Kendall Hall Steam Piping Replacement Project

TCNJ Advertised Bid # AB150032

PROJECT REQUIREMENTS & SPECIFICATIONS

SCOPE OF WORK

DRAWINGS

April 19, 2015
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 April 19, 2015. Contact person regarding placement of ad is Roselle Horodeski (609) 771-2495.

THE COLLEGE OF NEW JERSEY
ADVERTISEMENT FOR BIDS
BID #AB150032

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 Kendall Hall Steam Piping Replacement Project until 2:00 P.M. on the 19th day of May, 2015 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 April 19, 2015 via our website (www.tcnj.edu/~budfin/).

A strongly encouraged pre-bid conference/on-site inspection is scheduled on April 28, 2015 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).


A bid bond is required in the amount of 10% of the total bid. Bid bond shall consist of a certified check or cashier's 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 No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of The College of New Jersey.
Kendall Hall Steam Piping Replacement

Milestone Schedule

Date: 4/19/15

- Advertised for bidding: April 19, 2015
- Pre-Bid Meeting (10:00am): April 28, 2015
- Cut off for questions: May 4, 2015
- Addendum issued: May 8, 2015
- Bids Received: May 19, 2015
- Notice of Intent to Award issued: May 26, 2015
- End of Protest Period: June 3, 2015
- Notice to proceed issued by: June 4, 2015
- Start construction: June 5, 2015
- Steam piping and manhole work completed by: September 30, 2015
- Contract Closed out: November 30, 2015
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: AB150032
Bid Due Date: May 19, 2015

Project Name: Kendall Hall Steam Piping Replacement

BIDDER INFORMATION

Firm Name: Telephone Number:
Contact Person: Fax Number:
Address: 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. The scope of work includes replacing steam and condensate piping from Manhole 7 to Manhole 19.

   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.
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 plumbing and/or HVACR contractor or subcontractor as applicable shall have their valid licenses.
   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.


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](http://lwd.dol.state.nj.us/labor/wagehour/wagerate/wage_rates.html) for official wage rate determinations for Mercer County, NJ.

9. 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.

10. 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.

11. 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.

12. 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 May 4, 2015.
   B. Should any questions be received, an addendum or clarification will be available on or after May 8, 2015. 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.

13. 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., May 19, 2015, 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.
14. 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.

15. 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.

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

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

18. 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.

19. 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.

20. 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.

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

22. 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.

23. 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.

24. ACCEPTANCE/REJECTION OF BIDS

A. THE COLLEGE OF NEW JERSEY 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.

25. 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.

26. 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.

27. 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) New Jersey Statutes and Regulations
       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) Federal Statutes
   Immigration Control and Reform Act (1986) – 8 U.S.C.A. Section 1324(a) et seq.
   The Americans with Disabilities Act of 1990

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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 has completed and enclosed the Ownership Disclosure form.

g. _____ 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)

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

i. _____Bidder has enclosed its MWBE information.

j. _____Bidder has enclosed its Plumbing License and/or HVACR any other licenses, certifications, certifications, and qualifications.

k. _____Bidder has enclosed its Vendor Qualification Statement

l. _____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.

m. _____Bidder has included a copy of its DPMC Notice of Classification and Total Amount of Uncompleted Contracts.

n. _____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.

o. _____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 coy 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.
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 ________

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 LWD 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 10 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: Replacement of Steam and Condensate Pipe from Manhole 7 to Manhole 19

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
   Check One: _____Add    _____Deduct

   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):

   No Unit Prices are requested for this bid.

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
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: ________________________________

__________________________________
Bidder Name

By: ________________________________
Signature

__________________________________
Printed Name of Signing Individual

__________________________________
Date
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

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

_______________________________________          BY:______________________________
Witness

_______________________________________          BY:______________________________
Witness as to Surety

_______________________________________          BY:______________________________
ATTORNEY-IN-FACT

Countersigned

NOTE:  General Power of Attorney and the current
this ______ day of ________________ , 20_____. financial statement of the bonding company must be attached to each copy (a total of three) of the Performance Bond.

BY:____________________________________

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.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, upgrading, 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:

1) 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 contractor 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 I0 of the Administrative Code (NJAC 17:27).

IF AWARDED A CONTRACT YOUR COMPANY/FIRM WILL BE REQUIRED TO COMPLY 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.
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
STOCKHOLDER DISCLOSURE FORM

Firm Name: __________________________________________

Address: ____________________________________________

City/State/ZIP: _______________________________________

List the names and addresses of all individuals, corporations, or any other owner having
10% or greater interest in the corporation or partnership named in item 1. If a listed
owner is a corporation or partnership, then list the names and addresses of holders of 10%
or more interest in that corporation or partnership. If additional space is necessary, list on
an attached sheet. If there are no owners with 10% or more interest in your company,
enter "None" below.

Complete affidavit at bottom of form.

<table>
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<tr>
<th>Firm Name</th>
<th>Street</th>
<th>City/Twp</th>
<th>County</th>
<th>State</th>
<th>Zip</th>
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</table>

President of the Firm (Type or print name)    Telephone Number

I certify that (check applicable blanks):

_____ A list of stockholders names and addresses has been submitted to the Secretary
of State of New Jersey and it is current and correct to the best of my knowledge,
with the exceptions as listed above.

_____ The list of stockholders above is current and correct to the best of my
knowledge.

_____ There are no stockholders holding 10% or more interest in this corporation or
firm to the best of my knowledge.

_____ Firm is a sole ownership and not subject to corporation or partnership disclosure
requirement.

Signature of Authorized Representative

Name_________________________________________        Title:__________

Witnessed by____________________________________        Date:__________

THIS FORM MUST BE COMPLETED, SIGNED, AND WITNESSED
INFORMATION AND INSTRUCTIONS
For Completing The “Two-Year Vendor Certification and Disclosure of Political Contributions” Forms

Background Information
On September 22, 2004, then-Governor James E. McGreevey issued Executive Order 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, Executive Order 134 prohibited State departments, agencies
and authorities from entering into contracts exceeding $17,500 with individuals or entities that made certain political
contributions. Executive Order 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 Executive Order No. 117 (“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, the Certification and Disclosure of Political Contributions form (CH51.1R1/21/2009) is valid
for a two (2) year period. Thus, if a vendor receives approval on Jan 1, 2009, the certification expiration date would be
Dec 31, 2011. 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/EO117 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.

Prior to the awarding of a contract, the agency should first send an e-mail to CD134@treas.state.nj.us 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 Forms

NOTE: Please refer to the next section, “Useful Definitions for Purposes of Ch. 51 and E.O. 117,” for guidance when
completing the forms.

Part 1: VENDOR INFORMATION

Business Name -- Enter the full name of the Vendor, including trade name if applicable.

Business Type -- Select the vendor’s business organization from the list provided.

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.
INFORMATION AND INSTRUCTIONS
For Completing The “Two- Year Vendor Certification and Disclosure of Political Contributions” Forms


Read the following statements and verify that from the period beginning on or after October 15, 2004, no contributions as set forth at subsections 1(a)-(c) have been made by either the vendor or any individual whose contributions are attributable to the vendor pursuant to Executive Order 117 (2008).

NOTE: Contributions made prior to November 15, 2008 are applicable to Chapter 51 only.

Part 3: DISCLOSURE OF CONTRIBUTIONS MADE

Check the box at top of page 2 if no reportable contributions have been made by the vendor. If the vendor has no contributions to report, this box must be checked.

Name of Recipient Entity – Enter the full name of the recipient entity.

Address of Recipient Entity – Enter the recipient entity’s street address.

Date of Contribution – Indicate the date of the contribution.

Amount of Contribution – Enter the amount of the reportable contribution.

Type of Contribution – Select the type of contribution from the list provided.

Contributor Name – Enter the full name of the contributor.

Relationship of Contributor to the Vendor – Indicate relationship of the contributor to the vendor, e.g. officer or partner of the company, spouse of officer or partner, resident child of officer or partner, 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.

Part 4: CERTIFICATION

Check box A if the person completing the certification and disclosure is doing so on behalf of the vendor and all individuals and/or entities whose contributions are attributable to the vendor.

Check box B if the person completing the certification and disclosure is doing so on behalf of the vendor only.

Check box C if the person completing the certification and disclosure is doing so on behalf of an individual and/or entity whose contributions are attributable to the vendor.

Enter the full name of the person authorized to complete the certification and disclosure, the person’s title or position, date and telephone number.
INFORMATION AND INSTRUCTIONS
For Completing The “Two-Year Vendor Certification and Disclosure of Political Contributions” Forms

USEFUL DEFINITIONS FOR THE PURPOSES OF Ch. 51 and E.O. 117

- “Vendor” means the contracting entity.

- “Business Entity” 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 spouse or 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.

- “Reportable Contributions” are those contributions, including in-kind contributions, 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.

- “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 question, 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).

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.
INFORMATION AND INSTRUCTIONS
For Completing The “Two- Year Vendor Certification and Disclosure of Political Contributions” Forms

- “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.

Agency Submission of Forms
The agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms, together with a completed Ownership Disclosure form, either electronically to cd134@treas.state.nj.us or regular mail at Chapter 51 Review Unit, P.O. Box 039, 33 West State Street, 9th Floor, Trenton, NJ 08625. Original forms should remain with the Agency and copies should be sent to the Chapter 51 Review Unit.

Questions & Answers
Questions regarding the interpretation or application of Public Law 2005, Chapter 51 (N.J.S.A. 19:44A-20.13) or Executive Order 117 (2008) may be submitted electronically through the Division of Purchase and Property website at http://www.state.nj.us/treasury/purchase/execorder134.htm. Responses to previous questions are posted on the website, as well as additional reference materials and forms.

NOTE: The Chapter 51 Q&A on the website DOES NOT address the expanded pay-to-play requirements imposed by Executive Order 117. The Chapter 51 Q&A are only applicable to contributions made prior to November 15, 2008. There is a separate, combined Chapter 51/E.O. 117 Q&A section dealing specifically with issues pertaining to contributions made after November 15, 2008, available at http://www.state.nj.us/treasury/purchase/execorder134.htm#state.
Part 1: Vendor Information

Full Legal Business Name

(Including trade name if applicable)

Business Type

<table>
<thead>
<tr>
<th>O Corporation</th>
<th>O Limited Partnership</th>
<th>D Professional Corporation</th>
<th>D General Partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>O Limited Liability Company</td>
<td>D Sole Proprietorship</td>
<td>O Limited Liability Partnership</td>
<td></td>
</tr>
</tbody>
</table>

Address 1

Address 2

City

State

Zip

Phone

Vendor Email

Vendor FEIN


I hereby certify as follows:

1. On or after October 15, 2004, neither the below-named entity nor any individual whose contributions are attributable to the entity pursuant to Executive Order 117 (2008) has solicited or made any contribution of money, pledge of contribution, including in-kind contributions, company or organization contributions, as set forth below that would bar the award of a contract to the vendor, pursuant to the terms of Executive Order 117 (2008).

   a) Within the preceding 18 months, the below-named person or organization has not made a contribution to:

      (i) Any candidate committee and/or election fund of any candidate for or holder of the public office of Governor or Lieutenant Governor;
      (ii) Any State, county, municipal political party committee; OR
      (iii) Any legislative leadership committee.

   b) During the term of office of the current Governor(s), the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or Lieutenant Governor; OR
      (ii) Any State, county or municipal political party committee nominating such Governor in the election preceding the commencement of said Governor’s term.

   c) Within the 18 months immediately prior to the first day of the term of office of the Governor(s), the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or Lieutenant Governor; OR
      Any State, county, municipal political party committee of the political party nominating the successful gubernatorial candidate(s) in the last gubernatorial election.

PLEASE NOTE: Prior to November 15, 2008, the only disqualifying contributions include those made by the vendor or a principal owning or controlling more than 10 percent of the profits or assets of a business entity (or 10 percent of the stock in the case of a business entity that is a corporation for profit) to any candidate committee and/or election fund of the Governor or to any state or county political party within the preceding 18 months, during the term of office of the current Governor or within the 18 months immediately prior to the first day of the term of Office of Governor.
Part 3: Disclosure of Contributions Made

☐ Check this box if no reportable contributions have been made by the above-named business entity or individual.

