

**Delgado Community College
Purchasing Department
501 City Park Avenue, Bldg. 37
New Orleans, Louisiana 70119
(504) 762-3027**

Invitation to Bid

Bid Name:

R0013154 – Mechanical System Replacement

Due by & to be opened on:

October 28th, 2016 at 2:00PM CST

Contact Person:

Tracey Sheffield

Assistant Director Purchasing

(504) 762-3029

NAME OF COMPANY

ADDRESS

CITY, STATE, ZIP

PHONE NUMBER

FAX NUMBER

EMAIL

SIGNATURE OF COMPANY REPRESENTATIVE

NAME (PRINTED) & TITLE OF COMPANY REPRESENTATIVE

*** This form must be completed and submitted with your bid*

I. GENERAL INFORMATION

1. Any questions regarding this Invitation to Bid shall be in writing and shall be addressed to Tracey Sheffield at the following address:

Delgado Community College
O'Keefe Administration Building
501 City Park Avenue, Building 37
New Orleans, La 70119
Email: tsheff@dcc.edu
Fax: (504) 762-3089

Any additional information resulting from such inquiries shall be distributed to all bidders via addenda. The College will not be responsible for any other explanation of the documents.

Sealed bids may be submitted by mail or in person. Mailed bids and hand carried bids shall go to the address in item #1. Do not leave hand carried bids at the front desk. The bid name and number shall be on the outside of the packaging, including express mail. Please note that express mail or USPS carriers may not deliver directly to 501 City Park Avenue. The bidder/proposer is solely responsible for ensuring that its courier service provider makes inside deliveries to 501 City Park Avenue.

3. Each bidder is solely responsible for the accuracy and completeness of its bid. Errors or omissions may be grounds for rejection, or may be interpreted in favor of the College.

4. Each bidder is solely responsible for the timely delivery of its bid. Delgado Community College will not be responsible for any delays in the delivery of bids, whether delayed in the mail, or for any reason whatsoever.

5. Only the issue of a purchase order or a signed acceptance of a proposal constitutes acceptance on the part of the College.

6. Assuming there is no prompt payment discount provision, payment will be made within 30 days from receipt of products in satisfactory condition, or within 30 days from receipt of invoice, whichever is later.

7. Proposer or bidder, contractor, etc. certifies, by signing and submitting a proposal for \$25,000 or more, that their company, any subcontractors, or principals are not suspended or debarred by the General Services Administration (GSA) in accordance with the requirements in OMB Circular A-133. (A list of parties who have been suspended or debarred can be viewed via the internet at www.epls.gov .)

II. BID FORM
R0013035 - Concrete Repair & Replacement

<u>Item No</u>	<u>Qty</u>	<u>UOM</u>	<u>Description OF Work</u>	<u>Price</u>
(1)	1	LOT	Provide the materials, labor, equipment and supervision necessary for the removal/replacement of ceiling mount fan coil units(10) Williams Fan Coil Model ER-D	_____

Addendum No: _____ Dated: _____	Addendum No: _____ Dated: _____
Addendum No: _____ Dated: _____	

Bidder declares and represents that he; a) has carefully examined the Bidding Documents, b) has a clear understanding of the Bidding Documents, c) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, d) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services under this contract, all in accordance with the Bidding Documents as prepared by the College Purchasing Department and Facility Services.

By signing below, the Bidder agrees that he/she complies with all bid requirements, instructions, specifications, terms and conditions and special conditions as stated in the.

Signature _____

Title _____

Company _____

**Bid must be submitted on this form*

III. INSTRUCTIONS & REQUIREMENTS FOR BIDDERS

Provide the materials, labor, equipment and supervision necessary for the removal/replacement and installation of (10) horizontal exposed Williams ceiling mount Chill Water/Hot Water fan coil units Model ER-D
All mechanical work to include 120/60/1 ECM Motor, Stainless Steel Drain, Front/Bottom Supply, Valve Package, Disconnect Switch and 24V Control System. All work to take place in the Allied Health Building # 4 located at 615 City Park Ave, New Orleans, LA 70119

QUALIFICATIONS:

Vendors/Contractors Bidding this work shall have at least five (5) years of experience as a contractor in the field of Mechanical work, and shall be required to perform the work set forth in the specifications. Each vendor shall present documentation verifying their experience in construction. Bidder must complete **Attachment B, References Form** and submit it with their bid. Vendor is required to be licensed by the Louisiana State Licensing Board for Category VI, Mechanical Work

PRE-BID/JOBSITE VISIT:

A **non-mandatory pre-bid jobsite visit** is scheduled on **Monday, October 17th, 2016 at 10:00AM CST** at the jobsite. Bidders are to meet in the Facilities Office in Building 10 at Delgado Community College's City Park Campus located at 615 City Park Avenue, New Orleans, LA 70119. Provisions of site inspection are included. Although not required, it is strongly recommended that bidders attend the pre-bid meeting to ascertain the scope of the work to be performed.

ADDENDA:

Any questions arising from the specifications or the pre-bid conference must be addressed in writing to the individual indicated in Section I, General Conditions, and will be answered via an Addendum. All questions must be submitted no later than **Wednesday, October 19th, 2016 by 12:00PM CST**. A final 48-hour period after the issuance of the Addendum will be granted for questions which are directly related only to the answers provided in the Addendum.

Any interpretation, correction or change of the Bidding Documents will be made by addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes. The Bidder must acknowledge all issued addenda in the space provided on the Bid Form. Failure to acknowledge addenda will render the bid informal and will cause its rejection.

Bid Documents and Addenda may be downloaded from
<https://wwwcfprd.doa.louisiana.gov/osp/lapac/dspBid.cfm?search=department&term=39>

BID SUBMITTAL:

Bids must be sealed with the **Bidder's name, license number (if applicable) along with the name and number of the bid clearly written on the front of the** envelope and are to be delivered to the person and location in Section I, General Information by the date and time stated on the title page. Bids received without this information or after the due date and time will be automatically disqualified.

In accordance with R.S. 37:2163A, Contractors' License number in the appropriate classification(s) must appear on the bid envelope submitted on all projects in the amount of \$50,000 or more (and \$1.00 or more if hazardous materials are involved).

Bids must be submitted on the forms furnished for this purpose and must be filled out in ink or typewritten and signed in ink. Do not erase, correct, or write over any prices or figures necessary for this proposal. If any corrections are necessary, each must be initialed by bidder. Failure to comply with the above requirements will cause your bid to be disqualified.

Effective August 15, 1997, in accordance with L.R.S. 39:1594 (Act 121), the person signing the bid must be:

- a) A current corporate officer, partnership member or other individual specifically authorized to submit a bid as reflected in the appropriate records on file with the Secretary of State; or
- b) An individual authorized to bind the vendor as reflected by an accompanying corporate resolution, certificate, or affidavit.

By signing the bid, the bidder certifies compliance with the above.

MODIFICATION OR WITHDRAWAL OF BID:

A bid may not be modified, withdrawn, or canceled by the Bidder for a period of thirty (30) calendar days for the period following the time and bid date designated for the receipt of bids, and Bidder so agrees in submitting his bid, except in accordance with R.S. 39:1594,F.

Prior to the time and date designated for receipt of bids, bids submitted early may be modified or withdrawn only by notice to Delgado Community College Purchasing Office at the place and prior to the time designated for receipt of bids.

Withdrawn bids may be resubmitted up to the time designated for the receipt of bids provided that they are then fully in conformance with these Instructions to Bidders.

BIDDER REPRESENTATION:

By signing and submitting a bid, Bidder acknowledges that he/she has visited the site, read and understands the Bidding Documents and his bid is made in accordance therewith.

The Bidder is advised to carefully consider all College physical features and activities and occupancies by faculty, staff and students, and to plan activities so as not to disrupt the normal operations and activities of the College except as expressly permitted by the College in writing. The Bidder shall be especially aware of existing electric, gas, water, telephone and/or other utilities and facilities which may be in the way of or adjacent to the Work, and shall take appropriate action to protect these utilities during the Work.

Every effort has been made to accurately show all pertinent surface and subsurface features accurately. For self-assurance, the Bidder may examine available drawings and documents related to College premises. Such examinations may be made only in the offices of the College Facility Services as part of the Mandatory Pre-Bid Conference.

The Bidder agrees that his/her bid is based solely upon the materials, systems and equipment described in the Bidding Documents as advertised and as modified by addenda. The bid submitted is not based on any verbal instructions contrary to the Bidding Documents and addenda.

INSURANCE:

Bidders are to comply with the insurance requirements as stated in Section V of the bid. The provided **indemnification form** (see *Attachment A*) must be completed and submitted with your bid. Failure to comply with these requirements will result in disqualification of your bid.

The successful bidder will be responsible for ensuring that Delgado receives the required **insurance certificate** after the notice of award (as per terms and conditions) in a timely manner in order to meet the required work expectancy timeframe. No work may commence until a proper certificate is received.

END OF SECTION III

IV. TERMS AND CONDITIONS

GENERAL TERMS & CONDITIONS:

- A response to a bid invitation is our only indication of your interest in college business. Failure to respond to six (6) consecutive bid invitations may cause your name to be removed from the bidders' list.
- It shall be specifically agreed and understood that the Bidders may attend the Bid opening. .
- No information will be given out as to opinions concerning the ultimate outcome while consideration of the award is in progress.
- Effective September 1, 1991, in accordance with Act 1029 of the 1991 Regular Legislative Session, Delgado Community College will not be responsible for any sales tax, either state or local.
- Delgado Community College reserves the right to reject any and all bids and to waive any informality.
- It shall be distinctly agreed and understood that the price quoted must be a firm price, and not be subject to change at time of the shipment of goods or delivery of services.
- All shipping, handling, materials, labor or any other charges necessary to compete this job must be included in amount bid. Items not listed but necessary for completion of the job shall be furnished as part of the bid. Additional costs disclosed later will be at the expense of the vendor.
- All deliveries shall be made FOB Destination to the College unless otherwise specified by the College. All freight charges are to be included in the unit price. The College will not be responsible for freight charges not clearly stated as a part of this bid.
- The College reserves the right to award the above items separately, grouped, or on an all-or-none basis, and to reject any or all bids and to waive any informalities including technicalities in specifications that preclude competition.
- The College shall have the right to reject any or all bids not accompanied by any data required by the Bidding Documents or a bid in any way incomplete or irregular.
- The Bid will be awarded on the basis of the lowest total cost as determined by the College.
- List of distributors: The Vendor signing the bid shall be designated as the Prime Vendor on any contract/agreement resulting from this bid. If additional Vendors are authorized to receive orders for items covered under this proposal, the Vendor must submit, with bid, a list of those additional authorized distributors.
- Bidder must be a Louisiana licensed contractor who is licensed to perform the work as outlined in the specifications. The Bidder must be fully qualified under any State or local licensing law for Contractors in effect at the time and at the location of the work before submitting his bid. The Contractor shall be responsible for determining that all of his Sub-bidders or prospective Subcontractors are duly licensed in accordance with law.
- Bidder must be able to provide a project timeline if requested by Delgado Community College

- If item(s) or services bid do not fully comply with specifications, including brand and/or product number or work, bidder must state in what respect the item(s)/services or work deviate. Failure to note exceptions on the bid form will not relieve the successful bidder from supplying the actual products or services requested.

CONTRACT TERM & AGREEMENT:

The Form of Agreement between the Contractor and the College will be the issuance of a purchase order in accordance with all terms and conditions of the bid. Work to be completed within Sixty (60) days from receipt of a purchase order.

ADDITIONAL SITES:

NOT APPLICABLE TO THIS BID

PAYMENTS:

Contractor will be paid after work is satisfactorily completed and upon recommendation of the College Representative.

Payment for services shall be made to the Contractor (30) thirty days after receipt by the College of an invoice by which the Bidder certifies, and the College agrees, that all the invoiced work was performed in accordance with the specifications. Invoices will not be paid prior to 30 days from receipt of invoice or completion of services/receipt of project.

All invoices should be submitted to the College's Office of Accounts Payable and clearly indicate the Purchase Order Number assigned by the Delgado Purchasing office.

INSURANCE:

Vendor compliance with the attached insurance and indemnification requirements is mandatory. A completed copy of the ***indemnification agreement (Attachment A)*** must be submitted with the bid. Failure to do so will result in immediate disqualification of the bid. Upon award, a certificate of insurance must be submitted to Delgado Community College, delineating Delgado Community College as the certificate holder prior to the commencement of any work.

TERMINATION OF AGREEMENT:

- **Termination of this agreement for cause** – DCC may terminate this agreement for cause based upon the failure of Contractor to comply with the terms and/or conditions of the Agreement, or failure to fulfill its performance obligations pursuant to this agreement, provided that DCC shall give the Contractor written notice specifying the Contractor's failure. If within thirty (30) days after receipt of such notice, the Contractor shall not have corrected such failure or, in the case of failure which cannot be corrected in thirty (30) days, have begun in good faith to correct such failure and thereafter proceeded diligently to complete such correction, then DCC may, at its option, place the Contractor in default and the Agreement shall terminate on the date specified in such notice.

The Contractor may exercise any rights available to it under Louisiana law to terminate for cause upon the failure of DCC to comply with the terms and conditions of this agreement, provided that the Contractor shall give DCC written notice specifying the DCC's failure and a reasonable opportunity for DCC to cure the defect.

- **Termination for non-appropriation of funds** - The continuance of this contract is contingent upon the appropriation of funds to fulfill the requirements of the contract by the legislature. If the legislature fails to appropriate sufficient monies to provide for the continuation of the contract, or if such appropriation is reduced by the veto of the Governor or by any means provided in the appropriations act or Title 39 of the Louisiana Revised Statutes of 1950 to prevent the total appropriation for the year from exceeding revenues for that year, or for any other lawful purpose, and the effect of such reduction is to provide insufficient monies for the continuation of the contract, the contract shall terminate on the date of the beginning of the first fiscal year for which funds are not appropriated.
- **Termination for Convenience** - The College may terminate the Contract at any time by giving thirty (30) days written notice to the Contractor. The Contractor shall be entitled to payment for work performed (monthly charges to be prorated) to the extent work has been performed satisfactorily.

