

# Project Manual

(Formal Contract for Construction)

PROJECT NO. SU-120814

PROJECT TITLE: New Mailroom and  
Receiving Renovation  
project

DATE: December 12<sup>th</sup>, 2014

**State University of New York**

at

**Purchase College**

735 Anderson Hill Road  
Purchase, New York 10577-1402



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Form B, Affirmation with respect to State Finance Law §§139-j and 139-k  
[http://www.suny.edu/sunypp/documents.cfm?doc\\_id=282](http://www.suny.edu/sunypp/documents.cfm?doc_id=282)

Form C, Disclosure and Certification with respect to State Finance Law §§139-j and 139-k  
[http://www.suny.edu/sunypp/documents.cfm?doc\\_id=283](http://www.suny.edu/sunypp/documents.cfm?doc_id=283)

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MWBE Form 107 – MWBE Utilization Plan [http://www.suny.edu/sunypp/lookup.cfm?lookup\\_id=618](http://www.suny.edu/sunypp/lookup.cfm?lookup_id=618)

MWBE Form 108 – EEO Staffing Plan [http://www.suny.edu/sunypp/lookup.cfm?lookup\\_id=621](http://www.suny.edu/sunypp/lookup.cfm?lookup_id=621)

Construction Vendor Responsibility Questionnaire with Attachments A, B and C  
[http://www.suny.edu/sunypp/lookup.cfm?lookup\\_id=506](http://www.suny.edu/sunypp/lookup.cfm?lookup_id=506)  
[http://www.osc.state.ny.us/vendrep/forms\\_vendor.htm](http://www.osc.state.ny.us/vendrep/forms_vendor.htm)

Certificate of Insurance [http://www.suny.edu/sunypp/lookup.cfm?lookup\\_id=505](http://www.suny.edu/sunypp/lookup.cfm?lookup_id=505)

State University of New York Sub-Contracting Information  
Form AC 2947, NY State Labor Law, Section 220-a, Prime Contractor's Certification  
Form AC 2948, NY State Labor Law, Section 220-a, Subcontractor's Certification  
Form AC 2958, NY State Labor Law, Section 220-a, Sub-subcontractor's Certification  
[http://www.suny.edu/sunypp/lookup.cfm?lookup\\_id=516](http://www.suny.edu/sunypp/lookup.cfm?lookup_id=516)

Form UF-4, Release [http://www.suny.edu/sunypp/documents.cfm?doc\\_id=517](http://www.suny.edu/sunypp/documents.cfm?doc_id=517)

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Appendix 1

- CTS Specifications

Appendix 2

- Mail Box Specifications.

Appendix 3

- Hardware Schedule.





# STATE UNIVERSITY OF NEW YORK

# NOTICE TO BIDDERS

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Purchase College, State University of New York will receive sealed Proposals for **Project SU-120814**, Titled “**New Mailroom and Receiving Renovation Project**” until **1:00 P.M. Local Time on January 20th 2015**, at the Purchasing & Accounts Payable Office, Administration Building, Purchase College, State University of New York, 735 Anderson Hill Road, Purchase, New York 10577-1402, when they will be opened publicly and read. Proposals may be hand delivered or mailed to the above location and must be received by such time.

All work on this Contract is to be completed within **60** calendar days starting **ten (10)** calendar days after the contract approval date. All work must be completed no later than **March 31<sup>st</sup>, 2015**.

A Pre-Bid Conference and site walk-through for prospective Bidders will be held at the Capital Facilities conference room at Purchase College, 735 Anderson Hill Road, Purchase, New York 10577-1402 at **10:00AM on January 6<sup>th</sup> 2015**. Please note: This will be the only guided walk-through of the subject project facilities.

For directions to Purchase College, see <http://www.purchase.edu/AboutPurchase/VisitorsGuide/Directions/>  
For a campus map, see <http://www.purchase.edu/sharedmedia/admissions/campus%20map.pdf>

Purchase College is dedicated to environmentally sustainable development. In an effort to conserve resources and reduce waste, the Bidding and Contract Documents will only be available electronically in PDF format for viewing and downloading at the following website: <http://www.purchase.edu/purchasemeansbusiness>

There will be an Open Question and Answer Period from **December 16th, 2014 – January 9th, 2014**. During this time any questions must be submitted in writing (no telephone calls) to the following email address, [sayim.malik@purchase.edu](mailto:sayim.malik@purchase.edu). The email should reference the project in the subject line and include prospective bidder contact information and email address. A response to all questions submitted within the Open Question and Answer Period and any required Addendum will be posted no later than **January 13<sup>th</sup>, 2014** at the following website: <http://www.purchase.edu/purchasemeansbusiness> .

Bids must be submitted in duplicate in accordance with the instructions contained in the Information for Bidders.

It is the policy of the State of New York and the State University of New York to encourage minority and women-owned business enterprise participation in its projects by contractors, subcontractors and suppliers, and all bidders are expected to cooperate in implementing this policy. The minority (MBE) and women (WBE) owned business contractor/subcontractor participation goals for this construction procurement are 14.34% for MBEs and 8.41% for WBEs.

The rates of wages and supplements determined by the Industrial Commissioner of the State of New York as prevailing in the locality of the site at which the work will be performed can be found at <http://wpp.labor.state.ny.us/wpp/publicViewProject.do?method=showIt&id=1119122> .  
The Prevailing Rate Case (PRC) Number assigned to this project 2014011280.

Pursuant to State Finance Law §§139-j and 139-k, this solicitation includes and imposes certain restrictions on communications between Purchase College and an Offerer/Bidder during the procurement process. An Offerer/Bidder is restricted from making contacts from the earliest notice of intent to solicit proposals through final award and approval of the Procurement Contract by Purchase College/State University of New York and, if applicable, the Office of the State Comptroller (“restricted period”) to other than designated staff unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law §139-j(3)(a). Pursuant to the statute, Purchase College employees are also required to obtain certain information when contacted during the restricted period and maintain a record of the communication, and make a determination of a knowing and willful contact. Contact made to other than designated staff regarding this procurement may disqualify the vendor from the current award and affect future procurements with government entities in the State of New York.

The State University of New York reserves the right to reject any or all bids.

Designated Contacts:

Sayim Malik  
Project Manager, Capital Facilities Planning  
Purchase College  
State University of New York  
735 Anderson Hill Road  
Purchase, NY 10577-1402  
Tel: (914) 251-4479  
Fax: (914) 251-6063  
Email: [sayim.malik@purchase.edu](mailto:sayim.malik@purchase.edu)

Nikolaus D. Lentner (Also designated as MWBE contact)  
Director of Purchasing & Accounts Payable  
Purchase College  
State University of New York  
735 Anderson Hill Road  
Purchase, NY 10577-1402  
Tel: (914) 251-6070  
Fax: (914) 251-6075  
Email: [L@purchase.edu](mailto:L@purchase.edu)

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735 Anderson Hill Road  
Purchase, NY 10577-1402  
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Fax: (914) 251-6075  
Email: [james.mwaura@purchase.edu](mailto:james.mwaura@purchase.edu)

# STATE UNIVERSITY OF NEW YORK

## INFORMATION FOR BIDDERS

### Section 1 Definitions

All definitions set forth in the Agreement are applicable to the Notice to Bidders, Information for Bidders and the Proposal, all of which documents are hereinafter referred to as the Bidding Documents.

### Section 2 Issuance of Bidding and Contract Documents

- (1) Purchase College is dedicated to environmentally sustainable development. In an effort to conserve resources and reduce waste, the Bidding and Contract Documents will only be available electronically in PDF format for viewing and downloading at the following website: <http://www.purchase.edu/purchasemeansbusiness>

### Section 3 Proposals

- (1) Proposals must be submitted in duplicate on the forms provided by the University. Facsimile copies of the Proposal will not be accepted by the University. They shall be addressed to the University in a sealed envelope, marked with the name and address of the bidder, the title of the Project and the Project number. The University accepts no responsibility for Proposals that may be delivered by any courier or other messenger service that does not contain all of the above-noted information on the outside of a sealed envelope.

Sealed Proposals are to be delivered to:

Nikolaus D. Lentner  
Director of Purchasing & Accounts Payable  
Purchase College  
State University of New York  
735 Anderson Hill Road  
Purchase, NY 10577-1402

Proposals must be received in the Purchasing & Accounts Payable Office by the due date and time. Bidders mailing their Proposals must allow sufficient time to ensure receipt of their Proposals by the date and time specified. Bidders are cautioned that, although using a trackable mailing/courier/messenger service, bids must be received in the Purchasing Office by the due date and time. Although bids may be signed for by Purchase College Mail Operations personnel prior to bid opening time on the day of the bid, this does not guarantee that the Purchasing & Accounts Payable Office will receive the bid by bid opening time. No bid will be considered that is not physically received in the Purchase College Purchasing & Accounts Payable Office by the bid opening time.

- (2) All blank spaces in the Proposal must be filled in and, except as otherwise expressly provided in the Bidding Documents, no change is to be made in the phraseology of the Proposal or in the items mentioned therein.
- (3) Proposals that are illegible or that contain omissions, alterations, additions or items not called for in the Bidding Documents may be rejected as informal. In the event any bidder modifies, limits or restricts all or any part of its Proposal in a manner other than that expressly provided for in the Bidding Documents, its Proposal may be informal.
- (4) Any Proposal may be considered informal which does not contain prices in words and figures in all of the spaces provided or which is not accompanied by a bid security in proper form. In case any price shown in words and its equivalent shown in figures do not agree, the written words shall be binding upon the bidder. In case of a discrepancy in the prices contained in the Proposal forms submitted in duplicate by the bidder, the Proposal form which contains the lower bid shall be deemed the bid of the bidder; provided, however, the University at its election may consider the Proposal of such bidder informal.
- (5) If the Proposal is made by a corporation, the names and places of residence of the president, secretary and treasurer shall be given. If by a partnership, the names and places of residence of the partners shall be given. If by a joint venture, the names and addresses of the members of the joint venture shall be given. If by an individual, the name and place of residence shall be given.
- (6) No Proposal will be considered which has not been deposited with the University at the location designated in and prior to the time of opening designated in the Notice to Bidders or as extended by Addendum.
- (7) Bids may be modified, withdrawn or canceled only by written, facsimile or telegraphic notice received by the University prior

to the time of opening of bids designated in the Bidding and Contract Documents. A written, facsimile or telegraphic notice of modification, withdrawal or cancellation shall be marked by the bidder with the name and address of the bidder, the title of the Project and the Project number, and, upon receipt by the University, shall be sealed in an envelope by a duly authorized employee of the University, who shall sign and note thereon the date and time of receipt and shall thereupon attach said written, facsimile or telegraphic notice of modification, withdrawal or cancellation to the envelope submitted by the bidder pursuant to subdivision (1) of this section.

- (8) Permission will not be given to modify, explain, withdraw or cancel any Proposal or part thereof after the time designated in the Bidding and Contract Documents for the opening of bids, unless such modification, explanation, withdrawal or cancellation is permitted by law and the University is of the opinion that it is in the public interest to permit the same.

#### **Section 4 Examination of Bidding and Contract Documents**

- (1) Prospective bidders shall examine the Bidding and Contract Documents carefully and, before bidding, shall make written request to the Consultant (with a copy thereof to the University) for an interpretation or correction of any ambiguity, inconsistency or error therein which should be discovered by a reasonably prudent bidder. Such interpretation or correction as well as any additional Contract provision the University shall decide to include will be issued in writing by the Consultant as an Addendum, which will be sent by certified or registered mail or telegraph or delivered to each person recorded as having received a copy of the Bidding and Contract Documents from the Campus or Consultant, and which also will be available at the places where the Bidding and Contract Documents are available for inspection by prospective bidders. Upon such mailing or delivery and making available for inspection, such Addendum will become a part of the Bidding and Contract Documents and will be binding on all bidders whether or not the bidder receives or acknowledges the actual notice of it. The requirements contained in all Bidding and Contract Documents shall apply to all Addenda.
- (2) Only the written interpretation or correction so given by Addendum shall be binding. Prospective bidders are warned that no trustee, officer, agent or employee of the University or the Consultant is authorized to explain or interpret the Bidding and Contract Documents by any other method, and any such explanation or interpretation, if given, must not be relied upon.

#### **Section 5 Computation of Bid**

- (1) In computing their bids, bidders are not to include the sales and compensating use taxes of the State of New York or any city and county in the State of New York for any supplies or materials which are incorporated into the completed Project as the University is exempt from such taxes.
- (2) Any unit prices listed in the Proposal by the University are based upon the Consultant's appraisal of a fair cost for the work involved. Such listed prices will be binding upon both the bidder and the University unless the bidder wishes to change any of such unit prices by crossing out the listed unit price and inserting a revised unit price. Such revised unit price shall not be binding upon the University unless it accepts the same, in writing, before it issues a Contract. In the event the Proposal contains blank spaces for unit prices or the Contractor revises any stated unit price, the amount of such unit prices for additions shall not vary by more than 15 percent from the prices inserted by the bidder for deductions, and, if the variance of such prices exceeds 15 percent, the University may adjust the deduction price inserted by the bidder so that it is only 15 percent lower than the addition price inserted by the bidder. In addition, the University may adjust any unit price filled in by a bidder to an amount agreeable to both the bidder and the University or it may reject any unit prices.
- (3) Alternatives, if any, listed in the Proposal and described in Section A of the Technical Specifications shall be accepted in the order indicated and will be used in combination with the Total Bid to determine the low bidder. Unit prices will not be used to determine the low bidder.

#### **Section 6 Payment of Security –Not Required**

- (1) Each Proposal must be accompanied by the required amount of the bid security in the form of a bank draft or certified check, payable at sight to the University and drawn on a bank authorized to do business in the United States, or by a Bid Bond, on the form provided, duly executed by the bidder as principal and having as surety thereon a surety company or companies, approved by the University, authorized to do business in the State of New York as a surety. Attorneys-in-fact who execute a Bid Bond on behalf of a surety must affix thereto a certified and effectively dated copy of their power of appointment.
- (2) The University will return, without interest, bid securities in accordance with the following procedure:
  - a. Bid securities in the form of bank drafts or certified checks, to all bidders except the apparent three (3) lowest bidders within two (2) working days after the opening of bids.
  - b. To any bidder submitting a Bid Bond, meeting the requirements of paragraph (1) hereof, after the opening of bids, as a substitute for a bank draft or certified check within two (2) working days after the University's approval of such Bid Bond.

- c. To the apparent three (3) lowest bidders, unless their bid security was previously returned, within two (2) working days after delivery to the University by the successful bidder of the executed Agreement and required Bonds, or within two (2) working days of the University's rejection of all bids or within two (2) working days after the expiration of forty-five (45) calendar days after the bid opening, whichever event shall occur first.
  - d. Bid Bonds, due to their nature, will not be returned.
- (3) The University reserves the right to deposit bid security drafts or checks pending final disposal of them.

## **Section 7 Qualifications of Bidders**

- (1) All prospective bidders are hereby notified that, on request of the University, they must be able to prove to the satisfaction of the University that they have the skill and experience, as well as the necessary facilities, ample financial resources, organization and general reliability to do the work to be performed under the provisions of the Contract in a satisfactory manner and within the time specified.
- (2) Each bidder must be prepared to show to the satisfaction of the University that it has working capital available for the Project upon which it is bidding in an amount equal to 15 percent of the first \$100,000 of the amount of its Total Bid plus 10 percent of the next \$900,000 plus 5 percent of the remainder of its Total Bid. Working capital is defined as the excess of current assets over current liabilities. The University defines current assets as assets which can be reasonably expected to be converted into cash within a year, and current liabilities as debts which will have to be paid within a year.
- (3) A bidder must also be prepared to prove, to the satisfaction of the University, that it has successfully completed a contract of similar work in an amount of not less than 50 percent of the amount of its Total Bid.

## **Section 8 Submission of Post-Bid Information**

- (1) Within forty-eight (48) hours after the opening of bids, each of the apparent three lowest bidders, unless otherwise directed by the University or otherwise provided in the Bidding and Contract Documents, shall submit to both the University and the Consultant:
  - a. A New York State Uniform Contracting Questionnaire with all requested information furnished.
  - b. The names of the bidder's proposed subcontractors for the Electrical Work, the Heating, Ventilating and Air Conditioning Work and the Plumbing Work for each of said work categories valued at more than \$20,000. Only one proposed subcontractor should be named for each of such trades and the naming of the bidder itself for any of such work is not acceptable and may result in rejection of the bidder unless the bidder can demonstrate to the University that it has successfully completed a contract for the designated work in an amount not less than 50 percent of the value thereof. The bidder will be required to establish, to the satisfaction of the Consultant and the University, the reliability and responsibility of each of their said proposed subcontractors to furnish and perform the work described in the sections of the Specifications pertaining to each of such proposed subcontractors' respective trades. The bidders must submit to the University, within seven (7) calendar days after the bid opening, a Contracting Questionnaire, on the form provided by the University, with all of the applicable blank spaces filled in, for each of the aforesaid proposed subcontractors. In the event that the University and the Consultant reject any of said proposed subcontractors, the bidder, within five (5) working days after receipt of notification of such rejection, shall again submit to the University and the Consultant the name of another proposed subcontractor in place of the one rejected and it will be required to establish to the satisfaction of the University and the Consultant the reliability and responsibility of said proposed subcontractor; provided, however, that the bidder will not be permitted to submit another proposed subcontractor if it designated itself for any of the aforesaid categories of work. Proposed subcontractors of the bidder, approved by the University and the Consultant, must be used on the work for which they were proposed and approved and they may not be changed except with the specific written approval of the University.
  - c. A breakdown of the amount of the bidder's Proposal. Such breakdown shall be prepared in accordance with industry standards. No bidder shall be barred from revising, in the Contract breakdown required under the provisions of Section 4.08 of the Agreement, the various amounts listed in the bid breakdown required under the provisions of this Section. The amount set forth in said bid breakdown will not be considered as fixing the basis for additions to or deductions from the Contract consideration.
- (2) Notwithstanding the foregoing, any bidder or any of the proposed subcontractors referred to in paragraph (1) b, who, within the past year immediately preceding the bidding date, had submitted to the State or the University a Contracting Questionnaire, need not complete a new Questionnaire; provided, however, that they execute an Affidavit of No Change, and deliver the same together with the Questionnaire previously submitted.
- (3) Within seven (7) calendar days after the bid opening date each of the apparent three lowest bidders must submit the Utilization Plan (Form 7557-107) and the Contractor's EEO Policy Statement to the University and the Consultant. This

requirement applies only to Contracts in excess of \$100,000.

Contractor compliance with the Non-Discrimination Requirements indicated on Exhibit A of the Agreement and the University's Affirmative Action Policy as indicated on Exhibit A-1, of the Agreement is a precondition to entering into a valid and binding Contract with the University.

- (4) The above information and such other information as the University or the Consultant may request or obtain will be used by the University in determining the reliability and responsibility of the bidder. Each bidder must comply promptly with all requests by the University and the Consultant for information and must actively cooperate with the University and the Consultant in their efforts to determine the qualifications of the bidder. All information required to be furnished to the University under this Section shall be sent to the State University of New York campus where the work is to be performed.

## **Section 9 Award of Contract**

- (1) The award of the Contract shall be made to the bidder submitting the lowest bid who, in the opinion of the University, is qualified to perform the work involved and is responsible and reliable. The University shall determine the lowest bid by adding to or deducting from the Total Base Bid of the bidders the additive or deductive alternates, if any, the University elects to accept after the opening of the Proposals. Alternatives will be accepted in the order they are set forth in the Proposal. The unit prices set forth in the Proposal for additions to or deductions from the work shall not be considered in determining the lowest bid.
- (2) Subject to the rights hereinafter reserved, the work will be awarded within forty-five (45) calendar days after the opening of bids to a single responsible bidder or any combination of bidders whose Proposal conforms to the requirements of the Bidding Documents.
- (3) The right is reserved, if, in the University's judgment, the public interest will be promoted thereby, to reject any or all Proposals, to waive any informality in any Proposal received or to afford any bidder an opportunity to remedy any deficiency resulting from a minor informality or irregularity. Without limiting the generality of the foregoing:
  - a. A Proposal may be rejected if the bidder fails to furnish the required bid security or to submit the data required with or after its Proposal.
  - b. A Proposal may be rejected if the bidder cannot show to the satisfaction of the University: (i) that it has the necessary capital, skill and experience; or (ii) that it owns, controls or can procure the necessary plant and equipment to commence the work at the time prescribed in the Contract and thereafter to prosecute and complete the work at the rate, or within the time specified; or (iii) that it is not already obligated by the performance of so much other work as is likely to delay the commencement, prosecution or completion of the work contemplated by the Contract.
  - c. A Proposal will be rejected if it does not provide for the completion of the work by the date of completion specified in the Proposal.
- (4) The University also expressly reserves the right to reject any Proposal if, in its opinion, considering the work to be performed, the facts, as to the bidder's business or technical organization, plant, financial and other sources of business experience compared with the work bid upon, justify rejection.
- (5) The award of the Contract shall not be construed as a guarantee by the University that the plant, equipment and the general scheme of operations and other data submitted by the bidder with or after its Proposal is either adequate or suitable for the satisfactory performance of the work.

## **Section 10 Required Bonds**

- (1) Within ten (10) calendar days after the receipt of Notice of Award, the Contractor shall procure, execute and deliver to the Consultant and maintain, at its own cost and expense, a Performance Bond and a Labor and Material Bond, both of which Bonds shall be on the form prescribed by the University and in an amount not less than 100 percent of the total amount of the Contract awarded to the Contractor by the University. Said Bonds must be issued by a surety company approved by the University and authorized to do business in the State of New York as a surety.
- (2) Attorneys-in-fact who execute said Bonds on behalf of a surety must affix thereto a certified and effectively dated copy of their power of appointment.

## **Section 11 New York State Business Enterprises**

- (1) It is the policy of New York State and the University to maximize opportunities for the participation of New York State Business Enterprises, including Minority and Women's Business Enterprises as bidders, subcontractors and suppliers on its

procurement contracts.

- (2) Information on the availability of New York State subcontractors and suppliers is available from: Empire State Development Corporation (<http://www.empire.state.ny.us/default.asp>).
- (3) A directory of Minority and Women's Business Enterprises is available from: Empire State Development Corporation, Minority and Women's Business Development Division (<http://www.empire.state.ny.us/default.asp>).
- (4) The minimum MWBE goals for this will be:  
MBE= 14.34%  
WBE= 8.41%

## **Section 12 Examination of Site**

- (1) A pre-bid conference and project walk-through will be held on January 6th, 2014, with all contractors assembled at Capital Facilities Conference Room, 735 Purchase Street, Purchase NY 10577-1402. No individual or additional walk-throughs will be performed under the pre-bid time period. Failure to attend a walk-through shall not be the cause for extra payment.
- (2) No individual or additional walk-through will be performed under the pre-bid time period. Failure to attend a walk-through shall not be the cause for extra payment.





\_\_\_\_\_  
NAME OF BIDDER

\_\_\_\_\_  
E-MAIL OF BIDDER

\_\_\_\_\_  
ADDRESS OF BIDDER

**PROPOSAL  
FOR**

**SUNY PROJECT NO.: SU-120814**

**PROJECT TITLE: New Mailroom and Receiving  
Renovation Project**

**SUNY CAMPUS: Purchase College 28260**

**TO THE STATE UNIVERSITY OF NEW YORK:**

1. **The Work Proposed Herein Will Be Completed Within 90 Calendar Days, Starting 10 Calendar Days After The Contract Approval Date. The upgraded system should be in operation by April 30th, 2015.** In the event the bidder fails to complete such work by said date or dates, or within the time to which such completion may have been extended in accordance with the Contract Documents, the bidder agrees to pay the Purchase College of SUNY liquidated damages in an amount equal to the values indicate in the Liquidated Damages Schedule below for each calendar day of delay in completing the work.

=====

<u>Contract Amount</u>	<u>Liquidated Damages</u>
Under \$100,000 .....	\$100/day
\$100,000-\$499,999.....	\$200/day
\$500,000-\$999,999.....	\$300/day
\$1MM-\$1,999,999 .....	\$400/day
\$2MM-\$3,499,999 .....	\$500/day
\$3.5MM-\$5MM .....	\$700/day
Over \$5MM (to be determined by the Purchase College of SUNY in each instance)	\$_____/day

=====

2. The bidder hereby declares that it has carefully examined all Bidding and Contract Documents and that it has personally inspected the actual location of the work, together with the local sources of supply, has satisfied itself as to all the quantities and conditions, and understands that in signing this Proposal, it waives all right to plead any misunderstanding regarding the same.
3. The bidder further understands and agrees that it is to do, perform and complete all work in accordance with the Contract Documents and to accept in full compensation therefore the amount of the Total Bid.
4. The bidder further agrees to accept the unit prices, if any, set forth in paragraph (5) hereof, except as the same may be modified as agreed to by both the Purchase College and the Bidder, in advance, as full payment for the amount of the credit to Purchase College for any deletions, additions, modifications or changes to the portion or portions of work covered by said unit prices.

5. a. **TOTAL BID \$** \_\_\_\_\_  
(in numbers)

\_\_\_\_\_  
(in words)

b. **ALTERNATIVES:** Reference Section B of the General Requirements. The bidder proposes the following additions to or deductions from the Total Bid for the alternatives listed below:

Alternate Number	Add/Deduct	Amount in Words	Amount in Figures
1	<i>Provide price for Millwork(All Blocking is part of Base Bid)</i>		

c. **UNIT PRICES:** Reference Construction Documents and/or the technical specifications include in the Project Manual. The request for Unit Prices is for determining the value of omitted and/or extra work, and, in the case of extra work, such unit prices shall be deemed to include all profit, overhead and expenses, necessary for completion of the item for which the Unit Price was for.

Work or Materials Description	Amount in Words	Amount in Figures

6. **ALLOWANCES:** Reference page A-29 of the Agreement. The bidder further agrees that its Total Bid includes the following allowances:

Work or Materials Description	Amount in Words	Amount in Figures

7. By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief: (a) the prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor; (b) unless otherwise required by law, the prices have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor; and (c) no attempt has been made or will be made by the bidder to include any person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

A bid shall not be considered for award nor shall any award be made where (a), (b) and (c) above have not been complied with; provided, however, that if in any case the bidder cannot make the foregoing certification the bidder shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where (a), (b), and (c) above shall have not been complied with, the bid shall not be considered for award nor shall any award be made unless Purchase College or designee, or Assistant Vice Chancellor for Capital Facilities, or designee, determines that such disclosure was not made for purposes of restricting competition.

The fact that a bidder (a) has published price lists, rates, or tariffs covering items being procured, (b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or (c) has sold the same items to other customers at the same prices being bid, does not constitute, without more, a disclosure within the meaning of this Section.

- 8. The bidder agrees that if awarded the Contract, it will commence work within (10) calendar days after date of receipt of a fully executed Agreement and that it will fully complete the work by the date stated herein.
- 9. The bidder acknowledges the receipt of the following addenda, but agrees that it is bound by all addenda whether or not listed herein.

Addendum Number	Date	Addendum Number	Date
_____	___/___/___	_____	___/___/___
_____	___/___/___	_____	___/___/___
_____	___/___/___	_____	___/___/___

- 10. *The bidder submits herewith bid security in an amount not less than five (5) percent of the Total Bid. In the event that (a) the bidder's Total Bid is the lowest one submitted and the bidder does not timely provide the Post-Bid Information required by the Information for Bidders or (b) this Proposal is accepted by the Purchase College and the bidder shall refuse or neglect, within ten (10) calendar days after date of receipt of Agreement, to execute and deliver said Agreement in the form provided herein, or to execute and deliver a Performance Bond and a Labor and Material Bond in the amounts required and in the form prescribed, the bidder shall be liable to Purchase College, as liquidated damages, for the amount of the bid security or the difference between the Total Bid of the bidder and the Total Bid of the bidder submitting the next lowest bid, whichever sum shall be higher, otherwise the total amount of the bid security will be returned to the bidder in accordance with the provisions set forth in the Information for Bidders. Purchase College may apply the bid security in full or partial payments, as the case may be, of said liquidated damages and in the event the bid security is less than the amount of liquidated damages to which Purchase College is entitled, the bidder shall pay the difference, upon demand, to Purchase College. (N/A)*
- 11. The bidder certifies that all wood products that are to be used in the performance of this Contract shall be in accordance with the Specifications and provisions of Section 167 b. of the State Finance Law which Section prohibits the purchase and use of tropical hardwoods.

Dated \_\_\_/\_\_\_/\_\_\_

(If corporation, affix corporate seal)

Firm's Federal ID Number or Social Security Number as applicable \_\_\_\_\_

Legal name of person, partnership, joint venture or corporation:

\_\_\_\_\_

By \_\_\_\_\_  
(signature)

Title \_\_\_\_\_

E-Mail \_\_\_\_\_

# ACKNOWLEDGMENT FOR THE PROPOSAL

THE LEGAL ADDRESS OF THE BIDDER

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Telephone No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_

## If a Corporation

Name	Address
_____	PRESIDENT _____
_____	SECRETARY _____
_____	TREASURER _____

## If a Partnership

Name of Partners	Address
_____	_____
_____	_____
_____	_____

## If a Joint Venture

Name of Members	Address
_____	_____
_____	_____
_____	_____

## If an Individual

Name of Individual	Address
_____	_____

**ENCOURAGING USE OF NEW YORK STATE BUSINESSES  
IN CONTRACT PERFORMANCE**

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of their economic activity and leadership in doing business in New York State, bidders/proposers for this contract for commodities, services or technology are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of the contract. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders/proposers need to be aware that all authorized users of this contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, bidders/proposers are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects bidder/proposers to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

Bidders/proposers can demonstrate their commitment to the use of New York State businesses by responding to the question below:

Will New York State Businesses be used in the performance of this Contract?    Yes\_\_\_\_\_    No\_\_\_\_\_

If yes, identify New York State businesses that will be used and attach identifying information.



# State University of New York AGREEMENT

Contract No. \_\_\_\_\_

This Agreement made as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for Contract Number \_\_\_\_\_ by and between STATE UNIVERSITY OF NEW YORK, a corporation organized and existing under the laws of the State of New York, with its principal office located at State University Plaza, Albany, New York 12246, on behalf of State University of New York at Purchase located at 735 Anderson Hill Road, Purchase, New York 10577-1400 hereinafter referred to as "University" and \_\_\_\_\_ having its principal office located at \_\_\_\_\_, hereinafter referred to as "Contractor".

Federal ID or  
Social Security No. \_\_\_\_\_

The University and the Contractor agree as follows:

1. The Contractor shall perform all work and duties required for the construction of Project Number **SU-120814**, titled "**New Mailroom and Receiving Renovation project**", as contained in the Contract Documents. Subject to authorized adjustments the work and duties contained in the same shall be completed within **60** calendar days starting 10 calendar days after the approval date. The Contractor agrees to pay the University liquidated damages in accordance with paragraph 1 of the Proposal for each calendar day of delay in completing the work.
2. The University shall pay and the Contractor shall accept for the performance of work of the above referenced Project, the total contract compensation of \$ \_\_\_\_\_, (in figures),  
\_\_\_\_\_ (in word)s.

## ARTICLE I

### General Provisions

#### Section 1.01 Definitions

Where the following words and expressions are used in the Contract Documents it is understood that they have the meaning set forth as follows:

<b>CONSULTANT</b>	The Architect, Engineer, Landscape Architect, or Surveyor named in the Notice to Bidders or such other person or firm designated by the University to provide general administration of the Contract and inspection of the work.
<b>BIDDING DOCUMENTS</b>	The Notice to Bidders, Information for Bidders and Proposals
<b>BONDS</b>	Performance Bond and Labor and Material Bond
<b>CONTRACT OR CONTRACT DOCUMENTS</b>	The Agreement, Project Manual, Proposal, Bonds, Specifications, Contract Drawings, Addenda issued prior to the opening of bids and Change Orders issued after the award of the Contract.
<b>UNIVERSITY</b>	State University of New York
<b>NOTICE OF AWARD</b>	Letter of Intent
<b>PROJECT</b>	The facility or facilities to be constructed including all usual, appropriate and necessary attendant work shown on, described in or mentioned in the Contract.
<b>SITE</b>	The area within the Contract limit lines, as shown on the Drawings, and all other areas upon which the Contractor is to perform work.
<b>WORK</b>	The using, performing, installing, furnishing and supplying of all materials, equipment, labor and incidentals necessary or proper for or incidental to the successful completion of the Project and the carrying out of all duties and obligations imposed upon the Contractor by the Contract.
<b>NOT IN CONTRACT, "N.I.C."</b>	Indicates equipment furnished by the Owner and installed under another construction contract or by another contractor, or operations at the site not included as part of this Contract.
<b>PROVIDE, PROVIDED</b>	Mean that the Contractor shall furnish and install all materials and labor for the item so specified.

## **Section 1.02 Captions**

The titles or captions of Articles and Sections of the Contract are intended for convenience and reference purposes only and in no way define, limit or describe the scope or intent thereof or of the Contract or in any way affect the Contract.

## **Section 1.03 Nomenclature**

Materials, equipment or other work described in words which have a well-known, technical or trade meaning shall be interpreted as having such meaning in connection with the Contract.

## **Section 1.04 Contract Documents**

- (1) This agreement
- (2) Exhibit A and A-1

The Contract, together with all exhibits thereto, constitutes the entire agreement between the parties hereto and no statement, promise, condition, understanding, inducement or representation, oral or written, expressed or implied, which is not contained herein shall be binding or valid and the Contract shall not be changed, modified, or altered in any manner except by an instrument in writing executed by the parties hereto.

## **Section 1.05 Successors and Assigns**

To the extent allowed by the terms of "Exhibit A", the Contract shall bind the successors, assigns and representatives of the parties hereto. The University reserves the right to have the State University Construction Fund (Fund) act on its behalf at any time or duration of this Agreement. Such designation of the Fund to act on the behalf of the University shall be in writing and addressed to the Contractor and signed by the University.

## **Section 1.06 Accuracy and Completeness of Contract Documents**

- (1) The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all. The intention of the Documents is to include all materials, plant, equipment, tools, skill and labor of every kind necessary for the proper execution of the work and also those things which may be reasonably inferable from the Contract Documents as being necessary to produce the intended results.
- (2) The Contract Documents contemplate a finished piece of work of such character and quality as is reasonably inferable from them. The Contractor acknowledges that the contract consideration includes sufficient money allowance to make its work complete and operational and in compliance with good practice and it agrees that inadvertent minor discrepancies or omissions or the failure to show details or to repeat on any part of the Contract Documents the figures or notes given on another shall not be the cause for additional charges or claims. In case of a conflict between any part or parts of the Contract Documents with any other part or parts thereof, as contrasted with an omission or failure to show details or to repeat on any part of the Contract Documents the figures or notes given on another part thereof, the following shall be given preference, in the order hereinafter set forth, to determine what work the Contractor is required to perform: (a) Addenda (later dates to take preference over earlier dates); (b) Amendments to Agreement; (c) Agreement; (d) Specifications; (e) Schedules; (f) Large scale detail Drawings (detail drawings having a scale of 3/4" and over); (g) Large scale plan and section Drawings (plan and section drawings having a scale equal to or larger than that used for the basic floor or site plan, as the case may be); (h) Small scale detail Drawings (detail drawings having a scale of less than 3/4"); and (i) Small scale plan and section Drawings (plan and section drawings having a scale less than that used for the basic floor or site plan, as the case may be). In the event of such a conflict between or among parts of the Contract Documents that are entitled to equal preference, the more expensive way of doing the work, the better quality or greater quantity of material shall govern unless the University otherwise directs.

## **Section 1.07 Organization of Contract Documents**

The Specifications and Drawings are generally divided into trade sections for the purpose of ready references, but such division is arbitrary and such sections shall not be construed as the prescription by the Consultant or the University of the limits of the work of any subcontractor or as a determination of the class of labor or trade necessary for the fabrication, erection, installation or finishing of the work required. The Contractor will be permitted to allot the work of subcontractors at its own discretion regardless of the grouping of the Specifications and Drawings. It shall be the Contractor's responsibility to settle definitively with each subcontractor the portions of the work which the latter will be required to do. The University and the Consultant assume no responsibility whatever for any jurisdiction claimed by any of the trades involved in the work.

## **Section 1.08 Furnishing of Contract Documents**

The Contractor shall be furnished, free of charge, with as many copies of the Specifications and Drawings as it may reasonably request, in the judgment of the University, within fifteen (15) working days after the Notice of Award. Any other copies of the Specifications and Drawings which the Contractor may desire can be obtained by it from the Consultant at the latter's cost of duplication thereof.

## **Section 1.09 Examination of Contract Documents and Site**

By executing the Contract, the Contractor agrees: that it has carefully examined the Contract Documents together with the site of the proposed work as well as its surrounding territory; that it is fully informed regarding all the conditions affecting the work to be done and the labor and materials to be furnished for the completion of the Contract; and that its information has been acquired by personal investigation and research and not in the estimates and records of the University.



## **Section 1.10 Invalid Provisions**

If any term or provision of the Contract Documents or the application thereof to any person, firm or corporation or circumstance shall, to any extent, be invalid or unenforceable, the remainder of the Contract Documents, or the application of such terms or provisions to persons, firms or corporations or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby and each term or provision of the Contract Documents shall be valid and be enforced to the fullest extent permitted by law.

## **Section 1.11 No Collusion or Fraud**

Reference "Exhibit A" which is attached to and made a part of this Agreement.

## **Section 1.12 Notices**

Any notice to either party hereunder must be in writing signed by the party giving it and shall be served either personally, by facsimile or registered mail of the United State Post Office and individuals indicated below:

TO THE UNIVERSITY:            Director of Purchasing  
Purchase College  
State University of New York  
735 Anderson Hill Road  
Purchase, New York 10577-1402

And a copy to:                Vice Chancellor for Capital Facilities  
State University of New York  
State University Plaza  
Albany, New York 12246

TO THE CONTRACTOR:        At the address indicated on page 1 of this Agreement  
Or to such other addressee as may be hereafter designated by notice. All notices become effective only when received by the addressee.

## **Section 1.13 Singular-Plural; Male-Female**

As used in the Contract Documents, the singular of any word or designation, whenever necessary or appropriate, shall include the plural and vice versa, and the masculine gender shall include the female and neuter genders and vice versa.

## **ARTICLE II**

### **Contract Administration and Conduct**

#### **Section 2.01 Consultant's Status**

- (1) The Consultant, as the University's representative, shall provide general administration of the Contract and inspection of the work. The Consultant will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work, and it will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents. The Consultant's duties, services and work shall in no way supersede or dilute the Contractor's obligation to perform the work in conformance with all Contract requirements, but it is empowered by the University to act on its behalf with respect to the proper execution of the work and to give instructions when necessary to require such corrective measures as may be necessary, in its professional opinion, to insure the proper execution of the Contract or to otherwise protect the University's interest.
- (2) The Consultant shall have the authority to stop the work or to require the prompt execution thereof whenever such action may be necessary, in its professional opinion, to insure the proper execution of the Contract or to otherwise protect the interests of the University.
- (3) Except as otherwise provided in the Contract, the Consultant shall determine the amount, quality, acceptability, fitness and progress of the work covered by the Contract and shall decide all questions of fact which may arise in relation to the interpretation of the plans and Specifications, the performance of the work and the fulfillment by the Contractor of the provisions of the Contract. The Consultant shall in the first instance be the interpreter of the provisions of the Contract and the judge of its performance and it shall use its power under the Contract to enforce its faithful performance.

#### **Section 2.02 Finality of Decisions**

- (1) Any decision or determination of the Consultant under the provisions of the Contract shall be final, conclusive and binding on the Contractor unless the Contractor shall, within ten (10) working days after such decision, make and deliver to the University a verified written statement of its contention that the decision of the Consultant is contrary to a provision of the Contract. The University shall thereupon determine the validity of the Contractor's contention. Pending decision by the University, the Contractor shall proceed in accordance with the Consultant's decision.
- (2) Wherever it is provided in the Contract Documents that an application must be made to the University and/or determination made by the University, the University's decision on such application and/or its determination under the Contract Documents shall be final, conclusive and binding upon the Contractor unless the same shall be determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith and unless the Contractor, within ten (10) working days after receiving notice of the University's decision or determination, files a written statement with the University and the Consultant that it reserves its rights in

connection with the matters covered by said decision or determination.

### **Section 2.03 Claims and Disputes**

- (1) If the Contractor claims (i) that any work it has been ordered to do is extra work or (ii) that it has performed or is going to perform extra work or (iii) that any action or omission of the University or the Consultant is contrary to the terms and provisions of the Contract, it shall:
  - a. Promptly comply with such order;
  - b. File with the University and the Consultant, within five (5) working days after being ordered to perform the work claimed by it to be extra work or within five (5) working days after commencing performance of the extra work, whichever date shall be the earlier, or within five (5) working days after the said action or omission on the part of the University or the Consultant occurred, a written notice of the basis of its claim and request a determination thereof;
  - c. File with the University and the Consultant, within thirty (30) calendar days after said alleged extra work was required to be performed or said alleged extra work was commenced, whichever date shall be the earlier, or said alleged action or omission by the University or the Consultant occurred, a verified detailed statement, with documentary evidence, of the items and basis of its claim;
  - d. Produce for the University's examination, upon notice from the University, all its books of account, bills, invoices, payrolls, subcontracts, time books, progress records, daily reports, bank deposit books, bank statements, checkbooks and canceled checks, showing all of its actions and transactions in connection with or relating to or arising by reason of its claim, and submit persons in its employment and in its subcontractors' employment for examination under oath by any person designated by the University to investigate any claims made against the University under the Contract, such examination to be made at the offices of the Contractor; and
  - e. Proceed diligently, pending and subsequent to the determination of the University with respect to any such disputed matter, with the performance of the Contract and in accordance with all instructions of the University and the Consultant.
- (2) The Contractor's failure to comply with any or all parts of subdivision b of paragraph (1) of this Section shall be deemed to be (i) a conclusive and binding determination on its part that said order, work, action or omission does not involve extra work and is not contrary to the terms and provisions of the Contract; and (ii) a waiver by the Contractor of all claims for additional compensation or damages as a result of said order, work, action or omission. The provisions of subdivision b of paragraph (1) of this Section are for the purpose of enabling the University to avoid waste of public funds by affording it promptly the opportunity to cancel or revise any order, change its plans, mitigate or remedy the effects of circumstances giving rise to a claim or take such other action as may seem desirable and to verify any claimed expenses or circumstances as they occur. Compliance with such provisions is essential whether or not the University is aware of the circumstances of any order or other circumstances which might constitute a basis for a claim and whether or not the University has indicated it will consider a claim in connection therewith.
- (3) No person has power to waive or modify any of the foregoing provisions and, in any action against the University to recover any sum in excess of the sum certified by the University to be due under or by reason of the Contract, the Contractor must allege in its complaint and prove at the trial compliance with the provisions of this Section.
- (4) Nothing in this Section shall in any way affect the University's right to obtain an examination before trial or a discovery and inspection in any action that might be instituted by or against the University or the Contractor.

### **Section 2.04 Omitted Work**

The University reserves the right at any time during the progress of the work to delete, modify or change the work covered by the Contract, by a Change Order thereto providing for either a reduction or omission of any portion of the work, without constituting grounds for any claim by the Contractor for allowances for damages or for loss of anticipated profits and in such event a deduction shall be made from the Contract consideration, the amount of which is to be determined in accordance with the provisions of Section 4.02 of the Agreement.

### **Section 2.05 Extra Work**

- (1) The University reserves the right at any time during the progress of the work to add, modify or change the work covered by the Contract by a Change Order thereto providing for extra work of either a qualitative or quantitative nature and in such event the Contract consideration shall be increased by an amount to be determined in accordance with the provisions of Section 4.02 of the Agreement and the completion date for all or any part of the work shall be extended for such period of time as may be determined by the University as necessary, because of the extra work, to complete the work or any part thereof.
- (2) Nothing in the Contract Documents shall excuse the Contractor from proceeding with the extra work as directed and, except as otherwise specifically provided for in a Change Order, the terms and conditions of the Contract Documents shall be fully applicable to all extra work.
- (3) The Contractor shall have no claim for extra work if the performance of such work, in the judgment of the Consultant, is made necessary or desirable because of any act or omission of the Contractor which is not in accordance with the Contract.
- (4) Notwithstanding the provisions of Section 2.02 of the Agreement and any other provisions of the Contract Documents to the contrary, the University, after conferring with the Consultant, shall have the right to overrule a determination or decision of the Consultant, that relates to whether certain work is included in the Contract Documents or is extra work, which he or she believes is incorrect; in the event an officer exercises such right, his or her determination or decision shall be final, conclusive and binding upon the Contractor and the University unless the same shall be determined by a court of competent jurisdiction to have been fraudulent, capricious, arbitrary or so grossly erroneous as necessarily to imply bad faith.

## **Section 2.06 Contractor to Give Personal Attention**

- (1) The Contractor shall give its constant personal attention to all the work while it is in progress and shall place the working charge of a competent and reliable full-time superintendent acceptable to the Consultant and the University who shall have authority to act for the Contractor and who shall be accountable to the Consultant to the extent provided in the Contract. Unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in its employ, such superintendent shall not be changed without the written permission of the Consultant and the University.
- (2) When the Contractor and its superintendent are temporarily absent from the site of the work, the Contractor or its superintendent shall designate a responsible supervisory employee to receive such orders as the Consultant or its representative may give. At no time shall any work be conducted on the site in the absence of an individual present who has been so designated by the Contractor or its superintendent as having authority to receive and execute instructions given by the Consultant or its representative.

## **Section 2.07 Employment of Workers**

The Contractor shall at all times employ competent and suitable workers and equipment which shall be sufficient to prosecute all the work to full completion in the manner and time specified. All workers engaged in specially or skilled work shall have had sufficient experience in such work to properly and satisfactorily perform the same. Should the Consultant deem any employee of the Contractor or any subcontractor incompetent, careless, insubordinate or otherwise objectionable or whose continued employment on the work is deemed by the Consultant to be contrary to the public interest, it shall so advise the Contractor and the latter shall dismiss or shall cause the subcontractor, if such employee is employed by the latter, to dismiss such employee and such employee shall not again be employed on the work to be performed under the Contract without obtaining the prior written approval of the Consultant.

## **Section 2.08 Detailed Drawings and Instructions**

Upon timely notice by the Contractor that supplementary information is required, the Consultant shall furnish additional instructions, by means of Drawings or otherwise, necessary for the proper execution of the work. All such Drawings and instructions shall be consistent with the Contract Documents, true developments thereof and reasonably inferable therefrom. The work shall be executed in conformity therewith and the Contractor shall do no work without proper Drawings and/or instructions.

## **Section 2.09 Contract Documents to Be Kept at Site**

The Contractor shall keep at the site of the work a copy of the Drawings and Specifications and shall at all times give the Consultant and the University access thereto.

## **Section 2.10 Permits and Building Codes**

The Contractor shall obtain from the proper authorities all permits legally required to carry on its work, pay any and all taxes and fees legally required and shall be responsible for conducting its operations in accordance with the provisions of such permits. Except as otherwise expressly provided in the Contract Documents, all of the work covered by this Contract which is to be performed on property owned by the State University of New York is not subject to the building code of any city, county or other political subdivision of the State of New York. It is, however, subject to the provisions of the New York State Uniform Fire Prevention and Building Code and the applicable Federal and State health and labor laws and regulations. The building permit for the work shall be issued by the Campus Code Compliance Officer.

## **Section 2.11 Surveys**

- (1) From the data shown on the Drawings and identified at the site by the Consultant, a licensed surveyor, to be designated and paid for by the University, shall establish one (1) fixed bench mark and one (1) fixed base line at the site. The Contractor shall work from the bench marks and base lines shown on the Drawings, identified at the site by the Consultant and established at the site by the aforesaid surveyor and shall establish such supplementary bench marks and base lines that are required in order for it to lay out the work. The Contractor shall be responsible for all measurements that may be required for execution of the work to the exact position and elevation as prescribed in the Specifications, shown on the Drawings, or as the same may be modified at the direction of the Consultant to meet changed conditions or as a result of modifications to the work covered by the Contract.
- (2) The Contractor shall furnish at its own expense such stakes and other required equipment, tools and materials, and all labor as may be required in laying out any part of the work. If, for any reason, monuments are disturbed, it shall be the responsibility of the Contractor to reestablish them, without cost to the University, as directed by the Consultant. The Consultant may require that construction work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking completed work or the work in progress.
- (3) In all multiple-story construction, the Contractor shall establish and maintain line marks at each floor level and grade marks four (4) feet above the finished floor at each floor level.

## **Section 2.12 Site Conditions**

- (1) The Contractor acknowledges that it has assumed the risk and that the Contract consideration includes such provision as it deems proper for all physical conditions and subsurface conditions as it could reasonably anticipate encountering from the provisions of the Contract Documents, borings, rock cores, topographical maps and such other information as the University or the Consultant made available to it prior to the University's receipt of bids or from its own inspection and examination of the site prior to the University's receipt of bids.

- (2) In the event that the Contractor encounters subsurface physical conditions or other latent physical conditions at the site differing substantially from those shown on or described or indicated in the Contract Documents and which could not have been reasonably anticipated from the aforesaid information made available by the University or the Consultant or from the Contractor's aforesaid inspection and examination of the site, it shall give immediate notice to the Consultant of such conditions before they are disturbed. The Consultant will thereupon promptly investigate the conditions and, if it finds that they do substantially differ from that which should have been reasonably anticipated by the Contractor, it shall make such changes in the Drawings and Specifications as may be necessary and a Change Order shall be issued, the amount of which shall be determined in accordance with the provisions of Section 4.02, to reflect any increase or decrease in the cost of, or the time required for, performance of the Contract as a result of any of the aforesaid changes made by the Consultant and/or as a result of such unanticipated subsurface conditions.

### **Section 2.13 Right to Change Location**

When additional information regarding the subsurface conditions becomes available to the University as a result of the excavation work, further testing or otherwise, it may be found desirable to change the location, alignment, dimensions or grades to conform to such conditions. The University reserves the right to make such reasonable changes in the work as, in its opinion, may be considered necessary or desirable, such changes and any adjustments in the Contract consideration as a result thereof are to be made in accordance with the provisions of Sections 2.04, 2.05 and 4.02 of the Agreement.

### **Section 2.14 Unforeseen Difficulties**

Except as otherwise expressly provided in Section 2.12 of the Agreement and in other Sections of the Contract Documents, the Contractor acknowledges that it has assumed the risk and that the Contract consideration includes such provisions as it deems proper for any unforeseen obstacles or difficulties which it may encounter in the performance of the work.

### **Section 2.15 Moving Materials and Equipment**

Should it become necessary, in the judgment of the Consultant, at any time during the course of the work to move materials which are stored on the site and equipment which has been temporarily placed thereon, the Contractor upon request of the Consultant shall move them or cause them to be moved at its sole cost and expense; provided, however, if materials and equipment have been stored or placed by the Contractor at a location on the site expressly approved, in writing, by the consultant and the same are moved or caused to be moved by the Contractor at the Consultant's request, such removal shall be deemed extra work and the Contractor shall be compensated therefore in accordance with the provisions of Section 4.02 of the Agreement.

### **Section 2.16 Other Contracts**

- (1) Prior to and during the progress of the work hereunder the University reserves the right to let other contracts relating to the Project or in connection with work on sites within the Contract limit lines or adjoining or adjacent to that on which the work covered by this Contract is to be performed. In the event such other contracts are let, or have previously been let, the Contractor and such other contractors shall coordinate their work with each other, arrange the sequence of their work to conform with the progressive operation of all the work covered by such contracts and afford each other reasonable opportunities for the introduction and storage of their materials, supplies and equipment and the execution of their work. If the Contractor or such other contractors contend that their work or the progress thereof is being interfered with by the acts or omissions of the other or others or that there is a failure to coordinate or properly arrange the sequence of the work on the part of the Contractor or such other contractors, they shall, within five (5) working days of the commencement of such interference or failure of coordination or failure to perform work in proper sequence, give written notification to the University and the Consultant of such contention. Upon receipt of such notification or on its own initiative, the Consultant shall investigate the situation and issue such instructions to the Contractor or such other contractors with respect thereto as it may deem proper. The Consultant shall determine the rights of the Contractor and of such other contractors and the sequence of work necessary to expedite the completion of all work covered by this Contract in relation to the work covered by said other contracts.
- (2) The Contractor agrees that it has and will make no claim for damages against the University by reason of any act or omission to act by any other contractor or party or in connection with the Consultant's or University's acts or omissions to act in connection with such other contractor, but the Contractor shall have a right to recover such damages from the other contractors under a provision similar to the following provision which has been or will be inserted in the Contract with such other contractors.
- (3) Should any other contractor, having or who shall hereafter have a contract with the University relating to the Project or in connection with the work on sites adjoining or adjacent to that on which the work covered by this Contract is to be performed, sustain any damage, during the progress of the work hereunder, through any act or omission of the Contractor, the Contractor agrees to reimburse such other contractor for all such damages and it further agrees to indemnify and save harmless the University and the State of New York from all claims for such damages.
- (4) If the proper and accurate performance of the work covered by the Contract depends upon the proper performance and execution of work not included herein or depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the Consultant any defects in such work that render it unsuitable for proper execution and results. Its failure to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the execution of the work covered by the Contract, except as to latent defects which may be discovered thereafter.

### **Section 2.17 Inspection and Testing**

- (1) All materials and workmanship shall be subject to inspection, examination and testing by the Consultant and the University at all times during the performance of the work and at all places where the work is carried on. Except as otherwise herein specified, the University shall pay for the cost of inspection, examination and testing by the Consultant or the University. If, however, the tests and any attendant re-inspection or re-examination prove that the materials and/or work tested do not meet the requirements of the Contract, then the entire cost of such tests is

to be borne by the Contractor. The Consultant will have the right to reject defective material and workmanship furnished by the Contractor or require its correction. The Contractor, without charge therefore, shall satisfactorily and promptly correct all rejected work and replace all rejected material with proper material.

- (2) The Contractor shall promptly segregate and remove from the site of the work all rejected material and work. If the Contractor shall fail to proceed at once with the replacing of rejected material and/or correction of defective workmanship, the University may, by contract or otherwise, replace such material and/or correct such workmanship, and charge the costs thereof to the Contractor and/or it may cancel the Contract and terminate the Contractor's employment as provided in the Agreement.
- (3) The Contractor, without additional charge therefore, shall promptly furnish all reasonable facilities, labor and materials necessary for the safe and convenient inspection and testing that may be required by the Consultant or the University.
- (4) If the Contract Documents or the Consultant's instructions or the applicable laws, ordinances or regulations of any governmental authority require any part of the work covered by the Contract to be specially tested or inspected, the Contractor shall give the Consultant timely notice of its readiness for such testing or inspection or, if the same is to be performed by a governmental authority, of the date fixed therefore. If any such work, without the written permission of the Consultant, should be covered up prior to such testing or inspection, the Contractor, at its sole cost and expense, must, if directed by the Consultant, uncover the same for testing or inspection and reconstruct the same after the tests or inspection are conducted. All certificates of inspection or testing, involving the Contractor's work, required to be obtained from governmental authorities are to be secured by the Contractor at its sole cost and expense.
- (5) Should it be considered necessary or advisable by the Consultant at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out same, the Contractor, upon request, shall furnish all necessary facilities, labor and material to perform such examination. If the work subject to such examination is found to be defective or nonconforming in any manner due to the fault of the Contractor or any of its subcontractors, such uncovering or destruction and necessary reconstruction, even though such includes work not covered in the Contract, shall be at the expense of the Contractor. If, however, such work after testing and examination is found to be satisfactory, the University will pay the Contractor the cost of such uncovering or destruction and reconstruction, such cost to be determined as in the case of extra work as provided in Section 4.02.
- (6) Inspection of material and furnished articles to be incorporated in the work may be made at the place of production, manufacture or shipment unless otherwise stated herein. The inspection of material and workmanship for final acceptance as a whole or in part will be made at the site of the work.