<table>
<thead>
<tr>
<th>Name of Recipient</th>
<th>Address of Recipient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Contribution</td>
<td>Amount of Contribution</td>
</tr>
<tr>
<td>Type of Contribution (i.e. currency, check, loan, in-kind)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship of Contributor to the Vendor</td>
</tr>
<tr>
<td>Contributor Address</td>
</tr>
</tbody>
</table>

City          State          Zip

If this form is not being completed electronically, please attach pages for additional contributions as necessary. Otherwise click "Add a Contribution" to enter additional contributions.
Part 4: Certification

I have read the instructions accompanying this form prior to completing this certification on behalf of the above-named business entity. I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

I understand that this certification will be in effect for two (2) years from the date of approval, provided the ownership status does not change and/or additional contributions are not made. If there are any changes in the ownership of the entity or additional contributions are made, a new full set of documents are required to be completed and submitted. By submitting this Certification and Disclosure, the person or entity named herein acknowledges this continuing reporting responsibility and certifies that it will adhere to it.

(CHECK ONE BOX A, B or C)

D I am certifying on behalf of the above-named business entity and all individuals and/or entities whose contributions are attributable to the entity pursuant to Executive Order 117 (2008).

(A) D I am certifying on behalf of the above-named business entity only.

(B) D I am certifying on behalf of an individual and/or entity whose contributions are attributable to the vendor.

Signed Name ___________________________ Print Name _______________________
Phone Number ___________________________ Date ___________________________
Title/Position ______________________________

Agency Submission of Forms

The agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms, together with a completed Ownership Disclosure form, either electronically to cd134@treas.state.nj.us, or regular mail at Chapter 51 Review Unit, P.O. Box 039, 33 West State Street, 10th Floor, Trenton, NJ 08625. The agency should save the forms locally and keep the original forms on file, and submit copies to the Chapter 51 Review Unit.
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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Relationship to Bidder/Offeror</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of Activities</td>
<td></td>
</tr>
<tr>
<td>Duration of Engagement</td>
<td>Anticipated Cessation Date</td>
</tr>
<tr>
<td>Bidder/Offeror Contact Name</td>
<td>Contact Phone Number</td>
</tr>
</tbody>
</table>

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: __________________________
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-89.8 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 , 2015 between The College of New Jersey as the project owner, and, as the Construction Contractor

Contractor:
Address:

Project: Kendall Hall Steam Piping Replacement

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 than 10 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 1/20\(^{th}\) 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 2. 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 tortious 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 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
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 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, 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

By____________________________________
Lloyd Ricketts, Treasurer

Date__________________________________

By__________________________________
Curt Heuring, Vice President of Administration

By__________________________________
Mark Mehler, 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 to be 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 and the College will approve 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 and the College specifically and expressly approve 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.


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.


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 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.

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
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 than 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 its 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, whichever 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 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 shall commence when the certificate of substantial completion is issued, and the one year period 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, 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 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 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 from 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.
KENDALL HALL STEAM PIPING REPLACEMENT

THE COLLEGE OF NEW JERSEY
EWING, NJ

SPECIFICATIONS

Prepared by:
DLB Associates Consulting Engineers, P.C.
265 Industrial Way West
Eatontown, NJ 07724

(DLB # 47200)

March 2015
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SECTION 01010 - SUMMARY OF WORK

PART 1- GENERAL

1.01 RELATED DOCUMENTS

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

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of all work noted on the drawings and in these specifications for the Kendall Hall Steam Piping Replacement.
   1. Project Location: The College of New Jersey, Ewing New Jersey
   2. Owner: The College of New Jersey, State of New Jersey

B. Contract Documents, dated March 20, 2015, were prepared by DLB Associates.

1.03 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.

1.04 CONTRACTORS USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. 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.
   2. Contractor shall provide for and maintain pedestrian access flow through work areas during the fulfillment of this contract. This work shall include but is not limited to: temporary walkways, protection of open trenches and manholes, safety barriers and signage for pedestrian directions.

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. Owner will provide designated areas near the construction site for parking for two vehicles, all other vehicles must park at the TCNJ Carlton Avenue parking lot and have the workers shuttled to the site.
C. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect campus, buildings, contents, components, and systems and occupants during the construction period.

PART 2 - PRODUCTS (Not Applicable)

PART 3- EXECUTION (Not Applicable)

END OF SECTION 01010
SECTION 01025 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 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.

1.02 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 allowances described above, such allowances being inclusive, of all cost of superintendence, supervision, engineering, overhead, profit, administrative and site office expenses and all other general expenses.

1.03 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.


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.

1.04 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.


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.

1.05 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. Payment shall be 90% of the proportion of the Contract Sum properly allocated to labor, materials and equipment incorporated in the Work or suitably stored in accordance with the provisions of the General and Supplementary Conditions, up to the first day of that month, less the aggregate of previous payments in each case. And less such retainages as the Architect and Owner shall determine for all incomplete work and unsettled claims.

3. After 50% of the total value of the Contract has been performed and the Architect and the Owner find that the Contractor has made satisfactory requirements in the performance of the Contract requirements, the Architect may recommend to the Owner, after having received consent of Surety furnished him in writing by the contractor, that progress payments be made on subsequent Certificates for Payment on the basis of 100% of the value of Work performed and materials stored, less a retained percentage computed at 5% of the adjusted Contract Sum. In the absence of such findings and consent, the payment shall continue on the basis of 90% thereof.

4. Upon substantial completion, the retainage shall, upon the Architect/Owner’s approval, remain at 5% 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.

5. 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.

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

1.06 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.

1.07 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.

1.08 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 01025
SECTION 01100 - PROJECT PROCEDURES

PART 1 - GENERAL

1.01 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 college buildings 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.

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 campus buildings 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 campus buildings 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.

J. **All projects that require access to dormitories and apartments by contractor personnel require that each person have a state police background check completed and the contractor is to provide a list of all potential personnel to work at the site, and provide a copy of the back ground checks to the TCNJ project manager prior to start of the work on the project. Should a person not have a back ground check as required herewith (such as a delivery person), this unchecked person must be accompanied by a representative of the contractor who has been checked.**

PART 2 - PRODUCTS

NOT APPLICABLE
PART 3 - EXECUTION

3.01 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. Chemical extinguishers approved by the Owner shall be provided by the General Contractor during the progress of the work where and as required by the Owner, the Local Fire Marshal and the National Board of Fire Underwriters.

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. 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 the Architect, Owner and Owner.

I. Safety Barriers: The Contractor shall erect safety barriers to deter and prohibit unauthorized access to the construction site; such barriers may take the form of fences and shall be clearly marked with signage prohibiting unauthorized access. 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, Owner 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 TCNJ.

1. Parking will be available at Carlton Avenue. Contractor will provide shuttle service to the site.

2. Contractor will be permitted to have one vehicle on site.

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 Engineer and Owner 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.

### 3.02 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):
   - Project overview
   - Financial status
   - Updated project schedule
   - Change order request log
   - Submittal log
   - RFI log
   - Owner/Architect issues that need immediate resolution
   - 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 01100
SECTION 01300 – 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 Engineer prior to first application for payment. Any revisions or additional information requested by the Owner or Engineer 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 Engineer, 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 Engineer 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 10 working days of the Contract Award.
- The Engineer 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 contractor’s 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 Engineer 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 Engineer'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 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 Engineer, 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 Engineer 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 Engineer 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 Engineer 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 Engineer's selection is required. Prepare samples to match Engineer'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 Engineer. Engineer 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 Engineer’s Waiver form, electronic copies of CAD drawings of the Contract Documents will be provided by the Engineer 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.

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 Engineer 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
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 Engineer 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 Engineer 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 Engineer 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 Engineer'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 Engineer 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 Engineer'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 Engineer's selection, including designation of manufacturer, where necessary to obtain desired color, pattern or texture.
E. Substitutions may be permitted by the Engineer, 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 Engineer 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 Engineer 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 Engineer. 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 Engineer for redesign and evaluation services, increased cost of other work by Owner or separate Contractors, and similar considerations.

H. Contractor's submittal of, and Engineer'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, Engineer 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 Engineers 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 Engineer for approval with all additional information that the Engineer 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 Engineer. Upon completion and approval, 3 copies will be forwarded to the Owner and one copy retained by the Engineer.

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.
   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 Engineer.

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 Engineer 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. Engineer'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 Engineer 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 Engineer. 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 Engineer after submittal of samples.

B. It is imperative that all color information be submitted to the Engineer 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 Engineer 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 Engineer 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.

C. The Contractors are reminded of the requirement to declare all substitutions within 20 days of execution of their Contract as specified.

END OF SECTION 01300
SECTION 01310 - QUALITY CONTROL

PART 1 - GENERAL

1.01 TRADESMEN AND WORKMANSHP

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.

1.02 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 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.01 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.

3.02 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.

3.03 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. 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 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.

3.04 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.

3.05 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 01310
SECTIONS 01320 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 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.

1.02 GENERAL REQUIREMENTS

A. Each Contractor shall provide and operate all hoists, cranes, helicopters 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.

1.03 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.

1.04 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.

1.05 SECURITY

A. The Contractor shall maintain complete security on the site at all times 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 gates. A guard is not required.
- All areas under construction are to be secured with a 6’ high chain link fence with screening. The fence is to be maintained on a daily basis, kept straight, plumb and secure at all times to provide a professional appearance. Provide gates as necessary for access to each area.

1.06 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.

D. 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.

1.07 DEBRIS CONTROL (Refer to Section 01524 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°F) and at least twice weekly during mild and warm weather.

- Contractor is responsible to provide 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

3.01 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. 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.

3.02 TEMPORARY ELECTRICITY
A. Power is available on site.

3.03 TEMPORARY VENTILATION
A. A trade requiring ventilation for Work shall provide fans to induce circulation of air provided prior approval has been obtained from the Owner.

3.04 TEMPORARY TELEPHONES
A. Each Contractor is responsible for their own telephone service and for payment of all charges relating to that service.

3.05 TEMPORARY WATER
A. Water is available on site.

3.07 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.

3.08 REMOVAL AND RESTORATION
A. Prior to acceptance of the Project, each contractor shall remove temporary work for which he has been responsible.

3.09 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.

END OF SECTION 01320
SECTION 01322 – PHOTOGRAPHIC DOCUMENTATION

PART 1 – GENERAL

1.01 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.

1.02 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 video documentation.

B. Related Sections include the following:

1. All of Division 1.

1.03 SUBMITTALS

A. Qualification Data: For photographer.

B. Media: Submit 3 copies of recordings on CD

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 and Construction Manager.
d. Name of Contractor.
e. Date recorded.
f. Description of vantage point, indicating location, direction (by encompass point), and elevation or story of construction.

1.04 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.

1.05 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.

1.06 USAGE RIGHTS

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.
PART 2 – PRODUCTS

2.01 PHOTOGRAPHIC MEDIA

A. Format: Provide recordings on CD in mp4 / avi format

PART 3 – EXECUTION

3.01 CONSTRUCTION RECORDINGS

A. Photographer: Engage a qualified commercial videographer to record construction video.

B. Preconstruction Recording: Before starting demolition or construction record, record Project site, interior and exterior.

1. Show protection efforts by Contractor.

END OF SECTION 01322
SECTION 01330 – CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 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.

1.02 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, is installed and the building / work 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.

1.03 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.


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.

1.04 CLEAN UP

A. Remove waste materials from site and dispose of in a lawful manner.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.01 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.

3.02 RECORD DOCUMENTS (Refer to Section 01340, project requirements for submitting Record Documents)

3.03 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 01330
SECTION 01340 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Project record documents consisting of:
   a. Record drawings.
   b. Record project manual (specifications).

1.02 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

3.01 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 engineer during normal working hours; store in a fire-resistant 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.

3.02 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 engineer 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 engineer.

3.03 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.

3.04 TRANSMITTAL TO OWNER (through the Engineer)

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.

C. Submit to the Engineer four (4) sets of Operation and Maintenance Manuals in three-ring binders for approval: All to be submitted at one time, not piece meal.
   • Include all inspection/approvals/certifications
   • All approved cut sheets as well as manufacturer's operation and maintenance manuals.

END OF SECTION 01340
SECTION 01524 – 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 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 prevent 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.

3.5 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
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 01524
SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

B. Cast-in-place concrete includes the following:
   1. Sidewalks.

1.3 SUBMITTALS

A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.

B. Laboratory test reports for concrete materials and mix design test.

C. Material certificates in lieu of material laboratory test reports when permitted by Architect. Material certificates shall be signed by manufacturer and contractor, certifying that each material item complies with or exceeds specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

D. Copies of Material Safety Data Sheets (MSDS) for any adhesives and other hazardous materials.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI-301 “Specifications for Structural Concrete for Buildings”.
2. ACI-304 “Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete”.
3. ACI-311 “Recommended Practice for Concrete Inspection”.
4. ACI-315 “Details and Detailing for Reinforced Concrete Structures”.
5. ACI-318 “Building Code Requirements for Reinforced Concrete”.
6. ACI-347 “Recommended Practice for Concrete Formwork”.
7. Concrete Reinforcing Steel Institute, “Manual of Standard Practice”.
8. Building Code requirements, which are more stringent than the above.
PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces.

