

# **STOCKTON UNIVERSITY**

**F-Wing Main Campus Building  
100 Level Interior Renovations**

**PROJECT**

**MANUAL**

**Bid No.**

**B190011**

# **Table of Contents**

Instructions to Bidders

General Conditions for Construction

Safety Manual

Specifications

Supplementary General Conditions

# **Instructions to Bidders**

# STOCKTON UNIVERSITY



## GENERAL CONDITIONS (INSTRUCTION TO BIDDERS)

## **INSTRUCTIONS TO BIDDERS**

### **IB1. Bid Proposals**

**IB1.1.** Sealed proposals for the work described herein must be received at **Stockton University**, 101 Vera King Farris Drive Galloway, NJ 08205- 9441. The closing date and time for bids will be stated in the Advertisement and Invitation to Bid. Bidders are cautioned that reliance on the US Postal Service, other mail delivery, and/or courier service for timely delivery of proposals is at the bidders' risk. Failure by a bidder to have a sealed proposal reach the University by the prescribed time will result in a return of the unopened submission.

The time for receipt is firm. Respondents mailing proposals should allow for normal mail delivery time and internal circulation within the University to ensure the timely receipt of their proposals by the Purchasing Office. The University will not be responsible for proposals which do not meet the above deadline.

### **INSTRUCTIONS FOR MAILING AND/OR DELIVERING THE PROPOSAL FORMS**

**If submitting the proposal by regular mail, address to:**

Purchasing Department  
Stockton University  
101 Vera King Farris Drive  
Upper N Wing  
Galloway, NJ 08205-9441

**If submitting the proposal by hand or other special courier delivery, proposals should be addressed to and will be received at the following location:**

Purchasing Department  
Stockton University  
101 Vera King Farris Drive  
Upper N Wing  
Galloway, NJ 08205-9441

**Proposals shall be sealed and indicate the Bid Number on the envelope to distinguish it from other bids being received by Stockton University.**

**IB1.2.** Contractors who are prequalified by the New Jersey Division of Property Management and Construction (DPMC) may obtain contract documents at Stockton University (SU), or at the Architects/Engineer (A/E) of record offices, or upon written request, subject to payment of applicable fees. Each bidder is herewith put on notice that its general classification by DPMC is not the sole basis for qualification for the award of work. SU reserves the right to deny award to any bidder that is not clearly responsible, based upon experience, past performance, financial capability or other material factors, to perform the work required herein.

**IB1.3.** Upon request and at no cost, SU will furnish a set of the contract documents for review in the offices of the Facilities Planning Department at the address noted in Paragraph IB1.1 above.

**IB1.4.** Bid proposals based upon the plans, specifications, general, special and supplementary conditions and addendums shall be deemed as having been made by the contractor with full knowledge of the conditions therein. Bidders are required to visit the site prior to submitting proposals for the work herein described, and to have thoroughly examined the conditions under which the contract is to be executed, including those reasonably observable conditions of the premises which would hinder, delay, or otherwise affect the performance of the contractor required under the terms of the contract.

SU will not allow claims for additional costs as a result of the contractor's failure to become aware of the reasonably observable conditions affecting its required performance. The bidder is required to make appropriate allowances in the preparation of the bid for the accommodation of such conditions. Bidders must warrant in the bid documents that the bidder is familiar with conditions existing at the site at the time the bid is submitted.

**IB1.5.** Bid proposals shall be submitted on the standard form provided by SU, enclosed in a sealed envelope. The name and address of the bidder must be indicated on the envelope, as well as indication of SU project number, project location and other appropriate identification.

**IB1.6.** All amounts in the bid documents shall be stated in numerical figures only.

**IB1.7.** The Prime bidder must include in the bid envelope: (1) the proposal signed by the bidder, (2) the executed affidavit of non-collusion, (3) the bid security as further described in Section IB6, and (4) all other submittals as may be requested by the bid documents at the time of the bid opening date.