## **Section 2.18 Subcontractors**

- (1) Except for subcontractors designated by the University, or required to be named at any earlier date, pursuant to the provisions of the Information for Bidders, within thirty (30) calendar days after Notice of Award, the Contractor must submit a written statement to the Consultant giving the name and address of all proposed subcontractors. Said statement must contain a description of the portion of the work and materials which the proposed subcontractors are to perform and furnish and any other information tending to prove that the proposed subcontractors have the necessary facilities, skill, integrity, past experience and financial resources to perform the work in accordance with the terms and provisions of the Contract Documents.
- (2) If the Consultant finds that the proposed subcontractors are qualified, it will so notify the Contractor within ten (10) working days after receipt of the aforesaid information. If the determination is to the contrary, however, the Consultant within such period will notify the Contractor of such determination and the latter, unless it decides to do such work itself and is qualified, in the Consultant's opinion, to do such work, must, within ten (10) working days thereafter, submit similar information with respect to other proposed subcontractors.
- (3) The Consultant's approval of a subcontractor and/or the University's designation of a subcontractor pursuant to the provisions of the Contract Documents shall not relieve the Contractor of any of its responsibilities, duties and liabilities hereunder. The Contractor shall be solely responsible to the University for the acts or defaults of such subcontractors and of such subcontractors' officers, agents and employees, each of whom shall, for this purpose, be deemed to be the agent or employee of the Contractor to the extent of its subcontract.
- (4) The Contractor shall be fully responsible for the administration, integration, coordination, direction and supervision of all of its subcontractors and of all work and it shall check all space requirements of the work and coordinate and adjust the same so that conflicts in space do not occur in the work being performed by it with its own employees and with the work being performed by its subcontractors and so that all equipment, piping, wiring, etc., can be installed, where possible, in the spaces allowed for the same.
- (5) No subcontractor shall be permitted to work at the site until (a) it has furnished satisfactory evidence to the Consultant of the insurance required by law; (b) in the case of a Project involving a federal grant, it has furnished satisfactory evidence to the Consultant of the same type and amount of liability insurance as that required of the Contractor by Section 5.06 of the Agreement; and (c) except for subcontractors designated by the University pursuant to the provisions of the Information for bidders, it has been approved by the Consultant.
- (6) Within seven (7) working days after the Contractor receives payment from the University on account of a progress payment application for the percentage of the work done, it shall pay each of its subcontractors the sum contained in said payment for the percentage of said subcontractor's work, less the same amount retained therefrom by the University under the terms of the Contract Documents or in consequence of any legal proceedings or statutory liens, and less any amounts due the Contractor under the subcontract for work not performed or not properly or timely performed by the subcontractor. In the event any subcontractor is not paid by the Contractor, the former should immediately notify the University of such fact. Notwithstanding the foregoing, no retention or withholding of payment by the university shall affect the Contractor's obligation to pay all subcontractors, agents, employees or other parties for goods or services provided in connection with the work.
- (7) The Contractor shall execute with each of its subcontractors and shall require all subcontractors to execute with their sub-subcontractors a written agreement which shall bind the latter to the terms and provisions of this Contract insofar as such terms and provisions are applicable to the work to be performed by such subcontractors. The Contractor shall require all subcontractors and sub-subcontractors to promptly, upon

request, file with the Consultant and the University a copy of such agreements, from which the price and terms of payment may be deleted.

- (8) If for sufficient reason, at any time during the progress of the work to be performed hereunder, the Consultant determines that any subcontractor or sub-subcontractor is incompetent, careless or uncooperative, the Consultant will notify the Contractor accordingly and immediate steps will be taken by the Contractor for cancellation of such subcontract or sub-subcontract. Such termination, however, shall not give rise to any claim by the Contractor or by such subcontractor or sub-subcontractor for loss of prospective profits on work unperformed and/or work unfurnished and a provision to that effect shall be contained in all subcontracts and sub-subcontracts.
- (9) No provisions of this Contract shall create or be construed as creating any contractual relation between the University and any subcontractor or sub-subcontractor or with any person, firm or corporation employed by, contracted with or whose services are utilized by the Contractor.

## **Section 2.19 Shop Drawings and Samples**

- (1) The Contractor, in accordance with the approved Shop Drawing and Sample schedule and with such promptness and in such sequence as to cause no delay in the work, shall submit for the Consultant's approval all Shop Drawings and Samples called for under the Contract or requested by the Consultant.
- (2) Shop Drawings shall establish the actual detail of the work, indicate proper relation to adjoining work, amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.
- (3) All Shop Drawings and Samples shall be thoroughly checked by the Contractor for compliance with the Contract Documents before submitting them to the Consultant for approval and all Shop Drawings shall bear the Contractor's recommendation for approval certifying that they have been so checked. Any Shop Drawings submitted without this stamp of approval and certification, and Shop Drawings which, in the Consultant's opinion, are incomplete, contain numerous errors or have not been checked or only checked superficially, will be returned unchecked by the Consultant for resubmission by the Contractor. In checking Shop Drawings, the Contractor shall verify all dimensions and field conditions and shall check and coordinate the Shop Drawings of any section or trade with the requirements of all other sections or trades whose work is related thereto, as required for proper and complete installation of the work.
- (4) Samples must be of sufficient size or number to show the quality, type, range of color, finish and texture of the material. Each Sample shall be properly labeled to show the nature of the material, trade name of manufacturer, name and location of the work where the material represented by the Sample is to be used and the name of the Contractor submitting the Sample. Transportation charges to the Consultant must be prepaid on Samples forwarded to it.
- (5) Shop Drawings and Samples, submitted by the Contractor in accordance with the approved Shop Drawing and Sample schedule, will be reviewed by the Consultant within fifteen (15) working days and if satisfactory will be approved. A Shop Drawing, when approved, will be returned to the Contractor. If not satisfactory, the Drawings and Samples will be appropriately marked and returned to the Contractor for correction thereof, in which event the Contractor shall resubmit to the Consultant a corrected copy of the Shop Drawing or a new Sample, as the case may be. The Contractor shall make any correction required by the Consultant and shall appropriately note any changes or revisions on the Shop Drawing, dated to correspond with the date of the Consultant's request for the change. Upon approval of the Shop Drawing by the Consultant, the Contractor shall promptly furnish to the Consultant as many copies thereof as the Consultant may reasonably request.
- (6) At the time of submission of a Shop Drawing or Sample, the Contractor shall inform the Consultant and the University in writing of any deviation in the Shop Drawing or Sample from the requirements of the Contract Documents. Unless such deviation is specifically noted by the Contractor with a notation that such deviation will result in extra work for which the Contractor requests payment or requires additional time, the Contractor shall be deemed to have waived any claim for extra work, additional compensation or payment or an extension of time with respect to all work shown on, described in or related to the Shop Drawing or Sample.
- (7) The Consultant's approval of Shop Drawings or Samples is for design only and is not a complete check on the method of assembly, erection or construction. Approval shall in no way be construed as: (a) permitting any departure whatsoever from the Contract Documents, except where the Contractor, in accordance with the provisions of paragraph 6 of this Section, has previously notified the University and the Consultant of such departure; (b) relieving the Contractor of full responsibility for any error in quality of materials, details, dimensions, omissions or otherwise that may exist; (c) relieving the Contractor of full responsibility for adequate field connections, erection techniques, bracing or deficiencies in strength; (d) relieving the Contractor of full responsibility for satisfactory performance of all work and coordination with the work of all subcontractors and other contractors; or (e) permitting departure from additional details or instructions previously furnished by the Consultant.
- (8) No work requiring a Shop Drawing or Sample shall be commenced until a Shop Drawing or Sample is approved in writing by the Consultant and all such work shall be: (a) in accordance with the approved Shop Drawing, provided the latter conforms in all respects to the Contract Documents or to such deviations therefrom as have been previously noted by the Contractor in accordance with the provisions of paragraph 6 of this Section; and (b) in conformance in all respects to the sample furnished to and approved by the Consultant and, unless otherwise specified, as new and of good quality.

## **Section 2.20 Equivalentents - Approved Equal**

### **A. EQUIVALENTS OR APPROVALS - GENERAL**

- (1) The words "similar and equal to", "or equal", "equivalent", and such other words of similar content and meaning shall, for the purposes of this Contract, be deemed to mean similar and equivalent to one of the named products. For the purposes of subdivisions A and B of this Section and for purposes of the Bidding Documents, the word "products" shall be deemed to include the words "articles", "materials", "items", "equipment" and "methods". Whenever in the Contract Documents one or more products are specified, the words "similar and equal to" shall be deemed inserted.

- (2) Whenever any product is specified in the Contract Documents by a reference to the name, trade name, make or catalog number of any manufacturer or supplier, the intent is not to limit competition, but to establish a standard of quality which the Consultant has determined is necessary for the Project. A Contractor may at its option use any product other than that specified in the Contract Documents provided the same is approved by the Consultant in accordance with the procedures set forth in subdivision B of this Section. In all cases the Consultant shall be the sole judge as to whether a proposed product is to be approved and the Contractor shall have the burden of proving, at its own cost and expense, to the satisfaction of the Consultant, that the proposed product is similar and equal to the named product. In making such determination the Consultant may establish such objective and appearance criteria as it may deem proper that the proposed product must meet in order for it to be approved.
- (3) Nothing in the Contract Document shall be construed as representing, expressly or implicitly, that the named product is available or that there is or there is not a product similar and equal to any of the named products and the Contractor shall have and make no claim by reason of the availability or lack of availability of the named product or of a product similar and equal to any named product.
- (4) The Contractor shall have and make no claim for an extension of time or for damages by reason of the time taken by the Consultant in considering a product proposed by the Contractor or by reason of the failure of the Consultant to approve a product proposed by the Contractor.
- (5) Requests for approval of proposed equivalents will be received by the Consultant only from the Contractor.

**B. EQUIVALENTS OR APPROVALS AFTER BIDDING**

- (1) Requests for approval of proposed equivalents will be considered by the Consultant after bidding only in the following cases: (a) the named product cannot be obtained by the Contractor because of strikes, lockouts, bankruptcies or discontinuance of manufacture and the Contractor makes a written request to the Consultant for consideration of the proposed equivalent within ten (10) calendar days of the date it ascertains it cannot obtain the named product; or (b) the proposed equivalent is superior, in the opinion of the Consultant, to the named product; or (c) the proposed equivalent, in the opinion of the Consultant, is equal to the named product and its use is to the advantage of the University, e.g., the University receives an equitable credit, acceptable to it, as a result of the estimated cost savings to the Contractor from the use of the proposed equivalent or the University determines that the Contractor has not failed to act diligently in placing the necessary purchase orders and a savings in the time required for the completion of the construction of the Project should result from the use of the proposed equivalent; or (d) the proposed equivalent, in the opinion of the Consultant, is equal to the named product and less than ninety (90) calendar days have elapsed since the Notice of Award of the Contract.
- (2) Where the Consultant pursuant to the provisions of the subdivision approves a product proposed by a Contractor and such proposed product requires a revision or redesign of any part of the work covered by this Contract, all such revision and redesign and all new Drawings and details required therefore shall be subject to the approval of the Consultant and shall be provided by the Contractor at its own cost and expense.
- (3) Where the Consultant pursuant to the provisions of this Section approves a product proposed by a Contractor and such proposed product requires a different quantity and/or arrangement of duct work, piping, wiring, conduit or any other part of the work from that specified, detailed or indicated in the Contract Documents, the Contractor shall provide the same at its own cost and expense.

**Section 2.21 Patents, Trademarks and Copyrights**

The Contractor acknowledges that the Contract consideration includes all royalties, license fees and costs arising from patents or trademarks in any way involved in the work, provided, however, that the Contract consideration shall not be deemed to have included therein any royalty, license fee or cost arising from a patent or trademark for a design prepared by the Consultant and neither the Contractor nor the University shall have any liability in connection therewith. Where the Contractor is required or desires to use any product, device, material or process covered by patent or trademark, the Contractor shall indemnify and save harmless the University and the State of New York from any and all claims, actions, causes of action or demands, for infringement by reason of the use of such patented product, device, material or process, and shall indemnify the University and the State of New York from any cost, liability, damage and expense, including reasonable attorneys' fees and court costs, which it may be obligated to incur or pay by reason of any claim or infringement at anytime both before or after the University's final acceptance of all the work to be performed under the Contract.

**Section 2.22 Possession Prior to Completion**

If before the final completion of all the work it shall be deemed advisable or necessary by the University to take over, use, occupy or operate any part of the completed or partly completed work or to place or install therein equipment and furnishings, the University, upon reasonable written notice to the Contractor, shall have the right to do so and the Contractor will not in any way interfere therewith or object to the same. Such action by the University shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract Documents and the Contractor acknowledges that such action by the University does not in any way evidence the completion of the work or any part thereof or in any way signify the University's acceptance of the work or any part thereof, provided, however, that the period for the Contractor's warranties and guarantees under the Contract for the work so occupied or operated shall be deemed to commence on the date said work is occupied or operated. The Contractor agrees to continue the performance of all work covered by the Contract in a manner which will not unreasonably interfere with such takeover, use, occupancy, operation, placement or installation.

**Section 2.23 Completion and Acceptance**

**A. PARTIAL COMPLETION AND ACCEPTANCE**

If before the final completion of all the work any portion of the permanent construction has been satisfactorily completed and the same will be

immediately useful to the University, the latter may, by written notice, advise the Contractor that it accepts such portion of the work. Such actions by the University shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract with respect to any work not so completed and accepted.

## **B. SUBSTANTIAL COMPLETION**

When all the work covered by the Contract is substantially completed, i.e., has reached such point of completion that the Project can be fully occupied and used for the purposes for which it was intended, the Contractor shall give written notice thereof to the University and the Consultant. The latter will then promptly make an inspection of the work and, if they shall determine that all the work is substantially completed, they shall so advise the Contractor. Such action shall in no way affect the obligations of the Contractor under the terms and provisions of the Contract with respect to any uncompleted (including untested or deferred work), unaccepted or corrective work or in any way affect, limit or preclude the issuance by the Consultant, from time to time thereafter, of "Punch Lists", i.e., lists of uncompleted or corrective work which the Contractor is to promptly complete and/or correct.

## **C. FULL COMPLETION AND ACCEPTANCE**

After the completion of all the work the Contractor shall give written notice to the University and the Consultant that all the work is ready for inspection and final acceptance. The University and the Consultant shall promptly make such inspection and, if they shall determine that all the work has been satisfactorily completed, the University shall thereupon by written notice advise the Contractor that it accepts such work.

### **Section 2.24 Record Drawings**

- (1) Prior to acceptance by the University of all work covered by the Contract, the Contractor shall furnish to the Consultant one (1) set of current Contract Drawings on which the Contractor has recorded, using colored pencil, in a neat and workmanlike manner, all instances where actual field construction differs from work as indicated on the Contract Drawings. These "Record" Drawings shall show the following information: (a) all significant changes in plans, sections, elevations and details, such as shifts in location of walls, doors, windows, stairs and the like made during construction; (b) all significant changes in foundations, columns, beams, openings, concrete reinforcing, lintels, concealed anchorage and "knock-out" panels made during construction; (c) final location of electric panels, final arrangement of electric circuits and any significant changes made in electrical design as a result of Change Orders or job conditions; (d) final location and arrangement of all mechanical equipment and major concealed plumbing, including, but not limited to, supply and circulating mains, vent stacks, sanitary and storm water drainage; and (e) final location and arrangement of all underground utilities, connections to building and/or rerouting of existing utilities, including, but not limited to, sanitary, storm, heating, electric, signal gas, water and telephone.
- (2) Shop Drawings shall not be acceptable as "Record" Drawings.
- (3) The Contractor agrees to provide Record Drawings on "electronic media" or "hard copy" at the discretion of the University at no extra cost.

### **Section 2.25 Guarantees**

- (1) The Contractor, at the convenience of the University, shall remove, replace and/or repair at its own cost and expense any defects in workmanship, materials, ratings, capacities or characteristics occurring in or to the work covered by the Contract within one (1) year or within such longer period as may otherwise be provided in the Contract, the period of such guarantee to commence with the University's final acceptance of all work covered under the Contract or at such other date or dates as the University may specify prior to that time, and the Contractor, upon demand, shall pay for all damage to all other work resulting from such defects and all expenses necessary to remove, replace and/or repair such other work which may be damaged in removing, replacing or repairing the said defects. The obligations of the Contractor under the provisions of this paragraph or any other guarantee provisions of the Contract Documents are not limited to the monies retained by the University under the Contract.
- (2) Unless such removal, replacement and/or repair shall be performed by the Contractor within ten (10) working days after it receives written notice from the University specifying such defect, or if such defect is of such a nature that it cannot be completely removed, repaired and/or replaced within said ten (10) day period and the Contractor shall not have diligently commenced removing, repairing and/or replacing such defect within said ten (10) day period and shall not thereafter with reasonable diligence and in good faith proceed to do such work, the University may employ such other person, firm or corporation as it may choose to perform such removal, replacement and/or repair and the Contractor agrees, upon demand, to pay to the University all amounts which it expends for such work.

### **Section 2.26 Default of Contractor**

- (1) In addition to those instances specifically referred to in other Sections hereof, the University shall have the right to declare the Contractor in default of the whole or any part of the work if:
  - a. The Contractor makes an assignment for the benefit of creditors pursuant to the statutes of the State of New York; or if
  - b. A voluntary or involuntary petition in bankruptcy is filed by or against the Contractor; or if
  - c. A receiver or receivers are appointed to take charge of the Contractor's property or affairs; or if
  - d. The Contractor shall sublet, assign, transfer, convey, or otherwise dispose of the Contract other than as herein specified; or if
- (2) Before the University shall exercise its right to declare the Contractor in default by reason of the conditions set forth in this subsection, it shall give the Contractor three (3) working days' notice of its intention to declare the Contractor in default and unless, within such three (3) day



period, the Contractor shall make arrangements, satisfactory to the University, to correct and/or eliminate the conditions set forth in the University's aforesaid notice, the Contractor may be declared in default at the expiration of such three (3) day period or at the expiration of such longer period of time as the University may determine. In addition to those instances specifically referred to above, the University shall have the right to declare the Contractor in default of the whole or any part of the work if, in the sole opinion of the University:

- a. The Contractor becomes insolvent; or if
  - b. The Contractor fails to commence work when notified to do so by the Consultant; or if
  - c. The Contractor shall abandon the work; or if
  - d. The Contractor shall refuse to proceed with the work when and as directed by the Consultant; or if
  - e. The Contractor shall without just cause reduce its working force to a number which, if maintained, would be insufficient, in the opinion of the University, to complete the work in accordance with the approved time progress schedule, and shall fail or refuse to sufficiently increase such working force when ordered to do so by the Consultant; or if
  - f. The Contractor is or has been unnecessarily or unreasonably or willfully delaying the performance and completion of the work, or the award of necessary subcontracts, or the placing of necessary material and equipment orders; or if
  - g. The work cannot be completed within the time herein provided therefore or within the time to which such completion may have been extended; provided, however, that the impossibility of timely completion is, in the University's opinion, attributable to conditions within the Contractor's control; or if
  - h. The work is not completed within the time herein provided therefore or within the time to which the Contractor may be entitled to have such completed extended; or if
  - i. The Contractor is or has been willfully or in bad faith violating any of the provisions of this Contract; or if
  - j. The Contractor is not or has not been executing the Contract in good faith and in accordance with its terms.
- (3) The right to declare in default for any of the grounds specified or referred to shall be exercised by the University sending the Contractor a written notice setting forth the ground or grounds upon which such default is declared. Upon receipt of notice that it has been declared in default, the Contractor shall immediately discontinue all further operations under the Contract and shall immediately quit the site, leaving untouched all plant, materials, equipment, tools and supplies then on site.
- (4) The University, after declaring the Contractor in default, may then have the work completed by such means and in such manner, by contract, with or without public letting, or otherwise, as it may deem advisable, utilizing for such purpose such of the Contractor's plant, materials, equipment, tools and supplies remaining on the site, and also such subcontractors as it may deem advisable, or it may call upon the Contractor's surety at its own expense to do so.
- (5) In the event that the University declared the Contractor in default of the work or any part of the work, the Contractor, in addition to any other liability to the University hereunder or otherwise provided for or allowed by law, shall be liable to the University for any costs it incurs for additional architectural and engineering services necessary, in its opinion, because of the default and the total amount of liquidated damages from the date when the work should have been completed by the Contractor in accordance with the terms hereof to the date of actual completion of the work, both of which items shall be considered as expenses incurred by the University in completing the work and the amount of which may be charged against and deducted out of such monies as would have been payable to the Contractor or its surety if the work had been completed without a default.
- (6) If the University completes the work, the Consultant shall issue a certificate stating the expenses incurred in such completion, including the cost of re-letting. Such certificates shall be final, binding and conclusive upon the Contractor, its surety, and any person claiming under or through the Contractor, as to the amount thereof.
- (7) The expense of such completion, as so certified by the Consultant, shall be charged against and deducted out of such monies as would have been payable to the Contractor if it had completed the work; the balance of such monies, if any, subject to the other provisions of the Contract, to be paid to the Contractor without interest after such completion. Should the expense of such completion, so certified by the Consultant, exceed the total sum which would have been payable under the Contract if the same had been completed by the Contractor, any such excess shall be paid by the Contractor to the University upon demand.
- (8) In the event the University shall determine to complete the work without calling upon the Contractor's surety to do so, the Contractor shall not be entitled, from and after the effective date of the declaration of the default, to receive any further payment under the Contract until the said work shall be wholly completed and accepted by the University.
- (9) In case the University shall declare the Contractor in default as to a part of the work only, the Contractor shall discontinue such part, shall continue performing the remainder of the work in strict conformity with the terms of the Contract, and shall in no way hinder or interfere with any other contractors or persons whom the University may engage to complete the work as to which the Contractor was declared in default.
- (10) The provisions relating to declaring the Contractor in default as to the entire work shall be equally applicable to a declaration of partial default, except that the University shall be entitled to utilize for completion of the part of the work as to which the Contractor was declared in default only such plant, materials, equipment, tools and supplies as had been previously used by the Contractor on such part.
- (11) In completing the whole or any part of the work, the Consultant and the University shall have the power to depart from, change or vary the terms and provisions of the Contract; provided, however, that such departure, change or variation is made for the purpose of reducing the

time or expense of such completion. Such departure, change or variations, even to the extent of accepting a lesser or different performance, shall not affect the conclusiveness of the Consultant's certificate of the cost of completion, nor shall it constitute a defense to any action to recover the amount by which such certificate exceeds the amount which would have been payable to the Contractor hereunder but for its default.

- (12) The provisions of this Section shall be in addition to any and all other legal or equitable remedies provided by this Agreement and otherwise available by law.

## **Section 2.27 Termination**

- (1) The performance of work under this Contract may be terminated by the University, in whole or in part, whenever the University shall determine that such termination is in the best interest of the University; or in the event the State Finance Law Sections 139-j and 139-k certifications are found to be intentionally false or intentionally incomplete; or in the event the information provided in Sales Tax Certifications ST-220TD and/or ST-220CA is found to be false or incomplete. Any such termination shall be effected by a notice in writing to the Contractor specifying the date upon which such termination shall become effective and the extent to which performance of the Contract shall be terminated. Such termination shall be effective on the date and to the extent specified in said notice.
- (2) Upon receipt of a notice of termination, and except as otherwise directed in writing by the University, the Contractor shall:
- a. Discontinue all work and the placing of all orders for materials and facilities otherwise required for the performance thereof;
  - b. Cancel all existing orders and subcontracts to the extent such orders and subcontracts relate to the performance of work terminated by the notice of termination;
  - c. Take such actions as may be necessary to secure to the University the benefits of any rights of the Contractor under orders or subcontracts which relate to the performance of work terminated by the notice of termination, including, but not limited to, the assignment to the University, in the manner and to the extent directed by the University, all the right, title and interest of the Contractor under the orders or subcontracts so terminated and canceled. In the event of such assignment, the University shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination and cancellation of such orders and subcontracts;
  - d. Transfer title and deliver to the University, in accordance with the direction of the University, all materials, supplies, work in process, facilities, equipment, machines or tools produced as a part of or acquired by the Contractor in connection with the work terminated by said notice, and all plans, Drawings, Working Drawings, sketches, Specifications and information for use in connection therewith; provided, however, that the Contractor may retain any of the foregoing if it so elects and forgoes reimbursement therefore;
  - e. Take such action as may be necessary or as the Consultant or the University may prescribe for the protection and preservation of all property in the possession or control of the Contractor in which the University, under the provisions of the Contract, has or may acquire an interest.
- (3) Notwithstanding the foregoing, should the notice of termination relate to only a portion of the work covered by the Contract, the Contractor will proceed with the completion of such portions of the work as are not terminated.
- (4) The University will pay and the Contractor shall accept, in full consideration for the performance and completion of the portions of the work as are not terminated, a sum calculated by determining the percentage the portions of the work not terminated bear to the total amount of the work covered by the Contract, and by multiplying the Contract consideration by such percentage the product thereof being the amount to be paid to the Contractor. The University shall determine the amount of such consideration in accordance with the foregoing.
- (5) Upon compliance by the Contractor with the foregoing provisions of this Section and subject to deductions for payments previously made, the University, for the portions of the work terminated, shall compensate the Contractor as follows:
- a. By reimbursing the Contractor for actual expenditures made with respect to such work, including expenditures made in connection with any portion thereof which may have been completed prior to termination, as well as expenditures made after termination in completing those portions of the work covered by the Contract which the Contractor may have been required by the notice of termination to complete. The University shall determine the allocability and amount of such expenditures.
  - b. By reimbursing the Contractor for all actual expenditures made, with the prior written approval of the University or pursuant to a court judgment, in settling or discharging any outstanding contractual obligations or commitments incurred or entered into by the Contractor in good faith with respect to the Contract and resulting from the termination thereof.
  - c. By reimbursing the Contractor for all actual expenditures made after the effective date of the notice of termination resulting from or caused by the Contractor taking necessary action or action prescribed by the Consultant or the University for the protection and preservation of all property in the possession or control of the Contractor in which the University, under the provisions of the Contract, has or may acquire an interest.
  - d. By paying the Contractor a markup, which is to be calculated in the same manner as that provided for in subdivision c of paragraph (1) of Section 4.02 for extra work, on the foregoing expenditures, which markup is to cover the Contractor's overhead and profit; provided, however, that if it appears that the Contractor would have sustained a loss on the entire Contract had it been completed, said markup shall be reduced by one-third.
- (6) The sum of all amounts payable under this Section, plus the sum of all amounts previously paid by the University under the provisions of the Contract, shall not exceed the amount of the Contract consideration. In no event shall the Contractor be entitled to any payment for loss of anticipated profits on uncompleted work and the University shall not be liable for the same.

- (7) Termination by the University under the provisions of this Section shall be without prejudice to any claims or rights which the University may have against the Contractor. The University may retain from the amount due to the Contractor under the provisions of this Section such monies as may be necessary to satisfy any claim which the University may have against the Contractor in connection with the Contract; provided, however, that the University's failure to retain such monies shall not be deemed a waiver of any of its rights or claims against the Contractor.
- (8) Notwithstanding the foregoing, where the Contractor and the Consultant can agree upon another method of determining the amount of the consideration to be paid to the Contractor under the provisions of the Section, such method, subject to the approval of the University, may, at the option of the University, be substituted for the method set forth above.

## **ARTICLE III**

### **Time of Performance**

#### **Section 3.01 Commencement, Prosecution and Completion of Work**

- (1) The Contractor agrees that it will begin the work herein embraced within ten (10) calendar days after the Contract approval date and that it will prosecute the same with such diligence that all work covered by the Contract shall be entirely completed and performed on or before the time specified on page A-1 of the Agreement.
- (2) The Contractor further agrees that time is of the essence in this Contract and that the work shall be prosecuted in such manner and with sufficient plant and forces to complete all the work by the specified completion date.

#### **Section 3.02 Time Progress Schedule**

- (1) Within thirty (30) calendar days after receipt of the Notice of Award, the Contractor, unless otherwise directed by the University, shall submit to the University and the Consultant for their approval its proposed working plan and schedule for its first ninety (90) calendar days of operation. The working plan and schedule shall be in the form of suitable charts, diagrams or bar graphs and shall be based on the Contractor's logic and time estimates. Such plan and schedule shall be sufficiently detailed to show clearly, in sequence, all salient features of the work of each trade including: the anticipated time of commencement and completion of such work and the interrelationship between such work, submission of Shop Drawings and Samples for approval, approval of Shop Drawings and Samples, placing of orders of materials, fabrication and delivery of materials, installation and testing of materials, contiguous or related work under other contracts, and other items pertinent to the work.
- (2) Within ninety (90) calendar days after receipt of the Notice of Award, the Contractor, unless otherwise directed by the University, shall submit to the University and the Consultant for their approval its proposed working plan and schedule for all the work covered by the Contract. Said proposed working plan and schedule shall be prepared in accordance with the form and requirements set forth in the preceding paragraph.
- (3) The aforesaid proposed working plan and schedule shall be revised by the Contractor until they are satisfactory to the University and the Consultant, and the same shall be periodically revised thereafter and submitted by the Contractor to the University and the Consultant for approval at such time or times as the University or the Consultant may request.
- (4) The proposed working plan and schedule, including any revision or revisions thereof, when approved by both the University and the Consultant shall be known as the time progress schedule. The time progress schedule, as the same may be revised from time to time by the Contractor and approved by the University and the Consultant, shall be strictly adhered to by the Contractor.
- (5) If through the fault of the Contractor or any subcontractor the Contractor shall fail to adhere to the time progress schedule, it must promptly adopt such other and additional means and methods of construction as will make up for the time lost and will assure completion in accordance with such schedule.
- (6) The University's or the Consultant's approval of the Contractor's time progress schedule or of its time, means and/or methods of construction, including any revisions thereof, and/or their failure to reject the same shall not relieve the Contractor of its obligation to accomplish the result required by the Contract, nor shall the exercise of such right to reject, create or give rise to any claim, action or cause of action, legal, equitable or otherwise, against the Consultant or the University.

#### **Section 3.03 Time Schedule for Shop Drawings and Samples**

- (1) Within sixty (60) calendar days after the date specified for the commencement of the work, the Contractor, unless otherwise directed by the Consultant, shall submit to the latter for approval a proposed time schedule covering the preparation and submission of all Shop Drawings and Samples. The proposed schedule will be revised by the Contractor until it is satisfactory to the Consultant and it shall be periodically revised thereafter and submitted by the Contractor to the Consultant for approval at such time or times as the Consultant may request.
- (2) The aforesaid schedule, as the same may be revised from time to time by the Contractor, after approval by the Consultant, shall be strictly adhered to by the Contractor.

#### **Section 3.04 Notice of Conditions Causing Delay**

- (1) Within ten (10) working days after the commencement of any condition which is causing or may cause delay in completion, the Contractor must notify the Consultant and the University in writing of the effect, if any, of such condition upon the time progress schedule, and must state why and in what respects, if any, the condition is causing or may cause such delay.

- (2) Failure to strictly comply with this requirement may, in the discretion of the University, be deemed sufficient cause to deny any extension of

time on account of delay in completion arising out of or resulting from any change, extra work, suspension, or other condition.

### Section 3.05 Extension of Time

- (1) An extension or extensions of time for the completion of the work may be granted by the University subject to the provisions of this Section, but only upon written application therefore by the Contractor to the University and the Consultant.
- (2) An application for an extension of time must set forth in detail the source and the nature of each alleged cause of delay in the completion of the work, the date upon which each such cause of delay began and ended and the number of days of delay attributable to each of such causes. It must be submitted prior to completion of the work.
- (3) If such an application is made, the Contractor shall be entitled to an extension of time for delay in completion of the work caused solely: (a) by the acts or omissions of the University, its trustees, officers, agents or employees; or (b) by the acts or omissions of other contractors, not including subcontractors of the Contractor, on this Project; or (c) by unforeseeable supervening conditions entirely beyond the control of either party hereto (such as, but not limited to, acts of God or the public enemy, war or other national emergency making performance temporarily impossible or illegal, or strikes or labor disputes).
- (4) The Contractor shall, however, be entitled to an extension of time for such causes only for the number of calendar days of delay which the University may determine to be due solely to such causes, and then only if the Contractor shall have strictly complied with all of the requirements of this Section and Section 3.04. The University shall make such determination within ninety (90) calendar days after receipt of the Contractor's application for an extension of time; provided, however, said application complies with the requirements of this Section.
- (5) The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently, but, if at all, only for the actual period of delay in completion of the work as determined by the University, irrespective of the number of causes contributing to produce such delay. If one of several causes of delay operating concurrently results from any act, fault or omission of the Contractor or of its subcontractors or materialmen, and would of itself (irrespective of the concurrent causes) have delayed the work, no extension of time will be allowed for the period of delay resulting from such act, fault or omission.
- (6) The granting of an application for an extension of time for causes of delay other than those herein referred to shall be entirely within the discretion of the University.
- (7) If the Contractor shall claim to have sustained any damages by reason of delays, extraordinary or otherwise, or hindrances which it claims to be due to any action, omission, direction or order by the University or the Consultant, the Contractor shall be entitled only to an extension of time as hereinabove provided and shall not have or assert any claim or prosecute any suit, action, cause of action or proceeding against the University based upon such delays or hindrances, unless such delays or hindrances were caused by the University's bad faith or its willful, malicious, or grossly negligent conduct, or unanticipated delays, or delays so unreasonable that they constitute an intentional abandonment of the contract by the University, or delays resulting from the University's breach of a fundamental obligation of the contract.

### Section 3.06 Contractor's Progress Reports

After commencement of the work the Contractor shall furnish the Consultant with written monthly reports setting forth the condition and general progress of the work, the percentage of each part of the work that has been finished, those parts of the work which have been completed within the scheduled time and those parts of the work which have not been finished within the scheduled time, and the general progress of the work that is being performed away from the site and the approximate date when such work will be finished and delivered to the site.

## ARTICLE IV

### Payment

#### Section 4.01 Compensation to Be Paid Contractor

The University shall pay to the Contractor and the latter shall accept as full and complete payment for the performance of this Contract, subject to additions or deductions as provided herein, the sum indicated on page 1 of this Agreement which sum is the amount of the total contract compensation. The Contractor shall provide complete and accurate billing invoices to the University in order to receive payment for its services. Billing invoices submitted to the University must contain all information and supporting documentation required by the University and the Office of the State Comptroller (OSC). **Payment for invoices submitted by the Contractor shall only be rendered electronically** unless payment by paper check is expressly authorized by the Vice President for Administration or designee, in her/his sole discretion, due to extenuating circumstances. Such electronic payment shall be made in accordance with ordinary New York State procedures and practices. The Contractor shall comply with the OSC procedures to authorize electronic payments. Authorization forms are available at the OSC website at [www.osc.state.ny.us/epay/index.htm](http://www.osc.state.ny.us/epay/index.htm), by email at [epunit@osc.state.ny.us](mailto:epunit@osc.state.ny.us) or by telephone at 518-474-4032. The Contractor acknowledges that it will not receive payment on any invoices submitted under this contract if it does not comply with the OSC's electronic payment procedures, except where the Vice President or designee has expressly authorized payment by paper check as set forth above.

#### Section 4.02 Value of Omitted and Extra Work

- (1) The amount by which the Contract consideration is to be increased or decreased by any Change Order shall be determined by the University by one or more of the following methods:
  - a. By accepting an amount agreed upon by both parties, which amount is to be calculated in a manner similar to that provided in

subdivision c hereof.

- b. By applying the applicable price or prices set forth in the attached Schedule "I" of this Agreement or by applying a unit price agreed to by both parties. Subject to the provisions of Sections 4.04, this method must be used if the Contract Documents contain applicable unit prices.
- c. By estimating the fair and reasonable cost of: (i) labor, including all wages, required wage supplements and insurance required by law (workers' compensation, social security, disability, unemployment, etc.) paid to or on behalf of foremen, workers and other employees below the rank of superintendent directly employed at the site of the Project; (ii) materials; and (iii) equipment, excluding hand tools, which, in the judgment of the University, would have been or will be employed exclusively and directly on the omitted work or extra work, as the case may be; and, in the case of extra work, where the same is performed directly by the Contractor, by adding to the total of such estimated costs a sum equal to 15 percent thereof, but, where the extra work is performed by a subcontractor, by adding a sum equal to 15 percent of said costs for the benefit of such subcontractor, and by adding, for the benefit of the Contractor (no further allowance will be made where extra work is performed by the sub-subcontractor), an additional sum equal to 10 percent of the first \$10,000 of the above-estimated costs, including the subcontractor's percentage override, plus 5 percent of the next \$90,000 of the total of said items, plus 3 percent of any sum in excess of \$100,000 of the total of said items. For the purposes of the aforesaid percentage overrides, the words "extra work" shall be defined as a complete item of added, modified or changed work as described in the Consultant's written instructions to the Contractor. Such "extra work" may include the work of one or more trades and/or subcontractors or sub-subcontractors and shall include all labor, materials, plant, equipment, tools and all incidentals directly and/or indirectly necessary, related, involved in or convenient to the successful completion of the extra work item. Where the Consultant's aforesaid written instructions to the Contractor involve both an increase and a reduction in similar or related work, the above percentage overrides will be applied only on the amount, if any, the cost of the increased work exceeds the cost of the reduced work.

All profit, overhead and expense of whatsoever kind and nature, other than those set forth above in items (i) through (iii), of the Contractor, its subcontractors and sub-subcontractors, are covered by the aforesaid percentage overrides and no additional payment therefore will be made by the University. The University may make such cost estimate either before or after the extra work is completed by the Contractor.

- d. By determining the actual cost of the extra work in the same manner as in the above subdivision c except that actual costs of the Contractor shall be utilized in lieu of estimated costs. The University shall have the option of utilizing this method provided it notifies the Contractor of its intent to do so prior to the time the Contractor commences performance of such extra work.
- (2) Irrespective of the method used or to be used by the University in determining the value of a Change Order, the Contractor, within fifteen (15) working days after a request for the same, must submit to the University and the Consultant a detailed breakdown of the Contractor's estimate of the value of the omitted and/or extra work.
  - (3) For the purposes of paragraph (1) hereof, the cost of equipment shall be determined, irrespective of the actual price for any rental or actual cost associated with such equipment and irrespective of whether the equipment is or is not owned by the Contractor, as follows: (a) for the first 40 hours of use by taking the monthly rate listed in the "Green Book" (the publication of the Associated Equipment Distributors of Oakbrook, Illinois) and dividing the same by 176 hours to establish an hourly rate and then multiplying such hourly rate by the actual number of hours that the equipment was used; and (b) for any period of time in excess of the first 40 hours of use by taking 50 percent of the hourly rate established in accordance with the above for equipment used for periods of less than 40 hours, and then multiplying such rate by the actual number of hours in excess of 40 hours that the equipment was used. In the event that the "Green Book" does not list the item of equipment used, the applicable rate shall be determined in the same manner as that set forth above except that the monthly rate shall be that set forth in the "Blue Book" (published by Equipment Guidebook Co. of Palo Alto, California). If no listing or rates for an item of equipment is contained in either the "Green Book" or the "Blue Book", the University shall determine the reasonable rate of rental of the particular item of equipment by such other means as it finds appropriate. The editions of the "Green Book" and the "Blue Book" to be used shall be those in effect on the date of the receipt of bids for this Contract. None of the provisions of the "Green Book" or the "Blue Book" shall be deemed referred to or included in this Contract excepting only the aforesaid monthly rates. To the cost of equipment as determined above, there is to be added the actual cost of gasoline, oil, grease and maintenance required for operation of such equipment and, in the case of equipment utilized only for extra work when, in the opinion of the Consultant, suitable equipment therefore was not available on the site, the reasonable cost of transporting said equipment to and from the site. Notwithstanding the foregoing, if the Consultant should determine that the nature or size of the equipment used by the Contractor in connection with the extra work is larger or more elaborate, as the case may be, than the size or nature of the minimum equipment determined by the Consultant to be suitable for the extra work, the cost of equipment will not be based upon the equipment used by the Contractor but instead will be based on the smallest or least elaborate equipment determined by the Consultant to have been suitable for the performance of the extra work.
  - (4) Unless otherwise specifically provided for in a Change Order, the compensation specified therein for extra work includes full payment for both the extra work covered thereby and for any damage or expense caused the Contractor by any delays to other work to be done under the Contract resulting from or on account of said extra work, and the Contractor waives all rights to any other compensation for said extra work, damage or expense.

### **Section 4.03 Adjustment for Bond and Insurance Premiums**

Upon final acceptance of the work to be performed under this Contract, the University shall adjust the Contract consideration to reflect any changes in the cost of all required Bonds and liability and builder's risk insurance premiums which the Contractor had to pay for on all extra work and would have had to furnish and pay for on all omitted work. Unless such cost is agreed upon by the University and the Contractor, the University shall calculate and determine the amount of the adjustment in the Contract consideration by estimating such cost.

### **Section 4.04 Unit Prices**

- (1) Except as otherwise provided in the second paragraph of this Section, the unit prices, set forth in the attached Schedule I will be binding upon

both the University and the Contractor in determining the value of omitted and/or extra work, and, in the case of extra work, such unit prices shall be deemed to include all profit, overhead and expenses of whatever kind and nature of the Contractor, its subcontractors and sub-subcontractors, and the Contractor agrees that it shall make no claim for any profit, overhead, expense or percentage override in connection therewith.

- (2) Where Schedule I sets forth a unit price for added and/or deducted work, the University shall have the option, whenever it is found that the quantity of changed work varies by more than 15 percent from the quantity that is stated or that can be determined by the Contract Documents at the time of execution thereof, to accept or reject such unit price for the quantity that the changed work varies by more than 15 percent from the stated or determinable quantity. Where a quantity is not specifically stated in the Contract Documents, the University's determination of the amount of said quantity included in the Contract Documents shall determine the applicability of this paragraph. Where the University, pursuant to the foregoing provisions, exercises its aforesaid option, the amount of the increase or decrease in the Contract consideration for the quantity of work which varies by more than 15 percent from the stated or determinable quantity shall be determined in accordance with the provisions of Section 4.02 of the Agreement as if there was no unit price therefore set forth in said Proposal.

#### **Section 4.05 Allowances**

- (1) The Contractor acknowledges that the Contract consideration includes the allowances set forth in the attached Schedule I and, except for quantitative allowances, it agrees to cause the work covered thereby to be done by such contractors for such sums as the University may direct. Where cash allowances are provided, the allowances shall be deemed to include the purchase of the materials and/or equipment and the delivery of the same to the job site. Unless otherwise specified in the Contract Documents, cash allowances do not include the proper installation of the materials and/or equipment or the connection for final utilities thereto; the cost of said installation and/or connection having been included in the amount of the Contract consideration.
- (2) The Contractor acknowledges that the Contract consideration includes such sums for expenses and profit on account of cash allowances as it deems proper and that it shall make no claim for expenses or profit or any percentage override in addition thereto; said items having been included in the amount of the Contract consideration.
- (3) In the event any cash allowance listed below is either higher or lower than the cost of having the work done in accordance herewith, the Contract consideration shall be adjusted to reflect such variance, the amount of said adjustment to be the difference between the amount of the allowance and the actual cost of performing the work covered thereby.
- (4) When quantitative allowances are provided, progress payments thereof to the Contractor will be based upon the applicable unit prices set forth in the attached Schedule I, subject, however to the provisions of paragraph (2) of Section 4.04. In the event any of said quantitative allowances are more than or less than the actual quantity of work performed, the Contract consideration shall be adjusted to reflect such variance, the amount of said adjustment to be determined in accordance with the provisions of Section 4.02 and Section 4.04 of the Agreement.

#### **Section 4.06 Deductions for Unperformed and/or Uncorrected Work**

- (1) Without prejudice to any other rights, remedies or claims of the University, in the event that the Contractor at any time fails or neglects to supply working forces and materials of the proper quantity and quality necessary, in the opinion of the Consultant or the University, to comply with the approved time progress schedule, or fails in any respect to prosecute the work with promptness and diligence or causes by any action or omission the stoppage or delay of or interference with the work of any other contractor having a contract with the University, or fails in the performance of any obligations and responsibilities under this Contract, then, and in that event, the University, acting itself or through the Consultant, may, upon three (3) working days' notice to the Contractor, either itself provide or have any other contractor provide any and all labor or materials or both necessary, in its opinion, to correct any aforesaid deficiency of the Contractor, and the University will thereafter back charge the Contractor by issuing a Change Order reducing the amount of the Contract consideration for all costs and expenses it incurs in connection with the correction of such deficiency.
- (2) Notwithstanding any provisions in the Contract Documents to the contrary, if the University deems it inexpedient to correct work not done in accordance with the Contract or any work damaged as a result thereof, it shall notify the Contractor of such fact and the latter shall not remedy or correct the same. In such event, however, the amount of the Contract consideration shall be decreased by an amount, determined by the University, which is equal to the difference in value of the work as performed by the Contractor and the value of the work had it been satisfactorily performed in accordance with the Contract or which is equal to the cost of performing the corrective work, whichever shall be the higher amount.

#### **Section 4.07 Liquidated Damages**

In the event that the Contractor shall fail to substantially complete all the work within the time fixed for such completion on page A-1 of the Agreement, or within the time to which such completion may have been extended, or in the event that the Contractor abandons the work and the same is not substantially completed within the aforesaid time for such completion, the Contractor must pay to the University as damages for each calendar day of delay in completing the work the amount set forth on page A-1. In view of the difficulty of accurately ascertaining the loss which the University will suffer by reason of delay in completion of the work hereunder, said sum is hereby fixed and agreed as liquidated damages which the University will suffer by reason of such delay and not as a penalty. The University may deduct and retain out of the monies which may become due hereunder to the Contractor the amount of any such liquidated damages and, in case the amount which may become due to the Contractor under the provisions of the Contract may be less than the liquidated damages suffered by the University, the Contractor shall pay the difference, upon demand, to the University.

#### **Section 4.08 Contract Breakdown**

Prior to the submission of its first application for a progress payment, the Contractor shall present to the University and the Consultant for their approval a detailed schedule showing the breakdown of the Contract consideration. Such schedule must contain the amount estimated for each part

of the work and quantity survey for each part of the work. It shall also list the estimated value of the Contractor's guarantee obligations under the provisions of the Contract Documents, which is hereby fixed at \$5,000 or one-half of one percent (1/2%) of the Contract award amount, whichever is the lesser sum. Such schedule shall be revised by the Contractor until the same shall be satisfactory to the University and the Consultant and shall not be changed after the University and the Consultant have approved the same. The amounts set forth in the schedule will not be considered as fixing the basis for additions to or deductions from the Contract consideration.

#### **Section 4.09 Prompt Payment Requirements**

- (1) For the purposes of Article XI-A of the State Finance Law, the campus for which the work is being performed is the University's designated payment office. Applications for payment must contain the approval of the Consultant before being submitted to the University.
- (2) Whenever the Consultant's approval of an application for payment is required under the Contract, the Consultant shall have fifteen (15) calendar days after receipt of such application to inspect the work before acting on the application.
- (3) This Contract is subject to the approval of the Comptroller of the State of New York. Until such approval is given, the thirty (30) day period referred to in Article XI-A of the State Finance Law for the payment of invoices without interest shall not begin.

#### **Section 4.10 Progress Payments**

- (1) Unless otherwise provided in the Contract, progress payments will be made as the work progresses upon applications submitted by the Contractor and approved by the Consultant and the University. Payment of such approved applications shall be made by the University within thirty (30) days after such approval has been given.
- (2) The University shall make progress payments to the Contractor on the basis of such approved applications, less an amount equal to 5 percent thereof, plus an amount necessary, in the University's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged, which it shall reserve from each such payment until all of the work covered by the Contract has been completed.
- (3) When the University and the Consultant have determined that all the work is substantially completed, or that a substantial portion of the permanent construction has been completed and accepted, the University shall make a progress payment to the Contractor, on the basis of an application submitted by the Contractor and approved by the Consultant and the University, which shall reduce the unpaid amount due to the Contractor under the terms of the Contract, including all monies retained by the University from previous progress payments to the Contractor, to an amount equal to two (2) times the cost, estimated by the Consultant, of performing, in accordance with the Contract, all uncompleted, unaccepted and corrective work, plus an amount necessary, in the University's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of work are satisfactorily completed or corrected, the University shall make progress payments to the Contractor, on the basis of applications submitted by the Contractor and approved by the University and the Consultant, covering said items of work less an amount necessary, in the University's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

#### **Section 4.11 Applications for Progress Payments**

The Contractor shall prepare all applications for progress payments for work performed, together with supporting data and computations as are deemed necessary by the Consultant to determine the accuracy of the application. The application for payment shall be submitted on the form prescribed by the University. Failure of the Contractor to submit applications for progress payments, or lack of complete and accurate supporting data, shall be sufficient reason for withholding payment until such omissions or errors are rectified. Unless otherwise directed, such applications, signed and certified as correct by the Contractor, shall be delivered by the Contractor to the Consultant once each month showing the total value of work completed and in place on the last day of the payment period covered by the application.

#### **Section 4.12 Progress Payments for Materials Delivered to Site**

- (1) Progress payments made in accordance with Section 4.10 shall include a payment for materials and equipment to be furnished and installed under the Contract, after such materials and equipment have been delivered and accepted at the site of the work.
- (2) Materials and equipment for which such progress payment has been made shall not be removed from the site, shall be stored until incorporated into the work in a location approved by the Consultant and shall be adequately protected from fire, theft and vandalism, the effects of the elements and any other damage whatsoever, and shall at all times be available for inspection by the Consultant and the University.

#### **Section 4.13 Transfer of Title to Materials Delivered to Site**

Title to all supplies and materials to be furnished or provided by the Contractor to the University pursuant to the provisions of the Contract Documents shall immediately vest in and become the sole property of the University upon delivery of such supplies and materials to the site. Notwithstanding such transfer of title, the Contractor shall have the full continuing responsibility to install such materials and supplies, protect them, maintain them in proper condition and forthwith repair, replace and make good any damage thereto without cost to the University until such time as the work covered by the Contract is fully accepted by the University. Such transfer of title shall in no way affect any of the Contractor's obligations under the Contract. In the event that, after title has passed to the University, any of such supplies and materials are rejected as being defective or otherwise unsatisfactory, title to all such supplies and materials shall be deemed to have been transferred back to the Contractor.

#### **Section 4.14 Progress Payments for Materials Stored Off Site**

- (1) Progress payments made in accordance with Section 4.10 shall include a payment for materials and equipment which are in short and/or critical supply or have been specially fabricated for the Project. Materials and equipment, for which a progress payment is made pursuant to the preceding sentence, shall be stored by the Contractor, after fabrication, until such time as their delivery to the site is required, at a facility and location approved by the Consultant; shall be adequately protected from fire, theft and vandalism, the effects of the elements and any other damage whatsoever; and shall at all times be available for inspection by the Consultant and the University. No progress payment shall, however, be made for said materials and equipment until:
  - a. The Contractor furnishes to the University a bill of sale listing quantity and costs of said materials and equipment f.o.b. point of origin;
  - b. The Consultant shall have inspected said materials and equipment and recommended payment therefore; and
  - c. The Contractor furnishes to the University a builder's risk insurance policy, with the broad form extended coverage endorsement, for said materials and equipment, in an amount equal to 100 percent of the value thereof, which policy shall be maintained, at the sole cost and expense of the Contractor, until said materials and equipment have been incorporated into the Project. The said insurance policy shall contain a provision that the loss, if any, is to be made adjustable with and payable to the University as trustee for the insured, i.e., the University and the Contractor, and a provision that it shall not be changed or canceled and that it will be automatically renewed upon expiration and continued in force unless the University is given fifteen (15) days' written notice to the contrary.
- (2) Materials and equipment for which a progress payment has been made by the University pursuant to this Section shall be, become and remain the sole property of the University; provided, however, that the Contractor shall have the full continuing responsibility to install such materials and equipment, to deliver it to the site, to protect it, to maintain it in proper condition and to forthwith repair, replace and make good any damage thereto without cost to the University until such time as the work covered by the Contract is fully accepted by the University. Such transfer of title shall in no way affect any of the Contractor's obligations under the Contract.

#### **Section 4.15 Withholding of Progress Payments**

Notwithstanding anything contained in the Contract to the contrary, the University may withhold payment of all or any part of a progress, final or guarantee payment, in such an amount as it may deem proper to enforce the provisions of the Contract and to satisfy the claims of third parties, when:

- a. The University shall learn of any claim, of whatever nature or kind, against the University or the Contractor, which in any way arises or is alleged to arise out of or as a result of or in connection with the performance by the Contractor of the work covered by the Contract or out of or in connection with the Contractor's operations or performance at or in the vicinity of the construction site, that, in the opinion of the University, may not be adequately covered by insurance.

If an action on such claim is timely commenced and the liability of the University and/or the Contractor shall have been established therein by a final judgment of a court of competent jurisdiction, or if such claim shall have been admitted by the Contractor to be valid, the University shall pay such judgment or admitted claim out of the monies retained by it under the provisions of the Contract and return the balance, if any, without interest, to the Contractor.

The University may withhold from the Contractor any payments retained by it until such time as all such claims are either satisfied or barred by law from being presented. At such time the University, upon written demand by the Contractor, shall return to the Contractor the amount so withheld, without interest.

- b. The Contractor has not complied with any lawful or proper direction of the Consultant or the University or their representatives concerning the work covered by the Contract or the performance of the Contract or the production of records as required under the provisions of the Contract.
- c. There exists any of the conditions, listed in Section 2.26, which would allow the University to declare the Contractor in default of the whole or any part of the work.
- d. The Contractor is a foreign contractor and has not furnished satisfactory proof that all taxes due by such Contractor under the provisions of the Tax Law have been paid. The Certificate of the New York State Tax Commission to the effect that all such taxes have been paid shall be conclusive proof of the payment of such taxes. The term "foreign contractor" as used herein means, in the case of an individual, a person who is not a resident of the State of New York; in the case of a partnership, one having one or more partners not a resident of the State; and in the case of a corporation, one not organized under the laws of the State of New York.
- e. The Contractor, upon request of the University at any time after the initial progress payment by the University to the Contractor, fails to furnish the University with such documentary evidence that the University may deem necessary to prove to it that material and labor paid for by the University under previous applications for payment submitted have been paid for by the Contractor and that there are no outstanding claims or liens in connection therewith or fails to satisfy the University that the Contractor, with good cause, has sufficiently provided for the payment and/or satisfaction of claims for said material and labor.

#### **Section 4.16 Lien Law**

The attention of the Contractor is specifically called to the provisions of the Lien Law of the State of New York, wherein funds received by a Contractor for a public improvement are declared to constitute trust funds in the hands of such Contractor to be applied first to the payment of certain claims.

#### **Section 4.17 Substitution of Securities for Retainage**



Any time after 50 percent of all the work has been completed, the University, if the progress and performance of the work is satisfactory to it, on request of the Contractor, will allow the Contractor to withdraw up to 50 percent of the aforesaid amount retained by the University by depositing with the Comptroller of the State of New York government securities, of the type and kind specified in Section 139 of the State Finance Law, having a market value not exceeding par, at the time of deposit, equal to the amount so withdrawn. The Comptroller of the State of New York shall, from time to time, collect all interest or income on the obligations so deposited, and shall pay the same, when and as collected, to the Contractor. If the deposit is in the form of coupon bonds, the coupons as they respectively become due shall be delivered to the Contractor; provided, however, that the Contractor shall not be entitled to interest or coupons or income on any of the deposited securities, the proceeds of which have or will be used or applied by the University. In the event that the Contractor does not, in accordance with the terms and provisions of the Contract, comply with and fulfill all of its obligations and responsibilities thereunder, the Comptroller of the State of New York shall have the right to sell, assign, transfer or otherwise dispose of the aforesaid securities and the University shall have the right to use and apply all or any part of the monies obtained by the Comptroller of the State of New York from such a sale, assignment, transfer or disposition or from the collection of interest or income from said securities to the performance and fulfillment of said obligations and responsibilities. Notwithstanding the foregoing, when the University makes a payment under Section 4.10 (3) of the Agreement, it will return to the Contractor, as part of such payment, its substituted securities, and thereafter all retention of the University shall be in funds and not in substituted securities.

#### **Section 4.18 Final Payment**

Upon acceptance of all the work, except for the Contractor's guarantee obligations under Section 2.25 of the Agreement and the Contractor's guarantee obligations under any provision of the Specifications, the contractor shall prepare and submit to the University and the Consultant, for their approval, a final application for payment, which the University, within thirty (30) days after its approval of the same, shall pay. Such application and payment shall be in an amount equal to 100 percent of the Contract consideration, excluding the Contractor's guarantee obligations (reference Section 4.08), less:

- a. All previous payments by the University to the Contractor;
- b. All deductions authorized to be made by the University under the Contract; and
- c. An amount necessary, in the University's judgment, to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged.

#### **Section 4.19 Acceptance of Final Payment**

- (1) The acceptance by the Contractor, or by anyone claiming by or through it, of the final payment shall, except with respect to the amount retained by the University pursuant to the provisions of subdivisions b and c of Section 4.18 of the Agreement, constitute and operate as a release to the University from any and all claims of any liability for anything theretofore done or furnished for or relating to or arising out of the work covered by the Contract and for any prior act, neglect or default on the part of the University or any of its trustees, officers, agents or employees in connection therewith.
- (2) Should the Contractor refuse to accept the final payment as tendered by the University or should the Contractor refuse to execute the final application for payment without protest and without reserving any rights or claims against the University, it shall constitute a waiver of any right to interest on the amount of the payment so tendered and/or on the amount set forth in said final application for payment.

#### **Section 4.20 Guarantee Payment**

- (1) Subject to the provisions of the second paragraph of this Section, at the expiration of one (1) year after the University has accepted all the work covered by the Contract, the Contractor shall prepare and submit to the University and the Consultant, for their approval, a guarantee application for payment, which the University, within thirty (30) days after its approval of the same, shall pay. Such application and payment shall be in an amount equal to the monies retained by the University for the Contractor's guarantee obligations under the Agreement, less any monies deducted by the University under this Section. The Contractor shall not be entitled to any interest on the monies retained by the University pursuant to subdivision c of Section 4.18 of the Agreement.
- (2) In the event the Contractor does not, in accordance with the terms and provisions of the Contract, complete all corrective work or comply with and fulfill its contractual obligations, the University may use and apply all or any part of the monies retained by it to have such work or obligations performed or fulfilled by a person, firm or corporation other than the Contractor. The obligations of the Contractor, under the terms and provisions of the Contract, shall not, however, be limited to the monies retained by the University pursuant to the provisions of the Contract.
- (3) No payments may be made under this agreement for work completed more than 365 days after  
{Insert Contract Closing Date}

Unless the date/duration listed on page A-1, is extended in writing by the Fund, and approved by OSC.

#### **Section 4.21 Acceptance of Guarantee Payment**

The acceptance by the Contractor, or by anyone claiming by or through it, of the guarantee payment shall constitute and operate as a release to the University from any and all claims in connection with monies retained by the University. Should the Contractor refuse to accept the guarantee payment as tendered by the University or should the Contractor refuse to execute the guarantee application for payment without protest and without reserving any rights or claims against the University, it shall constitute a waiver of any right to interest on the amount of the payment so tendered

and/or on the amount set forth in said guarantee application for payment.