1. Use overlaid plywood complying with U.S. Product Standard PS-1 “A-C or B-B High Density Overlaid Concrete Form”, Class I.

2. Use plywood complying with U.S. Product Standard PS-1 “B-B (Concrete Form) Plywood” Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or another acceptable material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Form Release Agent: Provide commercial formulation form release agent with a maximum of 350 g/L volatile organic compounds (VOCS) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to the plane of the exposed concrete surface.

1. Provide ties that, when removed, will leave holes not larger than 1 inch in diameter in the concrete surface.

2.2 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I or ASTM C1157, Type LH or GU.

1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.

2. Do not re-use cement which has partially set or hardened.

B. Fly Ash:

1. Permitted in drilled piers, footings, pier caps, pile caps, columns, walls, grade beams only.

2. ASTM C 618, Class C or F, except maximum loss on ignition: 6%. Maximum percent retained on #325 sieve: 28%. Maximum water requirement, stated as percentage of control: 100%.


4. Percentage of fly ash in mix design shall be by weight, not by volume. Water/cement ratio will be calculated as water/cementitious (total cement and fly ash) ratio.

5. Prohibited: Fly ash in same mix with Type IP blended cement.

6. If strength or air content varies from value specified by more than specified tolerances, Engineer or designated representative shall reject that concrete.

7. The total fly ash contained in concrete should not be more than 20% of total cementitious materials by weight.

8. Submit all fly ash concrete mix designs per ACI 301.

C. Waterproofing Admixture:

1. Xypex(C-500)Cementitious Crystalline or approved equal.
D. Ground Granulated Blast-Furnace Slag (GG BFS):
   1. ASTM C 989, Grade 100 or higher.
   2. Percentage of GGBF slag in mix design shall be by weight, not by volume. Water-cement ratio shall be calculated as water-cementitious (total Portland cement + GGBF slag) ratio.
   3. If strength or air content varies from value specified by more than specified tolerances, Engineer or designated representative shall reject that concrete.
   4. Total fly ash and slag contained in concrete should not be more than 30% of total cementitious materials by weight.
   5. Submit all GGBF slag concrete mix designs per ACI 301.

E. Aggregates:
   1. Normal weight aggregates: Aggregates shall be crushed stone or gravel complying with ASTM C 33, uniform throughout the work, with fineness modulus not varying by more than 0.15 either way from approved samples; maximum size of coarse aggregate particles shall be ½ inch for slabs on grade and 1” for other concrete. Use in all foundations, slabs on grade, walls, steps, pits, mats, etc.
   2. Fine aggregates: Natural sand conforming to ASTM C33.
   3. Combined aggregate gradation for slabs and other designated concrete shall be 8% - 18% for large top size aggregates (1½ in.) or 8% - 22% for smaller top size aggregates (1 in. or ¾ in.) retained on each sieve below the top size and above the No. 100.

F. Water: Potable.

2.3 CONCRETE MIXING

A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
   1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.


C. Exposed surfaces to be broom finished to match adjacent existing surfaces.

END OF SECTION 033000
SECTION 230001- CONSTRUCTION ADMINISTRATION FOR HVAC WORK

PART 1 - GENERAL

1.1 GENERAL

A. This Section contains requirements for Construction Administration of HVAC work. These requirements are in addition to any requirements listed elsewhere in the Contract Documents. Where conflicts exist between this section and other sections, the more stringent requirement shall apply.

1.2 REQUESTS FOR INFORMATION

A. Requests For Information (RFI) are questions posed by the Contractor intended to resolve vagueness and conflicts during construction.

B. To submit a RFI, the Contractor must fill out the Request For Information form found in Appendix A of this specification section. Only RFI written on this enclosed form will be acknowledged.

C. Prior to submitting a RFI, the Contractor must thoroughly review the Construction Documents and Specifications and forward the RFI only if the issue in question cannot be resolved. If a RFI questions a clearly noted item or standard construction method which should be known by the Contractor, the Engineer may back charge the Contractor for time spent responding to the RFI.

1.3 SCHEDULE OF VALUES

A. Prior to initiating any work, the Contractor shall submit a Schedule of Values on an AIA G-703 Continuation Sheet outlining Material and Labor costs for each item.

B. Include in the Schedule of Values a line item for resolving Punchlist issues equal to 5% of the total contract value.

C. No Payment Applications will be processed until the Schedule of Values form has been approved by the Engineer.

1.4 EQUIPMENT MANUFACTURER LIST

A. Within ten (10) business days of the contract award date, the Contractor shall submit a list of equipment manufacturers, for the engineer's review and approval, that he intends to use on this project.

1.5 SHOP DRAWING SUBMISSION SCHEDULE

A. Prior to submitting any Shop Drawings, the Contractor shall issue a Shop Drawing Submission Schedule. The purpose of this schedule is to identify which items require Shop Drawings and when these Shop Drawings will be submitted to the Engineer. By agreeing to this schedule at the beginning of the project, Shop Drawings will be reviewed in a timely fashion and long lead items can be prioritized and reviewed first.

B. Refer to the Shop Drawing Submission Schedule in Appendix A of this specification section. The Contractor shall list all the items that require submittals per the Contract Documents and Specifications. The Contractor
shall fill out the Submittal Date column for each item and return the completed form to the Engineer for review. The Contractor may use a different form of his choosing provided the required information is provided.

C. No Shop Drawings will be reviewed until the Shop Drawing Submission Schedule is approved by the Engineer.

1.6 SHOP DRAWINGS

A. Shop Drawings will not be reviewed until the Equipment Manufacturer List and Shop Drawing Submission Schedule have been submitted to, and approved by, the Engineer.

B. Shop Drawings must include a completed copy of the Shop Drawing Submittal Form found in Appendix A of this specification section.

1. The Contractor must review and stamp all Shop Drawings prior to submission. Space has been provided for the Contractor's stamp on the Shop Drawing Submittal Form. Submittals without the Contractor's stamp will be returned unchecked.

C. The Contractor shall provide a maximum of six (6) copies of submittals to the Engineer for review. Additional Shop Drawings may be marked-up and processed for an additional fee to the Contractor.

1. Submitted items shall be clearly identified on all copies of the Shop Drawings. The Engineer will return any Shop Drawings that are not clearly marked.

D. It is the responsibility of the Contractor to make every attempt to ensure thoroughness and accuracy of his submittals. If Shop Drawings are not approved following a maximum of two (2) reviews, the Contractor will be backcharged for the Engineer's effort.

1.7 SUBSTITUTIONS

A. Substitutions for specified equipment must include a detailed comparison checklist identifying all pertinent similarities and differences between the two items. Substituted items without a comparison checklist will not be considered.

1. Where substituted items affect other trades, this Contractor is responsible for adjusting the installation as required to accommodate the substitution. This includes, but is not limited to, changes in Architectural, Structural, Mechanical, Electrical, Plumbing and Fire Protection Systems. This Contractor will pay for all associated costs.

B. Incomplete submittals will be returned rejected.

1.8 SERVICE INTERRUPTION SCHEDULE

A. Within ten (10) business days of the contract award date, the Contractor shall submit a Schedule of Shutdowns of equipment and/or systems for Owner and Engineer review.

B. The Contractor shall notify the Owner and Engineer in writing at least five (5) business days prior to each equipment and/or system shutdown.

1.9 SUBSTANTIAL COMPLETION LETTER

A. The purpose of this letter is to inform the Engineer that the Contractor has reached Substantial Completion.
B. Upon Substantial Completion, the Contractor shall copy the Substantial Completion Letter onto company letterhead, complete the letter and send it to the Engineer. Refer to Appendix A of this specification for this letter.

C. This letter shall be received at the Engineer's office no later than four (4) weeks before the project completion date. Upon receiving the letter, the Engineer will perform a Punch List. The Contractor shall have two (2) weeks to complete the Punch List items upon receiving the Punch List.

1.10 PUNCHLIST COMPLETION LETTER

A. The purpose of this letter is to inform the Engineer that the Contractor has completed all Punchlist items. The Contractor must ensure that all Punchlist items are indeed complete prior to submitting this letter.

B. Upon Punchlist Completion, the Contractor shall copy the Punchlist Completion Letter onto company letterhead, complete the letter and send it to the Engineer. Refer to Appendix A of this specification for this letter.

C. This letter shall be received at the Engineer's office no later than One (1) week before the project completion date. Upon receiving this letter, the Engineer will perform a final walkthrough.

D. Should the Engineer discover during the final walkthrough that all of the Punchlist items have not been completed, the time and expenses associated with a return visit by the Engineer shall be chargeable to the Contractor.

PART 2 - PRODUCTS - Not Used.

PART 3 - EXECUTION - Not Used.

END OF SECTION 230001
Appendix A

Construction Administration Forms
REQUEST FOR INFORMATION

Project ID: 47200  
Project Name: TCNJ Kendall Hall Piping Replacement  
Project Location: Ewing, NJ

Requestor's Information

Name ____________________________  Phone # ____________________

Firm Name __________________________  Date of Request ____________

Proposed Reviewer's Name (optional) ___________________________________

Certification by Requestor

I certify that I have thoroughly reviewed the Documents and am unable to reconcile this issue. I acknowledge that if the issue is easily reconcilable by reviewing the Documents or is asking direction on standard construction methods that should be known by the Contractor, the Professionals can backcharge the Requestor for the effort involved in the review and response.

X __________________________ date __________

RFI Classification

Related RFI ID's ___________  Urgency (typical response within 5 business days) __________ days

If urgency requires a fast turnaround, state why faster than normal response is needed:

Which Disciplines are involved with this RFI? ____________________________________________

Which Drawing ID's & which Specification Sections are involved? ____________________________

Request

Request Title (30 characters or less, used as an abbreviated title in RFI Log)

_________________________________________

Request Description:

_________________________________________

_________________________________________

Possible Solutions:

_________________________________________

_________________________________________

Engineer's Response:

☐ See Attached Sketch  ☐ See Attached Description  ☐ See Comments Above
SHOP DRAWING SUBMISSION SCHEDULE

Project Name: TCNJ Kendall Hall Steam Piping Replacement
DLB Project ID: 47200

Contractor: _________________________
Completed By: _______________________
Date: ________________

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# SHOP DRAWING SUBMITTAL FORM

**Project Name:**

**To:** DLB Associates

265 Industrial Way West

Eatontown, NJ 07724

**From:**

**Attention:**

**Phone #:** (732) 774-2000

**Date:**

**DLB Project ID #:**

**We are sending you:**

- Prints, [ ] Sepia/Vellums, [ ] Manufacturer's Literature, [ ] Letter, [ ]

**Purpose:** Shop Drawings

**Is this a Resubmittal?:** YES / NO

If YES Previous Submittal #: ________

**Referencing:**

- Drawing Number(s): _____________

- Specification Section(s): ________________

**COPIES**

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**REMARKS:**

**Filing:** Construction

**Copy To:** ________________________________

**Contractor's Stamp**

If material is not as listed, please call at once.

**SHEET ____ OF ____**
Date: __________

**Dan Rehberg**
DLB Associates Consulting Engineers, P.C.
265 Industrial Way West
Eatontown, NJ 07724
(732) 774-2000

Re: Substantial Completion Notification
TCNJ Kendall Hall Steam Piping Replacement
2000 Pennington Road, Ewing, NJ
(DLB Project # 47200)

Dear __________:

Please be advised that we have reached Substantial Completion for the above mentioned project. We understand that DLB Associates should receive this letter at least four (4) weeks prior to the project completion date. We are prepared for the Punchlist review and assure that any items found to be incomplete will be fixed within two (2) weeks of receiving the Punchlist.

Should you have any questions, please do not hesitate to contact this office.

Very truly yours,

____________________________________________________
(company)

x______________________________________________
(signature)

____________________________________________________
(print)

c:
Date: __________

Dan Rehberg  
DLB Associates Consulting Engineers, P.C.  
265 Industrial Way West  
Eatontown, NJ 07724  
(732) 774-2000

Re: Punchlist Completion Notification  
TCNJ Kendall Hall Steam Piping Replacement  
2000 Pennington Road, Ewing, NJ  
(DLB Project # 47200)

Dear __________:

Please be advised that we have completed all Punchlist items for the above mentioned project and consider the construction to be 100% complete. We understand that DLB Associates should receive this letter at least one (1) week prior to the project completion date. We are prepared for the final walk through and review.