**IB1.8.** Proposals shall remain open for acceptance and may not be withdrawn for a period of 60 calendar days after the bid opening date.

**IB1.9.** Proposals not submitted and filed in accordance with instructions contained herein and in the Advertisement for Bids may be considered informal and rejected as non-responsive.

## **IB2. Bid Modification**

**IB2.1.** A bidder may modify its bid proposal by telegram or letter at any time prior to the scheduled closing time for receipt of bids, provided such communication is received by the SU prior to such closing time. A written confirmation of any telegraphic modification signed by the bidder must have been mailed and time-stamped by the US Postal Service prior to specified closing time. Such confirmation shall be accompanied by a newly executed affidavit of non-collusion.

**IB2.2.** Telegraphic communications shall not reveal the basic bid price but shall only provide the amount to be added, subtracted or modified so that the final prices or terms will not be revealed until the sealed proposal is opened. If written confirmation of the telegraphic modification is not received prior to the scheduled closing time, no consideration will be given to the telegraphic modification.

**IB2.3.** Bids may be withdrawn upon receipt of a bidder's written request prior to the time fixed for the bid opening. A bidder's right to withdraw a bid is lost after a bid has been opened. If an error has been made in the bid amount, request for relief from the bid may be made in writing to SU. The written request shall be signed by an authorized corporate officer. A determination of whether the bidder will be released shall be at the sole discretion of SU, who shall issue a finding within five working days of receipt of all pertinent information relating to such request for relief.

### **IB3. Consideration of Bids**

#### **IB3.1. Award of Contracts or Rejection of Bids:**

- a.** Contracts will be awarded to the lowest responsible bidder. The awards will be made, or the bids rejected, within 60 calendar days from the date of the opening of bids.
- b.** SU reserves the right to waive any bid requirements when such waiver is the most advantageous to the University, and where such waiver is permitted by law. Such waiver shall be at the sole discretion of SU.
- c.** SU reserves the right to reject any and all bids when such rejection is most advantageous to the University pursuant to the State College Contracts Law N.J.S.A. 18A:64-66. SU also may reject the bid of any bidder which, in SU's judgment, is not responsible or capable of performing the contract obligations based on financial capability, past performance, or experience. A bidder whose bid is so rejected may request a hearing before SU by filing a written notice within 3 (three) days of the issuance date of the intent to award letter.

**IB3.2.** The bidder to be awarded the contract shall execute and deliver the requisite contract documents, including payment and performance bonds, within the time specified. Upon the bidder's failure or refusal to comply in the manner and within the time specified, SU may either award the contract to the next low responsible bidder or re-advertise for new proposals. In either case, SU may hold the defaulting bidder and its surety liable for the difference between the applicable sums quoted by the defaulting bidder and the sum which SU may be obligated to pay to the contractor which is contracted to perform and complete the work of the defaulting bidder.

## **IB4. Awards**

**IB4.1.** In executing a contract, the successful bidder agrees to perform the required work in a good and workmanlike manner to the reasonable satisfaction of SU, and to complete all work within the number of calendar days specified in its Contract.

**IB4.2.** Successful bidders will be notified of the time and place for the signing of contracts. Key requirements in the conduct of the contract, including, but not limited to, the number of days of performance of the contract, manner and schedule of payments, and other administrative details will be reviewed at the award meeting. The time and place of the first job meeting will be announced at the award meeting.

**IB4.3.** Add and Deduct Alternates are not listed in the Bid Proposal form in any particular sequence. SU shall have complete discretion as to which such Alternates, if any, it will actually select for incorporation into the contract. The contract will be awarded by SU to the responsive and responsible bidder who submits the lowest price for the base bid plus all of the Add/Deduct Alternates, if any, actually selected by SU.

**IB4.4.** Should submission of unit prices be required for specified items of work in bid proposal, they will be considered in the evaluation of bids.