#### **Section 4.22 Contractor Limited to Money Damages**

Inasmuch as the Contractor can be compensated adequately by money damages for any breach of the Contract which may be committed by the University, the Contractor agrees that no default, act or omission of the University shall constitute a material breach of the Contract entitling it to cancel or rescind the same or to suspend or abandon performance thereof; and it hereby waives any and all rights and remedies to which it might otherwise be or become entitled to because of any wrongful act or omission of the University or its representatives, saving only its right to money damages.

#### **Section 4.23 No Estoppel or Waiver**

- (1) The University shall not be precluded or estopped by any inspection, acceptance, application for payment or payment, final or otherwise, issued or made under the Contract or otherwise issued or made by it, the Consultant, or any trustee, officer, agent or employee of the University, from showing at any time the true amount and character of the work performed, or from showing that any such inspection, acceptance, application for payment or payment is incorrect or was improperly issued or made; and the University shall not be precluded or estopped, notwithstanding any such inspection, acceptance, application for payment or payment, from recovering from the Contractor any damages which it may sustain by reason of any failure on its part to comply strictly with the Contract and any monies which may be paid to it or for its account in excess of those to which it is lawfully entitled.
- (2) Neither the acceptance of all or any part of the work covered by the Contract; nor any payment therefore; nor any order or application for payment issued under the Contract or otherwise issued by the University, the Consultant, or any trustee, officer, agent or employee of the University; nor any permission or direction to continue with the performance of the Contract before or after its specified completion date; nor any performance by the University of any of the Contractor's duties or obligations; nor any aid lent to the Contractor by the University in its performance of such duties or obligations; nor any delay or omission by the University to exercise any right or remedy accruing to it under the terms of the Contract or existing at law or in equity or by statute or otherwise; nor any other thing done or omitted to be done by the University, its trustees, officers, agents or employees; shall be deemed to be a release to the Contractor or its sureties from any obligations, liabilities or undertakings in connection with the Contract or the Performance Bond or a waiver of any provision of the Contract or of any rights or remedies to which the University may be entitled because of any breach thereof, excepting only a written instrument expressly providing for such release or waiver. No cancellation, rescission or annulment hereof, in whole or as to any part of the Contract, because of any breach hereof, shall be deemed a waiver of any money damages to which the University may be entitled because of such breach. No waiver by the University of any breach of the Contract shall be deemed to be a waiver of any other or any subsequent breach.

#### **Section 4.24 Limitation of Actions**

- (1) No action or proceeding shall be maintained by the Contractor, or anyone claiming under or through the Contractor, against the University, or its trustees, officers, agents or employees, upon any claim arising out of or based upon the Contract or any breach thereof or by reason of any act or omission or requirement of the University, or its trustees, officers agents or employees, unless:
  - a. Such action or proceeding is instituted in the Court of Claims for the State of New York;
  - b. The Contractor or the person claiming under or through it shall have strictly complied with all requirements relating to the giving of notices and information with respect to such claims; and
  - c. Such action or proceeding shall be commenced within one (1) year after the submission to the University of the final application for payment or, if the claim is based upon monies required to be retained for any period after the date of the final application for payment, such action is commenced within six (6) months after such monies become due and payable under the terms of the Contract; or
  - d. If the Contract is terminated or the Contractor declared in default by the University, such action is commenced within six (6) months after the date of such termination or declaration of default by the University.
- (2) Notwithstanding anything in the laws of the State of New York to the contrary, the Contractor, or anyone claiming under or through the Contractor, shall not be entitled to any additional time to begin anew any other action if an action commenced within the times herein specified is dismissed or discontinued for any reason whatsoever.

### **ARTICLE V**

#### **Protection of Rights and Property**

##### **Section 5.01 Accidents and Accident Prevention**

The Contractor shall at all times take reasonable precautions for the safety of persons engaged in the performance of the work. The Contractor shall comply fully with all applicable provisions of the laws of the State of New York, OSHA, and with all valid rules and regulations adopted or promulgated by the agencies of the State of New York pursuant thereto. The Contractor's attention is specifically called to the applicable rules and regulations, codes and bulletins of the New York State Department of Labor.

##### **Section 5.02 Adjoining Property**

The Contractor shall be required to protect all the adjoining property and to repair or replace any such properties damaged or destroyed by it, its employees or subcontractors through, by reason of or as a result of activities under, for or related to the Contract.

### **Section 5.03 Emergencies**

- (1) In case of an emergency which threatens loss or injury to persons or property, the Contractor will be allowed to act, without previous instructions from the Consultant or the University, in a diligent manner, to the extent required to avoid or limit such loss or injury, and it shall notify the Consultant and the University immediately thereafter of the action taken by it and of such emergency. Where the Contractor has not taken action but has notified the Consultant or the University of an emergency which threatens loss or injury to persons or property, it shall act in accordance with the instructions and/or authorization by the Consultant or the University.
- (2) In the event that the Contractor performs extra work in accordance with the preceding paragraph, it will be compensated therefore in accordance with the provisions of Section 4.02.

### **Section 5.04 Fire Safety**

- (1) In the event that a municipal fire alarm box is not located within 300 feet from the site of the Project, the Contractor will be required to provide at the site of the Project, at a location approved by the Consultant, a private unlisted telephone reserved for fire calls only. The phone must be in addition to regular business phones and a rule prohibiting its use for purposes other than alarm for fire or other emergencies must be strictly enforced. The phone itself should be colored red and be located at a point quickly available to all employees, including watchmen. Clear instructions for the sending of a fire alarm should be conspicuously posted by the phone and all personnel customarily at work near the phone shall be acquainted with the procedure. If such a phone is required, the Contractor, at its sole cost and expense, must provide the same from the time the University first approves the Contract breakdown to be submitted by the Contractor pursuant to the provisions of Section 4.08 up until the time the University accepts all the work covered by the Contract.
- (2) All solid fuel salamanders and U. L. approved heaters used by the Contractor or any of its subcontractors shall be arranged in a standard manner. All other salamanders used by the Contractor or any of its subcontractors shall require constant attendance of competent persons on each floor where in use.
- (3) All temporary fabric used by the Contractor or any of its subcontractors for curtains or awnings shall be either non-combustible or flame retarded so that it will not burn or propagate flame.

### **Section 5.05 Risks Assumed by Contractor**

- (1) The Contractor solely assumes the following distinct several risks whether they arise from acts or omissions (whether negligent or not and whether supervisory or otherwise) of the Contractor, of the University, of third persons or from any other cause, including unforeseen obstacles and difficulties which may be encountered in the prosecution of the work covered by the Contract, whether such risks are within or beyond the control of the Contractor and whether such risks involve a legal duty, primary or otherwise, imposed upon the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York or the State University of New York, excepting only risks which arise from defects in maps, plans, designs or Specifications prepared, acquired or used by the Consultant or the University, from the negligence of the University, its agents or employees or from affirmative acts of the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York or the State University of New York or their trustees, officers, agents or employees committed with intent to cause the loss, damage and injuries herein below set forth:
  - a. The risk of loss or damage, direct or indirect, to the work covered by the Contract or to any plant, equipment, tools, materials or property furnished, used, installed or received by the University or by the Contractor or any subcontractor, materialman or worker performing services or furnishing materials for the work covered hereunder.

The Contractor shall bear such risk of loss or damage until the work covered by the Contract has been fully accepted by the University or until completion of removal of such plant, equipment, tools, materials or property from the construction site and the vicinity thereof, whichever event occurs last. In the event of such loss or damage, the Contractor shall forthwith repair, replace and/or make good any such loss or damage without cost to the University.
  - b. The risk of claims, just or unjust, by third persons against the Contractor, the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York, or the State University of New York on account of wrongful death, bodily injuries and property damage, direct or consequential, loss or damage of any kind whatsoever arising or alleged to arise out of or as a result of or in connection with the performance by the Contractor of the work covered by the Contract (whether actually caused by or resulting from the performance of the Contract) or out of or in connection with the Contractor's operations or presence at or in the vicinity of the construction site. The Contractor shall bear such risk for all such deaths, injuries, damages or losses sustained or alleged to have been sustained prior to the final acceptance by the University of all work covered by the Contract. The Contractor shall also bear the risk of claims for wrongful death occurring subsequent to said final acceptance provided such death is caused, contributed to or is a consequence of bodily injuries sustained or alleged to have been sustained prior to said final acceptance.
- (2) The Contractor shall indemnify and save harmless the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees against all claims described above and for all costs and expenses incurred by them in the defense, settlement or satisfaction thereof, including attorneys' fees and court costs. If so directed, the Contractor shall at its own expense defend against such claims, in which event it shall not, without obtaining express advance permission from Counsel of the University, raise any defense involving in any way jurisdiction of the tribunal over the University, governmental nature of the University or the provisions of any statutes respecting suits against the University.
- (3) Neither the University's final acceptance of the work to be performed hereunder nor the making of any payment shall release the Contractor from its obligations under this Section. The enumeration elsewhere in the Contract of particular risks assumed by the Contractor or of particular claims for which it is responsible shall not be deemed to limit the effect of the provision of this Section or to imply that it assumes or is responsible for only risks or claims of the type enumerated.

## Section 5.06 Compensation and Liability Insurance

- (1) The Contractor shall procure and maintain, at its own cost and expense, until final acceptance by the University of all the work covered by this Contract, the following kinds of insurance:

- a. Workers' Compensation Insurance.

A policy complying with the requirements of the laws of the State of New York.

- b. General Liability and Property Damage Insurance.

A standard general comprehensive liability insurance policy or a commercial general liability insurance policy issued to and covering the liability of the Contractor for all work and operations under this Contract, including, but not limited to, contractual and completed operations coverage. Such policy shall be written by a company licensed or approved as an excess line liability company by the New York State Department of Insurance. The coverage under such policy shall not be less than the following limits:

Bodily Injury and Property Damage Liability  
\$ 1,000,000 Each Occurrence  
\$ 2,000,000 Aggregate

The aforesaid insurance requirements will be deemed met by the Contractor's procurement and maintenance of either of the aforesaid policies and, in addition thereto, an umbrella policy providing similar coverage; provided, however, that the total amount of insurance coverage is at least equal to the requirements above set forth.

- c. Automobile Liability and Property Damage Insurance.

A policy covering the use in connection with the work covered by the Contract Documents of all owned, non-owned and hired vehicles bearing, or, under the circumstances under which they are being used, required by the Motor Vehicle Laws of the State of New York to bear license plates. The coverage under such policy shall not be less than the following limit:

Bodily Injury and Property Damage Liability  
\$ 1,000,000 Each Occurrence

- d. Owner's Protective Liability Insurance.

A policy issued to and covering the liability for damages imposed by law upon the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees, with respect to all operations under the Contract by the Contractor and its subcontractors, and/or their interest in the Project and the property upon which work under the Contract is to be performed, including omissions and supervisory acts of the former. Said insurance shall be in the same amounts as that required under subdivision b above and shall be written by a company licensed or approved as an excess line liability company by the New York State Department of Insurance.

- e. Asbestos Abatement Insurance.

A liability insurance policy issued to and covering the liability, of the Contractor and/or subcontractor engaged in the removal, handling or wrapping of asbestos, if any of such work is to be performed under the Contract, for bodily injury, illness, sickness or property damage caused by exposure to asbestos in an amount not less than \$1,000,000 per occurrence and \$2,000,000 aggregate. The Contractor and/or its aforesaid subcontractor shall either obtain an endorsement to the aforesaid required insurance policy adding the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, their trustees, officers, agents or employees, as additional parties insured thereunder or shall obtain a separate owner's protective liability insurance policy for such parties with coverage similar to that required by the first sentence of this subdivision. In addition, any Contractor or subcontractor engaged in the removal, handling, or wrapping of asbestos shall hold harmless and indemnify the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, for any claims or liabilities in connection with illness or sickness arising from work performed, not performed, or which should have been performed. The Contractor shall have said hold-harmless and indemnification conditions stipulated in all Contracts with subcontractors.

- (2) The aggregate insurance limit set forth above shall apply separately to each project for which a certificate of insurance and/or policy is issued.
- (3) Before commencing the performance of any work covered by the Contract, the Contractor shall furnish to the University a certificate or certificates in duplicate of the insurance required under the foregoing provisions. Such certificates shall be on a form prescribed by the University, shall list the various coverages and shall contain, in addition to any provisions hereinbefore required, a provision that the policy shall not be changed or canceled and that it will be automatically renewed upon expiration and continued in force until final acceptance by the University of all the work covered by the Contract, unless the University is given fifteen (15) days' written notice to the contrary. Upon request, the Contractor shall furnish the University with a certified copy of each policy. The State University reserves the right to receive a copy of the insurance policy which was based on the Certificate of Insurance issued.
- (4) All insurance required to be procured and maintained as aforesaid must be procured from insurance companies approved by the University and authorized to do business in the State of New York. The State University is to be cited as a named insured on all policies and certificates of insurance and shall be notified if a policy is canceled, terminated or modified.

- (5) If at any time any of the above-required insurance policies should be canceled, terminated or modified so that insurance is not in effect as above required, then, if the University shall so direct, the Contractor shall suspend performance of the work covered in the Contract. If the said work is so suspended, no extension of time shall be due on account thereof. If said work is not suspended, then the University may, at its option, obtain insurance affording coverage equal to that above required, the cost of such insurance to be payable by the Contractor to the University.

### **Section 5.07 Builder's Risk Insurance**

- (1) The Contractor shall procure and maintain, at its own cost and expense, until final acceptance of all work covered by this Contract or until the Project has been turned over for use by the State University of New York, whichever event occurs earlier, a builder's risk insurance policy with fire, extended coverage, vandalism and malicious mischief coverage.
- (2) The policy shall be in an amount equal to the Project's insurable value, i.e., the Contract consideration less the cost of the Contractor's Performance and Labor and Material Bonds; the cost of trees, shrubbery, lawn grass, plants and the maintenance of the same; the cost of demolition; the cost of excavation; the cost of foundations, piers or other supports which are below the undersurface of the lowest basement floor, or where there is no basement, which are below the surface of the ground, concrete and masonry work; the cost of underground flues, pipes or wiring; the cost of earthmoving, grading and the cost of paving, roads, walks, parking lots or athletic fields; and the cost of bridges, tunnels, dams, piers, wharves, docks, retaining walls and radio and/or television towers and antennas.
- (3) The policy may contain a provision for a \$500 deductible for each loss to a Project having an insurable value of less than \$1,500,000 and a \$1,000 deductible for each loss to a Project having an insurable value of \$1,500,000 or more.
- (4) The University, the Contractor and its subcontractors, as their interests may appear, will be named as the parties insured under said policy.
- (5) The Contractor shall have the sole responsibility to promptly report any loss to the insurer and/or its representatives and to furnish the latter with all necessary details relating to the occurrence of the loss and the amount thereof. The University, the Contractor and all subcontractors of the Contractor waive all rights, each against the others, for damages caused by fire or other perils covered by insurance provided under the terms of this Section, except such rights as they may have to the proceeds of insurance received; provided, however, this waiver shall not apply to any manufacturer, supplier or similar agent under any guarantee or warranty.
- (6) The Contractor shall not violate or permit to be violated any condition of such policy and shall at all times satisfy the fire safety requirements of the University and the insurance company issuing the same.
- (7) The procurement and maintenance of said policy shall in no way be construed or be deemed to relieve the Contractor from any of the obligations and risks imposed upon it by this Contract or to be a limitation on the nature or extent of such obligations and risks.
- (8) Such policy shall contain a provision that it shall not be changed or canceled and that it will be automatically renewed upon expiration and continue in force until final acceptance by the University of all the work covered by the Contract, unless the University is given fifteen (15) days' written notice to the contrary. Before the Contractor shall be entitled to have any progress payment rendered on account of the work which is to be insured pursuant to this Section, it shall furnish to the University a certificate in duplicate of the insurance herein required. Such insurance must be procured from an insurance company approved by the University and authorized to do business in the State of New York.

### **Section 5.08 Effect of Procurement of Insurance**

Neither the procurement nor the maintenance of any type of insurance by the University or the Contractor shall in any way be construed or be deemed to limit, discharge, waive or release the Contractor from any of the obligations and risks imposed upon it by the Contract or to be a limitation on the nature or extent of such obligations and risks.

### **Section 5.09 No Third Party Rights**

Nothing in the Contract shall create or give to third parties, except the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York and the State University of New York, any claim or right of action against the Contractor, the Consultant, the State University Construction Fund, the Dormitory Authority of the State of New York, the State of New York or the State University of New York beyond such as may legally exist irrespective of the Contract.

## **ARTICLE VI**

### **Affirmative Action**

The State University's requirements for affirmative action are set forth in "Exhibit A-1" which is attached hereto and made a part hereof, and shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein and, in the event any such provision is not inserted or is not correctly inserted, then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

## **ARTICLE VII**

### **Provisions Required by Law**

### **Section 7.01 Provisions Deemed Inserted**

Each and every provision required by law to be inserted in the Contract, including, but not limited to, the provisions set forth in Exhibit "A" which is attached hereto and made a part hereof, shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein and, in the event any such provision is not inserted or is not correctly inserted, then, upon the application of either party, this Contract shall forthwith be physically amended to make such insertion or correction.

**Section 7.02 Entire Agreement**

This Agreement consists of 1) the IFB; 2) the contractor's proposal; and 3) Exhibits A and A-1. This Agreement supersedes all previous understandings and agreements with respect to the Project or any of the provisions thereof. No statement, promise, condition, understanding, inducement, or representation, oral or written, expressed or implied, which is not contained herein shall be binding or valid and this Agreement shall not be changed, modified or altered in any manner except by an instrument in writing executed by the parties hereto.

**Section 7.03 Hierarchy of Precedent**

In the event of any controversy regarding the provisions of this Agreement, the terms of Exhibits A and A1 shall take precedence followed by this Agreement, the IFB and the contractor's proposal.

**Section 7.04 Wage Rates**

The Contractor shall post the appropriate prevailing wage schedules in a conspicuous place at the construction site. The Department of Labor shall provide the Contractor with posters relating to prevailing wage rates and the same shall be displayed by the Contractor in a conspicuous place at the construction site. The Contractor shall also distribute wallet cards, to be provided by the Department of Labor, to all workers engaged at the construction site containing information relating to wage rates and telephone numbers to call if a worker believes his or her rights are being violated. The Contractor shall provide each worker with a written notice, informing them of the applicable prevailing wage requirements, and the Contractor must obtain a signed statement or declaration from such worker attesting to the fact that he or she has been given this information. Further, the Contractor is required to keep certified copies of its payrolls at the construction site.

**Section 7.05 Contractor Responsibility**

The State University of New York at Purchase College will undertake an affirmative review of the proposed Contractor's responsibility in accordance with the standards outlined in Comptroller's Bulletin G 221, and based upon such review, will determine if it is reasonably assured that the proposed Contractor is responsible.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

**Agency Certification:** "In addition to the acceptance of this Contract, it is certified that an originally executed copy of this signature page will be attached to an exact copy of the Contract Documents, and forwarded to the Contractor".

**STATE UNIVERSITY OF NEW YORK**

By: \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_ Agency Code 28260  
(campus official)

**CONTRACTOR**

*(If Corporation, Affix Seal)*

By: \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_

*(If Corporation, Affix Seal)*

**ACKNOWLEDGMENTS**  
(ACKNOWLEDGMENT BY AN INDIVIDUAL)

STATE OF NEW YORK        )  
  ) ss.:  
COUNTY OF                    )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, before me personally came \_\_\_\_\_  
\_\_\_\_\_, to me known and known to me to be the person(s) described in and who executed  
the foregoing instrument and he/she acknowledged to me that he/she executed the same.

\_\_\_\_\_  
Notary Public

**(ACKNOWLEDGMENT BY A PARTNERSHIP)**

STATE OF NEW YORK        )  
  ) ss.:  
COUNTY OF                    )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, before me personally came \_\_\_\_\_  
\_\_\_\_\_, to me known and known to me to be the person who executed the above instrument,  
who, being duly sworn by me, did for themself depose and say that they are a member of the firm of \_\_\_\_\_  
\_\_\_\_\_, consisting of themself and \_\_\_\_\_  
\_\_\_\_\_, that he/she executed the foregoing instrument in the firm name \_\_\_\_\_  
\_\_\_\_\_, and that he/she had authority to sign the same, and that he/she did duly acknowledge to me  
that he/she executed the same as the act and deed of the aforementioned firm for the purposes mentioned therein.

\_\_\_\_\_  
Notary Public

**(ACKNOWLEDGMENT BY A CORPORATION)**

STATE OF                        )  
  ) ss.:  
COUNTY OF                    )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, before me personally came \_\_\_\_\_  
\_\_\_\_\_, to me known, who, being duly sworn, did depose and say that he/she reside in  
\_\_\_\_\_ ; that he/she is the \_\_\_\_\_

of the \_\_\_\_\_, the corporation described in and which  
executed the foregoing instrument; that he/she knows the seal of said corporation; that the seal affixed to said instrument was such corporate seal;  
that if was affixed by the order of the Board of Directors of said corporation, and that he/she signed their name thereto by like order.

\_\_\_\_\_  
Notary Public

**SCHEDULE I**

The following Unit Prices shall apply for additional work authorized by Change Order:

**UNIT PRICES**

Description of Unit Price Amount of Unit Price

**NONE**

The total bid includes the following Allowances:

**ALLOWANCES**

**NONE**



The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a Contractor, licensor, licensee, lessor, lessee or any other party):

**1. EXECUTORY CLAUSE.** In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.

**2. PROHIBITION AGAINST ASSIGNMENT**  
Except for the assignment of its right to receive payments subject to Article 5-A of the State Finance Law, the Contractor selected to perform the services herein are prohibited in accordance with Section 138 of the State Finance Law from assigning, transferring, conveying, subletting or otherwise disposing of its rights, title or interest in the contract without the prior written consent of SUNY and attempts to do so are null and void. Notwithstanding the foregoing, SUNY may, with the concurrence of the New York Office of State Comptroller, waive prior written consent of the assignment, transfer, conveyance, sublease or other disposition of a contract let pursuant to Article XI of the State Finance Law if the assignment, transfer, conveyance, sublease or other disposition is due to a reorganization, merger or consolidation of Contractor's its business entity or enterprise and Contractor so certifies to SUNY. SUNY retains the right, as provided in Section 138 of the State Finance Law, to accept or reject an assignment, transfer, conveyance, sublease or other disposition of the contract, and to require that any Contractor demonstrate its responsibility to do business with SUNY.

**3. COMPTROLLER'S APPROVAL.** (a) In accordance with Section 112 of the State Finance Law, Section 355 of New York State Education Law, and 8 NYCRR 316, Comptroller's approval is not required for the following contracts: (i) materials; (ii) equipment and supplies, including computer equipment; (iii) motor vehicles; (iv) construction; (v) construction-related services; (vi) printing; and (vii) goods for State University health care facilities, including contracts for goods made with joint or group purchasing arrangements.

(b) Comptroller's approval is required for the following contracts: (i) contracts for services not listed in Paragraph (3)(a) above made by a State University campus or health care facility certified by the Vice Chancellor and Chief Financial Officer, if the contract value exceeds \$250,000; (ii) contracts for services not listed in Paragraph (3)(a) above made by a State University campus not certified by the Vice Chancellor and Chief Financial Officer, if the contract value exceeds \$50,000; (iii) contracts for services not listed in Paragraph (3)(a) above made by health care facilities not certified by the Vice Chancellor and Chief Financial Officer, if the contract value exceeds \$75,000; (iv) contracts whereby the State University agrees to give something other than money, when the value or reasonably estimated value of such consideration exceeds \$10,000; (v) contracts for real property transactions if the contract value exceeds \$50,000; (vi) all other contracts not listed in Paragraph 3(a) above, if the contract value exceeds \$50,000, e.g. SUNY acquisition of a business and New York State Finance Article 11-B contracts and (vii) amendments for any amount to contracts not listed in Paragraph (3)(a) above, when as so amended, the contract exceeds the threshold amounts stated in Paragraph (b) herein. However, such pre-approval shall not be required for any contract established as a centralized contract through the Office of General Services or for a purchase order or other transaction issued under such centralized contract.

(c) Any contract that requires Comptroller approval shall not be valid, effective or binding

upon the State University until it has been approved by the Comptroller and filed in the Comptroller's office.

**4. WORKERS' COMPENSATION BENEFITS.** In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.

**5. NON-DISCRIMINATION REQUIREMENTS.** To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, sex, (including gender identity or expression), national origin, sexual orientation, military status, age, disability, predisposing genetic characteristics, marital status or domestic violence victim status. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of \$50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation

**6. WAGE AND HOURS PROVISIONS.** If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by SUNY of any SUNY-approved sums due and owing for work done upon the project.

**7. NON-COLLUSIVE BIDDING CERTIFICATION.** In accordance with Section 139-d of the State Finance Law, if this contract was awarded based on the submission of competitive bids, Contractor affirms, under penalty of perjury, and each person signing on behalf of Contractor, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered it to SUNY a non-collusive bidding certification on Contractor's behalf.

**8. INTERNATIONAL BOYCOTT PROHIBITION.** In accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds \$5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 *et seq.*) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2 NYCRR 105.4).

**9. SET-OFF RIGHTS.** The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State, its representatives, or the State Comptroller.

**10. RECORDS.** The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, "the Records"). The Records must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as SUNY and its representatives and entities involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. SUNY shall take reasonable steps to protect from public disclosure any of the Records which are

exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate SUNY official, in writing, that said Records should not be disclosed; and (ii) said Records shall be sufficiently identified; and (iii) designation of said Records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, SUNY's or the State's right to discovery in any pending or future litigation.

#### 11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION.

Identification Number(s). Every invoice or New York State Claim for Payment submitted to the State University of New York by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or (iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.

(b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State University of New York is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the purchasing unit of the State University of New York contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

#### 12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN.

(a) In accordance with Section 312 of the Executive Law and 5 NYCRR 143, if this contract is: (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of \$25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of \$100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of \$100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:

(1) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, and will undertake or

continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;

(2) at SUNY's request, Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and

(3) Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

(b) Contractor will include the provisions of "1", "2" and "3", above, in every subcontract over \$25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a Contractor or sub-contractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this section. SUNY shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, SUNY shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.

13. **CONFLICTING TERMS.** In the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Exhibit A, the terms of this Exhibit A shall control.

14. **GOVERNING LAW.** This contract shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.

15. **LATE PAYMENT.** Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article 11-A of the State Finance Law to the extent required by law.

16. **NO ARBITRATION.** Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized) but must, instead, be heard in a court of competent jurisdiction of the State of New York.

17. **SERVICE OF PROCESS.** In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon the State's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the State, in writing, of each and every change of address to which service of process can be made. Service by the State to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete

in which to respond.

18. **PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS.** The Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited to, the specifications and provisions of State Finance Law §165 (Use of Tropical Hardwoods), which prohibits purchase and use of tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this law will be the responsibility of the contractor to establish to meet with the approval of the State. In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in Section 165 of the State Finance Law. Any such use must meet with the approval of the State, otherwise, the bid may not be considered responsive. Under bidder certification, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

19. **MacBRIDE FAIR EMPLOYMENT PRINCIPLES.** In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that Contractor and any individual or legal entity in which the Contractor holds a ten percent or greater ownership interest and any individual or legal entity that holds a ten percent or greater ownership interest in the Contractor either (a) have no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165(5) of the State Finance Law), and shall permit independent monitoring of compliance with such principles.

20. **OMNIBUS PROCUREMENT ACT OF 1992.** It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development  
Division for Small Business  
30 South Pearl St., 7th Floor  
Albany, NY 12245  
Tel: 518-292-5100  
Fax: 518-292-5884  
email: opa@esd.ny.gov

A directory of certified minority and women-owned business enterprises is available from:

NYS Department of Economic Development  
Division of Minority and Women's Business Development  
633 Third Avenue  
New York, NY 10017  
212-803-2414

email: mwbecertification@esd.ny.gov  
<https://ny.newnycontracts.com/FrontEnd/VendorSearchPublic.asp>

The Omnibus Procurement Act of 1992 requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than \$1 million:

(a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority and women-owned business enterprises, on this project, and has retained the documentation of

these efforts to be provided upon request to SUNY;

(b) The Contractor has complied with the Federal Equal Employment Opportunity Act of 1972 (P.L. 92-261), as amended;

(c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Search Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The contractor agrees to document these efforts and to provide said documentation to the State upon request; and

(d) The Contractor acknowledges notice that SUNY may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with SUNY in these efforts.

#### 21. RECIPROCITY AND SANCTIONS

**PROVISIONS.** Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act of 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively) require that they be denied contracts which they would otherwise obtain. Contact the NYS Department of Economic Development, Division for Small Business, 30 South Pearl Street, Albany, New York 12245, for a current list of jurisdictions subject to this provision.

**22. COMPLIANCE WITH NEW YORK STATE INFORMATION SECURITY BREACH AND NOTIFICATION ACT.** Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law Section 899-aa; State Technology Law Section 208).

**23. COMPLIANCE WITH CONSULTANT DISCLOSURE LAW** If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer

programming, engineering, environmental health and mental health services, accounting, auditing, paralegal, legal or similar services, then in accordance with Section 163(4-g) of the State Finance Law, the Contractor shall timely, accurately and properly comply with the requirement to submit an annual employment report for the contract to SUNY, the Department of Civil Service and the State Comptroller.

**24. PURCHASES OF APPAREL AND SPORTS EQUIPMENT.** In accordance with State Finance Law Section 165(7), SUNY may determine that a bidder on a contract for the purchase of apparel or sports equipment is not a responsible bidder as defined in State Finance Law Section 163 based on (a) the labor standards applicable to the manufacture of the apparel or sports equipment, including employee compensation, working conditions, employee rights to form unions and the use of child labor; or (b) bidder's failure to provide information sufficient for SUNY to determine the labor conditions applicable to the manufacture of the apparel or sports equipment.

**25. PROCUREMENT LOBBYING.** To the extent this agreement is a "procurement contract" as defined by State Finance Law Sections 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law Sections 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, the State may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

**26. CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS.** To the extent this agreement is a contract as defined by Tax Law Section 5-a, if the Contractor fails to make the certification required by Tax Law Section 5-a or if during the term of the contract, the Department of Taxation and Finance or SUNY discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor

in accordance with the terms of the agreement, if SUNY determines that such action is in the best interests of the State.

**27. IRAN DIVESTMENT ACT.** By entering into this Agreement, Contractor certifies in accordance with State Finance Law §165-a that it is not on the "Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012" ("Prohibited Entities List") posted at: <http://www.oqs.ny.gov/about/regs/docs/ListofEntities.pdf>

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the state agency receive information that a person (as defined in State Finance Law §165-a) is in violation of the above-referenced certifications, the state agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the state agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

#### **THE FOLLOWING PROVISIONS SHALL APPLY ONLY TO THOSE CONTRACTS TO WHICH A HOSPITAL OR OTHER HEALTH SERVICE FACILITY IS A PARTY**

28. Notwithstanding any other provision in this contract, the hospital or other health service facility remains responsible for insuring that any service provided pursuant to this contract complies with all pertinent provisions of Federal, state and local statutes, rules and regulations. In the foregoing sentence, the word "service" shall be construed to refer to the health care service rendered by the hospital or other health service facility.

29. (a) In accordance with the 1980 Omnibus Reconciliation Act (Public Law 96-499), Contractor hereby agrees that until the expiration of four years after the furnishing of services under this agreement, Contractor shall make available upon written request to the Secretary of Health and Human Services, or upon request, to the Comptroller General of the United States or any of their duly authorized representatives, copies of this contract, books, documents and records of the Contractor that are necessary to certify the nature and extent of the costs hereunder.

(b) If Contractor carries out any of the duties of the contract hereunder, through a subcontract having a value or cost of \$10,000 or more over a twelve-month period, such subcontract shall contain a clause to the effect that, until the expiration of four years after the furnishing of such services pursuant to such subcontract, the subcontractor shall make available upon written request to the Secretary of Health and Human Services or upon request to the Comptroller General of the United States, or any of their duly authorized representatives, copies of the subcontract and books, documents and records of the subcontractor that are necessary to verify the nature and extent of the costs of such subcontract.

(c) The provisions of this section shall apply only to such contracts as are within the definition established by the Health Care Financing Administration, as may be amended or modified from time to time.



**1. DEFINITIONS.** The following terms shall be defined in accordance with Section 310 of the Executive Law:

**STATE CONTRACT** herein referred to as "State Contract", shall mean: (a) a written agreement or purchase order instrument, providing for a total expenditure in excess of twenty-five thousand dollars (\$25,000.00), whereby the State University of New York ("University") is committed to expend or does expend funds in return for labor, services including but not limited to legal, financial and other professional services, supplies, equipment, materials or a combination of the foregoing, to be performed for, or rendered or furnished to the University; (b) a written agreement in excess of one hundred thousand dollars (\$100,000.00) whereby the University is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; and (c) a written agreement in excess of one hundred thousand dollars (\$100,000.00) whereby the University as an owner of a state assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project.

**SUBCONTRACT** herein referred to as "Subcontract", shall mean any agreement for a total expenditure in excess of \$25,000 providing for services, including non-staffing expenditures, supplies or materials of any kind between a State agency and a prime contractor, in which a portion of the prime contractor's obligation under the State contract is undertaken or assumed by a business enterprise not controlled by the prime contractor.

**WOMEN-OWNED BUSINESS ENTERPRISE** herein referred to as "WBE", shall mean a business enterprise, including a sole proprietorship, partnership or corporation that is: (a) at least fifty-one percent (51%) owned by one or more United States citizens or permanent resident aliens who are women; (b) an enterprise in which the ownership interest of such women is real, substantial and continuing; (c) an enterprise in which such women ownership has and exercises the authority to control independently the day-to-day business decisions of the enterprise; (d) an enterprise authorized to do business in this state and independently owned and operated; (e) an enterprise owned by an individual or individuals, whose ownership, control and operation are relied upon for certification, with a personal net worth that does not exceed three million five hundred thousand dollars (\$3,500,000), as adjusted annually on the first of January for inflation according to the consumer price index of the previous year; and (f) an enterprise that is a small business pursuant to subdivision twenty of this section.

A firm owned by a minority group member who is also a woman may be certified as a minority-owned business enterprise, a women-owned business enterprise, or both, and may be counted towards either a minority-owned business enterprise goal or a women-owned business enterprise goal, in regard to any Contract or any goal, set by an agency or authority, but such participation may not be counted towards both such goals. Such an enterprise's participation in a Contract may not be divided between the minority-owned business enterprise goal and the women-owned business enterprise goal.

**MINORITY-OWNED BUSINESS ENTERPRISE** herein referred to as "MBE", shall mean a business enterprise, including a sole proprietorship, partnership or corporation that is: (a) at least fifty-one percent (51%) owned by one or more minority group members; (b) an enterprise in which such minority ownership is real, substantial and continuing; (c) an enterprise in which such minority ownership has and exercises the authority to control independently the day-to-day business decisions of the enterprise; (d) an enterprise authorized to do business in this state and independently owned and operated; (e) an enterprise owned by an individual or individuals, whose ownership, control and operation are relied upon for certification, with a personal net worth that does not exceed three million five hundred thousand dollars (\$3,500,000.00), as adjusted annually on the first of January for inflation according to the consumer price index of the previous year; and (f) an enterprise that is a small business pursuant to subdivision twenty of this section.

**MINORITY GROUP MEMBER** shall mean a United States citizen or permanent resident alien who is and can demonstrate membership in one of the following groups: (a) Black persons having origins in any of the Black African racial groups; (b) Hispanic persons of Mexican, Puerto Rican, Dominican, Cuban, Central or South American of either Indian or Hispanic origin, regardless of race; (c) Native American or Alaskan native persons having origins in any of the original peoples of North America. (d) Asian and Pacific Islander persons having origins in any of the Far East countries, South East Asia, the Indian Subcontinent or Pacific Islands.

**CERTIFIED ENTERPRISE OR BUSINESS** shall mean a business verified as a minority or women-owned business enterprise pursuant to section 314 of the Executive Law. A business enterprise which has been approved by the New York Division of Minority & Women Business Development (“DMWBD”) for minority or women-owned enterprise status subsequent to verification that the business enterprise is owned, operated, and controlled by minority group members or women, and that also meets the financial requirements set forth in the regulations.

**2. TERMS.** The parties to the attached State Contract agree to be bound by the following provisions which are made a part hereof (the word "Contractor" herein refers to any party other than the University:

1(a) Contractor and its Subcontractors shall undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. For these purposes, affirmative action shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation.

(b) Prior to the award of a State Contract, the Contractor shall submit an equal employment opportunity (EEO) policy statement to the University within the time frame established by the University.

(c) As part of the Contractor's EEO policy statement, the Contractor, as a precondition to entering into a valid and binding State Contract, shall agree to the following in the performance of the State Contract: (i) The Contractor will not discriminate against any employee or applicant for employment, will undertake or continue existing programs of affirmative action to ensure that

minority group members and women are afforded equal employment opportunities without discrimination, and shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State Contracts;(ii) The Contractor shall state in all solicitations or advertisements for employees that, in the performance of the State Contract, all qualified applicants will be afforded equal employment opportunities without discrimination; (iii) At the request of the University the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union, or representative will not discriminate, and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein.

(d) Form 108 - Staffing Plan To ensure compliance with this Section, the Contractor shall submit a staffing plan to document the composition of the proposed workforce to be utilized in the performance of the Contract by the specified categories listed, including ethnic background, gender, and Federal occupational categories. Contractors shall complete the Staffing plan form and submit it as part of their bid or proposal or within a reasonable time, but no later than the time of award of the contract.

(e) Form 112 - Workforce Employment Utilization Report (“Workforce Report”)

(i) Once a contract has been awarded and during the term of Contract, Contractor is responsible for updating and providing notice to SUNY of any changes to the previously submitted Staffing Plan. This information is to be submitted on a quarterly basis during the term of the contract to report the actual workforce utilized in the performance of the contract by the specified categories listed including ethnic background, gender, and Federal

occupational categories. The Workforce Report must be submitted to report this information.

(ii) Separate forms shall be completed by Contractor and any subcontractor performing work on the Contract.

(iii) In limited instances, Contractor may not be able to separate out the workforce utilized in the performance of the Contract from Contractor's and/or subcontractor's total workforce. When a separation can be made, Contractor shall submit the Workforce Report and indicate that the information provided related to the actual workforce utilized on the Contract. When the workforce to be utilized on the contract cannot be separated out from Contractor's and/or subcontractor's total workforce, Contractor shall submit the Workforce Report and indicate that the information provided is Contractor's total workforce during the subject time frame, not limited to work specifically under the contract.

(f) Contractor shall comply with the provisions of the Human Rights Law, all other State and Federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal conviction and prior arrest.

(g) The Contractor shall include the provisions of this section in every Subcontract in such a manner that the requirements of the provisions will be binding upon each Subcontractor as to work in connection with the State Contract, including the requirement that Subcontractors shall undertake or continue existing programs of



affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination, and, when requested, provide to the Contractor information on the ethnic background, gender, and Federal occupational categories of the employees to be utilized on the State Contract.

(h) To ensure compliance with the requirements of this paragraph, the University shall inquire of a Contractor whether the work force to be utilized in the performance of the State Contract can be separated out from the Contractor's and/or Subcontractors' total work force and where the work of the State Contract is to be performed. For Contractors who are unable to separate the portion of their work force which will be utilized for the performance of this State Contract, Contractor shall provide reports describing its entire work force by the specified ethnic background, gender, and Federal Occupational Categories, or other appropriate categories which the agency may specify.

(i) The University may require the Contractor and any Subcontractor to submit compliance reports, pursuant to the regulations relating to their operations and implementation of their affirmative action or equal employment opportunity program in effect as of the date the State Contract is executed.

(j) If a Contractor or Subcontractor does not have an existing affirmative action program, the University may provide to the Contractor or Subcontractor a model plan of an affirmative action program. Upon request, the Director of DMWBD shall provide a contracting agency with a model plan of an affirmative action program.

(k) Upon request, DMWBD shall provide the University with information on specific recruitment sources for minority group members and woman, and contracting agencies shall make such information available to Contractors

3. Contractor must provide the names, addresses and federal identification numbers of certified minority- and women-owned business enterprises which the Contractor intends to use to perform the State Contract and a description of the Contract scope of work which the Contractor intends to structure to increase the participation by Certified minority- and/or women-owned business enterprises on the State Contract, and the estimated or, if known, actual dollar amounts to be paid to and performance dates of each component of a State Contract which the Contractor intends to be performed by a certified minority- or woman-owned business enterprise. In the event the Contractor responding to University solicitation is joint venture, teaming agreement, or other similar arrangement that includes a minority-and women owned business enterprise, the Contractor must submit for review and approval: i. the name, address, telephone number and federal identification of each partner or party to the agreement; ii. the federal identification number of the joint venture or entity established to respond to the solicitation, if applicable; iii. A copy of the joint venture, teaming or other similar arrangement which describes the percentage of interest owned by each party to the agreement and the value added by each party; iv. A copy of the mentor-protégé agreement between the parties, if applicable, and if not described in the joint venture, teaming agreement, or other similar arrangement.

**4. PARTICIPATION BY MINORITY GROUP MEMBERS AND WOMEN.** The University shall determine whether Contractor has made conscientious and active efforts to employ and utilize minority group members and women to perform this State Contract based upon an analysis of the following factors:

(a) Whether Contractor established and maintained a current list of recruitment sources for minority group members and

women, and whether Contractor provided written notification to such recruitment sources that contractor had employment opportunities at the time such opportunities became available.

(b) Whether Contractor sent letters to recruiting sources, labor unions, or authorized representatives of workers with which contractor has a collective bargaining or other agreement or understanding requesting assistance in locating minority group members and women for employment.

(c) Whether Contractor disseminated its EEO policy by including it in any advertising in the news media, and in particular, in minority and women news media.

(d) Whether Contractor has attempted to provide information concerning its EEO policy to Subcontractors with which it does business or had anticipated doing business.

(e) Whether internal procedures exist for, at a minimum, annual dissemination of the EEO policy to employees, specifically to employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions. Such dissemination may occur through distribution of employee policy manuals and handbooks, annual reports, staff meetings and public postings.

(f) Whether Contractor encourages and utilizes minority group members and women employees to assist in recruiting other employees.

(g) Whether Contractor has apprentice training programs approved by the N.Y.S. Department of Labor which provides for training and hiring of minority group members and women.

(h) Whether the terms of this section have been incorporated into each Subcontract which is entered into by the Contractor.

**5. PARTICIPATION BY MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES.** Based upon an analysis of the following factors, the

University shall determine whether Contractor has made good faith efforts to provide for meaningful participation by minority-owned and women-owned business enterprises which have been certified by DMWBD:

(a) Whether Contractor has actively solicited bids for Subcontracts from qualified M/WBEs, including those firms listed on the Directory of Certified Minority and Women-Owned Business Enterprises, and has documented its good faith efforts towards meeting minority and women owned business enterprise utilization plans by providing, copies of solicitations, copies of any advertisements for participation by certified minority- and women-owned business enterprises timely published in appropriate general circulation, trade and minority- or women-oriented publications, together with the listing(s) and date(s) of the publications of such advertisements; dates of attendance at any pre-bid, pre-award, or other meetings, if any, scheduled by the University, with certified minority- and women-owned business enterprises, and the reasons why any such firm was not selected to participate on the project.

(b) Whether Contractor has attempted to make project plans and specifications available to firms who are not members of associations with plan rooms and reduce fees for firms who are disadvantaged.

(c) Whether Contractor has utilized the services of organizations which provide technical assistance in connection with M/WBE participation.

(d) Whether Contractor has structured its Subcontracts so that opportunities exist to complete smaller portions of work.

e) Whether Contractor has encouraged the formation of joint ventures, partnerships, or other similar arrangements among Subcontractors.

(f) Whether Contractor has requested the services of the Department of Economic

Development (DED) to assist Subcontractors' efforts to satisfy bonding requirement.

(g) Whether Contractor has made progress payments promptly to its Subcontractors.

(h) Whether the terms of this section have been incorporated into each Subcontract which is entered into by the Contractor. It shall be the responsibility of Contractor to ensure compliance by every Subcontractor with these provisions.

## **6. MWBE Utilization Plan.**

(a) The Contractor represents and warrants that Contractor has submitted an MWBE Utilization Plan prior to the execution of the contract.

(b) MWBE Utilization Plan (Form 7557-107).

Contractors are required to submit a Utilization Plan on Form 7557-107 with their bid or proposal. Complete the following steps to prepare the Utilization Plan:

- i. list NYS Certified minority- and women-owned business enterprises which the Contractor intends to use to perform the State contract;
- ii. insert a description of the contract scope of work which the Contractor intends to structure to increase the participation by NYS Certified minority- and women-owned enterprises on the State contract;
- iii. insert the estimated or, if known, actual dollar amounts to be paid to and performance dates of each component of a State contract which the Contractor intends to be performed by a NYS Certified minority- or women-owned business; and

(c) Any modifications or changes to the agreed participation by NYS Certified MWBEs after the Contract Award and during the term of the contract must be reported on a revised MWBE Utilization Plan and

submitted to the SUNY University-wide MWBE Program Office.

(d) The University will review the MWBE Utilization Plan and will issue the Contractor a written notice of acceptance or deficiency within twenty (20) day of its receipt. A notice of deficiency shall include the:

- i. list NYS Certified minority- and women-owned business enterprises which the Contractor intends to use to perform the State contract;
- ii. name of any MWBE which is not acceptable for the purpose of complying with the MWBE participation goals;
- iii. reasons why it is not an acceptable element of the Contract scope of work which the MWBE Program Office has determined can be reasonably structured by the Contractor to increase the likelihood of participation in the Contract by MWBEs; and
- iv. other information which the MWBE Program Office determines to be relevant to the MWBE Utilization Plan.

(e) The Contractor shall respond to the notice of deficiency within seven (7) business days of receipt by submitting to the University a written remedy in response to the notice of deficiency.

- i. If the written remedy that is submitted is not timely or is found to be inadequate, the University-wide MWBE Program Office shall notify the Contractor and direct the Contractor to submit, within five (5) business days, a request for partial or total waiver of MWBE participation goals on forms provided by the University-wide MWBE Program Office.
- ii. Failure to file the waiver form in a timely manner



may be grounds for disqualification of the bid or proposal.

(f) The University may disqualify a Contractor as being non-responsive under the following circumstances:

- i. If a Contractor fails to submit a MWBE Utilization Plan;
- ii. If a Contractor fails to submit a written remedy to a notice of deficiency in a MWBE Utilization Plan;
- iii. If a Contractor fails to submit a request for waiver; or
- iv. If the MWBE Program Office determines that the Contractor has failed to document Good Faith Efforts.

(g) Contractor agrees to use such MWBE Utilization Plan for the performance of MWBEs on the Contract pursuant to the prescribed MWBE goals set forth in Section III-A of this Appendix.

(h) Contractor further agrees that a failure to submit and/or use such MWBE Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, SUNY shall be entitled to any remedy provided herein, including but not limited to, a finding of Contractor non-responsiveness.

#### **7. Waivers.**

(a) For Waiver Requests Contractor should use (Form 7557-114) – Waiver Request.

(b) If the Contractor, after making good faith efforts, is unable to comply with MWBE goals, the Contractor may submit a Request for Waiver form documenting good faith efforts by the Contractor to meet such goals. If the documentation included with the waiver request is complete the University shall evaluate the request and issue a written notice of acceptance or

denial within twenty (20) days of receipt.

(c) If University, upon review of the MWBE Utilization Plan and updated Quarterly MWBE Contractor Compliance Reports determines that Contractor is failing or refusing to comply with the Contract goals and no waiver has been issued in regards to such non-compliance, the University may issue a notice of deficiency to the Contractor. The contractor must respond to the notice of deficiency within seven (7) business days of receipt. Such response may include a request for partial or total waiver of MWBE Contract Goals.

#### **8. Quarterly MWBE Contractor Compliance Report.**

Contractor is required to submit a Quarterly MWBE Contractor Compliance Report (Form 7557-114) to the University by the 5<sup>th</sup> day following each end of quarter over the term of the Contract documenting the progress made towards achievement of the MWBE goals of the Contract.

#### **9. GOALS. (a) GOALS FOR MINORITY AND WOMEN WORK FORCE PARTICIPATION.**

(i) The University shall include relevant work force availability data, which is provided by the DMWBD, in all documents which solicit bids for State Contracts and shall make efforts to assist Contractors in utilizing such data to determine expected levels of participation for minority group members and women on State Contracts.

(ii) Contractor shall exert good faith efforts to achieve such goals for minority and women's participation. To successfully achieve such goals, the employment of minority group members and women by Contractor must be substantially uniform during the entire term of this State Contract. In addition, Contractor should not participate in the transfer of employees from one employer or project to another for the sole

purpose of achieving goals for minority and women's participation.

#### **(b) GOALS FOR MINORITY AND WOMEN-OWNED BUSINESS ENTERPRISES PARTICIPATION.**

For all State Contracts in excess of \$25,000.00 whereby the University is committed to expend or does expend funds in return for labor, services including but not limited to legal, financial and other professional services, supplies, equipment, materials or a combination of the foregoing or all State Contracts in excess of \$100,000.00 whereby the University is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon, Contractor shall exert good faith efforts to achieve a participation goal of fourteen point three four percent (14.34 %) for Certified Minority-Owned Business Enterprises and \_ eight point four one percent (8.41%) for Certified Women-Owned Business Enterprises.

#### **10. ENFORCEMENT.**

The University will be responsible for enforcement of each Contractor's compliance with these provisions. Contractor, and each Subcontractor, shall permit the University access to its books, records and accounts for the purpose of investigating and determining whether Contractor or Subcontractor is in compliance with the requirements of Article 15-A of the Executive Law. If the University determines that a Contractor or Subcontractor may not be in compliance with these provisions, the University may make every reasonable effort to resolve the issue and assist the Contractor or Subcontractor in its efforts to comply with these provisions. If the University is unable to resolve the issue of noncompliance, the University may file a complaint with the DMWBD.

Failure to comply with all of the requirements herein may result in a finding of non-responsiveness, non-responsibility and/or a breach of contract, leading to the withholding of funds or such other actions, remedies or enforcement proceedings as allowed by the Contract.

#### **11. DAMAGES FOR NON COMPLIANCE.**

Where the University determines that Contractor is not in compliance with the requirements of the Contract and Contractor refuses to comply with such requirements, or if Contractor is found to have willfully and intentionally failed to comply with

the MWBE participation goals, Contractor shall be obligated to pay liquidated damages to the University. Such liquidated damages shall be calculated as an amount equaling the difference between:

- a. All sums identified for payment to MWBEs had the Contractor achieved the contractual MWBE goals; and
- b. All sums actually paid to MWBEs for work performed or materials supplied under the Contract.

In the event a determination has been made which requires the payment of liquidated damages and such

identified sums have not been withheld by the University, Contractor shall pay such liquidated damages to the University within sixty (60) days after such damages are assessed, unless prior to the expiration of such sixtieth day, the Contractor has filed a complaint with the Director of the Division of Minority and Woman Business Development pursuant to Subdivision 8 of Section 313 of the Executive Law in which event the liquidated damages shall be payable if Director renders a decision in favor of the University.

Division 1 - General Requirements  
SECTION A - Description of Work

1. Work to be Done

The work to be done under the Contract, in accordance with the Contract Documents, consists of performing, installing, furnishing and supplying all materials, equipment, labor and incidentals necessary or convenient for the construction of Project Numbers SU120814 titled "New Mailroom and Receiving Renovation Project" and carry out all of the duties and obligations imposed upon the Contractor by the Contract Documents.

The main features of the work shall include, but not be limited to the following:

The project will address complete Renovation of Storage room T18 and vestibule area marked on drawings. The project will address interior renovation of a space and converting it into a new mail room area, receiving office space, ware house and modification to few entrances as shown on the drawings.

All work shall be coordinated with college schedule to limit disturbance to the adjoin areas and operations of the buildings. Refer to Section C for special condition of construction.

The contractor shall submit pricing for all work which consists of performing, installing, furnishing and supplying all materials, equipment, labor, and incidentals necessary or convenient for the complete construction of this project. The contractor will be responsible for removal and disposal of all debris from the site.

The products listed in this document are the designed 'design baseline' product that are to be used on this project. If the substitution are requested the contractor is to provide adequate back-up information illustrating how the substituted products meets or exceeds the design parameters of the specified products below in terms of performance and system maintenance. Campus will have the final decision or whether substituted products are approved equal. Bidders are to list any substitution on bid response. All alternate products and material will be reviewed to client satisfaction.

The more detailed description is provided below. This outlines the major scope elements. Proposals are to include complete construction product cost. Pricing should be outlined by sections indicated below. Bidders are to provide a list of any exclusions and or exceptions.

The main features of the work shall include, but not be limited to the following.

- Renovation of existing storage area into new mailroom and receiving area as outlined in the drawings.
- Demolition and removal as per drawings.

**Mailroom:**

- Furnish and Install new walls, floor, doors, ceilings as per drawings and specifications.
- Furnish and Install new mail boxes. (Cut sheet is attached in Appendix 1, which is bases of design)
- Furnish and Install new millwork except two new counter table at mail room (Provided by campus). Refer to drawings and specifications.
- Furnish and Install new light fixture, fire alarm, burglar alarm and all infrastructure as per MEP's drawings and specification.
- Prepare subfloor and provide new specified VCT flooring and wall base. (Color will be selected by campus from manufacturer standard color charts).
- Prep and prime all surface as per manufacture recommendation to take finish paint.(Paint by others. Color will be selected by campus from manufacturer standard color charts.)
- Prep and paint all doors by GC including roll up doors.(Color will be selected by campus from manufacturer standard color charts)
- All penetration needs to be sealed as per code. Prep and finish where necessary.

**Receiving Area.**

- Furnish and Install new walls, floor, doors, and ceilings as per drawing and specifications.
- Furnish and Install new millwork except two tables and furniture in Mail Sorting Area (Provided by campus)

- Furnish and Install all electrical (including fire alarm, burglar alarm), Sprinkler, plumbing and Mechanical as per drawings and specification.
- Prepare subfloor and provide new specified VCT flooring and wall base.(GC to provide color samples from manufacturer standard colors to campus for approval)
- Prep and prime all surface as per manufacture recommendation to take finish paint.(Paint by others)
- Patch & Paint all surfaces as per manufacture recommendation to take finish paint (Paint by others)
- Prep and paint all doors by GC including roll up doors. .(GC to provide color samples from manufacturer standard colors to campus for approval)
- Furnishing & Installation of new under cabinet lighting(Refer to specs)
- All penetration needs to be sealed as per code. Prep and finish where necessary.

#### Storage Area

- Furnish and Install new walls, doors, and ceilings as per drawings and specifications.
- Furnish and Install new millwork.
- Furnish and Install electrical, sprinkler, plumbing and mechanical as per drawings and specifications
- Prep and prime all surface as per manufacture recommendation to take finish paint.(Paint by others)
- Patch & Paint all surfaces as per manufacture recommendation to take finish paint (Paint by others)
- Prep and paint all doors by GC including roll up doors.(GC to provide color samples from manufacturer standard colors to campus for approval)
- All penetration needs to be sealed as per code. Prep and finish where necessary.

#### Tunnel Entrance

- Furnish and Install new walls, floor, doors, and ceilings as per drawings and specifications.
- Furnish and Install electrical, as per drawings and specifications
- Prep and prime all surface as per manufacture recommendation to take finish paint.(Paint by others)
- Patch & Paint all surfaces as per manufacture recommendation to take finish paint (Paint by others)
- Prep and paint all doors by GC including roll up doors.(GC to provide color samples from manufacturer standard colors to campus for approval)
- All penetration needs to be sealed as per code. Prep and finish where necessary.

The Facility needs to be operational no later then March 30<sup>th</sup> 2015. The work needs to be done during the College's regular semester. Close coordination with the College will be required. Contractor is advised to coordinate appropriate timing with the college during loud demolition and/or excessively noisy work to minimize disturbance to the ongoing winter classes

#### SECTION B - Alternates

##### 1. General

- a. Refer to Proposal Form. State thereon the amount to be added to or deducted from the Total Bid for the Alternates described herein.
- b. Extent and details of the Alternates are indicated on the Drawings, and described in the Specifications.
- c. Where reference is made in the description of the Alternate to products, materials, or workmanship, the specification requirements applicable to similar products, materials or workmanship in the Total Bid shall govern the products, materials, and workmanship of the Alternate as if these specification requirements were included in full in the description of the Alternates.

##### 2. Alternates

Alternate #1: Furnish and install all millwork including sink under cabinet task light. All electrical roughing for task light, rough plumbing for sink and blocking of millwork is part of base bid.