Should you have any questions, please do not hesitate to contact this office.

Very truly yours,

______________________________
(company)

x_____________________________
(signature)

______________________________
(print)

c:
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Flexible, ball-joint, packed expansion joints.
   2. Slip-joint packed expansion joints.
   3. Expansion-compensator packless expansion joints.
   5. Metal-bellows packless expansion joints.
   6. Rubber packless expansion joints.
   7. Pipe loops and swing connections.
   8. Alignment guides and anchors.

1.2 PERFORMANCE REQUIREMENTS

A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.

B. Capability: Products to absorb 200 percent of maximum axial movement between anchors.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Delegated-Design Submittal: For each anchor and alignment guide indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   1. Design Calculations: Calculate requirements for thermal expansion of piping systems and for selecting and designing expansion joints, loops, and swing connections.
   2. Anchor Details: Detail fabrication of each anchor indicated. Show dimensions and methods of assembly and attachment to building structure.
   3. Alignment Guide Details: Detail field assembly and attachment to building structure.
   4. Schedule: Indicate type, manufacturer's number, size, material, pressure rating, end connections, and location for each expansion joint.

C. Welding certificates.

D. Product Certificates: For each type of expansion joint, from manufacturer.

E. Maintenance Data: For expansion joints to include in maintenance manuals.
1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   2. ASME Boiler and Pressure Vessel Code: Section IX.

PART 2 - PRODUCTS

2.1 PACKED EXPANSION JOINTS

A. Flexible, Ball-Joint, Packed Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide product by one of the following:
      a. Advanced Thermal Systems, Inc.
      b. Hyspan Precision Products, Inc.
      c. Mason Industries, Inc.
      d. Or equivalent.
   4. Design: For 360-degree rotation and angular deflection.
   5. Minimum Pressure Rating: 250 psig at 400 deg F.
   6. Angular Deflection for NPS 6 and Smaller: 30 degree minimum.
   7. Angular Deflection for NPS 8 and Larger: 15 degree minimum.
   8. End Connections for NPS 2 and Smaller: Threaded.

B. Slip-Joint Packed Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide product by one of the following:
      a. Adsco Manufacturing LLC.
      b. Advanced Thermal Systems, Inc.
      c. Hyspan Precision Products, Inc.
      d. Mason Industries, Inc.
      e. Or equivalent.
   4. Design: With internal guide and injection device for repacking under pressure. Include drip connection if used for steam piping.
   5. Configuration: Single joint with base and double joint with base classes unless otherwise indicated.
   6. End Connections: Flanged or weld ends to match piping system.
2.2 PACKLESS EXPANSION JOINTS

A. Metal, Expansion-Compensator Packless Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Adsco Manufacturing LLC.
      b. Flexicraft Industries.
      c. Hyspan Precision Products, Inc.
      d. Metraflex, Inc.
      e. Unisource Manufacturing, Inc.
      f. Mason Industries, Inc.
      g. Or equivalent.
   2. Minimum Pressure Rating: 175 psig unless otherwise indicated.
   3. Configuration for Copper Tubing: Two-ply, phosphor-bronze or stainless steel bellows with copper pipe ends.
      a. End Connections for Copper Tubing NPS 2 and Smaller: Solder joint or threaded.
      b. End Connections for Copper Tubing NPS 2-1/2 to NPS 4: Threaded.
   4. Configuration for Steel Piping: Two-ply, stainless-steel bellows; steel-pipe end connections; and carbon-steel shroud.
      a. End Connections for Steel Pipe NPS 2 and Smaller: Threaded.
      b. End Connections for Steel Pipe NPS 2-1/2 to NPS 4: Flanged.

B. Rubber, Expansion-Compensator Packless Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Amber/Booth Company, Inc.; a div. of Vibration Isolation Products of Texas, Inc.
      b. Flex-Hose Co., Inc.
      c. Flexicraft Industries.
      d. General Rubber Corporation.
      e. Mason Industries, Inc.; Mercer Rubber Co.
      f. Unaflex.
      g. Unisource Manufacturing, Inc.
      h. Or equivalent.
   3. Minimum Pressure Rating: 150 psig at 200 deg F unless otherwise indicated.
   4. End Connections for NPS 2 and Smaller: Threaded.

C. Flexible-Hose Packless Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Flex-Hose Co., Inc.
      b. Flexicraft Industries.
      c. Flex Pression Ltd.
d. Metraflex, Inc.
e. Unisource Manufacturing, Inc.
f. Or equivalent.

2. Description: Manufactured assembly with inlet and outlet elbow fittings and two flexible-metal-hose legs joined by long-radius, 180-degree return bend or center section of flexible hose.

3. Flexible Hose: Corrugated-metal inner hoses and braided outer sheaths.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 700 psig at 70 deg F and 515 psig at 600 deg F ratings.

5. Expansion Joints for Steel Piping NPS 2-1/2 to NPS 6: Carbon-steel fittings with flanged end connections.
   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 275 psig at 70 deg F and 200 psig at 600 deg F ratings.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 165 psig at 70 deg F and 120 psig at 600 deg F ratings.

   a. Stainless-steel hoses and double-braid, stainless-steel sheaths with 165 psig at 70 deg F and 120 psig at 600 deg F ratings.

D. Metal-Bellows Packless Expansion Joints:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

2. Basis-of-Design Product:
   a. Adsco Manufacturing LLC.
   b. Flex-Hose Co., Inc.
   c. Flexicraft Industries.
   d. Flex-Weld, Inc.
   e. Hyspan Precision Products, Inc.
   f. Metraflex, Inc.
   g. Unaflex.
   h. Unisource Manufacturing, Inc.
   i. Or equivalent.


4. Type: Circular, corrugated bellows with external tie rods.

5. Minimum Pressure Rating: 175 psig unless otherwise indicated.

6. Configuration: Single joint with base or double joint with base classes unless otherwise indicated.

7. Expansion Joints for Copper Tubing: Single- or multi-ply phosphor-bronze bellows, copper pipe ends, and brass shroud.

E. Rubber Packless Expansion Joints:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Amber/Booth Company, Inc.; a div. of Vibration Isolation Products of Texas, Inc.
      b. Flex-Hose Co., Inc.
      c. Flexicraft Industries.
      d. Flex-Weld, Inc.
      e. Mason Industries, Inc.; Mercer Rubber Co.
      f. Metraflex, Inc.
      g. Unaflex.
      h. Unisource Manufacturing, Inc.
      i. Or equivalent.
   4. Arch Type: Single or multiple arches.
   5. Spherical Type: Single or multiple spheres.
   6. Minimum Pressure Rating for NPS 1-1/2 to NPS 4: 150 psig at 220 deg F.
   7. Minimum Pressure Rating for NPS 5 and NPS 6: 140 psig at 200 deg F.
   8. Minimum Pressure Rating for NPS 8 to NPS 12: 140 psig at 180 deg F.
   9. Material for Water: BR or Buna-N or CR or CSM or EPDM or NR.

2.3 ALIGNMENT GUIDES AND ANCHORS

A. Alignment Guides:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Advanced Thermal Systems, Inc.
      b. Flex-Hose Co., Inc.
      c. Flexicraft Industries.
      d. Flex-Weld, Inc.
      e. Hyspan Precision Products, Inc.
      f. Metraflex, Inc.
      g. Or equivalent.
   2. Description: Steel, factory-fabricated alignment guide, with bolted two-section outer cylinder and base for attaching to structure; with two-section guiding spider for bolting to pipe.

B. Anchor Materials:
1. Steel Shapes and Plates: ASTM A 36/A 36M.
2. Bolts and Nuts: ASME B18.10 or ASTM A 183, steel hex head.
4. Mechanical Fasteners: Insert-wedge-type stud with expansion plug anchor for use in hardened portland cement concrete, with tension and shear capacities appropriate for application.
5. Chemical Fasteners: Insert-type-stud, bonding-system anchor for use with hardened portland cement concrete, with tension and shear capacities appropriate for application.
   a. Bonding Material: ASTM C 881/C 881M, Type IV, Grade 3, two-component epoxy resin suitable for surface temperature of hardened concrete where fastener is to be installed.

PART 3 - EXECUTION

3.1 EXPANSION-JOINT INSTALLATION
   A. For mechanical piping systems, furnish and install expansion loops/devices for every 100 foot run or greater of straight pipe.
   B. Install expansion joints of sizes matching sizes of piping in which they are installed.
   C. Install packed-type expansion joints with packing suitable for fluid service.
   D. Install metal-bellows expansion joints according to EJMA's "Standards of the Expansion Joint Manufacturers Association, Inc."
   E. Install rubber packless expansion joints according to FSA-NMEJ-702.

3.2 PIPE LOOP AND SWING CONNECTION INSTALLATION
   A. Install pipe loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.

3.3 ALIGNMENT-GUIDE AND ANCHOR INSTALLATION
   A. Install alignment guides to guide expansion and to avoid end-loading and torsional stress.
   B. Install guides on each side of pipe expansion fittings and loops. Install guides nearest to expansion joint not more than four pipe diameters from expansion joint.
   C. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.
D. Anchor Attachments:

E. Fabricate and install steel anchors by welding steel shapes, plates, and bars. Comply with ASME B31.9 and AWS D1.1/D1.1M.
   1. Anchor Attachment to Concrete Structural Members: Attach by fasteners. Follow fastener manufacturer's written instructions.

F. Use grout to form flat bearing surfaces for guides and anchors attached to concrete.

END OF SECTION 230516
SECTION 230517 - SLEEVES AND SLEEVE SEALS FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Sleeve-seal systems.
   2. Grout.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 SLEEVE-SEAL SYSTEMS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Link Seal or comparable product by one of the following:
   1. Metraflex Company (The).
   2. Pipeline Seal and Insulator, Inc.
   3. Proco Products, Inc.
   4. Or equivalent.

B. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and manhole wall.
   1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
   2. Pressure Plates: Glass reinforced nylon.
   3. Connecting Bolts and Nuts: Carbon steel, with corrosion-resistant coating, of length required to secure pressure plates to sealing elements.

2.2 GROUT

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 SLEEVE-SEAL-SYSTEM INSTALLATION

A. Install sleeve-seal systems around piping in exterior concrete walls at entries into manholes.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size.

C. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

D. Using grout, seal the space outside of sleeves on exterior side of manhole wall.

END OF SECTION 230517
SECTION 230523 - GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and
      Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. Section Includes:
      1. Iron gate valves.
   B. Related Sections:
      1. Section 230553 "Identification for HVAC Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS
   A. CWP: Cold working pressure.
   B. EPDM: Ethylene propylene copolymer rubber.
   C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
   D. NRS: Nonrising stem.
   E. OS&Y: Outside screw and yoke.
   F. RS: Rising stem.
   G. SWP: Steam working pressure.

1.4 ACTION SUBMITTALS
   A. Product Data: For each type of valve indicated.

1.5 QUALITY ASSURANCE
   A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
   B. ASME Compliance:
      1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
      2. ASME B31.1 for power piping valves.
      3. ASME B31.9 for building services piping valves.
1.6 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:
   1. Protect internal parts against rust and corrosion.
   2. Protect threads, flange faces, grooves, and weld ends.
   3. Set gate valves closed to prevent rattling.

B. Use the following precautions during storage:
   1. Maintain valve end protection.
   2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

B. Valve Sizes: Same as upstream piping unless otherwise indicated.

C. Valve Actuator Types:
   1. Gear Actuator: For quarter-turn valves NPS 8 (DN 200) and larger.
   2. Handwheel: For valves other than quarter-turn types.
   3. Handlever: For quarter-turn valves NPS 6 (DN 150) and smaller.

D. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions and the following features:
   1. Gate Valves: With rising stem.
   2. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

E. Valve-End Connections:
   1. Flanged: With flanges according to ASME B16.1 for iron valves.
   2. Grooved: With grooves according to AWWA C606.
   3. Threaded: With threads according to ASME B1.20.1.

F. Valve Bypass and Drain Connections: MSS SP-45.

2.2 IRON GATE VALVES

A. Class 250, OS&Y, Iron Gate Valves:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
a. Crane Co.; Crane Valve Group; Crane Valves.
b. Hammond Valve.
c. NIBCO INC.
d. Or equivalent.