If, for any reason, the Contractor desires to terminate the Contract, he may do so upon giving written notice of sixty (60) days to the College. Contractor shall perform all work satisfactorily as contracted until the determined termination date

- **Cancellation Conditions** - In any of the following cases, the College shall have the right to immediately cancel the contract agreement due to:

The interruption of operation in any of the contacted facilities or the College beyond its control; failure of the Contractor to maintain a satisfactory performance bond or adequate insurance coverage; wherever the contractor is guilty of misrepresentation; wherever the contract agreement was obtained by fraud, collusion, conspiracy, or other unlawful means, or the contract agreement conflicts with any statutory and constitutional provision of the State of Louisiana or the United States. In case of default by the Contractor, the College reserves the right to purchase any or all items or services in default on open market, charging the Contractor with any excessive costs. Until these excessive costs are paid to the College, the Contractor shall not do business with the College again.

- **Implementation of Termination** - The Contractor shall terminate all work under the Contract to the extent and on the date specified in the Notice of Termination or reduction of work and until such date shall, continue to perform all work required in the specification and be compensated for such work.

In the event of termination or reduction in the scope of work by the College, the College shall pay the Contractor for all work satisfactorily performed up to the effective date of termination or reduction in the scope of work, in accordance with the prices included in Contractor's bid less all partial payments made on account prior to the effective date of termination or reduction in the scope of work.

Upon termination as above, the Contract Administrator shall make final determination of the amount due the Contractor for work performed.

INQUIRIES, INTERPRETATION OR CORRECTION TO BIDDING

Any questions arising from either the specifications and/or jobsite visit must be addressed in writing and will be answered via an Addendum.

Any interpretation, correction or change of the Bidding Documents will be made by addendum. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

DISCRIMINATORY PRACTICES:

Delgado Community College of the State of Louisiana is an equal opportunity employer and looks to its contractors, subcontractors, vendors, and suppliers to take affirmative action to effect this commitment in its operations.

Both the College and the bidder shall abide by the requirements of Title VII of the Civil Rights Act of 1964, and shall not discriminate against employees or applicants due to race, color, religion, sex, handicap or national origin. Furthermore, both parties shall take affirmative action to provide for positive posture in employing and upgrading persons without regard to race, color, religion, sex, handicap, or national origin, and shall take affirmative action as provided in the Vietnam Era Veteran's Readjustment Act of 1974. Both parties shall abide by the requirements of Title VI of the Civil Rights Act of 1964 and the Vocational Rehabilitation Act of 1974 to insure that services are delivered without discrimination due to race, color national origin or handicap. Both parties shall comply with the requirements of the Americans with Disabilities Act of 1990 which bans discrimination in employment or in delivery of services on the basis of sexual orientation.

SUBCONTRACTORS:

All subcontractors must be identified and approved in writing in advance by the College. Contractor shall promptly pay all laborers, materialmen, subcontractors and suppliers for work performed pursuant to this contract.

It is the Contractor's responsibility to ensure that his subcontractors are properly licensed and insured and adhere to all rules and responsibilities as outlined in the bid documents.

SUBSTITUTIONS AND EQUIVALENTS:

SERVICES: Any materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution.

No substitution will be considered unless written request for approval has been submitted by the Contractor and has been received by the College Representative prior to beginning work.

Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including model numbers, drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included.

It shall be the responsibility of the Contractor to include in his request all changes required to the work if the proposed substitute is used. Approval, if granted, is given contingent upon Contractor being responsible for any costs which may be necessary to modify the space or facilities needed to accommodate the materials and equipment approved.

If the College approves a proposed substitution, such approval will be set forth in writing. Contractor shall not rely upon approvals made in any other manner.

MATERIALS: Any manufacturer's names, trade names, brand names, or catalog numbers used in the specifications for material purchase are for the purpose of describing and establishing general quality levels. Such references are not intended to be restrictive. Bids will be considered for any brand that meets or exceeds the quality of the specifications listed for any item.

Vendor must state the brand/model he or she is bidding on each item. It shall be the sole responsibility of the Vendor to prove equivalency. Vendor shall submit with the bid all illustrations, drawings, descriptive

literature, and specifications necessary to determine equivalency. Failure to do so will eliminate your bid from consideration. The decision of the College as to equivalency shall be final.

If a vendor wishes to submit an alternate bid in addition to the brand/model requested, he or she may submit one (1) alternate bid. The alternate bid must be a separate submission, must be clearly marked as an alternate, and must include all applicable forms (i.e., jobsite visit). In addition, a separate, signed cover sheet must be submitted with the alternate. **Applicable if materials are being purchased in addition to the services requested in the bid.*

END OF SECTION IV

V. INSURANCE REQUIREMENTS FOR VENDORS

The Contractor/Vendor shall purchase and maintain for the duration of the contract/work insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor/Vendor, its agents, representatives, employees or subcontractors.

A. MINIMUM SCOPE AND LIMITS OF INSURANCE

1. Workers Compensation

Workers Compensation insurance shall be in compliance with the Workers Compensations law of the State of Louisiana. Employers Liability is included with a minimum limit of \$500,000 per accident/per disaster/per employee. If work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act, or other maritime law coverage shall be included and the Employers Liability increased to a minimum of \$1,000,000.

2. Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability, shall have a minimum limit per occurrence of \$1,000,000 and a minimum general aggregate of \$2,000,000. The Insurance Services office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims made form is unacceptable.

3. Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of \$1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned automobiles.

B. DEDUCTIBLES AND SELF-INSURED RETENTIONS

Any deductibles or self-insured retentions must be declared to and accepted by the Agency. The Contractor/Vendor shall be responsible for all deductibles and self-insured retentions.

C. OTHER INSURANCE PROVISIONS

The policies are to contain, or be endorsed to contain the following provisions:

1. General Liability and Automobile Liability Coverage's

- a. The Agency, its officers, agents, employees and volunteers shall be named as an additional insured as regards to negligence by the contractor/vendor. ISO Form CG 20 10 (current form approved for use on Louisiana), or equivalent, is to be used when applicable. The coverage shall contain no special limitations on the scope of protection to the Agency.
- b. The Contractor's/Vendor's insurance shall be primary as respects to the Agency, its officers, agents, employees and volunteers. Any insurance or self-insurance maintained by the Agency shall be excess and non-contributory of the Contractor's insurance.
- c. The Contractor's/Vendor's insurance shall apply separately to each insured against whom claim is made or suit brought, except with respect to the policy limits.

2. Workers Compensation and Employers Liability Coverage

The insurer shall agree to waive all rights of subrogation against the Agency, its officers, agents, employees and volunteers for losses arising from work performed by the Contractor for the Agency.

3. All Coverages

- a. Coverage/Vendor shall not be cancelled, suspended, or violated by either party (the Contractor/Vendor or the insurer) or reduced in coverage or in limits except after 30 days written notice has been given to the Agency. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in the Contractor's/Vendor's policy.
- b. Neither the acceptance of the completed work nor the payment thereof shall release the Contractor/Vendor from the obligations of the insurance requirements or the indemnification agreement.
- c. The insurance companies issuing the policies shall have no recourse against the Agency for payment of premiums or for assessments under any form of the policies.
- d. Any failure of the Contractor/Vendor to comply with reporting provisions of the policy shall not affect coverage provided to the Agency, its officers, agents, employees and volunteers.

D. ACCEPTABILITY OF INSURERS

All required insurance shall be provided by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located. Insurance shall be placed

with insurers with an A.M. Best's rating of **A-: VI or higher**. This rating requirement may be waived for workers compensations only.

If at any time an insurer issuing any such policy does not meet the minimum A.M Best rating, the Contractor/Vendor shall obtain a policy with an insurer that meets the A.M Best rating and shall submit another Certificate of Insurance as required in the contract.

E. VERIFICATION OF COVERAGE

Contractor/Vendor shall furnish the Agency with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The Certificates are to be received and approved by the Agency before work commences and upon any contract renewal thereafter.

In addition to the Certificates, Contractor/Vendor shall submit the declarations page and cancellation provision endorsement for each insurance policy. The Agency reserves the right to request complete certified copies of all required insurance policies at any time.

Upon failure of the Contractor/Vendor to furnish, deliver and maintain such insurance as above provided, this contract, at the election of the Agency, may be suspended, discontinued or terminated. Failure of the Contractor/Vendor to purchase and/or maintain any required insurance shall not relieve the Contractor/Vendor from any liability or indemnification under the contract.

F. SUBCONTRACTORS

Contractor/Vendor shall include all subcontractors and as insureds under its policies OR shall be responsible for verifying and maintaining the Certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Agency reserves the right to request copies of subcontractor's Certificates at any time.

G. WORKERS COMPENSATION INDEMNITY

In the event the Contractor/Vendor is not required to provide or elects not to provide workers compensation coverage, the parties hereby agree that Contractor/Vendor, its owners, agents and employees will have no cause of action against, and it will not assert a claim against the State of Louisiana, its departments, agencies, agents and employer, whether pursuant to the Louisiana Workers Compensation Act, or otherwise under any circumstance. The parties also hereby agree that the State of Louisiana, its departments, agencies, agents, and employees shall in no circumstance be, or considered as, the employer or statutory employer of the Contractor/Vendor, its owners, agents and employees. The parties further agree that the Contractor/Vendor is a wholly independent contractor and is exclusively responsible for its employees, owners, and agents.

Contractor/Vendor hereby agrees to protect, defend, indemnify and hold the State of Louisiana, its departments, agencies, agents and employees harmless from any such assertion or claim that may arise from the performance of this contract.

H. INDEMNIFICATION/HOLD HARMLESS AGREEMENT

Contractor/Vendor agrees to protect, defend, indemnify, save and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents servants, employees and volunteers, from and against any and all claims, damages, expenses, and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur, or in any way grow out of, any act or omission of the Contractor/Vendor, its agents, servants, and employees, or any and all costs, expenses and/or attorney fees incurred by the Contractor/Vendor as a result of any claims, demands, suits or causes of action, except those claims, demands suits, or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

Contractor/Vendor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits, or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent.

END OF SECTION V

VI. TECHNICAL SPECIFICATIONS

SECTION 01000

GENERAL CONDITIONS

The general conditions of these Specifications, including amendments and additions thereto, apply to each and every heading included in these Specifications with the same force as though repeated in full under each heading respectively.

1.01 SCOPE

Provide the materials, labor, equipment and supervision necessary for the removal/replacement and installation of (10) horizontal exposed Williams ceiling mount Chill Water/Hot Water fan coil units Model ER-D Work to be performed in rooms 102, 103, 104, 108, 110, 112, 132, 136 and 311

All mechanical work to include 120/60/1 ECM Motor, Stainless Steel Drain, Front/Bottom Supply, Valve Package, Disconnect Switch and 24V Control System. All work to take place in the Allied Health Building # 4 located at 615 City Park Ave, New Orleans, LA 70119

Contractor is to include in his price all work described in these documents.

Provide the labor, equipment and supervision necessary and reasonably incidental to this task, all in accordance with these Specifications.

Bid Evaluation: Determination of the Low Bidder shall be on the basis of bid amount and all required documents shall be enclosed at the time of the bid opening.

All work will be coordinated with the contractor and College Representative prior to the work beginning.

1.02 NON-MANDATORY SITE INVESTIGATION

It is recommended that prospective bidders visit the site to make measurements, review existing conditions, and if required, review the Building Plans on file in the Facility Services Office if the prospect warrants same. A thorough understanding of the project per these Technical Specifications and/or accompanying drawings is imperative. Opportunity for the site visit and inspection is provided in Section III "INSTRUCTIONS & REQUIREMENTS FOR BIDDERS.

1.03 REVIEW OF DOCUMENTS

The Contractor shall carefully study and compare the field conditions, Drawings and Specifications and shall at once report to the College Representative errors, inconsistencies or omissions discovered.

1.04 PROJECT MEETINGS

If called by the College Representative, a Pre-Service Conference between the Contractor, his on-site representative and the College Representative will be held in order to clarify and direct College policy and specific items of concern as pertain to the Contract. Progress meetings will be scheduled at the discretion of the College Representative.

1.05 COORDINATION

Coordinate service schedule with the College Representative so as not to interfere with the ongoing operation of the College. If for any reason, shut down of utilities is required on this project, it is imperative that the College Representative be consulted.

1.06 TRAFFIC CONTROL

Coordinate the schedule of delivery vehicles which will interfere with normal campus traffic. When deliveries are made from the street curb, provide sufficient properly attired and equipped flagmen to safely control and maintain the flow of traffic. It is the policy of the Delgado Community College to provide full access to all disabled individuals in all areas possible. Because of this commitment, contractors, vendors or servicing agencies are cautioned to insure that their staff is made aware of this commitment. When parking on the campus of this College, it shall be the responsibility of the contractor, vendor or servicing agency to insure that no sidewalks or access ways are blocked at any time. If temporary blocking is required, the Contractor shall assume the responsibility for the safe transit of all disabled persons.

1.07 PROTECTION

Protect adjacent buildings and building elements from damage during site work. Protect the site, including trees, shrubs, vegetation, and lawn areas; where damage does occur, restore to original condition replacing damaged vegetation and lawn with equal size and species. Store construction materials with care; distribute the weight to not endanger the building structure.

1.08 SAFETY

Provide sufficient signs continuous barricades to identify the work site and restrict entry. Where necessary, equip barricades with warning lights for night use. Provide measures necessary to ensure and maintain security at the work site; protect from theft, vandalism, personal injury, and property damage. Erect and maintain temporary enclosures and barriers to prevent unauthorized access to the site. Provide fire protection equipment during the construction period, including not less than two (2) ten (10) pound capacity multipurpose A-B-C dry chemical extinguishers (10A:40BC). Where indicated on the Drawings, provide a temporary fence to isolate the construction site and restrict unauthorized entry. Use chain link fence material, 6'-0 minimum height, on steel or wood posts spaced a 6'-0 maximum and embedded 2'-6 minimum below existing grade; include personnel and/or equipment access gates. Coordinate fence installation with underground utilities - see 1.11; before installation, confirm fence location and layout with the College Representative.

1.09 WARRANTY

Warranty all workmanship and material for a period of one (1) year from date of acceptance. During this period, the College will notify the Contractor of any discrepancy for prompt correction at no expense to the College. At the discretion and initiation of the College Representative, a one-year warranty review meeting with the Contractor will be held to review warranty items which remain incomplete.