## **SECTION C - Special Conditions**

### **1. Cutting and Patching**

- a. **The Contractor shall do all cutting, fitting, and patching of its work that may be required to make its several parts come together properly and fitted as shown upon or reasonably implied from the Drawings and Specifications for the completed project.**
- b. **Any cost caused by defective or ill-timed work shall be borne by the Contractor. Except as otherwise expressly provided in the Contract Documents, the Contractor shall not cut or alter the work of any other Contractor or existing work without the consent of the University.**
- c. **Existing construction, finishes, equipment, wiring, etc., that is to remain and which is damaged or defaced by reason of work done under this contract shall be restored by the Contractor to a condition satisfactory to the University, or replaced with new, at no additional cost.**
- d. **Existing surfaces, materials, and work shall be prepared as necessary to receive the new installations. Such preparatory work shall be as required by the conditions and in each case shall be subject to approval by the University.**
- e. **Newly exposed work or surfaces which are presently concealed shall be made to match existing corresponding or adjoining new surfaces as directed, and the materials and methods to be employed shall be subject to approval by the University.**
- f. **All new, altered, or restored work in the building shall match existing corresponding work in the material, construction finish, etc., unless otherwise specified or required by the drawings.**
- g. **All cutting and patching work must be coordinated with and accepted by the mechanical contractor who shall act as the general contractor on the project.**
- h. **The contractor shall utilize the Universities roofing contractor who shall perform all roofing and flashing work to maintain the roof bond warranty unless directed otherwise.**

### **2. Clean-Up**

- a. **Periodic Cleaning: The Contractor shall at all times during the progress of the work keep the Site free from accumulation of waste matter or rubbish and shall confine its apparatus, materials and operations of its workmen to limits prescribed by law or by the Contract Limit Lines, except as the latter may be extended with the approval of the University. Cleaning of the structure(s), once enclosed, must be performed daily and removal of waste matter or rubbish must be performed at least once a week.**
- b. **Final Clean Up: Upon completion of the work covered by the Contract, the Contractor shall leave the completed project ready for use without the need of further cleaning of any kind and with all work in new condition and perfect order. In addition, upon completion of all work, the Contractor shall remove from the vicinity of the work and from the property owned or occupied by the State of New York, the State University of New York or the University, all plant, buildings, rubbish, unused materials, concrete forms and other materials belonging to it or used under its direction during construction or impairing the use or appearance of the property and shall restore such areas affected by the work to their original condition, and, in the event of its failure to do so, the same shall be removed by the University at the expense of the Contractor, and it and its surety shall be liable therefor.**

### **3. Temporary Access and Parking**

**See Supplemental Special Conditions for Construction.**

#### **4. Operating Instructions and Manuals**

The Contractor shall furnish three (3) complete sets of operating instructions and manuals which shall include definite and specific instructions on all mechanical and electrical systems involved in the Project. Said instructions and manuals should set forth: (1) the manner of operation; (2) the necessary precautions and care to be followed; (3) periodic prevention maintenance requirements; and (4) a complete set of spare parts lists, catalogs, service manuals and manufacturing data on said systems. Said instructions and manuals are to be made available by the Contractor for review and comment by the University a minimum of six (6) weeks prior to the scheduled completion of the Project.

#### **5. Utility Shutdowns and Cut Overs**

- a. Except as otherwise expressly provided in the Contract Documents, the Contractor shall be responsible for submitting to the University, for its approval, a proposed schedule of all utility shutdowns and Cut-overs of all types which will be required to complete the Project; said schedule should contain a minimum of two (2) week's advance notice prior to the time of the proposed shutdown and cut over. Most campuses of the State University of New York are in full operation 12 months of the year, and shutdowns and Cut-overs, depending upon their type, generally must be scheduled on weekends, at night, or during holiday periods. The contract consideration is deemed to include all necessary overtime and all premium time, if any, that is required by the Contractor to complete the shutdowns or Cut-overs.
- b. Temporary Connections: In the event the Contractor shall disrupt any existing services, the Contractor shall immediately make temporary connection to place such service back into operation and maintain the temporary connection until the Contractor makes the permanent connection. All work must be acceptable to the University.

#### **6. Temporary Power for Construction Activities**

Electrical energy will be available at no cost to the Contractor from existing outlets or panels from locations approved by the College. This power may be used for small power tools (not exceeding 1/2 HP), etc., and the Contractor shall not exceed the capacity of the existing circuits being used. The Contractor shall be responsible for providing all necessary connections, cables, etc. and removal of the same at completion of construction with approval from the University. The Contractor shall in no way modify the existing circuits at the panel boards to increase capacities of the circuits. If the required power load exceeds the capacities of the available power sources, the Contractor shall be responsible and pay for furnishing and installing all necessary temporary power poles, cables, fused disconnect switches, transformers and electric meters necessary to provide a temporary power system for the project, and remove the same at completion. Install all temporary wiring and equipment and make all connections in conformity with the National Electrical Code. Make all replacements required by temporary use of the permanent wiring system. Provide ground fault protection.

#### **7. Conducting Work**

- a. All work is to be conducted in such a manner as to cause a minimum degree of interference with the College's operation and academic schedule and co ordinate with the GC.
- b. Safe and direct entrance to and exiting from the existing buildings shall be maintained at all times during regular hours while construction is in progress.
- c. No construction work will start in any area until the Contractor has all the required materials on-site.
- d. The Contractor and its employees shall comply with College regulations governing conduct, access to the premises, and operation of equipment.
- e. The building shall not be left "open" overnight or during any period of inclement weather. Temporary weather tight closures shall be provided for/by the Contractor to protect the structure and its contents.

## 8. Safety and Protective Facilities

- a. The Contractor shall provide the necessary safeguards to prevent accidents, to avoid all necessary hazards and protect the public, the Staff, students, the work and property at all times, including Saturdays, Sundays, holidays and other times when no work is being done.
- b. The Contractor shall erect, maintain and remove appropriate barriers or other devices, including mechanical ventilation systems, as required by the conditions of the work for the protection of users of the project area, the protection of the work being done, or the containment of dust and debris. All such barriers or devices shall be provided in conformance with all applicable codes, laws and regulations, including OSHA and National Fire Prevention Association 241, for safeguarding of structures during construction.

## 9. Protection of Existing Structures, Vegetation and Utilities

The Contractor, during the course of its work, shall not damage any buildings, structures and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains and electric power and lighting and telephone cables, lawns, curbs, plants and other improvements. Any damage resulting from the Contractor's operations shall be repaired or replaced at its expense.

## 10. Abbreviations and References

The following abbreviations may be used in these Specifications:

N.A.	Not Applicable
N.I.C	Not in Contract.
Fed. Spec. or F.S.	Federal Specifications
SUCF	State University Construction Fund
University or SUNY	State University of New York
College	A Campus of the State University of New York

## 11. Use of Elevators

Permission must be taken from the campus for temporary use of elevators. If permission is granted to use designated elevators by the University then its use should not interfere with the normal activities of the College. Large and heavy items shall not be placed in elevators, and suitable padding shall be provided whenever a cab is used for construction purposes. Elevator pits shall be kept free of debris and dust by frequent cleaning out. The elevators shall be restored to original condition satisfactory to the University at the end of construction activities. Use of the top of the elevator may be permitted after obtaining approval of the University.

## 12. Salvage of Materials

N/A

Remove and legally dispose of all debris and other materials resulting from the alterations to State University property. The following items shall remain the property of the University and shall be stored at the site as directed by the University:

## 13. Storage of Materials

- a. The Contractor shall store materials and equipment within the contract limits in areas on the site as designated by the University.
- b. All materials shall be stored in a neat and orderly manner, and shall be protected against the weather by raised floored weatherproof temporary storage facility or trailer.

- c. Security for stored materials shall be the responsibility of the Contractor.
- d. Storage of materials is not permitted on the roof of any building.

#### 14. Shop Drawings and Samples

- a. The Contractor shall submit to the Consultant for its approval six copies of all shop drawings required by the specifications.

"DISAPPROVED" are not in accordance with the Contract Documents and shall be resubmitted.

"REVISE AND RESUBMIT" Contractor shall correct and resubmit.

"APPROVED AS NOTED": The contractor shall comply with corrections and may proceed. Resubmittal is not required.

"APPROVED - NO EXCEPTIONS TAKEN": The contractor may proceed.

"SUBMIT SPECIFIED ITEM": The contractor shall not deviate from the specification and provide specified item.

"REVIEWED": Item has been reviewed only and the contractor shall not proceed.

- b. All shop drawings and/or submittals used on the construction site must bear the impression of the consultant's review stamp as well as the General Contractor's review stamp, indicating the status of review and the date of review.
- c. All shop drawings shall reflect actual site conditions and accurate field dimensions. Dimensioned shop drawings shall be submitted for all fabricated items. Incomplete submittals will be rejected without review.
- d. All shop drawings, submittals and samples shall include:
  - 1). Date and revision dates.
  - 2). Project title and number.
  - 3). Names of:
    - a). Contractor
    - b). Subcontractor
    - c). Supplier
    - d). Manufacturer
  - 4). Identification of products or materials: Include Department of State (DOS) file number, manufacturers' name and market name of all covered products and applicable materials in accordance with Part 1120 of the Code. This information may be obtained by contacting the DOS, Office of Fire Prevention and Control: 518 474-6746 [voice] and 518 474-3240 [FAX]]
- e. Contractor may submit for review on a one time basis, equipment and material substitution in lieu of specified item in contract documents. The engineer shall determine if equipment substituted is equal to the specified item in all respects. If item is disapproved by engineer contractor shall submit specified item and no further substitution will be allowed.

#### 15. U.S. Steel

All structural steel, reinforcing steel, supplemental steel or other major steel items to be incorporated in the work shall be produced or made in whole or substantial part in the United States, its territories or possessions.



## **16. As Built Drawings**

At completion of work submit copies of as built drawings indicating all field and approved modifications in electronic pdf format to owner prior to receipt of final payment.

All structural steel, reinforcing steel, supplemental steel or other major steel items to be incorporated in the work shall be produced or made in whole or substantial part in the United States, its territories or possessions.

## **17. Non-Asbestos Products**

- a. All materials specified herein shall contain no asbestos.
- b. Provide "Contains No Asbestos" permanent labels applied to the exterior jacket of all pipe insulation at 20 foot intervals with a minimum of one (1) label for each service in each work area.

## **18. Material Safety Data Sheet**

The contractor shall submit MSDS (Material Safety Data Sheet) for all chemicals, solvents, and materials specified or proposed to be used on this project.

## **19. Architect's/Engineer's Seal**

In accordance with Rules and Regulations of the New York State Education Law, Title 8, Part 69.5(b), to all plans, specifications and reports to which the seal of an architect has been applied, there shall also be applied a stamp with appropriate wording warning that it is a violation of the law for any person, unless acting under the direction of a licensed architect, to alter an item in any way. If an item bearing the seal of an architect is altered, the altering architect shall affix to his item the seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

## **20. Construction Permit**

The Code Compliance Manager for the State University Campus will, as required by law, issue a Construction Permit for this Project. The project is not subject to any local building code or permit requirements, except for work that the Contractor is to perform on property located outside of the boundaries of the campuses of the State University of New York.

## **21. Other Contracts**

There may be other contracts let for work to be done in adjacent areas and, as such, this Contractor and such other contractors shall coordinate their work to conform with progressive operation of all the work covered by such contracts, and afford each other reasonable opportunities for the introduction and storage of their supplies, materials, equipment, and the execution of their work.

## **22. Asbestos**

If the work to be done under this contract contains the abatement of asbestos the following shall apply:

- a. **Applicable Regulations** -All work to be done under this Contract shall be in compliance with Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (cited as 12 NYCRR Part 56) as amended effective November 9, 1994.
- b. **Applicable Variance** - The abatement contractor is responsible for obtaining any variance not issued to date that he feels may be applicable to the policies/procedures as set forth in 12 NYCRR Part 56.

- c. Owner Project Fact Sheet** -The Contractor shall complete and submit as much information as possible on the Asbestos Material Fact Sheet to the University in triplicate prior to the project startup. Completion of the Fact Sheet shall be submitted prior to acceptance.
- d. Patent Infringement** - The State University of New York and the State University Construction Fund have been given notice by a law firm representing GPAC, Inc. that the use of its process/procedure for asbestos containment and removal constitutes a patent infringement. All potential contractors are hereby notified that they may have to obtain a license to use certain patented Negative Air Containment systems, and that any liability of the University in connection therewith is covered by Section 2.21 of the Agreement. Therefore, all potential contractors are hereby notified that after opening of the bids they must advise the University as to the system they intend to use for Negative Air Containment and provide the University with either a copy of their license to use the same or written documentation, signed by an authorized officer of their surety, that their performance bond guarantees the Contractor's indemnification covering patent claims.
- e. Air Monitoring** - The abatement contractor shall be responsible for hiring and paying an independent third party firm to perform the requirements of air monitoring as called for in Subpart 56-17 of 12 NYCRR Part 56.
- f. Testing** - The University and Campus reserve the right to employ an independent testing laboratory to perform testing on the work and air sampling. The Contractor shall be required to cooperate with the testing laboratory.
- g. Disposal Procedures** - It is the responsibility of the asbestos contractor to determine current waste handling, transportation and disposal regulations for the work site and for each waste disposal landfill. The asbestos contractor must comply fully with these regulations, all appropriate U.S. Department of Transportation, EPA and Federal, State and local entities' regulations, and all other then current legal requirements. Submit originals or copies of all pertinent manifests in triplicate to the University.
- h. Submittals** - Prior to commencement of the work on this project, the Contractor must submit the following to the University:
- 1). Copy of original insurance policy.
  - 2). Copy of Department of Labor notification.
  - 3). Owner Fact Sheet.
  - 4). Copy of EPA notification.
- i. Special Requirements** -
- 1) Size, location, and quantities of all pipes, joints, ducts, valves, tees, etc. must be field verified by all prospective bidders. Information given on the drawings and specifications is for general orientation and information only.
  - 2) The Contractor shall have at least one English-speaking supervisor on the ob site at all times while the project is in progress.
  - 3) Prior to the commencement of work involving asbestos demolition, removal, renovation, the Contractor must submit to the University the name of its on-site asbestos supervisor responsible for such operations, together with documentation that such supervisor has completed an Environmental Protection Agency-approved training course for asbestos supervisors.

### 23. Wage Rates and Supplements

The rates of wages and supplements determined by the Industrial Commissioner of the State of New York as Prevailing in the locality of the site at which the work will be performed can be found at:

<http://wpp.labor.state.ny.us/wpp/publicViewProject.do?method=showIt&id=1119122>

The Prevailing Wage Case Number (PRC#) assigned to this project is: **PRC# 2014011280**



# Special Conditions for Construction

## Part 1 – Use of Premise

### 1.1 General

- A. Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. *For purposes of this provision, "site" shall include all existing structures.*
- B. Each Contractor's use of premises is limited only as outlined in this section and/or any other section of the specifications, or at the College's discretion, to perform work or to retain other contractors on portions of Project.
- C. Coordination with Other Contractors:
  - 1). The Contractor will need to have their portion of the Work coordinated with other Contractors working on the site so that their work conforms to the progressive operation of all the work covered under other contracts that the College has let on this site.
  - 2). Each Contractor shall afford other Contractors reasonable opportunities for the introduction and storage of their supplies, materials, equipment, and execution of their work.
  - 3). If the Contractor or such other contractors contend that their work of the progress thereof is being interfered with by the acts or omissions of the others or that there is a failure to coordinate or properly arrange the sequence of the work on the part of the Contractor or such other contractors, they shall, within five (5) working days of the commencement of such interference or failure of coordination or failure to perform work in proper sequence, give written notification to the College of such contention. Upon receipt of such notification or on its own initiative, the College shall investigate the situation and issue such instructions to the Contractor or such other contractors with respect thereto as it may deem proper. The College shall determine the rights of the Contractor and of such other contractors and the sequence of work necessary to expedite the completion of the work covered by said other contracts.
- D. All work is to be conducted in such a manner as to cause a minimum degree of interference with the College's operations and academic schedule. Contractor is to coordinate their work with the College's classroom schedule.
- E. The Contractor and its employees shall comply with all College regulations governing conduct, access to the premises, and operation of equipment.
- F. Maintain all paths of egress and keep clear of all materials and debris.
- G. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, and other adjacent occupied or used facilities without written permission from College.
- H. Should it become necessary, in the judgment of the College, at any time during the course of the Work to move materials which are stored on the site and equipment which has been temporarily placed thereon, the Contractor upon request of the College shall move them or cause them to be moved at its sole cost and expense; provided, however, if materials and equipment that have been stored or placed by the Contractor at a location on the site expressly approved, in writing, by the College and the same are moved or caused to be moved by the Contractor at the College's request, such removal shall be deemed extra work and the Contractor shall be compensated.

### 1.2 Campus Regulations

- A. The contractor and his/her employees, subcontractors, etc., will not fraternize with any building or campus occupants. This includes but is not limited to students, faculty, and employees of the State other than those designated, visitors and guests. At no time will it be appropriate to say anything derogatory to the above referenced individuals. Harassment, verbal or otherwise, of the above referenced individuals will **not** be tolerated. If an incident arises, the Contractor will be directed to **permanently remove** the employee from the site.
- B. No drugs are permitted on campus.
- C. No smoking is permitted in the buildings.

- D. The contractor, employees and sub-contractors are required to stay within the construction boundary lines at all times.
- E. The contractor, employees, and sub-contractors must recognize the fact that this is an institute for learning. Flexibility will be required during certain times of the academic year.

**1.3 Use of Permanent Utilities**

- A. The written request for permission for use of the system from the College shall include, as a minimum, the conditions and reasons for use and provisions for and effect on equipment warranties. In the event that the College accepts the Contractors use of the permanent utility for the balance of the Work, the Contractor shall be fully responsible for it, and shall pay all costs for operation, power, restoration and maintenance of same.
- B. If the existing facilities are not adequate for the Contractor, locate temporary facilities where they will serve Project adequately and result in minimum interference with performance of the Work and disruption to the College. Any temporary facilities location is to be reviewed and approved by College's Representative.

**1.4 Storage and Staging of Materials**

- A. The following shall apply to this project
  - 1). The Contractor shall store materials and equipment within areas designated on construction documents.
  - 2). Security for stored equipment and materials shall be the responsibility of the Contractor.
  - 3). The Contractor shall at all times keep access routes, and parking and staging areas clean of debris and other obstructions resulting from the work.

**1.5 Temporary Power for Construction Activities**

- A. Electrical energy, as it exists within the work area, will be available at **no** cost to the Contractor from existing outlets or panels from locations approved by the College. As this site is still under construction, if electrical power is not available in the area of work, it is the Contractor's responsibility to provide necessary power to perform the Work. Typically available power may be used for small power tools (not exceeding ½ HP).

**1.6 Temporary Lighting / Heating & Cooling / Water**

- A. Electrical lighting, as it exists within the work area, is available to the contractor at **no** cost. As this site is still under construction, if electrical lighting is not available in the area of work, it is the Contractor's responsibility to provide necessary temporary equipment to perform the Work at its cost.

**1.7 Temporary Sanitary Facilities**

- A. Toilet, Water, and Drinking Water Facilities: The Contractor shall make arrangements with the College for use of the existing toilet, water, and drinking water facilities if available. It is the Contractor's responsibility to maintain the facility during the construction and restore to original state upon completion of the project.

**1.8 Temporary Parking**

- A. Contractor is to abide to the following:
  - 1). The Contractor and its employees shall be subject to all the rules and regulations of the College, including parking regulations. The College is regulated by New York State Vehicle and Traffic Laws.
  - 2). The Contractor and its employees shall only park in the designated areas in Lot #W-2. There shall be no parking in other areas of the campus (unless prior written authorization is provided by the College Chief of Police).
  - 3). Parking violations are subject to fines and are the sole responsibility of the Contractor or its employees. Vehicles that are parked illegally may be towed at the expense of the owner/driver.
  - 4). All vehicles are required at all times to register with the College's Public Safety Unit.

- 5). There is \$35.00 fee for parking permits. The fee is per vehicle and permits need to be display whenever the vehicle is parked on campus.

**1.9 Temporary Support Facilities**

- A. Construction Aids: Provide all items, such as lifting devices, all scaffolding, staging, platforms, runways, ladders; and all temporary flooring, as required by the various trades for the proper execution of the Work. Provide such construction aids with proper guys, bracing, guards, railings and other safety devices as required by the governing authorities and OSHA.
- B. Elevator and Loading Dock Usage: The Contractor shall make all arrangements with the College's Representative for the use of elevators as required for transporting material and workmen to the work areas and for the disposal of rubbish and waste materials.

**1.10 Safety and Protection of Facilities**

- A. The Contractor shall provide the necessary safeguards to prevent accidents, to avoid all necessary hazards and protect the public, the Faculty and Staff, students, the work, and the property at all times, including Saturdays, Sundays, holidays, and other times when no work is being done. The Contractor shall submit a safety plan which shall be certified by a Certified Safety Professional from the Board of Certified Safety Professionals ([www.bcsp.org](http://www.bcsp.org)).
- B. The Contractor shall erect, maintain and remove appropriate barriers or other devices, including mechanical ventilation systems, as required by the conditions of the work for the protection of the users of the project area, adjoining areas, the protection of the work being done, or the containment of dust and debris. All such barriers or devices shall be provided in conformance with all applicable codes, laws and regulations, including OSHA and National Fire Prevention Association 241, for safeguarding of structures during construction.
- C. Fire safety during construction:
- 1). The Contractor shall provide all temporary equipment, labor and materials required for compliance with the applicable provisions of Chapter 14, Fire Safety during Construction and Demolition, of the Fire Code of New York State.
  - 2). For areas and spaces under their control, the Contractor shall comply with Chapter 14 of the Fire Code of New York State, titled "Fire Safety during Construction and Demolition". Subject to approval by the College's Consultant and the College, the Contractor shall designate one person as the **fire prevention program superintendent**. This superintendent shall be responsible for the fire prevention program required by Section 1408 of the Fire Code of New York State and implementing the minimum safeguards for construction, alteration, and demolition operations that provide reasonable safety to life and property from fire during the Contractor's operations. Responsibilities also include developing and maintaining pre-fire plans per 1408.2, the training of the Contractor's workforce per 1408.3, maintenance of the fire protection equipment per 1408.4, supervising hot work operations per 1408.5, and implementing temporary impairment to existing fire protection systems per 1408.6 & 1408.7. This superintendent shall also provide periodic written reports at the field meetings and respond to questions raised concerning compliance with Chapter 14 of the Fire Code of New York State.
- D. Contractor shall comply with Labor Law Section 220-h; provide workers certified as having successfully completed the OSHA 10-hour construction safety and health course; and comply with applicable NYS DOL rules and regulations for monitoring and reporting compliance.
- D. Temporary Fire Protection:
- GC to provide temporary Fire Protection as per New York Codes.

F. Fire Watch Requirements:

- 1). If any of the work of the Contractor;
  - a) Disables any fire suppression systems, standpipes systems, fire alarm systems, fire detection systems, smoke control systems and/or smoke vents as defined in Chapter 9 of the Fire Code of New York State (FCNYS).
  - b) Involves welding, cutting, open torches and other hot work as defined in Chapter 26 of the FCNYS and/or involves demolition activities that are hazardous in nature as defined in Chapter 14 of the FCNYS.

Then the Contractor shall provide a fire watch or perform the work during the hours where the building is scheduled by the College to be closed, in accordance with Section 901.7 of the FCNYS, for structures that have campus occupancy.

- 2). If a fire watch is required, the Contractor shall provide all labor that is required. The Contractor shall:
  - a) Contact the New York State Department of State Office of Fire Prevention and Control (OFPC) at 41 State Street, Albany, NY 12231-0001, Phone: (518) 474-6746, Fax: (518) 474-3240, e-mail: [fire@dos.state.ny.us](mailto:fire@dos.state.ny.us) and obtain its currently amended recommendation for fire watch procedures. Review the OFPC recommendations and notify the College's Consultant and/or College Representative if there are significant discrepancies with the requirements of this section.
  - b) Review the fire watch procedures with the College's alarm monitoring staff (University Police – 914-251-6900) and the fire department prior to disabling a fire protection system. Submit a plan for the fire watch for approval by the College's Consultant and/or College Representative, and schedule a pre-system shutdown meeting with the College's Consultant and/or College Representative.
  - c) Employ, instruct and maintain competent fire watch personnel. Provide the sufficient number of dedicated personnel that are required to patrol all portions of the means of egress system in the facility in the period of time required.
  - d) Notify University Police (UPD) prior to and at the conclusion of the fire watch.
  - e) Employ competent personnel to fix the fire protection system (see section 1.11 below).
- 3). Fire Watch Duties: Personnel serving as a fire watch have the following duties:
  - a) Conduct periodic patrols of the entire facility as specified below.
  - b) Identify any fire, life or property hazards.
  - c) Notify the UPD if a fire is discovered by call (914-251-6911), with the exact address and type of emergency.
  - d) Notify occupants of the facility of the need to evacuate. If sirens or public address function of the alarm system are still functional, use them to assist with evacuation of the building.
  - e) Have access to at least one means of direct communication with UPD. A cell phone is acceptable.
  - f) Maintain a written log of fire watch activities.
  - g) Have knowledge of the location and use of fire protection equipment, such as fire extinguishers. (Note: The fire watch will not perform fire-fighting duties beyond the scope of the ordinary citizen).
  - h) Perform no other duties that are not directly part of the fire watch duties.
- 4). Frequency of Inspections: Fire watch personnel should patrol the entire facility every 30 minutes except in the following situations, where patrols shall be every 15 minutes:
  - a) The facility has people sleeping.
- 5). Record Keeping: A fire watch log should be maintained at the facility. The log should show the following:
  - a) Address of the facility.
  - b) Times that the patrol has completed each tour of the facility.
  - c) Name of the person(s) conducting the fire watch.
  - d) Records of communication(s) to the University Police.
  - e) Record of other information directed by the College's Consultant and/of the College Representative.



**1.11 Modifications / Alterations to Campus Existing Fire Alarm Systems**

NA

**Part 2 – Party Responsibilities**

**2.1 Information and Services Required of the College**

- A. Furnished Information: College shall furnish (if available) surveys, existing plans, or other required information describing physical characteristics, legal limitation and utility locations for the site of the Project, and a legal description of the site. These documents are for information purposes only. They are to be field verified by the Contractor for accuracy. The College will not be responsible if actual conditions vary from what is indicated on the documents. Plans will be released to awarded Bidder in PDF electronic format.
- B. College's Right to Stop the Work: If Contractor fails to correct Work which is not in accordance with the requirements outlined, or fails to carry out Work in accordance with the Contract Documents, the College, by written order signed personally or by an agent specifically so empowered by the College in writing, may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the College to stop the Work shall not give rise to a duty on the part of the College to exercise this right for the benefit of Contractor or any other person or entity.
- C. College's Right to Carry Out the Work: If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten (10) business-day period after receipt of written notice from College to commence and continue correction of such default or neglect with diligence and promptness, College may, without prejudice to other remedies College may have, correct such deficiencies. *College may offset* from payments then or thereafter due Contractor the cost of correcting such deficiencies, including compensation for Consultant's additional services and expenses made necessary by such default, neglect or failure. If payments then or thereafter due Contractor are not sufficient to cover such amounts, Contractor shall pay the difference to the College.

**2.2 Information and Services Required of the Contractor**

- A. Review of Contract Documents: Contractor shall carefully study and compare the Contract Documents with each other and with the information furnished by the College, and shall at once report to the College Representative errors, inconsistencies or omissions discovered.
- B. Review of Field Conditions: Contractor shall, *sufficiently in advance of undertaking the Work*, take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to Contractor with the Contract Documents. Errors, inconsistencies or omissions discovered shall be reported to the College Representative at once. *If Contractor performs any construction activity which involves an error, inconsistency or omission which Contractor knew of or should reasonably have known of, without notice to College, Contractor shall assume responsibility for such performance and shall bear all costs of correction.*
- C. Construction Schedule: Contractor, promptly after being awarded the Contract, shall prepare and submit for College Representative, a Contractor's construction schedule for the Work.
- D. Supervision:
  - 1). Contractor shall supervise and direct the Work, using Contractor's best skill and attention. Contractor shall be solely responsible for and have control over *construction means*, methods, techniques, sequences and procedures *including safety programs and procedures*, and for coordinating all portions of the Work under the Contract.
  - 2). Contractor shall enforce strict discipline and good order among Contractor's employees and other persons carrying out the Contract. Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

- 3). Contractor shall be responsible for inspection of related portions of Work already performed, *as well as existing conditions*, to determine that such are in proper condition to receive subsequent Work.
- E. Contractor shall be responsible to College for acts and omissions of Contractor's employees, Subcontractors and their agents and employees, and other *persons or entities directly or indirectly employed by them* performing portions of the Work under a contract with Contractor
- F. Cutting and Patchwork:
- 1). Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.
  - 2). Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying or load-deflection ratio.
  - 3). Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety (i.e., mechanical systems, plumbing, fire alarm, etc.).
  - 4). Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - 5). Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 6). Dispose of demolished items and materials promptly.
  - 7). Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.
  - 8). Existing utilities services to the College must be maintained at all times. If the Contractor is required to affect these services in order to complete the Work, Contractor must obtain written permission from the College prior to this work (also see Special Requirements Section). Any damage or disruption of services shall need to be repaired immediately and at the Contractor's expense.
- G. Hot Work Permits:
- 1) If the work requires any Hot Work (including cutting, welding, Thermit welding, brazing, soldering (except soldering electronics or electrical components with an electric soldering iron or gun), grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar situation), the Contractor shall be required to obtain a Hot Work Permit issued by the College. The Contractor shall request this through the College Representative, and be given a copy of the College's "Hot Work Guidelines and Permit Process" and the permit forms to be filled out. The Contractor must request, submit, and be given a permit before any Hot Work begins.
- H. Cleaning Up:
- 1). Contractor shall *at all times* keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work Contractor shall remove from and about Project waste materials, rubbish, Contractor's tools, construction equipment, machinery and surplus materials.
  - 2). If Contractor fails to clean up as provided in the Contract Documents, College may do so and the cost thereof shall be charged to Contractor.
  - 3). If a dispute arises among Contractor, separate contractors and College as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described above, College may clean up and allocate the cost among those responsible
- I. Access to Work: Contractor shall provide College access to *all portions of* the Work in preparation and progress wherever located.

**2.3 Communications Protocol for Contract Administration**

- A. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, Contractor shall communicate through the College Representative to the College. Communications by and with College's consultants shall be through College Representative. Communications by and with Subcontractors and material suppliers shall be through Contractor.

# **Technical Specification**



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A. 28 31 00 - Fire Detection and Alarm

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**SECTION 02 41 00**

**DEMOLITION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Selective demolition of building elements for alterations purposes.
- B. Abandonment and removal of existing utilities and utility structures.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 10 00 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
- C. Section 01 50 00 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 60 00 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 70 00 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- F. Section 01 74 19 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- G. Section 31 10 00 - Site Clearing: Vegetation and existing debris removal.

**1.03 REFERENCE STANDARDS**

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.

**PART 3 EXECUTION**

**2.01 SCOPE**

- A. Remove any items marked on drawings
- B. Remove other items indicated, for salvage, relocation, and recycling. (GC to remove Oil Tank installation and dispose.
- C.

**2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS**

- A. Comply with other requirements specified in Section 01 70 00.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
  - 1. Obtain required permits.
  - 2. Comply with applicable requirements of NFPA 241.
  - 3. Use of explosives is not permitted.
  - 4. Provide, erect, and maintain temporary barriers and security devices.



5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
  6. Do not close or obstruct roadways or sidewalks without permit.
  7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
- E. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- F. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- G. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

### **2.03 EXISTING UTILITIES**

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

### **2.04 SELECTIVE DEMOLITION FOR ALTERATIONS**

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as shown.
  2. Report discrepancies to Architect before disturbing existing installation.
  3. Beginning of demolition work constitutes acceptance of existing conditions.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. Remove existing work as indicated and as required to accomplish new work.

1. Remove items indicated on drawings.
- E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
  2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
  3. Verify that abandoned services serve only abandoned facilities before removal.
  4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
  2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
  3. Repair adjacent construction and finishes damaged during removal work.
  4. Patch as specified for patching new work.

#### **2.05 DEBRIS AND WASTE REMOVAL**

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 - Waste Management.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

**END OF SECTION**



**SECTION 03 01 30.75**

**CONCRETE REPAIR**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Preparation of concrete and application of repair materials.
- B. Repair of concrete internal reinforcement.

**1.02 PRICE AND PAYMENT PROCEDURES**

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

**1.03 REFERENCE STANDARDS**

- A. ASTM A 82/A 82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.
- B. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.
- C. ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.
- D. ASTM C 150 - Standard Specification for Portland Cement; 2007.
- E. ASTM C 404 - Standard Specification for Aggregates for Masonry Grout; 2007.
- F. ASTM C 882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear; 2005.
- G. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics; 2008.
- H. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2002a.
- I. ASTM D 790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2007.
- J. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; American Welding Society; 2005.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- C. Manufacturer's Certificate: Certify that specified products meet or exceed specified requirements.
- D. Project Record Documents: Accurately record actual locations of structural reinforcement repairs, type of repair.

**1.05 QUALITY ASSURANCE**

- A. Perform welding work in accordance with AWS D1.4.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this section with minimum 3 years of experience.

- D. Design reinforcement splices under direct supervision of a Professional Structural Engineer experienced in design of this type of work and licensed in New York.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Epoxy Mortars:
  - 1. Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
  - 2. Chase Construction Products: [www.e-poxy.com](http://www.e-poxy.com).
  - 3. STO Corp: [www.stocorp.com](http://www.stocorp.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Cementitious Mortars:
  - 1. Bonsal American, Inc: [www.sakrete.com](http://www.sakrete.com).
  - 2. Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Bonding Agents:
  - 1. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 2. Larsen Products Corp: [www.larsenproducts.com](http://www.larsenproducts.com).
  - 3. L&M Construction Chemicals, Inc: [www.lmcc.com](http://www.lmcc.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.02 PATCHING MATERIALS**

- A. Epoxy Resin: Two-part epoxy adhesive containing 100 percent solids, meeting the following minimum characteristics:
  - 1. Bond Strength (ASTM C 882): 2,700 psi.
  - 2. Tensile Strength (ASTM D 638): 6,600 psi.
  - 3. Percent Elongation (ASTM D 638): 2 percent at 7 days at 70 degrees F.
  - 4. Flexural Strength (ASTM D 790): 8,000 psi.
  - 5. Compressive Strength (ASTM D 695): 6,500 psi.
- B. Bonding Agent: Polyvinyl acetate emulsion, dispersed in water while mixing, non-coagulant in mix, water resistant when cured.
- C. Portland Cement: ASTM C 150, Type I, grey.
- D. Sand: ASTM C 33 or ASTM C 404; uniformly graded, clean.
- E. Water: Clean and potable.
- F. Cleaning Agent: Commercial muriatic acid.

### **2.03 REINFORCEMENT MATERIALS**

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 40 (280) billet-steel deformed bars, galvanized.
- B. Stirrup Steel: ASTM A 82/A 82M.

### **2.04 MIXING EPOXY MORTARS**

- A. Mix epoxy mortars in accordance with manufacturer's instructions for purpose intended.
- B. Mix components in clean equipment or containers. Conform to pot life and workability limits.

### **2.05 MIXING CEMENTITIOUS MATERIALS**

- A. Mix cementitious mortar and grout in accordance with manufacturer's instructions for purpose

intended.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

#### **3.02 PREPARATION**

- A. Clean concrete surfaces of dirt, laitance, corrosion, or other contamination; wire brush using water; rinse surface and allow to dry.
- B. Flush out cracks and voids with chemical solvent to remove laitance and dirt. Chemically neutralize by rinsing with water.
- C. Provide temporary entry ports spaced to accomplish movement of fluids between ports; no deeper than the depth of the crack to be filled or port size diameter no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.
- D. For areas patched with epoxy mortar, remove broken and soft concrete 1/4 inch deep. Remove corrosion from steel. Clean surfaces mechanically; wash with cleaning agent; rinse with water.
- E. Blast clean the exposed reinforcement steel surfaces. Mechanically cut away damaged portions of bar.

#### **3.03 REPAIR WORK**

- A. Repair exposed structural, shrinkage, and settlement cracks of concrete as indicated on drawings by the epoxy injection method.
- B. Repair spalling. Fill voids flush with surface. Apply surface finish.
- C. Repair reinforcement by welding new bar reinforcement to existing reinforcement with sleeve splices. Strength of welded splices to exceed original stress values.

#### **3.04 INJECTION - EPOXY RESIN ADHESIVE**

- A. Inject adhesive into prepared ports under pressure using equipment appropriate for particular application.
- B. Begin injection at lower entry port and continue until adhesive appears in adjacent entry port. Continue from port to port until entire crack is filled.
- C. Remove temporary seal and excess adhesive.
- D. Clean surfaces adjacent to repair and blend finish.

#### **3.05 APPLICATION - EPOXY MORTAR**

- A. Trowel apply mortar mix to a thickness to suit condition. Tamp into place filling voids at spalled areas.
- B. For patching honeycomb, trowel mortar onto surface, work mortar into honeycomb to bring surface flush with surrounding area. Finish trowel surface to match surrounding area.
- C. Cover exposed steel reinforcement with epoxy mortar, feather edges to flush surface.

#### **3.06 APPLICATION - CEMENTITIOUS MORTAR**

- A. Apply spray coating of bonding agent to dry concrete surfaces. Provide full surface coverage.
- B. Apply cementitious mortar by steel trowel to a thickness to suit condition. Tamp into place

filling voids at spalled areas. Work mix into honeycomb.

- C. Damp cure cementitious mortar for four days.

**3.07 FIELD QUALITY CONTROL**

- A. An independent testing agency, as specified in Section 01 40 00, will perform field inspection and testing.

**END OF SECTION**

**SECTION 03 30 00**

**CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Floors and slabs on grade.
- C. Concrete reinforcement.
- D. Joint devices associated with concrete work.
- E. Miscellaneous concrete elements, including equipment pads.
- F. Concrete curing.

**1.02 PRICE AND PAYMENT PROCEDURES**

- A. Cast-in-place concrete work will be paid for by the unit price method.
- B. See Section 01 22 00 - Unit Prices, for additional unit price requirements.
- C. Concrete - Slab-on-Fill or Slab-on-Grade: Includes formwork as specified in Section 03 10 00, reinforcement as specified in Section 03 20 00, concrete, placement accessories, consolidating and leveling, troweling, and curing. Measurement by:
  - 1. Cubic yard.
- D. Concrete - Miscellaneous Locations: Includes formwork as specified in Section 03 10 00, reinforcement as specified in Section 03 20 00, concrete, placement accessories, consolidating, and curing. Measurement by:
  - 1. Cubic yard.
- E. Concrete - Grouting: Includes preparation of substrate, grout, placement, consolidating, troweling, and curing. Measurement by the cubic yard.
- F. Construction Joint Devices: Includes component, accessories, and installation. Measurement by the linear foot.

**1.03 REFERENCE STANDARDS**

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2006.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- C. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2005.
- D. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).
- E. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- F. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 1999.
- G. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 1988 (Reapproved 2002).
- H. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001.



- I. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2008.
- J. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.
- K. ASTM A 185/A 185M - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete; 2007.
- L. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement; 2007.
- M. ASTM A 767/A 767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2005.
- N. ASTM C 33 - Standard Specification for Concrete Aggregates; 2007.
- O. ASTM C 39/C 39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2005.
- P. ASTM C 94/C 94M - Standard Specification for Ready-Mixed Concrete; 2007.
- Q. ASTM C 150 - Standard Specification for Portland Cement; 2007.
- R. ASTM C 171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- S. ASTM C 260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2006.
- T. ASTM C 494/C 494M - Standard Specification for Chemical Admixtures for Concrete; 2008.
- U. ASTM C 618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2005.
- V. ASTM C 685/C 685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2007.
- W. ASTM C 881/C 881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2002.
- X. ASTM C 1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 1999.
- Y. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2007a.
- Z. ASTM D 1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004.
- AA. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 1997 (Reapproved 2004).
- AB. COE CRD-C 513 - COE Specifications for Rubber Waterstops; Corps of Engineers; 1974.

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- C. Samples: Submit samples of underslab vapor retarder to be used.

- D. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

### **1.05 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
  - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

## **PART 2 PRODUCTS**

### **2.01 FORMWORK**

- A. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
  - 2. Earth Cuts: Do not use earth cuts as forms for vertical surfaces. Natural rock formations that maintain a stable vertical edge may be used as side forms.
  - 3. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
  - 4. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

### **2.02 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
  - 1. Type: Deformed billet-steel bars.
  - 2. Finish: Galvanized in accordance with ASTM A 767/A 767M, Class I, unless otherwise indicated.
- B. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.
  - 1. Form: Coiled Rolls.
  - 2. Mesh Size and Wire Gage: As indicated on drawings.
- C. Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gage.
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

### **2.03 CONCRETE MATERIALS**

- A. Cement: ASTM C 150, Type I - Normal portland type.
  - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
  - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C 618, Class C or F.
- D. Water: Clean and not detrimental to concrete.

## **2.04 CHEMICAL ADMIXTURES**

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C 260.
- C. Water Reducing and Accelerating Admixture: ASTM C 494/C 494M Type E.
- D. Water Reducing and Retarding Admixture: ASTM C 494/C 494M Type D.
- E. Accelerating Admixture: ASTM C 494/C 494M Type C.
- F. Retarding Admixture: ASTM C 494/C 494M Type B.
- G. Water Reducing Admixture: ASTM C 494/C 494M Type A.

## **2.05 ACCESSORY MATERIALS**

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is prohibited.
- B. Non-Shrink Grout: ASTM C 1107/C 1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
- C. Moisture-Retaining Cover: ASTM C 171; regular curing paper, white curing paper, clear polyethylene, white polyethylene, or white burlap-polyethylene sheet.

## **2.06 BONDING AND JOINTING PRODUCTS**

- A. Latex Bonding Agent: Non-dispersible acrylic latex, complying with ASTM C 1059 Type II.
- B. Epoxy Bonding System: Complying with ASTM C 881/C 881M and of Type required for specific application.
- C. Waterproofing Admixture Slurry: Slurry coat of portland cement, sand, and crystalline waterproofing additive, mixed with water in proportions recommended by manufacturer to achieve waterproofing at cold joints in concrete.
- D. Waterstops: Rubber, complying with COE CRD-C 513.
- E. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
- F. Joint Filler: Nonextruding, resilient asphalt impregnated fiberboard or felt, complying with ASTM D 1751, 1/4 inch thick and 4 inches deep; tongue and groove profile.

## **2.07 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
- D. Normal Weight Concrete:
  - 1. Compressive Strength, when tested in accordance with ASTM C 39/C 39M at 28 days: 3,000 psi.

## **2.08 MIXING**

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C 685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C 94/C 94M.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.02 PREPARATION**

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
  - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
  - 2. Use latex bonding agent only for non-load-bearing applications.
- E. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.
- F. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.
- G. Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches and seal watertight by taping edges and ends. Cover with sand to depth shown on drawings; repair damaged vapor retarder before covering.

### **3.03 INSTALLING REINFORCEMENT**

- A. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

### **3.04 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

- D. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- E. Separate slabs on grade from vertical surfaces with joint filler.
- F. Install joint devices in accordance with manufacturer's instructions.
- G. Install construction joint devices in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- H. Apply sealants in joint devices in accordance with Section 07 90 05.
- I. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- J. Place concrete continuously between predetermined expansion, control, and construction joints.
- K. Do not interrupt successive placement; do not permit cold joints to occur.

### **3.05 CONCRETE FINISHING**

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
  - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
  - 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
  - 1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 301.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
  - 2. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

### **3.06 CURING AND PROTECTION**

- A. Comply with requirements of ACI 308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Surfaces Not in Contact with Forms:
  - 1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
  - 2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
  - 3. Final Curing: Begin after initial curing but before surface is dry.
    - a. Moisture-Retaining Cover: Seal in place with waterproof tape or adhesive.

### **3.07 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C 39/C 39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

### **3.08 DEFECTIVE CONCRETE**

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

**END OF SECTION**



**SECTION 05 12 00**

**STRUCTURAL STEEL FRAMING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Structural steel framing members, support members.
- B. Base plates, as per drawings.
- C. Grouting under base plates.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 31 00 - Steel Decking: Support framing for small openings in deck.
- B. Section 05 50 00 - Metal Fabrications: Steel fabrications affecting structural steel work.
- C. Section 07 81 00 - Applied Fireproofing: Fireproof protection to framing and metal deck systems.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.

**1.04 REFERENCE STANDARDS**

- A. AISC (MAN) - Steel Construction Manual; American Institute of Steel Construction, Inc.; 2005.
- B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.
- C. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts; 2004.
- D. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- E. ASTM A 242/A 242M - Standard Specification for High-Strength Low-Alloy Structural Steel; 2004.
- F. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2007a.
- G. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2007.
- H. ASTM A 490 - Standard Specification for Structural Bolts, Alloy Steel, Heat-Treated, 150 ksi Minimum Tensile Strength; 2008a.
- I. ASTM A 490M - Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric); 2004.
- J. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.
- K. ASTM A 514/A 514M - Standard Specification for High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding; 2005.
- L. ASTM A 529/A 529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2005.
- M. ASTM A 563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a.
- N. ASTM A 563M - Standard Specification for Carbon and Alloy Steel Nuts [Metric]; 2007.



- O. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2007.
- P. ASTM A 992/A 992M - Standard Specification for Structural Steel Shapes; 2006a.
- Q. ASTM C 1107/C 1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2007a.
- R. ASTM E 94 - Standard Guide for Radiographic Examination; 2004.
- S. ASTM E 164 - Standard Practice for Ultrasonic Contact Examination of Weldments; 2003.
- T. ASTM F 436 - Standard Specification for Hardened Steel Washers; 2007a.
- U. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.
- V. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.

### **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
  - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
  - 2. Connections not detailed.
  - 3. Indicate cambers and loads.
  - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
- D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

### **1.06 QUALITY ASSURANCE**

- A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."
- B. Comply with Section 10 of AISC "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
- C. Maintain one copy of each document on site.
- D. Fabricator: Company specializing in performing the work of this section with minimum 5 years of documented experience.
- E. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.
- F. Design connections not detailed on the drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in New York.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. Steel Angles and Plates: ASTM A 36/A 36M.
- B. Steel W Shapes and Tees: ASTM A 992/A 992M.

- C. Steel Shapes, Plates, and Bars: ASTM A 242/A 242M high-strength, corrosion-resistant structural steel.
- D. Steel Shapes, Plates, and Bars: ASTM A 529/A 529M high-strength, carbon-manganese structural steel, Grade 50.
- E. Steel Plates and Bars: ASTM A 572/A 572M, Grade 50 (345) high-strength, columbium-vanadium steel.
- F. Cold-Formed Structural Tubing: ASTM A 500, Grade B.
- G. Steel Plate: ASTM A 514/A 514M.
- H. High-Strength Structural Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, medium carbon, galvanized.
- I. High-Strength Structural Bolts: ASTM A 490 (ASTM A 490M), with matching ASTM A 563 (ASTM A 563M) nuts and ASTM F 436 washers; Type 1 alloy steel.
- J. Headed Anchor Rods: ASTM A 307, Grade C, zinc-coated.
- K. Welding Materials: AWS D1.1; type required for materials being welded.
- L. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C 1107/C 1107M and capable of developing a minimum compressive strength of 3000 psi at 28 days.
- M. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.
- N. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

## **2.02 FABRICATION**

- A. Shop fabricate to greatest extent possible.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- C. Fabricate connections for bolt, nut, and washer connectors.
- D. Develop required camber for members.

## **2.03 FINISH**

- A. Prepare structural component surfaces in accordance with SSPC SP.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

### **3.02 ERECTION**

- A. Erect structural steel in compliance with AISC "Code of Standard Practice for Steel Buildings and Bridges".

- B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Field weld components indicated on shop drawings.
- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
- E. Do not field cut or alter structural members without approval of Architect.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

### **3.03 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00.
- B. Welded Connections: Visually inspect all field-welded connections and test at least 50 percent of welds using one of the following:
  - 1. Radiographic testing performed in accordance with ASTM E 94.
  - 2. Ultrasonic testing performed in accordance with ASTM E 164.

**END OF SECTION**

**SECTION 05 31 00**

**STEEL DECKING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Roof deck.
- B. Bearing plates and angles.
- C. Acoustical insulation in roof deck flutes.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 12 00 - Structural Steel Framing: Support framing.

**1.03 REFERENCE STANDARDS**

- A. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- B. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- C. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.
- E. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2007.
- F. SDI (DM) - Publication No.31, Design Manual for Composite Decks, Form Decks, Roof Decks; Steel Deck Institute; 2007.
- G. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); The Society for Protective Coatings; 2002 (Ed. 2004).
- H. SSPC-Paint 25 - Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II; Society for Protective Coatings; 1997 (Ed. 2004).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.
- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, accessories, and roof drain location(s).
- C. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.
- D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

**1.05 QUALITY ASSURANCE**

- A. Design deck layout, spans, fastening, and joints under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in New York.
- B. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Cut plastic wrap to encourage ventilation.

- B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Steel Deck:
  - 1. United Steel Deck, Inc: [www.njb-united.com](http://www.njb-united.com).
  - 2. Nucor-Vulcraft Group: [www.vulcraft.com](http://www.vulcraft.com).
  - 3. Wheeling Corrugating Co: [www.wheelingcorrugating.com](http://www.wheelingcorrugating.com).

### **2.02 STEEL DECK**

- A. Roof Deck: Non-composite type, fluted steel sheet:
  - 1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.

### **2.03 ACCESSORY MATERIALS**

- A. Bearing Plates and Angles: ASTM A 36/A 36M steel, galvanized per ASTM A 123/A 123M.
- B. Welding Materials: AWS D1.1.
- C. Fasteners: Galvanized hardened steel, self tapping.
- D. Weld Washers: Mild steel, uncoated, 3/4 inch outside diameter, 1/8 inch thick.
- E. Shop and Touch-Up Primer: SSPC-Paint 25, zinc oxide, complying with VOC limitations of authorities having jurisdiction.
- F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, complying with VOC limitations of authorities having jurisdiction.
- G. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.
- H. Acoustical Insulation: Glass fiber type, minimum 1.1 lb/cu ft density; profiled to suit deck.

### **2.04 FABRICATED DECK ACCESSORIES**

- A. Sheet Metal Deck Accessories: Metal closure strips and cover plates, 22 gage thick sheet steel; of profile and size as indicated; finished same as deck.
- B. Floor Drain Pans: 14 gage sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches below floor deck surface, bearing flange 3 inches wide, sealed watertight.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions prior to beginning work.

### **3.02 INSTALLATION**

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.
- B. On steel supports provide minimum 1-1/2 inch bearing.
- C. Fasten deck to steel support members at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
- D. Weld deck in accordance with AWS D1.3.
- E. Where deck changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches on center maximum.
- F. At openings between deck and walls, columns, and openings, provide sheet steel closures and

angle flashings to close openings.

- G. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.
- H. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.
- I. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

**END OF SECTION**



**SECTION 05 50 00**

**METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 09 90 00 - Painting and Coating: Paint finish.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 01 22 00 - Unit Prices, for additional requirements.
- B. Components:
  - 1. Basis of Measurement: By the pound.
  - 2. Basis of Payment: Includes fabrication, finishing, and installation.
- C. Components:
  - 1. Basis of Measurement: By the unit.
  - 2. Basis of Payment: Includes fabrication, finishing, and installation.

**1.04 REFERENCE STANDARDS**

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.
- B. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- C. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.
- D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- E. ASTM A 153/A 153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2005.
- F. ASTM A 283/A 283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2003 (Reapproved 2007).
- G. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2007a.
- H. ASTM A 325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2007.
- I. ASTM A 500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2007.
- J. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
- K. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.
- L. ASTM B 210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2004.
- M. ASTM B 210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric); 2005.



- N. ASTM B 211 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire; 2003.
- O. ASTM B 211M - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire (Metric); 2003.
- P. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2006.
- Q. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.
- R. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.
- S. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.
- T. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; American Welding Society; 2003, and Errata 2004.
- U. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
- V. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).
- W. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; 1982 (Ed. 2004).

#### **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

#### **1.06 QUALITY ASSURANCE**

- A. Design under direct supervision of a Professional Engineer experienced in design of this Work and licensed in New York.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, Grade B cold-formed structural tubing.
- C. Plates: ASTM A 283.
- D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
- E. Slotted Channel Framing: ASTM A 653, Grade 33.
- F. Slotted Channel Fittings: ASTM A 1011/A 1011M.
- G. Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.
- H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

- I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- J. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

## **2.02 MATERIALS - ALUMINUM**

- A. Extruded Aluminum: ASTM B 221 (ASTM B 221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B 209 (ASTM B 209M), 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B 210 (ASTM B 210M), 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B 211 (ASTM B 211M), 6061 alloy, T6 temper.
- E. Bolts, Nuts, and Washers: Stainless steel.
- F. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

## **2.03 FABRICATION**

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

## **2.04 FABRICATED ITEMS**

- A. Joist Hangers: Strap anchors, fabricated with steel; galvanized finish.
- B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of metal decking; prime paint finish.
- C. Sill Angles for Tempered Glass Railing Assemblies: ASTM A 36/A 36M steel angles with anchoring devices and sizes as indicated in shop drawings for railing assembly, drilled and tapped for fastener types, sizes, and spacing indicated, prime paint finish.
- D. Toilet Partition Suspension Members: Steel channel sections; prime paint finish.
- E. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

## **2.05 FINISHES - STEEL**

- A. Prime paint all steel items.
  - 1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A 123/A 123M requirements.

- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

## **2.06 FINISHES - ALUMINUM**

- A. Exterior Aluminum Surfaces: Class I color anodized.
- B. Interior Aluminum Surfaces: Class I color anodized.
- C. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick; dark bronze.
- D. Class I Color Anodized Finish: AAMA 611 AA-C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick; dark bronze.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### **3.03 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Obtain approval prior to site cutting or making adjustments not scheduled.
- E. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

**END OF SECTION**

**SECTION 06 10 00**

**ROUGH CARPENTRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Non-structural dimension lumber framing.
- B. Rough opening framing for doors, windows, and roof openings.
- C. Roof-mounted curbs.
- D. Roofing nailers.
- E. Roofing cant strips.
- F. Preservative treated wood materials.
- G. Fire retardant treated wood materials.
- H. Miscellaneous framing and sheathing.
- I. Concealed wood blocking, nailers, and supports.

**1.02 RELATED REQUIREMENTS**

- A. Section 09 21 16 - Gypsum Board Assemblies: Gypsum-based sheathing.

**1.03 REFERENCE STANDARDS**

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.
- B. AWPA C2 - Lumber, Timber, Bridge Ties and Mine Ties -- Preservative Treatment by Pressure Processes; American Wood Protection Association; 2003.
- C. AWPA C20 - Structural Lumber -- Fire Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2003.
- D. AWPA C27 - Plywood -- Fire-Retardant Treatment by Pressure Processes; American Wood-Protection Association; 2002.
- E. AWPA U1 - Use Category System: User Specification for Treated Wood; American Wood-Protection Association; 2007.
- F. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

**PART 2 PRODUCTS**

**2.01 GENERAL REQUIREMENTS**

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee ([www.alsc.org](http://www.alsc.org)) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

## **2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS**

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
  1. Lumber: S4S, No. 2 or Standard Grade.
  2. Boards: Standard or No. 3.

## **2.03 CONSTRUCTION PANELS**

- A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E 84.

## **2.04 FACTORY WOOD TREATMENT**

- A. Treated Lumber and Plywood: Comply with requirements of AWWA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
  1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
  2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWWA standards.
- B. Fire Retardant Treatment:
  1. Interior Type A: AWWA Use Category UCFA, Commodity Specification H (Treatment C20 for lumber and C27 for plywood), low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E 84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
    - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
    - b. Treat rough carpentry items as indicated .
    - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.
- C. Preservative Treatment:
  1. Preservative Pressure Treatment of Lumber Above Grade: AWWA Use Category UC3B, Commodity Specification A (Treatment C2) using waterborne preservative to 0.25 lb/cu ft retention.
    - a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
    - b. Treat lumber in contact with roofing, flashing, or waterproofing.
    - c. Treat lumber in contact with masonry or concrete.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous

over top of foundation, lap ends of flashing minimum of 4 inches and seal.

### **3.02 INSTALLATION - GENERAL**

- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

### **3.03 BLOCKING, NAILERS, AND SUPPORTS**

- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- C. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

### **3.04 ROOF-RELATED CARPENTRY**

- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
- B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

### **3.05 INSTALLATION OF CONSTRUCTION PANELS**

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
  - 1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
  - 2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
  - 3. Install adjacent boards without gaps.

### **3.06 CLEANING**

- A. Waste Disposal: Comply with the requirements of Section 01 74 19.
  - 1. Comply with applicable regulations.
  - 2. Do not burn scrap on project site.
  - 3. Do not burn scraps that have been pressure treated.
  - 4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

**END OF SECTION**



**SECTION 06 41 00**

**ARCHITECTURAL WOOD CASEWORK**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Specially fabricated cabinet units.
- B. Countertops.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 09 90 00 - Painting and Coating: Site finishing of cabinet exterior.

**1.03 REFERENCE STANDARDS**

- A. ANSI A208.1 - American National Standard for Particleboard; 1999.
- B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2002.
- C. AWI/AWMAC (QSI) - Architectural Woodwork Quality Standards Illustrated; Architectural Woodwork Institute and Architectural Woodwork Manufacturers Association of Canada; 2005, 8th Ed., Version 2.0.
- D. NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
- C. Product Data: Provide data for hardware accessories.
- D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

**1.06 QUALITY ASSURANCE**

- A. Perform work in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.
- B. Perform cabinet construction in accordance with AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, Custom quality, unless other quality is indicated for specific items.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Manufacturer Qualifications: Member in good standing of the Architectural Woodwork Institute (AWI) or the Architectural Woodwork Manufacturers Association of Canada (AWMAC) and familiar with the AWI/AWMAC QSI.



- E. Quality Certification: Provide inspection and quality certification of completed custom cabinets in accordance with AWI/AWMAC Quality Certification Program.