2. Description:
   a. Standard: MSS SP-70, Type I.
   b. NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).
   c. NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).
   d. Body Material: ASTM A 126, gray iron with bolted bonnet.
   e. Ends: Flanged.
   f. Trim: Bronze.
   g. Disc: Solid wedge.
   h. Packing and Gasket: Asbestos free.

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
   B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
   C. Examine threads on valve and mating pipe for form and cleanliness.
   D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
   E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION
   A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
   B. Locate valves for easy access and provide separate support where necessary.
   C. Install valves in horizontal piping with stem at or above center of pipe.
   D. Install valves in position to allow full stem movement.
3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:
   1. Shutoff Service: Gate valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:
   1. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded ends.
   2. For Steel Piping, NPS 2-1/2 (DN 65) and Larger: Flanged ends.

3.5 HIGH-PRESSURE STEAM VALVE SCHEDULE (MORE THAN 15 PSIG (104 kPa))

A. Pipe Sizes NPS 2-1/2 (DN 65) and Larger:
   1. Iron Gate Valves: Class 250, OS&Y.

3.6 STEAM-CONDENSATE VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller:
   1. Ball Valves: Two piece, regular port, brass or bronze with brass trim.
   2. Bronze Swing Check Valves: Class 150, bronze disc.
   3. Bronze Gate Valves: Class 150, RS.

B. Pipe NPS 2-1/2 (DN 65) and Larger:
   1. Iron Swing Check Valves: Class 250, metal seats.
   2. Iron Gate Valves: Class 250, OS&Y.

END OF SECTION 230523
SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal pipe hangers and supports.
   2. Trapeze pipe hangers.
   3. Metal framing systems.
   4. Thermal-hanger shield inserts.
   5. Fastener systems.
   6. Pipe stands.

B. Related Sections:
   1. Section 230516 "Expansion Fittings and Loops for HVAC Piping" for pipe guides and anchors.

1.2 DEFINITIONS

A. MSS: Manufacturers Standardization Society of The Valve and Fittings Industry Inc.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for HVAC piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
   1. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.
   2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
   3. Design hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:
   1. Trapeze pipe hangers.
   2. Metal framing systems.
   3. Pipe stands.
C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   1. Detail fabrication and assembly of trapeze hangers.
   2. Design Calculations: Calculate requirements for designing trapeze hangers.

D. Welding certificates.

1.5 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel".

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:
   1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
   2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
   3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
   4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
   6. Manufacturers:
      a. B-Line systems, Inc.; a division of Cooper Industries
      b. Empire Industries, Inc.
      c. ERICO/Michigan Hanger Co.
      d. Globe Pipe Hangers Products, Inc.
      e. Grinnell Corp.
      f. National Pipe Hanger Corporation
      g. Or equivalent.

2.2 METAL FRAMING SYSTEMS

A. MFMA Manufacturer Metal Framing Systems:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Allied Tube & Conduit.
      b. Cooper B-Line, Inc.
C. Flex-Strut Inc.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut Corporation; Tyco International, Ltd.
g. Wesanco, Inc.
h. Or equivalent.

2. Description: Shop- or field-fabricated pipe-support assembly for supporting multiple parallel pipes.


4. Channels: Continuous slotted steel channel with inturned lips.

5. Channel Nuts: Formed or stamped steel nuts or other devices designed to fit into channel slot and, when tightened, prevent slipping along channel.


7. Metallic Coating: Electroplated zinc or Hot-dipped galvanized or Mill galvanized or In-line, hot galvanized or Mechanically-deposited zinc.

8. Paint Coating: Vinyl or Vinyl alkyd or Epoxy or Polyester.

9. Plastic Coating: PVC or Polyurethane or Epoxy or Polyester.

2.3 THERMAL-HANGER SHIELD INSERTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Carpenter & Paterson, Inc.


3. ERICO International Corporation.


5. PHS Industries, Inc.

6. Pipe Shields, Inc.; a subsidiary of Piping Technology & Products, Inc.

7. Piping Technology & Products, Inc.

8. Rilco Manufacturing Co., Inc.

9. Value Engineered Products, Inc.

10. Or equivalent.

B. Insulation-Insert Material for Hot Piping: Water-repellent treated, ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.
2.4 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless-steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.5 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
   2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
   1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
   2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping, and support together on field-assembled metal framing systems.

D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:
   1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
   2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe Stand Installation:
   1. Pipe Stand Types except Curb-Mounted Type: Assemble components and mount on smooth roof surface. Do not penetrate roof membrane.
G. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

H. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

I. Install lateral bracing with pipe hangers and supports to prevent swaying.

J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

K. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

M. Insulated Piping:
   1. Attach clamps and spacers to piping.
      a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
      b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
      c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
   2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
      a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
   3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
      a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.
   4. Shield Dimensions for Pipe: Not less than the following:
      a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
      b. NPS 4: 12 inches long and 0.06 inch thick.
      c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
      d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
      e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.
   5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
   6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.3 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
   1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.5 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports, metal trapeze pipe hangers and metal framing systems and attachments for general service applications.

F. Use padded hangers for piping that is subject to scratching.

G. Use thermal-hanger shield inserts for insulated piping and tubing.
H. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of insulated, stationary pipes NPS 1/2 to NPS 30.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
4. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
5. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
6. Adjustable Pipe Saddle Supports (MSS Type 38): For stanchion-type support for pipes NPS 2-1/2 to NPS 36 if vertical adjustment is required, with steel-pipe base stanchion support and cast-iron floor flange.
7. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.
8. Adjustable Pipe Roll and Base Units (MSS Type 46): For support of pipes NPS 2 to NPS 30 if vertical and lateral adjustment during installation might be required in addition to expansion and contraction.

I. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

J. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

K. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Restraint-Control Devices (MSS Type 47): Where indicated to control piping movement.
2. Constant Supports: For critical piping stress and if necessary to avoid transfer of stress from one support to another support, critical terminal, or connected equipment. Include auxiliary stops for erection, hydrostatic test, and load-adjustment capability. These supports include the following types:
   a. Horizontal (MSS Type 54): Mounted horizontally.
   b. Vertical (MSS Type 55): Mounted vertically.
   c. Trapeze (MSS Type 56): Two vertical-type supports and one trapeze member.
L. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

M. Comply with MFMA-103 for metal framing system selections and applications that are not specified in piping system Sections.

N. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

END OF SECTION 230529
SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe labels.
   2. Valve tags.
   3. Warning tags.
   4. Buried piping warning tags.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
B. Samples: For color, letter style, and graphic representation required for each identification material and device.
C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.
D. Valve numbering scheme.
E. Valve Schedules: For each piping system to include in maintenance manuals.

1.3 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
B. Coordinate installation of identifying devices with locations of access panels and doors.

PART 2 - PRODUCTS

2.1 PIPE LABELS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Brimar Undustries, Inc.
   2. Seton Name Plate Corp.
   3. Or equivalent.
B. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.
C. Pretensioned Pipe Labels: Precoiled, semirigid plastic formed to cover full circumference of pipe and to attach to pipe without fasteners or adhesive.
D. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

E. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
   1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
   2. Lettering Size: At least 1-1/2 inches high.

2.2 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.
   1. Tag Material: Brass, 0.032-inch or Stainless steel, 0.025-inch or Aluminum, 0.032-inch or anodized aluminum, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
   2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
   1. Valve-tag schedule shall be included in operation and maintenance data.

2.3 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with matte finish suitable for writing.
   1. Size: 3 by 5-1/4 inches minimum.
   2. Fasteners: Brass grommet and wire.
   3. Nomenclature: Large-size primary caption such as "DANGER," "CAUTION," or "DO NOT OPERATE."

B. Warning Tags For Buried Underground Piping: Continuous printed plastic tape with metallic core intended for direct burial service.
   1. Size: 6" wide x 4 mils thick.
   2. Nomenclature: Large-size primary caption such as "CAUTION STEAM LINE BURIED BELOW."
   3. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.
3.2 PIPE LABEL INSTALLATION

A. Locate pipe labels where piping is exposed as follows:
   1. Near each valve and control device.
   2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow
      pattern is not obvious, mark each pipe at branch.
   3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
   4. Near major equipment items and other points of origination and termination.
   5. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of
      congested piping and equipment.

B. For underground pre-insulated piping system, provide continuous underground plastic line caution tape installed
   in the trench above the pipe one foot beneath the ground surface and one foot above the pipe.

C. Pipe Label Color Schedule:
   1. High-Pressure Steam Piping:
      a. Background Color: Yellow.
      b. Letter Color: Black.
   2. Pumped Condensate Piping:
      a. Background Color: Yellow.
      b. Letter Color: Black.
   3. Steam Condensate Piping:
      a. Background Color: Yellow.
      b. Letter Color: Black.

3.3 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-
fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and
HVAC terminal devices and similar roughing-in connections of end-use fixtures and units. List tagged valves in
a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions
   similar to those indicated in the following subparagraphs:
   1. Valve-Tag Size and Shape:
      a. High-Pressure Steam: 1-1/2 inches or 2 inches, round.
      b. Pumped Condensate: 1-1/2 inches or 2 inches, round.
      c. Steam Condensate: 1-1/2 inches or 2 inches, round.
   2. Valve-Tag Color:
      a. High-Pressure Steam: Natural.
      b. Pumped Condensate: Natural.
      c. Steam Condensate: Natural.
   3. Letter Color: 
a. High-Pressure Steam: Black.
b. Pumped Condensate: Black.
c. Steam Condensate: Black.

3.4 WARNING-TAG INSTALLATION

A. Write required message on, and attach warning tags to, equipment and other items where required.

B. Buried steam and condensate pipe caution tape installed in the trench one foot beneath the ground surface for underground pre-insulated piping system.

END OF SECTION 230553
SECTION 232213 - STEAM AND CONDENSATE HEATING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes pipe and fittings for buried and above grade high pressure steam, pumped condensate and high pressure condensate piping and appurtenances.

1.2 ACTION SUBMITTALS

A. Delegated-Design Submittal:
   1. Design calculations, piping stress analysis and detailed fabrication and assembly of pipe anchors, expansion joints and loops, and attachments of the same to the building structure and manholes.
   2. Locations of pipe anchors and expansion joints and loops.
   3. Locations of and details for penetrations, including sleeves and sleeve seals for exterior building walls, floors, basement, and piping manholes.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Piping layout, drawn to scale (minimum 1/4” scale), on which the following items are shown and coordinated with each other, using input from pre-engineered doubled walled underground piping manufacturer of the items involved:
   1. Location of anchors.
   2. Size and locations of expansion loops.
   3. Other building services.
   4. Structural members.

B. Qualification Data: For Installer.

C. Welding certificates.

D. Field quality-control reports.

E. Samples:
   1. Contractor shall submit a one foot long section of 2” pre-insulated high pressure condensate piping to engineer for review prior to field installation.

1.4 RECORD DRAWINGS

A. At project close out, submit as-built drawings of the installed system piping and products.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
B. Pipe Welding: Qualify procedures and operators according to the following:
   1. ASME Compliance: Comply with for materials, products, and installation.
   2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. The contractor shall provide a complete installation with all necessary piping materials and specialties fully and properly connected and coordinated.

D. Installation shall be in full compliance with the requirements of the pre-insulated manufacturer and shall be fully operational upon completion of work defined and as phased. Printed instructions shall be made available by the contractor at the site during construction.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Permapipe (Basis of design)
   2. Rovanco
   3. Thermacor
   4. Or Equivalent

B. Components and installation shall be capable of withstanding the following minimum working pressures and temperatures unless otherwise indicated:
   1. HP Steam Piping: 125 psig.
   2. HP Condensate Piping: 125 psig at 250 deg F.
   3. Pumped Condensate Piping: 40 psig at 275 deg F.
   4. Air-Vent and Vacuum-Breaker Piping: Equal to pressure of the piping system to which it is attached.

2.2 STEEL PIPE AND FITTINGS (IN MANHOLES)

A. Piping:
   1. Installation shall follow requirements in Section 3.

B. Insulation:
   1. Shall be sectional Aspen Aerogel Pyrogel XT with a K Factor of 0.24 at 600 F. Sectional insulation shall be banded on pipe with stainless steel banding on 18” centers. Insulation thickness shall be as follows:
      a. Pipe size up to 2” – 0.59” thick
      b. Pipe size 3” to 4” – 0.79” thick
      c. Pipe size 5” to 10” – 1.18” thick
   2. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
a. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity unless otherwise indicated.

b. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.

c. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.

d. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.

C. Jacketing:

1. Aluminum jacket shall be applied to all piping within manholes and shall comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-15.