1.10 TEMPORARY UTILITIES

The Contractor may use reasonable amounts of the utility services available to the site at no charge from the College. The College will not provide utility service beyond that existing. Coordinate tie-in and disconnect to the existing utilities with the College Representative. Locate temporary facilities so as not to interfere with the College's use of the Project site and/or surrounding areas. Relocate non-complying facilities at no expense to the College.

1.11 TEMPORARY SANITARY FACILITIES

Existing facilities in the building may be used by construction personnel during work on this project.

SECTION 01020

DEFINITIONS, STANDARDS AND ABBREVIATIONS INDUSTRY STANDARDS

Applicability of Standards: Except where Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the Project Site for reference.

Publication Dates: Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

Conflicting Requirements: Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Designer for a decision before proceeding.

Copies of Standards: Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where acronyms or abbreviations are used in the Specifications or other Contract Documents they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

END OF SECTION - 01020

SECTION 01025

CODES, REGULATIONS AND SUBMITTALS SUMMARY

This section sets forth governmental regulations and industry standards which are included and incorporated herein by reference and made a part of the specification. This section also sets forth those notices and permits which are known to the College and which either must be applied for and received, or which must be given to governmental agencies before start of work. Requirements include adherence to work practices and procedures set forth in applicable codes, regulations and standards. Requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with codes, regulations, and standards.

CODES AND REGULATIONS

General Applicability of Codes and Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the bid documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the bid documents by reference) as if copied directly into the bid documents, or as if published copies are bound herewith.

Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all applicable Federal, State, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. The Contractor shall hold the College and College Representatives harmless for failure to comply with any applicable work, hauling, disposal, safety, health or other regulation on the part of himself, his employees, or his subcontractors.

No work shall begin until these submittals are returned with College Representative's action indicating that the submittal is returned for unrestricted use or final-but-restricted use.

Permits, Licenses and Certificates: For the College's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:

- State Regulations: Submit copies of codes and regulations applicable to the work.
- Notices: Submit notices required by federal and state regulations together with proof of timely transmittal to agency requiring the notice
- Permits: Submit copies of current valid permits required by state regulations.
- Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract.

END OF SECTION – 01025

SECTION 01040

CUTTING AND PATCHING PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The General Provisions of the Contract, including General and Supplementary Conditions, and General Requirements apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. Furnish all labor, materials, tools, and equipment, and perform all operations necessary for cutting and patching work indicated or specified.
- B. Definition: "Cutting-and-Patching" is hereby defined to include but is not necessarily limited to the cutting and patching of nominally completed and previously existing work, in order to accommodate the coordination of the work, or to uncover other work for access or inspection, or to obtain samples for testing, or for similar purposes; and is defined to exclude integral cutting- and-patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting-and-patching.

General: Do not cut-and-patch work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio. Do not cut or core existing concrete joists or beams.

C. Visual Requirements

General: Do not cut-and-patch work which is exposed on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut-and-patch work, both as judged solely by the College Representative. Remove and replace work judged by the College Representative to be cut- and-patched in a visually unsatisfactory manner. All concrete shall be saw cut and removed back to nearest expansion joint.

3.1 PREPARATION

- A. Temporary Support: Provide adequate temporary support for work to be cut, to prevent failure. Do not endanger other work.
- B. Protection: Provide adequate protection of other work during cutting-and-patching, to prevent damage; and provide protection of the work from adverse weather exposure.

3.2 CUTTING AND PATCHING

- A. Employ skilled tradesmen to perform cutting and patching. Except as otherwise indicated or approved by the College Representative, proceed with cutting-and-patching at the earliest feasible time, in each instance, and perform the work promptly.

- B. Cut work by methods least likely to damage work to be retained and work adjoining.
- C. Patch with seams that are durable and as invisible as possible. Comply with specified tolerances for the work.
- D. Restore exposed finishes of patched areas; and, where necessary extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.
- E. Where patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch, after patched area has received prime and base coats.

END OF SECTION - 01040

SECTION 02100

DEMOLITION PART 1 GENERAL

1.1 SCOPE

- A. Perform all demolition and clearing work as specifically indicated and as otherwise required to achieve the results indicated in the Project Manual.

1.2 PRECAUTIONS

Refer to Section 01000 for requirements for protections, for safety, interruption of services. Particular precautions shall be exercised in the demolishing of components above and around occupied spaces to prevent injury to persons and property. Do not leave pipes, stubs, brackets and other components loose without adequate support and anchorage. Safety of persons during and after construction shall be the Contractor's primary concern. The Contractor shall be responsible to determine and assure that execution of the Work under this Contract in no way endangers occupants of the buildings, site, or any workmen.

1.3 PROTECTION

The Contractor shall be responsible for protecting all components and contents of the buildings, all improvements on the site, all building systems and all equipment, both fixed and movable which may be exposed to damage by the work of this Contract. Particular care must be taken with sensitive equipment which cannot be readily relocated for execution of the work in the areas in which such equipment is located.

1.4 COORDINATION

All demolition work shall be carefully coordinated with the construction schedule and the College's activities.

PART 3 EXECUTION

3.1 REMOVAL

- A. Limit demolition and removal to the areas and extent necessary to accomplish the finished results intended. Any demolition beyond what is required shall be replaced to match existing. All demolished materials not indicated to be reused or turned over to the College shall be removed promptly from the site by the Contractor.

It is impossible to show every detail of demolition on the drawings. However, when removing existing equipment, piping, conduit and structural elements, remove items back to a point where they are structurally secure and back to a point where they are no longer visible or exposed in occupied spaces or in the way of activity or passage or where these elements will no longer pose a safety hazard. All components shall be terminated in a safe and proper manner

3.2 SALVAGE

Unless specifically noted in the Project Manual or indicated at the Pre-Bid Meeting to be saved, all components being removed shall be removed from the site under this Contract. All items indicated to be reused shall be carefully stored for incorporation into the finished project. These items shall be the Contractor's responsibility during the duration of this Contract. All items indicated to be salvaged for the College shall be removed in a workmanlike manner and shall be turned over to the College at the place of removal or space(s) within the building(s) agreed to in advance by the College and Contractor.

END OF SECTION 02100

SECTION 09900 - PAINTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

The General Provision of the Contract, including General and Supplementary conditions and General Requirements, apply to the work specified in this Section.

1.2 THIS SECTION INCLUDES

Supply and apply all Painting and Finishing Work as specified herein. However, all surfaces left unfinished by the requirements of other Sections (Trades) shall be painted or finished as part of the Work Section. Work includes preparatory work, sanding and cleaning, and painting all exposed piping in finished areas.

1.3 SURFACES NOT PAINTED

- A. Unless specifically noted otherwise the following items do not require painting:
 - 1. All existing surfaces except where marred or damaged resulting from the work.

1.4 SUBMITTALS

- A. Before submitting samples, submit a complete schedule of manufacturers' products required throughout the Work, together with Specifications recommended by each manufacturer. The schedule shall be specifically written for the Project, on the Contractor's letterhead and shall include product names and numbers.
- B. Manufacturer's specification sheets shall show label analysis, application recommendations, and theoretical dry film thicknesses of the various paint products proposed for use.
- C. General approval of such a schedule shall not constitute waiver of the Specifications, and College Representative may require specific guarantees from a manufacturer regarding his product.
- D. Submit full range of manufacturer's samples for the College's selections. Before work is begun, College will furnish Contractor a color schedule of colors selected from manufacturer's stock colors or specially required color mixes.
- E. Submit two (2) 8 inch X 10 inch samples of each color on heavy cardboard.

1.5 DELIVERY AND STORAGE

Deliver materials to site in manufacturer's sealed containers, legends and labels intact. Store materials and equipment as approved; enforce good housekeeping practice. Do not remove empty containers from site until completion or until directed to do so by College Representative.

1.6 SPECIAL REQUIREMENTS

- A. Painting shall not be done in the vicinity of dust producing operations, such as gypsum board finishing and earthwork, nor when weather conditions are such that wind-blown dust and dirt will contaminate freshly painted surfaces.
- B. Do no exterior painting below 50 degrees F. temperature or while surfaces are damp.
- C. Mechanical and electrical items (access doors, panels, junction boxes, conduits, piping, ducts and similar items) exposed on or adjacent to surfaces having painted finish, shall be painted the same color as adjacent materials. Prepare surface as required. Spray painting is not required on electrical panel covers.
- D. Allow paint to dry hard between coats.
- E. Protect all work from damage by use of drop cloths. Remove paint stains completely from finished work.
- F. Covering shall be complete. When color, stain, dirt, or undercoats show through the final coat of paint, or if the final coat is streaked or non-uniform in appearance, the work shall be covered by additional coats until the paint is uniform in color and appearance and coverage is complete.
- G. Hardware and accessories, fixtures and similar items placed prior to painting shall be protected during painting, or removed and replaced upon completion of painting.
- H. Final job shall be free from defects, runs, sags, sanding scratches, blisters, etc. when viewed under normal light conditions using final building artificial light sources and normal available natural light. Unacceptable surfaces shall be refinished until acceptable finishes are achieved.

1.7 COMMERCIAL ITEMS

- A. Items that have been fabricated or assembled into essentially their final form by someone other than the Contractor, and which have been painted with a complete coating system in accordance with the manufacturer's standard practice, will be exempted entirely from surface preparation and painting requirements specified in this Section, provided the coating system is approved by the College Representative, is of acceptable color, and is touched up as necessary before acceptance. Examples of such items may be electric equipment, gauges, pumps, and motors. Requests for exemption of such items shall be accompanied by a description of the manufacturer's standard coating system, including surface preparation, type of primer and finish coats, dry film thickness and whether baked-on or air-dried.
- B. Paint all exposed piping and conduits, both interior and exterior to match existing color schemes. Piping and conduits in unfinished spaces need not be painted.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

Certain items in this specification are listed by manufacturer and/or manufacturer's model number to establish general style, type, character, and quality of the product desired. Similar items manufactured by other than those listed will be considered, providing submittals are made according to Pre-Bid Approval requirements of Instructions to Bidders Article 3.3

- A. Where no manufacturer or model number is given, any product meeting performance or design criteria, or referenced trade association standard may be used and Pre-Bid Approval is not required.

2.2 PAINTING

- A. All coats of a single painting system shall be products of a single manufacturer.
- B. Where specified items are listed in the following painting systems it is done for information only to give representative examples of the type of surfaces and materials involved. Such listings are not intended to be complete. The Contractor is referred to the drawings and to other Specifications Sections for complete information on the extent and location of all items to be painted.
- C. It is the intent of this Specification to establish procedure, quality, and number of coats. The College Representative will determine the exact finish desired. Do not start priming or painting without having notified the College Representative. All paint coats specified herein are in ADDITION to any prime coat which may already be on surface. ALL SURFACES SPECIFIED HEREIN TO RECEIVE THREE (3) COATS OF FINISH SHALL RECEIVE THREE (3) COATS OF FINISH: THERE WILL BE NO EXCEPTIONS.
- D. The number of coats specified are normally adequate for the type of application and material. If additional coats are required for proper coverage and finish, it shall be the responsibility of the painting contractor to apply additional costs without additional charges.
- E. In order to generally establish a basis for quality and performance the products and formulations herein specified are those as listed below:

Sherwin Williams (SW)
Benjamin Moore (BM)

- F. All exterior paints shall contain a mildew inhibiting agent.
- G. Exterior Steel and Iron & Concrete Pipe Markers

1c: BM-Rust Inhibitive Primer #163, or SW-Primer B50N2/B50W1

2c: BM-High Gloss Enamel #133 or, SW-Industrial Enamel B-54
Series 3c: Same as second coat

PART 3 – EXECUTION

GENERAL APPLICATION REQUIREMENTS

- A. Application of paint shall be in accordance with the paint manufacturer's instructions and recommendations, and these specifications.
- B. Surfaces shall be dry, both as regards previous paint and moisture, and shall be dusted off before paint is applied.

3.2 SURFACE PREPARATION

- A. Surfaces to be painted shall be clean, dry and free from grease, oil, dirt and other contaminants. In case any work is defective or unsuitable for finishing, do not proceed until satisfactory corrective work is completed. The Contractor will be held responsible for the quality of the finished work.
- B. Metal - remove grease, rust, scale and dirt. Touch up and spot paint field connections, welds and rivets, and all abrasions and damaged place of shop coats and galvanized surfaces using material specified for touch-up. Perform touch-up within 15 days after erection but before work is built-in and covered.

3.3 APPLICATION

Apply each coat in accordance with the manufacturer's directions to the dry film thickness recommended by the manufacturer for the surface materials and exposure conditions involved. Minimum final dry film thickness shall be 5 mils achieved in multiple coat applications.

3.4 ITEMS TO BE PAINTED

- A. The insulation of new chilled water system piping shall be painted. Paint color to be safety blue.
- B. The insulation of new heating water system piping shall be painted. Paint color to be safety orange.
- C. New floor mounted piping supports. Paint color to be safety yellow.

END OF SECTION - 09900

SECTION 15050

GENERAL MECHANICAL PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The General Provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this Section.

1.2 DESCRIPTION OF WORK

- A. The work to be done under this heading includes the furnishing of labor, materials, equipment, and service necessary for and reasonably incidental to the proper completion of all mechanical work as herein specified.
- B. Visit and examine the job site, and with all authorities concerned in order to become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed. Pay all costs and fees for utility connections.
- C. Materials and equipment shall be new, except where otherwise indicated, of the best quality, with same brand of manufacturer for all similar material.
- D. All work shall be performed in a neat and workmanlike manner, and in accordance with all codes, standards, and requirements of the industry.
- E. In general, provide the installation of piping, fittings, ductwork, equipment, etc.
- F. Regardless of titles and subdivisions herein employed, consider these specifications as one complete document with General Section applying to all other sections. All bidders are cautioned to read entire specifications and to thoroughly familiarize themselves with all requirements thereof.
- G. Check all specifications and all drawings and bring to attention any conflicts or variations as shown as noted.
- H. Specifications and accompanying drawings apply to all contracts or sub-contracts entered into for supplying material or labor for construction of work specified herein and shown on drawings.
- I. Protect College and College Representatives from any and all damages and expense arising from fulfillment of contract and at completion of work repair all damages done.
- J. For any points which are not clear, or for items and/or details which the Contractor feels are in need of clarification, consult the College Representative before submission of a proposal

- K. In case of discrepancies or in the specifications, the College Representative shall be consulted prior to submission of a proposal. Failure to do so on the part of the successful bidder shall be construed as explicit agreement on his part to abide by the College Representative's decision in such matters.
- L. The word "provide" as used in these Specifications shall be termed to mean "furnish and install".
- M. If the Contractor notices during the bidding any items of the contract documents which will violate any applicable code, these items shall be brought to the attention of the College Representative before the bid date. Failure to bring these items to the attention of the College Representative shall be construed as explicit agreement that the Contractor has included in his bid price any and all modifications necessary to complete the project in accordance with all applicable codes.