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Protect units from moisture damage.

### **1.08 FIELD CONDITIONS**

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

## **PART 2 PRODUCTS**

### **2.01 WOOD-BASED COMPONENTS**

- A. Wood fabricated from old growth timber is not permitted.
- B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 60 00.
- C. Provide wood harvested within a 500 mile radius of the project site.

### **2.02 PANEL MATERIALS**

- A. Particleboard: ANSI A208.1; medium density industrial type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated, composed of wood chips bonded with interior grade adhesive under heat and pressure; sanded faces; thickness as required; use for components indicated on drawings.
- B. Medium Density Fiberboard (MDF): ANSI A208.2; type as specified in AWI/AWMAC Architectural Woodwork Quality Standards Illustrated; composed of wood fibers pressure bonded with moisture resistant adhesive to suit application; sanded faces; thickness as required.
- C. Plywood for Non-Decorative Purposes: NIST PS 1, Interior rated adhesives, core of wood plies from listed species unless otherwise indicated, thickness as indicated or as required by application.

### **2.03 LAMINATE MATERIALS**

- A. Manufacturers:
  - 1. Formica Corporation: [www.formica.com](http://www.formica.com).
  - 2. Panolam Industries International, Inc\Nevamar: [www.nevamar.com](http://www.nevamar.com).
  - 3. Wilsonart International, Inc: [www.wilsonart.com](http://www.wilsonart.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Provide specific types as scheduled.
  - 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, colors as scheduled, finish as scheduled.
  - 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, colors as scheduled, finish as scheduled.
  - 3. Cabinet Liner: CLS, 0.020 inch nominal thickness, colors as scheduled, finish as scheduled.
  - 4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

### **2.04 COUNTERTOPS**

- A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL,

conventionally fabricated and self-edge banded.

## **2.05 ACCESSORIES**

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel, or chrome-plated finish in exposed locations.
- D. Grommets: Standard plastic grommets for cut-outs, in color to match adjacent surface.

## **2.06 SHOP TREATMENT OF WOOD MATERIALS**

- A. Provide UL approved identification on fire retardant treated material.
- B. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

## **2.07 SITE FINISHING MATERIALS**

- A. Finishing: Site finished as specified in Section 09 90 00.

## **2.08 FABRICATION**

- A. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- B. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.
  - 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
  - 2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of backing and support framing.

### **3.02 INSTALLATION**

- A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- B. Use fixture attachments in concealed locations for wall mounted components.
- C. Use concealed joint fasteners to align and secure adjoining countertops.
- D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- E. Secure counter bases to floor using appropriate angles and anchorages.
- F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

### **3.03 ADJUSTING**

- A. Adjust installed work.

### **3.04 CLEANING**

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

**END OF SECTION**

**SECTION 07 21 00**

**THERMAL INSULATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Board insulation at perimeter foundation wall and underside of floor slabs.
- B. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Supporting construction for batt insulation.
- B. Section 07 25 00 - Weather Barriers: Separate air barrier and vapor retarder materials.
- C. Section 07 53 00 - Elastomeric Membrane Roofing: Insulation specified as part of roofing system.
- D. Section 09 21 16 - Gypsum Board Assemblies: Acoustic insulation.

**1.03 REFERENCE STANDARDS**

- A. ASTM C 578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2007.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

**1.05 FIELD CONDITIONS**

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

**PART 2 PRODUCTS**

**2.01 APPLICATIONS**

- A. Insulation Under Concrete Slabs: Extruded polystyrene board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene board.
- C. Insulation in Metal Framed Walls: Batt insulation with separate vapor retarder.
- D. Insulation Above Lay-In Acoustical Ceilings: Batt insulation with no vapor retarder.

**2.02 FOAM BOARD INSULATION MATERIALS**

- A. Extruded Polystyrene Board Insulation: ASTM C 578, Type X; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
  - 1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E 84.
  - 2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E 84.
  - 3. Manufacturers:

- a. Dow Chemical Co: [www.dow.com](http://www.dow.com).
- b. Owens Corning Corp: [www.owenscorning.com](http://www.owenscorning.com).
- c. Pactiv Building Products: [www.pactiv.com/green-guard/](http://www.pactiv.com/green-guard/).
4. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.03 BATT INSULATION MATERIALS**

#### **2.04 ACCESSORIES**

- A. Sheet Vapor Retarder: Specified in Section 07 25 00.
- B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- C. Nails or Staples: Steel wire; electroplated, or galvanized; type and size to suit application.
- D. Wire Mesh: Galvanized steel, hexagonal wire mesh.
- E. Adhesive: Type recommended by insulation manufacturer for application.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

#### **3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER**

- A. Adhere a 6 inch wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
  1. Tape seal joints.
  2. Extend sheet full height of joint.
- B. Install boards horizontally on foundation perimeter.
  1. Place boards to maximize adhesive contact.
  2. Install in running bond pattern.
  3. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Extend boards over expansion joints, unbonded to foundation on one side of joint.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

#### **3.03 BOARD INSTALLATION UNDER CONCRETE SLABS**

- A. Place insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

#### **3.04 BATT INSTALLATION**

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

- E. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over member face.
- F. Tape seal tears or cuts in vapor retarder.
- G. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

**3.05 PROTECTION**

- A. Do not permit installed insulation to be damaged prior to its concealment.

**END OF SECTION**



## SECTION 07 25 00

### WEATHER BARRIERS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Air Barriers: Materials to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

##### 1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-In-Place Concrete: Vapor retarder under concrete slabs on grade.
- B. Section 07 53 00 - Elastomeric Membrane Roofing: Vapor retarder installed as part of roofing system.
- C. Section 07 90 05 - Joint Sealers: Sealant materials and installation techniques.

##### 1.03 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, vapor retarders, or water-resistive barriers.
- B. Air Barrier: Air-tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
- C. Vapor Retarder: Air-tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
  - 1. Water Vapor Permeance: For purposes of conversion,  $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$ .
- D. Water-Resistive Barrier: Water-shedding barrier made of material that is moisture-resistant, to the degree specified, intended to be installed to shed water without sealed seams.

##### 1.04 REFERENCE STANDARDS

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2003.
- B. ASTM D 226 - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2006.
- C. ASTM D 1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2001.
- D. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.
- E. ASTM E 96/E 96M - Standard Test Methods for Water Vapor Transmission of Materials; 2005.
- F. ASTM E 1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 1997 (Reapproved 2004).
- G. ASTM E 2178 - Standard Test Method for Air Permeance of Building Materials; 2003.
- H. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers; ICC Evaluation Service, Inc.; 2008.

##### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on material characteristics.

##### 1.06 FIELD CONDITIONS



- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

## **PART 2 PRODUCTS**

### **2.01 WATER-RESISTIVE BARRIER MATERIALS (NEITHER AIR BARRIER NOR VAPOR RETARDER)**

- A. Asphalt Felt: ASTM D 226 Type I felt (No.15).
- B. Building Paper: Asphalt-saturated kraft building paper complying with requirements of ICC-ES AC38 Grade D.
- C. Plastic Sheet: Polymeric-based sheet complying with requirements of ICC-ES AC38 Grade D with 60-minute water-resistance; do not use polyethylene sheet.

### **2.02 AIR BARRIER MATERIALS (WATER VAPOR PERMEABLE AND WATER-RESISTIVE)**

- A. Air Barrier Sheet, Mechanically Fastened:
  - 1. Air Permeance: 0.004 cubic feet per square foot, maximum, when tested in accordance with ASTM E 2178.
  - 2. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E 96M Procedure A (desiccant method).
  - 3. Water Penetration Resistance: Withstand a water head of 21 inches, minimum, for minimum of 5 hours, when tested in accordance with AATCC 127.
  - 4. Ultraviolet and Weathering Resistance: Approved in writing by manufacturer for minimum of 9 months weather exposure.
  - 5. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 50 or less, when tested in accordance with ASTM E 84.
  - 6. Products:
    - a. DuPont Company; Tyvek CommercialWrap: [www.dupont.com](http://www.dupont.com).
    - b. Fiberweb, Inc; Typar MetroWrap: [www.typar.com](http://www.typar.com).
    - c. VaproShield, LLC; WrapShield: [www.vaproshield.com](http://www.vaproshield.com).
    - d. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.03 VAPOR RETARDER MATERIALS**

- A. Vapor Retarder Sheet: Butyl, black color.
- B. Vapor Retarder Sheet: Rubberized asphalt bonded to sheet polyethylene, self-adhesive, complying with ASTM D 1970.
- C. Vapor Retarder Sheet: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for application indicated. Single ply polyethylene is prohibited.
  - 1. Water Vapor Permeance: 0.3 perm, maximum, when tested in accordance with ASTM E 96/E 96M.
- D. Vapor Retarder Tape: Bright aluminum self adhering type, mesh reinforced, 2 inches wide, compatible with sheet material.

### **2.04 ADHESIVES**

- A. Mastic Adhesive: Compatible with sheet seal and substrate, thick mastic of uniform knife grade consistency.
- B. Non-Curing Adhesive: Compatible with sheet seal and substrate, permanently non-curing.

### **2.05 ACCESSORIES**

- A. Self-Adhesive Sheet Flashing: ASTM D 1970.
- B. Thinners and Cleaners: As recommended by material manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces and conditions are ready to accept the work of this section.

### **3.02 PREPARATION**

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives in accordance with manufacturer's instructions.

### **3.03 INSTALLATION**

- A. Install materials in accordance with manufacturer's instructions.
- B. Water-Resistive Barriers: Install continuous barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.
- C. Air Barriers: Install continuous air-tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. Vapor Retarders: Install continuous air-tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- E. Mechanically Fastened Sheets - On Exterior:
  - 1. Install sheets shingle-fashion to shed water, with seams generally horizontal.
  - 2. Overlap seams as recommended by manufacturer but at least 6 inches.
  - 3. Overlap at outside and inside corners as recommended by manufacturer but at least 12 inches.
  - 4. For applications specified to be air-tight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners recommended by the manufacturer.
  - 5. Install water-resistive barrier over jamb flashings.
  - 6. Install air barrier and vapor retarder UNDER jamb flashings.
  - 7. Install head flashings under weather barrier.
  - 8. At openings to be filled with frames having nailing flanges, wrap excess sheet into opening; at head, seal sheet over flange and flashing.
- F. Mechanically Fastened Sheets - Vapor Retarder On Interior:
  - 1. When insulation is to be installed in assembly, install vapor retarder over insulation.
  - 2. Seal seams, laps, perimeter edges, penetrations, tears, and cuts with self-adhesive tape, making air-tight seal.
  - 3. Locate laps at a framing member; at laps fasten one sheet to framing member then tape overlapping sheet to first sheet.
  - 4. Seal entire perimeter to structure, window and door frames, and other penetrations.
  - 5. Where conduit, pipes, wires, ducts, outlet boxes, and other items are installed in insulation cavity, pass vapor retarder sheet behind item but over insulation and maintain air-tight seal.
- G. Self-Adhesive Sheets:
  - 1. Prepare substrate in manner recommended by sheet manufacturer; fill and tape joints in substrate and between dissimilar materials.
  - 2. Lap sheets shingle-fashion to shed water and seal laps air-tight.

3. Use same material, or other material approved by sheet manufacturer for the purpose, to seal to adjacent construction and as flashing.
  4. At wide joints, provide extra flexible membrane allowing joint movement.
- H. Openings and Penetrations in Exterior Weather Barriers:
1. Install self-adhesive flashing over sills, covering entire sill frame member, extending at least 5 inches onto weather barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
  2. At openings to be filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with self-adhesive flashing at least 4 inches wide; do not seal sill flange.
  3. At openings to be filled with non-flanged frames, seal weather barrier to all sides of opening framing, using self-adhesive flashing at least 9 inches wide, covering entire depth of framing.
  4. At head of openings, install self-adhesive flashing under weather barrier extending at least 2 inches beyond face of jambs; seal weather barrier to flashing.
  5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
  6. Service and Other Penetrations: Form self-adhesive flashing around penetrating item and seal to weather barrier surface.

#### **3.04 FIELD QUALITY CONTROL**

- A. Do not cover installed weather barriers until required inspections have been completed.
- B. Obtain approval of installation procedures by the weather barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

#### **3.05 PROTECTION**

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Do not leave paper- or felt-based barriers exposed to weather for longer than one week.

**END OF SECTION**

## SECTION 07 62 00

### SHEET METAL FLASHING AND TRIM

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, and downspouts.
- B. Reglets and accessories.

##### 1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood nailers.
- B. Section 07 90 05 - Joint Sealers.
- C. Section 09 90 00 - Painting and Coating: Field painting.

##### 1.03 REFERENCE STANDARDS

- A. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
- B. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.
- C. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007.
- D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.

##### 1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

##### 1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- C. Samples: Submit two samples 6x6 inch in size illustrating metal finish color.

##### 1.06 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.
- B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 3 years of documented experience.

##### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

#### PART 2 PRODUCTS

##### 2.01 SHEET MATERIALS

- A. Aluminum: ASTM B 209 (ASTM B 209M); 0.032 inch thick; anodized finish of color as selected.

##### 2.02 ACCESSORIES

- A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.
- D. Sealant: Type specified in Section 07 90 05.
- E. Plastic Cement: ASTM D 4586, Type I.

### **2.03 FABRICATION**

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.

### **2.04 GUTTER AND DOWNSPOUT FABRICATION**

- A. Downspouts: Profile as indicated / to match existing.
- B. Accessories: Profiled to suit gutters and downspouts.
  - 1. Anchorage Devices: In accordance with SMACNA requirements.
  - 2. Downspout Supports: Brackets.
- C. Downspout Boots: Type as indicated / to match existing.
- D. Seal metal joints.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

### **3.02 PREPARATION**

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

### **3.03 INSTALLATION**

- A. Secure flashings in place using concealed fasteners.
- B. Apply plastic cement compound between metal flashings and felt flashings.

- C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal metal joints watertight.
- E. Connect downspouts to downspout boots. Grout connection watertight.

**3.04 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for field inspection requirements.
- B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

**END OF SECTION**



**SECTION 07 81 00**

**APPLIED FIREPROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fireproofing of interior structural steel.
- B. Preparation of fireproofing for application of finish specified elsewhere.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 12 00 - Structural Steel Framing.
- B. Section 05 31 00 - Steel Decking.

**1.03 REFERENCE STANDARDS**

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.
- B. ASTM E 605 - Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material (SFRM) Applied to Structural Members; 1993 (Reapproved 2006).
- C. ASTM E 736 - Standard Test Method For Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members; 2000 (Reapproved 2006).
- D. ASTM E 760 - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2005).
- E. ASTM E 761 - Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members; 1992 (Reapproved 2005).

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
- B. Preinstallation Meeting: Convene one week before starting work of this section.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.
- B. Product Data: Provide data indicating product characteristics.
- C. Manufacturer's Installation Instructions: Indicate special procedures.
- D. Manufacturer's Certificate: Certify that sprayed-on fireproofing products meet or exceed requirements of contract documents.
- E. Manufacturer's Field Reports: Indicate environmental conditions under which fireproofing materials were installed.

**1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.
- B. Applicator Qualifications: Company specializing in performing the work of this section, with minimum 5 years of experience.

**1.07 FIELD CONDITIONS**

- A. Do not apply spray fireproofing when temperature of substrate material and surrounding air is



below 40 degrees F.

- B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
- C. Provide temporary enclosure to prevent spray from contaminating air.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Sprayed-On Fireproofing:
  - 1. Carboline Company; Product \_\_\_\_: [www.carboline.com](http://www.carboline.com).
  - 2. Grace Construction Products; Product \_\_\_\_: [www.na.graceconstruction.com](http://www.na.graceconstruction.com).
  - 3. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.02 FIREPROOFING ASSEMBLIES**

- A. Provide assemblies as indicated on the drawings.

### **2.03 MATERIALS**

- A. New fire-resistive materials to match and/or to be compatible with existing fire-resistive materials.
- B. Low Density Sprayed Fire-Resistive Material: Factory mixed, cementitious material blended for uniform texture with vermiculite or lightweight synthetic aggregate, and conforming to the following requirements:
  - 1. Bond Strength: ASTM E 736, 200 psf when set and dry.
  - 2. Bond Impact: ASTM E 760, no cracking, flaking or delamination.
  - 3. Dry Density: ASTM E 605, minimum average density of 14 lb/cu ft, with minimum individual density of any test sample of 13 lb/cu ft.
  - 4. Compressive Strength: ASTM E 761, minimum 7.0 psi.
  - 5. Surface Burning Characteristics: Maximum flame spread of 0 and maximum smoke developed of 0, when tested in accordance with ASTM E 84.

### **2.04 ACCESSORIES**

- A. Primer Adhesive: Of type recommended by fireproofing manufacturer.
- B. Overcoat: As recommended by manufacturer of fireproofing material.
- C. Water: Clean, potable.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces are ready to receive fireproofing.
- B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
- C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
- D. Verify that voids and cracks in substrate have been filled. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.

### **3.02 PREPARATION**

- A. Perform tests as recommended by fireproofing manufacturer in situations where adhesion of fireproofing to substrate is in question.
- B. Remove incompatible materials that could affect bond by scraping, brushing, scrubbing, or sandblasting.
- C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
- D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
- E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
- F. Close off and seal duct work in areas where fireproofing is being applied.

### **3.03 APPLICATION**

- A. Apply primer adhesive in accordance with manufacturer's instructions.
- B. Apply fireproofing in sufficient thickness to achieve required ratings, with as many passes as necessary to cover with monolithic blanket of uniform density and texture.
- C. Apply overcoat to a thickness of \_\_\_\_ inches.

### **3.04 FIELD QUALITY CONTROL**

- A. Inspect the installed fireproofing after application and curing for integrity, prior to its concealment. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings.
- B. Re-inspect the installed fireproofing for integrity of fire protection, after installation of subsequent Work.

### **3.05 CLEANING**

- A. Remove excess material, overspray, droppings, and debris.
- B. Remove fireproofing from materials and surfaces not required to be fireproofed.

**END OF SECTION**



**SECTION 07 90 05**

**JOINT SEALERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Sealants and joint backing.
- B. Precompressed foam sealers.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with air barriers and vapor retarders:
- C. Section 09 21 16 - Gypsum Board Assemblies: Acoustic sealant.

**1.03 REFERENCE STANDARDS**

- A. ASTM C 834 - Standard Specification for Latex Sealants; 2005.
- B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2002.
- C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.
- D. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005a.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the work with other sections referencing this section.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating sealant chemical characteristics.

**1.06 QUALITY ASSURANCE**

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- C. Applicator Qualifications: Company specializing in performing the work of this section with minimum 3 years experience.

**1.07 FIELD CONDITIONS**

- A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

**1.08 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Silicone Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Momentive Performance Materials, Inc (formerly GE Silicones): [www.momentive.com](http://www.momentive.com).
  - 3. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 4. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Polyurethane Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Acrylic Sealants:
  - 1. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Butyl Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Acrylic Emulsion Latex Sealants:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Preformed Compressible Foam Sealers:
  - 1. EMSEAL Joint Systems, Ltd: [www.emseal.com](http://www.emseal.com).
  - 2. Sandell Manufacturing Company, Inc: [www.sandellmfg.com](http://www.sandellmfg.com).
  - 3. Dayton Superior Corporation: [www.daytonsuperior.com](http://www.daytonsuperior.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

## 2.02 SEALANTS

- A. Sealants and Primers - General: Provide products having volatile organic compound (VOC) content as specified in Section 01 61 16.
- B. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
  - 1. Color: Standard colors matching finished surfaces.
  - 2. Applications: Use for:
    - a. Control, expansion, and soft joints in masonry.
    - b. Joints between concrete and other materials.
    - c. Joints between metal frames and other materials.
    - d. Other exterior joints for which no other sealant is indicated.
- C. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
  - 1. Color: Black.
  - 2. Size as required to provide weathertight seal when installed.
  - 3. Provide product recommended by manufacturer for traffic-bearing use.
  - 4. Applications: Use for:
    - a. Exterior wall expansion joints.
- D. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
- E. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
  - 1. Color: Standard colors matching finished surfaces.

2. Applications: Use for:
  - a. Interior wall and ceiling control joints.
  - b. Joints between door and window frames and wall surfaces.
  - c. Other interior joints for which no other type of sealant is indicated.
- F. Bathtub/Tile Sealant: White silicone; ASTM C 920, Uses I, M and A; single component, mildew resistant.
  1. Applications: Use for:
    - a. Joints between plumbing fixtures and floor and wall surfaces.
    - b. Joints between kitchen and bath countertops and wall surfaces.
- G. Acoustical Sealant: Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
  1. Applications: Use for concealed locations only:
    - a. Sealant bead between top stud runner and structure and between bottom stud track and floor.
- H. Interior Floor Joint Sealant: Polyurethane, self-leveling; ASTM C 920, Grade P, Class 25, Uses T, M and A; single component.
  1. Approved by manufacturer for wide joints up to 1-1/2 inches.
  2. Color: Standard colors matching finished surfaces.
  3. Applications: Use for:
    - a. Expansion joints in floors.
- I. Concrete Paving Joint Sealant: Polyurethane, self-leveling; ASTM C 920, Class 25, Uses T, I, M and A; single component.
  1. Color: Gray.
  2. Applications: Use for:
    - a. Joints in sidewalks and vehicular paving.

## **2.03 ACCESSORIES**

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.
- B. Verify that joint backing and release tapes are compatible with sealant.

### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean and prime joints in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.
- D. Protect elements surrounding the work of this section from damage or disfigurement.

### **3.03 INSTALLATION**

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of

surfaces and material installation instructions.

- B. Perform installation in accordance with ASTM C 1193.
- C. Perform acoustical sealant application work in accordance with ASTM C 919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker where joint backing is not used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- H. Tool joints concave.
- I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

#### **3.04 CLEANING**

- A. Clean adjacent soiled surfaces.

#### **3.05 PROTECTION**

- A. Protect sealants until cured.

**END OF SECTION**

## **SECTION 08 11 13**

### **HOLLOW METAL DOORS AND FRAMES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Non-fire-rated steel doors and frames.
- B. Fire-rated steel doors and frames.
- C. Steel glazing frames.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 08 71 00 - Door Hardware.
- B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.
- C. Section 09 90 00 - Painting and Coating: Field painting.

##### **1.03 REFERENCE STANDARDS**

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.
- B. ANSI A250.8 - SDI-100 Recommended Specifications for Standard Steel Doors and Frames; 2003.
- C. ANSI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 1998 (R2004).
- D. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.
- E. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; The National Association of Architectural Metal Manufacturers; 2007.
- F. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.
- G. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- H. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; 1998.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.
- D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

##### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Maintain at the project site a copy of all reference standards dealing with installation.

##### **1.06 DELIVERY, STORAGE, AND HANDLING**



- A. Store in accordance with NAAMM HMMA 840.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Steel Doors and Frames:
  - 1. Assa Abloy Ceco, Curries, or Fleming: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 2. Windsor Republic Doors: [www.republicdoor.com](http://www.republicdoor.com).
  - 3. Steelcraft: [www.steelcraft.com](http://www.steelcraft.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

### **2.02 DOORS AND FRAMES**

- A. Requirements for All Doors and Frames:
  - 1. Accessibility: Comply with ANSI/ICC A117.1.
  - 2. Door Top Closures: Flush with top of faces and edges.
  - 3. Door Edge Profile: Beveled on both edges.
  - 4. Door Texture: Smooth faces.
  - 5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
  - 6. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
  - 7. Galvanizing for Units in Wet Areas: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer's standard coating thickness.
  - 8. Finish: Factory primed, for field finishing.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

### **2.03 STEEL DOORS**

- A. Interior Doors, Non-Fire-Rated:
  - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
  - 2. Thickness: 1-3/4 inches.
- B. Interior Doors, Fire-Rated:
  - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
  - 2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C ("positive pressure").
    - a. Provide units listed and labeled by UL.
    - b. Attach fire rating label to each fire rated unit.

### **2.04 STEEL FRAMES**

- A. General:
  - 1. Comply with the requirements of grade specified for corresponding door.
    - a. ANSI A250.8 Level 3 Doors: 14 gage frames.
    - b. ANSI A250.8 Level 4 Doors: 12 gage frames.
  - 2. Finish: Same as for door.
- B. Interior Door Frames, Non-Fire-Rated: Fully welded type.
- C. Interior Door Frames, Fire-Rated: Fully welded type.
  - 1. Fire Rating: Same as door, labeled.
- D. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match

door frames, and as indicated on drawings.

- E. Transom Bars: Fixed, of profile same as jamb and head.

## **2.05 ACCESSORY MATERIALS**

- A. Glazing: As specified in Section 08 80 00, factory installed.
- B. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.
- D. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

## **2.06 FINISH MATERIALS**

- A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.

### **3.02 INSTALLATION**

- A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
- B. In addition, install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Coordinate installation of hardware.
- E. Coordinate installation of glazing.
- F. Coordinate installation of electrical connections to electrical hardware items.

### **3.03 TOLERANCES**

- A. Clearances Between Door and Frame: As specified in ANSI A250.8.
- B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

### **3.04 ADJUSTING**

- A. Adjust for smooth and balanced door movement.

**END OF SECTION**



## **SECTION 08 42 29**

### **AUTOMATIC ENTRANCES**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Operators for doors provided in other sections.
- B. Actuators and safety devices.
- C. Maintenance.

##### **1.02 REFERENCE STANDARDS**

- A. BHMA A156.10 - American National Standard for Power Operated Pedestrian Doors; Builders Hardware Manufacturers Association; 2005 (ANSI/BHMA A156.10).
- B. BHMA A156.19 - American National Standard for Power Assist and Low Energy Power Operated Doors; Builders Hardware Manufacturers Association; 2007 (ANSI/BHMA A156.19).
- C. UL (ECMD) - Electrical Construction Materials Directory; Underwriters Laboratories Inc.; current edition.
- D. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Underwriters Laboratories Inc.; 2002.

##### **1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
  - 1. Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
  - 2. Identify installation tolerances required, assembly conditions, routing of service lines and conduit, and locations of operating components and boxes.
- C. Product Data: Provide data on system components, sizes, features, and finishes.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.
- E. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.
- F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Wrenches and other tools required for maintenance of equipment.

##### **1.04 QUALITY ASSURANCE**

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

- C. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of experience.

### **1.05 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for motor and compressor.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Automatic Entrance Doors:
  - 1. Horton Automatics; Product EasyAccess series 7000: [www.hortondoors.com](http://www.hortondoors.com).

### **2.02 DOOR OPERATORS**

- A. Door Operators - General Requirements: Comply with BHMA A156.10, BHMA A156.19, and UL 325, as applicable.
  - 1. Select equipment to accommodate heavy pedestrian traffic and weight of doors.
  - 2. Provide equipment capable of operating, holding open, and closing doors under positive and negative wind pressures calculated in accordance with applicable code.
  - 3. Provide operators that are fully adjustable for opening and closing speeds, checking speeds, and hold-open time.
  - 4. Swinging Door Operators: Provide for manual open and close operation of door leaves in the event of power failure.
  - 5. Conform to applicable code for automatic release of control drive unit to permit manual opening of doors.
  - 6. Finish exposed components to match door and door hardware finish.
- B. Swinging Door Operator: Electric Surface mounted overhead.
  - 1. Operation: Power open, spring close operation.
  - 2. Variable speed control for opening and closing cycles.
  - 3. "Push" Side Actuator: Push button. Wireless.
  - 4. "Pull" Side Actuator: Push button. Wireless.

### **2.03 ACTUATORS**

- A. Push Plate Actuator: Standard wall mounted, surface mounted momentary contact type; satin stainless steel plate; 6 inches diameter; labeled PUSH with hadicap logo.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available and is of the correct characteristics.

### **3.02 INSTALLATION**

- A. Install equipment in accordance with manufacturer's instructions.
- B. Coordinate installation of components with related and adjacent work; level and plumb.

### **3.03 ADJUSTING**

- A. Adjust door equipment for correct function and smooth operation.

**3.04 CLEANING**

- A. Remove temporary protection, clean exposed surfaces.

**3.05 CLOSEOUT ACTIVITIES**

- A. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

**3.06 MAINTENANCE**

- A. See Section 01 70 00 - Execution Requirements, for additional requirements relating to maintenance service.
- B. Provide service and maintenance of operating equipment for one year from Date of Substantial Completion, at no extra charge to Owner.

**END OF SECTION**



**SECTION 08 43 13**

**ALUMINUM-FRAMED STOREFRONTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.
- C. Weatherstripping.
- D. Perimeter sealant.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 12 00 - Structural Steel Framing: Steel attachment members.
- B. Section 05 50 00 - Metal Fabrications: Steel attachment devices.
- C. Section 07 25 00 - Weather Barriers: Perimeter air and vapor seal between glazing system and adjacent construction.
- D. Section 07 90 05 - Joint Sealers: Perimeter sealant and back-up materials.
- E. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.
- F. Section 08 80 00 - Glazing: Glass and glazing accessories.
- G. Section 09 90 00 - Painting and Coating: Field painting of interior surface of infill panels.

**1.03 REFERENCE STANDARDS**

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2004.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.
- C. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2005.
- D. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- E. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- F. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2006.
- G. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.
- H. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- I. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002.
- J. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000.
- K. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).



#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate with installation of other components that comprise the exterior enclosure.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

#### **1.05 PERFORMANCE REQUIREMENTS**

- A. Design and size components to withstand the following load requirements without damage or permanent set, when tested in accordance with ASTM E 330, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
  - 1. Design Wind Loads: Comply with requirements of New York State code.
  - 2. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
- B. Air Infiltration: Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of wall area, measured at a reference differential pressure across assembly of 1.57 psf as measured in accordance with ASTM E 283.
- C. Water Leakage: None, when measured in accordance with ASTM E 331 with a test pressure difference of 2.86 lbf/sq ft.
- D. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

#### **1.06 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Design Data: Provide framing member structural and physical characteristics, engineering calculations, dimensional limitations.
- E. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- F. Samples: Submit two samples 6x6 inches in size illustrating finished aluminum surface, glass, glazing materials.
- G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.07 QUALITY ASSURANCE**

- A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at New York.

- B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum three years of documented experience.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

#### **1.09 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

#### **1.10 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- D. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Acceptable Manufacturers:
  - 1. Kawneer North America: [www.kawneer.com](http://www.kawneer.com).
  - 2. United States Aluminum Corp: [www.usalum.com](http://www.usalum.com).
  - 3. Vistawall Architectural Products: [www.vistawall.com](http://www.vistawall.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

#### **2.02 COMPONENTS**

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
  - 1. Finish: Class I color anodized.
  - 2. Color: Dark bronze.
- B. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
  - 1. Framing members for interior applications need not be thermally broken.
  - 2. Glazing stops: Flush.
  - 3. Cross-Section: As indicated on drawings.
- C. Doors: Glazed aluminum.
  - 1. Finish: Same as storefront.
  - 2. Type, size and thickness as indicated on drawings.

#### **2.03 MATERIALS**

- A. Extruded Aluminum: ASTM B 221 (ASTM B 221M).
- B. Structural Steel Sections: ASTM A 36/A 36M; galvanized in accordance with requirements of ASTM A 123/A 123M.
- C. Fasteners: Stainless steel.

- D. Exposed Flashings: 0.032 inch thick aluminum sheet; finish to match framing members.
- E. Perimeter Sealant: Type specified in Section 07 90 05, and/or as per manufacturer.
- F. Glass: As specified in Section 08 80 00.
- G. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
- H. Glazing Accessories: As specified in Section 08 80 00.
- I. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

#### **2.04 FINISHES**

- A. Class I Color Anodized Finish: AAMA 611 AA-C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick.
- B. Touch-Up Materials: As recommended by coating manufacturer for field application.

#### **2.05 HARDWARE**

- A. Door Hardware: As specified in Section 08 71 00.
- B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- D. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

#### **2.06 FABRICATION**

- A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.
- C. Prepare components to receive anchor devices. Fabricate anchors.
- D. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
- E. Arrange fasteners and attachments to conceal from view.
- F. Reinforce components internally for door hardware.
- G. Reinforce framing members for imposed loads.
- H. Finishing: Apply factory finish to all surfaces that will be exposed in completed assemblies.
  - 1. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

#### **3.02 INSTALLATION**

- A. Install wall system in accordance with manufacturer's instructions.

- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Install glass in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.
- J. Install perimeter sealant in accordance with Section 07 90 05.
- K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

### **3.03 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.

### **3.04 ADJUSTING**

- A. Adjust operating hardware for smooth operation.

### **3.05 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
- C. Remove excess sealant by method acceptable to sealant manufacturer.

### **3.06 PROTECTION**

- A. Protect installed products from damage during subsequent construction.

**END OF SECTION**



**SECTION 08 71 00**

**DOOR HARDWARE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Hardware for hollow steel and aluminum doors.
- B. Electrically operated and controlled hardware.
- C. Thresholds.
- D. Weatherstripping, seals and door gaskets.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 11 13 - Hollow Metal Doors and Frames.
- B. Section 08 43 13 - Aluminum-Framed Storefronts: Hardware for same.
- C. Section 08 42 29 - Automatic Entrances: Hardware for same.

**1.03 PRICE AND PAYMENT PROCEDURES**

- A. See Section 01 21 00 - Allowances, for allowances affecting this section.

**1.04 REFERENCE STANDARDS**

- A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.
- B. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; Door and Hardware Institute; 2004.
- C. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2007.
- D. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association; 2006.
- E. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.

**1.05 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the manufacture, fabrication, and installation of products onto which door hardware will be installed.
- B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- C. Convey Owner's keying requirements to manufacturers.
- D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.
- E. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

**1.06 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
  - 1. Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts, electrical characteristics and connection requirements.

2. Submit manufacturer's parts lists, templates, and \_\_\_\_\_.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- D. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
- E. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
- F. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.
- G. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
- H. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
  1. See Section 01 60 00 - Product Requirements, for additional provisions.
  2. Tools: One set of all special wrenches or tools applicable to each different or special hardware component, whether supplied by the hardware component manufacturer or not.

#### **1.07 QUALITY ASSURANCE**

- A. All hardware types & finishes, keying, security/access devices, and other requirements to be coordinated with owner project representative.
- B. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with 3 years of experience.
- E. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this section.

#### **1.08 DELIVERY, STORAGE, AND HANDLING**

- A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

#### **1.09 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year warranty for door closers.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Hinges:
  1. Ives.
  2. Bommer Industries, Inc: [www.bommer.com](http://www.bommer.com).
  3. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  4. Stanley Hardware: [www.stanleyworks.com](http://www.stanleyworks.com).
- B. Continuous Hinges, Geared concealed:
  1. Select Products Ltd: [www.select-hinges.com](http://www.select-hinges.com).
  2. Roton.
  3. Pemko.

- C. Cylinders:
  - 1. Best Access Systems, 'Premium Series'.
  - 2. No substitutions allowed.
- D. Push/Pulls:
  - 1. Rockwood.
  - 2. Von Duprin.
  - 3. Ives.
- E. Cylindrical Locksets:
  - 1. Best Access Systems: [www.bestlock.com](http://www.bestlock.com).
- F. Exit Devices:
  - 1. Von Duprin: [www.vonduprin.com](http://www.vonduprin.com).
- G. Closers - Heavy-Duty:
  - 1. LCN: [www.lcnclosers.com](http://www.lcnclosers.com).
- H. Overhead Holders/Stops:
  - 1. Glynn-Johnson: [www.glynn-johnson.com](http://www.glynn-johnson.com).
- I. Wall and Floor Stops/holders:
  - 1. Ives.
  - 2. Rockwood.
- J. Flush Bolts:
  - 1. Ives.
  - 2. Rockwood.
- K. Gasketing and Thresholds:
  - 1. National Guard Products, Inc: [www.ngpinc.com](http://www.ngpinc.com).
  - 2. Pemko Manufacturing Co: [www.pemko.com](http://www.pemko.com).
  - 3. Zero International, Inc: [www.zerointernational.com](http://www.zerointernational.com).
- L. Silencers:
  - 1. Ives.
  - 2. Rockwood.
- M. Protection Plates:
  - 1. Ives.
  - 2. Rockwood.
- N. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.02 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS**

- A. Provide products that comply with the following:
  - 1. Applicable provisions of federal, state, and local codes.
  - 2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
  - 3. Applicable provisions of NFPA 101, Life Safety Code.
  - 4. Fire-Rated Doors: NFPA 80.
  - 5. All Hardware on Fire-Rated Doors: Listed and classified by UL as suitable for the purpose specified and indicated.
  - 6. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
- B. Finishes: Identified in schedule \_\_\_\_\_.

## **2.03 KEYS AND KEYING**

- A. All locksets and cylinders shall be keyed into the existing Campus Master Key System for this



project. Allow for 100% expansion. For the protection of the Campus, all cylinders shall be keyed at the factor where permanent records shall be established and maintained.

- B. Cylinders, permanent and removable cores, and keys to be Campus standard - by Best Access Systems 'Premium Series' (no substitutions allowed).
- C. Conduct conference on-site at the Campus to comply with all requirements set forth in project documents and verify Campus requirements. In addition to the Campus, Architect, and Contractor, conference participants shall also include; Hardware Sub-Contractor, Hardware Consultant, and Campus Representatives. Incorporate keying conference decisions, but not limited to, the following:
  - 1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
  - 2. Preliminary key system schematic diagram.
  - 3. Requirements for key control system.
  - 4. Arrangements for delivery of keys.
- D. During construction, all new locksets shall be construction masterkeyed. Provide temporary construction cores. The General Contractor shall receive ten (10) construction masterkeys. Under no circumstance shall the General Contractor receive any permanent building masterkeys or change keys unless authorized by the Campus Representative.
- E. All permanent cores and keys shall be requested directly by the Campus to the manufacturer. The General Contractor shall be responsible for all payments to the manufacturer and shall supply the Campus with all necessary information (account number, etc.), in order for the Campus to order final cores and keys.
- F. All construction cores will be returned to General Contractor once Campus has received and installed final cores.
- G. Standard Lock Cylinders: BHMA A156.5, Grade 1.
- H. Cylinders: Manufacturer's standard tumbler type, constructed from brass, or bronze, stainless steel, or nickel silver, complying with the following:
  - 1. Number of Pins: Seven (7)
  - 2. Bored-Lock Type: Cylinders with tailpieces to suit locks.
    - a. High-Security Grade: BHMA A156.5, Grade 1A, listed and labeled as complying with pick- and drill-resistant testing requirements in UL-437 (SuffixA).
  - 3. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
    - a. Removable Cores: Core insert, removable by use of a special key; for use only with core manufacturer's cylinder and door hardware.
- I. Keying system shall be factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:
  - 1. Master Key System: Cylinders are operated by a change key and a master key.
  - 2. Existing System: Re-key Campus' existing master key system into new keying system.
  - 3. Keyed Alike: Key all cylinders to same change key.
- J. All masterkeys shall be identified with a registry number, and shall not be stamped with MASTER or letter M.
- K. All keys shall be stamped "DO NOT DUPLICATE".
- L. Furnish:
  - 1. Cylinder Change Key: Three (3) per building.
  - 2. Master Keys: Two (2) per building.
  - 3. Key Blanks: Two (2) per door.
- M. All keying shall be thoroughly checked with the Campus Representative. Final keying requirements shall be submitted in writing, for final approval by the Campus Representative.

N.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available to power operated devices and of the correct characteristics.

#### **3.02 INSTALLATION**

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Use templates provided by hardware item manufacturer.
- C. Install hardware on fire-rated doors and frames in accordance with code and NFPA 80.
- D. Mounting heights for hardware from finished floor to center line of hardware item: As listed in Schedule, unless otherwise noted:
  - 1. For steel doors and frames: Comply with DHI "Recommended Locations for Architectural Hardware for Steel Doors and Frames."
  - 2. For steel doors and frames: See Section 08 11 13.

#### **3.03 FIELD QUALITY CONTROL**

- A. Field inspection and testing will be performed under provisions of Section 01 40 00.
- B. Provide an Architectural Hardware Consultant to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

#### **3.04 ADJUSTING**

- A. Adjust work under provisions of Section 01 70 00.
- B. Adjust hardware for smooth operation.

#### **3.05 PROTECTION**

- A. Protect finished Work under provisions of Section 01 70 00.
- B. Do not permit adjacent work to damage hardware or finish.

**END OF SECTION**



**SECTION 08 80 00**

**GLAZING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Glass.
- B. Glazing compounds and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 90 05 - Joint Sealers: Sealant and back-up material.
- B. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed doors and borrowed lites.
- C. Section 08 43 13 - Aluminum-Framed Storefronts.

**1.03 REFERENCE STANDARDS**

- A. ASTM C 864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005.
- B. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.
- C. ASTM C 1036 - Standard Specification for Flat Glass; 2006.
- D. ASTM C 1048 - Standard Specification for Heat-Treated Flat Glass--Kind HS, Kind FT Coated and Uncoated Glass; 2004.
- E. ASTM C 1172 - Standard Specification for Laminated Architectural Flat Glass; 2003.
- F. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2005a.
- G. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2007.
- H. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2002.
- I. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2004.
- J. GANA (SM) - FGMA Sealant Manual; Glass Association of North America; 1990.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
- C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Samples: Submit two samples 12x12 inch in size of glass units, showing coloration and design.
- E. Manufacturer's Certificate: Certify that glass meets or exceeds specified requirements.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

### 1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual and FGMA Sealant Manual for glazing installation methods.
- B. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years documented experience.

### 1.07 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 50 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

### 1.08 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Sealed Insulating Glass Units: Provide a five (5) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
- C. Laminated Glass: Provide a five (5) year warranty to include coverage for delamination, including replacement of failed units.

## PART 2 PRODUCTS

### 2.01 GLAZING TYPES

- A. Sealed Insulating Glass Units: Vision glazing, low-E.
  - 1. Application(s): All exterior glazing unless otherwise indicated.
  - 2. Basis of Design: Guardian Industries Corp.
  - 3. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
  - 4. Inboard Lite: Fully tempered float glass, 1/4 inch thick.
  - 5. Total Thickness: 1 inch.
- B. Sealed Insulating Glass Units: Safety glazing:
  - 1. Applications: Provide this type of glazing in the following locations:
    - a. Glazed lites in exterior doors.
    - b. Glazed sidelights and panels next to doors.
    - c. Other locations required by applicable federal, state, and local codes and regulations.
    - d. Other locations indicated on the drawings.
  - 2. Type: Same as other vision glazing except use fully tempered float glass for both outboard and inboard lites.
- C. Single Vision Glazing:
  - 1. Applications: All interior glazing unless otherwise indicated.
  - 2. Type: Laminated float glass.
  - 3. Tint: Clear.
  - 4. Thickness: 3/8 inch.

### 2.02 EXTERIOR GLAZING ASSEMBLIES

- A. Structural Design Criteria: Select type and thickness to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with New York State code.
  - 1. Use the procedure specified in ASTM E 1300 to determine glass type and thickness.
  - 2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.
  - 3. Thicknesses listed are minimum.

### 2.03 GLASS MATERIALS

- A. Float Glass Manufacturers:
  - 1. AGC Flat Glass North America, Inc: [www.afgglass.com](http://www.afgglass.com).
  - 2. Pilkington North America Inc: [www.pilkington.com](http://www.pilkington.com).
  - 3. PPG Industries, Inc: [www.ppg.com](http://www.ppg.com).
  - 4. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- B. Float Glass: All glazing is to be float glass unless otherwise indicated.
  - 1. Annealed Type: ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).
  - 2. Heat-Strengthened and Fully Tempered Types: ASTM C 1048.
  - 3. Tinted Types: Color and performance characteristics as indicated.
  - 4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.
- C. Laminated Glass: Float glass laminated in accordance with ASTM C 1172.
  - 1. Plastic Interlayer: 0.060 inch thick, minimum.
  - 2. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.
  - 3. Manufacturers:
    - a. AGC Flat Glass North America, Inc: [www.afgglass.com](http://www.afgglass.com).
    - b. Cardinal Glass Industries: [www.cardinalcorp.com](http://www.cardinalcorp.com).
    - c. Viracon, Apogee Enterprises, Inc: [www.viracon.com](http://www.viracon.com).
    - d. Substitutions: Refer to Section 01 60 00 - Product Requirements.

#### **2.04 SEALED INSULATING GLASS UNITS**

- A. Manufacturers:
  - 1. Any of the manufacturers specified for float glass.
  - 2. Cardinal Glass Industries: [www.cardinalcorp.com](http://www.cardinalcorp.com).
  - 3. Viracon, Apogee Enterprises, Inc: [www.viracon.com](http://www.viracon.com).
  - 4. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- B. Sealed Insulating Glass Units: Types as indicated.
  - 1. Durability: Certified by an independent testing agency to comply with ASTM E 2190.
  - 2. Edge Spacers: Aluminum, bent and soldered corners.
  - 3. Edge Seal: Glass to elastomer with supplementary silicone sealant.
  - 4. Purge interpane space with dry hermetic air.

#### **2.05 GLAZING COMPOUNDS**

- A. Manufacturers:
  - 1. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 2. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 3. BASF Construction Chemicals-Building Systems: [www.chemrex.com](http://www.chemrex.com).
  - 4. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- B. Butyl Sealant: Single component; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; Shore A hardness of 10 to 20; black color; non-skinning.
- C. Acrylic Sealant: Single component, solvent curing, non-bleeding; ASTM C 920, Type S, Grade NS, Class 12-1/2, Uses M and A; cured Shore A hardness of 15 to 25; color as selected.
- D. Polyurethane Sealant: Single component, chemical curing, non-staining, non-bleeding; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; Shore A Hardness Range 20 to 35; color as selected.

- E. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; non-bleeding, non-staining; ASTM C 920, Type S, Grade NS, Class 25, Uses M, A, and G; cured Shore A hardness of 15 to 25; color as selected.

## **2.06 GLAZING ACCESSORIES**

- A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C 864 Option I. Length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C 864 Option I. Minimum 3 inch long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; standard sizes; black color.
  - 1. Manufacturers:
    - a. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
    - b. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
    - c. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- D. Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air barrier and vapor retarder seal; standard sizes.
  - 1. Manufacturers:
    - a. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
    - b. Saint-Gobain Performance Plastics: [www.plastics.saint-gobain.com](http://www.plastics.saint-gobain.com).
    - c. Substitutions: Refer to Section 01 60 00 - Product Requirements.
- E. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C 864 Option I; color as selected.
- F. Glazing Clips: Manufacturer's standard type.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that openings for glazing are correctly sized and within tolerance.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

### **3.02 PREPARATION**

- A. Prime surfaces scheduled to receive sealant.
- B. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.
- C. Install sealant in accordance with manufacturer's instructions.

### **3.03 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)**

- A. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

### **3.04 INSTALLATION - EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)**

- A. Cut glazing tape to length; install on glazing pane. Seal corners by butting tape and sealing junctions with butyl sealant.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Trim protruding tape edge.

### **3.05 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)**

- A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch (1.6 mm) above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- D. Place glazing tape on free perimeter of glazing in same manner described above.
- E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- F. Knife trim protruding tape.

### **3.06 MANUFACTURER'S FIELD SERVICES**

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

### **3.07 CLEANING**

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

### **3.08 PROTECTION**

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

**END OF SECTION**





**SECTION 08 91 00**

**LOUVERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Louvers, frames, and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 90 05 - Joint Sealers.
- B. Section 09 90 00 - Painting and Coating: Field painting.
- C. Section 23 31 00 - HVAC Ducts and Casings: Ductwork attachment to louvers, and blank-off panels.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2005.
- B. AMCA 511 - Certified Ratings Program for Air Control Devices; Air Movement and Control Association International, Inc.; 2007.
- C. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- D. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
- C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, tolerances; head, jamb and sill details; blade configuration, screens, blankout areas required, and frames.
- D. Samples: Submit two samples 2 by 2 inches in size illustrating finish and color of exterior and interior surfaces.
- E. Maintenance Data: Include lubrication schedules, adjustment requirements.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.

**1.06 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide twenty year manufacturer warranty against distortion, metal degradation, and failure of connections.
  - 1. Finish: Include coverage against degradation of exterior finish.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Wall Louvers:

1. Airolite Company, LLC: [www.airolite.com](http://www.airolite.com).
2. American Warming and Ventilating: [www.awv.com](http://www.awv.com).
3. Construction Specialties, Inc: [www.c-sgroup.com](http://www.c-sgroup.com).
4. PCI Industries, Inc; All-Lite Brand: [www.allite-louvers.com](http://www.allite-louvers.com).
5. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.02 LOUVERS**

- A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified under AMCA 511.
  1. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

## **2.03 MATERIALS**

- A. Extruded Aluminum: ASTM B 221 (ASTM B 221M),.
- B. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A 653/A 653M, with G90/Z275 coating.
- C. Stainless Steel: ASTM A 666 Type 304, soft temper, smooth surface, No. 4 finish.
- D. Bird Screen: Interwoven wire mesh of steel, 0.063 inch diameter wire, 1/2 inch open weave, diagonal design.
- E. Insect Screen: 18 x 16 size aluminum mesh.
- F. Polyvinylidene Fluoride Coating: Minimum 70 percent Kynar 500/Hylar 500 resin, two coat finish, complying with AAMA 2604.

## **2.04 ACCESSORIES**

- A. Blank-Off Panels: Specified in Section 23 31 00.
- B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
- C. Fasteners and Anchors: Galvanized steel.
- D. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.
- E. Sealant: type, as specified in Section 07 90 05.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that prepared openings and flashings are ready to receive work and opening dimensions are as indicated on shop drawings.
- B. Verify that field measurements are as indicated.

### **3.02 INSTALLATION**

- A. Install louver assembly in accordance with manufacturer's instructions.
- B. Install louvers level and plumb.
- C. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- D. Secure louver frames in openings with concealed fasteners.
- E. Install perimeter sealant and backing rod in accordance with Section 07 90 05.
- F. Coordinate with installation of mechanical ductwork.
- G. Coordinate with installation of louver actuators.

**3.03 ADJUSTING**

- A. Adjust operable louvers for freedom of movement of control mechanism. Lubricate operating joints.

**3.04 CLEANING**

- A. Strip protective finish coverings.
- B. Clean surfaces and components.

**END OF SECTION**



**SECTION 09 21 16**

**GYPSUM BOARD ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Metal stud wall framing.
- C. Metal channel ceiling framing.
- D. Acoustic insulation.
- E. Cementitious backing board.
- F. Gypsum wallboard.
- G. Joint treatment and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 07 21 00 - Thermal Insulation: Acoustic insulation.
- C. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.
- D. Section 07 90 05 - Joint Sealers: Acoustic sealant.
- E. Section 09 30 00 - Tiling: Tile backing board.

**1.03 REFERENCE STANDARDS**

- A. ANSI A108.11 - American National Standard for Interior Installation of Cementitious Backer Units; 1999 (R2005).
- B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 1999 (R2005).
- C. ASTM C 475/C 475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2002 (Reapproved 2007).
- D. ASTM C 645 - Standard Specification for Nonstructural Steel Framing Members; 2007.
- E. ASTM C 665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2006.
- F. ASTM C 754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2007.
- G. ASTM C 840 - Standard Specification for Application and Finishing of Gypsum Board; 2007.
- H. ASTM C 954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2007.
- I. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2007.
- J. ASTM C 1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2005.
- K. ASTM C 1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement

Substrate Sheets; 2004.

- L. ASTM C 1396/C 1396M - Standard Specification for Gypsum Board; 2006a.
- M. ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2000 (Reapproved 2005).
- N. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction; 2005.
- O. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2004.
- P. ASTM E 413 - Classification for Rating Sound Insulation; 2004.
- Q. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2007.

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Test Reports: For all stud framing products that do not comply with ASTM C 645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum 3 years of documented experience.

### **PART 2 PRODUCTS**

#### **2.01 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C 840 and GA-216.
- B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
  - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E 413, based on tests conducted in accordance with ASTM E 90.

#### **2.02 METAL FRAMING MATERIALS**

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
  - 1. Clark Western Building Systems: [www.clarkwestern.com](http://www.clarkwestern.com).
  - 2. Dietrich Metal Framing: [www.dietrichindustries.com](http://www.dietrichindustries.com).
  - 3. MarinoWare: [www.marinoware.com](http://www.marinoware.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Non-Loadbearing Framing System Components: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
  - 1. Exception: The minimum metal thickness and section properties requirements of ASTM C 645 are waived provided steel of 40 ksi minimum yield strength is used, the metal is continuously dimpled, the effective thickness is at least twice the base metal thickness, and maximum stud heights are determined by testing in accordance with ASTM E 72 using assemblies specified by ASTM C 754.
    - a. Acceptable Products:
      - 1) Dietrich Metal Framing; UltraSteel (tm): [www.dietrichindustries.com](http://www.dietrichindustries.com).
      - 2) Clark Western Building Systems; UltraSteel (tm): [www.clarkwestern.com](http://www.clarkwestern.com).
  - 2. Studs: "C" shaped with flat or formed webs with knurled faces.

3. Runners: U shaped, sized to match studs.
  4. Ceiling Channels: C shaped.
  5. Furring: Hat-shaped sections, minimum depth of 7/8 inch.
- C. Ceiling Hangers: Type and size as specified in ASTM C 754 for spacing required.
- D. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and screwed to secondary deflection channel set inside but unattached to top track.

### 2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. American Gypsum: [www.americangypsum.com](http://www.americangypsum.com).
  2. Georgia-Pacific Gypsum LLC: [www.gp.com/gypsum](http://www.gp.com/gypsum).
  3. National Gypsum Company: [www.nationalgypsum.com](http://www.nationalgypsum.com).
  4. USG Corporation: [www.usg.com](http://www.usg.com).
- B. Wallboard: Paper-faced gypsum wallboard as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
  2. Thickness:
    - a. Vertical Surfaces: 5/8 inch.
    - b. Ceilings: 5/8 inch.
    - c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
  3. Paper-Faced Products:
    - a. American Gypsum; EagleRoc Regular Gypsum Wallboard and FireBloc Type X Gypsum Wallboard.
    - b. Georgia-Pacific Gypsum LLC; ToughRock Gypsum Wallboard.
    - c. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
    - d. USG Corporation; Sheetrock Brand Gypsum Panels.
  4. Mold-Resistant Paper-Faced Products:
    - a. American Gypsum; M-Bloc.
    - b. National Gypsum Company; Gold Bond Brand XP Gypsum Board.
    - c. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
- C. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including toilet areas.
  2. Mold Resistance: Score of 10, when tested in accordance with ASTM D 3273.
  3. ANSI Cement-Based Board: Non-gypsum-based; aggregated portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C 1325.
    - a. Thickness: 1/2 inch.
    - b. Products:
      - 1) Custom Building Products; Wonderboard.
      - 2) National Gypsum Company; PermaBase Brand Cement Board.
      - 3) USG Corporation; Durock Brand Cement Board.
      - 4) Substitutions: See Section 01 60 00 - Product Requirements.
  4. Glass-Mat-Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C 1178.
    - a. Standard Type: Thickness 1/2 inch.
    - b. Products:
      - 1) Georgia-Pacific Gypsum LLC; DensShield Tile Backer.
      - 2) Substitutions: See Section 01 60 00 - Product Requirements.
- D. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
  2. Thickness: 5/8 inch.



3. Edges: Tapered.
4. Products:
  - a. American Gypsum; Interior Ceiling Board.
  - b. Georgia-Pacific Gypsum LLC; ToughRock CD Ceiling Board.
  - c. National Gypsum Company; High Strength Brand Ceiling Board.
  - d. USG Corporation; Sheetrock Brand Sag-Resistant Interior Gypsum Ceiling Board.
- E. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C 1396/C 1396M; sizes to minimize joints in place; ends square cut.
  1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
  2. Types: Regular, in locations indicated.
  3. Regular Type Thickness: 5/8 inch.
  4. Edges: Tapered.
  5. Products:
    - a. American Gypsum; Exterior Soffit Wallboard.
    - b. Georgia-Pacific Gypsum LLC; ToughRock Soffit Board.
    - c. National Gypsum Company; Gold Bond Brand Exterior Soffit Board.
    - d. USG Corporation; Sheetrock Exterior Gypsum Ceiling Board.

## **2.04 ACCESSORIES**

- A. Acoustic Insulation: ASTM C 665; preformed glass fiber, friction fit type, unfaced.
- B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- C. Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated.
  1. Types: As detailed or required for finished appearance.
- D. Joint Materials: ASTM C 475 and as recommended by gypsum board manufacturer for project conditions.
  1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
  2. Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
  3. Ready-mixed vinyl-based joint compound.
  4. Chemical hardening type compound.
- E. High Build Drywall Surfacers: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
- F. Screws for Attachment to Steel Members Less Than 0.03 inch In Thickness, to Wood Members, and to Gypsum Board: ASTM C 1002; self-piercing tapping type; cadmium-plated for exterior locations.
- G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C 954; steel drill screws for application of gypsum board to loadbearing steel studs.
- H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that project conditions are appropriate for work of this section to commence.

### **3.02 FRAMING INSTALLATION**

- A. Metal Framing: Install in accordance with ASTM C 754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

- C. Studs: Space studs as indicated.
  - 1. Extend partition framing to structure where indicated and to ceiling in other locations.
  - 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
  - 3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.
- D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
- E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
- F. Blocking: Install wood blocking for support of:
  - 1. Framed openings.
  - 2. Wall mounted cabinets.
  - 3. Toilet partitions.
  - 4. Toilet accessories.