2.3 STEEL PIPE AND FITTINGS (UNDERGROUND)

A. Carrier Pipe:

1. A53B Black steel pipe, ERW domestic steel, in pre-cutlengths. Pipe 10" and smaller shall be Schedule 40. Pipe 2" and larger shall be standard weight 0.375 wall. Schedule 80 shall be used for condensate lines. All piping materials shall be domestic.

B. Insulation:

1. Shall be sectional Aspen Aerogel Pyrogel XT with a K Factor of 0.24 at 600 F. Sectional insulation shall be banded on pipe with stainless steel banding on 18” centers. Insulation thickness shall be as follows:

   a. Pipe size up to 1” – 0.39” thick
   b. Pipe size 1-1/2” to 2” – 0.59” thick
   c. Pipe size 3” to 4” – 0.79” thick
   d. Pipe size 5” to 10” – 0.98” thick

C. Inner Pipe Supports:

1. All pipe shall be aligned and supported within the casing with galvanized steel supports spaced on centers approximately 10'-0". The insulated inner pipe shall bear directly on the steel support. The support shall be designed as to permit drainage and free air passage. All pipe passing through supports shall be insulated. Concrete type pipe supports will not be allowed.

D. Outer Conduit Casing:

1. Outer casing shall be black steel. Casing up through 24" shall be 10 gauge. Casing 26" and larger shall be 6 gauge. The interior surface shall be smooth to permit free moisture drainage and removability of the inner assembly. The outer casing shall be sized to provide an adequate annular space between the
outer surface of the insulation material and the interior surface of the casing. The interior surface shall be coated with epoxy for corrosion resistance.

2. The exterior surface will be coated with a two-coat Fusion Bonded Epoxy system. The first coat will be a green finish coat with a melting point of 5000F. No glass wrap or filler materials shall be used in the epoxy. All exterior conduit surfaces shall be shot blasted prior to the coating being applied. The Fusion Bonded Epoxy shall conform to these ASTM Standards:
   a. ASTM D1763 Disclosure of properties of the epoxy sub-components
   b. ASTM G17 Penetration test
   c. ASTM D1044 Abrasion resistance
   d. ASTM D2370 Tensile strength
   e. ASTM G14 Impact tests
   f. ASTM G8 Salt crock
   g. ASTM D968 Abrasion tests
   h. ASTM D1002 Sheer strength and adhesion
   i. ASTM D659 Compressive strength
   j. ASTM D257 Volume resistivity
   k. ASTM D1000 Electric strength
   l. ASTM G53 Weathering
   m. ASTM B117 Salt fog

3. The second layer will be compatible Fusion Bonded Epoxy coating that will provide mechanical protection to the first layer. The second layer of Fusion Bonded Epoxy will be applied no later than 5 seconds after the first layer has been applied so that it securely bonds to the first layer as both layers cure. The second layer must have an impact resistance of at least 160 lbs. per square inch as per ASTM G14-72. The Fusion Bonded Epoxy coating will be applied in a total thickness of no less than 20 mils. No asphalt, coal tar coating, FRP casing or any other type will be allowed.

4. Outer conduit casing closures shall consist of 10 gauge steel suitably rustproofed and in cylindrical form with a single horizontal split and shall be field welded over adjacent units. After tests, all exposed closures shall be covered in the field with a polyethylene heat shrink material with a minimum thickness of 60 mils.

E. Expansion loops and Elbows:

1. Expansion loops or expansion elbows shall be furnished and enclosed in the same type of casing as those furnished for the standard section of the piping system. They will be of a size to permit the inner pipe or pipes to move without damage to the insulation material. All expansion loops or expansion elbows shall be pre-fabricated and shipped to the job site in as few pieces as possible (manufacturers’ recommendations to govern). All inner pipe loops and expansion bends shall be cold sprung in the field by the contractor as required.

F. Weld Fittings:

1. All changes in direction shall be made with bent or weld fittings. Where tee branches are smaller than the mains they join, weld-o-lets may be used. All weld fittings shall be long radius and shall be the same wall thickness as adjacent piping.

G. Anchors:

1. Anchors shall be pre-fabricated onto the piping units and shall be equipped with drainage and vent openings at the top and bottom of the anchor plate. Anchor plates shall be made of 1/2” steel plate.
H. End Seals and Gland Seals:
   1. Terminal ends of conduits inside manholes, pits, or building walls shall be equipped with end seals consisting of a steel bulkhead plate welded to the pipe conduit. Where there is no anchor within five feet of a terminal end, conduits shall be equipped with gland seals consisting of a packed stuffing box and gland follower mounted on a steel plate welded to end of conduit. End seals or gland seals shall be made of 1/2” steel plate with drain and vent openings located diametrically opposite on the vertical center line of the mounting plate and shall be shipped to the job site with plugs in place. Terminate all conduits 2 inches beyond the inside face of building walls to protect any exposed piping insulation from damp wall condensation.

2.4 JOINING MATERIALS

A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
   1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
      a. Full-Face Type: For flat-face, Class 150, cast-iron and cast-bronze flanges.
      b. Narrow-Face Type: For raised-face, Class 300, cast-iron and steel flanges.

B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

D. Welding Materials: Comply with Section II, Part C, of ASME Boiler and Pressure Vessel Code for welding materials appropriate for wall thickness and for chemical analysis of pipe being welded.

2.5 INSTALLATION OF IDENTIFICATION

A. Underground Type Plastic Line Markers (Applies to direct bury only)
   1. During backfilling and topsoiling of underground steam and condensate piping, install continuous underground plastic line markers, located at two depths 1’-0” below grade and 1’-0” above pipe.

B. Piping inside steam manhole
   1. Comply with the requirements of section 230553 – Identification for HVAC piping and equipment.

PART 3 - EXECUTION

3.1 HP STEAM PIPING APPLICATIONS

A. HP Steam Piping, NPS 2-1/2 through NPS 12: Schedule 40, Type E, Grade B, steel pipe; Class 150 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.

B. HP Condensate piping, NPS 2 and smaller, shall be the following:
   1. Schedule 80, Type S, Grade B, steel pipe; Class 300 cast-iron fittings; and threaded joints.

C. Pumped condensate piping, NPS 2-1/2 and larger, shall be the following:
   1. Schedule 80, Type E, Grade B, steel pipe; Class 300 wrought-steel fittings, flanges, and flange fittings; and welded and flanged joints.
3.2 ANCILLARY PIPING APPLICATIONS

A. Vacuum-Breaker Piping: Outlet, same as service where installed.

3.3 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless otherwise indicated.

C. Install piping to permit valve servicing.

D. Install piping free of sags and bends.

E. Install fittings for changes in direction and branch connections.

F. Install piping to allow application of insulation.

G. Select system components with pressure rating equal to or greater than system operating pressure.

H. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.

I. Install drains, consisting of a tee fitting, NPS 3/4 full port-ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.

J. Install steam supply piping at a minimum uniform grade of 0.2 percent downward in direction of steam flow.

K. Install condensate return piping at a minimum uniform grade of 0.4 percent downward in direction of condensate flow.

L. Reduce pipe sizes using eccentric reducer fitting installed with level side down.

M. Install branch connections to mains using tee fittings in main pipe, with the branch connected to top of main pipe.

N. Install valves according to Section 230523 "General-Duty Valves for HVAC Piping”.

O. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.

P. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.

Q. Install shutoff valve immediately upstream of each dielectric fitting.

R. Comply with requirements in Section 230516 "Expansion Fittings and Loops for HVAC Piping” for installation of expansion loops, expansion joints, anchors, and pipe alignment guides.

S. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment” for identifying piping.

T. Install drip legs at low points and natural drainage points such as ends of mains, bottoms of risers, and ahead of pressure regulators, and control valves.
1. On straight runs with no natural drainage points, install drip legs at intervals not exceeding 300 feet.

2. Size drip legs same size as main. In steam mains NPS 6 and larger, drip leg size can be reduced, but to no less than NPS 4.

3.4 HANGERS AND SUPPORTS

A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for installation of hangers and supports. Comply with requirements below for maximum spacing.

B. Install the following pipe attachments:
   1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
   2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
   3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
   4. Spring hangers to support vertical runs.

C. Install hangers for steel steam supply piping with the following maximum spacing:
   1. NPS 3 and Larger: Maximum span, 15 feet.

D. Install hangers for steel steam condensate piping with the following maximum spacing:
   1. NPS 2: Maximum span, 10 feet.
   2. NPS 3 and Larger: Maximum span, 12 feet

3.5 PIPE JOINT CONSTRUCTION

A. Ream ends of pipes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
   2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
   1. Branch connections shall be made with welding tees.
   2. Mitering of pipe to form tees will not be permitted. All pipe and fittings shall be cleaned before welding and installation in system.

E. Fittings: All pipe intersections and all changes in directions shall be made with factory-built reinforced fittings. Field fabricated fittings and miters are not permitted.

F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
G. Field Joints: Applied by the insulation contractor utilizing the manufacturer’s furnished kit and instruction. Field joints shall not be applied until after carrier pipe has been hydrostatically tested and approved.

3.6 PRECAST CONCRETE MANHOLE

A. Manholes:
   1. Manholes are existing to remain.
   2. Conduit Stub-Outs: Modified as necessary and core drilled in the field.
   3. Piping Penetration Seals: Link Seals

3.7 FIELD QUALITY CONTROL

A. Prepare steam and condensate piping according to ASME B31.1, "Power Piping," and ASME B31.9, "Building Services Piping," and as follows:
   1. Leave joints, including welds, uninsulated and exposed for examination during test.
   2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
   3. Flush system with clean water. Clean strainers.
   4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.

B. Manufacturer's Field Service Representative: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections. The manufacturer's field service representative shall be certified by the manufacturer, technically qualified and experienced in the installation of the system. The manufacturer's representative shall be present at the job site when the following work is performed and shall certify in writing that all requirements have been performed. The manufacturer's field service representative shall perform the following:
   1. Inspection of trench prior to installation.
   2. Inspection of thrust blocking.
   3. Inspection of cold springing.
   4. Inspection of all field joint work.
   5. Inspection of any coating patchwork and outer jacket field insulation.
   6. Inspection of backfill up to 24” above the top of the casing conduits.

C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
   1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
   2. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength.
   3. Maintain pressure until system has been inspected for leaks but not less than four hours.
   4. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
D. The contractor shall obtain periodic written reports (6-minimum) from the representative of the system manufacturer. The report shall be signed by the manufacturer’s representative. The report shall state whether or not the conditions and quality of the materials used and the installation of the system are in accordance with the plans, specifications, and is satisfactory in all respects. If any work connected with the installation is unsatisfactory, the report shall state what corrective action has been taken or shall contain the system manufacturer’s recommendations for corrective action. The manufacturer’s representative shall take prompt action to return to the factory all damaged or defective material, and shall order prompt replacement of such material. Upon completion of the work and final acceptance, the contractor shall submit a notarized statement signed by a principal officer of both the supplier and the contracting firm stating that the installation is satisfactory and in compliance with the plans and specifications.

E. The contractor shall not perform any of this work in the absence of the manufacturer’s authorized field service representative.

F. The installing contractor shall be trained in the installation of the pre-insulation piping system by the system manufacturer prior to the beginning of any installation.

END OF SECTION 232213
SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. Section Includes:
1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting, capping or sealing, removing site utilities and abandoning site utilities in place.
7. Temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS
A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.
F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP
A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.
1.5 INFORMATIONAL SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
   1. Use sufficiently detailed photographs or videotape.
   2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 QUALITY ASSURANCE

A. Preinstallation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify utility locator service and college for area where Project is located before site clearing.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

E. Do not direct vehicle or equipment exhaust towards protection zones.

F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

G. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
   1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly identify trees, shrubs, and other vegetation to remain. Wrap a 1-inch (25-mm) blue vinyl tie tape flag around each tree trunk at 54 inches (1372 mm) above the ground.

C. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by owner.

B. All trees to be replaced shall be a minimum of five inches in diameter of a type approved by the owner.

3.4 EXISTING UTILITIES

A. Interrupting Existing Utilities: 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. Steam utilities shall only be disconnected during approved summer shutdown period.
   2. Notify Engineer not less than two weeks in advance of proposed utility interruptions.
3. Do not proceed with utility interruptions without Engineer's written permission.

B. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
   1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
   2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches (450 mm) below exposed subgrade.
   3. Use only hand methods for grubbing within protection zones around manholes and congested areas shown on drawings.
   4. Chip removed tree branches and dispose of off-site.
   5. All trees that are removed as part of this project shall be replaced with two trees with minimum trunk diameters of five inches.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
   1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.
   1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil at Carlton Avenue lot away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
   1. Limit height of topsoil stockpiles to 72 inches (1800 mm).
   2. Do not stockpile topsoil within protection zones.
   3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
   4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
   1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000
SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Preparing subgrades for walks and pavements.
   2. Excavating and backfilling trenches for utilities.

B. Related Sections:
   1. Section 01322 "Photographic Documentation" for recording pre-excavation and earth moving progress.
   2. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.

1.3 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. (0.76 cu. m) for bulk excavation or 3/4 cu. yd. (0.57 cu. m) for trench and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
   1. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- (1065-mm-) wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp (103-kW) flywheel power with bucket-curling force of not less than 28,700 lbf (128 kN) and stick-
crowd force of not less than 18,400 lbf (82 kN) with extra-long reach boom; measured according to SAE J-1179.

2. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp (172-kW) flywheel power and developing a minimum of 47,992-lbf (213.3-kN) breakout force with a general-purpose bare bucket; measured according to SAE J-732.

I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

J. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:
   1. Warning tapes.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
   1. Classification according to ASTM D 2487.
   2. Laboratory compaction curve according to ASTM D 698.

C. Seismic survey report from seismic survey agency.

D. Preexcavation Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by earth moving operations. Submit before earth moving begins.

1.6 QUALITY ASSURANCE

A. Seismic Survey Agency: An independent testing agency, acceptable to authorities having jurisdiction, experienced in seismic surveys and blasting procedures to perform the following services:

   1. Report types of explosive and sizes of charge to be used in each area of rock removal, types of blasting mats, sequence of blasting operations, and procedures that will prevent damage to site improvements and structures on Project site and adjacent properties.

   2. Seismographic monitoring during blasting operations.

B. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.
C. Preexcavation Conference: Conduct conference at Project site.

1.7 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways. Temporary bridges to be provided over sidewalks if necessary to allow continuous usage by college staff and students.

B. Utility Locator Service: Notify utility locator service and college for area where Project is located before beginning earth moving operations.

C. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Section 311000 "Site Clearing," are in place.

D. The following practices are prohibited within protection zones:
   1. Storage of construction materials, debris, or excavated material.
   2. Parking vehicles or equipment.
   3. Foot traffic.
   4. Erection of sheds or structures.
   5. Impoundment of water.
   6. Excavation or other digging unless otherwise indicated.
   7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

E. Do not direct vehicle or equipment exhaust towards protection zones.

F. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
D. **Subbase Material:** Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

E. **Base Course:** Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

F. **Engineered Fill:** Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

G. **Bedding Course:** Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

H. **Drainage Course:** Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

I. **Filter Material:** Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and 0 to 5 percent passing a No. 4 (4.75-mm) sieve.

J. **Sand:** ASTM C 33; fine aggregate.

K. **Impervious Fill:** Clayey gravel and sand mixture capable of compacting to a dense state.

2.2 **ACCESSORIES**

A. **Detectable Warning Tape:** Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:

1. **Yellow:** Gas, oil, steam, and dangerous materials.

**PART 3 - EXECUTION**

3.1 **PREPARATION**

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
   1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXPLOSIVES

A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
   1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
   2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
      a. 24 inches (600 mm) outside of concrete forms other than at footings.
      b. 6 inches (150 mm) beneath pipe in trenches, and the greater of 24 inches (600 mm) wider than pipe or 42 inches (1065 mm) wide.

B. Excavations at Edges of Tree- and Plant-Protection Zones:
   1. Excavate by hand to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.
   1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
   1. Clearance: 12 inches (300 mm) each side of pipe or conduit.
C. **Trench Bottoms:** Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches (150 mm) in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
2. For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
4. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. **Trench Bottoms:** Excavate trenches 4 inches (100 mm) deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

1. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

E. **Trenches in Tree- and Plant-Protection Zones:**

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots.

### 3.7 **SUBGRADE INSPECTION**

**A.** Notify Engineer when excavations have reached required subgrade.

**B.** If Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

**C.** Proof-roll subgrade below manholes to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

**D.** Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

**E.** Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

### 3.8 **STORAGE OF SOIL MATERIALS**

**A.** Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

2. Carlton Avenue lot shall be used for storage. Coordinate with owner on location and access.

3.9 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.

2. Surveying locations of underground utilities for Record Documents.

3. Testing and inspecting underground utilities.

4. Removing concrete formwork.

5. Removing trash and debris.

6. Removing temporary shoring and bracing, and sheeting.

7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.10 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under Roadways: Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches (100 mm) of concrete before backfilling or placing roadway subbase course. Concrete is specified in Section 033000 "Cast-in-Place Concrete."

D. Backfill voids with satisfactory soil while removing shoring and bracing.

E. Place and compact initial backfill of subbase material, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

F. Place and compact final backfill of satisfactory soil to final subgrade elevation.

G. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.11 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
B. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use satisfactory soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.12 SOIL MOISTURE CONTROL
A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS
A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
   1. Under structures and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent.
   2. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.
   3. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.
   4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.14 GRADING
A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm).
   2. Walks: Plus or minus 1 inch (25 mm).
   3. Pavements: Plus or minus 1/2 inch (13 mm).
3.15 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
   1. Place base course material over subbase course under hot-mix asphalt pavement.
   2. Shape subbase course and base course to required crown elevations and cross-slope grades.
   3. Place subbase course and base course 6 inches (150 mm) or less in compacted thickness in a single layer.
   4. Place subbase course and base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
   5. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

C. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.16 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
   1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
   2. Determine that fill material and maximum lift thickness comply with requirements.
   3. Determine, at the required frequency, that in-place density of compacted fill complies with requirements.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
   1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab, but in no case fewer than three tests.
   2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet (46 m) or less of trench length, but no fewer than two tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.
3.17 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. All soil within specified environmental zone around Power House shall be properly sampled, protected and disposed of. All work shall be through TCNJ's Licensed Site Remediation Professional, Envirotrac. Contact shall be made through the office of Occupational Safety and Environmental Services.

END OF SECTION 312000
SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and
      Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. Section Includes:
      1. Walks.
   B. Related Sections:
      1. Section 033000 "Cast-in-Place Concrete for general building applications of concrete.

1.3 DEFINITIONS
   A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic
      cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.
   B. WWM: Woven Wire Mesh

1.4 ACTION SUBMITTALS
   A. Product Data: For each type of product indicated.
   B. Shop Drawings: Indicate concrete mix and rebar design.
   C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.
   D. Other Action Submittals:
      1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when
         characteristics of materials, Project conditions, weather, test results, or other circumstances warrant
         adjustments.

1.5 INFORMATIONAL SUBMITTALS
   A. Qualification Data: For qualified ready-mix concrete manufacturer.
   B. Material Certificates: For the following, from manufacturer:
      1. Cementitious materials.
      2. Steel reinforcement and reinforcement accessories.
      3. Fiber reinforcement.
      4. Admixtures.
5. Curing compounds.
7. Bonding agent or epoxy adhesive.
8. Joint fillers.

C. Material Test Reports: For each of the following:
   1. Aggregates.

D. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

C. Concrete Testing Service: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures.

D. ACI Publications: Comply with ACI 301 (ACI 301M) unless otherwise indicated.

1.7 PROJECT CONDITIONS

A. Traffic Control:
   1. Maintain access for pedestrian traffic as required for other construction activities. Bridges shall be provided over existing walkways during construction.
   2. Installation of temporary walkways (Gravel) will be required to maintain traffic flow as best as possible during the work of each area. Keep work areas neat and organized at all times.
   3. All areas to be secure with proper fencing and signage to prevent physical harm to pedestrian traffic. Advanced notice as to when the work will begin and when the work will be completed are required on signage provided by this contractor.
   4. Movement of construction vehicles must be approved to assure safety to existing sidewalks and the college community.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
1. Use flexible or uniformly curved forms for curves with a radius of 100 feet (30.5 m) or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, fabricated from as-drawn steel wire into flat sheets.

C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

D. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60 (Grade 420), deformed bars; assembled with clips.

E. Plain-Steel Wire: ASTM A 82/A 82M, as drawn.

F. Deformed-Steel Wire: ASTM A 496/A 496M.

G. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420) plain-steel bars. Cut bars true to length with ends square and free of burrs.

H. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

I. Hook Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

J. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

K. Zinc Repair Material: ASTM A 780.

2.3 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, gray portland cement Type I.

B. Normal-Weight Aggregates: ASTM C 33, Class 4S, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
C. Water: Potable and complying with ASTM C 94/C 94M.


E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
   1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
   2. Retarding Admixture: ASTM C 494/C 494M, Type B.
   3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
   4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
   5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
   6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.4 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.5 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 30 1 (ACI 301M), for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
   1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
   2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that meet or exceed requirements.

B. Proportion mixtures to provide normal-weight concrete with the following properties:
   2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
   3. Slump Limit: 4 inches (100 mm), plus or minus 1 inch (25 mm).

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
   1. Air Content: 5-1/2 percent plus or minus 1.5 percent for 1-1/2-inch (38-mm) nominal maximum aggregate size.
   2. Air Content: 6 percent plus or minus 1.5 percent for 1-inch (25-mm) nominal maximum aggregate size.
   3. Air Content: 6 percent plus or minus 1.5 percent for 3/4-inch (19-mm) nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
2.6 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. (0.76 cu. m) or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.

2. For concrete batches larger than 1 cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1 cu. yd. (0.76 cu. m).

3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 DEMOLITION

A. Remove sidewalks as identified using equipment and machinery required to safely dislodge and remove from site.

B. Great care must be taken to assure no damage is incurred to adjoining sidewalks, light fixtures, trees and minimal disturbance to landscaping and lawn areas. Repair all disturbed areas immediately after work of each area is done.

C. All debris is to be hauled from the site on a daily basis.

3.2 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete pavings to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph (5 km/h).

2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes).

3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch (13 mm) according to requirements in Section 312000 "Earth Moving."

C. Proceed with installation only after unsatisfactory conditions have been corrected.
3.3 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.4 GENERAL INSTALLATION

A. All sidewalks and intersections are to contain 6” packed 3/4” clean crushed aggregate over compacted sub grade.

B. Concrete is to be 4,000 PSI, rated class C and air entrained with fly ash. A 15% Class C fly ash mix is suggested, similar to a 1# fly ash to 1# cement ratio. Submit concrete mix design to TCNJ for approval and provide delivery tickets for each day’s placement of concrete.

C. 6x6 WWF Reinforcing is to be installed in low one-third of all concrete walks (only if there is no re-bar).

D. Expansion joints are to be placed a maximum of 20’ on center utilizing preformed expansion joint material, PVC pipe for re-bar continuation, minimum 1/2” thick.

E. Pavement slope: minimum 1/8” per foot.

F. Create 1/2” radius along outside edge by use of an appropriate edging tool. Intermediate lines and details to match the existing prior to removal. Take pictures in order to assist in duplicating the work.

G. Appropriate sealer to be applied to all new concrete via 1/2” smooth dowels at a minimum of 12” into the adjacent concrete and epoxy solid into the concrete, with a minimum of 12” into the new concrete.

H. Topsoil and seed / hay (or mulch) per existing conditions all edges of new walkways immediately upon final cleanup of each area.

3.5 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI’s "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.
3.7 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
   1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
   1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
   2. Provide tie bars at sides of paving strips where indicated.
   3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches (38 mm) into concrete.
   5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
   1. Locate expansion joints at intervals of 50 feet (15.25 m) unless otherwise indicated.
   2. Extend joint fillers full width and depth of joint.
   3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.
   4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
   5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
   6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch (6-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.8 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 (ACI 301M) by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
   1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement and joint devices.

H. Screech paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

K. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
   1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
   2. Do not use frozen materials or materials containing ice or snow.
   3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

L. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:
   1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
   3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.9 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.
B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.

2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch (1.6 to 3 mm) deep with a stiff-bristled broom, perpendicular to line of traffic.

3.10 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

3.11 CONCRETE DETAILS (LARGER THAN 8 FEET WIDE)

A. Perimeter border of sidewalk to be one foot wide.

B. Border to be 12” thick reinforced with #4 and #5 rebar on 24” centers and 18” centers respectively. See detail 06 on drawing M-4.

C. Concrete inside border is to be minimum 8” thick reinforced with #4 and #5 rebar on centers as noted above.

3.12 CONCRETE DETAILS (LESS THAN 8 FEET WIDE)

A. Concrete is to be 5 inches thick across entire slab.

B. Concrete sidewalk, 4,000 psi class C air entrained with 6”x6” WWM in lower one-third of slab.

C. 1/2” preformed joint filler expansion joints required.

3.13 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch (19 mm).