1.3 QUALITY ASSURANCE

- A. The Contractor bidding on this portion of the work must be fully experienced in installations of equal size, complexity, and quality, and must be licensed as a mechanical contractor to perform such work as required by the Louisiana State Legislature, R.S.37:2152-2163.
- B. In bidding he acknowledges that he fully understands the scope of work and design, and has the ability for the contract price to assemble and install the equipment, piping and ductwork shown or specified, so as to mold same into a satisfactory workable system and arrangement.
- C. Contractor shall recognize that a fault or error in his work remains his responsibility regardless of whether such difficulty was discovered after the work had progressed, and shall make corrections at no cost to the College.
- D. Adequate and competent constant supervision shall be provided by Contractor to assure that work is done in accordance with good standard practice and workmanship and with intent of drawings and specifications. Contractor shall recognize that amount of information and detail could be provided to contract documents is limitless and could extend into every minute detail and sequence of operations, to a point where only workmen would be required, without drawing on ability, experience and ingenuity of the Contractor.
- E. All work shall be installed in strict accordance, with all existing local and state codes and ordinances, with National Board of Fire Underwriter

- F. This Contractor shall secure all permits and inspections and shall pay all fees and taxes and shall provide College with certificates of approval from agencies having jurisdiction over various phases of work.
- G. Contractor shall maintain and service all equipment until time of acceptance by College. Contractor shall include all required service access in the installation as required by the manufacturer and governing codes.
- H. Prior to starting any work, the Contractor shall submit a quality assurance plan for approval by the College Representative. In the quality assurance plan, the Contractor shall provide the following information:
 - 1. List of all sub-contractors and equipment suppliers.
 - 2. List of all foreman and job superintendents including job experience for all trades.
 - 3. Construction time schedule demonstrating coordination with other trades and showing detailed time lines for test and balance and commissioning being completed prior to final punch list inspection.

1.4 SUBMITTALS

A. Shop Drawings and Submittal Data required:

1. Submit to the College Representative for review, complete descriptive information and dimensional data on all items of equipment, materials and accessories, including duct, equipment and sprinkler layouts. Piecemeal submissions shall not be approved. Written approval thereof must be obtained before ordering or installation. The following shall be submitted:

Valves and Fittings	Insulation
Temperature Controls	Pipe Layout Drawings
Equipment Layout Drawings	

2. Shop drawings and submittal data shall be considered to be instruments of service only and submitted for the sole purpose of convenience to the Contractor to assist him in the performance of the contract. The College Representative's review of the shop drawings and submittal data shall not supersede these specifications, or the contract terms, unless specifically covered by a properly executed change order, and then only to the extent specifically and explicitly stipulated therein.

2 Submit in accordance with requirements of Section 01000 or as indicated below.

- a. All structural members larger than 4".
- b. All hydronic piping 2" or larger.
- c. All conduit 2" or larger.
- d. All duct fittings, take-offs, volume dampers, control devices and fire dampers.

- e. All grilles, louvers, registers and diffusers.
 - f. Duct dimensions and insulation methods.
 - g. Duct dimensioned from structural beams and columns.
 - h. Architectural ceiling heights, furrings, chases, etc.
 - i. Cross-sections in areas of congestion or conflict.
 - j. Installation details for all duct and related equipment.
 - k. Lights, speakers, smoke detectors and other ceiling mounted devices.
- A. After completion of project Contractor shall turn over to the College Representative complete operating and maintenance instructions including listing of supply and repair items and locations of places to purchase same.
- B. Substitutions:
- 1. All material, equipment, methods, and accessories entering into the work under this section of contract are subject to approval or disapproval of the College. Approval of any manufacturer, material, or product shall not constitute a waiver of College's right to demand full compliance with contract requirements, including shape, size, quality and performance.
 - 2. Equality of materials is that established by opinion of College. Decision of College is final.
 - 3. Whenever a material or article of equipment is specified by use of a proprietary name, or by naming the manufacturer or vendor, any material or article which will perform adequately the duties imposed by the design will be considered for substitution, providing it is of equal substance, and function, meets specifications, and is aesthetically acceptable to the College.
 - 4. Literature, technical data, etc., includes complete data and samples if necessary, with submissions for substitutions. Burden of proof that material offered for substitution is equal, or superior, in construction and efficiency to that named, rests on Contractor, and unless proof is satisfactory to College Representative, substitution will not be approved.

2.2 PRODUCT DELIVERY, STORAGE AND HANDLING

Take necessary precautions to protect all material, equipment, apparatus and work from damage. Failure to do so to the satisfaction of the College Representative will be sufficient cause for the rejection of the material, equipment or work in question. Contractor is responsible for the safety and good condition of the materials installed until final acceptance by the College

2.3 JOB CONDITIONS

- A. Whenever it becomes necessary to shift ducts or pipes or to change shape of ducts, such changes shall be referred to College Representative for approval.
- B. Ask for details whenever uncertain about method of installation. Lack of details not requested shall not excuse improper installation and correction shall be responsibility of Contractor.
- C. Schedule and perform all mechanical work to avoid delays to the Contractor and other trades.
- D. In addition to the basic work covered under this contract, the Contractor shall plan and schedule the work to permit continuous operation of essential services of existing facilities. Planning shall also include scheduling necessary interruptions of service on water lines, drain lines, etc., to existing building at times when such interruptions will cause minimum interference with existing routine and services. All such interruptions shall be made only after consultation with the College. This is extremely important since included in the work is a relocation and rerouting of and connecting to existing facilities, piping, etc. No additional compensation will be allowed for failure to be so informed.
- E. It is essential that all adjacent areas of the school be kept in operation at all times, except when specific permission is given to contrary. Before any lines or equipment are shut down for disconnecting, tie-ins, or rearranging of services, make arrangements with College Representative to do this work at night, or Sunday, or at special time of day or year with length of shutdown agreed upon before work is begun. Contractor to bear any overtime or work costs in the connection.
- F. All piping, cleanouts and covers, and other mechanical items in way of construction or remodeling, shall be rerouted, relocated or otherwise adjusted to work out with such construction or changes shown or specified in any or all of various sections of specifications. Unknown piping that is encountered will be referred immediately to College Representative for method of disposition before continuation of work.

2.4 GUARANTEE AND SERVICE

- A. Guarantee all equipment, materials, and workmanship for a period of one (1) year following date of acceptance.
- B. During the period of guarantee any defects in equipment, materials, or workmanship shall be promptly corrected without cost to the College.
- C. Guarantee includes equipment capacity and performance ratings specified without excessive noise levels. Any deficiencies in equipment capacity specified shall be promptly corrected.

PART 2 - PRODUCTS

2.1 TOOLS AND SCAFFOLDING

Furnish all tools, equipment, scaffolding and other facilities required to properly and expeditiously perform the work.

2.2 SIPHON PREVENTORSs

Furnish and install on all equipment and fixtures requiring same, backflow preventors or vacuum breakers of a type approved by the Louisiana Health and Human Resources. Water connections to fixtures and equipment shall be made in such a way as to prevent back siphonage when the water supply is out or the pressure drops. Provide reduced pressure type back flow preventors where indicated on drawings or required by Code. They shall be Watts series 900 or Febco Series 825, size as indicated on drawings.

2.3 SLEEVES AND THIMBLES

- A. Pipe sleeves - wrought iron or cast iron of sufficient size for piping and installation to be installed in floors, walls below grade, and grade beams where piping passes through.
- B. Thimbles above grade - heavy galvanized steel of proper size to allow freedom of piping and insulation, set in floor or roof slab as work progresses, also to be installed in wall and partitions where piping passes through.
- C. Thimbles below grade - same as pipe sleeves above.
- D. Sleeves through floors extend 1/4" above finished floor. Caulk around and seal all piping in chases and piping passing through floor slab.
- E. Provide fire-stopping in all pipe penetrations of rated floors and walls.

2.4 BUCKS, GROUNDS AND CHASES

Be responsible for proper location and sizes or for any errors or omission in placing same.

- A. Failure to inform the General Contractor promptly of such requirements shall not relieve the Mechanical installer of the responsibility for providing a complete mechanical system.

2.5 HANGERS

- A. Horizontal piping above grade without hubs shall be rigidly supported. Distance between pipe supports:

- | | | |
|----|-------------------------|-------------------|
| 1. | 1/2" pipe | 6'-0" |
| 2. | 3/4" pipe | 7'-0" |
| 3. | 1" pipe | 8'-0" maximum |
| 4. | 1 1/4" pipe | 9'-0" |
| 5. | 1 1/2" pipe and
over | 10'-0"
maximum |

- B. Hangers shall be similar to "Split Ring" type.
- C. Metal strap or wire will not be acceptable.
- D. For two or more systems of piping run parallel and with same grade trapeze hangers may be used.
- E. Use #22 gauge galvanized sheet steel saddles between the pipe covering and each pipe hanger on all insulated lines. Saddles shall extend along pipe runs and at least half way up piping on each side.
- F. Rods supporting pipe hangers shall have the following dimensions:

1/2" to 2" pipe 3/8" rod
2-1/2" to 3" pipe 1/2" rod 4"

Rods for trapeze hangers shall be a minimum of 3/8" and shall have the equivalent cross section, listed above, per pipe supported.

2.6 PAINTING AND IDENTIFICATION

- A. Equipment, including pumps, motors, and similar factory fabricated and assembled units shall be furnished with factory applied protective prime coat paint of finished baked enamel. Equipment surfaces damaged during course of construction or shipment shall be refinished by the Contractor.
- B. Uncoated black ferrous piping and fittings shall be cleaned under this section and painted with one coat of enamel paint under PAINTING SECTION 09900. Color of piping shall be selected by College Representative. Hangers and supports shall be coated by dipping or brush painting with one coat of asphalt varnish. Steel frame equipment supports shall be cleaned and painted with one coat of aluminum paint.
- C. Detached motor controllers, disconnects, etc., shall be identified with metal or plastic plates with etched letters to completely identify service of electrical equipment.
- D. Major control and sectionalizing valves shall be identified by means of etched brass plates bracketed to valve handle. Contractor shall prepare schedule of such identifying plates for College Representative's approval.

PART 3 - EXECUTION

3.1 FLASHING AND COUNTERFLASHING

All pipes and ducts that pass through roof and walls shall run so as not to interfere with the structural system and to permit proper application of base and counterflashing.

3.2 CLEANING, STERILIZING AND PIPING

- A. When all work has been finally tested, Contractor shall clean all pipes and exposed work.
- B. All plated and other finished products shall be thoroughly cleaned and polished.
- C. All piping shall be installed so that it may expand and contract freely without damages to equipment, other work, or injury to piping system. All necessary swing joints, expansion joints, or offsets to protect piping, etc., shall be installed whether indicated or not. Piping shall be graded to allow for system drainage.
- D. All piping shall be installed and sized as indicated on plans and be of equivalent materials to piping as hereinafter specified.
- E. All piping shall be installed with runs arranged parallels or perpendicular to wall and ceilings with symmetrical and equal spacing between parallel pipes. Offsets shall be made using factory fittings, bending of piping shall not be accepted.
- F. Notify College Representative a minimum 72 hours prior to enclosing piping in concealed spaces so that piping may be inspected.

3.3 TESTING AND INSTRUCTION

- A. Piping shall be tested to pressure hereinafter specified. Where pressures are not mentioned, it shall be understood that testing to 1-1/2 times service conditions, before insulation is applied, will be acceptable. All tests shall be held for a minimum of 24 hours before inspection.
- B. Furnish all necessary gauges, pumps, test plugs, and temporary connections and shall test sections of the building as work progresses.
- C. All new chilled and heating water piping shall be tested to 150 PSI for four hours.
- D. All tests shall be made in the presence of the College Representative or his representative. Where pipes or connections in new piping are found to leak, they shall be made tight and the tests repeated.
- E. Thoroughly check the operation of each item of equipment and controls while testing, without waiting first for the College Representative to complain about their operation. Verify that same are wired correctly and completely, notifying the proper parties for necessary corrections. Thoroughly instruct the Owner's representative

in the operation and care of controls, individual equipment, and entire system. Provide training for each equipment item to include recommended maintenance procedures, control adjustments and system installation specifics. The following is the minimum training period for each item of equipment:

Overall HVAC System – 2 hours

3.4 CUTTING AND PATCHING

Cooperate to the fullest extent with all other trades to reduce to a minimum the amount of cutting and patching of other work necessary for this installation. Do not cut or patch the work of other trades but arrange to provide cutting templates in time, or otherwise pay the respective other contractors for changing theirs, to accommodate this work. No cutting into any structural units likely to impair the strength shall be done without the approval of the College Representative.

3.5 CLEAN UP

Remove debris, surplus and waste materials, oil, grease or stains resulting from the work performed and leave the premises in a broom clean condition AT THE END OF EACH WORKING DAY. All debris, surplus and waste material shall be removed completely from the job site.

3.6 WELDING

A. Codes and Standards

1. American Society of Mechanical Engineers (ASME) B31.1
2. ASME Boiler and Pressure Vessel Code – Section V and IX
3. American Welding Society (AWS) D10

B. Qualifications for Welding Work: The fabricator and/or installer shall qualify each welder or welding operator for the welding processes to be used during production and field welding. The performance qualification shall be in accordance with a qualified Welding Procedure Specification (WPS). The WPS shall be governed by the essential variables listed in ASME Section IX and AWS D10.9 as may be applicable for the welding processes for which the welder is being qualified. Provide certification that the welders performing work on this project are qualified in accordance with the WPS, as well as the parameters used in the qualification.

