR	MFR	MANUFACTURER	VFD	VARIABLE FREQUENCY DRIVE
EAT	ENTERING AIR TEMPERATURE	MH	MANHOLE	VIF	VERIFY IN FIELD
EFF	EFFICIENCY	MIN	MINIMUM	VOL	VOLUME
EFL	EFFLUENT	MISC	MISCELLANEOUS	VPC	VIA PHOTOCELL
EL	ELEVATION	MOD	MOTOR OPERATED DAMPER	VTC	VIA TIME CLOCK
ELEC	ELECTRICAL	MPCR	MEDIUM PRESSURE CONDENSATE RETURN	VTR	VENT THROUGH ROOF
EMF	ELECTROMOTIVE FORCE	MPH	MILES PER HOUR	W/	WITH
EQ	EQUAL	MPSS	MEDIUM PRESSURE STEAM SUPPLY	WB	WET BULB TEMPERATURE
EQUIP	EQUIPMENT	(N)	NEW	WCO	WALL CLEANOUT
ES	EMERGENCY SHOWER	NA	NOT APPLICABLE	WH	WALL HYDRANT
ESP	EXTERNAL STATIC PRESSURE	NC	NOISE CRITERIA	WP	WEATHERPROOF
EVAP	EVAPORTATOR	N.C.	NORMALLY CLOSED	W/O	WITHOUT
EW	EMERGENCY EYEWASH	NIC	NOT IN CONTRACT	WSFU	WATER SUPPLY FIXTURE UNITS
EWC	ELECTRIC WATER COOLER			YR	YEAR

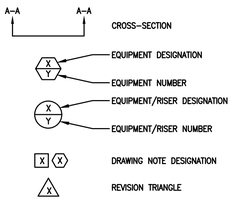
PROJECT GENERAL NOTES

1. TCNJ TO PAY FOR PERMITS. CONTRACTOR TO FILL OUT APPLICATIONS.
2. PROVIDE SHOP DRAWINGS OF ALL EQUIPMENT FOR REVIEW PRIOR TO ORDERING. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR AND PHYSICAL DIMENSIONS PRIOR TO SHOP DRAWING SUBMISSION.
3. THREE (3) PHASE STARTERS TO BE PROVIDED BY MECHANICAL CONTRACTOR. MAGNETIC ACROSS THE LINE, AUXILIARY CONTACTS. SINGLE PHASE STARTERS BY ELECTRICAL CONTRACTOR.
4. ALL WORK TO BE CONCEALED UNLESS OTHERWISE INDICATED.
5. PROPERLY INSTRUCT OWNERS PERSONNEL IN THE OPERATION AND MAINTENANCE OF ALL SYSTEMS AND EQUIPMENT. PROVIDE THREE INSTRUCTIONS AND MAINTENANCE MANUALS. SUBMIT MANUALS FOR REVIEW PRIOR TO OPERATING INSTRUCTION PERIOD.
6. COORDINATE LOCATIONS AND ROUGH-IN REQUIREMENTS WITH ALL TRADES PRIOR TO INSTALLATION.
7. IF THE CONTRACTOR ELECTS TO SUBMIT ALTERNATE EQUIPMENT, MANUFACTURERS, SYSTEMS, METHODS, OR MATERIALS, NOT SPECIALLY IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS, IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE WORK WITH OTHER TRADES AND PAY FOR ANY ADDITIONAL COSTS WITH THE SUBSTITUTION OR CHANGE.
8. PROVIDE RECORD AS-BUILT DRAWINGS AT COMPLETION OF WORK. SUBMIT TO OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
9. CONTRACTOR SHALL VISIT SITE PRIOR TO BID SUBMISSION AND BECOME AWARE OF ALL CONDITIONS WHICH MAY AFFECT THE WORK. SUBMISSION OF BID WILL BE DEEMED EVIDENCE OF HAVING COMPLETED WITH THE REQUIREMENTS. CONTRACTOR TO INCLUDE ALL ASSOCIATED COSTS (MATERIALS/LABOR) AS A RESULT OF THE SITE VISIT INSPECTION.
10. DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE TAKEN AS A WHOLE. IF A CONFLICT OR CONTRADICTION EXISTS BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY. THE ARCHITECT'S AND ENGINEER'S INTERPRETATION OF THE DOCUMENTS SHALL BE BINDING UPON THE CONTRACTOR.
11. ALL WORK SHALL BE COORDINATED WITH THE OWNER PRIOR TO SHUT DOWN AND OBTAIN APPROVAL. ALL REQUESTS SHALL BE WRITTEN AND SUBMITTED TO THE OWNER 24 TO 48 HOURS PRIOR TO REQUESTED DELETIONS.

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL CONFORM WITH THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE CODES, REGULATIONS AND STANDARDS. NOT ALL CODE REQUIREMENTS HAVE BEEN DESCRIBED IN THIS SPECIFICATION OR INDICATED ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE CODES AND INSTALL THE WORK IN ACCORDANCE WITH CODES.
2. ALL UPGRADES WORK TO INVOLVE SEVERAL INDEPENDENT CONTRACTORS AND VENDORS WORKING TOGETHER. IN ADDITION OF THE GENERAL CONTRACTOR, OWNER TO ENGAGE INDEPENDENTLY WITH HONEYWELL, IT INSTALLER AND ACCESS CONTROL FOR SECURITY UPGRADES. THE CONTRACTOR SHALL COORDINATE ALL SECURITY WORK WITH EACH OF THE OTHER CONTRACTORS AS REQUIRED. SECURITY WORK TO INCLUDE INSTALLATION OF CAMERAS, PANIC BUTTONS, EMERGENCY DOOR LOCKS, SECURITY PANEL AND ASSOCIATED CONDUIT AND CABLE.
3. PROVIDE LABOR, MATERIALS, EQUIPMENT AND SUPERVISION NECESSARY TO INSTALL COMPLETE OPERATING ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING ALL WORK AT THE SITE AND WITHIN THE PROPOSED CONSTRUCTION AREAS TO ACCOMPLISH THE REQUIRE WORK.
4. FINAL LOCATIONS OF ALL DEVICES IN FINISHED SPACES SHALL BE COORDINATED AND APPROVED BY THE ARCHITECT/OWNER PRIOR TO ROUGH-IN AND INSTALLATION.
5. PROVIDE NEW DEVICES TO EXISTING ADDRESSABLE FIRE ALARM SYSTEM WITH HORN/STROBES, PULL STATIONS, SMOKE DETECTORS, STROBES.
6. PROVIDE POWER TO HVAC AND PLUMBING EQUIPMENT AS NECESSARY TO HAVE COMPLETE OPERATING SYSTEMS.
7. PROVIDE LIGHTING THROUGHOUT, WITH EXTERIOR LIGHTING AT ALL EXIT DOORS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING PARTICULAR MOUNTING ARRANGEMENTS OF FIXTURES TO SUIT THE CONSTRUCTION OR CEILING TYPES. CONTRACTOR OR HIS AGENT SHALL REVIEW ARCHITECTURAL DRAWINGS TO ESTABLISH CEILING TYPES PRIOR TO PREPARING SHOP DRAWINGS FOR SUBMISSION. IT IS NOT TO BE UNDERSTOOD THAT THE FIXTURE SCHEDULE ACCOUNTS FOR THE MOUNTING TYPES. FREQUENTLY CEILING TYPES ARE CHANGED AFTER THE FIXTURE SCHEDULE HAS BEEN COMPLETED.
9. FIXTURES WHICH ARE RECESSED IN A FIRE RATED CEILING SHALL BE PROVIDED WITH AN ENCLOSURE AROUND THE FIXTURE WHICH SHALL MAINTAIN THE FIRE RATING INTEGRITY OF THE CEILING SYSTEM. THE INSTALLATION OF THE ENCLOSURE SHALL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. THE FIXTURE SHALL BE INSULATION RATED FOR HIGHER TEMPERATURE OPERATION.
10. ALL ROOMS ARE TO BE PROVIDED WITH LIGHTING CONTROLS. PROVIDE MANUAL SWITCH AND CODE REQUIRED CONTROL DEVICES AS APPROPRIATE.
11. PROVIDE EXIT AND EMERGENCY LIGHTING AS REQUIRED BY CODE IN ALL SPACES TO MEET REQUIREMENTS OF THE AHJ. ALLOW FOR 10 ADDITIONAL FIXTURES TO BE INSTALLED WHERE DIRECTED BY THE AHJ.
12. ALL DEVICES TO BE INSTALLED TRUE AND PLUMB.
13. SWITCH PLATES AND RECEPTACLES SHALL NOT BE PLACED BACK TO BACK IN ADJACENT ROOMS. OFFSET LOCATIONS A MINIMUM OF 3 INCHES TO RESTRICT NOISE TRANSFER. THIS SHALL ALSO APPLY TO TV OUTLETS, TELEPHONE OUTLETS, AND DATA OUTLETS.
14. ALL DEVICES ON OPPOSITE SIDE OF A FIRE RESISTANCE RATED WALL ASSEMBLY ARE TO BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES.
15. GROUND FAULT CIRCUIT INTERRUPTERS SHALL BE PROVIDED ON ALL OUTDOOR RECEPTACLE CIRCUITS, RECEPTACLE CIRCUITS WITHIN TOILET AND BATH ROOMS, AREAS IN CLOSE PROXIMITY TO WATER, AND WHEREVER ELSE INDICATED ON THE DRAWINGS OR REQUIRED BY CODE. WHILE-IN-USE TYPE COVERS ARE TO BE USED IN EXTERIOR WET LOCATIONS.
16. PROVIDE CODE REQUIRED SIGNAGE (I.E., NEC 110.22, NEC 700.7, AND 695.4 B3 (C)).
17. PROVIDE THIRD PARTY CERTIFICATION OF ALL PACKAGED SYSTEMS BY A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) IN ACCORDANCE WITH OSHA FEDERAL REGULATIONS 29CFR1910.303 AND .399 AS WELL AS PAMPHLET #70 AND NATIONAL ELECTRICAL CODE ARTICLE 90-7.
18. ALL EQUIPMENT PANELS, CONTROLS, SAFETY SWITCHES, AND DEVICES SHALL BE PROVIDED WITH PERMANENT BLACK LAMINATED MICARTA WHITE CORE LABELS WITH 3/8 INCH LETTERS. THIS SHALL ALSO APPLY TO ALL CONTROLLERS, REMOTE START/STOP PUSHBUTTONS, EQUIPMENT CABINETS, AND WHERE DIRECTED BY THE A/E. THIS SHALL NOT APPLY TO INDIVIDUAL ROOM THERMOSTATS, AND LOCAL LIGHT SWITCHES.
19. EXPOSED INTERIOR WIRING, PANEL FEEDERS, HOME RUNS, AND EQUIPMENT FEEDERS SHALL BE IN EMT CONDUIT. EMT CONDUIT SHALL BE SECURELY FASTENED AT INTERVALS NOT EXCEEDING 10 FEET AND WITHIN 3" OF ALL BOXES. NOTE: EXPOSED MEANS ALL WIRING WHICH IS NOT INSTALLED WITHIN WALLS, ABOVE SUSPENDED CEILINGS, OR WITHIN A PRE-MANUFACTURED RACEWAY. ANY RACEWAY THAT IS TO BE EXPOSED IN A FINISHED AREA IS TO BE COORDINATED WITH THE ARCHITECT/ENGINEER PRIOR TO INSTALLATION.
20. CONCEALED BRANCH CIRCUITING ABOVE SUSPENDED CEILINGS, AND IN STUD PARTITIONS TO BE MC CABLE. MC CABLE SHALL BE SECURELY FASTENED AT INTERVALS NOT EXCEEDING 4.5 FEET, AND WITHIN 12" OF ALL BOXES OR FITTINGS.
14. PROVIDE SHOP DRAWINGS OF ALL NEW EQUIPMENT FOR REVIEW PRIOR TO ORDERING. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR AND PHYSICAL DIMENSIONS PRIOR TO SHOP DRAWING SUBMISSION.
15.

DRAWING SYMBOLS LIST



DRAWING LIST

TCNJ Green Hall 206 — Issued for dDCA 07/23/18

H.001.0	COVER SHEET	- MECHANICAL	●
DH.101.0	FLOOR DEMO PLAN	- MECHANICAL	●
H.101.0	FLOOR PLAN	- MECHANICAL	●
H.201.0	DETAILS & SCHEDULES	- MECHANICAL	●
H.201.1	DETAILS & SCHEDULES	- MECHANICAL	●
P.001.0	COVER SHEET	- PLUMBING	●
DP.101.0	FLOOR DEMO PLAN	- PLUMBING	●
P.101.0	FLOOR PLAN	- PLUMBING	●
P.201.0	DETAILS & SCHEDULES	- PLUMBING	●
E.001.0	COVER SHEET	- ELECTRICAL	●
DE.101.0	FLOOR DEMO PLAN	- ELECTRICAL	●
E.101.0	FLOOR PLAN	- ELECTRICAL	●
E.101.1	FLOOR PLAN - SECURITY	- ELECTRICAL	●
E.201.0	DETAILS & SCHEDULES	- ELECTRICAL	●

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NOTICE

THE SCHEDULES AND DRAWINGS REPRESENT ONLY CERTAIN REQUIREMENTS OF THE PROJECT. THERE ARE ADDITIONAL REQUIREMENTS IN THE SPECIFICATIONS BOOKLET WHICH THE CONTRACTOR IS BOUND TO PROVIDE. A SUPPLIER OR CONTRACTOR'S PRICING, WHICH IS BASED ONLY ON DRAWINGS OR SCHEDULES, MAY LEAVE IMPORTANT COSTS UNACCOUNTED FOR WHICH WILL ULTIMATELY BE THE CONTRACTOR OR SUPPLIER'S RESPONSIBILITY TO PROVIDE.