**IB4.5.** Allowances shall be included in the lump sum base bid. The allowances are to be expended at the discretion of SU and with advance written approval. Any unused portion of this allowance should be credited back to the University against the Total Lump Sum Bid Amount.

## **IB5. Qualification of Bidders**

**IB5.1.** If the successful bidder is a corporation not organized under the laws of the State of New Jersey or is not authorized to do business in this State, the awards of the contract shall be conditioned upon the prompt filing by the said corporation of a certificate to do business in this State and complying with the laws of this State in that regard. This filing must be made with the Department of State. No award of contract will be made until the Department of State confirms this authorization.

**IB5.2.** SU reserves the right to reject a bidder at any time prior to the signing of a contract if information or data is obtained which, in the opinion of SU, adversely affects the responsibility and/or the capability of the bidder to undertake and to complete the work, regardless of the bidder's previous qualification or classification. SU may conduct any investigation as it deems necessary to determine the bidder's responsibility and capacity, and the bidder shall furnish all information and data for this purpose as requested by SU.



**IB5.3.** Each bidder must be prequalified by New Jersey Division of Property Management and Construction (DPMC) in accordance with the provisions of the classification statute (N.J.S.A. 52:35-1, *et seq.*). In the case of a single bid for all of the work, the bidder shall include in the bid the names of its principal subcontractors, if applicable, who must be DPMC prequalified also.

**IB5.4** Each bidder is required to make a good faith effort to meet the subcontracting targets of awarding a total of twenty-five (25) percent of the value of this contract to SBE firm as more fully described in Appendix C known as “Exhibit B” in the Bid Proposal Form. Only SBE firms properly registered as such with the State of New Jersey Small Business Set Aside Program through the Division of Revenue and Enterprises Services will be considered in determining whether the bidder has met the contract goals. A database of registered SBE firms is available at:

<http://www.nj.gov/njbusiness/contracting/services/njsavi/>

**IB5.5** At the time of the bid due date, the bidder and the subcontractors must be registered in accordance with “The Public Works Contractor Registration Act” (N.J.S.A. 34:11-56.48 *et seq.*) All questions regarding registration should be addressed to:

Contractor Registration Unit New  
Jersey Department of Labor and  
Workforce Development  
Division of Wage and Hour Compliance  
P O Box 389  
Trenton, New Jersey 08625-0389  
Telephone: 609-292-9464  
Fax: 609-633-8591

**IB6. Deposit and Bid Bond**

**IB6.1** The Proposal, when submitted, shall be accompanied by a bid bond satisfactory to the SU, certified check or cashier’s check for the sum of not less than ten percent (10%) of the price submitted for the base bid plus all the Add Alternates. The Bid Bond shall be properly filled out, signed, and witnessed

**IB6.2** The Bid Bond shall be accompanied by a copy of the power of attorney executed by the Surety Company or companies. The power of attorney shall set forth the authority of the attorney-in-fact who has signed the bond on behalf of the surety company to bind the company and shall further certify that such power is in full force and effect as of the date of the bond.

**IB6.3** If the bidder whose proposal is accepted is unable to provide the performance and payment bonds or fails to execute a contract, then such bidder and the bid bond surety,

where applicable, shall be obligated to pay to SU the difference between the amount of the bid and the amount which SU contracts to pay another party to perform the work. The bidder and the surety shall pay, upon demand, the entire amount of SU's difference in cost. Should there be a deficiency in excess of the bid deposit; the bidder shall make immediate payment to SU for any such deficiency. Nothing contained herein shall be construed as a waiver of any other legal remedies that SU may have against the contractor.

## **IB7. Performance and Payment Bond**

**IB7.1.** The successful bidder shall furnish, within ten calendar days after the intent to award letter, both a performance bond substantially in statutory form required by N.J.S.A. 2A:44-147 in an amount equal to one hundred percent (100%) of the total contract price as security for the faithful performance of this contract and a payment bond in statutory form in amount equal to one hundred percent (100%) of the contract price as security for the payment of all persons and firms performing labor and furnishing materials in connection with this contract. The performance bond and the payment bond may be combined or in separate instruments in accordance with law. No contract shall be executed unless and until each bond is submitted to and approved by SU. The surety must be presently authorized to do business in the State of New Jersey.