C. Welds shall be in accordance with ASME and AWS standards as qualified under ASME Section IX. Owner shall employ a testing agency to perform a visual inspection of 5% of the welds in accordance with ASME Section V. The following visual examination indications shall be deemed unacceptable and shall be corrected at Contractor's expense:

1. Cracks on external surfaces
2. Surface undercut greater than 1/32 inch deep
3. Weld reinforcement greater than specified in ASME Table 127.4.2
4. Lack of fusion on surface
5. Incomplete penetration

3.7 COMMISSIONING

- A. Contractor shall install all items of equipment as identified in this specification in strict accordance with manufacturer's requirements (whether identified in this specification or not), shop drawings and contract documents. Start-up of all equipment shall be by manufacturer authorized representative, unless specific equipment is allowed in writing, by the College Representative, to be started up by the installing Contractor. Start-up services shall be provided for as long a period of time as is necessary to insure proper operation of the equipment items. The start-up technician shall conduct all operating tests as required to insure the equipment is operating in accordance with design parameters. Complete testing of all safety and emergency control devices shall be made. The start-up technician shall submit a written report to the College Representative containing all test data recorded as required above and a letter certifying that the equipment is operating properly.
- B. Other specific items of commissioning shall be as follows:
 1. Visually inspect insulation system to verify that insulation is continuous and vapor barrier is complete. Verify there is no condensation or hot spots, correct as required.
 2. Thoroughly test all piping systems to insure no leaks are present. Adjust valves, pressure reducing valves, etc., as required by operating characteristics of the system. Set pressures of domestic water systems.
 3. Vibration isolation shall be tested by running equipment and checking deflection of spring isolators. Make adjustments as required. No isolator shall be fully compressed.
 4. Piping shall be checked to insure direction of flow.
 5. Ductwork and hydronic piping test and balancing. See Section 15850.
 6. Provide written reports for all startup and commissioning tests for College Representative review prior to final punch list inspection.

END

SECTION 15800

MECHANICAL SYSTEMS AND PIPING PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The General Provisions of the Contract, including General and Supplementary Conditions and General Requirements apply to the work specified in this Section.
- B. Refer to General Piping Requirements which shall apply to work in this Section.

1.2 DESCRIPTION OF WORK

- A. The work to be done under this Section includes the furnishing of all labor, tools, materials, equipment and services necessary for and reasonable incidental to the removal and installation of complete mechanical equipment and piping as shown on plans and herein specified, excepting only work and/or materials indicated as being done and/or furnished under other sections.
- B. Contractor shall refer to other Sections of the Specifications which may be applicable to, or associated with this Section.
- C. Contractor shall disconnect and remove the Mechanical equipment as specified in scope
- D. Contractor shall provide complete installation of piping, equipment and installation of all field mounted accessories.
- E. Miscellaneous piping.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Provide and install structural supports for equipment. These supports must be checked and coordinated by this Section so that they suit the equipment which is to be supported.
- B. Provide all platforms slabs, lintels and curbs, as directed by this Section, to accommodate the mechanical equipment.

1.4 QUALITY ASSURANCE

These specifications with accompanying drawings, require complete apparatus, fully erected and in successful operating condition. Perform all work in best, most substantial manner.

1.5 SUBMITTALS

- A. Contractor, before beginning work, shall submit dimensional shop drawings for approval of the installation of all piping systems and equipment layouts.

- B. Where the piping installed is of a different configuration and/or routing than that shown on the drawings, Contractor shall assume all responsibility to conform with the intent of the contract documents. The College Representative shall be advised of any changes and deviations for his approval. The same shall be true for any field modification required because of "on job" construction conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Certain items in this specification are listed by manufacturer and/or manufacturer's model number to establish general style, type, character, and quality of the product desired. Similar items manufactured by other than those listed will be considered, providing submittals are made according to Pre-Bid Approval requirements of Instructions to Bidders Article 3.3.
- B. Where no manufacturer or model number is given, any product meeting performance or design criteria, or referenced trade association standard may be used and Pre-Bid Approval is not required.

2.2 PIPING AND FITTINGS

- A. Furnish and install all piping related to the mechanical equipment and other miscellaneous piping.
- B. All piping shall be installed parallel and square with building lines and shall be sloped to permit drainage, with suitable provision for drainage at all low points.
- C. Piping shall be arranged to maintain headroom and keep passageways clear and where necessary shall be offset to maintain the required clearance and conform with the structural features of the building. Contractor shall determine in advance of construction locations for all piping sleeves, hangers, etc. No allowance will be made for extra due to inaccurate location of sleeves, piping or equipment.
- D. All piping shall have provisions for expansion and contraction with anchorage at each point shown on the plans and/or as required.
- E. Full length pipe shall be used where possible, short lengths and couplings will not be permitted. After cutting, all pipes shall be reamed out to full bore and before erection, all cutting and foreign matter shall be removed from the inside of pipes. Screwed joints shall be made tight without caulking or the use of lead or paint and no lubricant shall be used except flake granite and cylinder oil paste, or approved pipe compound applied to make threaded pipe.
- F. Pipe sleeves shall be provided for the passage of all pipe through walls, floors and partitions.
- G. Welding fittings shall be Tube Turn, Midwest, or approved equal. Use welding elbows at all turns in welded piping, except where bent runs are indicated and except that turns and off-setting to a maximum of 15 degrees mitered. At branch connections, use

welding tees.

- H. Hydronic piping shall be installed using ASTM A53 Grade B Schedule 40 black steel pipe with welded fittings. Welded elbows shall be factory made long radius.
- I. Water and drain piping 2" and smaller shall be ASTM B88 type "L" hard drawn copper with wrought copper sweat fittings.
- J. Install control valves, sensor wells, sockets, flow meters and DP sensors. Provide brass nipples for all sensor wells.

2.3 PAINTING AND IDENTIFICATION

- A. Equipment factory fabricated and assembled units shall be furnished with factory applied protective prime coat paint of finished baked enamel. Equipment surfaces damaged during course of construction or shipment shall be refinished by the Contractor.
- B. Detach motor controllers, disconnects, etc., shall be identified with metal or plastic plates with etched letters to completely identify service of electrical equipment.
- C. Major control and sectionalizing valves shall be identified by means of etched brass plates bracketed to valve handle. Contractor shall prepare schedule of such identifying plates for Engineer's approval.
- D. All piping at all equipment shall be stenciled to show the service and direction of flow. Stencils shall be black on a white background with letters one (1") inch high spaced at approximately forty-eight (48") inches apart. Pressure-sensitive pipe markers ANSI Standard A 13.1-1956 may be used in lieu of stenciling.
- E. Paint all piping and equipment in accordance with Painting Section 09900.

2.4 WATER TREATMENT

- A. Water treatment chemicals shall be furnished and installed by the College.
- B. This contractor shall completely flush out the systems to remove all oil and film from the inside of the piping.

2.5 VIBRATION ISOLATION SYSTEMS

- A. Work shall include furnishing, installing and testing all material required and hereinafter called for complete execution of the vibration isolation system. Isolation materials shall not be limited to compressors, converters, air units, pumps, piping, duct work, fans, etc. All motor-connected equipment shall be considered a source of vibration and shall be isolated to prevent vibration and sound transmission. Isolation equipment, as

manufactured by Kinetics, Mason industries or prior approval equal, shall be used. Specific reference to isolation under equipment headings is to provide additional information by which proper selection of the required isolation may be made. Equipment specification data showing physical size, bearing points, weights per point, rotating speeds and sound power levels generated shall be furnished by the respective equipment supplier to the vibration isolation supplier after equipment submittals have been approved.

- B. All mechanical and sound isolation materials specified herein or shall be provided by a single manufacturer to assure singular responsibility for proper selection, application, installation and performance. Substitution for isolation material specified incorporating non-permanent materials, such as cork, rubber, wood pulp, or thermal fiberglass will not be acceptable. Should no specific material be called out for particular use, all mechanical vibration isolation shall be based upon Chapter 46, 1999 A.S.H.R.A.E. Guide-Table 45, "Guide for Selection of Vibration Isolators". Bases, mounts, and hangers furnished shall have a nominal deflection equal to the minimum deflection as shown in this guide and shall be furnished on all motor driven equipment requiring isolation as well as piping and duct connected to same.
- C. To assure stability, the spring element to be a large diameter laterally stable spring with load plate and have a lateral stiffness greater than 0.8 times the rater vertical stiffness and be designed to prove up to 50% overload capacity. Each base mount spring shall have a 1" isolation sound pad of elastomeric material.
- D. Isolation shall be stable during starting and stopping of equipment without any transverse or eccentric movement that could damage or adversely affect the equipment or attachments. Isolation systems for floor or ceiling-mounted equipment shall have a maximum lateral motion under start up and shut down of 3/8". Motion in excess shall be corrected by restrained spring- type mounts. Isolators shall be selected for the lowest operating speed of the equipment isolated and shall be located to produce uniform loading and deflection even when equipment weight is not evenly distributed. Static deflection on grade up to 3/8" shall use nominal 1" deflection springs on isolation pads. Static deflection above grade shall use spring isolators with spring deflection based upon 2007 ASHRAE Handbook Deflection data. The static deflection of the isolation system shall be selected to avoid being in resonance with the disturbing frequency. All spring isolators shall have neoprene sound damping pads separating isolator from structure.
- E. Submittals shall contain a complete schedule of all equipment to be isolated along with the type of isolator, loading per isolator, static deflection, spring diameters and maximum deflection. Should isolation installed fail to perform satisfactorily in preventing the transmission of vibration, the isolation shall be replaced without cost to owner and properly selected isolators shall be installed.

2.6 HVAC DUCTWORK

- A. Provide and install a complete system of ductwork as herein specified to include, but not limited to supply, return, exhaust and fresh air with grilles, registers, diffusers and appurtenance to provide a complete functional and operational system. Duct sizes shown on drawings are free

area dimensions. Design shall be as described in the latest edition of SMACNA manuals and as per the following:

1. Galvanized sheet metal shall be lock form quality per ASTM A653 with a G90 zinc coating.
2. Outside air and exhaust air ducts shall be galvanized sheet metal with air-tight seams and as per applicable sections of SMACNA manuals for low velocity ducts. Insulate outside air and exhaust air ducts with 2" exterior duct wrap.
3. Supply and return ducts for low pressure system and, low velocity systems shall be galvanized sheet metal with airtight seams and as per applicable section of SMACNA manuals for low velocity ducts. All ducts shall be insulated with 1" internal liner as per Section 15250.
4. Rectangular ductwork for medium pressure, high velocity systems shall be galvanized sheet metal with airtight seams and as per applicable section of SMACNA manuals for high velocity ductwork. Insulate with 1" internal liner as per Section 15250.
5. Round rigid ductwork shall be all round single wall spiral pipe and fittings, galvanized steel, as per applicable sections of SMACNA manuals for high velocity duct. Insulate with 2" exterior duct wrap. Seal all seams, joints and wall penetrations with hard cast as herein specified.
6. All ducts shall be sealed per SMACNA Seal Class A. All joints, longitudinal seams and wall penetrations of all supply, return outside air and exhaust ducts shall be sealed with an elastomeric tape which shall consist of a pressure sensitive layer of modified butyl rubber sealer laminated to a foil backing material which shall conform to surface variations and irregular areas and shall not harden crack or peel. The sealant shall be waterproof and shall be a minimum of 15 mils thick. All ductwork shall be cleaned and prepared and sealant shall be applied strictly in accordance with manufacturer's instructions and recommendations. Sealant shall be hard cast FG-1402, Suretape #653 or approved equal, at Contractor's option flanged gasketed duct system may be used for POSITIVE PRESSURE SYSTEM ONLY.
7. Flexible round duct where indicated on plans shall be listed by Underwriters' Laboratories, Inc., under UL-181 standards as Class I flexible Air Duct Material complying with NFPA Standards 90A. Ducts shall be rated on maximum pressure of 6 inches WG positive and 2 inches WG negative. The duct shall be factory fabricated assembly composed of: an inner duct of woven and coated fiberglass providing an air seal and bonded permanently to corrosion resistant coated steel wire helix: a 2" thick fiberglass insulating blanket and low permeability outer vapor barrier of fiberglass reinforced metalized film laminate. Pressure drop not to exceed .15" SP at 500 Fpm through 6" or larger duct. Maximum length of flexible duct shall not exceed 8'-0". Connect flexible round duct with ½" wide nylon positive locking nylon straps on inner duct and outer duct.

8. Splitter dampers shall be installed where branches take off of main trunk ductwork, where ducts divide or where shown on the drawings. Splitters shall be fitted with nickel plated damper regulators in finished areas. Splitters shall be factory fabricated in accordance with SMACNA Duct Construction Standards.
- B. Flexible connections shall be provided between each fan unit and ductwork on supply side and also on return side. Material shall be flexible fire-resistive material, minimum 4" wide, UL listed, with no metal to metal contact.
- C. Duct supports for rectangular ducts shall be a minimum 1" X 18 gauge galvanized steel bands. Hanger bands shall be bent under lower corners and secured with self-tapping screws at corners
1. Supply and return ducts for low pressure system and, low velocity systems shall be galvanized sheet metal with airtight seams and as per applicable section of SMACNA manuals for low velocity ducts. All ducts shall be insulated with 1" internal liner as per Section 15250.
 2. Rectangular ductwork for medium pressure, high velocity systems shall be galvanized sheet metal with airtight seams and as per applicable section of SMACNA manuals for high velocity ductwork. Insulate with 1" internal liner as per Section 15250.
 3. Round rigid ductwork shall be all round single wall spiral pipe and fittings, galvanized steel, as per applicable sections of SMACNA manuals for high velocity duct. Insulate with 2" exterior duct wrap. Seal all seams, joints and wall penetrations with hard cast as herein specified.
 4. All ducts shall be sealed per SMACNA Seal Class A. All joints, longitudinal seams and wall penetrations of all supply, return outside air and exhaust ducts shall be sealed with an elastomeric tape which shall consist of a pressure sensitive layer of modified butyl rubber sealer laminated to a foil backing material which shall conform to surface variations and irregular areas and shall not harden crack or peel. The sealant shall be waterproof and shall be a minimum of 15 mils thick. All ductwork shall be cleaned and prepared and sealant shall be applied strictly in accordance with manufacturer's instructions and recommendations.
 5. Flexible round duct where indicated on plans shall be listed by Underwriters' Laboratories, Inc., under UL-181 standards as Class I flexible Air Duct Material complying with NFPA Standards 90A. Ducts shall be rated on maximum pressure of 6 inches WG positive and 2 inches WG negative. The duct shall be factory fabricated assembly composed of: an inner duct of woven and coated fiberglass providing an air seal and bonded permanently to corrosion resistant coated steel wire helix: a 2" thick fiberglass insulating blanket and low permeability outer vapor barrier of fiberglass reinforced metalized film laminate. Pressure drop not to exceed .15" SP at 500 Fpm through 6" or larger duct. Maximum length of flexible duct shall not exceed 8'-0". Connect flexible round duct with ½" wide nylon

positive locking nylon straps on inner duct and outer duct.