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

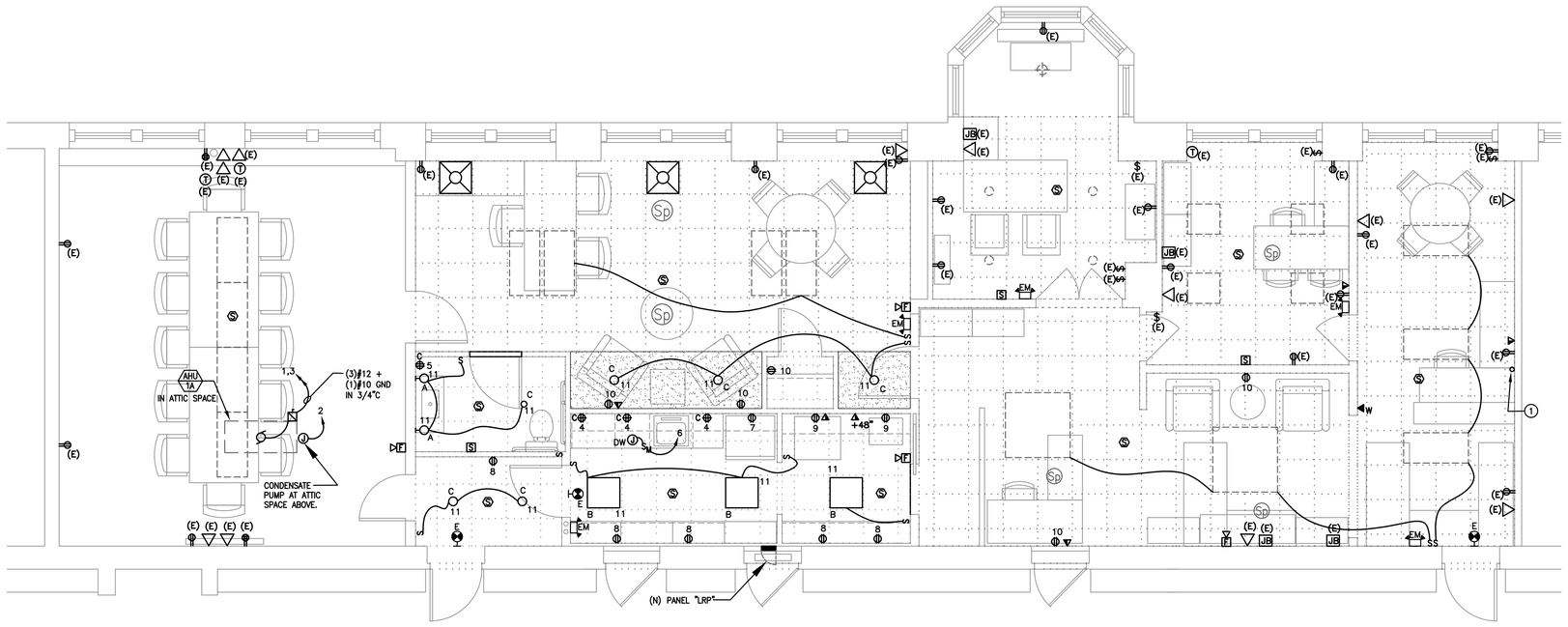
Project No: 1732
Date: 07-23-18

MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
	07/23/18	ISSUED FOR DCA

COVER SHEET

E.001.0



SECOND FLOOR PLAN – ELECTRICAL

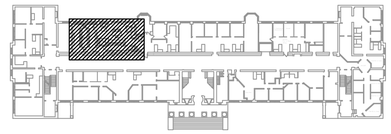
SCALE: 1/4"=1'-0"

ELECTRICAL NOTES:

1. COORDINATE LOCATIONS AND MOUNTING HEIGHTS OF ALL WIRING DEVICES WITH OWNER/TENANT/ARCHITECT PRIOR TO ROUGH-IN. REFER TO DETAILS/SPECIFICATIONS FOR TYPICAL MOUNTING HEIGHTS.
2. ALL LIGHTING FIXTURE LOCATIONS AND MOUNTING HEIGHTS ARE TO BE COORDINATED WITH THE ARCHITECTURAL DRAWINGS.
3. ALL EXIT SIGNS ARE TO BE CIRCUITED TO THE UNSWITCHED LEG OF THE LOCAL EMERGENCY LIGHTING CIRCUIT.
4. ALL LIGHTING CONTROL SWITCHES SHALL BE GANGED TOGETHER, HAVE A COMMON FACE PLATE AND BE LABELED WITH THE AREA OF CONTROL.
5. ALL CIRCUITS NUMBERS ARE TO PANEL "LRP", UNLESS OTHERWISE NOTED.
6. CONTRACTOR IS TO CONCEAL WIRING WHENEVER POSSIBLE. ALL EXPOSED WIRING IS TO BE IN EMT. CONTRACTOR IS TO PAINT AS DIRECTED BY THE ARCHITECT. CONDUIT PATH IS TO BE AS INCONSPICUOUS AS POSSIBLE. COORDINATE CONDUIT ROUTE WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN AND INSTALLATION.
7. INSTALL (2) NEW 3" CONDUIT FROM FIRST FLOOR JANITOR CLOSET TO ATTIC WITH PULL BOXES.
8. ALL NEW FIRE ALARM DEVICES TO BE CONNECTED TO EXISTING HONEYWELL FIRE ALARM PANEL. MINIMUM CLASS B WIRING.

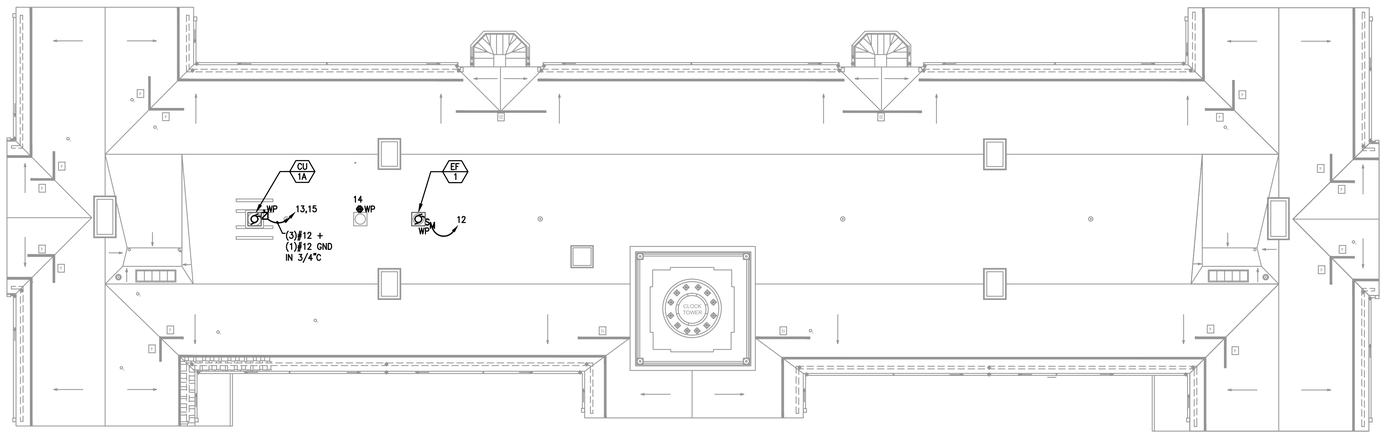
DRAWING NOTES:

(1) PROVIDE 2" EMT SLEEVE PENETRATION INTO ATTIC FROM ABOVE CEILING SPACE FOR USE BY IT FOR CABLING INSTALLATION. ANNULAR SPACE TO BE FIRE STOPPED WITH FIRESTOPPING COMPOUND ON BOTH SIDES OF PLASTER CEILING ASSEMBLY. CONDUIT TO EXTEND 12" ABOVE INSTALLED INSULATION LEVEL. EMT SLEEVE TO BE SECURED TO CEILING JOIST WITH MINIMUM OF TWO ATTACHMENT POINTS USING 2-HOLE CONDUIT CLIPS. INSTALL 2" WIREMOLD/FLAMESTOPPER SET (FS2R-RED) OR APPROVED EQUAL TO COMPLETE FIRE STOPPED ASSEMBLY. COORDINATE SLEEVE LOCATION WITH RESPECT TO OBSTRUCTIONS AND CATWALK IN ATTIC.



KEY PLAN – SECOND FLOOR

SCALE: N.T.S.



ROOF PLAN – ELECTRICAL

SCALE: 1/16"=1'-0"

ELECTRICAL NOTES:

1. ALL CIRCUITS NUMBERS ARE TO PANEL "LRP", UNLESS OTHERWISE NOTED.

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GREEN HALL

ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

Project No: 1732
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MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
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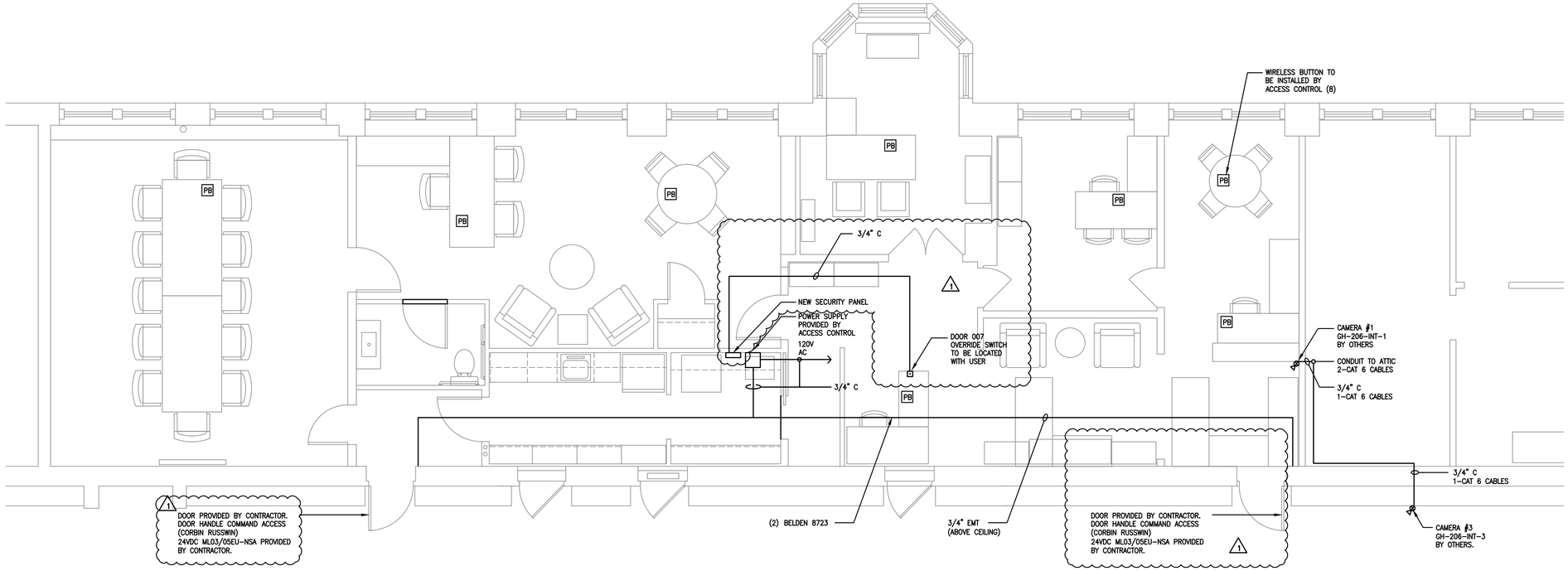
FLOOR PLAN - ELECTRICAL

E.101.0



SECOND FLOOR PLAN - SECURITY

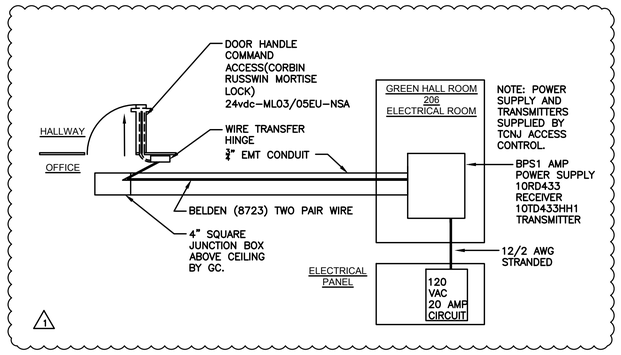
SCALE: 1/4"=1'-0"

1

SECURITY NOTES:

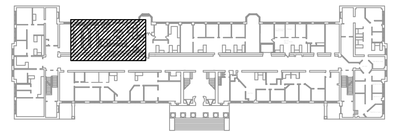
1. ALL CAMERA LOCATIONS AND DIRECTION SHALL BE AS PER THE CAMERA SPECIFICATION AND SHALL BE COORDINATED WITH THE OWNER PRIOR TO INSTALLATION.
2. THE SECURITY PANEL FOR THE PANIC BUTTONS SHALL BE LOCATED CENTRALLY IN THE SAME AREA AS EXISTING AND SHALL BE LESS THAN 200' FROM THE FARTHEST BUTTON. WORK BY IT INSTALLER.
3. THE WIRING FOR CAMERAS TO POE SWITCH SHALL BE ROUTED IN THE ATTIC BY IT INSTALLER.
4. THE DOOR LOCK BUTTON SHALL BE HARDWIRED AT THE DOOR - 1 - PAIR #16. WORK BY GC.
5. THE CAMERAS AND ASSOCIATED CONDUIT AND WIRING TO BE INSTALLED BY IT INSTALLER.
6. SECURITY PANEL TO BE INSTALLED BY IT INSTALLER.
7. THE CONDUIT FROM CAMERA #2 TO ATTIC MAY BE ROUTED THROUGH PENETRATION INSIDE THE WALL CAVITY. WORK BY IT INSTALLER
8. PANEL BOX CONTAINING POWER SUPPLY BPS1, RECEIVER 10RD433 AND TRANSMITTER 10TD433HH1 TO BE PROVIDED BY ACCESS CONTROL AND INSTALLED BY IT INSTALLER.
9. CONTRACTOR TO PROVIDE 120V POWER TO SECURITY PANEL AND POWER SUPPLY- (2)#12 WG IN 3/4" CONDUIT. CONTRACTOR TO INSTALL CONDUIT AND CABLE FOR DOOR LOCKS FROM POWER SUPPLY TO DOOR ELECTRIC STRIKE. WORK BY GC.

NOTES: IT INSTALLER WILL BE INDEPENDENTLY HIRED BY TCNJ.



WIRING DIAGRAM - EMERGENCY DOOR LOCK

SCALE: N.T.S



KEY PLAN - SECOND FLOOR

SCALE: N.T.S.

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	07/23/18	ISSUED FOR DCA
1	09/20/18	SECURITY

FLOOR PLAN - SECURITY PLAN

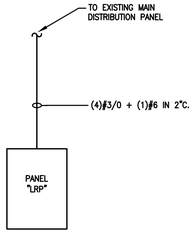
E.101.1

ISSUED FOR DCA

LIGHTING FIXTURE SCHEDULE

LISTED EQUIV. MFRS: IT IS NOT UNDERSTOOD THAT THIS IMPLIES A STANDARD FIXTURE IS ACCEPTABLE. THE FIXTURE MUST MEET ALL TECHNICAL REQUIREMENTS AS WELL AS BEING NAMED. ALTERNATE MANUFACTURERS ARE NOT ACCEPTABLE UNLESS ACCEPTED BY OWNER PRIOR TO GMP. REFER TO SPECIFICATION SECTION 16500 FOR DETAILS. CONTRACTOR IS RESPONSIBLE TO SELECT MOUNTING TYPE: SURFACE, RECESSED, LAY-IN, FLANGED, WALL, PENDANT, ETC. COLOR TEMPERATURES OF ALL LAMPS TO MATCH. ALL BALLAST TO BE ELECTRONIC. ALL FIXTURE LENSES ARE TO BE SHIPPED WITHIN A PROTECTIVE COVERING.