### **3.03 ACOUSTIC ACCESSORIES INSTALLATION**

- A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
- B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
  - 1. Place one bead continuously on substrate before installation of perimeter framing members.
  - 2. Place continuous bead at perimeter of each layer of gypsum board.
  - 3. In non-fire-rated construction, seal around all penetrations by conduit, pipe, ducts, and rough-in boxes.

### **3.04 BOARD INSTALLATION**

- A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Exterior Soffit Board: Install perpendicular to framing, with staggered end joints over framing members or other solid backing.
- C. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
- D. Installation on Metal Framing: Use screws for attachment of all gypsum board.
- E. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

### **3.05 INSTALLATION OF TRIM AND ACCESSORIES**

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
  - 1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
- B. Corner Beads: Install at external corners, using longest practical lengths.

### **3.06 JOINT TREATMENT**

- A. Glass Mat Faced Gypsum Board: Use fiberglass joint tape, bedded and finished with chemical hardening type joint compound.
- B. Paper Faced Gypsum Board: Use paper joint tape, bedded with ready-mixed vinyl-based joint compound and finished with ready-mixed vinyl-based joint compound.

- C. Finish gypsum board in accordance with levels defined in ASTM C 840, as follows:
  - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
  - 2. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
  - 3. Level 1: Wall areas above finished ceilings, whether or not accessible in the completed construction.
  - 4. Level 0: Temporary partitions and surfaces indicated to be finished in later stage of project.
- D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
  - 2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.
- E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
- F. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

**END OF SECTION**

**SECTION 09 51 00**

**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 21 00 - Thermal Insulation: Acoustical insulation.
- B. Section 07 90 05 - Joint Sealers: Acoustical sealant.
- C. Section 28 31 00 - Fire Detection and Alarm: Fire alarm components in ceiling system.
- D. Section 23 37 00 - Air Outlets and Inlets: Air diffusion devices in ceiling.
- E. Section 26 51 00 - Interior Lighting: Light fixtures in ceiling system.

**1.03 REFERENCE STANDARDS**

- A. ASTM C 635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2004.
- B. ASTM C 636/C 636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels; 2006.
- C. ASTM E 580/E 580M - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint; 2006.
- D. ASTM E 1264 - Standard Classification for Acoustical Ceiling Products; 1998 (Reapproved 2005).

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on suspension system components.
- C. Samples: Submit two samples 6x6 inch in size illustrating material and finish of acoustical units.
- D. Samples: Submit two samples each, 6 inches long, of suspension system main runner.
- E. Manufacturer's Installation Instructions: Indicate special procedures.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.
  - 2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

## 1.06 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

## 1.07 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

## PART 2 PRODUCTS

### 2.01 ACOUSTICAL UNITS

- A. Manufacturers:
  - 1. Armstrong World Industries, Inc: [www.armstrong.com](http://www.armstrong.com).
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Acoustical Units - General: ASTM E 1264, Class A.
- C. Acoustical Panels Type as scheduled: Painted mineral fiber, ASTM E 1264 Type III, with the following characteristics:
  - 1. Size: 24 x 24 inches.
  - 2. Suspension System: Exposed grid Type as scheduled.

### 2.02 SUSPENSION SYSTEM(S)

- A. Manufacturers:
  - 1. Same as for acoustical units.
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
- C. Exposed Steel Suspension System Type as scheduled: Formed steel, commercial quality cold rolled; intermediate-duty.

### 2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Perimeter Moldings: Same material and finish as grid.
  - 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- C. Touch-up Paint: Type and color to match acoustical and grid units.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

### 3.02 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C 636/C 636M, ASTM E 580/E 580M, and manufacturer's instructions and as supplemented in this section.

- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Locate system on room axis according to reflected plan.
- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.
- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Overlap and rivet corners.

### **3.03 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Make field cut edges of same profile as factory edges.

**END OF SECTION**



**SECTION 09 65 00**

**RESILIENT FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Resilient tile flooring.
- B. Resilient base.
- C. Installation accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

**1.03 REFERENCE STANDARDS**

- A. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.
- B. ASTM F 1344 - Standard Specification for Rubber Floor Tile; 2004.
- C. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2002.
- D. RFCI - Recommended Work Practices for Removal of Resilient Floor Coverings; Resilient Floor Covering Institute; 1998.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

**PART 2 PRODUCTS**

**2.01 TILE FLOORING**

- A. Rubber Tile: Homogeneous color and pattern throughout thickness, and:
  - 1. Minimum Requirements: Comply with ASTM F 1344, of Class corresponding to type specified.
  - 2. Design: Smooth.
  - 3. Size: 12 x 12 inch.
  - 4. Overall Thickness: 0.125 inch.
  - 5. Pattern: Solid color.

**2.02 RESILIENT BASE**

- A. Resilient Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove, and as follows:
  - 1. Height: 4 inch.
  - 2. Thickness: 0.125 inch thick.
  - 3. Finish: Satin.
  - 4. Color: Color as selected from manufacturer's standards.

**2.03 ACCESSORIES**

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.



- B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.
- C. Moldings and Edge Strips: Same material as flooring.
- D. Filler for Coved Base: Plastic.
- E. Sealer and Wax: Types recommended by flooring manufacturer.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Verify that concrete sub-floor surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

#### **3.02 PREPARATION**

- A. Remove existing resilient flooring and flooring adhesives; follow the recommendations of RFCI Recommended Work Practices for Removal of Resilient Floor Coverings.
- B. Prepare sub-floor surfaces as recommended by flooring and adhesive manufacturers.
- C. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
- D. Prohibit traffic until filler is cured.
- E. Clean substrate.

#### **3.03 INSTALLATION**

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Install in accordance with manufacturer's instructions.
- C. Spread only enough adhesive to permit installation of materials before initial set.
- D. Fit joints tightly.
- E. Set flooring in place, press with heavy roller to attain full adhesion.
- F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
  - 1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
  - 2. Resilient Strips: Attach to substrate using adhesive.
- H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

- I. At movable partitions, install flooring under partitions without interrupting floor pattern.

#### **3.04 TILE FLOORING**

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer's instructions say otherwise.

#### **3.05 RESILIENT BASE**

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Install base on solid backing. Bond tightly to wall and floor surfaces.

#### **3.06 CLEANING**

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's instructions.

#### **3.07 PROTECTION**

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

**END OF SECTION**



**SECTION 09 90 00**

**PAINTING AND COATING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
- D. Do Not Paint or Finish the Following Items:
  - 1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Floors, unless specifically so indicated.
  - 6. Ceramic and other tiles.
  - 7. Glass.
  - 8. Concealed pipes, ducts, and conduits.

**1.02 DEFINITIONS**

- A. Conform to ASTM D 16 for interpretation of terms used in this section.

**1.03 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D 16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2007.
- C. ASTM D 4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials; 1992 (Reapproved 2003).
- D. GreenSeal GS-11 - Paints; 1993.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on all finishing products, including VOC content.
- C. Samples: Submit two paper chip samples, 12x12 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.
- D. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.
- E. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.
- F. Manufacturer's Instructions: Indicate special surface preparation procedures.
- G. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Coatings: 1 gallon of each color; store where directed.
3. Label each container with color in addition to the manufacturer's label.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

#### **1.07 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.
- B. Paints:
- C. Substitutions: See Section 01 60 00 - Product Requirements.

#### **2.02 PAINTS AND COATINGS - GENERAL**

- A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.
  1. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Supply each coating material in quantity required to complete entire project's work from a single production run.
  3. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
- C. Volatile Organic Compound (VOC) Content:
  1. Provide coatings that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for

- Architectural Coatings.
- b. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; [www.otcair.org](http://www.otcair.org); specifically:
    - 1) Opaque, Flat: 50 g/L, maximum.
    - 2) Opaque, Nonflat: 150 g/L, maximum.
    - 3) Opaque, High Gloss: 250 g/L, maximum.
    - 4) Varnishes: 350 g/L, maximum.
  - c. Architectural coatings VOC limits of State in which the project is located.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- D. Colors: As indicated on drawings

### **2.03 PAINT SYSTEMS - EXTERIOR**

- A. Paint GE-OP-3L - Gypsum Board and Plaster, Opaque, Latex, 3 Coat:
  - 1. One coat of latex primer sealer.
  - 2. Flat: Two coats of latex.
- B. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
  - 1. One coat of latex primer.
  - 2. Gloss: Two coats of latex enamel.
  - 3. Semi-gloss: Two coats of latex enamel.
- C. Paint ME-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
  - 1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
  - 2. Gloss: Two coats of latex enamel.
  - 3. Semi-gloss: Two coats of latex enamel.

### **2.04 PAINT SYSTEMS - INTERIOR**

- A. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat:
  - 1. One coat of latex primer sealer.
  - 2. Gloss: Two coats of latex enamel.
  - 3. Semi-gloss: Two coats of latex enamel.
  - 4. Eggshell: Two coats of latex enamel.
  - 5. Flat: Two coats of latex enamel.
- B. Paint MI-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
  - 1. One coat of latex primer.
  - 2. Gloss: Two coats of latex enamel.
  - 3. Semi-gloss: Two coats of latex enamel.
- C. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
  - 1. Touch-up with latex primer.
  - 2. Gloss: Two coats of latex enamel.
  - 3. Semi-gloss: Two coats of latex enamel.
- D. Paint GI-OP-3LA - Gypsum Board/Plaster, Latex-Acrylic, 3 Coat:
  - 1. One coat of alkyd primer sealer.
  - 2. Gloss: Two coats of latex-acrylic enamel.
  - 3. Semi-gloss: Two coats of latex-acrylic enamel.
  - 4. Eggshell: Two coats of latex-acrylic enamel.
  - 5. Flat: Two coats of latex enamel-acrylic.

### **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Gypsum Wallboard: 12 percent.
  - 2. Interior Wood: 15 percent, measured in accordance with ASTM D 4442.

#### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to coating application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.
- G. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).
- H. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.
- I. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
- J. Interior Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- K. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

#### **3.03 APPLICATION**

- A. Apply products in accordance with manufacturer's instructions.
- B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

- D. Apply each coat to uniform appearance.
- E. Sand wood and metal surfaces lightly between coats to achieve required finish.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

**3.04 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for general requirements for field inspection.

**3.05 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

**3.06 PROTECTION**

- A. Protect finished coatings until completion of project.
- B. Touch-up damaged coatings after Substantial Completion.

**END OF SECTION**





**SECTION 10 44 00**

**FIRE PROTECTION SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.
- B. Section 09 90 00 - Painting and Coating: Field paint finish.

**1.03 REFERENCE STANDARDS**

- A. NFPA 10 - Standard for Portable Fire Extinguishers; National Fire Protection Association; 2007.
- B. UL (FPED) - Fire Protection Equipment Directory; Underwriters Laboratories Inc.; current edition.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate cabinet physical dimensions.
- C. Product Data: Provide extinguisher operational features.
- D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

**1.05 FIELD CONDITIONS**

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Fire Extinguishers, Cabinets and Accessories:
  - 1. JL Industries, Inc: [www.jlindustries.com](http://www.jlindustries.com).
  - 2. Larsen's Manufacturing Co: [www.larsensmfg.com](http://www.larsensmfg.com).
  - 3. Potter-Roemer: [www.potterroemer.com](http://www.potterroemer.com).
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.

**2.02 FIRE EXTINGUISHERS**

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
  - 1. Provide extinguishers labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Cast steel tank, with pressure gage.
  - 1. Class 20A-8B:C.
  - 2. Size 20 pounds.
  - 3. Finish: Baked enamel, red color.

**2.03 FIRE EXTINGUISHER CABINETS**

- A. Metal: Formed stainless steel sheet; 0.036 inch thick base metal.
- B. Cabinet Configuration: Recessed type.
  - 1. Sized to accommodate accessories.
- C. Door: 0.036 inch thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with continuous piano hinge. Provide roller type catch.
- D. Door Glazing: Glass, clear, 1/8 inch thick float. Set in resilient channel gasket glazing.
- E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.
- F. Finish of Cabinet Exterior Trim and Door: brushed stainless steel.
- G. Finish of Cabinet Interior: White enamel.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

#### **3.02 INSTALLATION**

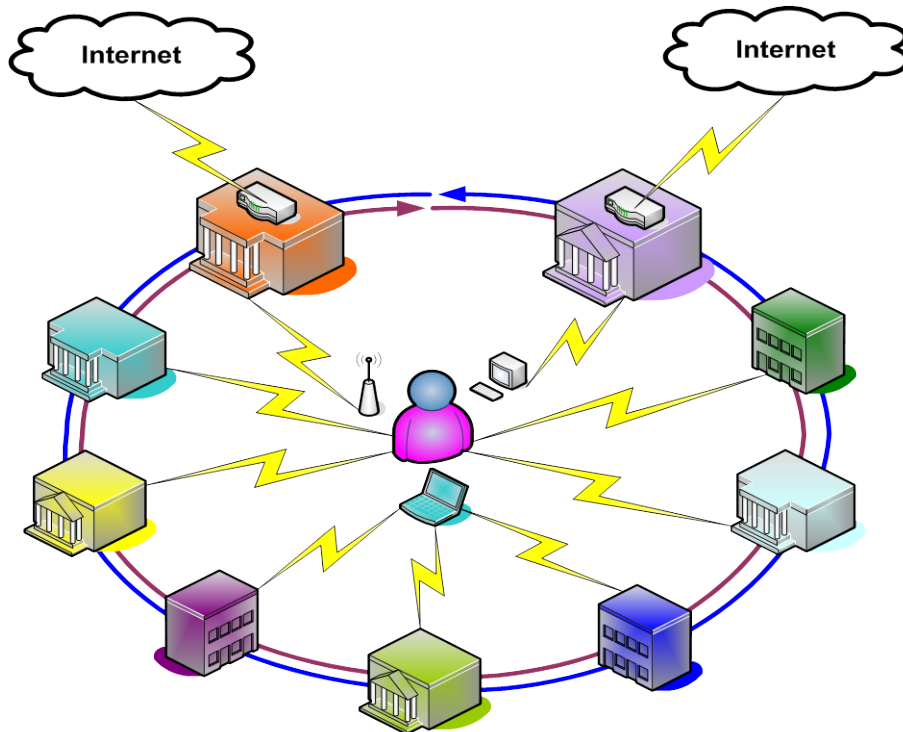
- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Place extinguishers and accessories in cabinets.

**END OF SECTION**

# **Appendix 1**



# Purchase College State University of New York



## Network Cable Installation Specification and Scope of Work Version 2.4

**December 16, 2014**

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## **Part 1: Introduction**

### 1.1) Introduction

Purchase College (SUNY) located in Purchase, NY, maintains the following specification (hereafter referred to as "Specification", "the Specification", or "this Specification") as a set of requirements for any installation of cables that shall support data, telephone, and/or video surveillance services on the Purchase College campus.

### 1.2) The Terms "Owner" and "the Owner"

The Terms "Owner" and "the Owner" shall represent Purchase College, State University of New York (SUNY) of 735 Anderson Hill Rd., Purchase, NY 10577.

### 1.3) Applicability of this Specification and the Term "Contractor"

This Specification may be presented in a number of ways, including but not limited to the following:

1.3.1) This Specification may be attached to a request for quotation or request for proposal, in which case this document shall specify requirements for proposed work upon which a vendor shall base its quotation. In this case the terms "Contractor" and "the Contractor" shall represent the vendor who is providing cost quotation/proposal upon which an agreement to perform the work may be reached. By use of the terms "Contractor" and "the Contractor", Owner conveys no promise or intention that such an agreement will be reached.

1.3.2) This Specification may accompany an order for installation services and materials, in which case it shall serve as requirements by which vendor is to provide requested service and materials should the vendor accept the order. In this case the terms "Contractor" and "the Contractor" shall represent the selected vendor in its obligation to perform the actual work.

### 1.4) Format

This Specification consists of the following five parts:

- Part 1: Introduction
- Part 2: General,
- Part 3: Materials,
- Part 4: Execution, and
- Part 5: Scope of Work.



## **Part 2: General**

### 2) General

#### 2.1) Schedule

Contractor shall submit a proposed schedule in writing to Project Manager, including all of the Project Milestones specified below and the Schedule Requirements specified in the Scope of Work.

Contractor shall complete all work according to any Schedule Requirements specified in the Scope of Work.

If awarded, proposed schedule of successful Contractor shall become the Schedule. Contractor shall adhere strictly to the Schedule and convey any proposed adjustments to the Schedule as a Transmittal to Owner Project Manager, and shall include adjustment to all of the Project Milestones specified below.

Written approval from Owner Project Manager must be obtained by Contractor prior to change of Schedule. If written approval from Owner Project Manager is not obtained by Contractor, then the Schedule remains unchanged and Contractor is obligated to perform according to Schedule.

Project Milestones and Schedule Requirements are as follows:

- 2.1.1) Materials Delivery Date (if different from the start date)
- 2.1.2) Start Date
- 2.1.3) Start of Path Installation (incl. core drilling, conduit, cable tray installation) Date
- 2.1.4) Completion of Risers Date
- 2.1.5) Completion of Path Installation Date
- 2.1.6) Completion of Cable Pulling and Rough-in Date
- 2.1.7) Testing and Labeling Date
- 2.1.8) Remainder Completion of Fiber-Optic Cable Installation Date
- 2.1.9) Completion of Telecommunications Feeder Installation Date
- 2.1.10) Documentation Delivery Date
- 2.1.11) Project Total Completion Date

#### 2.2) Contractor References

Contractor shall supply along with their bid a list of references of comparable installations, including contact name and telephone number. Owner may elect to perform a site visit to one or more references. Contractor shall note at least one reference that is able to accommodate a site visit by Owner.

#### 2.3) Designated Contacts

### 2.3.1) Owner Designated Contacts

Owner shall specify the name, mailing address, email address, fax, and telephone numbers for the following persons, hereafter referred to as "Owner Designated Contacts".

Changes to any Owner Designated Contacts before or during the relevant period of this work shall be communicated to all Designated Contacts by the Owner Project Manager.

Contractor shall communicate exclusively with the Owner Designated Contacts defined below in regard to any matter pertaining to the work described herein.

#### 2.3.1.1) Owner Project Manager

Sean Connolly  
Capital Facilities Planning  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
(914)251-6916  
[sean.connolly@purchase.edu](mailto:sean.connolly@purchase.edu)

#### 2.3.1.2) Owner Technical Contact

John Walters  
Campus Technology Services  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
(914)251-6916  
[john.walters@purchase.edu](mailto:john.walters@purchase.edu)

#### 2.3.1.3) Owner Billing Contact

Nikolaus Lentner  
Purchasing and Accounts Payable Office  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
Phone: (914)251-6070  
Fax: (914)251-6075

#### 2.3.1.4) Owner Parking and Transportation Contact

Donna Salter  
Parking and Transportation Office  
CCN Building, Rm. 1014  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
(914)251-6177  
[donna.salter@purchase.edu](mailto:donna.salter@purchase.edu)

2.3.1.5) Owner Certified Payroll Records Contact

Anne Marie Russillo  
Capital Facilities Planning Office  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
(914)251-4480

2.3.1.6) Owner Capital Projects Contact

Anne Marie Russillo  
Capital Facilities Planning  
Purchase College  
735 Anderson Hill Rd., Purchase NY 10577  
(914)251-4480

2.3.2) Contractor Designated Contacts

Contractor shall specify the name, mailing address, email address, fax, and telephone numbers for the following persons, hereafter referred to as "Contractor Designated Contacts".

Changes to any Contractor Designated Contacts before or during the relevant period of this work shall be communicated to all Designated Contact by the Contractor Project Manager.

2.3.2.1) Contractor Project Manager

2.3.2.2) Contractor Field Contact

2.3.2.3) Contractor Sales Contact

2.3.2.4) Contractor Billing Contact

2.3.2.5) Contractor President / CEO

### 2.3.3) Coordination by Contractor with Owner Designated Contacts

Contractor shall simultaneously forward copies of any correspondence between Contractor (or any of its employees or designees) and Owner (or any of its employees or designees) to the Owner Project Manager.

Contractor shall forward copies of meeting minutes within one business day following any meeting with Owner Designated Contact(s) to the Owner Project Manager, and copy any attending Owner Designated Contact(s).

Contractor shall submit all required documentation, all test results, all quotations, all matters of dispute, and all questions pertaining to this document in writing via the mailing address of the Owner Project Manager. Contractor shall send electronic copy of same to both the Owner Project Manager and the Owner Technical Contact via email.

Contractor shall submit all technical questions to the Owner Technical Contact via email, with copy to Owner Project Manager.

Contractor shall submit all matters of billing to the mailing address of the Owner Billing Contact, with copy to Owner Project Manager.

Contractor shall submit all certified payroll records to the Owner Certified Payroll Records Contact, and notify Owner Project Manager when these are sent.

Contractor shall submit all questions regarding parking and transportation on Owner premises, all requests for permission to park vehicles on owner premises, and all disputes related to parking/ticketing/towing on Owner premises to the Owner Parking and Transportation Contact

### 2.4) Quality Assurance and Contractor Qualifications:

Contractor must have and maintain the following qualifications:

- 2.4.1) Contractor's personnel are trained and experienced in the installation and testing of cabling systems according to all parts of TIA, BICSI, and related standards.
- 2.4.2) Contractor's personnel are trained and experienced in cable support techniques.
- 2.4.3) Contractor's personnel are trained and experienced in fire stopping methods.
- 2.4.4) Contractor's on-site personnel must be fully conversant with and capable of the installation of large scale Category-6 cabling systems for high-speed data and voice, and telecommunications cabling systems to support both analog and digital voice communications.
- 2.4.5) Contractor's on-site personnel must be trained and certified in installing Category-6 and equivalent cabling system at the level required to provide the cabling system manufacturer extended performance warranty with a minimum of a 20 year term.
- 2.4.6) Contractor's on-site personnel must have completed at least three comparable installations of telecommunications cabling systems supporting analog and digital voice communications within the last year.

- 2.4.7) Contractor's on-site personnel must be fully conversant with and capable of the installation of large scale SMF cabling systems supporting high-speed data and voice, if scope requires SMF installation.
- 2.4.8) Contractor's on-site personnel must have completed at least three comparable installations of SMF cabling systems supporting 1000Base-LX Ethernet within the last year.
- 2.4.9) Contractor's on-site personnel must be trained and certified in installing Corning Single-mode Fiber and equivalent cabling system at the level required to provide the cabling system manufacturer extended performance warranty with a minimum of a 20 year term.
- 2.4.10) Contractor's on-site personnel must be fully conversant with and capable of the installation of large scale security and surveillance cabling systems supporting analog and digital signals.
- 2.4.11) Contractor's on-site personnel must have completed at least three comparable installations of cabling systems supporting installation of security/surveillance cable within the last year.
- 2.4.12) Contractor's on-site personnel must be trained and certified in installing security/surveillance cabling systems supporting analog and digital signals.

## 2.5) Technical References

The provision and installation of the cable plant is to adhere to the strictest codes, standards, and practices. All products, processes, and standards of work must conform to the current versions of all applicable standards as defined by the following organizations and codes:

- American National Standards Institute (ANSI)
- American Society for Testing and Materials (ASTM)
- Edison Testing Laboratories (ETL)
- Building Industry Consulting Service International (BICSI)
- Association of Cabling Professionals (ACP)
- Electronic Industries Association (EIA)
- Federal Communications Commission (FCC)
- International Electrotechnical Commission (IEC)
- Institute of Electrical and Electronics Engineers (IEEE)
- National Electrical Code (NEC // NFPA 70)
- National Electrical Contractors Association (NECA)
- National Electrical Manufacturers Association (NEMA)
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA)
- New York State Uniform Fire Prevention and Building Code
- Telecommunication Industries Association (TIA)
- Underwriters Laboratories (UL)

In the event of a conflict between standards or codes, Contractor shall adhere to the most stringent.

In the event of a conflict between this Specification and any standard, code, or practice whereby this Specification is the most stringent, Contractor shall adhere to this Specification.

In the event of a conflict between this Specification and any standard, code, or practice whereby this Specification is not the most stringent, Contractor will immediately inform Owner Technical Contact and identify the conflict.

## 2.6) Approvals

Certain materials and practices are specified herein. If Contractor wishes to propose an equivalent alternate component or practice, a formal request including manufacturer performance data, cut sheets, shop drawings, and all supporting documentation must be submitted to the Owner Technical Contact and Owner Project Manager for approval.

Proposed alternate component or practice must not invalidate manufacturer warranty on installed cabling system.

Any variance from this Specification must be explicitly approved in writing by both the Owner Technical Contact and the Owner Project Manager. An approval from one of either the Owner Technical Contact or Owner Project Manager shall not suffice as approval. Both the Owner Technical Contact and Owner Project Manager must approve of the variance.

Owner reserves the right to deny any request for approval. If an approval request is denied or an approval is not received, then Contractor shall comply with this Specification.

## 2.7) Notification of Errors, Inquires and Interpretation

It shall be the responsibility of the Contractor to bring to the attention of Owner any errors in this Specification and to make recommendations to Owner Project Manager and Owner Technical Contact in writing for any additional requirements deemed necessary. If Owner finds the errors significant or a change in the requirements necessary, then Owner will notify Contractor in writing of the change in this Specification. No deviations from this Specification shall be made without approval from Owner.

## 2.8) Parking and Operation of Vehicles on Campus

Contractor will operate vehicles responsibly under campus rules and regulations and will not park vehicles in unauthorized areas. Illegally parked vehicles will be towed at vehicle owner's expense.

It will be the responsibility of the Contractor to contact the Parking and Transportation Office at (914)251-6177 to make arrangements for temporary visitor parking permits. The Owner Parking and Transportation Office is located in the Campus Center North (CCN) Building, in room 1014. Illegally parked vehicles are subject to ticketing and/or towing.

Unless otherwise noted, or otherwise instructed by the Owner Parking and Transportation Office, Contractor shall park all vehicles in parking lot W-1. Metered parking is available at vehicle operator's expense in parking lot W-1 for short-term parking of vehicles that have not been issued a temporary visitor parking permit.

Contractor shall not park or operate motor vehicles on grass or other non-paved surfaces, unless explicit written permission is granted by the Parking and Transportation Office.

2.9) Proper Contractor Identification

Employees of the Contractor while on site shall carry identification badge or cards and shall be instructed to submit same to scrutiny upon request by Police or Owner supervisory personnel.

2.10) Subcontracts

All of the requirements herein that apply to Contractor shall also apply to any subcontractor that Contractor uses to execute the requirements of this Specification. It is Contractor's sole responsibility to insure that all work is executed according to this Specification, whether performed directly by Contractor, or by Contractor's subcontractor. Upon request, Contractor must provide a list of all proposed subcontractors along with detailed information regarding their financial and technical abilities.

2.11) Certified payroll records must be submitted by the Contractor to Owner Certified Payroll Records Contact.

### **Part 3: Materials**

#### 3) Materials

The following materials requirements shall pertain to any materials provided, installed, and/or used by Contractor.

##### 3.1) General

Contractor shall supply all materials, unless otherwise noted.

All materials, equipment, tools and methods used shall be of standard manufacture, shall have undergone thorough tests, shall have been proven in actual use, and shall not be custom-designed for this project.

##### 3.2) Category-6

All Category-6 network cable, jacks, plugs, patch panels, and patch cables must be rated Category 6, must exceed performance specifications for Category 6 cable as defined in TIA-568-C.2, and must be certified by manufacturer at a frequency range of 1Mhz through 350Mhz.

Installed Category-6 network shall support 100BASE-TX Ethernet as per IEEE 802.3u, 1000BASE-T Ethernet as per IEEE 802.3ab, 1000BASE-TX Ethernet as per TIA-854, and Power over Ethernet as per the IEEE 802.3af and IEEE802.3at standards.

Installed materials must form an integrated system and must integrate with existing network. Components and interconnections must match for optimum future performance. All components must be produced by the same manufacturer, or be warranted by an exclusive partnership.

##### 3.2.1) Warranty on Installed Cabling system

Manufacturer warranty on installed Data/Telecommunications Cabling System shall be extended to Owner **for a period of not less than 20 years** and shall provide immediate remediation or replacement of installed cabling system by manufacturer, if cabling system does not meet the requirements of this Specification, including but not limited to testing parameters, at any point during the warrantee period.

Contractor shall submit manufacturer warranty information on proposed Data/Telecommunications Cabling System, along with copies of manufacturer certification credentials for Contractor, with Contractor's bid.

##### 3.2.2) Category-6 Cable

Category-6 cabling shall be 24 AWG, 4-pair UTP, UL/NEC CMP rated, with a blue PVC jacket. Plenum-rated Category-6 cabling shall be used where wiring passes through a plenum. Individual conductors shall be 100% FEP insulated. Cable jacketing shall be lead-free.

Category-6 Cable shall be UL listed under file number E138034. Cable shall be ETL verified to Category 6. Category-6 Cable shall be AMP NETCONNECT Category-6 cable part number 219567-5/219567-6 or approved equal.



### 3.2.3) Shielded Category-6 Outside Service Plant Cable ("Category-6 OSP Cable")

Category-6 OSP Cable shall be 23 AWG, 4-pair STP, with a sunlight and abrasion resistant black polyethylene outer jacket. Category-6 OSP Cable shall consist of a core of four balanced twisted pairs held in place by a cross-web separator and surrounded by a filling compound to prevent water ingress. Category-6 OSP Cable shall provide dry water block between the shield and the core jacket to prevent water ingress. Category-6 OSP Cable shall be suitable for buried applications.

Category-6 OSP Cable shall be produced by Superior Essex Corp., and shall be Superior Essex OSP Broadband Category 6 Shielded Cable, Product Code BBDN6, Part Number 04-001-64.

### 3.2.4) Category-6 Modular Plugs for Outside Service Plant (OSP) Cable

Category-6 Modular Plugs for Outside Service Plant Cable shall 8P8C shielded modular plugs that are designed to accept 23-gauge solid conductor shielded cable, and operate as part of an installed Category 6 cable system.

Category-6 Modular Plugs for Outside Service Plant Cable shall be SENTINEL Connector Systems Inc., Part number 111S08080090C34, or approved equal.

### 3.2.5) Category-6 Patch Cables

Patch cable and station cable assemblies shall be gray in color. Patch cable and station cable assemblies shall be constructed using 50-micron gold-plated 8-position modular plugs, wired to the T568A wiring pattern. The cable assemblies shall utilize colored cable and "snagless" cable boots that match the color of the cable. Cable shall be stranded, and cable assemblies shall comply with TIA Category 6 performance requirements and shall be backed by a 20-year component warranty provided by the manufacturer to Owner. Patch cables shall be AMP NETCONNECT part number 219885 or approved equivalent.

### 3.2.6) Category-6 Data/Telecommunication Outlets

For wall-mounted data/telecommunications outlets, outlet faceplates shall be 45-degree downward-facing angled faceplates, colored almond.

Floor-mounted data/telecommunications outlets shall have self-sealing flip-open covers, and faceplates shall be flush with the floor when covered are closed. Floor-mounted data/telecommunications outlets must be water and dust proof.

Faceplates and fittings shall be colored white. Angled faceplate assembly shall consist of AMP parts or approved equivalents.

Modular jacks shall be un-keyed, RJ-45 (8-position – 4-pair) and shall meet EIA/TIA-568 requirements for Category 6 component performance.

Modular jacks shall fit in a .790" X .582" opening. Modular jacks shall be terminated using PDS 110-style insulation displacement pc board connectors, color-coded for both T568A and T568B wiring. The 110-style connectors shall be capable of terminating 22-24 AWG solid wire. The 110 Contacts shall be paired (with additional space between pairs) to improve crosstalk performance. Each jack shall be provided with a bend-limiting strain relief. The strain relief shall provide a "silo" to limit the bend radius at the point of termination. Each jack shall be wired to T568B. Each jack shall have an integral dust cover.

Category-6 data/telecommunications outlet modular jacks shall be colored orange.

Data/telecommunications faceplates shall be colored electrical ivory.

Data/telecommunications modular jacks shall be AMP NETCONNECT part number 1375187-5 or approved equivalent.

Data/telecommunications faceplates shall be AMP NETCONNECT part numbers 1-406185-1, 1-1375155-1, or approved equivalent.

### 3.2.7) Category-6 Patch Panels

Category-6 patch panels shall be 1.75" high, occupy one 19" rack unit (1RU), and provide 24 RJ-45 (8-position – 4-pair) modular jack ports wired to T568B. Patch panels shall be configured as 6-port modules with individually replaceable jacks. The front of each module shall be capable of accepting 9mm to 12mm labels. Each port shall be capable of accepting an icon to indicate its function. Patch panels shall terminate the building cabling on PDS 110-style insulation displacement connectors.

Individually replaceable modular jacks inserted in patch panel will be pre-installed and will be colored black, unless otherwise noted.

Patch panels must be UL-Listed AMP NETCONNECT part number 1375014-2 or approved equivalents.

Patch panels shall be labeled using compatible labels and label covers, or approved alternate.

### 3.2.8) Category-6 Lightning Protectors

Category-6 Lightning Protectors shall be designed and laboratory-tested for use with 10/100/1000 Base-T Ethernet networks in indoor and outdoor environments between -40 degrees Fahrenheit and +176 degrees Fahrenheit. Category-6 Lightning Protectors shall meet or exceed the GR-1089 Intra-Building surge protection requirements for 10/100/1000 Base-T Ethernet lines.

Category-6 Lightning Protectors shall present two Category 6 8P8C shielded modular jacks, with shield isolated from the safety ground. Category-6 Lightning Protectors modular jacks shall accept 8P8C shielded modular plugs for inline installation in a single permanent link. Category-6 Lightning Protectors shall be compatible with 802.3af Power-over-Ethernet (PoE) devices, and shall support PoE modes A and B as per 802.3af.

Category-6 Lightning Protectors clamping voltage shall be 15 Volts for wire-to-wire, 90 Volts for wire-to-ground, and 90 Volts for shield-to-ground.

Category-6 Lightning Protectors shall have a weatherproof ABS enclosure with gasketed cover and concealed mounting holes. Ground clamp provided outside the Category-6 Lightning Protector enclosure shall accept a 10-gauge ground cable.

Category-6 Lightning Protectors shall be HyperLink AL-CAT6HPW manufactured by L-Com, or approved equal.

### 3.3) Category 3 Telecommunications Feeder/Backbone

All telecommunications feeder cables, patch panels, and punch-down blocks shall be rated Category-3, must comply with or exceed specifications as defined in TIA-568-B, and must be certified by manufacturer at a frequency range of 1Mhz through 16Mhz.

Installed Category-3 telecommunications feeder shall support analog telephony as per TIA 470-C and digital telephony as per TIA-810-B.

Installed materials must form an integrated system and must integrate with existing telecommunications network. Components and interconnections must match for optimum future performance. All components must be produced by the same manufacturer, or be warranted by an exclusive partnership.

#### 3.3.1) Telecommunications Feeder Cable

Telecommunications feeder cable shall be type ARMM, and shall consist of 100-pair of #24 AWG solid conductor cables wrapped individually in expanded polyethylene insulation. Telecommunications feeder cable shall be wrapped in ALVYN sheath-corrugated polymer-coated aluminum shield adhering to a flame-retardant grey PVC jacket. Cable shall be UL/NEC rated. Cable jacketing shall be lead-free.

Color-coding of insulation on individual pairs of conductors shall conform to TIA-568-B and PIC standard color codes for telecommunications backbone cable.

Telecommunications feeder cable shall be ETL verified to Category-3 transmissions requirements as defined in the TIA-568-A standard.

Typical electrical characteristics shall be as follows at 20-degree Celsius:

- 3.3.1.1) Max DC Resistance of 27.3 Ohms/kft
- 3.3.1.2) Insulation Resistance of 5000 Megohms-kft
- 3.3.1.3) Mutual Capacitance of 83 nF/mile at 1 kHz(nom)
- 3.3.1.4) Nominal Attenuation of 6.9 dB/kft at 772 kHz
- 3.3.1.5) Characteristics Impedance of 100 Ohms at 1 MHz(nom)

#### 3.3.2) Telecommunications Feeder Patch Panels

Category-3 patch panels shall be 7" high, occupy four 19" rack units (4RU), and provide 96 RJ14C (4-position – 2-pair) modular jack ports on front of panel, with PDS 110-style insulation displacement connectors on rear of panel.

Telecommunications feeder patch panel will be colored black.

Patch panels must be UL-Listed AMP part number 557-415-1 or approved equivalents.

### 3.3.3) Telecommunications Distribution Frame Punch-Down Block

Cross-connect punch-down blocks for Telecommunications Distribution Frames shall be type 66M split 50-pair blocks. Cross-connect blocks shall provide 6 pins per row, and shall be designed for termination of 22-26 AWG solid or 20-26 AWG stranded conductors. Block shall be molded of flame-retardant thermoplastic with quick-connect clips.

All pairs of the Telecommunications Feeder Cable in the Distribution Frame end shall be terminated on 66M insulation displacement connectors on cross-connect punch-down blocks for Telecommunications Distribution Frames. A sufficient number of cross-connect punch-down blocks for Telecommunications Distribution Frames shall be provided and installed by Contractor such that all pairs of the Telecommunications Feeder Cable provided by Contractor may be terminated.

Cross-connect punch-down blocks for Telecommunications Distribution Frames shall be Hubbell part number HPW66M150C5 or approved equal.

### 3.3.4) Telecommunications Gas Protector Panel

Gas Protector Panels shall be CIRCA Telecom (serial #205226, CIRCA 1900A1-100) gas protector panel or approved equal.

### 3.3.5) Telecommunications Patch Cables

Telecommunications patch cable jacket shall be silver in color. Telecommunications patch cable assemblies shall be "silver satin" with four 28-gauge stranded copper conductors, four-position RJ14C modular plugs, with 15-micron gold-plated contacts.

## 3.4) Fiber-Optics

All fiber-optic network cable, jacks, patch panels, and patch cables shall be designed for single-mode optical transmission.

Installed fiber-optic network shall support 1000bLX Ethernet, as per the IEEE 802.3z standard.

Installed materials must form an integrated system and must integrate with existing fiber-optic network. Components and interconnections must match for optimum future performance. All components must be produced by the same manufacturer, or be warranted by an exclusive partnership.

All components shall be produced by Corning Cable Systems, or approved equal.

### 3.4.1) Fiber-Optic Cable

All fiber-optic cable shall contain 24-strands strands of single-mode fibers surrounded by a lead-free flame-retardant outer jacket. Fiber-optic cable shall provide an 8-9 micron core transmission medium with 125 micron cladding, and introduce no more than .4 dB/km of attenuation (nominal).

Color of fiber-optic strand cladding and buffer tubes shall conform to TIA-598-C.

Outer jacket of all fiber-optic cable, including armored and non-armored fiber-optic cable, shall be colored yellow.

Fiber-optic cable shall be manufactured by Corning Cable Systems.

#### 3.4.1.1) Intra-building Single-mode Fiber Optic Cable

All intra-building single-mode fiber optic cable shall contain 24-strands strands of 900 µm tight-buffered fibers surrounded by dielectric strength members and a lead-free flame-retardant outer jacket. Outer jacket of all intra-building Single-mode fiber optic cable shall be colored Yellow.

Indoor single-mode fiber optic cable shall be:

- 3.4.1.1.1) Plenum-rated Armored Single-mode fiber optic cable -- Corning MIC Interlocking Armored Plenum Cable, Corning part number 024E88-33131-A3
- 3.4.1.1.2) Riser-rated Armored Single-mode fiber optic cable -- Corning MIC Interlocking Armored Riser Cable, Corning part number 024E81-33131-A1
- 3.4.1.1.3) Plenum-rated (non-armored) Single-mode fiber optic cable – Corning MIC Plenum Cable, Corning part number 024E88-33131-29
- 3.4.1.1.4) Riser-rated (non-armored) Single-mode fiber optic cable – Corning MIC Riser Cable, Corning part number 024E81-33131-24

#### 3.4.1.2) Inter-building Single-mode Fiber Optic Cable

All inter-building single-mode fiber optic cable shall contain 24-strands strands of fiber in two 3.0 mm buffer tubes, surrounded by dielectric strength members and a lead-free UV-resistant flame-retardant outer jacket.

Indoor single-mode fiber optic cable shall be:

- 3.4.1.2.1) Plenum-rated Armored inter-building Single-mode fiber optic cable – Corning FREEDM Plenum Loose Tube Cable with Interlocking Armor, part number 024E8P-31131-A3
- 3.4.1.2.2) Riser-rated Armored inter-building Single-mode fiber optic cable – Corning FREEDM Loose Tube Cable with Interlocking Armor, part number 024EWF-14101-AA1
- 3.4.1.2.3) Riser-rated (non-armored) inter-building Single-mode fiber optic cable – Corning FREEDM Loose Tube Indoor/Outdoor Cable, part number 024EWF-T4103A20

### 3.4.2) Fiber Optic Grounding

Armored cable shall be grounded.

Armored cable grounding assembly shall be Corning part number FDC-CABLE-GRND (Armored Cable Grounding Kit)

#### 3.4.3) Fiber-Optic Connectors

Fiber optic connectors on patch panels shall be compliant with TIA/EIA 604-2 ("SC") connectors. Fiber-optic connectors shall be crimp-on type, and shall have Ultra Physical Contact (UPC) polish/finish. Fiber-optic connector ferrules shall be constructed of ceramic.

Fiber-optic connectors shall present no more than 0.2 dB of typical insertion loss and 0.5 dB of maximum insertion loss, as measured by manufacturer at wavelengths of 1310 nm and 1550 nm, FOTP-171.

Fiber-optic connectors shall be Corning Unicam SC Single-Mode Connector with Ultra PC Polish, Corning Cable Systems part number 95-200-42, or approved equal.

#### 3.4.4) Fiber-Optic Patch Panel

Fiber optic patch panels shall meet requirements of TIA-568-C and TIA606, suitable for loose tube, tight-buffered, and optical fiber ribbon cables. Fiber optic patch panels shall be rack-mountable in standard EIA 19" (48 cm) equipment racks (1.75-in EIA hole spacing). Fiber optic patch panels shall be capable of being rack-mounted with either a 4.5" (11.4 cm) frontal projection to allow entry of fiber-optic patch cable slot front compartment, or flush to rack rails (0" projection). Fiber optic patch panels shall offer multiple locations for jumper egress, and a slide-out drawer for easy connector access.

Fiber-optic patch panel shall provide integrated bend radius limiting, cable anchor, and strand fan-out in rear connector housing. Protection for patch cable connectors, D-rings for patch cable routing, and side egress for patch cables shall be provided on front of housing.

Fiber optic patch panels located in building data/telecommunications closets shall consume two rack spaces (3.5-in high), shall have up to 64 fiber total capacity (SC or ST connectors). Fiber optic patch panels located in building data/telecommunications closets shall be Corning part number CCH-02U (Corning Cable Systems' Closet Connector Housing) and shall include four 12-fiber panels (48 fiber capacity), Fan-out kits (Corning part number FAN-BT25-06 kit), fan-out consumables (Corning part number TKT-FANBT-C), Buffer Tube Fan-Out Assembly Tool Kit (Corning part number TKT-FANBT-A), and any other materials required for proper termination and installation of fiber optic cable at patch panel.

#### 3.4.5) Fiber Optic Cable Management

Fiber optic cable management shall be one rack unit (1.75-in) high.

Fiber optic cable management shall be Corning part number CJP-01U.

#### 3.4.6) Fiber-Optic Patch Cables (Jumpers)

Fiber-optic patch cable assemblies shall be single-mode, 2-fiber jumper cable, and shall provide one duplex SC connector to one duplex un-keyed LC connector.

Fiber-optic patch cable assembly cable shall be engineered to present lowest attenuation at bends up to and including a minimal bend radius of 30mm (1.2 inches).

Fiber-optic patch cable assembly cable outer jacket shall be yellow in color, and shall allow separation of individual fibers and duplex connectors in field to allow conversion to two separate 1-fiber jumpers. Each separable 1-fiber cable shall be minimum of 2mm in diameter.

SC and LC connectors shall allow coupling and decoupling in duplex or single connector configuration.

LC connector duplex clip shall allow pairs to be swapped in the field such that cable may be field-configurable as either a straight-through or crossover cable.

Connector ferrules shall be constructed of ceramic. Connectors shall be factory-installed, shall have Ultra Physical Contact (UPC) polish/finish, and shall present no more than 0.15 dB of typical insertion loss and 0.4 dB of maximum insertion loss, as measured by manufacturer at wavelengths of 1310 nm and 1550 nm.

Fiber-optic patch cable assemblies shall be factory-built and factory-tested to produce no more than 1 dB attenuation at wavelengths of 1310 nm and 1550 nm.

Fiber-optic patch cable assemblies shall be Corning Cable Systems part number 0472-02-R5120-002-M or approved equal.

#### 3.4.7) Fiber-Optic Splice Enclosures

Fiber-Optic Splice Enclosures shall be Corning Cable Systems part number SCF-6C28-01-144 or approved equal.

Fiber splice trays shall be type 2S trays, and shall permit for 24 RTF fusion splices. Fiber-optic splice trays shall be Corning Cable Systems part number M67-092 or approved equal.

### 3.5) Security/Surveillance

All Category-6 network cable, jacks, patch panels, and patch cables used to interconnect surveillance system components shall meet all requirements for Category-6 cable and components, described elsewhere in this document.

Installed materials must form an integrated system and must integrate with existing security/surveillance network. Components and interconnections must match for optimum future performance. All components must be produced by the same manufacturer, or be warranted by an exclusive partnership.

#### 3.5.1) Warranty on Installed Cabling system

Contractor shall submit manufacturer warranty information on proposed security/surveillance cabling system, along with copies of manufacturer certification credentials for Contractor, with Contractor's bid.

#### 3.5.2) Security/Surveillance Cable

##### 3.5.2.1) Power Cable

Power cable used for surveillance network shall be two conductor 18 AWG twisted pair, with stranded bare copper conductors, encased in a black jacket.

### 3.6) Pathway

#### 3.6.1) Ladder Cable Tray

All cable trays installed in data/telecommunications closets will be ladder-style aluminum cable tray. Ladder cable tray shall be a minimum of eighteen inches (18") wide, have a side rail height of four inches (4"), a load depth of at least three inches (3"), and a rung spacing of six inches (6"). Ladder cable tray shall be installed according to manufacturer specification, using proper radius fittings and fasteners prescribed by manufacturer. Ladder cable tray shall be grounded per NEC and manufacturer standards and to the same ground as equipment rack. Ladder cable tray will be Wiremold SpecMate Aluminum L Series Ladder Tray System or approved equal.

#### 3.6.2) Basket Cable Tray ("Basket Tray")

Unless otherwise noted, all intra-building cable trays will be 8"-wide welded wire mesh basket cable tray with a 2" usable load depth. Finish of basket tray shall be pre-galvanized zinc finish, applied to steel wire prior to fabrication, and meeting the minimum properties of ASTM A 641. Basket tray shall have T-weld on top rail in order to avoid sharp surfaces or protrusions on tray surface. Wire Diameter on all mesh sections of basket tray must be a minimum of 0.197 inch. Basket tray manufacturer must have a demonstrated history of production and distribution of product offering for a minimum period of 3 years in the US. Basket cable tray shall be installed as per manufacturer's specification. All fittings shall be field-formed, from straight sections, in accordance with manufacturer's instructions. Basket tray shall be classified by UL as an Equipment Ground Conductor (ECG) when spliced as recommended. All splicing assemblies shall likewise be UL approved as ECG. Basket cable trays will be 8" FLEXTRAY Cable Management System part number FT2x8x10GS, or approved equal.



### 3.6.3) Poke-Throughs

Poke-throughs shall fit into 4" cored hole, and shall be fire-rated for four hours when installed in compatible unprotected reinforced concrete floors or fire-rated for three hours when installed in compatible floors employing steel floor units with concrete top floors. An adjustable fire barrier shall be integral to the poke-through that may accommodate floors between 2 ¼ inches to 7 inches in thickness. Poke-throughs shall be suitable for new or retrofit installations, and shall be appropriate for installation on carpeted or tiled floors.

Poke-throughs shall provide four Category-6 Data/Communications ports, and four NEMA 5-20R receptacles fed by four separate 20 Amp 125V power circuits.

Poke-throughs shall provide flip-up gasketed covers over each data/communications and power receptacle, to exclude scrub-water and dirt/debris when closed. Poke-through receptacles shall be positioned face-up atop a flange that shall raise the receptacles a minimum of 0.5 inches in height, further discouraging scrub-water infiltration even when covers are opened.

Poke-throughs shall exceed UL514A and UL514C testing standards, and UL scrub water exclusion requirements.

Poke-throughs shall be Hubbell part numbers PT4X4BLHPW, PT4X4BRS3HPW, PT4X4GYHPW, PT4X4IHPW, or approved equal. Miscellaneous additional Hubbell parts shall be required to accommodate the proper number of data/communications and power receptacles.

### 3.6.4) Conduit

All conduits to be installed by Contractor, unless otherwise specified, shall be Electrical Metallic Tubing.

#### 3.6.4.1) Electrical Metallic Tubing

Electrical Metallic Tubing (EMT) must be ANSI C80.3 galvanized conduit.

EMT fittings and conduit bodies installed in interior spaces must be NEMA FB 1 steel setscrew type.

EMT fittings, conduit bodies, and junction boxes installed in exterior spaces must be weatherproof compression type.

Conduit system bushing and connectors must have nylon insulated throats.

### 3.6.5) Raceway

Raceway and fittings shall be constructed entirely of PVC, and shall be colored Ivory. minimum 8' lengths. Raceway shall be designed to be secured to walls mechanically using screws or bolts. Raceway product series must include the following finishing fittings:

- 3.6.5.1) cover clip / union
- 3.6.5.2) internal 90-degree bend
- 3.6.5.3) external 90-degree bend
- 3.6.5.4) flat 90-degree bend

#### 3.6.5.5) end-cap

Fittings shall have a minimum of 1.3 inches interior bend radius, and shall be suitable to maintain rating of selected Category-6 cable.

Raceway shall be Wiremold NM2000 series or approved equal.

#### 3.6.6) Surface-mount device boxes

Surface-mount device boxes shall be constructed entirely of PVC, and shall be ivory in color. Surface-mount device boxes shall be 2 7/8" inches deep, and shall be single-gang, 3 inches wide by, 4 7/8" high. Surface mount boxes shall be of same manufacturer and compatible with selected raceway, and shall have knockouts/twist-outs for selected raceway model. Surface-mount device boxes shall be designed to be secured to wall mechanically using screws or bolts.

Surface-mount device boxes shall be Wiremold NM2044 or approved equal.

#### 3.7) Box Eliminator Bracket

Box eliminator brackets must allow faceplate to be mounted flush, with no greater than a 1/16" gap between faceplate and wall.

#### 3.8) Innerduct

All innerduct shall be constructed of corrugated High Density Polyethylene (HDPE) and shall be colored orange.

#### 3.9) Pull Tape

Pull tape shall be composed of longitudinal aramid strands tied together with a 90-degree cross-weave of polyester strands. Pull cord shall have a minimum tensile strength of 1250 pounds, and shall maintain less than 4% tensile elongation at yield.

Pull tape shall have lubrication coating applied at factory, and shall have a coefficient of less than 0.12 (twelve hundredths).

Pull tape shall have footage marked clearly on tape by manufacturer.

Pull tape shall meet or exceed pull line requirement as defined in Bellcore GR-356-CORE "Generic Requirements for Optical Cable Innerduct and Accessories".

Pull tape shall be ARNCO Bull-Line WOVEN ARAMID Fiber with Polyweft part number WP12, or approved equal.

#### 3.10) Pull Cord

Pull cord shall be composed of continuous polyethylene fibers and shall have a tensile strength of at least 200 pounds.

3.11) Cable Fasteners

Velcro brand hook-and-loop fasteners, or equivalent shall be used to secure cables. Contractor shall not use nylon or plastic zip strip, tie wrap, cable tie, (etc.) or similar fasteners on cables during construction and installation of the Data/Telecommunications Cabling System.

### 3.12) Equipment Cabinets ("Cabinets")

Equipment cabinets shall be four-post free-standing EIA 19" cabinets, specifically designed for high-density cabling system applications. Cabinets shall include steel side panels each end of a series of bayed cabinets. Each cabinet shall include steel locking doors on front and rear. Installed cabinets shall provide NEMA 12 rating of protection against dust, falling dirt, and dripping non-corrosive liquids.

Cabinets shall be rated IP 51, and classified UL 50 Type 1, UL 50 Type 2, and UL 50 Type 12. Cabinets shall be certified by Underwriters Laboratories to be in compliance with UL 50 (Standard for Safety for Enclosures for Electrical Equipment), and to maintain integrity of a UL Type 12 enclosure.

Cabinets shall include integrated plinths to raise bottom of cabinet a minimum of 4" from floor when installed. Plinths shall have side, front, and rear covers.

Cabinets shall be constructed of steel and shall provide a minimum of 1500 pound static load capacity. Cabinet mounting rails/panels shall be constructed of 11 gauge zinc-plated steel. Cabinet frame, roof, base, and sidewalls shall be constructed of 16 gauge steel. Cabinet doors shall be constructed of 14 gauge steel.

Cabinet exterior shall be dipcoat primed, and powder-painted ANSI 70 Grey or Tiger RAL 7035 at factory.

Cabinet door handles shall be tamper-proof with integrated locks, keyed alike.

Unless otherwise specified, cabinets shall be 78.74" high (not including plinth), 31.5" wide, and 31.5" deep, and provide 42 rack units (RU) of equipment mounting space.

If integrated cabinet system air conditioner is specified, then air conditioner shall be manufactured by the same manufacturer as the cabinet, and shall be compatible with cabinet. Cabinet shall maintain its NEMA 12 rating when the air conditioner is installed. Air conditioner shall accept 230V input, and provide a minimum of 9390 BTU of continuous cooling in sustained ambient temperatures of 55 degrees Celsius. Cabinet system shall offer the capabilities of expanding cooling capacity to a total of 40,000 BTU via replacement, upgrade, and/or supplementation of additional similar air conditioning units. Temperature levels shall be maintained by microprocessor control. Current cabinet inside temperature, and temperature settings shall be displayed on external numeric display of air conditioner.

Cabinets shall be Rittal base model number 9971160 or approved equivalent. Integrated cabinet system air conditioner shall be Rittal part number 3328110, or approved equivalent.

One Rittal cabinet baying kit shall be supplied with each cabinet.

Additional components by Rittal may need to be included in order to meet this Specification.

Contractor shall coordinate with Rittal product specialist and Owner Technical Contact to ensure proper cabinet configuration and order. Contractor shall submit Bill of Materials to Owner Technical Contact and Owner Project Manager for approval prior to order placement.

### 3.12.1) Mounting Hardware for Cabinets

Contractor shall furnish a quantity of one hundred (100) compatible 10/32" cage nuts and one hundred (100) matching bolts for each cabinet supplied.

### 3.12.2) Power Distribution Units for Cabinets

Contractor shall supply two (2) Power Distribution Units (PDUs) per each cabinet supplied by Contractor.

PDUs for cabinets shall each have a single 30 amp 125 volt input via a NEMA L5-30M (male) plug, and shall distribute power to a total of twenty-four (24) NEMA 5-15/20 ("T-slot") female receptacle outputs.

PDUs shall each be between 42" and 49" in height, between 2" and 3" in width, and less than 2.5" inches in depth. Input power cable shall be 7' long.

Two 20 Amp circuit breakers shall be integrated into PDU chassis, and shall each be wired to twelve (12) NEMA 5-15/20 outputs.

PDUs for Cabinets shall be BayTech PDU22-30 TL UC437 Power Strip, or approved equal.

### 3.12.3) Vertical Cable Management Panels for Cabinets

One vertical slotted duct cable management panel shall be provided and installed by Contractor on each post of each cabinet provided by Contractor (four per cabinet).

Vertical slotted duct cable management provided with cabinet shall be molded out of plastic and shall incorporate bend radius control throughout the fingers, pass-through holes, and transitions between horizontal and vertical pathways. Integral cable retainers shall be molded on the end of each finger. Four snap-on adjustable cable retainers, manufactured specifically to fit the selected model of cable management, shall be attached to duct fingers to provide additional retention of cables within channel.

Vertical slotted duct cable management provided with cabinet shall be double-sided. Front and rear dual-hinged cover shall open minimum of 110-degrees in the left or right position. Front duct shall be 83" high X 6" deep X 4.9" wide. Rear duct shall be 83" high X 6" deep X 4.9" wide.

Vertical slotted duct cable management provided with cabinets shall be colored black.

Vertical slotted duct cable management provided with cabinets shall be PANDUIT part number WMPV45E, or approved equivalent.

3.13) Wall-Mounted Cabinets (“Wall-Mounted Cabinets”)

Wall-Mounted Cabinets shall be constructed of 16 gauge steel with black powder-coated finish. Wall-Mounted Cabinets shall have front and rear (two pairs of) equipment mounting rails fastened to cabinet sides. Wall-Mounted Cabinet equipment mounting rails shall be constructed of 11 gauge steel with black powder-coated finish, shall be 19 inches apart with fully adjustable depth position, and shall provide 26 rack units of usable rack space with 12/32-inch factory-tapped holes in an EIA-310-D Universal pattern. Wall-Mounted Cabinets shall have solid front door. Wall-Mounted Cabinet shall have a rear hinged section with pre-drilled/cut keyholes slots that permits mounting to wall, and allows full access to rear of cabinet when mounted. Rear section of cabinet shall have three 3-inch diameter and eight ¾-inch diameter conduit entry knockouts. Wall-Mounted Cabinet side panels shall be vented via ventilation slots/louvers. Wall-Mounted Cabinet top shall have 250 CFM exhaust fan. Wall-Mounted Cabinet dimensions shall be 48 inches high, by 21 inches wide, by 26 inches deep.