6. Splitter dampers shall be installed where branches take off of main trunk ductwork, where ducts divide or where shown on the drawings. Splitters shall be fitted with nickel plated damper regulators in finished areas. Splitters shall be factory fabricated in accordance with SMACNA Duct Construction Standards.
- D. Flexible connections shall be provided between each fan unit and ductwork on supply side and also on return side. Material shall be flexible fire-resistive material, minimum 4" wide, UL listed, with no metal to metal contact.
- E. Duct supports for rectangular ducts shall be a minimum 1" X 18 gauge galvanized steel bands. Hanger bands shall be bent under lower corners and secured with self-tapping screws at corners
- F. Louvers shall be as scheduled and/or detailed on drawings.

Insulate the back of all diffusers, grates and registers with $\frac{3}{4}$ Armaflex or Rubatex.

2.7 FIRE DAMPERS

Fire dampers shall be solid sheet curtain type, dynamic closure type corrosion resistant galvanized steel construction. Dampers mounted in the horizontal position shall be closed by a stainless steel negate spring. Damper to be easily reset through standard access panel for required periodic maintenance. Access panels are required for access to all fire dampers, minimum size 12 X 12 inches. Dampers shall be 100% out of air stream. Provide fusible links rated at 160 degrees F.

2.8 ACCESS DOORS

Access doors shall be installed in ductwork wherever required for ready access to any operating part. Doors shall not be smaller than 12 X 12 inches, with brass hinge and sash type fasteners. Ducts 30" or larger shall be supplied with minimum 18 X 18 inch access doors. Doors shall be double wall insulated type, hinged with sash locks and gaskets.

2.9 AIR HANDLING UNITS

- A. Air Handling Units shall be modular, double wall, type as manufactured by McQuay Model Vision Air, Trane Performance Climate Changer, York Solution or equal. Units shall have the capacities and requirements as scheduled on the drawings and here-in-after specified. Units shall be tested and rated in accordance with ARI standard 430 and are ETL listed.
- B. Unit Construction
 1. Unit casing shall be fabricated of 16 gauge nominal channel posts and removable

panels assembled with mechanical fasteners and a galvanized steel or painted galvanized steel. Sections shall be assembled with high compression gasket between each frame member and unit panel or door to prevent thermal bridging from interior to exterior of unit. The outside casing shall consist of G90 galvanized steel 18 gauge nominal. The casing leakage rate shall not exceed .5 cfm per square foot of cabinet area at 5" static pressure. Module to module assembly shall be accomplished with an overlapping, full perimeter internal splice joint that shall be sealed with bulb type gasket on both mating modules to minimize on-site labor along with meeting indoor air quality standards. Insulation between casing shall be Two inch thick, R-13 injected foam. The inner liner shall be constructed of 20 gauge nominal G90 galvanized steel solid. The base rail shall be formed of galvanized steel minimum of 6" high. The base rail shall be an integral part of each shipping section.

2. Access doors shall be double wall and constructed of galvanized steel, flush mounted to the cabinetry, and provided with gasket seal. Heavy duty stainless steel hinges, door latch and full size handle assembly shall be factory installed. Section to provide access between components shall be a minimum of 16" and a maximum of 54" deep.
- C. Drain pan shall be constructed from stainless steel, cross broken and pitched (double sloped) to the drain connection. The drain connection centerline shall be a minimum of 3" above finished floor for proper trapping. The variable base rail height can provide additional height for trapping
 - D. Coils shall be accessible from the connection side of unit for service and cleaning. The coil headers and return bends shall be fully enclosed within unit casing. The unit shall be furnished with coil connections that extend a minimum of 5" beyond unit casing for easy installation. Drain and vent connections shall be located on the coil connections. The coil connections shall be factory sealed with grommets where the piping extends through the unit casing to avoid air leakage and comply with indoor air quality standards. Coils shall be removable through side panels and/or top panels of unit without removal and disassembly of entire unit. Coils shall be ARI certified and Underwriters Laboratories, Inc. listed. Capacities, pressure drops, and selection procedures are in accordance with ARI 410.
 - E. Coil fins shall have a minimum thickness of .0075" aluminum plate construction. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be constructed of 5/8" OD seamless copper mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins. Coils shall be provided with round seamless 5/8" OD copper .020" nominal tube wall thickness, expanded into fins. All joints shall be brazed. Coils shall be provided with headers of seamless copper tubing with intruded tube holes that permit expansion and contraction without creating undue stress or strain. The casing shall be formed channel frame of stainless steel. Coil connections shall be copper with size provided by manufacturer based upon the most efficient coil circuiting. Coil vents and drains shall be provided on the coil connection outside the unit

casing. Vent connections shall be provided at the highest point to assure proper venting. Drain connections shall be provided at the lowest point to insure drainage and prevent freeze-up.

- F. Supply fans shall be single width, single inlet, class II, belt-drive type airfoil blade plug fan dynamically balanced as an assembly. Maximum fan RPM is always below the first critical fan speed.
- G. Fan and motors shall be internally mounted on a steel base. The motor base shall be able to be slid out the side of unit if removal is required. Access shall be provided to motor, drive, and bearings through a hinged access door. Fan and motor assemblies shall be provided with 2" internally mounted spring isolators, rubber in shear mounts, or rigid mounts. Motors shall be type ODP 1 Speed, 1 Winding, efficiency Premium, Inverter Duty Rated.
- H. Fan bearings shall be sealed, self-aligning, grease lubricated, ball bearings. The extended copper lubrication lines shall be furnished on the access side of unit. The grease fittings shall be attached to fan base assembly, near the access door.
- I. The bearing load rating shall be computed in accordance with AFBMA - ANSI Standards, L-50 life at 500,000 hours-all DWDI fans and L-50 life at 400,000 hours- all belt drive airfoil plenum fans. Bearings shall be heavy-duty pillow block type, self-aligning, grease-lubricated ball bearings
- J. The V-belt drive shall be cast iron or steel sheaves, dynamically balanced, and bored to fit shafts and keyed. Variable or adjustable pitch sheaves shall be selected so that the required rpm is obtained with sheaves set at mid-position. The standard drive service factor shall be 1.1 (7 1/2 HP & smaller) or 1.3 (10 HP & larger) times fan brake horsepower.
- K. The shaft shall be solid, hot rolled steel, ground and polished, keyed to the shaft, and protectively coated with lubricating oil.
- L. The filter section shall include filter racks, and hinged and latching access doors on either, or both sides of the section for side or front loading and removal of filters. Filter racks shall be suitable for a 2 inch deep cartridge filter. Filter media is U.L. Class 2, and tested according to U.L. Standard 900. AHU shall have MERV 11, 2" cartridge filters.
- M. The Mixing box section shall be provided with factory mounted outside air dampers. Dampers shall be low leak rated, and made of galvanized steel in a galvanized frame. Dampers shall have hollow core airfoil blades, fully gasketed and have continuous vinyl seals between the damper blades. Stainless steel jamb seals shall be provided along the end of dampers. The outside air leakage rate shall be less than two tenths of one percent leakage at 2 inches static pressure differential. The leakage rate shall be tested in accordance with AMCA Standard 500.

Fixtures shall be track mounted to the appropriate factory supplied hardware to form horizontal rows that provide for the proper fixture support. Fixtures shall be equipped with UL approved fixture-to-fixture mechanical and electrical connections that facilitate

- N. Proper installation and coupling to A/C power from one end. Fixtures shall be capable

of being mounted anywhere in the system

- O. Fixtures shall meet the "UL" drip proof design and each fixture shall be equipped with an electrical interlock, which will not allow the fixture to energize unless it's properly installed to its factory supplied mounting track.
- P. Fixtures shall be constructed of type 304 stainless steel to preclude corrosion.

3.1 INSTALLATION

- A. All piping and equipment shall be installed in accordance with manufacturer's recommendations. Installation, adjustments and starting shall be done under supervision of manufacturer's representative.
- B. All piping and valves shall be installed in a neat and workmanlike manner in accordance with the guidelines and the best practice of the trade.
- C. Upon completion of the installation of all work and equipment the Contractor shall coordinate with the College in the starting of all equipment and make all necessary tests and adjustments to place the piping systems in a satisfactory condition for continuous safe operation of facilities.

END OF SECTION 15800

SECTION 15900

VALVES AND FITTINGS PART 1 – GENERAL

1.1 SUMMARY

The work under this heading includes the furnishing and installing of all required appurtenances incidental to the piping systems as indicated on the drawings. Refer to GENERAL MECHANICAL REQUIREMENTS Section 15050 which shall apply to all work in this Section.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide factory-fabricated valves for use in service indicated. Provide valves of types and pressure ratings indicated; provide proper selection to comply with installation requirements. Provide sizes as indicated, and connections, which properly mate with pipe, tube, and equipment connections. Where more than one type is indicated, selection is installer's option. Valves shall be of same make for all these services.
- B. Valves shall comply with the following:

Gate - cast iron - MSS SP-70
Gate - bronze - MSS SP-80
Globe - cast iron -MSS SP-85
Globe - bronze - MSS SP-80
Ball - MSS SP-110
Butterfly - MSS SP-67
Check - cast iron - MSS SP-71
Check - bronze - MSS SP-80

- C. Gate valves shall be equipped with packing suitable for intended service. (Under no circumstances is asbestos acceptable.) Valves shall be designed so back seating protects packing and stem threads from media when valve is fully opened, and equipped with gland follower. Guides for disc on rising stem valves shall be machined for accurate fit.
- D. Globe valves shall be equipped with packing suitable for intended service. (Under no circumstances is asbestos acceptable.) Globe valves shall be designed so back seating protects packing and stem threads from media when valve is fully opened, and equipped with gland follower.
- E. Ball valves shall have FULL port opening blow out proof stem: hard chrome plated forged brass ball, rated not less than 600# W.O.G.
- F. Provide gear operators on butterfly valves 8" and larger. Valve bodies shall have extended necks to provide for 2-1/4" insulation.
- G. Provide valves with features indicated and where not otherwise indicated, provide proper valve features as outlined in this specification. Comply with ANSI B31.1.
- H. Valve flanges shall comply to ANSI B16.1 (cast iron), ANSI B16.5(steel), ANSI B16.24 (bronze)
- I. Butt-Weld valve ends shall comply with ANSI B16.25.
- J. Solder Joint valve ends shall comply with ANSI B16.18.
- K. Flangeless valve bodies shall be manufactured to fit between flanges and shall comply with ANSI B16.1 (cast iron), ANSI B16.5 (steel), or ANSI B16.24 (bronze).
- L. Fabricate pressure-containing components of valves, including stems and seats from brass or bronze materials, of standard alloy recognized in valve manufacturing that resist de-zincification.
- M. Design seat of valve with removable disc, and assemble valve so disc can be replaced when worn.
- N. Butterfly valves shall be designed for flow regulation, and manufactured to be tight in closed position. Test pressures in accordance with MSS SP-67 as follows: Seat 2-12" 220psi. No leakage shall be permitted under test.

2.2 GLOBE VALVES FOR STEEL PIPING

- A. Threaded Ends 2" and Smaller: Class 125, bronze body, union bonnet, rising stem, Teflon disc.
- B. Flanged Ends 2-1/2" and Larger: Class 125, iron body, bolted bonnet, rising stem, OS&Y, renewable seat and disc.

2.3 GATE VALVES FOR STEEL PIPING

- A. Threaded Ends 2" and Smaller: Class 125, bronze body, union bonnet, rising stem, solid wedge.
- B. Flanged Ends 2-1/2" and Larger: Class 125, iron body, bronze mounted, bolted bonnet, rising stem, OS&Y, solid wedge.

2.4 GLOBE VALVES FOR COPPER PIPING

- A. Soldered Ends 2" and Smaller: Class 125, bronze body, screwed bonnet, rising stem, bronze disc (swivel type).
- B. Flanged Ends 2-1/2" and Larger: Class 125, iron body, bolted bonnet, rising stem, OS&Y, renewable seat and disc. Provide dielectric gasket and bolt isolators.

2.5 GATE VALVE FOR COPPER PIPING

- A. Flanged Ends 2-1/2" and Larger: Class 125, iron body, bronze mounted, bolted bonnet, rising stem, OS&Y, solid wedge. Provide dielectric gasket and bolt isolators.
- B. Solder Ends 2" and Smaller: Class 125, bronze body, screwed bonnet, rising stem, solid wedge.

2.6 BALL VALVES

- A. Threaded Ends 3" and Smaller: 600# W.O.G., forged brass two piece body, hard chrome plated forged brass ball, blow-out proof stem.
- B. Soldered Ends 2" and Smaller: 600# W.O.G., forged brass two piece body, hard chrome plated forged brass ball, true adjustable packing nut ("O"-ring only type stem seal not acceptable), blow-out proof stem..
- C. Flanged Ends 2-1/2" and larger: Class 150, flanged ends, carbon steel body with 316 s.s. trim, uni-body design, full port, blowout proof s.s. stem and ball, teflon seat.

2.7 BUTTERFLY VALVES

- A. For chilled/hot water system provide lug type with rated working pressure of 200 psi on sizes 2" thru 12". Valve shall be cast iron, drilled and tapped bug body, lever operated, 10 position throttling handle, memory plate, type 410 stainless steel stem with EPDM seat.

2.8 SWING CHECK VALVE IN COPPER PIPING

- A. Soldered Ends 2" and Smaller: Class 125, bronze body, screwed cap, "Y" pattern

swing, bronze disc.

- B. Flanged Ends 2-1/2" and Larger: Class 125, iron body, bronze mounted, horizontal swing, cast-iron disc. Provide dielectric gasket with insulated bolts.

2.9 SWING CHECK VALVES IN STEEL PIPING

- A. Threaded Ends 2" and Smaller: Class 125, bronze body, screwed cap, "Y" pattern swing, Teflon disc.
- B. Flanged Ends 2-1/2" and Larger: Class 125, iron, bronze mounted, horizontal swing, cast-iron disc.