SYMBOL	DESCRIPTION	LAMPS	CU@2.0 RCR 80/50/20	VOLTAGE	EQUIV. MFRS
A	ONE LIGHT WALL/BATH SCONCE. BRUSHED NICKEL FINISH, SATIN ETCHED GLASS, ENERGY STAR QUALIFIED. HOLMAN COLLECTION 41806EN3-962	9.5W LED		120	PRIOR APPROVED EQUAL
B	2X2 HIGH PERFORMANCE LED RECESSED LUMINAIRE. COLD ROLLED STEEL HOUSING AND REFLECTOR, DOUBLE DIFFUSE. FINELITE HPR-DD-2X2-DCO-S-830-120-SC-C1-	28W LED		120	PRIOR APPROVED EQUAL
C	SLIMSURFACE LED DOWNLIGHT. 5" AND 7" ROUND APERTURE, HIGH TRANSMITTANCE LENS, PLASTIC FLANGE. ENERGY STAR CERTIFIED PHILIPS LIGHTOLIER S7R-8-30K-10-W-Z10U	14W LED		120	PRIOR APPROVED EQUAL
EM	LED EMERGENCY LIGHTING UNIT. INJECTION-MOLDED, FLAME-RETARDANT, HIGH-IMPACT, AND CORROSION RESISTANT. DUAL VOLTAGE INPUT. LITHONIA EU2 LED M12	2W LED		120	PRIOR APPROVED EQUAL
	LED EXIT SIGN. POLYCARBONATE HOUSING, IMPACT AND CORROSION RESISTANT, UV STABILIZED, SINGLE FACE WITH EXTRA FACEPLATE FOR EASY CONVERSION TO DOUBLE FACE, REPLACEABLE CHEVRON DIRECTION INDICATORS, UNIVERSAL MOUNTING CAPABILITY WITH CANOPY, U.L. LISTED, STENCIL FACE, DAMP LOCATION HOUSING, WHITE, GREEN LETTERS. LITHONIA QUANTUM LQM SERIES				PRIOR APPROVED EQUAL



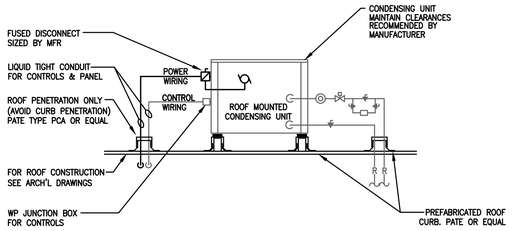
SINGLE LINE DIAGRAM

SCALE: NONE

PANEL SCHEDULE — LRP

PANEL LABEL: LRP | MAINS: 200 AMP | ENCLOSURE
A.I.C.: 10K | MCB: | NEMA: 1
208/120 VOLT 3 PHASE 4 WIRE | LUGS: | MOUNTING: S
TOP___BOTTOM: X | WIDTH: 20"

CKT	TRIP	POLE	DESCRIPTION	WATT	WATT	DESCRIPTION	TRIP	POLE	CKT
1	15	2	AHU-1A	832	500	CONDENSATE PUMP	20	1	2
3					540	GFI RCPTS- 205B	20	1	4
5	20	1	GFI RCPT- 205C	180	1200	DISHWASHER	20	1	6
7	20	1	REFRIGERATOR	900	900	RCPTS- 205B & 206A	20	1	8
9	20	1	RCPTS- COPY AREA	360	360	RCPTS- 205A & 210	20	1	10
11	20	1	LIGHTING-205, 205B, 205C, 206A	187	50	EF-1	20	1	12
13	20	2	CU-1A	2496	180	SERVICE RCPT- ON THE ROOF	20	1	14
15						SPARE	20	1	16
17	20	1	SPARE			SPARE	20	1	18
19	20	1	SPARE			SPARE	20	1	20
21	20	1	SPARE			SPARE	20	1	22
23	20	1	SPARE			SPARE	20	1	24
25	20	1	SPARE			SPARE	20	1	26
27	20	1	SPARE			SPARE	20	1	28
29	20	1	SPARE			SPARE	20	1	30
31	20	1	SPARE			SPARE	20	1	32
33	20	1	SPARE			SPARE	20	1	34
35	20	1	SPARE			PREPARED SPACE			36
37	20	1	SPARE			PREPARED SPACE			38
39	20	1	SPARE			PREPARED SPACE			40
41	20	1	SPARE			PREPARED SPACE			42
				4955	3730	8685	30	AMPS	



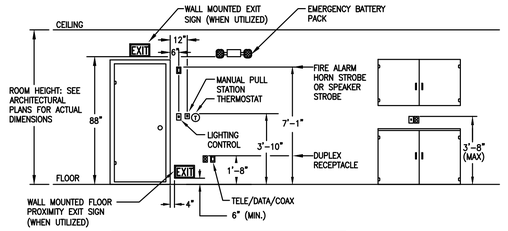
ROOF MOUNTED CONDENSING UNIT

SCALE: NONE

NOTE:
CONTRACTOR SHALL INSTALL FUSED DISCONNECT SWITCH TO MAINTAIN WORKING CLEARANCE PER NEC 110.26.

ELECTRICAL SYMBOLS AND ABBREVIATIONS

- DUPLEX RECEPTACLE
- SINGLE RECEPT. FOR EQUIP.
- D DUPLEX RECEPTACLE "D" INDICATES DEDICATED DEVICE ON INDIVIDUAL BRANCH CIRCUIT
- DOUBLE DUPLEX RECEPTACLE
- GFCI DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER, PERSONAL PROTECTION
- J JUNCTION BOX
- W TELEPHONE OUTLET WALL MOUNTED +54" A.F.F.
- COMBINATION DATA/TELEPHONE OUTLET W/1" CONDUIT UP TO ACCESSIBLE CEILING SPACE
- A4 LIGHTING FIXTURE & TYPE
- EMERGENCY LIGHTING FIXTURE & TYPE GENERATOR OR BATTERY POWERED
- 2 INDICATES SWITCHING ARRANGEMENT
- A4 INDICATES FIXTURE TYPE
- INDICATES CIRCUIT NUMBER
- E EXIT LIGHT GENERATOR OR BATTERY POWERED
- E WALL MOUNTED EXIT GENERATOR OR BATTERY POWERED
- 3#2 WIRE & COND. DESIGNATION
- LP-1 PANEL CIRCUIT DESIGNATION (CONCEALED)
- LP-1 PANEL CIRCUIT DESIGNATION (EXPOSED)
- CONCEALED BRANCH CIRCUITING
- EXPOSED BRANCH CIRCUITING
- Sp SPEAKER - CEILING MOUNTED
- MOTOR
- xxAF yyAT DISCONNECT SWITCH FUSED TYPE. "xxAF" INDICATES FRAME SIZE, "xxAT" INDICATES TRIP SIZE.
- (E) EXISTING TO REMAIN
- (R) REMOVE EXISTING
- (RE) RELOCATE EXISTING
- (ER) EXISTING RELOCATED
- WP WEATHERPROOF
- HORN/STROBE
- ADDRESSABLE AREA SMOKE DETECTOR
- S STROBE
- ES ELECTRICAL STRIKE
- PB PANIC BUTTON
- CAMERA



LAYOUT IS ONLY DIAGRAMMATIC. CONTRACTOR IS TO REFER TO FLOOR PLANS FOR QUANTITIES OF DEVICES. IT IS THE INTENT FOR THE CONTRACTOR TO INSTALL ALL DEVICES IN A NEAT AND ORDERLY FASHION. ALL DEVICES TO COMPLY WITH ADA AND/OR ANSI A117.1 REQUIREMENTS UNLESS NOTED OTHERWISE.

TYPICAL DEVICE ELEVATION DETAIL

SCALE: NONE

NOTE:

1. ALL GENERAL PURPOSE RECEPTACLES TELE/DATA/COAX OUTLETS ARE TO BE MOUNTED AT A MINIMUM OF 15" ABOVE FINISH FLOOR PER ADA TO THE BOTTOM OF THE DEVICE. 20" ABOVE FINISHED FLOOR IS TO BE STANDARD INSTALLATION HEIGHT TO THE TOP OF THE DEVICE BOX.
2. ALL GENERAL PURPOSE RECEPTACLES, LIGHTING SWITCHES AND LOW VOLTAGE OUTLETS ABOVE COUNTERTOPS ARE TO BE MOUNTED A MAXIMUM OF 44" ABOVE FINISHED FLOOR TO THE TOP OF THE DEVICE BOX. 8" ABOVE COUNTERTOP IS STANDARD.
3. LIGHTING CONTROLS AND FIRE ALARM PULL STATIONS ARE TO BE MOUNTED AT MAXIMUM OF 46" ABOVE FINISHED FLOOR. DEVIATIONS FROM THE STANDARD MOUNTING HEIGHTS ABOVE MAY BE INCORPORATED FOR EASE OF INSTALLATION DUE TO ARCHITECTURAL ITEMS SUCH AS TILES, HAND RAILS, ETC. DEVICES TO BE A MAXIMUM OF 48" ABOVE FINISHED FLOOR TO THE OPERATING HANDLE.
4. THERMOSTATS ARE INDICATED FOR SIDE REACH APPLICATIONS. WHEN LOCKABLE COVERS ARE PROVIDED, THERMOSTATS ARE TO BE MOUNTED AT 4'-6".

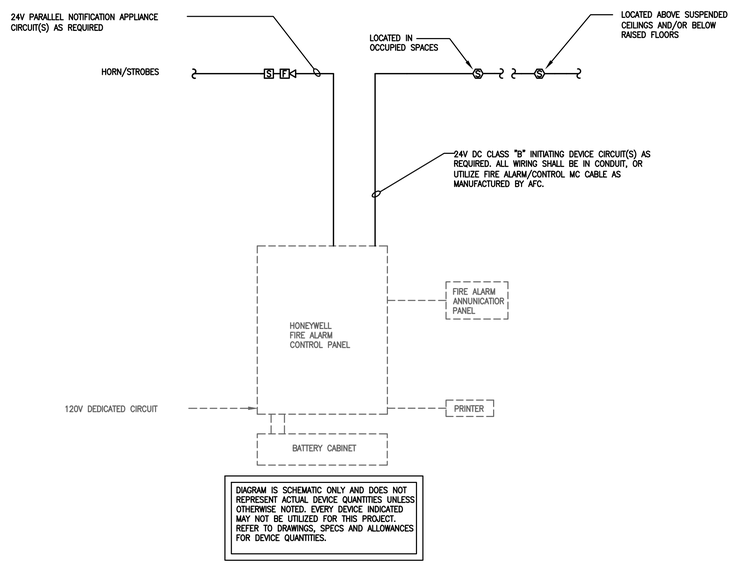
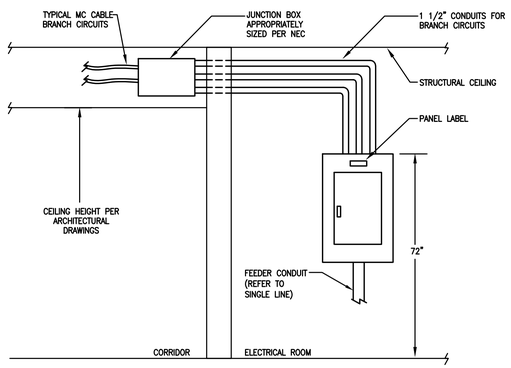


DIAGRAM IS SCHEMATIC ONLY AND DOES NOT REPRESENT ACTUAL DEVICE QUANTITIES UNLESS OTHERWISE NOTED. EVERY DEVICE INDICATED MAY NOT BE UTILIZED FOR THIS PROJECT. REFER TO DRAWINGS, SPECS AND ALLOWANCES FOR DEVICE QUANTITIES.

ADDRESSABLE FIRE ALARM SYSTEM SCHEMATIC WIRING DIAGRAM

SCALE: NONE



TYPICAL SURFACE MOUNTED LIGHTING/APPLIANCE PANELBOARD INSTALLATION DETAIL

SCALE: NONE

NOTE: ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR INCREASING WIRE SIZE FROM PANELBOARD TO JUNCTION BOX IN CORRIDOR.

McHUGH ENGINEERING ASSOCIATES INC.
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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW
Project No: 1732
Date: 07-23-18

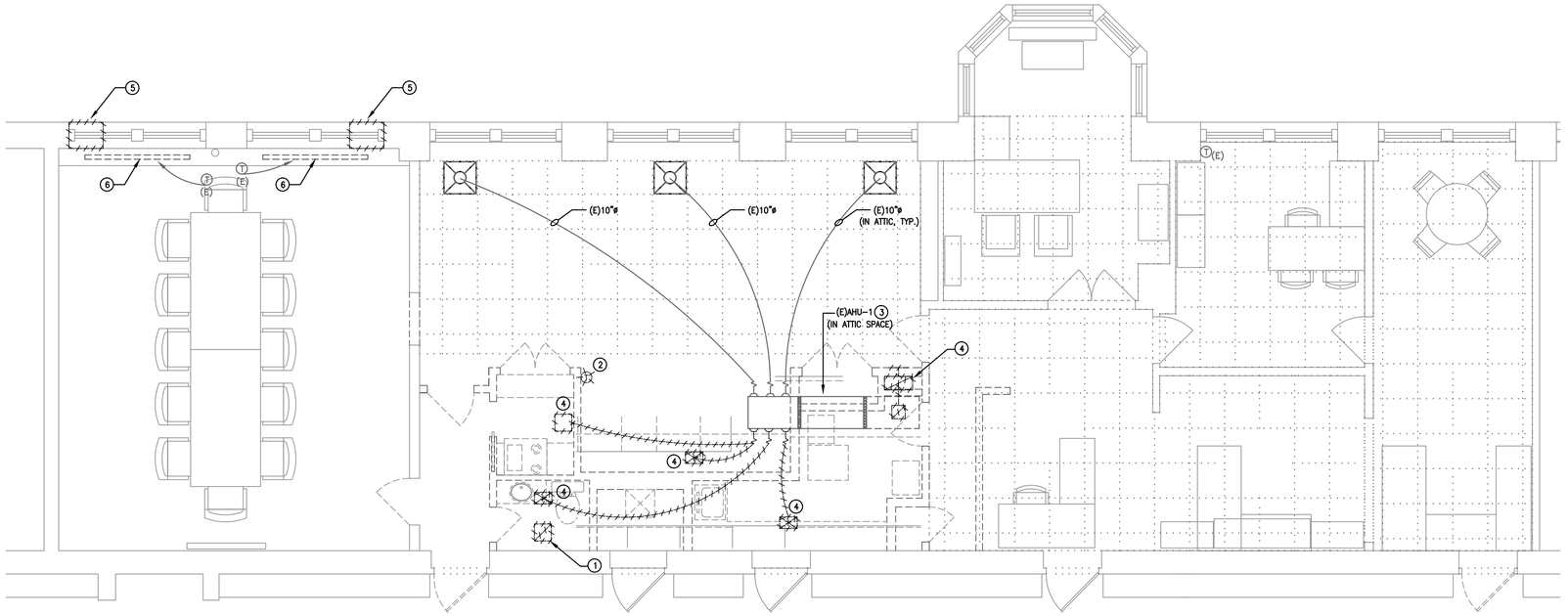
MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
	07/23/18	ISSUED FOR DCA

DETAILS & SCHEDULES - ELECTRICAL

E.201.0

ISSUED FOR DCA

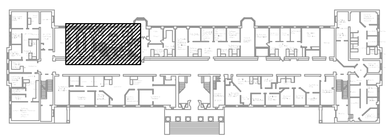


SECOND FLOOR DEMO PLAN - MECHANICAL

SCALE: 1/4"=1'-0"

MECHANICAL DEMOLITION NOTES:

1. CONTRACTOR TO REMOVE EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK.
2. CONTRACTOR TO REMOVE EXISTING THERMOSTAT AND ALL ASSOCIATED WIRING.
3. EXISTING AHU-1 TO REMAIN IN ATTIC.
4. CONTRACTOR TO REMOVE EXISTING AIR TERMINAL AND ASSOCIATED BRANCH DUCTWORK. CAP AND SEAL OFF MAIN DUCT WORK.
5. EXISTING WINDOW AIR CONDITIONING UNIT AND ASSOCIATED INFILL PANELS TO BE REMOVED.
6. EXISTING RADIATOR TO REMAIN.



KEY PLAN - SECOND FLOOR

SCALE: N.T.S.