Wall-Mounted Cabinet shall be Hubbell base part number MCC48WMCS19D.

Wall-Mounted Cabinet shall include an installed 250 CFM top-mounted fan, Hubbell part number MCCWRFAN, or approved equal.

Wall-Mounted Cabinet rear rails shall be Hubbell part number WMC48RAILS or approved equal, installed.

3.13.1) Mounting Hardware for Wall-Mounted Cabinets

Contractor shall furnish a quantity of one hundred (100) compatible 10/32” cage nuts and one hundred (100) matching bolts for each cabinet supplied.

### 3.14) Open Equipment Racks ("Racks", "Open Racks")

Equipment racks shall be two-post free-standing EIA 19" wide racks, specifically designed for high-density cabling system applications. Racks shall be constructed of steel and shall provide a minimum of 1500 pound static load capacity. Rack shall be colored black with powder-painted at factory.

Rack posts shall be factory machine-tapped on front and rear with 10/32" holes in EIA pattern.

Rack posts shall contain built-in cable routing channels with hand-hole access openings on sides. The depth of the built-in cable routing channels shall be 16.5". Rack shall provide open access to cable routing channels from top, bottom, and inside of rack. The cable routing channel outside walls shall provide built-in cable tie points for affixing 3/4"-wide velcro fasteners directly to sidewalls while dressing cable.

Racks shall have integrated rungs on top of rack behind rack face to permit support and routing of cables to patch panel rear. Integrated rungs shall be of sufficient radius to maintain proper bend radius of cable.

Racks shall have integrated top trough with built-in waterfall in front of posts to provide bend radius control and efficient routing for patch cables.

Unless otherwise specified, racks shall be seven feet high (7' H), and provide 45 rack units (45 RU) of equipment mounting space.

Seven-foot-high racks shall be Ortronics part number OR-MM6716, or approved equivalent.

Eight-foot-high racks shall be Ortronics part number OR-MM6816, or approved equivalent.

#### 3.14.1) Mounting Hardware for Open Racks

Contractor shall furnish a quantity of one hundred (100) compatible 10/32" bolts for each rack supplied.

#### 3.14.2) Power Distribution Units for Open Racks

Contractor shall supply two (2) Power Distribution Units (PDUs) per each open rack supplied by Contractor.

PDUs for open racks shall each have a single 30 amp 125 volt input via a NEMA L5-30M (male) plug, and shall distribute power to a total of twenty-four (24) NEMA 5-15/20 ("T-slot") female receptacle outputs.

PDUs shall each be between 42" and 49" in height, between 2" and 3" in width, and less than 2.5" inches in depth. Input power cable shall be 7' long.

Two 20 Amp circuit breakers shall be integrated into PDU chassis, and shall each be wired to twelve (12) NEMA 5-15/20 outputs.

PDUs for Open Racks shall be BayTech PDU22-30 TL UC437 Power Strip, or approved equal.

### 3.14.3) Vertical Cable Management Panels for Open Racks

One vertical cable management panels shall be provided and installed by Contractor on each post of each rack provided by Contractor.

Vertical cable management provided with racks shall be colored black, with a solid black front cover with hinge on both sides to permit opening of panel from right or left without removal of panel. Vertical cable management provided with racks shall be manufactured by same manufacturer of rack to fit selected rack. Vertical cable management provided with racks shall include snap-on bend-radius-limiting cable management spools and bend-limiting clips. Vertical cable management provided with racks shall provide a 6-inch-wide channel between racks for front and back routing of equipment cables and patch cords.

Seven-foot-high vertical cable management panels for seven-foot-high open racks shall be Ortronics part number OR-MM6VMD710 or approved equivalent.

Eight -foot-high vertical cable management panels for eight-root-high open racks shall be Ortronics part number OR-MM6VMD810 or approved equivalent.



3.15) Horizontal Cable Management Panels

One horizontal slotted duct cable management panel shall be supplied and installed per each 24-port Category-6 patch panel supplied.

Horizontal slotted duct cable management panel shall be molded out of plastic and shall incorporate bend radius control throughout the fingers, pass-through holes, and transitions between horizontal and vertical pathways. Integral cable retainers shall be molded on the end of each finger. Four snap-on adjustable cable retainers shall be attached to duct fingers to provide additional retention of cables within channel. Snap-on adjustable cable retainers must be manufactured specifically to fit the selected model of slotted duct cable management panel.

Horizontal slotted duct cable management panel shall be colored black.

Horizontal slotted duct cable management panel shall be double-sided. Front dual-hinged cover shall open 180-degrees in the up or down position. Rear cover shall snap on. Front duct shall be 3.5" high X 3" deep. Rear duct shall be 2" high X 5" deep. Horizontal slotted duct cable management panels shall mount to any standard EIA 19" wide rack.

Horizontal slotted duct cable management panel shall be PANDUIT part number NCMH2, or approved equivalent.

### 3.16) Labels

All labels shall meet the legibility requirements of UL 969, and shall be preprinted using a mechanical means of printing (e.g., laser printer).

Where insert type labels are used provide transparent plastic cover over label.

All label text shall conform to the Cable Installation Labeling Convention, described elsewhere in this document.

#### 3.16.1) Data/telecommunications Outlet Labels

Data/telecommunications faceplates shall be labeled using compatible non-adhesive labels. A transparent snap-in plastic label cover shall be provided.

Data/telecommunications outlets and data/telecommunications outlet ports shall be labeled according to the Cable Installation Labeling Convention, described elsewhere in this document.

#### 3.16.2) Labels for Patch Panels (all types)

Patch Panels shall be labeled using compatible non-adhesive labels. A transparent slide-in plastic label cover shall be provided.

Patch panels and patch panel ports shall be labeled according to the Cable Installation Labeling Convention, described elsewhere in this document.

#### 3.16.3) Cable Marking Labels

Cable marking labels shall be composed of vinyl substrate with a white printing area and a clear "tail" that self laminates the printed area when wrapped around the cable.

Cable marking labels shall meet the legibility, defacement, exposure, and adhesion requirements of UL 969, and shall be preprinted using a mechanical means of printing (e.g., laser printer).

If cable jacket is white, provide cable label with printing area that is any other color than white, preferably orange or yellow – so that the labels are easily distinguishable.

Cables shall be labeled on both ends according to the Cable Installation Labeling Convention, described elsewhere in this document.

#### 3.16.4) Fiber-Optic Cable Warning Labels

Fiber-optic cable warning labels shall alert to the presence of fiber-optic cable within innerduct and conduit.

Fiber-optic cable warning labels shall be colored yellow, and shall clearly state in black print applied by manufacturer: "WARNING" and "FIBER OPTIC CABLE".

Fiber-optic cable warning labels shall also advise reader in clearly legible print to "CONTACT: CTS NETOPS AT (914)251-6465" for information.

Fiber-optic cable warning labels shall be manufactured to attach directly to innerduct, conduit, and fiber-optic cable via mechanical means, rather than adhesive.

3.17) Plywood Backboard

Plywood used for backboard in data/telecommunications closets shall be 3/4" thick, type A/C, and must be stamped clearly on the "good" finished side (the "A" side) by manufacturer showing that it has been treated with fire-retardant chemical, and meets Class A requirements for NFPA Life Safety Code (NFPA 101). Plywood shall be entirely unpainted. At least one fire-retardant treatment stamp must be clearly visible on plywood at all times, regardless of what is mounted on the backboard.

Whole 4' x 8' sections of plywood shall be cut to fit the specified area of backboard. Scrap or remnant wood is not acceptable. Plywood must be free of dirt and dust.

Plywood shall be cut and mounted such that specified size and area of backboard is covered continuously, with as few joints and as few cuts as possible.

3"x4"x3" 11-gauge steel U-brackets shall be supplied with each piece of plywood for use in mounting.

3.18) Electrical Grounding Busbar for Data/Telecommunications Closets

Contractor shall supply and install one UL-listed electrical grounding busbar for each plywood backboard assembly installed by Contractor in data/telecommunications closets, to be used as the Telecommunications Main Grounding Busbar (TMGB) in data/telecommunications located closest to entrance facility, and as Telecommunications Grounding Busbar (TBB) in all other closets as per TIA/EIA J-STD-607-A.

Grounding busbars for data/telecommunications closets shall be 0.25" deep x 4" high x 12" wide copper grounding busbar with a minimum of eighteen (18) 0.437" holes at a minimum of 1" separation.

Grounding busbars for data/telecommunications closets shall be insulated from each of its supports by a minimum of two inches (2") of UL standoff insulators.

Grounding busbars for data/telecommunications closets shall be mounted at bottom of plywood backboard via two stainless steel mounting brackets, and four stainless steel assembly bolts and lock washer.

Grounding busbars for data/telecommunications closets shall be suitable for indoor or outdoor installations.

Electrical Grounding Busbar shall be Storm Copper SCGB-5KT Ground Bar Kit, or approved equal.

3.19) Firestopping

Use only Firestopping products that have been tested for specific fire resistance rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire rating involved for each separate instance.

### 3.19.1) Firestopping Putty, Firestopping Caulk, or Firestopping Foam

Firestopping Putty, Firestopping Caulk, and Firestopping Foam (Firestopping Putty/Caulk/Foam) shall remain soft and pliable to allow removal, repair, and the addition of cables (“reenterability”) without power tools, and without any danger of damaging existing cable traversing the penetration.

Firestopping Putty/Caulk/Foam shall not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during or after construction.

Firestopping Putty/Caulk/ Foam shall be colored red.

### 3.19.2) Fire Rated Cable Pathway Devices (Firestop Assemblies)

Fire Rated Cable Pathway Devices shall be comprised of steel raceway with intumescent foam pads allowing 0 to 100 percent cable fill.

Fire rated pathway devices shall:

- 3.23.2.1.1) Meet the hourly rating of the floor or wall penetrated.
- 3.23.2.1.2) Permit the allowable cable load to range from 0% to 100% visual fill thereby eliminating the need to calculate allowable fill ratios.
- 3.23.2.1.3) Permit multiple devices to be ganged together to increase overall cable capacity.
- 3.23.2.1.4) Allow for retrofit to install around existing cables.
- 3.23.2.1.5) Include an optional means to lengthen the device to facilitate installation in thicker barriers without degrading fire or smoke sealing properties or inhibiting ability of device to permit cable moves, add-ons, or changes.
- 3.23.2.1.6) Not require any additional action on the part of the installer to open or close the pathway device or activate the internal smoke and fire seal, such as, but not limited to:
  - 3.23.2.1.6.1) Opening, closing, or adjustment of doors.
  - 3.23.2.1.6.2) Twisting an inner liner.
  - 3.23.2.1.6.3) Removal or replacement of any material such as, but not limited to, sealant, caulk, putty, pillows, bags, foam plugs, foam blocks, or any other material.

Fire Rated Cable Pathways shall be Specified Technologies Inc. (STI) EZ-PATH™ Fire Rated Pathway or approved equal.

### 3.19.3) Firestopping for Data/Telecommunications Cabinet Penetrations

Firestopping used on data/telecommunications cabinet penetrations shall provide a fire, smoke, and watertight seal to cabinet. This seal shall remain soft and pliable to allow removal, repair, and the addition of cables (“reenterability”) without power tools, and without any danger of damaging existing cable traversing the penetration.

Firestopping used inside data/telecommunications closet and cabinet penetrations shall be RTV silicone foam PR-855 chase foam manufactured by PRC-DeSoto, or approved equivalent.

3.20) Wireless Access Point Mounting Brackets

3.20.1) Suspended-Ceiling-Mount Wireless Access Point Mounting Bracket

Suspended-Ceiling-Mount WAP Bracket shall be Cisco AIR-AP-T-RAIL-R, Part Number 700-19209-04. Suspended-Ceiling-Mount Wireless Access Point Bracket shall be provided by Purchase College.

3.20.2) Indoor Wall-Mount Wireless Access Point Mounting Bracket

Indoor Wall-Mount Wireless Access Point Mounting Bracket shall be constructed of 18 gauge steel, and be constructed sturdily with a hostile environment in mind. Door concealing faceplate must lock, and all Wall-Mount WAP Mounting Brackets must be keyed alike. Two keys shall be furnished for each Wall-Mount WAP Mounting Bracket provided. Surface of WAP Mounting Bracket shall be finished with textured white powder coat.

Indoor Wall-Mount Wireless Access Point Enclosures shall be Oberon Wireless model 1029-00 or approved equal.

## **Part 4: Execution**

### 4) Execution

#### 4.1) Workmanship

Workmanship will be to the highest standards in industry; all equipment and materials to be installed in a neat and secure manner in accordance with applicable industry technical standards, local code standards and product manufacturer's standards for their installation.

#### 4.2) Pre-Bid and Pre-Installation Surveys

Prior to placing any cabinet, rack, wireless access point enclosure, conduit, cable tray, raceway, feeder, or cable, the Contractor shall survey the site to see that job conditions do not impose any obstructions that would interfere with the safe and satisfactory placement of the cables or equipment. Necessary changes to the plans may be determined by Contractor's site survey and such changes may not be made without the prior approval of Owner.

Building plans and documentation are not guaranteed to be entirely accurate or to scale, and are provided for informational purposes only. Contractor must verify all measurements in the field.

Unless otherwise noted, Contractor may freely access public areas of campus during normal hours of operation in order to verify measurements and existing conditions.

Contractor is urged to perform a site visit and verify measurements and existing conditions prior to placing a bid in respond to any request for quote or request for proposal.

#### 4.3) Access and Physical Security

Contractor may require access to locked doors or alarmed areas. Contractor shall coordinate access with Owner Project Manager.

If a security alarm is tripped, then Contractor must immediately notify the University Police Department at (914)251-6900.

Contractor shall comply with all of Owner's policies regarding access to non-public areas.

Contractor may be provided with a chaperone by Owner while working in residence facilities, museum, art galleries, and other restricted areas of the campus.

#### 4.4) Coordination with Other Trades

In order to conform to the overall project event schedule, Contractor shall survey the work areas regularly, and coordinate work with other applicable trades and with the Owner Project Manager.

#### 4.5) Damage or Loss

During installation, and prior to final acceptance, the Contractor shall protect finished and unfinished work against damage and loss. In the event of such damage or loss, the Contractor shall replace or repair such work at no additional cost to Owner. As cable is installed, care must be taken to avoid nicks, kinks or other damage to the cable.

#### 4.6) Existing Cables and Equipment

Contractor shall perform work without disturbing existing cables and equipment. If Contractor must disturb existing cables in order to perform work, then Contractor must obtain prior written permission to do so from Owner.

#### 4.7) Clean-up

Contractor is required to clean up work areas of debris and dust generated by Contractor, as specified.

##### 4.7.1) End of day

Contractor will broom-clean all work areas of job site prior to leaving job site the end of each workday.

Contractor must restore suspended ceilings in occupied areas to their former condition by the end of each workday. If suspended ceiling tiles are damaged or broken, then Contractor must replace tiles.

##### 4.7.2) End of project

Following the completion of construction in an area, Contractor shall vacuum-clean and wipe-down all dust and debris generated by the work.

##### 4.7.3) Data/Telecommunications closets and cabinets shall be delivered to college in clean condition with all surfaces dust-free and debris-free.-

#### 4.8) Regular Meeting with Owner Project Manager

Owner Project Manager and Contractor Project Manager shall meet weekly, or more frequently as determined by Owner Project Manager. Owner Technical Contact and/or Contractor Field Contact, or any other party that Owner or Contractor deem necessary may be present.

#### 4.9) Splices

All cables shall be "home run" between patch panel and termination point.

No intermediate splice points are permitted for cables of any type.

Splicing of any cables of any type is prohibited, except where fiber-optic fusion splices are specified.

4.10) Technical Requirements

4.10.1) Data/Telecommunications Cabling System

Installed Category-6 network shall support 100BASE-TX Ethernet as per IEEE 802.3u, 1000BASE-T Ethernet as per IEEE 802.3ab, 1000BASE-TX Ethernet as per TIA-854,

The installed Data/Telecommunications Cabling System shall support 100base-TX Fast Ethernet as per IEEE 802.3u, 1000base-T Gigabit Ethernet as per IEEE 802.3ab, Voice-Over-IP telephony (VOIP) as per TIA-TR41, digital telephony as per TIA-810-B, analog telephony as per TIA 470-C, and Power over Ethernet as per the IEEE 802.3af and IEEE802.3at standards. Installation of Data/Telecommunications Cabling System must satisfy requirements set forth in all parts and addenda of ANSI/TIA/EIA-568-C, and TIA-569-A, ISO/IEC 11801:2002 2nd Edition, and IEC 61156-5/-6.

Contractor shall furnish and install cables, terminals, connectors, patch panels, and miscellaneous hardware required for delivery of a complete and working cable plant.

4.11) Cabinets and Racks

4.11.1) Securing Cabinets and Racks to Floor and to Each Other

Cabinets and racks installed by Contractor must be securely anchored and bolted to the floor. Wherever one cabinet or rack is installed directly adjacent to another cabinet or rack, the cabinets or racks must be securely connected using manufacture-approved baying kit.

4.11.2) Knockouts

Where knockouts in cabinet sheet metal are specified or are necessary, knockout will be fitted with a bushed steel chase nipple to prevent cable from contacting sharp surfaces of cut sheet metal and to allow proper packing of fire-stop/water-stop material at cabinet penetration. All unused knockouts in cabinet are to be covered with knockout seals, regardless of whether or not knockout was open prior to Contractor performing work.

4.11.3) Fire-stop and Water-stop for Cabinet Penetrations

Contractor shall insure that combination fire-stop/water-stop material is installed at all knockouts or other entrances to any cabinet in which Contractor performs work, regardless of whether or not Contractor disturbed fire-stop/water-stop, and whether or not fire-stop/water-stop was present prior to Contractor performing work.

Contractor shall install fire-stop/water-stop in any new cabinet penetration that contractor creates. Contractor shall insure that prior to the completion of the job, absolutely every cabinet penetration has combination fire-stop/water-stop installed.



4.11.4) Cabinet or Rack Layout

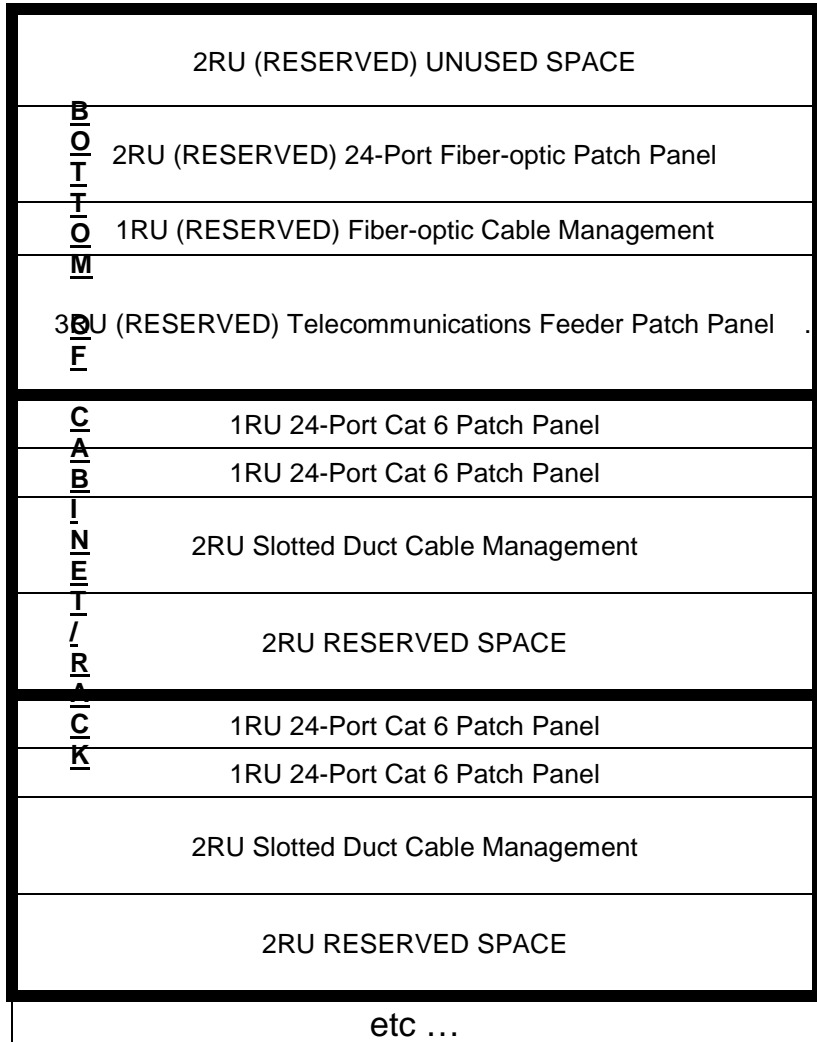
The top eight rack units in each rack and cabinet are reserved for fiber, telecommunication feeder patch panel, and future use. Contractor will install first 24-port Category-6 patch panel below the eighth rack unit (8RU) from the top of the cabinet.

Patch panels and cable management will be installed in “blocks” of six rack units (6RU), with each 6RU “block” consisting of two 1RU 24-port patch panels, one 2RU slotted duct cable management, and 2RU of reserved space for equipment.

Directly below the 2U of reserved space at bottom of a “block”, subsequent “blocks” shall be installed in a similar fashion as long as space in rack permits entire block to be installed.

Example: Basic rack elevation of building data/telecommunications closet, with shaded “block”:

**TOP OF CABINET/RACK**



4.12) Drip Loops

For all cables Contractor installs, Contractor will create minimum 3" radius drip loops before cabinets, racks, and connection blocks. Drip loops shall not be located anywhere above or within three feet (3') of cabinets, equipment, patch panels, and connection blocks, and shall direct any water traveling on cables away from such equipment.

4.13) Plywood Backboard

Plywood backboard shall be provided in whole 4'x8' sections cut to maximum size and fit in the designated location.

Plywood backboard shall be furred to wall using 3"x4"x3" U-brackets constructed of 11ga steel in corners of each installation section of plywood, such that a 3" void exists behind the backboard. Access via top, bottom, and sides of backboard shall be available to void behind plywood backboard after installation. Adequate mounting methods and fasteners shall be utilized to insure proper support of the weight of the backboard assembly plus 300 pounds of static load on backboard.

Plywood backboard shall be bolted to steel furring such that bottom edge of plywood is 36" AFF and top edge of plywood is 84" AFF. Bolts and brackets must be filed and sanded as to be of sufficient smoothness not to nick or cut cables that are routed behind backboard in the future.

Wood screws used in mounting equipment, cable, and supports to backboard shall not exceed 3/4" in length. Screws and other sharp objects must not protrude out rear of backboard where they may nick or cut cables that are routed behind backboard in the future.

Existing light fixtures, electrical outlets, switches, and other items fixed to designated wall must be avoided, or plywood must be cut around such items such that access to items is not hindered in any way.

The "good" finished side (the "A" side) of the A/C plywood shall face away from mounting wall, and shall display manufacturer's stamps confirming that it has been treated with fire-retardant chemical.

Plywood backboard shall be entirely unpainted so that stamps show clearly for fire inspector. At least one stamp in its entirety must be clearly visible on plywood at all times, regardless of what is mounted on the backboard.

4.14) Grounding

All components of the Data/Telecommunications Cabling System shall be properly grounded and bonded as per ANSI/TIA/EIA 607, and all applicable electrical codes. Electrical ground busbars shall be available on plywood backboards in all data/telecommunications closets

A complete connection to ground shall be formed from each structural metallic part of the cable plant to and through all others which parallel the route that a signal is designed to travel. Appropriate gauge copper ground cable as per code and standards shall be used to connect all components. Paint-piercing screws, grounding lugs, and split-bolt connectors shall be utilized as appropriate to insure proper connections.

All connections to the Grounding busbars for data/telecommunications closets shall all be made via UL-rated two-hole compression lugs – one-hole compression lugs are not acceptable. Each compression lug shall be crimped a minimum of twice to insure good connection to lug. Grounding busbars for data/telecommunications closets and associated lugs shall be cleaned prior to fastening of conductors, and an anti-oxidant shall be applied to contact area to control corrosion and reduce contact resistance.

Grounding busbars for data/telecommunications closets shall be installed no more than ten feet from electrical panel located in same data/telecommunications closet that serves the data/telecommunications system. A minimum gauge of #6 AWG cable designed for use in grounding/bonding applications shall be used to interconnect grounding/bonding components, and shall have a green insulating jacket that meets the fire ratings of its pathway. Any cable used to ground/bond newly-installed components shall be installed without splices.

A Telecommunications Bonding Backbone cable of at minimum #3/0 AWG cable designed for use in grounding/bonding applications shall be supplied and installed by Contractor to interconnect the Main Telecommunications Grounding Busbar and all Telecommunications Ground Busbar(s) as per ANSI/TIA/EIA J-STD-607-A, if one does not exist.

4.15) Keys to Cabinets and WAP Enclosures

Keys to cabinets and WAP Enclosures may be retained by Contractor until Final Completion, at which time all keys must be returned to Owner. Contractor shall not make copies of ANY key.

#### 4.16) Service Slack

##### 4.16.1) Data/telecommunications Outlet Service Slack

Each installed data/telecommunications cable shall provide a minimum of eight inches (8") of service slack in the station outlet gang box at modular jack termination point, or as much as is allowed considering available space in gang box. Service slack shall be arranged in a loop and tucked in gang box, with consideration for the specified maximum bend radius of installed cable.

##### 4.16.2) Additional Service Slack for Wireless Access Point Data Outlets

Each installed data cable designated for Wireless Access Point (WAP) connection shall have thirty feet (30') of service slack coiled above the ceiling within 5' of WAP outlet, and hung on nearest j-hook or other approved support using Velcro.

##### 4.16.3) Additional Service Slack for Spare Cables

Each installed data/telecommunications cable designated as a "Spare Cable" shall have fifty feet (50') of service slack coiled above the ceiling, and hung on nearest j-hook or other approved support using Velcro.

##### 4.16.4) Data/Telecommunications closet and MDF Service Slack

###### 4.16.4.1) Category-6 Cable

At each data/telecommunications closet, Category-6 cables shall be combed, secured to plywood backboard using Velcro, and arranged in an S-curve such that ten feet (10') of service slack is provided in the data/telecommunications closet.

With written approval or where preexisting conditions exist, contractor may alternatively lay service slack in data/telecommunications closet in an S-curve on adjoined cable trays that are dedicated for the purpose of dressing service slack. Service slack on cable tray shall be combed and secured to cable tray using Velcro fasteners.

An additional three feet (3') of service slack shall be provided in the cabinet or rack via a small "C-curve" secured to side rail of cabinet or rack with Velcro fasteners, directly before cable enters rear of slotted duct cable management.

###### 4.16.4.2) Telecommunications Feeder Cable Service Slack

At each data/telecommunications closet and telecommunications Distribution Frame, telecommunications feeder cable shall be neatly secured to plywood backboard using Velcro, and arranged in a C-curve such that six feet (6') of service slack is provided.

With written approval, contractor may alternatively lay telecommunications feeder cable service slack in a coil in data/telecommunications closet on adjoined cable trays that are dedicated for the purpose of dressing service slack. Service slack on cable tray shall be secured to cable tray using Velcro fasteners.

An additional four feet (4') of service slack on fiber-optic cable shall be provided in the cabinet or rack in data/telecommunications closet via an "S-curve" secured to side rail of cabinet or rack with Velcro fasteners, directly before cable enters fiber-optic patch panel.

#### 4.16.4.3) Fiber-optic Cable Service Slack

At each data/telecommunications closet, fiber-optic cable shall be neatly secured to plywood backboard using Velcro, and arranged in a coil such that fifty feet (50') of service slack is provided in each data/telecommunications closet.

With written approval, contractor may alternatively lay fiber-optic cable service slack in a coil in data/telecommunications closet on adjoined cable trays that are dedicated for the purpose of dressing service slack. Service slack on cable tray shall be secured to cable tray using Velcro fasteners.

An additional ten feet (10') of service slack on fiber-optic cable shall be provided in the cabinet or rack via an "S-curve" secured to side rail of cabinet or rack with Velcro fasteners, directly before cable enters fiber-optic patch panel.

#### 4.17) Strain Relief and Cable Dressing

The Contractor shall provide and install Velcro ties, riser cable support grips and strain relief based upon field conditions to maintain orderly cable organization

Contractor shall neatly dress cable in data/telecommunications closets and securely bundle them at every two-foot interval using prescribed cable fastener. Separate cable fasteners shall be used to attach cable bundle to cable tray, cabinet, cable management, or other cable support in the room.

Contractor shall utilize strain relief system for all installed patch panels. Strain relief shall system include use of rear compartment of double-sided slotted duct cable management. Plastic strain relief bars that mount directly to patch panel are not acceptable. Strain relief will be installed in such a way that patch panel may be serviced with strain relief in place. Strain relief boots and termination caps shall be installed on the station outlet modular jack and patch panel, if provided as part of the assembly.

#### 4.18) Data/telecommunications Cabling System

##### 4.18.1) Data/telecommunications Outlets

###### 4.18.1.1) Outlet Placement

Standard wall data/telecommunications outlets shall be installed on the wall entirely above baseboard or cove base, and approximately 15" AFF or matching existing electrical outlets at a minimum of 8" height on center.

4.18.1.1.1) Wall outlets from which EMT stub-up shall be provided shall be installed in a recessed extra-deep single gang electrical box (4"H x 2"W x 3.5"D)

4.18.1.1.2) Wall outlets retrofitted into sheetrock walls shall utilize "box eliminator" brackets. Box eliminator bracket must allow selected faceplate to be mounted flush, with no greater than 1/16" clearance to wall.

##### 4.18.2) Termination

All Category-6 termination assemblies shall employ the TIA-568-B wiring configuration for color-coding of pinout/position.

In order to maintain the electrical and data transmission characteristics of Category-6 cables, the following practices must be observed during the termination of all Category-6 cabling:

4.18.2.1) Only remove the minimum amount of cable sheath necessary to properly terminate the wires.

4.18.2.2) Cable conductors are arranged in pairs. Each pair has a specific twist associated with that pair. Maintain the pair twist at all times. Do not untwist and then attempt to re-twist cable pairs while terminating. Separate the conductors in a pair only as much as absolutely necessary to terminate the cable onto the connector. For all twisted pair cables the maximum untwisted length is not to exceed 0.5 inches.

4.18.2.3) Never remove insulation from the conductors. All of the terminations in this project shall be of the insulation displacement (IDC) type.

4.18.2.4) Leave the minimum amount of conductor after termination in an IDC connector. If necessary, use a cable scissor to trim extra length. Under no circumstances shall the excess length exceed 0.125 inches above the terminator block face edge.

#### 4.19) Telecommunications Feeder Cable

Telecommunications feeder cable shall be terminated on PDS 110-style insulation displacement connectors on rear of in 19" rack-mount telecommunications feeder patch panel at data/telecommunications closet end, and on 66M cross-connect punch-down block at Telecommunications Distribution Frame end.

An intermediary gas protector panel may be specified for data/telecommunications closet, in which case it shall be placed on plywood backboard in data/telecommunications closet.

One pair of conductors shall be terminated on each port of 19" rack-mount telecommunications feeder patch panel, in color order according to TIA/PIC standards. Pairs shall be terminated in corresponding order on left side of telecommunications punch-down block at building Distribution Frame.

#### 4.20) Fiber-Optic Cable

Fiber-optic cable shall be run within innerduct or dedicated ¾" EMT for the entirety of the cable length between data/telecommunications closets.

A conduit less than or equal to 1.5" in diameter that a fiber-optic cable is run through shall be deemed non-reenterable. Additional cables shall not be pulled through this conduit following testing/certification of fiber-optic cable, in order to insure performance of the fiber-optic cable.

When run through conduit greater than 1.5" in diameter or on cable tray, fiber-optic cable shall be run within innerduct.

When otherwise run above suspended ceilings, in mechanical rooms, and in mechanical spaces, fiber-optic cable shall be run in dedicated ¾" EMT.

When otherwise run below suspended ceilings and in occupied areas that require aesthetics to be maintained, fiber-optic cable shall be run in raceway that is specifically designed to maintain bend radius of the fiber-optic cable.

##### 4.20.1) Non-Armored Fiber-Optic Cable

No exceptions shall be made in any circumstance regarding the above use of innerduct/EMT/raceway with non-armored fiber-optic cable.

##### 4.20.2) Armored Fiber-Optic Cable

Exceptions may be made under certain circumstances regarding the above use of innerduct/EMT/raceway with armored fiber-optic cable, but only if explicit written permission is granted from both Owner Project Manager and Owner Technical Contact.

#### 4.20.3) Patch Panels and Termination

Termination of fiber-optic cable at fiber-optic patch panels shall conform to TIA-568-C. SC duplex connectors shall be used for all single-mode fiber termination.

The highest level of workmanship and attention to detail shall be exercised during installation and termination of fiber-optic cable.

Only cable manufacturer compatible tools and materials such as crimpers, fanouts, and connectors shall be used in terminating fiber-optic cable termination.

#### 4.20.4) Splicing and Fusion Splicing

Where fusions splices of fiber-optic cable are specified, contractor shall use fusion splicing tool from same manufacturer as cable being fused, to insure optimal results. Each fusion splice shall be tested at point of fuse, and less than 0.1 dB

Mechanical splices of fiber optic cable are not permitted.



#### 4.21) Cable Pathway

##### 4.21.1) General

Cable pathways will be constructed of appropriate cable supports such as J-hooks, cable tray, raceways, or conduits. Cable supports will not be attached to existing drop ceiling grid supports and must be installed as per manufacturer specifications.

J-hooks or cable tray may be used to support cable above drop ceiling, where there is no requirement for a specific type of cable support at that location in the scope of work.

If employed as a cable support, J-hooks must never be installed more than six feet apart. When transitioning from J-hook to another approved cable support, J-hook shall be at most four feet from alternate cable support.

Path shall be constructed with Owner's hostile environment in mind. With the exception of designated Mechanical Room spaces, cables must not be exposed when run below ceilings -- all cables shall be run within conduit, within raceway, in walls, or above hung ceilings. Cables must be run within conduit or metallic raceway on exposed walls or ceilings. Raceway may be used as an alternate path when it is desirable to avoid ceiling space, though any use of conduit or raceway not explicitly prescribed in the scope of work must be approved in writing by Owner prior to bid submission.

Cable supports installed above suspended ceilings shall be supported from the building structure and not from the existing ceiling support cables, grid, rods, or acoustical tees. Cable supports installed above suspended ceiling shall be installed below plenum partition, if enough space exists between ceiling and plenum partition. If insufficient space exists between ceiling and plenum partition to install cable supports, then alternate pathway or method must be proposed by Contractor and approved in writing by Owner.

Threaded support rods shall extend a minimum of one inch (1") below cable tray wherever space allows to accommodate extension hardware that may be need to be added in the future.

Conduit, cable tray, innerduct, and raceway installation shall be continuous and connected appropriately to all boxes, cabinets, and other pathway components. Manufacturer's fitting must be used for all transitions. Caps and gaskets shall be used to prevent dirt and moisture from entering installed conduit, innerduct, and raceway where appropriate. Nylon bushings shall be used on all stubs and points of connection to prevent sharp edges from damaging cable and pull tape.

Headroom shall be maintained when installing conduit, cable tray, raceway, J-hooks, and cable.

#### 4.21.2) Basket Cable Tray and Ladder Cable Tray

Contractor shall install anchors, threaded rod, clamps and bars as needed to properly install and secure cable tray. Contractor shall use support methods, splice methods, fittings, and materials that are recommended by the cable tray manufacturer to continuously connect sections of cable tray and fittings. Cable tray shall be grounded per NEC and manufacturer standards and to the same ground as equipment rack. Contractor shall provide sufficient space encompassing cable tray to permit access for installing and maintaining cables. Contractor shall install cable tray in accordance with recognized industry practices, and in accordance with all of the following:

- 4.21.2.1) NEMA VE-2 2000
- 4.21.2.2) NEC and applicable portions of NFPA70B
- 4.21.2.3) NECA's "Standards of Installation" pertaining to general electrical installation practices

#### 4.21.3) Avoidance of Electromagnetic Interference Sources

All conduit, cable tray, and cables containing metallic elements -- including, but not limited to dielectric/non-metallic cable housed in metallic armor -- shall be routed in such a way as to maintain the following distances from sources of electromagnetic interference:

- 6 inches from power lines 2KVA or less.
- 12 inches from fluorescent lighting such as fluorescent/HID lamps
- 60 inches from transformers, motors, or power lines of 5KVA and up

#### 4.21.4) Innerduct

All cables running within conduit of 3" (three inch) or greater outer diameter that is at 0% fill (unused) initially, and is expected to be filled to less than 25% upon completion of job must be run within innerduct supplied and installed by Contractor.

When installing innerduct in an unused conduit, Contractor shall simultaneously pull the maximum number of 1" and/or 1.25" diameter innerduct capable of fitting in the conduit, such that the maximum number of innerducts is provided for future use.

Pull tape shall be installed in each innerduct.

#### 4.21.5) Conduit

Conduit shall be run in parallel, wherever practical, and secured to existing steel channel and steel beams using conduit straps or clamps. Existing steel channel or trapeze may be used if additional load can be supported at appropriate safety factor.

Unless specified, conduit fill ratio must never exceed 40% or the fill ratio specified by the firestopping assembly, whichever is lesser. For conduit of over 50 feet of length with no intermediate pull point, the fill ratio must never exceed 30%.

There shall not be more than 100 feet in length of conduit between pull boxes or conduit ends. Each 30-degrees of bend shall be considered as 10 feet of conduit when determining pull box placement.

There shall not be between two pull boxes or conduit ends more than a 180 degree cumulative total of bends.

Pull boxes shall not be used in place of bends. Conduit ends must be aligned in parallel on opposite sides within each pull box, such that they permit a straight pull through a pull box. Angled pulls and U-pulls through pull boxes are not permitted.

Example:

A length of conduit originating from a pull box, containing one 90-degree bend (counted as 30 feet of a 100 foot total budget), must not contain more than 70 feet of straight conduit ( $30 + 70 = 100$  feet) before terminating in a pull box.

#### 4.21.6) Raceway

Surface-mount raceway (raceway) shall be provided and installed in such a manner to optimize aesthetics. Appropriate raceway fittings such as unions, bends, and end-caps must be provided and installed by Contractor. In-field mitering of raceway in lieu of using fittings is not permitted.

Raceway and fittings used for data/telecommunications cable must be appropriate for a Category-6 installation, maintaining minimum bend radius and other properties of the Category-6 cable contained within.

Raceway fill shall not exceed 80% of the raceway manufacturer's recommendations, such that 20% spare capacity remains available in the raceway for future use without exceeding manufacturer's recommendations.

Raceway shall be mechanically mounted as per manufacturer's instructions using screws, anchors, and/or bolts. Raceway shall not be mounted with adhesive.

Raceway shall run vertically near the corners of room and horizontally at same height of data/telecommunications outlets. Raceway shall not run near the middle of walls. Installed raceway shall not cover or prevent access to any existing service, outlet, control, or access panel. Raceway covers must be installed and secured properly.

#### 4.21.7) Pulling Tension

No cable shall be installed with a pulling tension exceeding the maximum recommended by the manufacturer. Pulling tension shall be monitored with a tension gauge (tensiometer) to ensure the maximum tension rating of cable is not exceeded.

A suitable breakaway link (swivel) should be used as a failsafe to insure maximum pulling tension of cable is not exceeded. Breakaway link/swivel shall be used as a failsafe in this respect, and not as a primary means of controlling cable tension.

If multiple cables are to be pulled at one time, the Contractor shall make the necessary allowances to back off the pulling tension of the bundle.

As necessary, for cable pulls in conduit, the Contractor shall use only an approved lubricant compatible with the cable outer jacket insulation, innerduct, and pull tape.

#### 4.21.8) Pull tape

Contractor shall install new pull tape in all conduits 2" or greater in trade size installed by contractor, and in all pre-existing conduits 2" or greater in trade size utilized by Contractor.

Pull tape installed in conduits and innerducts shall be lubricated with a lubricant appropriate for the selected pull tape, innerduct, and installed cable, as necessary to prevent burn-through of pull tape.

All installed pull tape shall be tied securely on both ends of the conduit to a fixed object that is attached to or part of the conduit system. Pull tape installed in a conduit or cable tray shall include 4' of slack on both ends. Slack shall be rolled and tied neatly.

#### 4.21.9) Pull Cord

Contractor shall install pull cord in all conduits less than 2" in trade size installed or utilized by Contractor, all raceways installed or utilized by Contractor, all cable tray installed or utilized by contractor, and all walls fished by Contractor.

#### 4.21.10) Bend Radii

##### 4.21.10.1) Conduits

The minimum inside radius for conduits 2-inch in diameter or less shall be six times the internal diameter of the conduit. Conduits having diameter greater than two inches shall have a minimum inside radius of ten times the internal diameter of the conduit.

##### 4.21.10.2) Cable tray (Basket Cable Tray and Ladder Cable Tray)

Radius shields shall be installed at all cable tray lateral bends, and must maintain a minimum 6 inch radius in interior of tray.

Waterfall/radius-drop fittings shall be installed at all cable tray vertical transitions, where cables transition more than six inches (6") vertically without support. Waterfall/radius-drop fittings shall have minimum of 3 inch radius.

#### 4.21.10.3) Cables

All cables shall be installed with a bend radius greater than or equal to the bend radius recommended by the cable manufacturer to maintain cable rating and transmission properties.

As necessary, cable guides shall be used to maintain recommended bend radii during pulling.

Cables shall be secured using prescribed cable fasteners so as to prevent migration and maintain proper bend radius after initial installation.

Contractor shall secure the cable bundle at each J-hook with a prescribed cable fastener.

#### 4.22) Labeling

All outlets, patch panel ports, cable ends, and firestopping locations shall be clearly labeled according to the Cable Installation Labeling Convention.

##### 4.22.1) Cable Installation Labeling Convention

The Cable Installation Labeling Convention shall be used to identify all components of installed systems, including but not limited to equipment, cable, termination points (such as modular jacks, patch panel ports, or other connectors), and firestop installation, in **all documentation, test results, and labeling**.

Cable Installation Labeling Convention is a TIA-606-A -compatible identification standard.

There are a total of six fields in each name: five identifying fixed-length fields used to identify *where* an item is located and *what* the item is, followed by one *variable length* field used to identify a port on the item.

The first three fields describe the general location of an item. This will describe the building, room, suite, and possibly a general location within a room (e.g. a Rack or Cabinet within the room). These three fields are a total of exactly eight characters in length (2+4+2).

##### General Location Fields:

- 1) Building Code field (two letters)  
(e.g. "NS" for Natural Sciences – see table)
- 2) Room or Suite Number field (four digits)  
(e.g. "1023")
- 3) Location in Suite/Room field: letter+digit, or "-" as placeholder  
(e.g. data center coordinates "K6",  
"-2" for rack #2 in a room with three racks in it,  
"L-" for living room in suite,  
"A-" for bedroom A in suite,  
or a placeholder of two hyphens ("--") if  
this information is not pertinent)

The last three fields identify a particular type of item in the location; specify the unique identification number of that particular type of item in the location; and specify a particular port on that particular item. This part contains three fields and totals four or more characters in length:

##### Item Identification

- 4) Item Type Code field: two letters  
(e.g. "MJ" for Modular Jack box, "PP" for Patch Panel)
- 5) Index number of Item within room or rack field: two digits  
(e.g. "03" for the third item of its type in the location)
- 6) [Optional] Port Number field\*\*: *variable length*  
(e.g. patch panel port "9", or modular jack "4")

\*\* The Index Number field is separated from the Port Number field by a hyphen (e.g. "03-9" or "03-D")

[See illustration next page]

**Building Code**

**Format**  
Two UPPERCASE alphabetic characters

**Contents**  
Code as follows:  
AD Administration  
CN Campus Center North  
CS Campus Center South  
DA Dance  
FM Facilities Management  
HU Humanities  
LI Library  
MU Music  
NM Neuberger Museum  
NS Natural Sciences  
SS Social Science  
ST Student Services Building  
MS Mechanical Services below ST  
MT Maintenance Tunnel  
PA Performing Arts Center  
PE Physical Education  
VA Visual Arts  
R\* Residence area "\*" (e.g. "RA")  
Use Dormitory or Apartment street code assigned by ResLife

**Room or Suite Number**

**Format**  
(Typically) Four numeric characters

**Contents**  
Room number in four-digits (e.g. "SS0021")  
OR  
Apartment building/unit numbers (e.g. "RG0053")

**Notes**  
This field **MUST** be padded with leading zeros to create four-digit number.  
  
Alphabetical character in room identifier shall be removed and moved to next field ("Sub-Room")

**Sub-Room / Cabinet**

**Format**  
One UPPERCASE alphabetic character or a hyphen, followed by one numeric character or a hyphen

**Contents**  
Sub-room in suite (A, B, C, or "L" for living room) or hyphen (e.g. "RJ0041A-")  
OR  
Coordinates or serial number of cabinet or rack in room (e.g. "SS0027F5")  
OR  
Two hyphens, if nothing relevant (e.g. "LI1014--")

**Notes**  
Hyphens ("-") can be used in one or both characters of this field if field information is irrelevant (e.g. a simple, single room) in order to make this field exactly two characters in length.

C S 0 0 0 8 - 2 P P 0 1 - 0 1

**Item Type Code**

**Format**  
Two UPPERCASE alphabetic characters

**Contents**  
Code as follows examples below:  
MJ Modular Jack/Gang box  
PP Patch Panel  
FL Firestopping location  
SV Server  
WS Workstation  
SW Switch  
RO Router  
MC Media Converter  
PS Power Supply / UPS  
TE Terminal  
MO Modem  
AB AB, ABC, ABCD Switch  
KV KVM Switch  
AP Wireless Access Point (device, not outlet)  
etc...

**Item Index Number**

**Format**  
Two numeric characters

**Contents**  
Unique index number of item in the room, cabinet, or rack

**Notes**  
Index numbers shall unless otherwise specified begin at "01" for equipment of a certain type located at the top of a rack or cabinet and increment for lower equipment of same type in same rack or cabinet.

**Port Number**

**Format**  
Optional field. May contain any number of characters in any format. Possible values depend on item.

**Contents**  
Used to specify port number

**Notes**  
Always separate from previous field with a hyphen. Use values as labeled by manufacturer on an item, if available (e.g. a certain manufacturer's faceplate may have molded plastic labels of "A", "B", "C", while another might use "1", "2", "3"). If manufacturer does not print labels on ports, then number ports starting at one (1) on top left and proceeding all the way to right, and then down.

#### 4.22.2) Data/telecommunications Outlet Labels

Contractor shall label data/telecommunications outlet faceplates with appropriate far-end termination address for each port, as in the following example:

Example:

NS2055A-PP01-24  
(Room NS2055, Cabinet "A", Patch Panel #01, port 24)

Where a label insert slot or space is available on faceplate, insert a compatible non-adhesive label, and provide and install manufacturer-supplied clear plastic cover over label slot.

#### 4.22.3) Patch Panel Labels

Contractor shall label patch panel ports using compatible labels and label covers.

Contractor shall label patch panel ports with appropriate far-end termination address as in the following example:

Example:

NS1010B-MJ06-4  
(Room "NS1010B", Modular Jack faceplate "06", Jack "4")

Where a label insert slot or space is available on patch panel, insert a compatible non-adhesive label, and provide and install manufacturer-supplied clear plastic cover over label slot.

#### 4.22.4) Cable Marking Labels

All cables shall have wrap labels affixed to cable at both ends within 6" of each termination point. Contractor shall label each cable end with the appropriate near and far-end termination address, as in the following example:

Example:

A data/telecommunications cable runs between NS1010B-MJ06-4 and NS255A-PP01-24.

In room "NS1010B", the cable termination at faceplate "MJ06", jack "4", will be labeled "NS1010B-MJ06-4 / NS2055A-PP01-24".

In room "NS2055A", the same cable terminated at patch panel "PP01", port "24", will be labeled "NS2055A-PP01-24 / NS1010B-MJ06-4".



#### 4.22.5) Labeling of Firestopping Locations

Contractor shall legibly and neatly mark firestopping locations with firestopping location name using permanent marker on the firestopping material, in a conspicuous location.

If Contractor cannot mark firestopping location name on firestopping materials, then Contractor shall mark firestopping location name on the firestopped barrier or assembly, directly adjacent to firestopping material.

Contractor shall consider aesthetics of surrounding area when labeling/marketing firestopping locations.

#### 4.22.6) Fiber Optic Cable Warning Labels

Fiber optic cable warning labels shall be placed on all innerduct containing fiber optic cable, within two feet of location where innerduct enters or exits conduit.

#### 4.23) Safety and Code Requirements

Contractor will adhere to all applicable local, state, and federal laws and codes.

#### 4.24) Firestopping

Contractor shall provide and install Firestopping materials at all penetrations of fire-rated barriers, both existing and created by Contractor, through which any cable, conduit, or sleeve installed by the Contractor passes.

Contractor shall provide and install Firestopping materials in the interior of all conduits, sleeves, and raceways that are installed or utilized by Contractor and that traverse a fire-rated barrier. Threaded metal caps may be utilized, as per applicable codes, to close-off unused conduits and/or sleeves.

Firestopping materials shall be installed according to code, according to certification listing, and according to firestopping manufacturer instructions. Firestopping materials used must meet the hourly rating of the floor or wall penetrated.

##### 4.24.1) Firestopping product type

The type of firestopping utilized in each particular case shall be determined based on this Specification, on firestopping manufacturer instructions, on code, on certification listing, and on particular application including but not limited to:

- 4.24.1.1) Barrier or assembly in which the firestopping is being installed
- 4.24.1.2) Size of penetration
- 4.24.1.3) Materials (e.g. cables, conduit, basket tray, etc.) that shall traverse or adjoin the penetration

##### 4.24.2) Fire Rated Pathway Devices

- 4.24.2.1) Fire Rated Pathway Devices shall be the preferred method of firestopping and shall be installed in all locations where frequent cable moves, add-ons and changes will occur.

- 4.24.2.2) Cable trays shall terminate at each barrier and resume on the opposite side such that cables pass independently through fire-rated pathway devices. Cable tray shall be rigidly supported independent from fire-rated pathway devices on each side of barrier.
- 4.24.2.3) Install through-penetration firestop systems in accordance with Performance Criteria and in accordance with the conditions of testing and classification as specified in the published design.

#### 4.24.3) Firestop Putty, Firestop Caulk, and Firestop Foam

Where it is not practical to use a Fire Rated Pathway Device, Firestop Putty/Caulk/Foam may be used.

- 4.24.3.1) Before beginning installation, verify that substrate conditions previously installed under other sections are acceptable for installation of firestopping in accordance with manufacturer's installation instructions and technical information.
- 4.24.3.2) Surfaces shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellants, and any other substances that may inhibit optimum adhesion.
- 4.24.3.3) Provide masking and temporary covering to protect adjacent surfaces.

#### 4.24.4) Firestopping Pillows

Pillow-type firestopping may be used in conduits if and where code permits. If firestopping pillows are utilized, then all firestopping pillow manufacturer instructions and certification listing must be adhered to, including but not limited to those pertaining to compression ratio, cable bundling, and hose-stream dislodgement prevention. Proper compression ratio must be maintained as per certification listing and manufacturer instructions. Cable bundles must be shaped properly as per certification listing and manufacturer instructions in order to prevent smoke penetration between cables. Wire mesh or other material must be installed on larger openings to prevent dislodgement of pillow as per certification listing and manufacturer instructions.

Contractor shall submit compression ratio calculations to the Owner Project Manager for each penetration in which a firestopping pillow is used by Contractor, including:

- 4.24.4.1) any penetration in which a new firestopping pillow is installed by Contractor
- 4.24.4.2) any existing penetration used by contractor in which an existing firestopping pillow has been disturbed by Contractor
- 4.24.4.3) any penetration where a cable has been added or removed by Contractor

#### 4.24.5) Firestopping of Data/Telecommunications Cabinet Penetrations

Contractor shall create and maintain fire, smoke, and watertight seal of firestopping for data/telecommunications cabinet penetrations.

#### 4.25) Testing and Certification Requirements

##### 4.25.1) Independent Testing and Certification Requirement

Contractor shall arrange to have a qualified 3<sup>rd</sup>-Party independent inspecting and testing agency perform field testing and submit certification and observation reports for each and every cable installed by Contractor, including 100% of installed fiber optic cable strands, 100% of installed category-6 Cable permanent links, 100% of installed telephone feeder/trunk cable pairs, and 100% of installed security/surveillance cables.

Field test certification and observation reports shall indicate and interpret test results relative to compliance with performance requirements of the installed systems, and as defined herein.

This Independent Testing and Certification Requirement may at the option of Owner be waived in the Scope of Work or in a Transmittal signed by both the Owner Project Manager and Purchase College Technical Contact. If the Independent Testing and Certification Requirement is waived in such a way, then all certification and testing requirements shall be maintained save that for the requirement of having an independent 3<sup>rd</sup>-Party perform the testing and certification: Contractor shall submit field test certification reports, as defined herein, from a qualified employee for 100% of cables installed by Contractor.

##### 4.25.2) Category-6 Cable Testing

100% of the Category-6 cables in the installation shall be tested in accordance with the Telecommunications Industry Association (TIA) standard ANSI/TIA/EIA-568-C.2 and with this Specification.

The installed twisted-pair links shall be tested from the patch panel or termination block, to the data/telecommunications outlet against the "Permanent Link" performance limits specification as defined in ANSI/TIA/EIA-568-C.2.

##### 4.25.2.1) Technician Qualifications

All tests shall be executed by trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof. Appropriate training programs include but are not limited to installation certification programs provided by BICSI or the ACP.

#### 4.25.2.2) Test Equipment Accuracy

The test equipment (tester) shall comply with or exceed the accuracy requirements for enhanced level II (Level II-E) field testers as defined in TIA-568; Annex I: Section I.4. The tester including the appropriate interface adapter must meet the specified accuracy requirements. The accuracy requirements for the permanent link test configuration (baseline accuracy plus adapter contribution) are specified in Table I.4 of Annex I of TIA/EIA-568-B.2. (Table I.5 in this TIA document specifies the accuracy requirements for the Channel configuration.)

The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy. The contractor shall provide proof that the interface has been calibrated within the period recommended by the vendor.

The tester interface adapters must be of high quality and the cable shall not show any twisting or kinking resulting from coiling and storing of the tester interface adapters. In order to deliver optimum accuracy preference is given to a permanent link interface adapter for the tester that can be calibrated to extend the reference plane of the Return Loss measurement to the permanent link interface. To ensure that normal handling on the job does not cause measurable Return Loss change, the adapter cord cable shall not be of twisted-pair construction.

#### 4.25.2.3) The Pass or Fail condition for the link-under-test is determined by the results of the required individual tests (detailed in "Performance Test Parameters", below). Any Fail or Fail\* result yields a Fail for the link-under-test. In order to achieve an overall Pass condition, the results for each individual test parameter must Pass or Pass\*.

A Pass or Fail result for each parameter is determined by comparing the measured values with the specified test limits for that parameter. The test result of a parameter shall be marked with an asterisk (\*) when the result is closer to the test limit than the accuracy of the field tester. The field tester manufacturer must provide documentation as an aid to interpret results marked with asterisks. (Reference TIA-568; Annex I: Section I.2.2)

#### 4.25.2.4) Performance Test Parameters

The test parameters for Category-6 are defined in ANSI/TIA/EIA standard TIA-568-B.1; The test of each Category-6 link shall contain all of the following parameters as detailed below. In order to pass the link test all measurements must meet or exceed the limit value determined in the TIA-568.1 standard at each frequency in the range from 1 MHz through 100 MHz.

In addition to any tests performed in the 1MHz through 100MHz frequency range, each parameter shall also be measured from 1 through 250 MHz and all of these measurement points are to be recorded in the test results information as detailed in Section 4.25.1.3) ("Database Detailed Information")

4.25.2.4.1) Wire Map [as defined in TIA/EIA-568-B.1]

Wire Map shall report Pass if the wiring of each wire-pair from end to end is determined to be correct. The Wire Map results shall include the continuity of the shield connection if present.

4.25.2.4.2) Length [as defined in TIA/EIA-568-B.1]

The field tester shall be capable of measuring length of all pairs of a permanent link or channel based on the propagation delay measurement and the average value for the Nominal Velocity of Propagation (NVP). The physical length of the link shall be calculated using the pair with the shortest electrical delay. This length figure shall be reported and shall be used for making the Pass/Fail decision. The Pass/Fail criteria are based on the maximum length allowed for the permanent link configuration (90 meters, or 295 ft) plus 10% to allow for the variation and uncertainty of NVP.

4.25.2.4.3) Insertion Loss (Attenuation) [as defined in TIA/EIA-568-B.1]

Insertion Loss shall be tested from 1 MHz through 100MHz in maximum step size of 1 MHz. It is preferred to measure attenuation at the same frequency intervals as NEXT Loss in order to provide a more accurate calculation of the Attenuation-to-Crosstalk Ratio (ACR) parameter.

Test results shall identify the worst wire pair (1 of 4 possible). The test results for the worst wire pair must show the highest attenuation value measured (worst-case), the frequency at which this worst-case value occurs, and the test limit value at this frequency.

4.25.2.4.4) NEXT Loss, pair-to-pair [as defined in TIA/EIA-568-B.1]

Pair-to-pair near-end crosstalk loss (abbreviated as NEXT Loss) shall be tested for each wire pair combination from each end of the link (a total of 12 pair combinations). This parameter is to be measured from 1 through 100 MHz. The maximum step size for NEXT Loss measurements shall not exceed the maximum step size defined in the standards as shown in Table 1, column 2.