2.10 UNIONS IN COPPER LINES

Cast Bronze Unions.

2.11 UNIONS IN BLACK STEEL, WROUGHT IRON OR GALVANIZED STEEL PIPING

Ground joint malleable iron galvanized Class 300 for 2" nominal pipe sizes or below. For pipe sizes 2-1/2" and larger use forged steel welding flanges (Galvanized for galvanized piping).

2.12 UNIONS IN CONNECTION BETWEEN COPPER AND STEEL OR IRON PIPING

Provide bronze valves or dielectric waterways.

2.13 STRAINERS

Through 2-1/2" Metraflex Style S - Screwed; Zurn Model YSBR 20 mesh monel screen through 2"; .045 stainless steel on 2-1/2"; Strainers on 3" and above Metraflex Style M1 - flanged; Zurn Model FS 3" to have .045 mesh, ss screws; 3-1/2" and above .125 mesh, ss screws.

2.14 GAGE COCK

Crane No. 744, or Weiss TC-14, all bronze.

2.15 AIR VENT

Automatic air vents where indicated on drawings shall be Bell & Gossett No. 7, or Taco 417, with copper discharge line piped to closet floor drain.

2.16 MANUAL AIR VENTS

Where installed shall be Crane No. 744, or Weiss TC-14, with 1/4" tap into line to be vented.

2.17 GAUGES

Furnish and install where shown on the plans or where good practice required, pressure gauges with 4-1/2 glass dial face, corrosion resistant stainless steel case and ring, balanced adjustable black pointer guaranteed accurate to 1% of range, easy read dial - white background with bold black numerals and graduations, 270 degree ARG, 1/4" N.P.T. bottom connection.

2.18 THERMOMETERS

Shall be Adjustable Angle type with 9" case, lens front reading mercury tube with angle satin finish aluminum scales, bold black numerals, bold scale graduations, thick glass windows, and die cast aluminum case with baked bronze finish. Thermometer shall rotate 180 degrees and stem swivels 180 degrees in 10 degree increments separable wells to suit insulation. For chilled water 20 degrees to 120 degrees. For hot water 30 degrees to 240 degrees.

2.19 T.A.P. PLUGS

Furnish where shown on plans or where good practice requires 1/2" IPS plug. The Contractor shall leave with the College one kit consisting of (1) 1/8" thermometer, (1) pressure gauge and (1) gauge adaptor, 1/8" diameter with stainless steel probe, 1/4" FPT gauge connection.

2.20 BALANCING VALVES

Valves 1/2" to 2" pipe size (NPT or Sweat) to be of dezincification brass or bronze construction. Valves 2-1/2" to 12" pipe size shall be cast iron for flanged models or ductile iron for grooved models. Valves shall be globe type rated 175 psi for iron and 240 psi for brass/bronze at 250 degrees F. Valves to have concealed memory stop feature and visual position readout. Each valve shall have two metering/test ports with internal check valves and protective caps. Valves to be leak-tight at full rated working pressure. All valves to be provided with molded insulation to permit access for balance and read-out. Nibco model T or S1710 (1/2" to 2"), F or G737 (2-1/2" to 12"), DeZurik series 12.30-1 or approved equal.

2.21 GASKETS

Material shall be of compressed sheet suitable for the operating conditions. Group 1a or 1b as listed in ASTM B16.5.

2.22 BOLTS AND NUTS

Bolts shall conform to ASTM A193/A193M Rev B, Grade B7, nuts shall conform to ASTM A194/A194M Rev A, Grade 2H.

PART 3 EXECUTION

3.1 WORKMANSHIP AND INCIDENTAL ITEMS

- A. All valves shall be installed so as to be easily accessible for cleaning, inspection, maintenance, and operation.
- B. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward for horizontal plane unless unavoidable. Provide chain operators on all valves over 6' above floor in mechanical rooms.
- C. Except as otherwise indicated, install valves with the following ends or types of pipe/tube connections:

Tube Size 2" and smaller - Soldered-joint valves Pipe Size 2" and smaller - Threaded valves Pipe Size 2-1/2" and larger - Butt-weld end valves or Flanged end valves

- D. Install swing check valves in horizontal position, unless otherwise shown on drawings, with hinge pin horizontally perpendicular to centerline of pipe. Install for proper direction of flow.
- E. Provide access panels at all concealed valves.
- F. Major control and sectionalizing valves throughout building shall be identified by means of a brass valve tag bracketed to valve handle. Contractor shall prepare schedule of such identifying plates and frame under glass for installation in main equipment room.
- G. No piping of dissimilar metals placed in contact or in close proximity with each other. Provide dielectric waterways wherever piping of dissimilar metals is joined.
- H. Run all piping concealed unless specifically noted otherwise, making all necessary offsets, turns, etc., necessary to conceal piping from view.
- I. Provide all necessary steel frame supports, anchor bolts, sleeves, etc., required for safe support of equipment and piping installed under this contract. The Contractor shall be completely responsible for the accurate position and dimensions of all foundations and support items.

END OF SECTION 15900

SECTION 16010

ELECTRICAL GENERAL PART 1 GENERAL

1.1 SUMMARY

- A. Furnish all labor, tools, materials, fixtures, equipment, accessories, transportation, etc., required for complete electrical lighting and power systems, complete with necessary auxiliaries.
- B. The GENERAL CONDITIONS of the Specifications shall apply to all work under this Section. Separation of Specifications into Sections is for convenience only and is not intended to establish limits of work or liability.
- C. In general, the work shall consist of the following installations:
 - 1. Power wiring and connection to new mechanical equipment.
 - 2. Lighting.
 - 3. Fire alarm devices.
- D. Prior to submitting quotation for electrical work, Contractor shall visit and examine the job site in order to become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed.
- E. It is the intent of these specifications that in all particulars, the materials and workmanship shall conform to the best practice and that the equipment and accessories as furnished and installed shall be complete and ready to operate.
- F. All materials shall be new, except where otherwise indicated, and shall conform with the standards of underwriters' Laboratories in every case where such a standard has been established for the particular type of material in question.
- G. It shall be the Contractor's responsibility to see that all equipment such as junction boxes, panelboards, switches, and other apparatus, as may require maintenance from time to time, are made easily accessible.

1.2 MEASUREMENTS

The Contractor shall carefully investigate structural conditions, walls, furring and chase locations and room finishes and shall make actual measurements on the job so that the panelboards, switches, receptacles, lighting fixtures and accessories shall fit.

1.3 LAWS, CODES AND PERMITS

- A. Latest edition of the following listed established standards constitute part of the specification requirements.

National Electrical Code - 2005 (NFPA No. 70) Applicable
State Requirements
Underwriters' Laboratories (UL) Electrical Testing
Laboratories (ETL)
American National Standard Institute (ANSI) NFPA 101
Life Safety Code – 2007

1.4 JOB CONDITIONS

- A. Structural and other conditions may require certain modifications and adjustments from conditions shown. Such deviations are permissible; however, specific sizes capacities and requirements affecting the satisfactory performance and operation of the installation shall remain unchanged. Make allowance for normal job conditions and interferences.
- B. Ask for details whenever uncertain about method of installation. Lack of details not requested shall not excuse improper installation and correction shall be responsibility of the Contractor.
- C. Schedule and perform all electrical work to avoid delays to the Contractor and other trades.
- D. In addition to the basic work covered under this contract, the Contractor shall plan and schedule the work to permit continuous operation of essential services of existing facilities. Planning shall also include scheduling necessary interruptions of electrical service to existing building at times when such interruptions will cause minimum interference with existing routine and services. All such interruptions shall be made only after consultation with the College. This is extremely important since included in the work is a relocation and rerouting of and connecting to existing facilities. No additional compensation will be allowed for failure to be so informed. Contractor shall provide temporary power connections as required to execute work as shown on drawings.
- E. It is essential that all adjacent areas of the building be kept in operation at all times, except when specific permission is given to contrary. Before any power or equipment is shut down for disconnecting, tie-ins, or rearranging of services, make arrangements with College Representative to do this work at night, or Sunday, or at special time of day or year with length of shutdown agreed upon before work is begun. Contractor to bear any overtime or work costs in this connection.
- F. All piping, conduits, conductors and other electrical items in way of construction, shall be rerouted, relocated or otherwise adjusted to work out with such construction or changes shown or specified in any or all of various sections of specifications. Unknown electrical devices that are encountered will be referred immediately to College Representative for method of disposition before continuation of work.

PART 2 PRODUCTS AND INSTALLATION

2.1 APPROVALS

- A. Name of manufacturer or catalog numbers are mentioned herein in order to establish a standard as to design and quality. Other products similar in design and of equal quality may be used if submitted to the College Representative and approved by him.
- B. Within twenty-one (21) days after award of General Contract, Contractor shall submit complete dimensional shop drawings and descriptive literature covering the following equipment and materials. Written approval thereof must be obtained before ordering or installation.

Safety Switches Conduit and Fittings
Wiring
Fire Alarm Devices
Circuit Breakers

- C. Comply with requirements regarding submittals, number of copies, and procedures.

2.2 PROTECTION OF FIXTURES, MATERIAL AND EQUIPMENT

- A. Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the College's property from injury or loss, except as may be caused by agents or employees of the College. He shall adequately protect adjacent property as provided by law.
- B. Conduit openings shall be capped or plugged during installation. Fixtures and equipment shall be tightly covered and protected against dirt, moisture, chemical and mechanical injury. At the completion of the work, the fixtures, material and equipment shall be thoroughly cleaned and delivered in condition satisfactory to the College Representative.

2.3 CUTTING, PATCHING, AND SEALING

- A. All cutting and patching for the work of this Section shall be in accordance with the requirements of the GENERAL CONDITIONS. The Contractor shall perform all necessary cutting and patching required for the installation of work. Where floor or roof is cut or penetrated the structural integrity shall be maintained or restored. Cutting of structural members is prohibited except with prior approval of the College Representative.
- B. Penetrations of all walls, floors, and ceilings shall be sealed with a material capable of preventing the passage of flames and gases in accordance with the requirements of the test standard ASTM-E-814 for fire stops. The integrity of the fire rating, as indicated on the architectural drawings, shall be maintained.

2.4 CLEANING UP

- A. This Contractor shall promptly remove from the jobsite all debris, surplus and waste materials, empty crates and cartons resulting from his work.
- B. This Contractor shall remove all oil, grease or other stains resulting from his work performed in the building or the exterior thereof.

2.5 TESTING AND BALANCING

- A. Make tests which may be required by the College in connection with the operation of the electrical system in the building.
- B. All tests shall be made in accordance with the latest standards of the IEEE and the NEC.
- C. The installation shall be tested for performance, grounds, and insulation resistance. "Megger" type instrument shall be used. Circuit continuity tests and operational tests on all equipment furnished and/or connected by him shall be made by the Contractor after such equipment has been installed.
- D. The tests shall be made in the presence of the College Representative.

The Contractor shall notify the College Representative at least seventy-two (72) hours in advance of tests. The Contractor shall provide all testing equipment and all costs shall be borne by him. Written reports shall be made of all tests. All faults shall be corrected immediately.

2.6 PAINTING

- A. Contractor shall touch-up or refinish all items of electrical equipment furnished with a factory finish coat of paint and which may have been damaged regardless of cause.
- B. All electrical equipment such as switches, panelboards, motor controllers, etc., shall be suitably identified with micarta nameplates.

2.7 GUARANTEE

Upon completion of all tests and acceptance, the Contractor shall furnish the College a written guarantee covering all electrical work under this Contract for a period of one (1) year from date of final acceptance. Upon notice from the College Representative during the Guarantee period, the Contractor shall replace defective materials and correct faults of workmanship and repair any damage caused thereby promptly and free of any charge. Fuses and lamps are excluded from the guarantee.

2.8 CONTRACTOR'S QUALIFICATIONS

The Contractor must be licensed to perform such work as required by State and Local laws.

2.9 DIRECTORY CARDS, NAMEPLATES AND EQUIPMENT LABELS

Provide in the directory frame of each panelboard and for each feeder switch or circuit breaker, neatly typed directory cards indicating the general area and type of electrical load.

2.10 SUBSTITUTION

- A. All specified material, equipment, fixtures, etc., entering into the work under this section of contract are subject to the prior approval or disapproval of the College Representative. Refer to Section 3.3 (Substitutions) in Instructions to Bidders for approval procedures.
- B. Materials, equipment, fixtures, etc., herein named or indicated on drawings establish the type, size, appearance and quality required of products other manufacturers must meet to be acceptable.
- C. Requests for substitutions must include necessary data to conclusively demonstrate equality in type, size, appearance, quality, etc. Any deviation in the opinion of College Representative may be cause for rejection.

PART 3 EXECUTION

3.1 COMMISSIONING

- A. Contractor shall install all items of equipment as identified in this specification in strict accordance with manufacturer's requirements (whether identified in this specification or not), shop drawings and contract documents. Contractor shall insure a complete installation. Start-up of all equipment shall be by manufacturer authorized representative. Start-up services shall be provided for as long a period of time as is necessary to insure proper operation of the equipment items. The start-up technician shall conduct all operating tests as required to insure the equipment is operating in accordance with design parameters. Complete testing of all safety and emergency control devices shall be made. The start-up technician shall submit a written report to the College Representative (prior to final punch list inspection) containing all test data recorded as required above and a letter certifying that the equipment is operating properly.
- B. Other specific items of commissioning shall be as follows:
 - 1. Test and balance all new power feeders over 50 amps
 - 2. Provide written reports for all tests described above prior to final punch list

END OF SECTION - 16010

SECTION 16050

ELECTRICAL MATERIALS AND METHODS PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Applicable items of this Section shall apply to all sections of ELECTRICAL.