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SECOND FLOOR DEMO PLAN - MECHANICAL

DH.101.0

ABBREVIATIONS

ABS	ABSOLUTE	EWH	ELECTRIC WATER HEATER	NL	NIGHT LIGHT
AC	ALTERNATING CURRENT	EWT	ENTERING WATER TEMPERATURE	N.O.	NORMALLY OPEN
AD	AREA DRAIN	EXP	EXPANSION	NO.	NUMBER
AFF	ABOVE FINISHED FLOOR	EXP JT	EXPANSION JOINT	NTS	NOT TO SCALE
AGF	AIR GAP FITTING	EXT	EXTERIOR	OA	OUTSIDE AIR
AHU	AIR HANDLING UNIT	°F	DEGREE FAHRENHEIT	OD	OUTSIDE DIAMETER
AMP	AMPERE	F	FIRE PROTECTION WATER SUPPLY	OD	OVERFLOW DRAIN
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FCO	FLOOR CLEANOUT	%	PERCENT
APP	APPROVED	FD	FLOOR DRAIN	PCR	PUMPED CONDENSATE RETURN
APPROX	APPROXIMATE	FDC	FIRE DEPARTMENT CONNECTION	PD	PUMPED DRAIN
AV	ACID VENT	FHC	FIRE HOSE CABINET	PDI	PLUMBING & DRAINAGE INSTITUTE
AVG	AVERAGE	FHV	FIRE HOSE VALVE	PG	PRESSURE GAUGE
B.O.P.	BOTTOM OF PIPE	FIN	FINISH	PH	PHASE-ELECTRICAL
BFP	BACKFLOW PREVENTION DEVICE	FF	FINISHED FLOOR	PIV	POST INDICATOR VALVE
BFV	BUTTERFLY VALVE	FLFD	FUSIBLE LINK FIRE DAMPER	PLBG	PLUMBING
BHP	BRAKE HORSEPOWER	FLR	FLOOR	PP	POLYPROPYLENE PIPE
BLDG	BUILDING	FO	FUEL OIL	PRV	PRESSURE REDUCING VALVE
BLV	BALANCING VALVE	FPM	FEET PER MINUTE	PSF	POUNDS PER SQUARE FOOT
BTU	BRITISH THERMAL UNIT	FPS	FEET PER SECOND	PSI	POUNDS PER SQUARE INCH
BV	BALL VALVE	FS	FLOW SWITCH	PVC	POLYVINYL CHLORIDE PIPE
BWV	BACKWATER VALVE	FT	FEET	QT	QUART
CA	COMPRESSED AIR	FU	FIXTURE UNIT	(R)	REMOVE EXISTING
C TO C	CENTER TO CENTER	FV	FLUSH VALVE	(RE)	RELOCATE EXISTING
CD	CONDENSATE DRAIN	G	NATURAL GAS	RA	RETURN AIR
CFH	CUBIC FEET PER HOUR	GA	GAUGE	RD	ROOF DRAIN
CFM	CUBIC FEET PER MINUTE	GAL	GALLONS	R&D	RESEARCH & DEVELOPMENT
CHWR	CHILLED WATER RETURN	GALV	GALVANIZED	REQ	REQUIRED
CHWS	CHILLED WATER SUPPLY	GPD	GALLONS PER DAY	RG	RETURN AIR GRILLE
CI	CAST IRON	GPH	GALLONS PER HOUR	RH	RELATIVE HUMIDITY
CISP	CAST IRON SOIL PIPE	GPM	GALLONS PER MINUTE	RM	ROOM
CISPI	CAST IRON SOIL PIPE INSTITUTE	GR	GRAINS OF MOISTURE	RPM	REVOLUTIONS PER MINUTE
CKT	CIRCUIT	GRD	GROUND	RR	RETURN AIR REGISTER
CLG	CEILING	GWH	GAS WATER HEATER	RWC	RAINWATER CONDUCTOR
CO	CLEANOUT	H	ENTHALPY	RZBP	REDUCED PRESSURE ZONE BFP
CO_2	CARBON DIOXIDE	HB	HOSE BIBB	SA	SHOCK ABSORBER
COL	COLUMN	HC	HANDICAP	SAN	SANITARY WASTE
COND	CONDENSATE	HD	HEAD	SCH	SCHEDULE
CONN	CONNECTION	HP	HORSEPOWER	SD	SUPPLY AIR DIFFUSER
CONT	CONTINUED	HPCR	HIGH PRESSURE CONDENSATE RETURN	SF	SQUARE FEET
CONTR	CONTRACTOR	HPSS	HIGH PRESSURE STEAM SUPPLY	SH	SHOWER
CP	CONTROL PANEL	HR	HOUR	SP	STANDPIPE
CR	CONDENSER RETURN	HS	HOSE STATION	SPD	SURGE PROTECTION DEVICE
CS	CONDENSER SUPPLY	HT	HEIGHT	SPEC	SPECIFICATION
CU FT	CUBIC FEET	HTR	HEATER	SPR	SPRINKLER
CU IN	CUBIC INCHE	HVAC	HEATING VENTILATION AIR CONDITIONING	SQ	SQUARE
CV	CHECK VALVE	HW	HOT WATER (DOMESTIC)	SR	SUPPLY AIR REGISTER
CW	COLD WATER (DOMESTIC)	HWR	HOT WATER RETURN (DOMESTIC)	SS	STAINLESS STEEL
DB	DECIBEL	HWR	HOT WATER RETURN	STD	STANDARD
DB	DRY BULB	HWS	HOT WATER SUPPLY	STL	STEEL
DCBP	DOUBLE CHECK BACKFLOW PREVENTER	HZ	FREQUENCY-ELECTRICAL	STR	STRAINER
DD	DECK DRAIN	ID	INSIDE DIAMETER	STRUC	STRUCTURAL
DEG	DEGREE	ID	INDIRECT DRAIN	SUCT	SUCTION
DFU	DRAINAGE FIXTURE UNIT	IE	INVERT ELEVATION	SV	SANITARY VENT
DI	DEIONIZED WATER	IW	INDIRECT WASTE	SWV	SANITARY WASTE VENT
DIA	DIAMETER	KW	KILOWATT	T&P	TEMP. & PRESSURE RELIEF VALVE
DIS	DISTILLED WATER	KWH	KILOWATT HOUR	TEMP	TEMPERATURE
DISCH	DISCHARGE	LAT	LEAVING AIR TEMPERATURE	THERM	THERMOMETER
DN	DOWN	LAV	LAVATORY	T.O.P.	TOP OF PIPE
DP	DEEP	LBS	POUNDS	TP	TRAP PRIMER
DS	DOWNSPOUT	LF	LINEAR FEET	TYP	TYPICAL
DSP	DRY STANDPIPE	LL	LOW LEVEL	UL	UNDERWRITER'S LABORATORY
DTR	DUAL TEMPERATURE RETURN	LP	LIQUID PROPANE	UTIL	UTILITY
DTS	DUAL TEMPERATURE SUPPLY	LPCR	LOW PRESSURE CONDENSATE RETURN	VAC	VACUUM
DTTV	DOUBLE THICK TURNING VANES	LPCS	LOW PRESSURE CONDENSATE SUPPLY	VAV	VARIABLE AIR VOLUME
DVC	DRY VACUUM CLEANING	LWT	LEAVING WATER TEMPERATURE	VB	VACUUM BREAKER
DWG	DRAWING	MAU	MAKE-UP AIR UNIT	VD	VOLUME DAMPER
DWR	DOMESTIC WATER RISER	MAX	MAXIMUM	VEL	VELOCITY
(E)	EXISTING	MECH	MECHANICAL	VERT	VERTICAL
EA	EXHAUST AIR	MFR	MANUFACTURER	VFD	VARIABLE FREQUENCY DRIVE
EAT	ENTERING AIR TEMPERATURE	MH	MANHOLE	VIF	VERIFY IN FIELD
EFF	EFFICIENCY	MIN	MINIMUM	VOL	VOLUME
EFL	EFFLUENT	MISC	MISCELLANEOUS	VPC	VIA PHOTOCELL
EL	ELEVATION	MOD	MOTOR OPERATED DAMPER	VTC	VIA TIME CLOCK
ELEC	ELECTRICAL	MPCR	MEDIUM PRESSURE CONDENSATE RETURN	VTR	VENT THROUGH ROOF
EMF	ELECTROMOTIVE FORCE	MPH	MILES PER HOUR	W/	WITH
EQ	EQUAL	MPSS	MEDIUM PRESSURE STEAM SUPPLY	WB	WET BULB TEMPERATURE
EQUIP	EQUIPMENT	(N)	NEW	WCO	WALL CLEANOUT
ES	EMERGENCY SHOWER	NA	NOT APPLICABLE	WH	WALL HYDRANT
ESP	EXTERNAL STATIC PRESSURE	NC	NOISE CRITERIA	WP	WEATHERPROOF
EVAP	EVAPORTATOR	N.C.	NORMALLY CLOSED	W/O	WITHOUT
EW	EMERGENCY EYEWASH	NIC	NOT IN CONTRACT	WSFU	WATER SUPPLY FIXTURE UNITS
EWC	ELECTRIC WATER COOLER			YR	YEAR

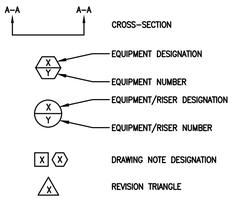
PROJECT GENERAL NOTES

1. TCNJ TO PAY FOR PERMITS. CONTRACTOR TO FILL OUT APPLICATIONS.
2. PROVIDE SHOP DRAWINGS OF ALL EQUIPMENT FOR REVIEW PRIOR TO ORDERING. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR AND PHYSICAL DIMENSIONS PRIOR TO SHOP DRAWING SUBMISSION.
3. THREE (3) PHASE STARTERS TO BE PROVIDED BY MECHANICAL CONTRACTOR. MAGNETIC ACROSS THE LINE, AUXILIARY CONTACTS. SINGLE PHASE STARTERS BY ELECTRICAL CONTRACTOR.
4. ALL WORK TO BE CONCEALED UNLESS OTHERWISE INDICATED.
5. PROPERLY INSTRUCT OWNERS PERSONNEL IN THE OPERATION AND MAINTENANCE OF ALL SYSTEMS AND EQUIPMENT. PROVIDE THREE INSTRUCTIONS AND MAINTENANCE MANUALS. SUBMIT MANUALS FOR REVIEW PRIOR TO OPERATING INSTRUCTION PERIOD.
6. COORDINATE LOCATIONS AND ROUGH-IN REQUIREMENTS WITH ALL TRADES PRIOR TO INSTALLATION.
7. IF THE CONTRACTOR ELECTS TO SUBMIT ALTERNATE EQUIPMENT, MANUFACTURERS, SYSTEMS, METHODS, OR MATERIALS, NOT SPECIALLY IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS, IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE WORK WITH OTHER TRADES AND PAY FOR ANY ADDITIONAL COSTS WITH THE SUBSTITUTION OR CHANGE.
8. PROVIDE RECORD AS-BUILT DRAWINGS AT COMPLETION OF WORK. SUBMIT TO OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
9. CONTRACTOR SHALL VISIT SITE PRIOR TO BID SUBMISSION AND BECOME AWARE OF ALL CONDITIONS WHICH MAY AFFECT THE WORK. SUBMISSION OF BID WILL BE DEEMED EVIDENCE OF HAVING COMPLETED WITH THE REQUIREMENTS. CONTRACTOR TO INCLUDE ALL ASSOCIATED COSTS (MATERIALS/LABOR) AS A RESULT OF THE SITE VISIT INSPECTION.
10. DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE TAKEN AS A WHOLE. IF A CONFLICT OR CONTRADICTION EXISTS BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY. THE ARCHITECT'S AND ENGINEER'S INTERPRETATION OF THE DOCUMENTS SHALL BE BINDING UPON THE CONTRACTOR.
11. ALL WORK SHALL BE COORDINATED WITH THE OWNER PRIOR TO SHUT DOWN AND OBTAIN APPROVAL. ALL REQUESTS SHALL BE WRITTEN AND SUBMITTED TO THE OWNER 24 TO 48 HOURS PRIOR TO REQUESTED DELETIONS.