**IB7.2.** The cost of bonds shall be paid for by the Contractor.

**IB7.3.** If at any time SU, for justifiable cause, is dissatisfied with any surety which has issued or proposes to issue a performance or payment bond, the contractor shall, within ten calendar days after notice from SU to do so, substitute an acceptance bond (or bonds). The substituted bond(s) shall be in such form and sum and executed by such other surety or sureties as may be satisfactory to SU. The premiums on such bond(s) shall be paid by the contractor.

No contract shall be executed and/or no payment made under a contract until the new surety or sureties shall have furnished such an acceptable bond to SU.

**IB7.4.** Bonds must be legally effective as of the date the contract is signed. Each must indicate the contractor's name exactly as it appears on the contract. Current attorney-in-fact instruments and financial statement of the surety must be included with the bonds. Bonds must be executed by an authorized officer of the surety. Bonds furnished under this section shall be issued by a surety that meets the standards set forth in N.J.S.A. 18A:64-68 et seq. including the requirement that the surety shall hold a current certificate of authority issued by the United States Secretary of Treasury, pursuant to 31 U.S.C. section 9305, that is valid in the State of New Jersey as listed annually in the United States Treasury Circular 570.

The Payment and Performance Bond shall be accompanied by a completed "Surety Disclosure Statement and Certification" substantially in the form prescribed in N.J.S.A. 18A:68-68 (e) and executed by the authorized representative for the Surety.

The "Surety Disclosure Statement and Certification" form is attached to the Bid Proposal Form known as "Exhibit A".

## **IB8. Addendums and Interpretations**

**IB8.1.** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be provided to any bidder unless such interpretation is made in writing to all prospective bidders prior to the opening of bids. Any such interpretations must be identified in bid proposals submitted. Any interpretations which are not entered in accordance with this provision shall be unauthorized and not binding upon SU.

**IB8.2.** Every request for an interpretation relating to clarification or correction of the plans, specifications, or other bid documents must be made in writing, addressed to SU. Any and all interpretations, clarifications or corrections and any supplemental instructions must be issued by SU in the form of written addendums. The notice of these addendums will be publicly advertised and notification sent to all prospective bidders not later than seven (7) business days prior to the date of the opening of bids. All addendums issued shall become part of the contract documents and should be acknowledged in all bid proposals. Failure of a bidder to acknowledge receipt of all such addendums and interpretations by the time of bid opening could result in its proposal being considered non-responsive, at the option of SU.

**IB8.3.** Each bidder shall be responsible for thoroughly reviewing the contract documents prior to the submission of bids. Bidders are advised that no claim for expenses incurred or damages sustained on account of any error, discrepancy, omission, or conflict in the contract documents shall be recognized by SU unless, and only to the extent that, a written request for interpretation, clarification or correction has been submitted in compliance with Section IB8.2 and provided the matter has not been addressed by SU through the issuance of an addendum interpreting, clarifying or correcting such error, discrepancy, omission or conflict.

## **IB9. Assignments**

**IB9.1.** The contractor shall not assign all or any part of this contract without written consent of SU. Money due (or to become due) the contractor hereunder shall not be assigned for any purposes whatsoever.

## **IB10. Federal Excise Taxes and State Sales Tax**

**IB10.1.** In general, bidders, in preparing bids, must take into consideration applicable Federal and State tax laws.

**IB10.2.** Under Chapter 32 of the Internal Revenue Code, an exemption certificate must be on file with the Director of the Division of Purchase and Property (Number 22-75-005).

**IB10.3.** Materials, supplies or services for exclusive use in erecting structures or buildings or otherwise improving, altering or repairing all SU-owned property are exempt from the State sales tax.