Test results shall identify the wire pair combination that exhibits the worst case NEXT margin (2) and the wire pair combination that exhibits the worst value of NEXT (worst case). NEXT is to be measured from each end of the link-under-test. These wire pair combinations must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

Table 1:

<u>Frequency Range (MHz)</u>	<u>Maximum Step Size (MHz)</u>
1 – 31.25	0.15
31.26 – 100	0.25

#### 4.25.2.4.5) PSNEXT Loss [as defined in TIA/EIA-568-B.1]

Power Sum NEXT Loss shall be evaluated and reported for each wire pair from both ends of the link-under-test (a total of 8 results). PSNEXT Loss statistically captures the combined near-end crosstalk effect on a wire pair when all other pairs actively transmit signals. Like NEXT this test parameter must be evaluated from 1 through 100 MHz and the step size may not exceed the maximum step size defined in the standards as shown in Table 1, column 2.

Test results shall identify the wire pair that exhibits the worst-case margin and the wire pair that exhibits the worst value for PSNEXT. These wire pairs must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

#### 4.25.2.4.6) ELFEXT Loss, pair-to-pair [as defined in TIA/EIA-568-B.1]

Pair-to-pair FEXT Loss shall be measured for each wire-pair combination from both ends of the link-under-test. FEXT is measured to compute ELFEXT Loss that must be evaluated and reported in the test results. This test yields 24 wire-pair combinations. ELFEXT is to be measured from 1 through 100 MHz and the maximum step size for FEXT Loss measurements shall not exceed the maximum step size defined in the standards as shown in Table 1, column 2.

Test results shall identify the wire pair combination that exhibits the worst-case margin and the wire pair combination that exhibits the worst value for ELFEXT. These wire pairs must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

#### 4.25.2.4.7) PSELFEXT Loss [as defined in TIA/EIA-568-B.1]

Power Sum ELFEXT shall be calculated, yielding 8 wire-pair combination values. Each wire-pair is evaluated from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the standards as shown in Table 1, column 2.

Test results shall identify the wire pair that exhibits the worst-case margin and the wire pair that exhibits the worst value for PSELFEXT. These wire pairs must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

4.25.2.4.8) Return Loss [as defined in TIA/EIA-568-B.1]

Return Loss (RL) measures the total energy reflected on each wire pair. Return Loss is to be measured from both ends of the link-under-test for each wire pair. This parameter is also to be measured from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the standards as shown in Table 1, column 2.

Test results shall identify the wire pair that exhibits the worst-case margin and the wire pair that exhibits the worst value for Return Loss. These wire pairs must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

4.25.2.4.9) ACR (Attenuation to crosstalk ratio) [This parameter is not demanded by the standards but may be required in order to obtain the premise wiring vendor's warranty. Premise wiring vendor's parameters shall prevail.]

This calculation yields 12 combinations – six from each end of the link.

Test results shall identify the wire pair combination that exhibits the worst-case margin and the wire pair combination that exhibits the worst value for ACR.

These wire pair combinations must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

4.25.2.4.10) PSACR [This parameter is not required by the standards but may be required in order to obtain the premise wiring vendor's warranty. Premise wiring vendor's parameters shall prevail.]

This calculation yields 8 combinations – one for each wire pair from both ends of the link.

Test results shall identify the wire pair that exhibits the worst-case margin and the wire pair that exhibits the worst value for PSACR. These wire pairs must be identified for the tests performed from each end. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

4.25.2.4.11) Propagation Delay [as defined in TIA/EIA-568-B.1; Section 11.2.4.10]

This measurement is to be performed for each of the four wire pairs. Minimum test results documentation (summary results): Identify the wire pair with the worst-case propagation delay.

Test results shall identify the propagation delay value measured as well as the test limit value.

4.25.2.4.12) Delay Skew [as defined in TIA/EIA-568-B.1]

Test results shall identify the wire pair with the worst-case propagation delay (the longest propagation delay). The report shall include the delay skew value measured as well as the test limit value.

#### 4.25.3) Telecommunications Feeder Cable Testing

100% of the Category-3 cables in the installation shall be tested in accordance with the Telecommunications Industry Association (TIA) standard ANSI/TIA/EIA-568-B and with this Specification.

All pairs of the installed telecommunications feeder cable shall be tested and shall be confirmed meet or exceed Category 3 specification as per TIA-568-B.

The installed telecommunications feeder cable shall be tested from the telecommunications feeder patch panel, to the MDF connection block against performance limits specification as defined in ANSI/TIA/EIA-568-B. Technician Qualifications

All tests shall be executed by trained technicians who have successfully attended an appropriate training program and have obtained a certificate as proof thereof. Appropriate training programs include but are not limited to installation certification programs provided by BICSI or the ACP (Association of Cabling Professionals).

##### 4.25.3.1) Test Equipment Accuracy

The test equipment (tester) shall comply with or exceed the accuracy requirements for enhanced level II (Level II-E) field testers as defined in TIA-568; Annex I: Section I.4. The tester including the appropriate interface adapter must meet the specified accuracy requirements

The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy. The contractor shall provide proof that the interface has been calibrated within the period recommended by the vendor.

The tester interface adapters must be of high quality and the cable shall not show any twisting or kinking resulting from coiling and storing of the tester interface adapters. I

4.25.3.2) The Pass or Fail condition for the link-under-test is determined by the results of the required individual tests. Any Fail or Fail\* result yields a Fail for the link-under-test. In order to achieve an overall Pass condition, the results for each individual test parameter must Pass or Pass\*.

A Pass or Fail result for each parameter is determined by comparing the measured values with the specified test limits for that parameter. The test result of a parameter shall be marked with an asterisk (\*) when the result is closer to the test limit than the accuracy of the field tester. The field tester manufacturer must provide documentation as an aid to interpret results marked with asterisks.

##### 4.25.3.3) Performance Test Parameters

The test parameters for Category-3 are defined in ANSI/TIA/EIA standard TIA-568-B; The test of each Category-3 link shall contain all of the following parameters as detailed below. In order to pass the link test all measurements must meet or exceed the limit value determined in the TIA-568.B standard at each frequency in the range from 1 MHz through 16 MHz.



#### 4.25.4) Fiber-Optic Cable Testing

This Section includes the minimum requirements for the test certification and administration of backbone and horizontal optical fiber cabling.

Contractor shall notify the Owner Project Manager and the Owner Technical Contact of any additional tests that are deemed necessary to guarantee a fully functional system as described under this Specification. The contractor shall carry out and record any additional measurement results at no additional charge.

##### 4.25.4.1) Testing Scope

4.25.4.1.1) Testing shall be carried out in accordance with this Specification. This includes testing the attenuation and polarity of the installed cable plant with an optical loss test set (OLTS) and the installed condition of the cabling system and its components with an optical time domain reflectometer (OTDR). The condition of the fiber endfaces shall also be verified.

4.25.4.1.2) Testing shall be performed on each cabling link (connector to connector).

4.25.4.1.2.1) Testing shall not include any active devices or passive devices within the link or channel other than cable, connectors, and splices, i.e. link attenuation does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.

4.25.4.1.3) All tests shall be documented including OLTS dual wavelength attenuation measurements for multimode and singlemode links and channels and OTDR traces and event tables for multimode and singlemode links and channels.

4.25.4.1.3.1) Documentation shall also include optical length measurements and pictures of the connector endface.

##### 4.25.4.2) Quality Assurance

4.25.4.2.1) All testing procedures and field-test instruments shall comply with applicable requirements of:

4.25.4.2.1.1) ANSI Z136.2, ANS For Safe Use Of Optical Fiber

Communication Systems Utilizing Laser Diode And LED Sources

4.25.4.2.1.2) ANSI/EIA/TIA 455 50B, Light Launch Conditions For Long-Length Graded-Index Optical Fiber Spectral Attenuation Measurements

4.25.4.2.1.3) ANSI/TIA/EIA-455-59A, Measurement of Fiber Point Discontinuities Using an OTDR

4.25.4.2.1.4) ANSI/TIA/EIA 455 60A, Measurement of Fiber or Cable Length Using an OTDR

4.25.4.2.1.5) ANSI/TIA/EIA 455 61A, Measurement of Fiber or Cable Attenuation Using an OTDR

4.25.4.2.1.6) ANSI/TIA/EIA 526 7, Optical Power Loss Measurements of Installed Singlemode Fiber Cable Plant

4.25.4.2.1.7) ANSI/TIA/EIA 526 14 A, Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant

- 4.25.4.2.1.8) ANSI/TIA/EIA-568-B.1, Commercial Building Telecommunications Cabling Standard, Part 1, General Requirements
  - 4.25.4.2.1.9) ANSI/TIA/EIA 568 B.3, Optical Fiber Cabling Components Standard
  - 4.25.4.2.1.10) TIA/EIA TSB-140, Additional Guidelines for Field-Testing Length, Loss and Polarity of Optical Fiber Cabling Systems
  - 4.25.4.2.1.11) ANSI/TIA/EIA-606-A, Administration Standard for Commercial Telecommunications Infrastructure, in addition to the requirements specified by Owner.
- 4.25.4.2.2) Trained technicians who have successfully attended an appropriate training program, which includes testing with an OLTS and an OTDR and have obtained a certificate as proof thereof shall execute the tests. These certificates may have been issued by any of the following organizations or an equivalent organization:
- 4.25.4.2.2.1) Manufacturer of the fiber optic cable and/or the fiber optic connectors
  - 4.25.4.2.2.2) Manufacturer of the test equipment used for the field certification
  - 4.25.4.2.2.3) Training organizations (e.g., BICSI, A Telecommunications Association headquarters in Tampa, Florida; ACP [Association of Cabling Professionals™] Cabling Business Institute located in Dallas, Texas).
- 4.25.4.2.3) The Owner Project Manager and the Owner Technical Contact shall be invited to witness and/or review field-testing.
- 4.25.4.2.3.1) The Owner Project Manager and the Owner Technical Contact shall be notified of the start date of the testing phase five (5) business days before testing commences.
  - 4.25.4.2.3.2) The Owner Project Manager will select a random sample of 5% of the installed links. Owner may test these randomly selected links. The results obtained may be compared to the data provided by the installation contractor. If more than 2% of the sample results differ in terms of the pass/fail determination, then Contractor under supervision of Owner Technical Contact's representative shall repeat 100% testing at no cost to the Owner.

4.25.4.3) Submittals

Contractor shall supply the following to Owner Project Manager upon request:

4.25.4.3.1) Manufacturers catalog sheets and specifications for fiber optic field-test instruments including optical loss test sets (OLTS; power meter and source), optical time domain reflectometer (OTDR) and inspection scope.

4.25.4.3.2) A schedule (list) of all optical fibers to be tested.

4.25.4.3.3) Sample test reports.

4.25.4.4) Acceptance of Test Results

4.25.4.4.1) Unless otherwise specified by the Owner or the Owner's representative, each cabling link shall be in compliance with the following test limits:

4.25.4.4.1.1) Optical loss testing

4.25.4.4.1.1.1) Backbone (multimode and singlemode) link

The link attenuation shall be calculated by the following formulas as specified in ANSI/TIA/EIA-568-B.1.

4.25.4.4.1.1.1.1)  $\text{Link Attenuation (dB)} = \text{Cable\_Attn (dB)} + \text{Connector\_Attn (dB)} + \text{Splice\_Attn (dB)}$

4.25.4.4.1.1.1.2)  $\text{Cable\_Attn (dB)} = \text{Attenuation\_Coefficient (dB/km)} * \text{Length (Km)}$

4.25.4.4.1.1.1.3)  $\text{Connector\_Attn (dB)} = \text{number\_of\_connector\_pairs} * \text{connector\_loss (dB)}$

4.25.4.4.1.1.1.4) Maximum allowable connector\_loss = 0.75 dB

4.25.4.4.1.1.1.5)  $\text{Splice\_Attn (dB)} = \text{number\_of\_splices} * \text{splice\_loss (dB)}$

4.25.4.4.1.1.1.6) Maximum allowable splice\_loss = 0.3 dB

4.25.4.4.1.1.1.7) The values for the Attenuation\_Coefficient (dB/km) are listed in the table below:

Type of Optical Fiber	Wavelength (nm)	Attenuation coefficient (dB/km)	Wavelength (nm)	Attenuation coefficient (dB/km)
Multimode 62.5/125 $\mu$ m	850	3.5	1300	1.5
Multimode 50/125 $\mu$ m	850	3.5	1300	1.5
Single-mode (Inside plant)	1310	1.0	1550	1.0
Single-mode (Outside plant)	1310	0.5	1550	0.5

4.25.4.4.1.1.2) Horizontal (multimode) link

4.25.4.4.1.1.2.1) The acceptable link attenuation for a multimode horizontal optical fiber cabling system is based on the maximum 90 m (295 ft) distance.

4.25.4.4.1.1.2.2) The horizontal link may be tested using a fixed upper limit for attenuation of 2.0 dB. This value is based on the loss of two (2) connector pairs, one pair at the telecommunications outlet/connector and one pair at the horizontal cross-connect, plus 90 m (295 ft) of optical fiber cable.

4.25.4.4.1.1.2.3) A horizontal link in an Open Office Cabling network with a consolidation point may be tested using a fixed upper limit for attenuation of 2.75 dB.

4.25.4.4.1.1.3) Centralized (multimode) link

4.25.4.4.1.1.3.1) The acceptable link attenuation for a multimode centralized optical fiber cabling system is based on the maximum 300 m (984 ft) distance.

4.25.4.4.1.1.3.2) The centralized link may be tested using a fixed upper limit for attenuation of 3.3 dB. This value is based on the loss of three (3) connector pairs, one pair at the telecommunications outlet/connector, one pair at the consolidation point and one pair at the horizontal cross-connect, plus 300 m (984 ft) of optical fiber cable.

4.25.4.4.1.1.3.3) A horizontal link in an Open Office Cabling network with a consolidation point may be tested using a fixed upper limit for attenuation of 4.1 dB.

4.25.4.4.1.2) OTDR testing

4.25.4.4.1.2.1) Reflective events (connections) shall not exceed 0.75 dB.

4.25.4.4.1.2.2) Non-reflective events (splices) shall not exceed 0.3 dB.

4.25.4.4.1.3) Magnified endface inspection

4.25.4.4.1.3.1) Fiber connections shall be visually inspected for endface quality.

4.25.4.4.1.3.2) Scratched, pitted or dirty connectors shall be diagnosed and corrected.

4.25.4.4.2) All installed cabling links and channels shall be field-tested and pass the test requirements and analysis as described in this Specification. Any link or channel that fails these requirements shall be diagnosed and corrected. Any corrective action that must take place shall be documented and followed with a new test to prove that the corrected link or channel meets performance requirements. The final and passing result of the tests for all links and channels shall be provided in the test results documentation in accordance with this Specification.

4.25.4.4.3) Acceptance of the test results shall be given in writing after the project is fully completed and tested in accordance with Contract Documents and to the satisfaction of the Owner.

Note: High Bandwidth applications such as 1000BASE-SX, 10GBASE-S, and FC1200 impose stringent channel loss limits. Where practical, certification shall consider loss length limits that meet maximum channel (transmitter to receiver) loss.

**Performance specification for MM fiber at 850 nm**

Fiber Type		Bandwidth	1000BASE-SX		10GBASE-SR		FibreChannel 1200-MX-SN-I	
	µm	(MHz• Km)	Length (m)	Loss (dB)	Length (m)	Loss (dB)	Length (m)	Loss (dB)
OM1	62.5	220	275	2.38	26	2.6	33	2.4
OM2	50	500	550	3.56	82	2.3	82	2.2
OM3	50	2000	1000	3.56	300	2.6	300	2.6

#### 4.25.4.5) Optical Fiber Cable Tester Device Requirements

4.25.4.5.1) The field-test instrument shall be within the calibration period recommended by the manufacturer.

#### 4.25.4.5.2) Optical loss test set (OLTS)

- 4.25.4.5.2.1) Multimode optical fiber light source
- 4.25.4.5.2.2) Provide dual LED light sources with central wavelengths of 850 nm ( $\pm 30$  nm) and 1300 nm ( $\pm 20$  nm)
- 4.25.4.5.2.3) Output power of  $-20$  dBm minimum.
- 4.25.4.5.2.4) The light source shall meet the launch requirements of ANSI/EIA/TIA 455 50B, Method A. This launch condition can be achieved either within the field test equipment or by use of an external mandrel wrap (as described in clause 11 of ANSI/TIA/EIA-568-B.1) with a Category 1 light source.

#### 4.25.4.5.3) Singlemode optical fiber light source

- 4.25.4.5.3.1) Provide dual laser light sources with central wavelengths of 1310 nm ( $\pm 20$  nm) and 1550 nm ( $\pm 20$  nm).
- 4.25.4.5.3.2) Output power of  $-10$  dBm minimum.

#### 4.25.4.5.4) Power Meter

- 4.25.4.5.4.1) Provide 850 nm, 1300/1310 nm, and 1550 nm wavelength test capability.
- 4.25.4.5.4.2) Power measurement uncertainty of  $\pm 0.25$  dB.
- 4.25.4.5.4.3) Store reference power measurement.
- 4.25.4.5.4.4) Save at least 100 results in internal memory.
- 4.25.4.5.4.5) PC interface (serial or USB).

#### 4.25.4.5.5) Optional length measurement

- 4.25.4.5.5.1) It is preferable to use an OLTS that is capable of measuring the optical length of the fiber using time-of-flight techniques.

#### 4.25.4.5.6) Optical Time Domain Reflectometer (OTDR)

- 4.25.4.5.6.1) Multimode OTDR
  - 4.25.4.5.6.1.1) Wavelengths of 850 nm ( $\pm 20$  nm) and 1300 nm ( $\pm 20$  nm).
  - 4.25.4.5.6.1.2) Event deadzones of 3.7 m maximum at 850 nm and 1300 nm.
  - 4.25.4.5.6.1.3) Attenuation deadzones of 10 m maximum at 850 nm and 13 m maximum at 1300 nm.
  - 4.25.4.5.6.1.4) Distance range not less than 2000 m.
  - 4.25.4.5.6.1.5) Dynamic range at least 10 dB at 850 nm and 1300 nm
- 4.25.4.5.6.2) Singlemode OTDR
  - 4.25.4.5.6.2.1) Wavelengths of 1310 nm ( $\pm 20$  nm) and 1550 nm ( $\pm 20$  nm).
  - 4.25.4.5.6.2.2) Event deadzones of 3.5 m maximum at 1310 nm and 1550 nm.

- 4.25.4.5.6.2.3) Attenuation deadzones of 10 m maximum at 1310 nm and 12 m maximum at 1550 nm.
- 4.25.4.5.6.2.4) Distance range not less than 10000 m.
- 4.25.4.5.6.2.5) Dynamic range at least 10 dB at 1310 nm and 1550 nm

#### 4.25.4.5.7) Fiber Microscope

- 4.25.4.5.7.1) Magnification of 200X or 400X for endface inspection.
- 4.25.4.5.7.2) Test equipment shall be capable of saving and reporting the endface image.

#### 4.25.4.5.8) Integrated OLTS, OTDR and fiber microscope

- 4.25.4.5.8.1) Test equipment that combines into one instrument an OLTS, an OTDR and a fiber microscope may be used.

#### 4.25.4.6) Administration

- 4.25.4.6.1) Administration of the documentation shall include test results of each fiber link and channel.

- 4.25.4.6.2) The test result information for each link shall be recorded in the memory of the field-test instrument upon completion of the test.

- 4.25.4.6.3) The test result records saved within the field-test instrument shall be transferred into a Microsoft Windows™-based database utility that allows for the maintenance, inspection and archiving of these test records.

#### 4.25.4.7) Execution of Optical Fiber Cable Testing

- 4.25.4.7.1) All outlets, cables, patch panels and associated components shall be fully assembled and labeled prior to field-testing. Any testing performed on incomplete systems shall be redone on completion of the work.

- 4.25.4.7.2) All tests performed on optical fiber cabling that use a laser or LED in a test set shall be carried out with safety precautions in accordance with ANSI Z136.2.

- 4.25.4.7.3) Field-test instruments shall have the latest software and firmware installed.

- 4.25.4.7.4) Link and channel test results from the OLTS and OTDR shall be recorded in the test instrument upon completion of each test for subsequent uploading to a PC in which the administrative documentation (reports) may be generated.

- 4.25.4.7.5) Fiber endfaces shall be inspected at 200X or 400X magnification. 200X magnification is suitable for inspecting multimode and singlemode fibers. 400X magnification may be used for detailed examination of singlemode fibers. Scratched, pitted or dirty connectors shall be diagnosed and corrected.

- 4.25.4.7.5.1) Endface images shall be recorded in the memory of the test instrument for subsequent reporting.

- 4.25.4.7.6) Testing shall be performed on each cabling segment (connector to connector).

- 4.25.4.7.7) Testing shall be performed on each cabling channel (equipment to equipment) that is planned for use per the Owner's instructions.

- 4.25.4.7.8) Testing of the cabling shall be performed using high-quality test cords of the same fiber type as the cabling under test. The test cords for OLTS testing shall be between 1 m and 5 m in length. The test cords for OTDR testing shall be approximately 100 m for the launch cable and at least 25 m for the receive cable.
- 4.25.4.7.9) Optical loss testing
  - 4.25.4.7.9.1) Backbone link
    - 4.25.4.7.9.1.1) Multimode backbone links shall be tested at 850 nm and 1300 nm in accordance with ANSI/EIA/TIA-526-14A, Method B, One Reference Jumper or the equivalent method.
    - 4.25.4.7.9.1.2) Singlemode backbone links shall be tested at 1310 nm and 1550 nm in accordance with ANSI/TIA/EIA-526-7, Method A.1, One Reference Jumper or the equivalent method.
    - 4.25.4.7.9.1.3) Link attenuation does not include any active devices or passive devices other than cable, connectors, and splices, i.e. link attenuation does not include such devices as optical bypass switches, couplers, repeaters, or optical amplifiers.
    - 4.25.4.7.9.1.4) Use the One Reference Jumper Method specified by ANSI/TIA/EIA-526-14A, Method B and ANSI/TIA/EIA-526-7, Method A.1 or the equivalent method. The user shall follow the procedures established by these standards or application notes to accurately conduct performance testing.
  - 4.25.4.7.9.2) Horizontal (multimode) link
    - 4.25.4.7.9.2.1) The horizontal optical fiber cabling link segments need to be tested at only one wavelength. Because of the short length of cabling, attenuation deltas due to wavelength are insignificant. The horizontal link shall be tested at 850 nm or 1300 nm in one direction in accordance with ANSI/EIA/TIA-526-14A, Method B, One Reference Jumper method or the equivalent method.
  - 4.25.4.7.9.3) Centralized (multimode) link
    - 4.25.4.7.9.3.1) The centralized optical fiber cabling link segments need to be tested at only one wavelength. Because of the short length of cabling, attenuation deltas due to wavelength are insignificant. The horizontal link shall be tested at 850 nm or 1300 nm in one direction in accordance with ANSI/EIA/TIA-526-14A, Method B, One Reference Jumper method or the equivalent method. Testing at 850 nm is recommended unless otherwise specified by the Owner.
- 4.25.4.7.10) OTDR Testing
  - 4.25.4.7.10.1) Backbone, horizontal and centralized links shall be tested at the appropriate operating wavelengths for anomalies and to ensure uniformity of cable attenuation and connector insertion loss.
    - 4.25.4.7.10.1.1) Backbone multimode: 850 nm and 1300 nm
    - 4.25.4.7.10.1.2) Backbone singlemode: 1310 nm and 1550 nm
    - 4.25.4.7.10.1.3) Horizontal multimode: 850 nm or 1300 nm
    - 4.25.4.7.10.1.4) Centralized multimode: 850 nm or 1300 nm (850 nm recommended unless otherwise specified by the end user)
  - 4.25.4.7.10.2) Each fiber link and channel shall be tested in one direction.
  - 4.25.4.7.10.3) A launch cable shall be installed between the OTDR and the first link connection.
  - 4.25.4.7.10.4) A receive cable shall be installed after the last link connection.
- 4.25.4.7.11) Magnified Endface Inspection



4.25.4.7.11.1) Fibers shall be inspected at 250X or 400X magnification. 250X magnification is suitable for inspecting multimode and singlemode fibers. 400X magnification may be used for detailed examination of singlemode fibers.

4.25.4.7.12) Length Measurement

4.25.4.7.12.1) The length of each fiber shall be recorded.

4.25.4.7.12.2) It is preferable that the optical length be measured using an OLTS or OTDR.

4.25.4.7.13) Polarity Testing

4.25.4.7.13.1) Paired duplex fibers in multi-fiber cables shall be tested to verify polarity in accordance with subclause 10.3 of ANSI/TIA/EIA 568 B.1. The polarity of the paired duplex fibers shall be verified using an OLTS.

4.25.4.8) Security/Surveillance Power Cable Testing

100% of the Security/Surveillance cables in the installation shall be tested.

All conductors of the installed Security/Surveillance cable shall be tested and shall be confirmed continuous.

The installed Security/Surveillance cable shall be tested from the point of termination, to the Security/Surveillance patch panel.

4.25.5) Additional Requirements

4.25.5.1) The test results documentation shall be available for inspection by the Owner Project Manager and the Owner Technical Contact during the installation period and shall be passed to the Owner Project Manager and the Owner Technical Contact representative within 5 working days of completion of tests on cabling served by a telecommunications room or of backbone cabling. The installer shall retain a copy to aid preparation of as built information.

4.25.5.2) Circuit IDs reported by the test instrument shall match the label on the tested cable, in accordance with the Cable Installation Labeling Convention, described in this Specification

#### 4.26) Documentation

##### 4.26.1) Category-6 Test Results

Contractor will supply test results from test equipment for all cables that Contractor installs.

The test results information for each link shall be recorded in the electronic memory of the field tester equipment upon completion of the test.

The test results records saved by the field tester shall be transferred into a Microsoft Windows™-based database utility that allows for the maintenance, inspection, archiving, and plain-text exporting of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered (i.e., "as saved in the field-test instrument") and that these results cannot be modified at a later time. Testers that transfer the numeric measurement data from the tester to the PC in a non-printable format in this regard offer superior protection. The file format, CSV (comma separated value), does not provide adequate protection of these records and shall not be used.

The database for the completed job and all source tester data files shall be stored and delivered on CD-ROM prior to Owner acceptance of the tested cable. This CD-ROM shall include the software tools required to view, inspect, and print any selection of the test reports.

A paper hard copy shall be submitted, containing a test results summary of each installed link.

##### 4.26.1.1) Hard Copy

A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information:

- 4.26.1.1.1) The identification of the link in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.1.1.2) The overall Pass/Fail evaluation of the link-under-test including the NEXT Headroom (overall worst case) number
- 4.26.1.1.3) The date and time the test results were saved in the memory of the tester

##### 4.26.1.2) Database General Information

General Information to be provided in the electronic database with the test results information for each link:

- 4.26.1.2.1) The identification of the customer site as specified by Owner
- 4.26.1.2.2) The identification of the link in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.1.2.3) The overall Pass/Fail evaluation of the link-under-test
- 4.26.1.2.4) The name of the standard selected to execute the stored test results
- 4.26.1.2.5) The cable type and the value of NVP used for length calculations
- 4.26.1.2.6) The date and time the test results were saved in the memory of the tester
- 4.26.1.2.7) The brand name, model and serial number of the tester
- 4.26.1.2.8) The identification of the tester interface

- 4.26.1.2.9) The revision of the tester software and the revision of the test standards database in the tester
- 4.26.1.2.10) The test results information must contain information on each of the required test parameters that are listed in Section 0 ("Performance Test Parameters") and as further detailed below under paragraph 4.25.1.3) ("Database Detailed Information")

#### 4.26.1.3) Database Detailed Information

The detailed test results data to be provided in the electronic database for each tested Category-6 link must contain the following information:

For each of the frequency-dependent test parameters, the minimum test results documentation shall be stored for each wire-pair or wire-pair combination as observed from each end of the link. The minimum test results documentation for each test parameter shall be in compliance with the information in Section 0 ("Performance Test Parameters")

- 4.26.1.3.1) The name of the test limit selected to execute the stored test results
- 4.26.1.3.2) The name of the personnel performing the test
- 4.26.1.3.3) The date and time the test results were saved in the memory of the tester
- 4.26.1.3.4) The manufacturer, model and serial number of the field-test instrument
- 4.26.1.3.5) The version of the test software and the version of the test limit database held within the test instrument
- 4.26.1.3.6) Length: Identify the wire-pair with the shortest electrical length, the value of the length rounded to the nearest foot and the test limit value
- 4.26.1.3.7) Propagation delay: Identify the pair with the shortest propagation delay, the value measured in nanoseconds (ns) and the test limit value
- 4.26.1.3.8) Delay Skew: Identify the pair with the largest value for delay skew, the value calculated in nanoseconds (ns) and the test limit value
- 4.26.1.3.9) Insertion Loss (Attenuation): Minimum test results documentation as explained in Section 0 ("Performance Test Parameters") for the wire pair with the worst insertion loss
- 4.26.1.3.10) Return Loss: Minimum test results documentation as explained in Section 0 ("Performance Test Parameters"). Identify as detected from each end of the link, the wire pair that exhibits the worst-case margin and the wire pair with the worst RL. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.
- 4.26.1.3.11) NEXT, ELFEXT, ACR: Minimum test results documentation as explained in Section 0 ("Performance Test Parameters"). Identify as measured from each end of the link, the wire pair combination that exhibits the worst case margin and the wire pair combination that delivers the worst case value. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.
- 4.26.1.3.12) PSNEXT, PSELFEXT, and PSACR: Minimum test results documentation as explained in Section 0 ("Performance Test Parameters"). Identify as detected from each end of the link, the wire pair that exhibits the worst-case margin and the wire pair with the worst value. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.
- 4.26.1.3.13) Link length, propagation delay, and delay skew shall also be reported for each wire pair as well as the test limit for each of these parameters.

#### 4.26.2) Telecommunications Feeder Cable Test Results

Contractor will supply test results from test equipment for all telecommunications feeder cables that Contractor installs.

The test results information for each pair of the installed telecommunications feeder cable shall be recorded in the electronic memory of the field tester equipment upon completion of the test.

The test results records saved by the field tester shall be transferred into a Microsoft Windows™-based database utility that allows for the maintenance, inspection, archiving, and plain-text exporting of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered (i.e., "as saved in the field-test instrument") and that these results cannot be modified at a later time. Testers that transfer the numeric measurement data from the tester to the PC in a non-printable format in this regard offer superior protection. The file format, CSV (comma separated value), does not provide adequate protection of these records and shall not be used.

The database for the completed job and all source tester data files shall be stored and delivered on CD-ROM prior to Owner acceptance of the tested cable. This CD-ROM shall include the software tools required to view, inspect, and print any selection of the test reports.

A paper hard copy shall be submitted, containing a test results summary of each installed pair.

##### 4.26.2.1) Hard Copy

A paper copy of the test results shall be provided that lists all the pairs that have been tested with the following summary information:

- 4.26.2.1.1) The identification of the pair in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.2.1.2) The overall Pass/Fail evaluation of the pair-under-test
- 4.26.2.1.3) The date and time the test results were saved in the memory of the tester

##### 4.26.2.2) Database General Information

General Information to be provided in the electronic database with the test results information for each pair:

- 4.26.2.2.1) The identification of the customer site as specified by Owner
- 4.26.2.2.2) The identification of the pair in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.2.2.3) The overall Pass/Fail evaluation of the link-under-test
- 4.26.2.2.4) The name of the standard selected to execute the stored test results
- 4.26.2.2.5) The cable type
- 4.26.2.2.6) The date and time the test results were saved in the memory of the tester
- 4.26.2.2.7) The brand name, model and serial number of the tester
- 4.26.2.2.8) The identification of the tester interface
- 4.26.2.2.9) The revision of the tester software and the revision of the test standards database in the tester

4.26.2.2.10) The test results information must contain information on each of the required test parameters as detailed below under "Database Detailed Information"

4.26.2.3) Database Detailed Information

The detailed test results data to be provided in the electronic database for each tested Category-3 pair must contain the following information:

For each of the frequency-dependent test parameters, the minimum test results documentation shall be stored for each wire-pair or wire-pair combination as observed from each end of the pair. The minimum test results documentation for each test parameter shall be in compliance with TIA568-B specification for Category-3 cable.

4.26.2.3.1) The name of the test limit selected to execute the stored test results

4.26.2.3.2) The name of the personnel performing the test

4.26.2.3.3) The date and time the test results were saved in the memory of the tester

4.26.2.3.4) The manufacturer, model and serial number of the field-test instrument

4.26.2.3.5) The version of the test software and the version of the test limit database held within the test instrument

4.26.2.3.6) Insertion Loss (Attenuation)

4.26.2.3.7) Return Loss: Identify as detected from each end of the pair, the wire pair that exhibits the worst-case margin and the wire pair with the worst RL. Each reported case shall include the frequency at which it occurs as well as the test limit value at this frequency.

#### 4.26.3) Fiber-optic Cable Test Results

Contractor will supply test results from test equipment for all fiber-optic cables that Contractor installs.

The test results information for each terminated or fused strand shall be recorded in the electronic memory of the field tester equipment upon completion of the test.

The test results records saved by the field tester shall be transferred into a Microsoft Windows™-based database utility that allows for the maintenance, inspection, archiving, and plain-text exporting of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered (i.e., "as saved in the field-test instrument") and that these results cannot be modified at a later time. Testers that transfer the numeric measurement data from the tester to the PC in a non-printable format in this regard offer superior protection. The file format, CSV (comma separated value), does not provide adequate protection of these records and shall not be used.

The database for the completed job and all source tester data files shall be stored and delivered on CD-ROM prior to Owner acceptance of the tested cable. This CD-ROM shall include the software tools required to view, inspect, and print any selection of the test reports.

A paper hard copy shall be submitted, containing a test results summary of each strand.

##### 4.26.3.1) Hard Copy

A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information:

- 4.26.3.1.1) The identification of the strand in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.3.1.2) The overall Pass/Fail evaluation of the strand-under-test
- 4.26.3.1.3) The date and time the test results were saved in the memory of the tester

##### 4.26.3.2) Database General Information

General Information to be provided in the electronic database with the test results information for each link:

- 4.26.3.2.1) The identification of the customer site as specified by Owner
- 4.26.3.2.2) The identification of the pair in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.3.2.3) The overall Pass/Fail evaluation of the strand-under-test
- 4.26.3.2.4) The name of the standard selected to execute the stored test results
- 4.26.3.2.5) The cable type
- 4.26.3.2.6) The date and time the test results were saved in the memory of the tester
- 4.26.3.2.7) The brand name, model and serial number of the tester
- 4.26.3.2.8) The identification of the tester interface
- 4.26.3.2.9) The revision of the tester software and the revision of the test standards database in the tester

4.26.3.2.10) The test results information must contain information on each of the required test parameters as detailed below under "Database Detailed Information"

#### 4.26.3.3) Database Detailed Information

Detailed test results documentation data is to be provided in an electronic database for each tested optical fiber and shall contain the following information:

- 4.26.3.3.1) The identification of the customer site as specified by Owner
- 4.26.3.3.2) The name of the test limit selected to execute the stored test results
- 4.26.3.3.3) The name of the personnel performing the test
- 4.26.3.3.4) The date and time the test results were saved in the memory of the tester
- 4.26.3.3.5) The manufacturer, model and serial number of the field-test instrument
- 4.26.3.3.6) The version of the test software and the version of the test limit database held within the test instrument
- 4.26.3.3.7) Circuit ID - as reported by the test instrument and matching the label on test tested cable, in accordance with the Cable Installation Labeling Convention, described in this Specification
- 4.26.3.3.8) The fiber strand identification number
- 4.26.3.3.9) The length for each optical fiber
- 4.26.3.3.10) Optionally the index of refraction used for length calculation when using a length capable OLTS
- 4.26.3.3.11) Test results to include OLTS attenuation link and channel measurements at the appropriate wavelength(s) and the margin (difference between the measured attenuation and the test limit value).
- 4.26.3.3.12) Test results to include OTDR link and channel traces and event tables at the appropriate wavelength(s).
- 4.26.3.3.13) The length for each optical fiber as calculated by the OTDR.
- 4.26.3.3.14) The overall Pass/Fail evaluation of the link-under-test for OLTS and OTDR measurements
  - 4.26.3.3.14.1) A picture or image of each fiber end-face
- 4.26.3.3.15) A pass/fail status of the end-face based upon visual inspection.

#### 4.26.4) As-Built Documentation

Contractor shall provide as-built documentation in electronic format, describing all work performed. As-built documentation shall follow apparent documentation standards and formats of existing data wiring documentation and building plans, submitted to Contractor by Owner.

##### 4.26.4.1) Circuit Endpoint Table

Contractor shall submit a completed "Circuit Endpoint Table.xls" document, entering as-built labeling information for 100% of installed cables into this Microsoft Excel document. A blank "Circuit Endpoint Table.xls" form shall be provided to Contractor by Owner upon request.

Contractor shall submit completed spreadsheet to Owner as both electronic document (Microsoft Excel spreadsheet), and as hard-copy.

#### 4.26.4.2) As-Built Drawings

Contractor shall provide a full set of as-built drawings in electronic format as a Microsoft Visio Version 11 (Visio 2003) document.

As-built drawings shall convey an accurate depiction of the entire installation superimposed on a drawing of the building. As-built drawings must be to scale.

All edits and additions by Contractor shall be placed in a new layer, which shall have a name clearly identifying Contractor name, and date of job completion.

The as-built drawings shall include, but shall not be limited to, the following information for all materials installed by Contractor and for all existing materials used by Contractor:

4.26.4.2.1) Inside Service Plant (ISP) drawings, depicting all installed materials, as well as any existing materials utilized, along with building envelope, walls, and features. These shall include, but not be limited to:

- 4.26.4.2.1.1) station outlet location and label
- 4.26.4.2.1.2) details of cable path
- 4.26.4.2.1.3) locations of cable termination points
- 4.26.4.2.1.4) locations of pull boxes
- 4.26.4.2.1.5) locations and diameter of conduits/sleeves
- 4.26.4.2.1.6) locations and manufacturer/model number of raceway
- 4.26.4.2.1.7) locations of penetrations and installed firestopping
- 4.26.4.2.1.8) block diagrams
- 4.26.4.2.1.9) frame and cable labeling
- 4.26.4.2.1.10) location of cabinets/racks
- 4.26.4.2.1.11) equipment room layouts and frame installation details

4.26.4.2.2) Outside Service Plant (OSP) drawings, depicting all installed materials, as well as any existing materials utilized, along with campus building envelopes and landmarks. This shall include, but not be limited to:

- 4.26.4.2.2.1) label or name of each utilized manhole, handhole, and pole as per existing documentation (if available), and as per any label evident on the utilized manhole, handhole, or pole
- 4.26.4.2.2.2) precise locations of each utilized manhole, handhole, as determined by the Global Positioning System (GPS), expressed as longitude and latitude in DMS (degrees-minutes' seconds"), and accurate to one-hundredth of a minute.
- 4.26.4.2.2.3) measured pull distances between manholes, as evident from markings on installed pull tape and/or cable jacket
- 4.26.4.2.2.4) the type of cable that was installed between manholes, handholes and poles. e.g. 24-strand-SM-fiber, OSP-CAT6, etc., etc.
- 4.26.4.2.2.5) labels on installed cables in manhole/handhole/pole

4.26.4.2.3) The as built drawings shall also include accurate depiction of all field-directed changes made up to construction completion. These shall include, but not limited to:

- 4.26.4.2.3.1) field-directed changes to pull schedule
- 4.26.4.2.3.2) field-directed changes to cross connect and patching schedule
- 4.26.4.2.3.3) horizontal cable routing changes
- 4.26.4.2.3.4) backbone cable routing or location changes
- 4.26.4.2.3.5) associated detail drawings



4.26.4.3) Firestopping Locations

Contractor shall provide a table of as-built firestopping locations in Microsoft Excel format as in the following example:

Example:

	A	B	C	D
1	<b><u>Location</u></b>	<b><u>Description</u></b>	<b><u>Manufacturer</u></b>	<b><u>Material</u></b>
2	LI1005C-FL01	Above Cable tray	Hilte	Intumescent putty
3	LI1005C-FL02	Around 4" Conduit	Hilte	Mortar
4	LI1005C-FL03	Inside 4" conduit	Hilte	Vermiculite Pillow
...				
...				
...				
37	LI0003F-PP01-22	3" Cabinet penetration	PRC-DeSoto	PR-855 Chase Foam

4.27) Submission of Manufacturer Warranty Information

Contractor shall submit Manufacturer Warranty documents on installed cable plant upon completion of installation.

4.28) Punch Lists

Owner Project Manager and Owner Technical Contact shall inspect all work with Contractor at a punch list inspection tours, to take place as determined by Owner Project Manager.

Additional punch list inspection tours shall be performed as deemed necessary by Owner Project Manager, whereby prior punch list items shall be inspected, and additional punch list items may be generated.

The punch lists shall be conveyed in writing by Owner Project Manager to Owner Technical Contact, and to Contractor.

Contractor shall provide all materials and labor to repair, replace, or complete each punch list item that is within the Scope of Work.

Contractor shall respond to all punch list items in writing, either by stating that the item has been addressed/completed or by claiming that the item is outside of the Scope of Work.

Final payment shall not be released by Owner until after such a time that all punch list items have been completed to the satisfaction of Owner Project Manager and Owner Technical Contact.

4.29) Unused materials

At completion of work, Contractor shall deliver to Owner Technical Contact any materials of significant value that were included in Contractor's cost quotation/proposal for the work, but neither delivered, installed, nor credited by Contractor to Owner.

This shall include, but not be limited to:

- 4.29.1) Spooled/reeled/boxed copper cable greater than 150' in length
- 4.29.2) Unused or trimmed fiber-optic cable greater than 1000' in length
- 4.29.3) Unused jacks and faceplates
- 4.29.4) Unused patch panels
- 4.29.5) Unused patch cables
- 4.29.6) Unused racks/cabinets
- 4.29.7) Unused cable management
- 4.29.8) Unused conduit, raceway and cable tray, greater than 5' in length
- 4.29.9) Unused conduit, raceway, and cable tray fittings
- 4.29.10) Unused firestopping
- 4.29.11) Unused access point enclosures

**Part 5: Scope of Work**

5) Scope of Work

Contractor shall supply all necessary parts and labor for installation of cabling and accessories to support data/telephone, Audio-visual, and security systems as described elsewhere referencing this Specification.

**\*\*\* END OF DOCUMENT \*\*\***

## **Appendix 2**



## Student Mailboxes - Specifications

9.1 This portion includes product, delivery, installation and post installation warranty support. This product is used as the basis of design.

9.2 Provide 3,960 student mailboxes including, product, delivery, installation and trim as specified below within allotted space as per drawing CSK- 006.

9.3 It is the intent of the University to award this contract based in part on the product specifications listed in this section. Please quote per specifications or equal.

9.4 Basis of Design: Salsbury Industries 2200 Rack Ladder Series

9.5 Compartment Specifications:

- A compartment will hold a cluster of mailbox units.
- Compartments to be constructed of minimum 20 gauge steel
- Compartment Size - 23-1/4" W x 12-1/8" H x 15-1/2" D
- Designed to be installed into rack ladder system
- Trim around the installed compartment is to be included
- Compartments to be interchangeable with additional box size options available including; 5-1/2" W x 5-1/2" H, 10-3/4" W x 5-1/2" H, 10-3/4" W x 11-1/2" H, 22" W x 11-1/2" H

9.6 Mailbox Specifications:

- Door Size - minimum 3-1/2" W X 5-12" H
- Mailbox Door Construction - minimum 1/4" thick, one piece extruded aluminum with powder coated aluminum finish
- Lock Type - 5 pin, cylinder cam locks with 2 keys ea.
- Locks to be warranted for 5 years minimum
- Provide additional 20 locks with 2 keys each, packaged and labeled
- Provide one box of key blanks (50 minimum)
- Mailbox number up to four digits needs to be engraved on the door (number sequence to be provided by university)
- Rear loading required with no master door
- Provide 1.5" W x 0.375" D matching trim for complete system

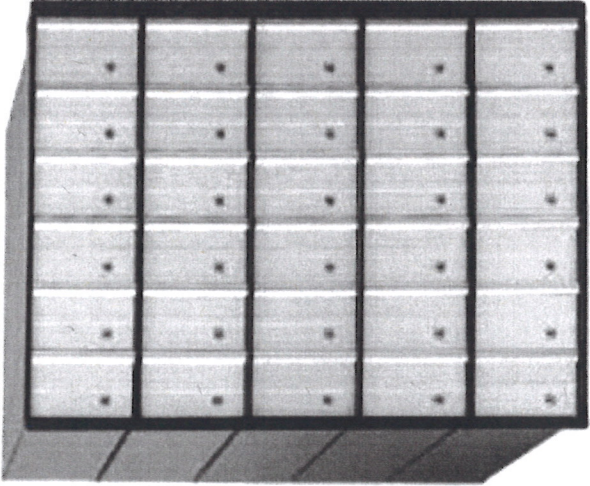
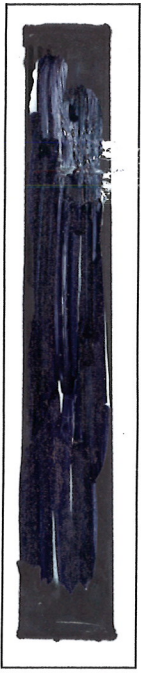
9.7 Specify all terms and conditions of the warranties associated with the products you are quoting. Warranty information MUST be included with your bid response.

9.8 The Brand, Product/Model number you are quoting must be provided on the bid quotation sheet.

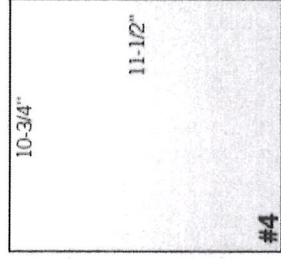
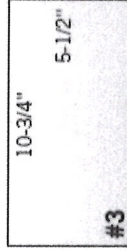
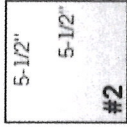
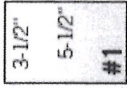
9.9 The manufacturer's published technical specifications must be included with your response.



**Standard Aluminum – 3 ½ x 5 ½ doors**

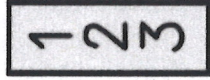


2230



**CUSTOM ENGRAVED PLACARDS**

7/8" W x 3" H custom engraved self-adhesive placards are available as an option upon request. (#2267 - \$3.00)



#2267

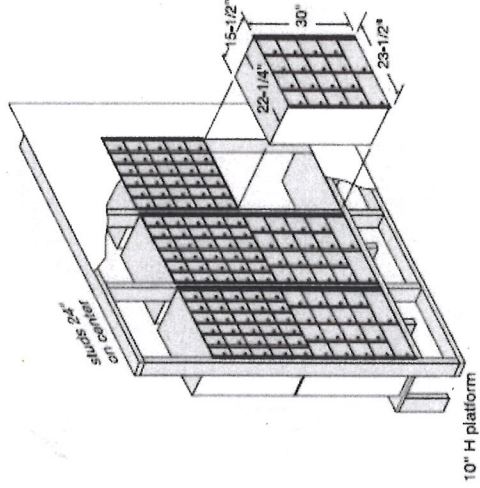
**SAMPLE INSTALLATION**

Models displayed:

(3) 2230's

(3) 2218's

Allow approximately 24" W and 60" H for each mailbox column.



10" H platform

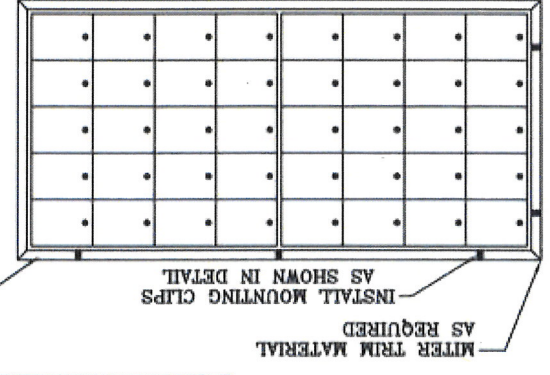
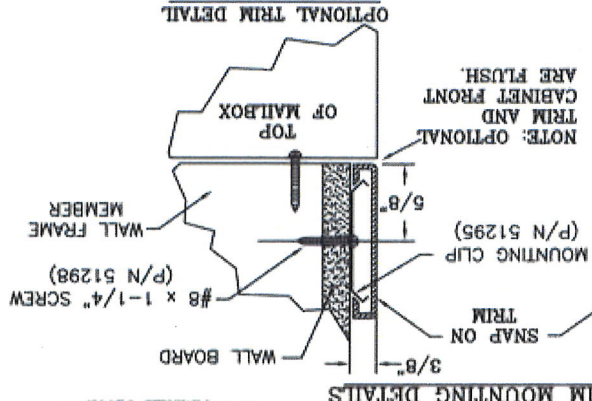
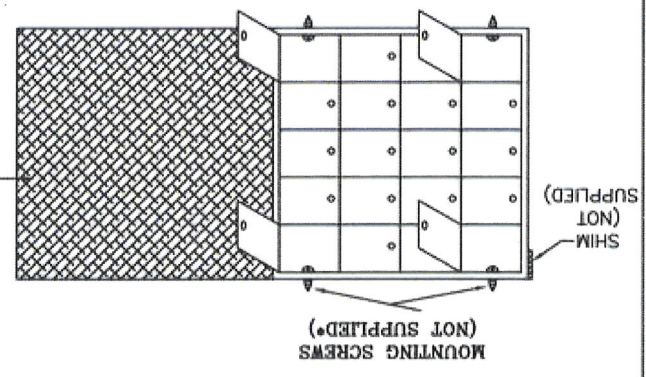
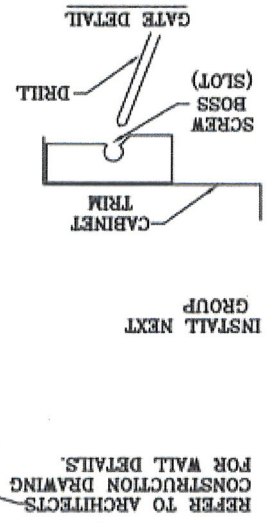
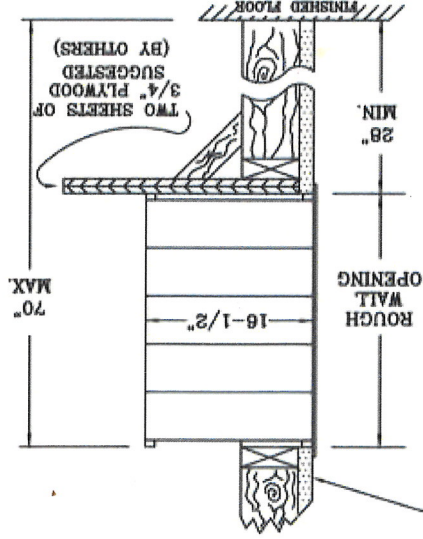


# 1500/1550/1700 CABINET INSTALLATION INSTRUCTIONS (REAR LOAD)

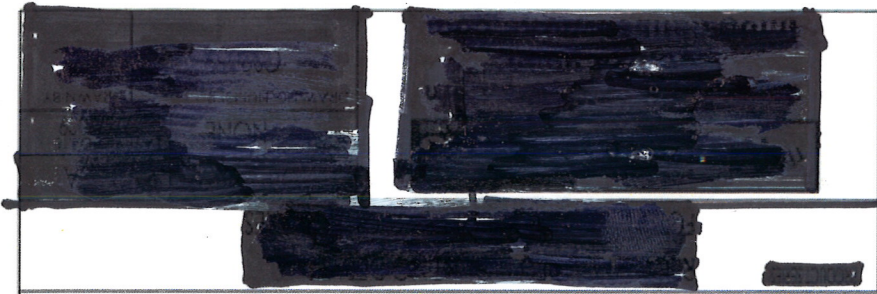
- NOTE: WHEN SNAP ON TRIM IS USED, CABINET MUST PROJECT 3/8" BEYOND FINISHED WALL TO MAKE A FLUSH SURFACE BETWEEN THE CABINET AND THE TRIM. SEE OPTIONAL TRIM DETAIL.
1. SLIDE FIRST GROUP OF BOXES INTO THE ROUGH OPENING IN WALL.
  2. OPEN ALL FOUR CORNER TENANT DOORS AND DRILL HOLES THROUGH GATE FRAME IN SCREW BOSS (SLOT), SEE GATE DETAIL.
  3. PARTIALLY INSTALL TWO MOUNTING SCREWS\* IN THE TOP AND TWO IN THE BOTTOM.
  4. SHIM AS NECESSARY FOR GATE TO OPEN AND CLOSE FREELY. TIGHTEN MOUNTING SCREWS.
  5. INSTALL NEXT GROUP OF BOXES THE SAME AS ABOVE.

NEXT STEPS ONLY FOR CABINETS WITH OPTIONAL SNAP ON TRIM

6. SCREW MOUNTING CLIP TO WALL USING #8 X 1-1/4" SCREWS, SEE OPTIONAL TRIM DETAIL.
  7. HOOK ONE EDGE OF TRIM OVER LEG OF CLIP AND SNAP OVER SECOND LEG OF CLIP.
- \* FOR CONVENTIONAL LUMBER WE RECOMMEND A #8 X 2" FLAT HEAD WOOD SCREW.



USPS STD-4C COMPLIANT MAILBOX SYSTEMS ARE MANDATORY FOR ALL NEW CONSTRUCTION AND MAJOR RENOVATIONS. MAILBOXES THAT ARE 48+ COMPLIANT WILL ONLY BE CONSIDERED USPS APPROVED IF THEY ARE REPLACING EXISTING MAILBOXES. CHECK WITH LOCAL POSTAL OFFICIAL PRIOR TO INSTALLING MAILBOX. 1550/1700 SERIES ARE 48+ COMPLIANT 1500 SERIES ARE 48+ COMPLIANT



## **Appendix 3**



## Hardware Schedule

### Hardware Set #1 – Pair of Glass Entrance Doors to Mailroom

- 2 Continuous Hinges
- 1 Entrance Electrified Lockset (active right-hand leaf)
- 1 Dummy Lever Trim Set (inactive left-hand leaf)
- 2 Electric Top and Bottom Flush Bolts
- 2 Dustproof Strikes (at threshold)
- 1 Automatic Door Assist Device (active right-hand leaf)
- 2 Automatic Door Assist Operator buttons (interior wireless, exterior hardwired)
- 2 Concealed Overhead Closers (no hold open)
- 2 Silencers (at head)
- 1 Card Reader (with tie-in to door actuator)
- 4 Door Contacts

### Hardware Set #2 – Single Doors into Receiving Area

- 1 Pair Butt Hinges
- 1 Electric Transfer Hinge
- 1 Entrance Electrified Lockset
- 1 Closer (no hold open)
- 1 Floor-mounted Door Stop
- 3 Silencers
- 1 Card Reader
- 2 Door Contact

### Hardware Set #3 – Single Door from Warehouse Area

- 1 Continuous Hinge
- 1 Electrified Entrance Lockset
- 1 Concealed Overhead Closer (no hold open)
- 3 Silencers
- 1 Card Reader
- 2 Door Contacts

### Hardware Set #4 – Single Door Office

- 1-1/2 Butt Hinges
- 1 Office Lockset
- 1 Closer (90 degree hold open)
- 1 Coat Hook
- 1 Floor-mounted Door Stop
- 3 Silencers

### Hardware Set #5 – Pair of Flush Wood Doors to Coat Closet

- 2 Top & Bottom Offset Pivots
- 2 Lever Dummy Trims
- 2 Surface-mounted Stops (inside)
- 2 Angle Stops w/Roller Catches
- 1 Floor-mounted Door Stop (right-hand leaf)

Hardware Set #6 – Pair of HM Doors to Secure Storage Room

- 3 Pair Butt Hinges
- 1 Storeroom Lockset (right-hand leaf)
- 1 Lever Dummy Trim (left-hand leaf)
- 1 Top & Bottom Flush Bolts (left-hand leaf)
- 1 Dustproof Strike (left-hand leaf)
- 2 Closers (no hold open)
- 1 Floor-mounted Door Stop (right-hand leaf)
- 2 Silencers

Hardware Set #7 – Pair of HM Doors to Warehouse Area

- 2 Continuous Hinges
- 1 Entrance Lockset (active right-hand leaf)
- 1 Dummy Lever Trim Set (inactive left-hand leaf)
- 1 Top and Bottom Flush Bolts (left-hand left)
- 1 Dustproof Strikes (at threshold)
- 2 Concealed Overhead Closers (90 degree hold open)
- 2 Silencers (at head)

Hardware Set #8 – Roll-up Door to Warehouse Area

- 1 Roll-up Door Hardware
- 1 Operator Button (inside)
- 1 Key Switch (outside)
- 1 Alarm Panel
- 2 Door Contacts

Hardware Set #9 – Single HM Door to South Corridor Area

- 1 Continuous Hinge
- 1 Entrance Lockset (w/crash-bar on secure side)
- 1 Closer (no hold open)
- 1 Floor-mounted Door Stop
- 3 Silencers

Hardware Set #10 – Roll-up Exterior Door at Corridor

- 1 Roll-up Door Hardware
- 1 Operator Button (inside)
- 1 Key Switch (outside)
- 1 Continuous Hinge (swing door)
- 1 Entrance Lockset (w/crash-bar on secure side)
- 1 Closer (no hold open)
- 1 Floor-mounted Door Stop
- 3 Silencers