MECHANICAL GENERAL NOTES

1. ALL WORK SHALL BE IN COMPLIANCE WITH THE INTERNATIONAL MECHANICAL CODE 2015 AND ASHRAE 90.1-2013. NOT ALL CODE REQUIREMENTS HAVE BEEN DESCRIBED IN THIS SPECIFICATION OR INDICATED ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE CODES AND INSTALL THE WORK IN ACCORDANCE WITH CODES.
2. SUBMIT SHOP DRAWINGS OF ALL SHEET METAL FOR REVIEW. DRAWINGS SHALL BE NOT LESS THAN 1/4" SCALE AND SHOW ALL STEEL, PIPING, CONDUIT, LIGHTING, SPRINKLER, EQUIPMENT AND ARCHITECTURAL FEATURES. DUCTWORK IS TO BE SHOWN DOUBLE LINE. SHOW DETAIL OF FIRE DAMPER. SHEET METAL SHOP DRAWING SHALL BE UTILIZED FOR CONTRACTORS COORDINATION DRAWINGS AND SUBMIT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. IF SHEET METAL SHOP DRAWINGS ARE NOT SUBMITTED OR IF THE CONTRACTOR INSTALLS THE DUCTWORK WITHOUT APPROVALS, THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITIES AND FIELD COORDINATION AND PAY ANY ASSOCIATED COSTS ASSOCIATED WITH DUCTWORK INSTALLATION DEFICIENCIES AND FIELD COORDINATION ISSUES.
3. ALL DUCTWORK TO COMPLY WITH NFPA PAMPHLET 90 A. ALL DUCTWORK SEAMS SHALL BE SEALED WITH DUCT SEALANT. ALL NEW DUCTWORK SECTIONS AND FITTINGS TO BE INSTALLED ON THE PROJECT SHALL BE COVERED AND SEALED FROM DUCT, DIRT, DEBRIS.
4. PROVIDE TEST, BALANCE, AND ADJUST REPORT (ALL AIR SYSTEMS) PRIOR TO DEMOLITION WORK AND AT THE COMPLETION OF THE WORK. BALANCE AIR QUANTITIES AND FLOW RATES TO VALUES ON THE DRAWINGS. SET DAMPER POSITIONS. ALLOW FOR ONE SHEAVE CHANGE PER EACH (50%) OF THE HVAC SYSTEMS. PROVIDE TOTAL AND STATIC PRESSURE READINGS, TRAVERSE AT FAN INLETS AND OUTLETS. TBA CONTRACTOR TO BE INDEPENDENT AND AABC/NEBB CERTIFIED.
5. PROVIDE CONDENSATE DRAIN TO ACCEPTABLE CODE APPROVED DISCHARGE POINT, 1-1/2" PVC. ALL CONDENSATE PIPING SHALL HAVE 1/2" FIBERGLASS INSULATION WITH VAPOR BARRIER, FURNISH AND INSTALL A CONDENSATE PUMP WITH DISCHARGE CHECK VALVE IF GRAVITY FLOW IS NOT OBTAINABLE. SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL AND COORDINATE ELECTRICAL WORK WITH THE ELECTRICAL WORK WITH THE ELECTRICAL CONTRACTOR.
6. FURNISH AND INSTALL FIRE DAMPERS IN RATED WALL/FLOOR/SHAFT ASSEMBLIES WHERE INDICATED ON THE ARCHITECTURAL PLANS. FIRE DAMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE UL LISTING FOR THE DAMPER AND AS DETAILED AS ON THE DRAWING. THE DAMPERS SHALL BE SET IN A STEEL SLEEVE AND PROVIDED WITH BREAKAWAY CONNECTIONS. DAMPERS SHALL BE 1-1/2 HR RATED. FURNISH AND INSTALL SMOKE DAMPERS IN ALL SMOKE RATED WALLS/PARTITIONS AS PER ARCHITECTURAL PLANS. COORDINATE LOCATIONS AND POWER REQUIREMENTS WITH ELECTRICAL/FIRE ALARM CONTRACTORS.
7. PROVIDE INSULATED PREFABRICATED ROOF CURB FOR ROOF MOUNTED EQUIPMENT, DUCTWORK, AND PIPING AS MANUFACTURED BY THE ROOF MOUNTED EQUIPMENT MANUFACTURER, PATE, OR APPROVED EQUAL. ALL DUCT/PIPING ROOF PENETRATIONS SHALL HAVE ROOF CURBS. ALL ROOF CURBS SHALL BE SECURED TO THE ROOF AND COORDINATED WITH THE OWNER'S ROOFING CONTRACTOR.
8. COORDINATE ELECTRICAL REQUIREMENTS WITH THE ELECTRICAL CONTRACTOR PRIOR TO PURCHASING EQUIPMENT. VERIFY VOLTAGES AND AMPERAGES FOR FEEDERS.
9. ALL FINISHES RELATED TO MECHANICAL EQUIPMENT, TERMINAL EQUIPMENT, AIR DEVICES, PERIMETER HEATERS, LOUVERS, ACCESS PANELS, EXPOSED WIREMOLD/RACEWAYS, ETC. SHALL BE COORDINATED AND SELECTED BY THE ARCHITECT/OWNER/ENGINEER PRIOR TO SHOP DRAWING SUBMISSION, ORDERING, AND INSTALLATION.
10. FINAL LOCATIONS OF ALL THERMOSTATS, ACCESS PANELS, SPACE SENSORS, DETECTION DEVICES, ETC. IN FINISHED SPACES SHALL BE COORDINATED AND APPROVED BY THE ARCHITECT/OWNER PRIOR TO ROUGH-IN AND INSTALLATION.
11. FURNISH AND INSTALL NEW MERV 8 FILTERS FOR ALL NEW AND EXISTING HVAC EQUIPMENT. CONTRACTOR TO PROVIDE (1) SPARE SET OF FILTERS (MERV 8) FOR EACH HVAC SYSTEM AND TURN OVER TO THE OWNER.
12. CONTRACTOR TO FURNISH AND INSTALL TEMPORARY FILTERS IN ALL THE EXISTING HVAC EQUIPMENT AFFECTED BY THE RENOVATION SCOPE OF WORK. CONTRACTOR TO COVER ALL EXISTING SUPPLY, RETURN, EXHAUST, AND RELIEF AIR OPENINGS DURING CONSTRUCTION OR DEMOLITION TO PREVENT DUST, DIRT, AND DEBRIS FROM ENTERING THE EXISTING DUCTWORK.
13. CONTRACTOR TO PROVIDE MANUFACTURER'S START-UP OF ALL HVAC EQUIPMENT/SYSTEM.
14. NO PVC PIPING IS PERMITTED IN RETURN AIR PLENUMS.
15. ALL EXTERIOR WALL/ROOF PENETRATIONS SHALL BE SEALED AIR/WATER TIGHT. ALL PIPING PASSING THROUGH WALL OR FLOOR PENETRATIONS SHALL HAVE SLEEVES. ALL WALL OR FLOOR RATED PENETRATIONS SHALL BE SEALED WITH FIRE RATED SEALANT FORMED IN PLACE BY 3M, HILTI, OR EQUIVALENT. ALL PENETRATIONS AND MODIFICATIONS TO MEET ROOF MANUFACTURERS REQUIREMENTS TO MAINTAIN EXISTING ROOF WARRANTY. REFER TO ARCHITECTURAL DRAWINGS.
16. FURNISH AND INSTALL ACCESS DOORS FOR ALL VALVES, DAMPERS, DEVICES, CONTROLLERS, ETC WHICH MAY NEED SERVICE AND ACCESS. ACCESS PANELS SHALL BE 16 GAUGE STEEL FRAME, 20 GAUGE HINGED DOOR, LOCKABLE AND FIRE RATED (WHEN IN RATED WALLS, FLOORS, "B" LABEL, 1 1/2 HRS). FINISH AS SELECTED BY THE ARCHITECT.
17. CONTRACTOR TO FURNISH AND INSTALL RADIANT CEILING DAMPERS IN ALL CEILING AIR DEVICES (DIFFUSERS, GRILLES, REGISTERS, ETC.) AND RECESSED CEILING EXHAUST FANS LOCATED IN THE FIRE RATED CEILING ASSEMBLY. REFER TO ATTACHED DETAILS.

DRAWING SYMBOLS LIST



DESIGN CONDITION NOTES

1. DESIGN CONDITIONS

SIZING, DESIGN AND PERFORMANCE OF THE HEATING AND COOLING SYSTEMS ARE BASED ON THE FOLLOWING DESIGN CHARACTERISTICS. MODIFICATION OF ANY OF THESE CHARACTERISTICS MAY ADVERSELY AFFECT THE HEATING AND COOLING PERFORMANCE AND LEVEL OF COMFORT TO THE BUILDING OCCUPANTS.

WEATHER STATION LOCATIONS – MCGUIRE ARB, NJ
HEATING DEGREE DAYS = 2721

OUTDOOR:
WINTER DRY BULB 11°F
SUMMER DRY BULB 89°F
SUMMER WET BULB 76°F

INDOOR:
WINTER DRY BULB 70°F
SUMMER DRY BULB 75°F

DRAWING LIST

TCNJ Green Hall 206

Issued for dDCA 07/23/18

H.001.0	COVER SHEET	- MECHANICAL	●
DH.101.0	FLOOR DEMO PLAN	- MECHANICAL	●
H.101.0	FLOOR PLAN	- MECHANICAL	●
H.201.0	DETAILS & SCHEDULES	- MECHANICAL	●
H.201.1	DETAILS & SCHEDULES	- MECHANICAL	●
P.001.0	COVER SHEET	- PLUMBING	●
DP.101.0	FLOOR DEMO PLAN	- PLUMBING	●
P.101.0	FLOOR PLAN	- PLUMBING	●
P.201.0	DETAILS & SCHEDULES	- PLUMBING	●
E.001.0	COVER SHEET	- ELECTRICAL	●
DE.101.0	FLOOR DEMO PLAN	- ELECTRICAL	●
E.101.0	FLOOR PLAN	- ELECTRICAL	●
E.101.1	FLOOR PLAN - SECURITY	- ELECTRICAL	●
E.201.0	DETAILS & SCHEDULES	- ELECTRICAL	●

ISSUED FOR DCA

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

Project No: 1732
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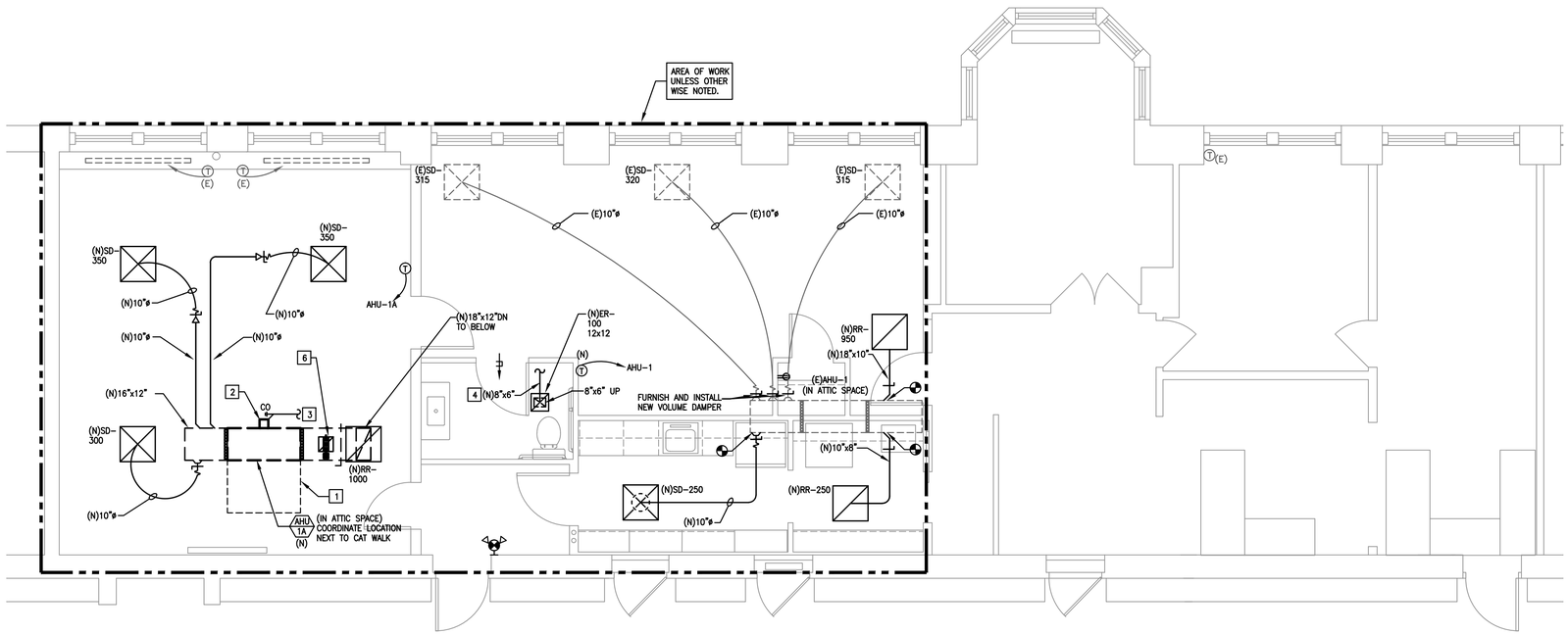
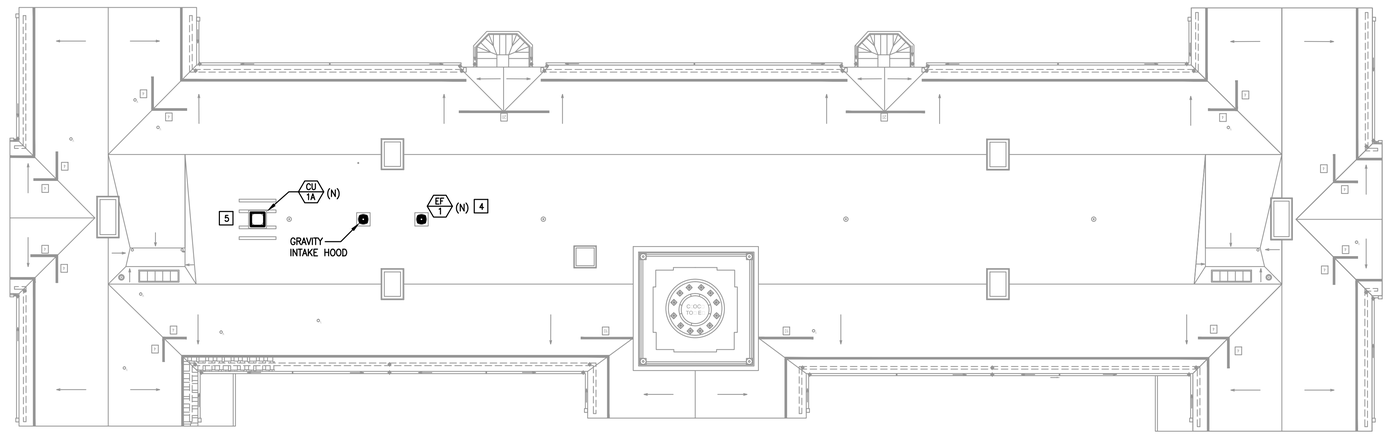
COVER SHEET

H.001.0



SECOND FLOOR PLAN – MECHANICAL

SCALE: 1/4"=1'-0"



ROOF PLAN – MECHANICAL

SCALE: 1/16"=1'-0"

MECHANICAL NOTES:

1. ALL DUCTWORK SIZES INDICATED ARE INSIDE DIMENSIONS UNLESS OTHERWISE NOTED.
2. DUCT SIZES INDICATED ON DRAWING ARE BASED AFTER THE LAST DIFFUSER AND/OR BRANCH TAKE-OFF.
3. CONTRACTOR TO PROVIDE A CLEAN OUT AT EVERY CHANGE IN DIRECTION OF A CONDENSATE LINE AND AT 25 FT. CENTERS.
4. RUN ALL CONDENSATE PIPING TO POINT OF DISCHARGE (REFER TO NOTE 3), PROVIDE REQUIRED AIR GAP AT DISCHARGE POINT, REFER TO PLANS & SPECIFICATIONS FOR SIZES AND REQUIREMENTS.
5. ALLOW FOR FUTURE CONNECTION OF NEW EQUIPMENT TO HONEYWELL BUILDING BAS SYSTEM.

CONSTRUCTION NOTES:

1 CONTRACTOR SHALL PROVIDE 36" CLEARANCE FOR UNIT ACCESS/SERVICE. COORDINATE IN FIELD WITH ARCHITECT AND TCNJ.

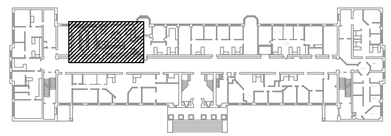
2 PROVIDE CONDENSATE PUMP.

3 CONNECT PUMPED CONDENSATE TO FIRST FLOOR JANITOR SLOP SINK. CONTRACTOR TO WALK SITE AND ACCESS LOCATIONS PRIOR TO BID SUBMISSION.

4 EXTEND EXHAUST DUCT UP IN ATTIC SPACE TO EF-1 LOCATED ON ROOF. REFER TO DETAIL.

5 LOCATE CONDENSING UNIT ON ROOF. CONDENSING UNIT SHALL BE 10'-0" FROM EDGE OF ROOF AND 4'-0" FROM ALL OTHER CONDENSING UNTS.

6 8"X8" OUTSIDE AIR DUCT W/ VOLUME DAMPED AND MOTORIZED DAMPER TO EXTEND UP TO ROOF MOUNTED INTAKE AIR HOOD. REFER TO DETAIL.



KEY PLAN – SECOND FLOOR

SCALE: N.T.S.