**IB10.4.** Bidders must determine the current status and applicability of any tax laws, and the contractor may make no claim based upon any error or misunderstanding as to the applicability of any tax laws.

**IB10.5.** Purchases or rentals of equipment are not exempt from any tax under the State Sales Tax Act.

#### **IB10.6 SET-OFF FOR STATE TAX**

Pursuant to P.L. 1995, c 159, and notwithstanding any provision of the law to the contrary, whenever any taxpayer under contract to provide goods or services or construction projects to the State of New Jersey or its agencies or instrumentality, including the legislative and judicial branches of State government, is entitled to payment for those goods or services at the same time a taxpayer, partner or shareholder of that entity is indebted for any State tax, the Director of Taxation shall seek to set off so much of that payment as shall be necessary to satisfy the indebtedness.

The amount set off shall not allow for the deduction of any expenses or other deductions which might be attributable to the taxpayer, subject to set-off under this act. The Director of the Division of Taxation shall give notice of the set-off to the taxpayer, partner or shareholder and provide an opportunity of a hearing within 30 days of such notice under the procedures for protests established under R.S. 54:49-18. No request for conference, protest, or subsequent appeal to the Tax Court from any protest under this section shall stay the collection of the indebtedness. Interest that may be payable by the State, pursuant to P.L. 1987, c 184 (c.52:32- 32 et seq.) to the taxpayer shall be stayed.

#### **IB11. Restrictive Specifications**

**IB11.1.** Should any bidder determine, before the bid due date, that any portion of the specifications or drawings specify a particular product which can be provided by only one supplier or manufacturer, with the result that competitive prices are not available, the bidder shall immediately notify SU, in writing, of such fact.

**IB11.2.** If such notice is not given in a timely manner, it shall be assumed that the bidder has included the estimate of such sole source in the bid. However, if SU is notified in a timely manner of the sole source of supply or manufacture, SU may order the product re-bid or take other lawful action.

#### **IB12. Offer of Gratuities**

**IB12.1.** Bidders are advised that the laws of New Jersey (N.J.S.A. 52:34-19) make it a misdemeanor to offer, pay or give any fee, commission, compensation, gift or gratuity to any person employed by SU or any other State Agency. Also, Executive Order #189 (1988) requires that all requests for proposals and contracts issued by the State specify prohibitions on vendor (contractor) activities, the violation of which shall render the vendor liable to ineligibility for

State contracts, pursuant to the debarment procedures set forth in N.J.A.C. 17:19-3.1 *et seq.* These prohibited activities include the following:

- a.** No vendor shall pay, offer to pay, or agree to pay, either directly or indirectly, any fee, commission, compensation, gift, gratuity, or other thing of value of any kind to any State officer or employee or special State officer or employee, as defined by N.J.S.A. 52:34D-13b. and e., in the Department of Treasury or any other agency with which such vendor transacts or offers or proposes to transact business, or to any member of the immediate family, as defined by N.J.S.A. 52:13D-13i., of any such officer or employee, or any partnership, firm, or corporation with which they are employed or associated, or in which such officer or employee has an interest within the meaning of N.J.S.A. 52:13D-13g.
- b.** The solicitation of any fee, commission, compensation, gift, gratuity or other thing of value by any State officer or employee or special State officer or employee from any State vendor shall be reported in writing forthwith by the vendor to the Attorney General and the State Ethics Commission.
- c.** No vendor may, directly or indirectly, undertake any private business, commercial or entrepreneurial relationship with, whether or not pursuant to employment, contract or other agreement, express or implied, or sell any interest in such vendor to, any State officer or employee or special State officer or employee having any duties or responsibilities in connection with the purchase, acquisition or sale of any property or services by or to any State agency or any instrumentality thereof, or with any person, firm or entity with which he is employed or associated or in which he has an interest within the meaning of N.J.S.A. 52:13D-13g.