2. Thickness: Plus 3/8 inch (10 mm), minus 1/4 inch (6 mm).

3. Surface: Gap below 10-foot- (3-m-) long, unleveled straightedge not to exceed 1/2 inch (13 mm).
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches (13 mm per 300 mm) of tie bar.

5. Lateral Alignment and Spacing of Dowels: 1 inch (25 mm).


7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches (6 mm per 300 mm) of dowel.

8. Joint Spacing: 3 inches (75 mm).

9. Contraction Joint Depth: Plus 1/4 inch (6 mm), no minus.

10. Joint Width: Plus 1/8 inch (3 mm), no minus.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mixture placed each day.

   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when it is 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.

6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.

   a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Concrete paving will be considered defective if it does not pass tests and inspections.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.15 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 321313
SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Chain-link fences.

1.3 PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with CLFMI Product Manual and with requirements indicated below:

1. Fabric Height: To match height of fence.
2. Aluminum Wire Fabric: ASTM F 1183, with mill finish, and wire diameter of 0.148 inch (3.76 mm).
   a. Mesh Size: 2 inches (50 mm).
3. Selvage: Knuckled at both selvages.

B. Provide privacy fabric on one side of fencing. Fabric shall be green.

2.2 FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:

1. Fence Height: 72 inches (1830 mm).
   a. Line Post: 1.9 inches (48 mm) in diameter.
   b. End, Corner and Pull Post: 2.375 inches (60 mm).
   a. Top Rail: 1.66 inches (42 mm) in diameter.
4. Metallic Coating for Steel Framing:
   a. Type A, consisting of not less than minimum 2.0-oz./sq. ft. (0.61-kg/sq. m) average zinc coating per ASTM A 123/A 123M or 4.0-oz./sq. ft. (1.22-kg/sq. m) zinc coating per ASTM A 653/A 653M.
   b. Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.
   c. Coatings: Any coating above.

2.3 FITTINGS

A. General: Comply with ASTM F 626.

B. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
   1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
      a. Aluminum: ASTM B 211 (ASTM B 211M); Alloy 1350-H19; 0.148-inch- (3.76-mm-) diameter, mill-finished wire.

C. Finish:
   1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. (366 g/sq. m) zinc.
      a. Polymer coating over metallic coating.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
   1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Provide fencing around excavation area.

3.2 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet (152.5 m) or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
   1. Install fencing on established boundary lines inside property line.
3.4 CHAIN-LINK FENCE INSTALLATION

A. Post Setting: Set posts on supports on firm, undisturbed soil with weights to limit movement.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting.

B. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.

C. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches (300 mm) o.c. and to braces at 24 inches (610 mm) o.c.

D. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

E. Connections: Make connections to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
   1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
   2. Make connections with clean, bare metal at points of contact.
   5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

END OF SECTION 323113
1. All Sophisticated Seal, Sediment Control, Contact Points Shall Be Kept cheerful. Prior To Expansion, Seal Sediment Control and Procedures As Required By The Mercer County Soil Conservation District.

2. Conduit Outlet Protection shall Be Installed At All Required Outfalls Prior To The Drainage System Becoming Operational.


4. All Work Shall Be Done In Accordance With The State Standards For Soil Erosion And Sediment Control In Their Proper Sequence And Maintained Until Permanent Protection Is Established.

5. Any Disturbed Areas That Will Be Left Exposed More Than 30 Days And Not Subject To Construction Traffic, Will Immediately Receive A 50'x30'x1' Pad Of 1-1/2" Or 2" Stone, At All Access Points. If Traffic Is Not Present, The Sub-Base Shall Be Installed Within 15 Days Or Preliminary Grading. Contractor Shall Hand Dig To Avoid Utilities.

6. Conduct Daily Precautionary Measures Shall Be Ineffective At All Proposed Cutouts Prior To The Drainage System Being Operational.

7. The Mercer County Soil Conservation District Shall Be Notified Of Any Changes To The Certified Soil Erosion And Sediment Control Plan Will Require The Submission Of Amendments To The District Issuing A Report Of Compliance To The Contractor Of The District.

8. The Contractor Is Responsible For Providing All Adjacent Roads Open During Any Construction Project. Completed Areas Shall Be Hand Dug By Contractor.


10. The Mercer County Soil Conservation District Shall Be Notified Of Any Changes In Ownership. Steep Slopes, Roadway Embankments (Steep Slopes, Roadway Embankments) Will Receive A Temporary Seeding In Combination With Straw Mulch Or A Suitable Equivalent, At A Rate Of Two (2) Tons Per Acre, According To State Standards. Contractors Are Responsible For Providing All Adjacent Roads Open During Any Construction At The Request Of The Mercer County Soil Conservation District.

11. At The Time When The Site Preparation For Permanent Vegetation Measures Have Been Completed Prior To The District Issuing A Report Of Compliance To The Contractor Of The District.


13. Contractors Are Responsible For Providing All Adjacent Roads Open During Any Construction Project. Completed Areas Shall Be Hand Dug By Contractor.


15. Conduct Daily Precautionary Measures Shall Be Ineffective At All Proposed Cutouts Prior To The Drainage System Being Operational.

16. The Mercer County Soil Conservation District Shall Be Notified Of Any Changes To The Certified Soil Erosion And Sediment Control Plan Will Require The Submission Of Amendments To The District Issuing A Report Of Compliance To The Contractor Of The District.

17. Contractors Are Responsible For Providing All Adjacent Roads Open During Any Construction At The Request Of The Mercer County Soil Conservation District.
## Topsoiling

### Permeable Vegetation Cover

#### Permeable Vegetation Cover for Soil Stabilization

**Notes:**
- Topsoil Stripping and Stockpiling
- Stockpile Detail
- Mulching
- Seedbed Preparation

**Table:**
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<thead>
<tr>
<th>Soil Texture</th>
<th>Tons/Acre</th>
<th>Lbs/1000 Sq. Ft</th>
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<tbody>
<tr>
<td>Clay, Clay Loam, High Organic</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>Sandy Loam, Loam, Silty Loam</td>
<td>2</td>
<td>90</td>
</tr>
<tr>
<td>Loam</td>
<td>25</td>
<td>200</td>
</tr>
<tr>
<td>Sand</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Loam, Sandy Loam</td>
<td>3</td>
<td>20</td>
</tr>
</tbody>
</table>

### Topsoiling (Continued)

- Field Preparation:
  - Soils with a pH of 4.0 or less or with a potential for re-compacting the subsoil.

### Specifications

- **Soil Texture:**
  - Loam, sandy loam, or silty loam

### Seed Mixes

#### Permanent Vegetation Mixes

- **20% Perennial Ryegrass**
  - Rate: 400 pounds per acre
  - **20% Weeping Lovegrass**
  - Rate: 100 pounds per acre

#### Temporary Vegetation Mixes

- **20% Ryegrass**
  - Rate: 100 pounds per acre
  - **20% Bluegrass**
  - Rate: 100 pounds per acre

### Silt Fence

- **Height:** 10 feet
- **Length:** 100 feet

### Hydromulch Application

- Application is 3 tons per acre

### Pens Fabric Details

<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
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<td>Polypropylene</td>
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<tr>
<td>Polyester</td>
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### Polypropylene Fabric Details

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<td>Polyester</td>
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</table>

### Cellulose Protection Plan

- **Earthworks:**
  - Stormwater Drainage
  - Erosion Control

### Soil Erosion Control Plan

- **Notes and Details:**
  - Sheet 1 of 12 (Plan and Section)
  - Sheet 2 of 12 (Plan and Section)
This Drawing Is The Property Of DLB Associates, Consulting Engineers P.C. - Last Saved: N:\47\472\47200\47200M01.dwg, 3/10/15 at 9:42 AM By DREHBERG - Last Printed: 3/10/15 at 9:44 AM By Rehberg, Dan

SITE PLAN - PIPING OVERVIEW

KENDALL HALL

SOCIAL SCIENCES BUILDING

ITEM

01/30/15 ISSUED FOR REVIEW
03/20/15 ISSUED FOR BID

KENDALL HALL STEAM PIPING REPLACEMENT
2000 PENNINGTON ROAD
265 Industrial Way West, Eatontown, N.J. 07724
CONSULTING  ENGINEERS, P.C.

3. Location Of All Existing Underground Utilities Shall Be Marked Out By College Prior To Excavation. Areas

4. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Underground

5. All Trenches Shall Be Back filled Without Delay. Open Trenches Shall Be Kept To A Minimum And Shall Be

6. All Trenches Shall Be Hand Dug Without Estate. Deep Trenches Shall Be Sloped For Excavation And Be

7. The Contractor Must Provide Adequate De watering For All Excavation Where Required.

8. No Stock Piling Of Soils Will Be Allowed Onsite. All Excavated Materials Are To Be Stockpiled At The TCNJ

9. A Small Fenced in Compound Will Be Established At The Site For Two Vehicles, Tool Boxes, Toilets And

10. Temporary 6" HPS Piping Between MH-19 and MH-7 Buried A Minimum Of One Foot Below

11. The Contractor Shall Provide Temporary 6" HPC Piping On All Trenches To Protect From Debris During Excavations Or Trenching.

12. All Excavated Material To An Off-Site Location At No Additional Cost To The Owner.

13. The Contractor Shall Be Responsible For Protecting Existing Thrust Blocks Which Are Restraining Existing

14. The Contractor Shall Be Responsible For Protecting Thrust Blocks Which Are Restraining Existing

15. All Pre-cast Concrete Manhole To Remain.

16. All Existing Manhole To Remain

17. Disconnect From Existing

18. Existing Piping Between College Utilities Shall Be Hand Dug To Ensure Full Removal Of Abandoned Piping

19. Remove Abandoned 6" HPS Piping To Allow Installation Of Temporary Piping. Cap Abandoned Piping To

20. Trees Of Similar Type Of At Least 5" Caliper In Project Scope. Trees Shall Be Removed And Stumps

21. Existing Trees Along Piping Path Shall Be Protected To The Greatest Extent Possible During Excavation

22. The Contractor Shall Perform Ground Penetrating Radar Scanning In Zones Where Availability Standards To

23. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

24. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

25. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

26. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

27. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

28. Existing Piping Shall Be Hand Dug To Ensure Full Removal Of Abandoned Piping

29. Permanent Woodbedo 6" HPS Piping To Allow Installation Of Temporary Piping - Cap Abandoned Piping To

30. Existing Precast Concrete Manhole To Remain

31. A Small Fenced In Compound Will Be Established At The Site For Two Vehicles, Tool Boxes, Toilets And

32. Trees Of Similar Type Of At Least 5" Caliper In Project Scope. Trees Shall Be Removed And Stumps

33. The Contractor Shall Be Responsible For Protecting Existing Thrust Blocks Which Are Restraining Existing

34. The Contractor Shall Be Responsible For Protecting Thrust Blocks Which Are Restraining Existing

35. All Excavated Material To An Off-Site Location At No Additional Cost To The Owner.

36. The Contractor Shall Be Responsible For Protecting Thrust Blocks Which Are Restraining Existing

37. The Contractor Shall Be Responsible For Protecting Thrust Blocks Which Are Restraining Existing

38. The Contractor Shall Be Responsible For Protecting Thrust Blocks Which Are Restraining Existing

39. All Excavated Material To An Off-Site Location At No Additional Cost To The Owner.

40. Trees Of Similar Type Of At Least 5" Caliper In Project Scope. Trees Shall Be Removed And Stumps

41. Existing Trees Along Piping Path Shall Be Protected To The Greatest Extent Possible During Excavation

42. The Contractor Shall Perform Ground Penetrating Radar Scanning In Zones Where Availability Standards To

43. The Contractor Shall Provide Protection To Prevent Damage Or Interruption Of Service To Undeveloped

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47. Existing Piping Between College Utilities Shall Be Hand Dug To Ensure Full Removal Of Abandoned Piping

48. Remove Abandoned 6" HPS Piping To Allow Installation Of Temporary Piping. Cap Abandoned Piping To

49. Trees Of Similar Type Of At Least 5" Caliper In Project Scope. Trees Shall Be Removed And Stumps

50. Existing Trees Along Piping Path Shall Be Protected To The Greatest Extent Possible During Excavation

51. The Contractor Shall Perform Ground Penetrating Radar Scanning In Zones Where Availability Standards To

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