ISSUED FOR DCA

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

Project No: 1732
Date: 07-23-18

MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
	07/23/18	ISSUED FOR DCA

FLOOR PLAN - MECHANICAL

H.101.0

AIR HANDLING UNIT SCHEDULE (AHU)

TAG	Serves	Configuration	Nom	CFM	OA	(in) External Static	Fan HP	(lbs) Weight	(in) Height	Cooling						Electrical (AHU)						Electrical (CU)				Filters		Basis of Design	Model	Comments
										Total BTU	Sens BTU	Entering Air		Leaving Air		Volts	Phase	MCA	MOCP	SEER	EER	Volts	Phase	MCA	MOCP	Min MERV	Type			
												dB	wB	dB	wB															
AHU-1A	Conference Room	Split System	2.5	1000	110	0.5	1/3	132	50	28,000	21,400	77.2	64.2	55.4	53.6	208	1	4	15	14.5	12.2	208	1	12	20	8	Throwaway	Trane	Indoor: GAM5B0B30 Outdoor: 4TTR4	1,2,3,4,5,6,7,8,9,10

Comments

1 Single Point Power Connection
2 Disconnect Switch
3 Vibration Isolation Hangers
4 Equivalent By Trane, York, Lennox, or equivalent
5 Roof Mounting Curb For Condensing Unit
6 Provide temperature sensor in space. Integrate with existing Honeywell BAS. Update front end graphics.
7 Merv 8, 30% EFF Filters 2" Throwaway
8 On Split System And Fan Coil Units Contractor Shall Provide A UL Listed Condensate Detection Device On The Units Primary Drain Pan Wall. Interlock Sensor With Air Handler.
9 Condensate Piping-Furnish and Install Condensate Pump, 120V/1PH. 6 FT. Power Cord. Impact Resistant Integral Check Valve. Stainless Steel Motor/Pump Shaft. 25GPH. 15 FTHD. 1/30 HP. Little Giant "VCMA" Series Or Equivalent. Pump shall be hardwired for above ceiling applications.
10 Contractor to provide refrigerant piping

Note:

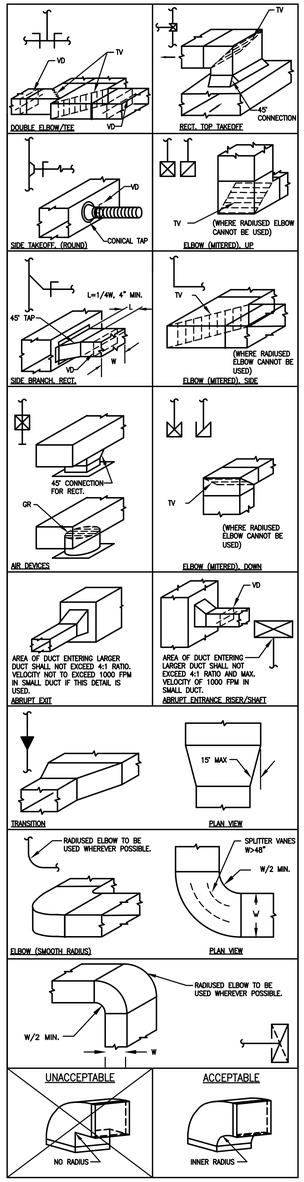
Equipment Selling Agent/Distributor Shall Have A Service Agency That Is Part Of The Company And Covers Start-Up And Warranty Labor.
Leaving Air Temperature Represents Temperature Leaving The Air Handler.
All Air Handlers 15,000 CFM And Greater Require Duct Smoke Dampers.

AIR DEVICE SCHEDULE

TAG	CFM Range		TYPE	# of Slots	Slot Spacing	Neck Diameter	CONNECTION SIZE	DEVICE SIZE	MAX DEPTH FROM CEILING	Total Static Pressure	NC	VEL FPM	DAMPER	MATERIAL	FINISH	MANUFACTURER	SERIES
	Min CFM	Max CFM						L x W									
SD	176	280	Square Diffuser Plaque Style	NA	NA	8"	10"	24" x 24"	1/4"	0.07	17	800	YES	STEEL	WHITE	TITUS / PRICE	OMNI / SPD
SD	281	380	Square Diffuser Plaque Style	NA	NA	10"	12"	24" x 24"	1/4"	0.08	15	700	YES	STEEL	WHITE	TITUS / PRICE	OMNI / SPD
EXH/RET REG/ GRILLE	0	100	EXH/RET REG/ GRILLE	NA	NA	-	8"x6"	10"x5"	1/4"	0.10	25	400	YES	STEEL	WHITE	TITUS / PRICE	350 / 350
EXH/RET REG/ GRILLE	101	185	EXH/RET REG/ GRILLE	NA	NA	-	10"x8"	14"x6"	1/4"	0.10	27	400	YES	STEEL	WHITE	TITUS / PRICE	350 / 350
EXH/RET REG/ GRILLE	186	270	EXH/RET REG/ GRILLE	NA	NA	-	12"x12"	18"x8"	1/4"	0.06	24	300	YES	STEEL	WHITE	TITUS / PRICE	350 / 350
EXH/RET REG/ GRILLE	401	1000	EXH/RET REG/ GRILLE	NA	NA	-	18"x18"	36"x10"	1/4"	0.06	27	300	YES	STEEL	WHITE	TITUS / PRICE	350 / 350

COMMENTS

1. USE SCHEDULE SIZE UNLESS OTHERWISE NOTED.
2. USE ALTERNATE SIZE WHEN APPROVED BY ENGINEER.
3. PROVIDE VOLUME DAMPER AT TRUNK DUCT CONNECTION.
4. ALL SUPPLY REGISTERS TO BE DOUBLE DEFLECTION TYPE.
5. ALUMINUM IN MOIST AREAS, TOILET ROOMS.
6. FOR LAY-IN CEILING PROVIDE A 2'x2' PAN FOR A 12"x12" FACE SIZE DIFFUSERS.
7. BRANCH DUCT DIAMETER SHALL BE REDUCED AT COLLAR CONNECTIONS TO DIFFUSER.



DUCTWORK DETAIL

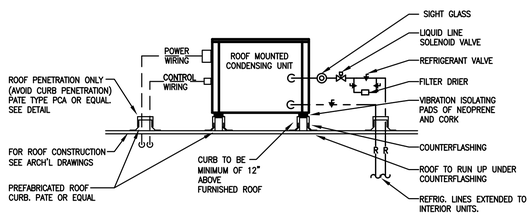
SCALE: NONE

ABBREVIATIONS:

GR	EQUALIZING GRID
TV	TURNING VANES
VD	VOLUME DAMPER
AT	AIR TURN OR EXTRACTOR

MECHANICAL SYMBOLS AND ABBREVIATIONS

- NEW DUCTWORK
- EXISTING DUCTWORK
- DUCTWORK TO BE DEMOLISHED
- C/D — A/C UNIT DRAIN
- SUPPLY DIFFUSER
- SUPPLY DIFFUSER W/ROUND DUCT CONNECTION
- RETURN REGISTER/GRILLE EXHAUST REGISTER/GRILLE
- SPIN IN TAP W/DAMPER
- SPIN IN TAP W/DAMPER BOTTOM TAKEOFF
- SPIN IN TAP W/DAMPER TOP TAKEOFF
- TAKEOFF W/DAMPER
- FLEXIBLE CONNECTION
- TRANSITION FROM RIGID DUCT TO ROUND FLEXIBLE DUCT
- DUCT REDUCER
- THERMOSTAT HEIGHT 54" STANDARD HEIGHT 48" HANDICAP
- , VD VOLUME DAMPER
- 1" DOOR UNDERCUT
- CONTINUATION/BREAK
- INLINE PUMP
- THERMOMETER
- BACKDRAFT DAMPER
- PIPE DOWN
- PIPE UP
- MOTOR OPERATED DAMPER
- DTTV DOUBLE THICK. TURN VANES
- EA EXHAUST AIR
- OA OUTSIDE AIR
- RA RETURN AIR
- RG RETURN AIR GRILLE
- RR RETURN AIR REGISTER
- SA SUPPLY AIR
- SD SUPPLY AIR DIFFUSER
- SR SUPPLY AIR REGISTER
- (N) NEW
- (E) EXISTING
- NEW CONNECTION TO EXISTING

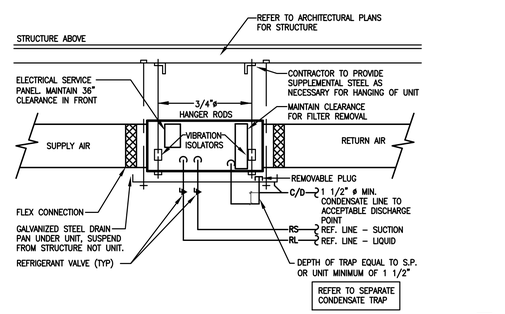


ROOF MOUNTED CONDENSING UNIT

SCALE: NONE

NOTE:

1. ALL ROOF CURBS SHALL BE SECURED TO THE ROOF IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND COMPLY WITH IBC WIND LOADING REQUIREMENTS. COORDINATE WITH STRUCTURAL ENGINEER.

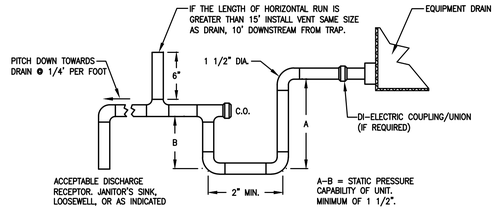


DETAIL OF HORIZONTAL AIR HANDLING UNIT (AHU X)

SCALE: NONE

NOTES:

1. UL LISTED CONDENSATE DETECTION DEVICE ON PRIMARY DRAIN PAN WITH SENSOR INTERLOCKED W/AIR HANDLER. SHUT UNIT DOWN IF WATER IS DETECTED AND ALARM BAS.



CONDENSATE TRAP

SCALE: NONE

EXHAUST FAN SCHEDULE (EF)

Tag	Serves	Configuration	Primary CFM	Secondary CFM	External Static (in.)	Break HP	Fan Watts	RPM	Sones	Volts	Phase	Height (in.)	Control	Basis of Design	Comments
EF-1	Rest Room	Roof Exhaust	100	-	0.25	0.01	-	1300	2.7	120	1	12.125	Integrate with Lights	Greenheck 'G'	1,2,4,5,6,7,8

MOTOR STARTERS:

Mechanical contractor shall provide for polyphase and single phase above 1/2 hp.

Electrical contractor shall provide for fractional horsepower up to 1/2 hp.

Electrical contractor shall install all starters except for those integral to the equiptment.

Comments

1 12" High roof curb above finished roof
2 Motor operated backdraft damper
3 Manual motor starter
4 Gravity backdraft damper
5 Equivalent manufacturer by Carnes, Cook, Acme, Penn, Greenheck
6 Birdscreen
7 Snowscreen
8 Flexible connection

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GREEN HALL
ALTERATIONS TO SUITE 206

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MICHAEL WITKOWSK, PE
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DETAILS & SCHEDULES - MECH/PLUMB

H.201.0

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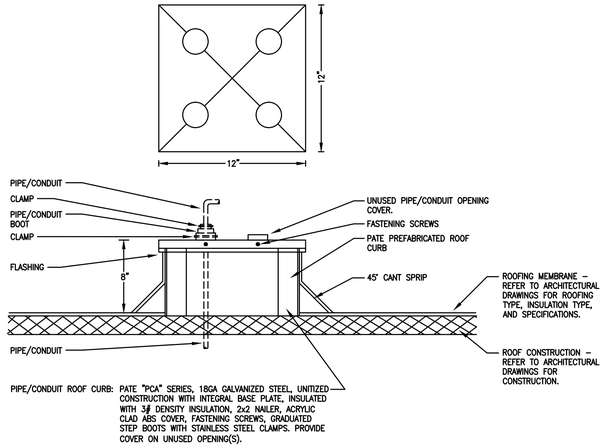
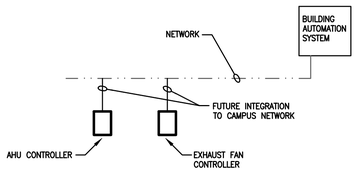


PIPE/CONDUIT ROOF CURB DETAIL

SCALE: NONE

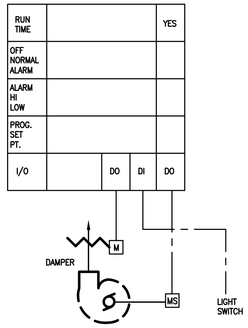
NOTE:

1. REFER TO FLOOR PLANS FOR FINAL LOCATIONS.
2. CONTRACTOR TO COORDINATE QUANTITIES AND SIZES OF PIPES/CONDUITS PRIOR TO ORDERING AND SUBMITTING SHOP DRAWINGS.



NOTES:

(N) EQUIPMENT SHALL HAVE A HONEYWELL CONTROLLER AND BE CAPABLE FOR FUTURE INTEGRATION TO THE CAMPUS NETWORK. THE EQUIPMENT SHALL BE CAPABLE OF STAND ALONE OPERATION UNTIL FUTURE INTEGRATION.

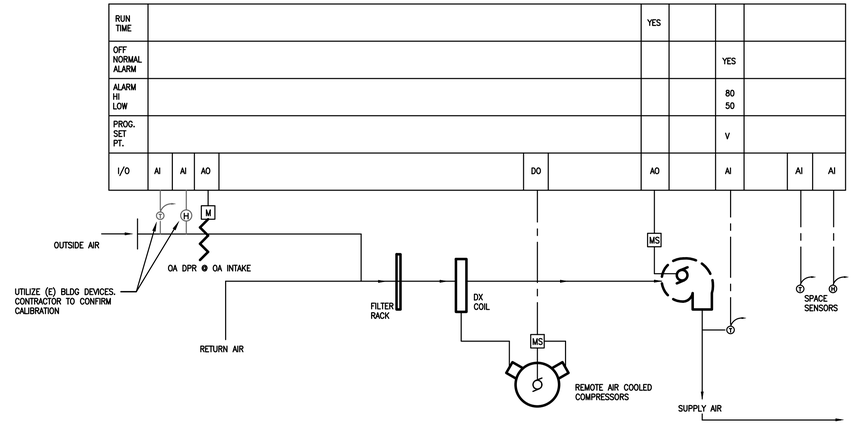


EXHAUST FANS

SCALE: NONE

ATC SYMBOLS AND ABBREVIATIONS

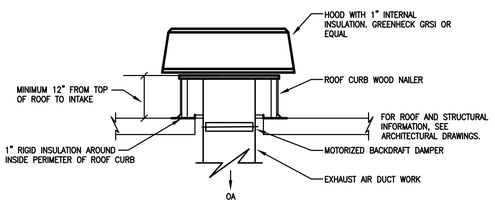
AI	ANALOG INPUT
AO	ANALOG OUTPUT
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
(T)	THERMOSTAT
FS	FLOW SWITCH
DP	DIFFERENTIAL PRESSURE
MS	MOTOR STARTER
M	MOTOR
M	MOTOR OPERATED DAMPER
	MOTOR
(H)	HUMIDISTAT
(F)	FREEZESTAT
(S)	SMOKE DETECTOR
V	VARIABLE



INDOOR AIR HANDLING UNITS

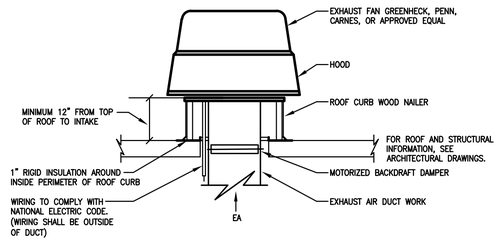
SCALE: NONE AHU 1A

SEQUENCE: SEE SPECIFICATIONS



INTAKE AIR HOOD DETAIL

SCALE: NONE



ROOF EXHAUST DETAIL

SCALE: NONE

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GREEN HALL

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NJ License #GE 45136

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DETAILS & SCHEDULES - MECHANICAL