Any relationships subject to this provision shall be reported in writing forthwith to the State Ethics Commission, which may grant a waiver of this restriction upon application of the State officer or employee or special State officer or employee upon a finding that the present or proposed relationship does not present the potential, actuality or appearance of a conflict of interest.

- d.** No vendor shall influence, or attempt to influence or cause to be influenced, any State officer or employee or special State officer or employee in his official capacity in any manner which might tend to impair the objectivity or independence of judgment of said officer or employee.
- e.** No vendor shall cause or influence, or attempt to cause or influence, any State officer or employee or special State officer or employee to use, or attempt to use, his official position to secure unwarranted privileges or advantages for the vendor or any other person.
- f.** The provisions cited above in paragraphs IB12.1.a. through e. shall not be construed to prohibit a State officer or employee or special State officer or employee from receiving gifts from or contracting with vendors under the same

terms and conditions as are offered or made available to members of the general public subject to any guidelines the State Ethics Commission may promulgate under paragraph IB12.1.c. above.

**END OF INSTRUCTIONS TO BIDDERS**

# **General Conditions for Construction**

**STOCKTON UNIVERSITY**



**GENERAL CONDITIONS  
FOR CONSTRUCTION**



## **Table of Contents - General Conditions**

**Page**

<b>Article 1:</b>	<b>Contract Documents</b>	<b>5</b>
	1.1 Definitions	5
	1.2 Intent of the Contract	8
<b>Article 2:</b>	<b>Owner</b>	<b>11</b>
	2.1 SU's Right to Stop Work	11
	2.2 SU's Right to Terminate	11
	2.3 Owner's Representation	12
	2.4 Review of Contractor Claims and Disputes	13
	2.5 Termination by the Owner for Convenience	14
<b>Article 3:</b>	<b>A/E</b>	<b>16</b>
	3.1 The A/E	16
	3.2 Administration of the Contract	16
	3.3 Inspections – Substantial and Final Completion	16
	3.4 Punch List Coordination	17
<b>Article 4</b>	<b>The Contractor</b>	<b>17</b>
	4.1 Review of Contract	17
	4.2 New Jersey Prevailing Wage Act	18
	4.3 Supervision and Construction Procedures	19
	4.4 Responsibility for the Work	20
	4.5 Permits – Laws – Regulations	21
	4.6 Storage, Cleaning and Final Clean Up	22
	4.7 Cut-Overs, Interruptions to Existing Buildings	23
	4.8 Non-Regular Workdays	23
	4.9 Drawings, Specifications, Shop and As-Built Drawings	23
	4.10 Samples	26
	4.11 Miscellaneous Drawings, Charts and Manuals	26
	4.12 Openings – Channels –Cutting and Patching	26
	4.13 Tests	27
	4.14 Equipment – Materials	28
	4.15 Substitutions	29
	4.16 Subcontractor Approvals	30
	4.17 Soil Borings	30
	4.18 Protection of Contractor's Property	30
	4.19 Patents	30
	4.20 Right to Audit	31
	4.21 Contract Closeout	32
<b>Article 5:</b>	<b>Contractor for General Construction: Special Responsibilities</b>	<b>35</b>
	5.1 Unique Role of Responsibility - Staffing	35
	5.2 Control and Coordination of Construction	35