PART 2 PRODUCTS AND INSTALLATION

2.1 METHODS OF WIRING

- A. No wire shall be smaller than No. 12 except those for fixture drops and for control circuits of equipment. All wire shall have 600-volt insulation equivalent to type THHN/THWN unless otherwise noted on the drawings.
- B. Conductors shall be continuous from outlet to outlet and no splices shall be made except in outlet or junction boxes.
- C. Homeruns to panelboards may be collected in one or more conduits provided all circuiting is done in accordance with Code requirements and the maximum unbalanced current does not exceed the capacity of the neutral conductors.
- D. Powdered soapstone or approved pulling compound shall be used as a pulling lubricant for all non-lead covered conductors. Use Thomas and Betts Wireslick, or equal.
- E. All empty conduits installed shall contain a #14 fish wire.
- F. Conduit sizes shall conform to the requirements of the National Electric Code and/or sizes shown on the drawings. Minimize size conduit shall be 1/2".
- G. Vertical penetrations of concrete slabs shall be cored and sealed with fire stop. Size and location of all sleeves are subject to the approval of the structural engineer. Conduits routed below the first floor slab shall be rigid galvanized conduit, supported using 3/8" stainless steel threaded rods and steel framing, hot-dipped galvanized after fabrication. Supports shall be spaced in accordance with NEC-346-12. Any exposed conduits on exterior of building, shall be heavy wall hot dipped galvanized rigid conduit.
- H. Conduits in metal stud walls, exposed within mechanical and electrical rooms, and above ceilings shall be EMT. Conduits in hollow cmu walls shall be EMT with concrete tight set screw fittings. Conduits in solid, infilled cmu walls shall be Schedule 40 PVC.
- I. All raceways shall be concealed unless otherwise indicated.

- J. Branch circuit conduits feeding outlets in masonry walls shall be concealed in masonry. Where outlet boxes are indicated in bare masonry walls, the box shall be mounted so that two edges of the box or plaster cover will fall in a mortar joint. Where switchboxes will not accommodate the number of conductors required and 4" square or larger boxes are installed, the device covers shall be manufactured by Steel City Manufacturing Co., or Appleton, 1" minimum in depth, with straight rectangular openings for drywall construction. Where grouting is required to fill up improperly cut openings in the masonry, the work will be rejected. Contractor shall cooperate with the bricklayer to insure a neat and workmanlike job.
- K. Solderless Fixed spring connectors (T & B 10-100, Ideal wrap-cap, or equal) shall be used for all branch circuit wiring and fixture connections on all conductors #10 AWG and smaller. Split bolt or 2 bolt connectors (T & B 6 HPW, O-Z Gedney PMX, or equal) shall be used for connections and splices on all conductors #8 AWG or larger.
- L. Connections to all motors not equipped with a portable cord shall be made with a short piece of flexible metal conduit between rigid conduit system and motor terminal box. Ground bond of separate copper conductor shall be made between motor frame and rigid conduit system. In all outdoor locations, liquid tight flexible metal conduit shall be used.
- M. All recessed fixtures, unless they contain a box approved for THW wire shall be wired with THHN, in three feet (3') maximum of flexible metal conduit from a box at least one foot (1') from the fixture. Not more than two individual or two rows of continuous fixtures shall be connected to any one of these outlet boxes. This box shall be located above the ceiling and shall be accessible by removing fixture. Installation of blank covers on ceilings to provide access to such boxes will not be acceptable.
- N. Splices in all low voltage wiring shall be made at terminal blocks furnished with the equipment. At junction boxes or where other splices are required, these splices shall be soldered.
- O. Other routings than those indicated may not be used without the approval of the College Representative, but Contractor shall make allowance for possible obstructions to routes indicated. Conduits shall be grouped together and run on common hangers parallel to building lines in areas of open ceilings.

2.2 WIRING IN RACEWAYS

- A. Conduit sizes shall conform to requirements of the National Electrical Code and/or sizes shown on drawings.
- B. Routings facilitating speed and ease of installation may be used, provided the general intent of these specifications is followed and the specific intent of the particular circuit or circuits and the National Electrical Code are not violated; such changes and must be approved by the College Representative before work is

done. Contractor shall make full allowances for possible obstructions to these routes.

- C. Conduits shall be installed in a neat appearing manner and shall be rigidly secured in place. The use of wooden plugs in masonry or concrete as a base to fasten raceways will not be permitted. Approved anchors only shall be used for this purpose. Exposed conduits shall be installed with runs arranged parallel or perpendicular to walls and ceilings, with rigid angle turns consisting of symmetrical bends, conduits and junction boxes. Bends and offsets shall be held to a minimum. Conduits shall be kept at least six (6") inches from parallel runs of hot piping flues, or other hot objects.
- D. Conduits shall be cut with a hacksaw; ends must be square, threads cut and cleaned before reaming. Conduits must be securely fastened to all outlet and junction boxes with two locknuts and one bushing of approved make, care being exercised to see that full number of threads project through to permit bushings to butt up tight against the end of the conduit, after which the locknuts shall be screwed tight. Conduit shall be joined by approved conduit couplings and shall have ends butted in all cases where couplings are used. Use three piece threaded electrical unions where standard couplings cannot be used. The use of running threads will not be permitted. Where conduits cannot be joined by standard thread couplings, approved type conduit unions shall be used. Connectors and couplings for electric metallic tubing shall be of the set screw type. Couplings for rigid heavy-wall conduit shall be of the threaded type.
- E. Conduit fittings shall be Crouse-Hinds or Appleton grounding type, or approved equal.
- F. Insulated bushings shall be provided for all conductors #4 and larger.
- G. No wire shall be pulled in until the conduit system is complete and plastering dried. This does not include the white finish coat of plaster.
- H. During Construction, all outlet boxes and conduit stub-ins shall be suitably protected against the entrance of foreign material.

2.3 BOXES AND FITTINGS

- A. Boxes and fittings shall conform to requirements of Article 370 of the N.E.C.
- B. Junction and pull boxes required by field conditions shall be installed whether indicated on drawings or not.
- C. The location of outlets not specifically dimensioned on the drawings should be considered as approximate only. The Contractor shall study the general plans with relation to the spaces surrounding each outlet in order that his work fit the work of others so that when fixtures or other fittings are installed, they will be symmetrically located according to design requirements.

- D. Use only galvanized outlet and junction boxes, conduit fittings, covers, and supports for interior wiring and cast fittings and boxes with gasketed covers for exterior wiring. The Contractor shall provide all necessary structural supports for boxes and cabinets. Kindorf or Unistrut channels shall be used where applicable. Boxes for concealed outlets shall be 4" square by 1-1/2" deep, or larger, with raised device covers as required, except that 2-3/4" deep switch boxes may be used where only one conduit enters a box.
- E. Outlet boxes for exposed work shall be 4" square by 1-1/2" deep, or larger. Boxes shall have Appleton 1/2" deep surface metal covers to accommodate the devices indicated, or approved equal.
- F. In walls or ceilings of concrete, tile or other non-combustible material, boxes and fittings shall be so installed that the front edge of the box or fitting will not set back of the finished surface more than 1/4". In walls or ceilings constructed of wood or other combustible material, outlet boxes and fittings shall be set flush with the finished surface.
- G. If a fixture, canopy or pan is used as an outlet box cover, any combustible wall or ceiling finish between the edge of the canopy and the outlet box shall be covered with non-combustible material.
- H. Fixture studs shall be installed in all fixture outlets. In each case, the maximum permissible number of conductors shall be reduced by one.
- I. Appropriate galvanized blank covers, subject to approval of the College Representative, shall be installed over outlet or junction boxes which do not house a device. Multiple devices shall be installed in one-piece multi-gang box with one-piece multi-gang cover plates. On surface mounted switch and receptacle outlets, provide raised covers to permit mounting devices without additional device plates.
- J. For junction and pull boxes, 14 gauge or thicker sheet metal. Attach covers by means of 1/4" X 20 round head machine screws. In damp locations, provide rubber or neoprene gaskets.
- K. Attention is called to National Electrical Code, Article 370, Paragraph 370-16, Sub-paragraph (a) and (b) relative to allowable number of conductors in outlet boxes. Contractor shall make provisions to prevent overcrowding outlet and junction boxes regardless of number of conductors shown on the drawings at the outlets. There shall be no deviations from Code requirements on this subject.

2.4 CONDUCTORS

- A. All conductors shall be copper and no wire shall be less than #12 AWG except as otherwise noted herein and or indicated on drawings.
- B. All conductors, except as herein noted and/or as indicated on drawings, shall

have 600 volt insulation type THHN/THWN. Wiring through channels of continuous surface or suspended fluorescent fixtures shall be Type RHH, or THHN.

- C. Conductor #8 and larger shall be stranded. Feeders shall be of the size and type indicated on drawings.
- D. Type MC cable shall not be used.

2.5 GROUNDING

- A. Grounding shall conform to the requirements of Article 250 of the N.E.C.
- B. Contractor shall provide grounding as indicated on drawings, or as required by the modifications to the distribution system.
- C. A grounding conductor shall be provided in all conduit. The grounding conductor shall be green insulated, with a minimum size of #12 AWG, or as indicated on the drawings or per NEC-250. Grounding conductors routed entirely in soil as part of the ground loop shall be bare copper. The grounding conductor connecting the electrical service to the ground system shall be green insulated copper.
- D. Bond jumpers shall be used around concentric or eccentric knockouts on service equipment.
- E. Grounding pole of each polarized receptacle shall be bonded to its outlet box with copper wire and machine or self-tapping screw.

2.6 EQUIPMENT SUPPORTS

All electrical switches, panels, appurtenances, etc., shall be rigidly supported on Unistrut or equal steel framing which shall be securely fastened to walls, floors, ceilings, etc., as required. Details of framing must be submitted for approval before installation.

2.7 MOUNTING HEIGHTS

- A. If not otherwise indicated in the drawings, mounting heights to centerline of outlets shall be as follows:
- B. Receptacles - 18" above finished floor except above counter where indicated.
- C. Panelboard - Not more than 6'-0" from topmost operating handle to floor.
- D. Bracket Fixtures - 8'-0" above floor, or where mounted above exterior door, mirror, medicine cabinet, at a height just sufficient to clear the swing of the door or medicine cabinet.
- E. The above mounting heights may be adjusted as required to permit bottom or

top of plate to align with mortar joints in unfinished masonry walls, provided joints are not raked. Where joints are raked, adjust height as required to insure that center of outlet box will be in center of a masonry unit.

2.8 SAFETY SWITCHES

- A. Safety switches shall be of the visible blade, heavy duty knife switch type. They shall be of the fused or unfused type as required. Fused switches shall have positive pressure fuse clips. Switches shall be fully interlocked with provision to neutralize the interlock by a screwdriver while under load without interrupting the circuit. Switches shall be complete with insulated base and pressure or solderless lugs. All switches shall be horsepower rated, capable of breaking stalled-rotor motor current at these ratings. Outdoor locations shall have NEMA Type 3R enclosures, indoor locations shall have NEMA 1 enclosures.
- B. Switches shall have provision for padlocking in the "ON" or "OFF" positions. Safety switches, as indicated on plans, shall be Siemens, General Electric, Cutler-Hammer, or Square D.

2.9 FUSES

- A. Fuses utilized shall provide type 2 "no damage" as defined by IEC 947. All fuses shall have a minimum interrupting rating of 200,000 A. Fuses protecting transformers shall be Class J or RK5 time delay. Fuses protecting motor loads shall be Class J or RK1 current limiting. Provide one set of spare fuses for each load protected. Fuses shall be manufactured by Ferraz-Shawmut, Cooper Bussman, or approved equal.

2.10 TERMINATIONS

All termination lugs shall be rated 75 degrees C or higher, and shall be compatible with number and size of wires to be terminated.

- 2.11 CIRCUIT BREAKERS Circuit breakers shall be bolted to the bus bar, and be quick-make, quick-break, using over-center toggle mechanism. Breakers shall indicate tripped position by assuming the center toggle position. Breakers shall have deion arc extinguisher principle. All two and three-pole breakers shall have single handle and the common trip. No bail handle ties will be acceptable. Circuit breaker shall match existing distribution panel board. Provide mounting brackets and cover plates as required.

END OF SECTION - 16050

SECTION 16900

ELECTRICAL EQUIPMENT CONNECTIONS PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Applicable items of all other ELECTRICAL SECTIONS shall apply to this Section.
- B. General Provisions of the Contract, including General Conditions, Supplementary Conditions apply to this Section.

PART 3 - EXECUTION

3.1 MECHANICAL EQUIPMENT

- A. All power wiring associated with the MECHANICAL SECTION of these Specifications shall be done by this Contractor.
- B. Contractor will furnish and set all motors.
- C. Overload elements in all starters shall be selected according to actual motor nameplate full load current. Responsibility for this coordination shall lie with the Contractor who has furnished the particular starter.
- D. All manual starting switches shall be furnished and installed by the Contractor.
- E. All disconnect switches shall be furnished and installed as indicated and as required by the Contractor.
- F. Refer to MECHANICAL SECTION and to MECHANICAL PLANS for any additional electrical work required.

END OF SECTION - 16900

ATTACHMENT A: INDEMNICATION AGREEMENT

_____ **{Contractor/Vendor/Lessee}** agrees to protect, defend, indemnify, save and hold harmless the State of Louisiana, all State departments, Agencies, Boards and Commissions, its officers, agents, servants, employees, and volunteers, from and against any and all claims, demands, expense and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur or in any way grow out of any act or omission of _____ **{Contractor/Vendor/Lessee}** its agents, servants, and employees, or any and all costs, expense and/or attorney fees incurred by _____ **{Contractor/Vendor/Lessee}** as a result of any claims, demands, suits and/or causes of action except those claims, demands, suits and/or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

_____ **{Contractors/Vendor/Lessee}** agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits, or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suites, or causes of action are groundless, false or fraudulent.

Accepted By:

Company Name

Signature

Title

Date Accepted

Is certificate of insurance attached? _____ YES _____ NO

****This form must be completed and submitted with your bid**

ATTACHMENT B: REFERENCE FORM

_____	_____
(Company Name)	(Facility Type)
_____	_____
(Address)	(Phone Number)

(Contract Administrator)	

_____	_____
(Company Name)	(Facility Type)
_____	_____
(Address)	(Phone Number)

(Contract Administrator)	

_____	_____
(Company Name)	(Facility Type)
_____	_____
(Address)	(Phone Number)

(Contract Administrator)	

_____	_____
(Company Name)	(Facility Type)
_____	_____
(Address)	(Phone Number)

(Contract Administrator)	

_____	_____
(Company Name)	(Facility Type)
_____	_____
(Address)	(Phone Number)

(Contract Administrator)	

**Form must be completed and submitted with the bid*

END OF BID DOCUMENTS