H.201.1

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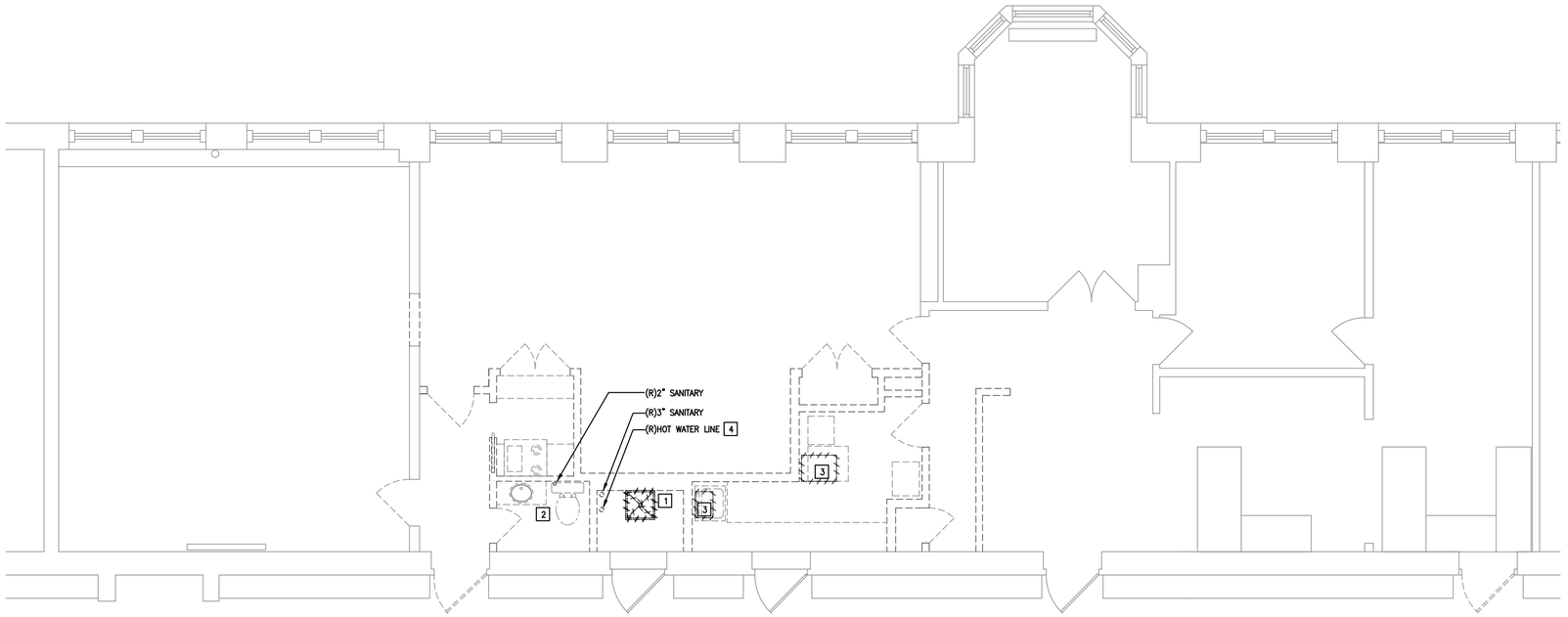
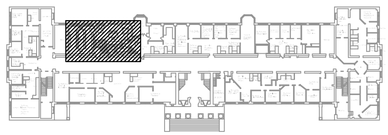


SECOND FLOOR DEMO PLAN - PLUMBING

SCALE: 1/4"=1'-0"

PLUMBING DEMOLITION NOTES:

1. REMOVE SLOP SINK AND ALL ASSOCIATED PLUMBING AT FIRST AND SECOND FLOOR BACK TO RISER AND CAP.
2. REMOVE TOILET AND SINK AND ALL ASSOCIATED PLUMBING AT FIRST AND SECOND FLOOR BACK TO RISER AND CAP.
3. REMOVE KITCHEN SINK AND DISHWASHER AND ALL ASSOCIATED PLUMBING AT FIRST AND SECOND FLOOR BACK TO RISER AND CAP.
4. REMOVE HOT WATER LINE BACK TO FLOOR BELOW TO BE RELOCATED.



KEY PLAN - SECOND FLOOR

SCALE: N.T.S.

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SECOND FLOOR DEMO PLAN - PLUMBING

DP.101.0

ABBREVIATIONS

ABS	ABSOLUTE	EWH	ELECTRIC WATER HEATER	NL	NIGHT LIGHT
AC	ALTERNATING CURRENT	EWT	ENTERING WATER TEMPERATURE	N.O.	NORMALLY OPEN
AD	AREA DRAIN	EXP	EXPANSION	NO.	NUMBER
AFF	ABOVE FINISHED FLOOR	EXP JT	EXPANSION JOINT	NTS	NOT TO SCALE
AGF	AIR GAP FITTING	EXT	EXTERIOR	OA	OUTSIDE AIR
AHU	AIR HANDLING UNIT	°F	DEGREE FAHRENHEIT	OD	OUTSIDE DIAMETER
AMP	AMPERE	F	FIRE PROTECTION WATER SUPPLY	OD	OVERFLOW DRAIN
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	FCO	FLOOR CLEANOUT	%	PERCENT
APP	APPROVED	FD	FLOOR DRAIN	PCR	PUMPED CONDENSATE RETURN
APPROX	APPROXIMATE	FDC	FIRE DEPARTMENT CONNECTION	PD	PUMPED DRAIN
AV	ACID VENT	FHC	FIRE HOSE CABINET	PDI	PLUMBING & DRAINAGE INSTITUTE
AVG	AVERAGE	FHV	FIRE HOSE VALVE	PG	PRESSURE GAUGE
B.O.P.	BOTTOM OF PIPE	FIN	FINISH	PH	PHASE-ELECTRICAL
BFP	BACKFLOW PREVENTION DEVICE	FF	FINISHED FLOOR	PIV	POST INDICATOR VALVE
BFV	BUTTERFLY VALVE	FLFD	FUSIBLE LINK FIRE DAMPER	PLBG	PLUMBING
BHP	BRAKE HORSEPOWER	FLR	FLOOR	PP	POLYPROPYLENE PIPE
BLDG	BUILDING	FO	FUEL OIL	PRV	PRESSURE REDUCING VALVE
BLV	BALANCING VALVE	FPM	FEET PER MINUTE	PSF	POUNDS PER SQUARE FOOT
BTU	BRITISH THERMAL UNIT	FPS	FEET PER SECOND	PSI	POUNDS PER SQUARE INCH
BV	BALL VALVE	FS	FLOW SWITCH	PVC	POLYVINYL CHLORIDE PIPE
BWV	BACKWATER VALVE	FT	FEET	QT	QUART
CA	COMPRESSED AIR	FU	FIXTURE UNIT	(R)	REMOVE EXISTING
C TO C	CENTER TO CENTER	FV	FLUSH VALVE	(RE)	RELOCATE EXISTING
CD	CONDENSATE DRAIN	G	NATURAL GAS	RA	RETURN AIR
CFH	CUBIC FEET PER HOUR	GA	GAUGE	RD	ROOF DRAIN
CFM	CUBIC FEET PER MINUTE	GAL	GALLONS	R&D	RESEARCH & DEVELOPMENT
CHWR	CHILLED WATER RETURN	GALV	GALVANIZED	REQ	REQUIRED
CHWS	CHILLED WATER SUPPLY	GPD	GALLONS PER DAY	RG	RETURN AIR GRILLE
CI	CAST IRON	GPH	GALLONS PER HOUR	RH	RELATIVE HUMIDITY
CISP	CAST IRON SOIL PIPE	GPM	GALLONS PER MINUTE	RM	ROOM
CISPI	CAST IRON SOIL PIPE INSTITUTE	GR	GRAINS OF MOISTURE	RPM	REVOLUTIONS PER MINUTE
CKT	CIRCUIT	GRD	GROUND	RR	RETURN AIR REGISTER
CLG	CEILING	GWH	GAS WATER HEATER	RWC	RAINWATER CONDUCTOR
CO	CLEANOUT	H	ENTHALPY	RZBP	REDUCED PRESSURE ZONE BFP
CO_2	CARBON DIOXIDE	HB	HOSE BIBB	SA	SHOCK ABSORBER
COL	COLUMN	HC	HANDICAP	SAN	SANITARY WASTE
COND	CONDENSATE	HD	HEAD	SCH	SCHEDULE
CONN	CONNECTION	HP	HORSEPOWER	SD	SUPPLY AIR DIFFUSER
CONT	CONTINUED	HPCR	HIGH PRESSURE CONDENSATE RETURN	SF	SQUARE FEET
CONTR	CONTRACTOR	HPSS	HIGH PRESSURE STEAM SUPPLY	SH	SHOWER
CP	CONTROL PANEL	HR	HOUR	SP	STANDPIPE
CR	CONDENSER RETURN	HS	HOSE STATION	SPD	SURGE PROTECTION DEVICE
CS	CONDENSER SUPPLY	HT	HEIGHT	SPEC	SPECIFICATION
CU FT	CUBIC FEET	HTR	HEATER	SPR	SPRINKLER
CU IN	CUBIC INCHE	HVAC	HEATING VENTILATION AIR CONDITIONING	SQ	SQUARE
CV	CHECK VALVE	HW	HOT WATER (DOMESTIC)	SR	SUPPLY AIR REGISTER
CW	COLD WATER (DOMESTIC)	HWR	HOT WATER RETURN (DOMESTIC)	SS	STAINLESS STEEL
DB	DECIBEL	HWR	HOT WATER RETURN	STD	STANDARD
DB	DRY BULB	HWS	HOT WATER SUPPLY	STL	STEEL
DCBP	DOUBLE CHECK BACKFLOW PREVENTER	HZ	FREQUENCY-ELECTRICAL	STR	STRAINER
DD	DECK DRAIN	ID	INSIDE DIAMETER	STRUC	STRUCTURAL
DEG	DEGREE	ID	INDIRECT DRAIN	SUCT	SUCTION
DFU	DRAINAGE FIXTURE UNIT	IE	INVERT ELEVATION	SV	SANITARY VENT
DI	DEIONIZED WATER	IW	INDIRECT WASTE	SWV	SANITARY WASTE VENT
DIA	DIAMETER	KW	KILOWATT	T&P	TEMP. & PRESSURE RELIEF VALVE
DIS	DISTILLED WATER	KWH	KILOWATT HOUR	TEMP	TEMPERATURE
DISCH	DISCHARGE	LAT	LEAVING AIR TEMPERATURE	THERM	THERMOMETER
DN	DOWN	LAV	LAVATORY	T.O.P.	TOP OF PIPE
DP	DEEP	LBS	POUNDS	TP	TRAP PRIMER
DS	DOWNSPOUT	LF	LINEAR FEET	TYP	TYPICAL
DSP	DRY STANDPIPE	LL	LOW LEVEL	UL	UNDERWRITER'S LABORATORY
DTR	DUAL TEMPERATURE RETURN	LP	LIQUID PROPANE	UTIL	UTILITY
DTS	DUAL TEMPERATURE SUPPLY	LPCR	LOW PRESSURE CONDENSATE RETURN	VAC	VACUUM
DTTV	DOUBLE THICK TURNING VANES	LPCS	LOW PRESSURE CONDENSATE SUPPLY	VAV	VARIABLE AIR VOLUME
DVC	DRY VACUUM CLEANING	LWT	LEAVING WATER TEMPERATURE	VB	VACUUM BREAKER
DWG	DRAWING	MAU	MAKE-UP AIR UNIT	VD	VOLUME DAMPER
DWR	DOMESTIC WATER RISER	MAX	MAXIMUM	VEL	VELOCITY
(E)	EXISTING	MECH	MECHANICAL	VERT	VERTICAL
EA	EXHAUST AIR	MFR	MANUFACTURER	VFD	VARIABLE FREQUENCY DRIVE
EAT	ENTERING AIR TEMPERATURE	MH	MANHOLE	VIF	VERIFY IN FIELD
EFF	EFFICIENCY	MIN	MINIMUM	VOL	VOLUME
EFL	EFFLUENT	MISC	MISCELLANEOUS	VPC	VIA PHOTOCELL
EL	ELEVATION	MOD	MOTOR OPERATED DAMPER	VTC	VIA TIME CLOCK
ELEC	ELECTRICAL	MPCR	MEDIUM PRESSURE CONDENSATE RETURN	VTR	VENT THROUGH ROOF
EMF	ELECTROMOTIVE FORCE	MPH	MILES PER HOUR	W/	WITH
EQ	EQUAL	MPSS	MEDIUM PRESSURE STEAM SUPPLY	WB	WET BULB TEMPERATURE
EQUIP	EQUIPMENT	(N)	NEW	WCO	WALL CLEANOUT
ES	EMERGENCY SHOWER	NA	NOT APPLICABLE	WH	WALL HYDRANT
ESP	EXTERNAL STATIC PRESSURE	NC	NOISE CRITERIA	WP	WEATHERPROOF
EVAP	EVAPORTATOR	N.C.	NORMALLY CLOSED	W/O	WITHOUT
EW	EMERGENCY EYEWASH	NIC	NOT IN CONTRACT	WSFU	WATER SUPPLY FIXTURE UNITS
EWC	ELECTRIC WATER COOLER			YR	YEAR

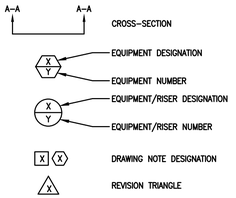
PROJECT GENERAL NOTES

1. TCNJ TO PAY FOR PERMITS. CONTRACTOR TO FILL OUT APPLICATIONS.
2. PROVIDE SHOP DRAWINGS OF ALL EQUIPMENT FOR REVIEW PRIOR TO ORDERING. COORDINATE ALL ELECTRICAL REQUIREMENTS WITH ELECTRICAL CONTRACTOR AND PHYSICAL DIMENSIONS PRIOR TO SHOP DRAWING SUBMISSION.
3. THREE (3) PHASE STARTERS TO BE PROVIDED BY MECHANICAL CONTRACTOR. MAGNETIC ACROSS THE LINE, AUXILIARY CONTACTS. SINGLE PHASE STARTERS BY ELECTRICAL CONTRACTOR.
4. ALL WORK TO BE CONCEALED UNLESS OTHERWISE INDICATED.
5. PROPERLY INSTRUCT OWNERS PERSONNEL IN THE OPERATION AND MAINTENANCE OF ALL SYSTEMS AND EQUIPMENT. PROVIDE THREE INSTRUCTIONS AND MAINTENANCE MANUALS. SUBMIT MANUALS FOR REVIEW PRIOR TO OPERATING INSTRUCTION PERIOD.
6. COORDINATE LOCATIONS AND ROUGH-IN REQUIREMENTS WITH ALL TRADES PRIOR TO INSTALLATION.
7. IF THE CONTRACTOR ELECTS TO SUBMIT ALTERNATE EQUIPMENT, MANUFACTURERS, SYSTEMS, METHODS, OR MATERIALS, NOT SPECIALLY IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS, IT IS THE CONTRACTORS RESPONSIBILITY TO COORDINATE THE WORK WITH OTHER TRADES AND PAY FOR ANY ADDITIONAL COSTS WITH THE SUBSTITUTION OR CHANGE.
8. PROVIDE RECORD AS-BUILT DRAWINGS AT COMPLETION OF WORK. SUBMIT TO OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
9. CONTRACTOR SHALL VISIT SITE PRIOR TO BID SUBMISSION AND BECOME AWARE OF ALL CONDITIONS WHICH MAY AFFECT THE WORK. SUBMISSION OF BID WILL BE DEEMED EVIDENCE OF HAVING COMPLETED WITH THE REQUIREMENTS. CONTRACTOR TO INCLUDE ALL ASSOCIATED COSTS (MATERIALS/LABOR) AS A RESULT OF THE SITE VISIT INSPECTION.
10. DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE TAKEN AS A WHOLE. IF A CONFLICT OR CONTRADICTION EXISTS BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY. THE ARCHITECT'S AND ENGINEER'S INTERPRETATION OF THE DOCUMENTS SHALL BE BINDING UPON THE CONTRACTOR.
11. ALL WORK SHALL BE COORDINATED WITH THE OWNER PRIOR TO SHUT DOWN AND OBTAIN APPROVAL. ALL REQUESTS SHALL BE WRITTEN AND SUBMITTED TO THE OWNER 24 TO 48 HOURS PRIOR TO REQUESTED DELETIONS.