5.3	Layout and Dimensional Control –Surveying	35
5.4	Construction Access Routes	36
5.5	Project Sign	36
5.6	Dust Control	36
5.7	Repair of Finished Surfaces, Applied Finishes, Glass	36
5.8	Photographs	37
5.9	Warranties	37
5.10	Security Services	38
<b>Article 6:</b>	<b>Temporary Facilities, Utilities and Services</b>	<b>38</b>
6.1	Field Offices	38
6.2	Temporary Storage, Staging and Shelter Structures	39
6.3	Temporary Construction Operations/Services Facilities	39
6.4	Temporary Toilet Facilities	39
6.5	Temporary Drives and Walks	40
6.6	Temporary Water	41
6.7	Temporary Light and Power	42
6.8	Temporary Heat	42
<b>Article 7:</b>	<b>Subcontractors</b>	<b>44</b>
7.1	Contractor – Subcontractor Relationship	44
<b>Article 8:</b>	<b>Relationship between Owner and Prime Contractor</b>	<b>46</b>
8.1	Owner’s Right to Perform Work	46
8.2	Mutual Responsibility	46
8.3	Substantial Completion	47
8.4	Contractor’s Claims for Damage	48
8.5	SU’s Right to Accelerate	48
8.6	Time of Completion - Delay –Liquidated Damages	48
8.7	No Damage for Delay	50
8.8	Indemnification	50
8.9	Contract Time - Notice to Proceed	51
<b>Article 9:</b>	<b>Project Schedule</b>	<b>52</b>
9.1	General Requirements	52
9.2	Breach	53
9.3	Progress Schedule	53
9.4	Critical Path Method (CPM)	57
<b>Article 10:</b>	<b>Payments</b>	<b>63</b>
10.1	Contractor Payment Process	63
10.2	Invoices	66
10.3	Interest	67
10.4	Allowances	67
<b>Article 11:</b>	<b>Uncovering and Correction of Work</b>	<b>70</b>

11.1	Uncovering of Work	70
11.2	Correction of Work	70
11.3	Acceptance of Defective or Non-Conforming Work	71
<b>Article 12:</b>	<b>Protection of Persons and Property</b>	<b>71</b>
12.1	Safety Precautions and Programs	71
12.2	Safety of Persons and Property	72
12.3	Construction Safety Act	73
12.4	Emergencies	73
<b>Article 13:</b>	<b>Insurance and Indemnity and Bond Requirements</b>	<b>74</b>
13.1	Contractor Insurance Requirements	74
13.2	Insurance to be carried by SU	76
13.3	Bond Requirements	76
<b>Article 14:</b>	<b>Changes in the Work</b>	<b>78</b>
14.1	Changes to Contract	78
14.2	Requests for Equitable Adjustment	78
<b>Article 15:</b>	<b>Assignment of Antitrust Claim(s)</b>	<b>80</b>
15.1	Assignments of Antitrust Claim(s)	80
<b>Article 16:</b>	<b>Affirmative Action Requirements</b>	<b>81</b>
16.1	Policy Statement	81
16.2	Mandatory Language	82
<b>Article 17:</b>	<b>Other Statutory/Mandatory Requirements</b>	<b>86</b>
17.1	Political Contributions Disclosure	86
17.2	Business Registration	87
17.3	Conflict of Interest	87

## GENERAL CONDITIONS

### 1. ARTICLE 1 -- CONTRACT DOCUMENTS

#### 1.1 Definitions for the purpose of this Contract:

- 1.1.2 A/E: The Architectural or the Engineering (A/E) consultant engaged by SU to act as the authorized representative of the contracting officer.
- 1.1.3 Where "as shown," "as indicated," "as detailed," or words of similar import are used, it shall be understood that the reference is made to the Drawings accompanying this Contract unless stated otherwise.  
The word "provided" as used herein shall be understood to mean "provided complete in place," that is, "furnished and installed."
- 1.1.4 Addendum: A document, issued by SU prior to opening of bids, which supplements, revises or modifies the solicitation document(s) furnished for bidding purposes.
- 1.1.5 Claims: Differences between SU and a Contractor concerning extra Work, alleged errors or omissions in the Specifications or Drawings, unreasonable delays, damages to Work, informal suspensions or interference by SU personnel, and like matters.
- 1.1.6 Change Order Request: A request for equitable adjustment made by the Contractor in response to written direction by the Associate Vice President for Operations or his authorized representative(s) pursuant to Article 14 entitled "Changes to Contract."
- 1.1.7 Change In Work: Changes to the original design, Specifications, or Scope of Work as required by the SU, prior to agreement on adjustment, if any, in the Contract Sum or Contract time, or both.
- 1.1.8 Contract Documents: Consists of the Contract between SU and Contractor; General and Supplementary Conditions to the Contract, Plans, Drawings, Specifications, Addenda issued prior to execution of the Contract, or other documents listed in the Contract which are attached hereto or incorporated herein by reference, and Modifications to the Contract issued after execution of the Contract. A Modification is: (i) a written amendment to the Contract signed by both parties, (ii) a Change Order, (iii) a Construction Change directive or (iv) a written order for minor change to the Work issued by the A/E, together with any such plans, drawings, specifications, schedules, or other documents which may be