PLUMBING GENERAL NOTES

1. ALL WORK TO BE IN CONFORMANCE WITH NATIONAL STANDARD PLUMBING CODE 2015, OR LOCAL CODE HAVING JURISDICTION. NOT ALL CODE REQUIREMENTS HAVE BEEN DESCRIBED IN THIS SPECIFICATION OR INDICATED ON THE DRAWINGS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE CODES AND INSTALL THE WORK IN ACCORDANCE WITH CODES.
2. ALL FINISHES RELATED TO PLUMBING EQUIPMENT, TERMINAL EQUIPMENT, AIR DEVICES, PERIMETER HEATERS, LOUVERS, ACCESS PANELS, EXPOSED WIREMOLD/RACEWAYS, ETC. SHALL BE COORDINATED AND SELECTED BY THE ARCHITECT/OWNER/ENGINEER PRIOR TO SHOP DRAWING SUBMISSION, ORDERING, AND INSTALLATION.
3. FINAL LOCATIONS OF ALL ACCESS PANELS, ETC. IN FINISHED SPACES SHALL BE COORDINATED AND APPROVED BY THE ARCHITECT/OWNER PRIOR TO ROUGH-IN AND INSTALLATION.
4. CONTRACTOR TO PROVIDE MANUFACTURER'S START-UP OF ALL EQUIPMENT/SYSTEM.
5. NO PVC PIPING IS PERMITTED IN RETURN AIR PLENUMS.
6. ALL PIPING PASSING THROUGH WALL OR FLOOR PENETRATIONS SHALL HAVE SLEEVES. ALL WALL OR FLOOR RATED PENETRATIONS SHALL BE SEALED WITH FIRE RATED SEALANT FORMED IN PLACE BY 3M, HILTI, OR EQUIVALENT.
7. FURNISH AND INSTALL ACCESS DOORS FOR ALL VALVES, DAMPERS, DEVICES, CONTROLLERS, ETC WHICH MAY NEED SERVICE AND ACCESS. ACCESS PANELS SHALL BE 16 GAUGE STEEL FRAME, 20 GAUGE HINGED DOOR, LOCKABLE AND FIRE RATED (WHEN IN RATED WALLS, FLOORS, "B" LABEL, 1 1/2 HRS). FINISH AS SELECTED BY THE ARCHITECT.
8. ALL TRIM, TRAPS, ESCUTCHEON PLATES, SEAT HINGES AND ANY MISCELLANEOUS PARTS OF FIXTURES SHALL BE CHROME PLATED BRASS.
9. VENTS THROUGH ROOF SHALL BE FLASHED WITH "SURE SEAL" PRE-MOLDED OR SIMILAR TYPE BOOT AS RECOMMENDED BY THE ROOFING CONTRACTOR.

DRAWING SYMBOLS LIST



DRAWING LIST

TCNJ Green Hall 206

Issued for dDCA 07/23/18

H.001.0	COVER SHEET	- MECHANICAL	●
DH.101.0	FLOOR DEMO PLAN	- MECHANICAL	●
H.101.0	FLOOR PLAN	- MECHANICAL	●
H.201.0	DETAILS & SCHEDULES	- MECHANICAL	●
H.201.1	DETAILS & SCHEDULES	- MECHANICAL	●
P.001.0	COVER SHEET	- PLUMBING	●
DP.101.0	FLOOR DEMO PLAN	- PLUMBING	●
P.101.0	FLOOR PLAN	- PLUMBING	●
P.201.0	DETAILS & SCHEDULES	- PLUMBING	●
E.001.0	COVER SHEET	- ELECTRICAL	●
DE.101.0	FLOOR DEMO PLAN	- ELECTRICAL	●
E.101.0	FLOOR PLAN	- ELECTRICAL	●
E.101.1	FLOOR PLAN - SECURITY	- ELECTRICAL	●
E.201.0	DETAILS & SCHEDULES	- ELECTRICAL	●

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GREEN HALL
ALTERATIONS TO SUITE 206

Drawn By: AF/LS
Checked By: MW

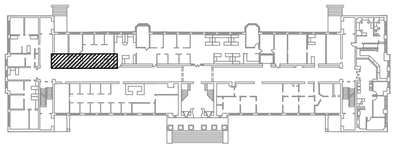
Project No: 1732
Date: 07-23-18

MICHAEL WITKOWSK, PE
NJ License #GE 45136

Revision No	Date	Description
	07/23/18	ISSUED FOR DCA

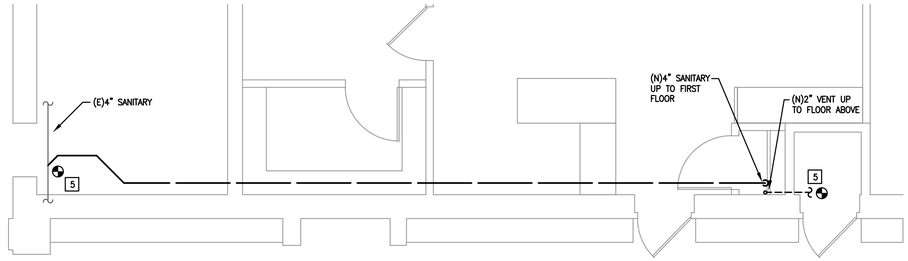
COVER SHEET

P.001.0



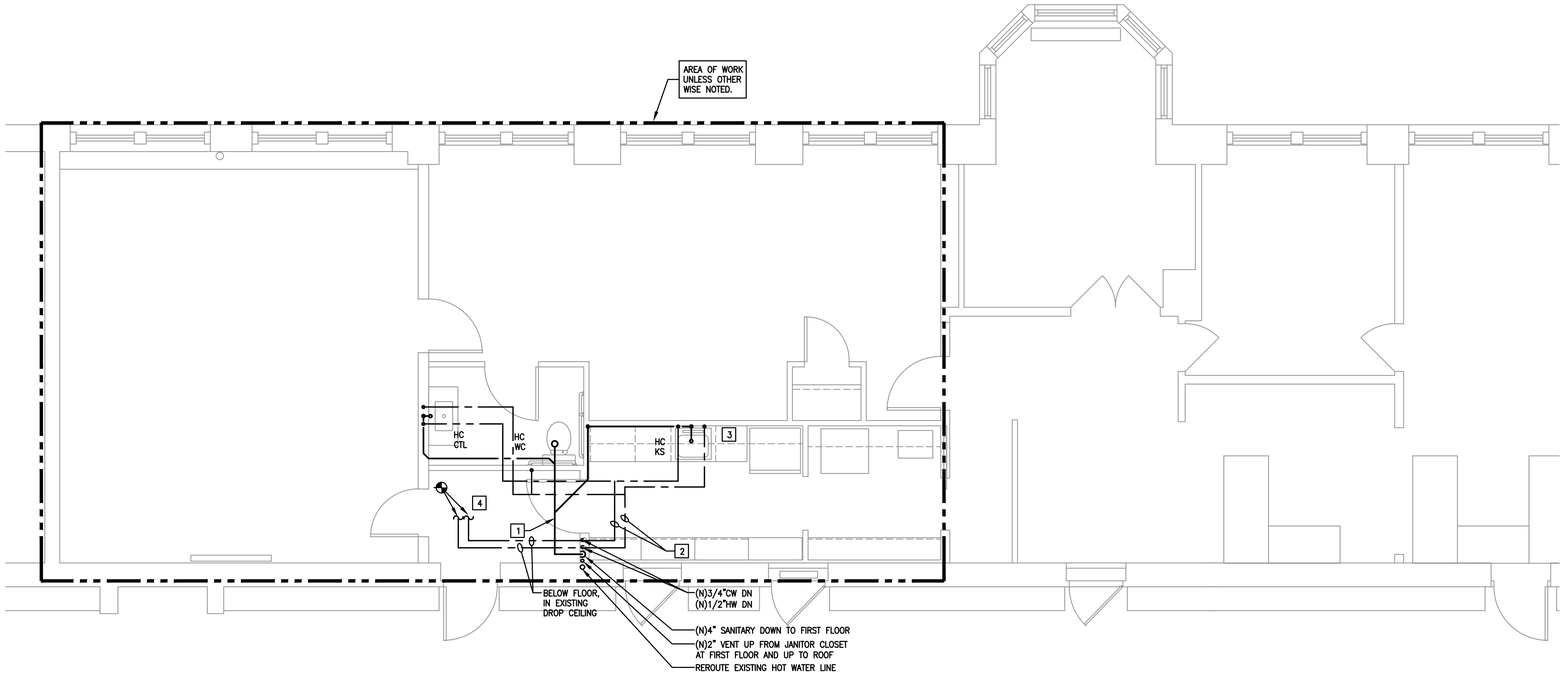
KEY PLAN – FIRST FLOOR

SCALE: N.T.S.



PARTIAL FIRST FLOOR PLAN – PLUMBING

SCALE: 1/4"=1'-0"

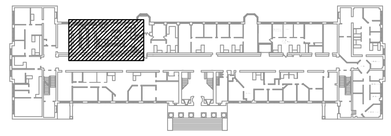


SECOND FLOOR PLAN – PLUMBING

SCALE: 1/4"=1'-0"

CONSTRUCTION NOTES:

1. EXTEND (N) 4" SANITARY TO (E) SANITARY AT BASEMENT THROUGH FIRST FLOOR CLOSET.
2. ALL DOMESTIC WATER PIPING SHALL BE IN CEILING SPACE BELOW ATTIC INSULATION.
3. INSTALL COLD WATER LINE TO REFRIGERATOR FROM ADJACENT SINK.
4. CONNECT TO EXISTING RISER IN MOP RECEPTOR CLOSET ON FIRST FLOOR.
5. CONNECT TO EXISTING VENT IN JANITORS CLOSET ON FIRST FLOOR.
6. CONNECT (N) 4" SANITARY TO EXISTING 4" SANITARY LINE.



KEY PLAN – SECOND FLOOR

SCALE: N.T.S.

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FLOOR PLAN - PLUMBING

P.101.0

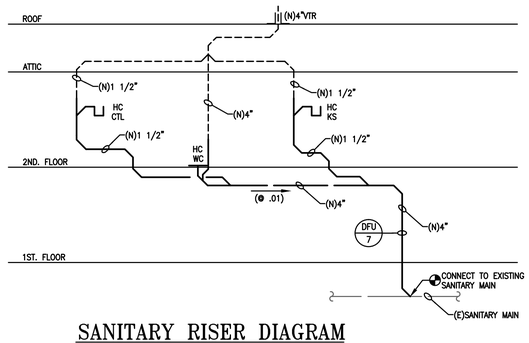
PLUMBING SYMBOLS AND ABBREVIATIONS

DOM. COLD WATER	
DOM. HOT WATER	
DOM. HOT WATER RETURN	
SOIL, WASTE	
VENT	
F	SPRINKLER SERVICE
SP	WET SANDPIPE
DSP	DRY STANDPIPE
FHC	FIRE HOSE CABINET
FHV	HOSE VALVE CABINET
BFP	BACK FLOW PREVENTER
PRV	PRESS REDUCING VALVE
VTR	VENT THRU ROOF
CO	CLEAN OUT
DWR	DOMESTIC WATER RISERS
EWH	ELECT. WATER HEATER
FU	FIXTURE UNIT
S & VST	SOIL & VENT STACK
W & VST	WASTE & VENT STACK
I.E.	INVERT ELEVATION
SF	SQUARE FEET
BWV	BACKWATER VALVE
	CONTINUATION/BREAK
	INLINE PUMP
	THERMOMETER
	PIPE DOWN
	PIPE UP
	RELIEF VALVE
	CHECK VALVE
	STRAINER W/ BLOW OFF VALVE
	BALANCING VALVE
	UNION
	PIPE REDUCER
	PIPE INCREASER
	PIPE FLEXIBLE CONNECTION
	BALL VALVE
	GAS COCK/GAS RATED BALL VALVE
WH	WALL HYDRANT
HB	HOSE BIBB
FD	FLOOR DRAIN
(N)	NEW
(E)	EXISTING
	NEW CONNECTION TO EXISTING

PLUMBING FIXTURE SCHEDULE

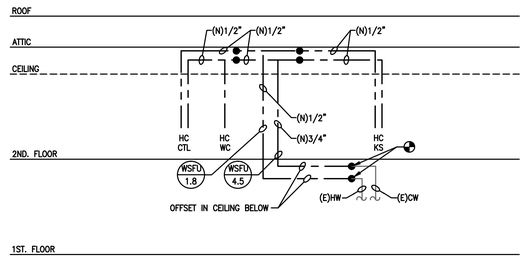
1. ALL FIXTURES AND TRIM TO BE LEAD FREE.
2. ALL HANDICAP FIXTURES TO BE INSTALLED ADA COMPLIANT WITH OFFSET WASTE WHERE REQUIRED AND INCLUDING UNDERFIXTURE PROTECTIVE KIT.
3. REFER TO SPECIFICATION FOR ADDITIONAL FIXTURE REQUIREMENTS AND ALTERNATE MFR'S.
4. ALL TRIM TO BE CHROME PLATED CAST BRASS.
5. FIXTURES IN PRIVATE TOILETS SHALL BE FURNISHED WITH POP-UP DRAINS.
6. TRAPS FOR LAV./SINKS SHALL BE SEMI-CAST BRASS/17 GAUGE WASTE 1 1/4"x1 1/2" OR 1 1/2" DEPENDING ON FIXTURE OUTLET.
7. ALL FIXTURES TO BE FURNISHED WITH INDIVIDUAL FIXTURE STOP VALVES. IN PUBLIC AREAS VALVES SHALL BE LOOSE KEY TYPE.
8. ALL WALL HUNG FIXTURES TO BE PROVIDED WITH SUITABLE FLOOR MOUNTED SUPPORTS.
9. VENTS NOTED ARE FOR INDIVIDUAL FIXTURE VENTS ONLY.

SYMBOL	DESCRIPTION	BASIS OF DESIGN (APPROVED MFR.'S ARE LISTED IN SPECIFICATIONS)					COLOR/ FINISH	FLOW (GPF)	MAP	ROUGH IN				FIXTURE UNITS			NOTES
		MANUFACTURER	MODEL NO.	FAUCET OR FLUSH VALVE	CARRIER OR SUPPORT	TRIM				CW	HW	SAN	SWV	CW	HW	DFU	
CTL	COUNTER-TOP LAVATORY	KOHLER	PENNINGTON K-2196-4	TRITON K-7404-SA	COUNTER-TOP	–	STAINLESS STEEL	1.5 GPM	–	1/2"	1/2"	1 1/4"	1 1/4"	–	–	–	
KS	KITCHEN SINK-HANDICAPPED	ELKAY	LRAD131640	ELKAY LKGT2042	COUNTER-TOP	–	STAINLESS STEEL	1.75 GPM	–	1/2"	1/2"	1 1/2"	1 1/2"	–	–	–	4 HOLES, P-TRAP, SUPPLIES AND STOPS. PROVIDE THE DISHWASHER WITH A COUNTERTOP VENT, DRAIN LINE CONNECTION TO SANITARY &A 1/2" THREADED HW CONNECTION WITH SHUT OFF VALVE.
WC	WATER CLOSET-HANDICAPPED	AMERICAN STANDARD	CADET #3378.128ST	FLUSH	FLOOR MOUNTED	–	WHITE	1.28	>=1000	1/2"	N/A	4"	4"	–	–	–	



SANITARY RISER DIAGRAM

SCALE: NONE



DOMESTIC WATER RISER DIAGRAM

SCALE: NONE

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DETAILS & SCHEDULES - PLUMBING

P.201.0