produced pursuant to or derived from this Contract and which are intended to bind the Contractor hereunder.

**1.1.19** Contract Limit Lines: Refers to those lines shown on the contract drawings which limit the boundaries of the project, and beyond which no construction Work or activities shall be performed by the Contractor unless otherwise noted on the drawings or specifications.

**1.1.10** Contractor: The person or persons, partnership or corporation named as Contractor in this Contract, operating as an independent Contractor and not as an agent of the SU in the performance of its functions. Whether referred to as "Contractor," "prime Contractor," "prime," "separate Contractor," or "single Contractor," it shall be understood to mean Contractor. It does not include suppliers or material men.

**1.1.11** Costs: Costs shall mean: (i) the cost of labor for construction workers directly employed by the Contractor to perform construction of the Work; (ii) costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed; (iii) rental costs of machinery and equipment, exclusive of hand tools, whether rented from Contractor or others; and (iv) payment made to subcontractors in accordance with the requirements of the subcontract. The costs of supervision and field office personnel, specifically including superintendents and labor foreman, are **only** considered to be part of the Overhead calculation for the purpose of computing an equitable adjustment under Article 14.

**1.1.12** Department: As used in this Contract shall mean the Facilities Planning and Construction Department of SU.

**1.1.13** Associate Vice President for Facilities & Construction: means the Associate Vice President for Facilities & Construction or his designated representative(s) who is authorized to administer the design, engineering and construction of all SU buildings and facilities. The Associate Vice President for Facilities & Construction is the delegated officer representing SU personally or through authorized representatives in all relationships with Contractors, consultants and A/E's. This includes a duly appointed successor or an authorized administrative contracting officer acting within the limits of his or her authority.

The Associate Vice President for Facilities & Construction is the interpreter of the conditions of the Contract and the judge of its performance. The Associate Vice President for Facilities & Construction shall not take arbitrary positions benefiting either

SU or the Contractor, but shall use the powers specified under the contract to enforce its faithful performance by both.

- 1.1.14** Drawings: Shall mean the graphic and pictorial portions of the Contract Documents, showing design, location and dimensions of the Work, generally including any plans, elevations, sections, details, schedules and contemplated by this Contract.
- 1.1.15** Final Completion: The point in time when SU determines the Work is complete.
- 1.1.16** Notice: A written directive or communication served on the Contractor to act or perform Work or carry out some other contractual obligation. It shall be deemed to have been duly served if delivered to an individual or member of the firm or entity or to an officer of the corporation for whom it was intended. This includes delivery by courier or registered or certified mail to the business address cited in the Contract Documents.
- 1.1.17** Owner means Stockton University.
- 1.1.18** Project: A general term for identification of the total construction of the Work performed under the Contract. It includes the Work and all administrative aspects required to fully satisfy the contract requirements.
- 1.1.19** Public Contract: Any contract or agreement entered into by Stockton University or any instrumentality of SU to purchase goods, services, or both.
- 1.1.20** SU: The abbreviation for Stockton University.
- 1.1.21** Site, Construction Site or Project Site refers to the geographical area of the entire SU facility or property at which the Work under the contract is to be performed.
- 1.1.22** Specifications: All written requirements for materials, equipment, systems, standards and Workmanship of the Work, and instructions or other documents in or pursuant to this Contract pertaining to the method of performing the Work and the results to be obtained.
- 1.1.23** Wherever in the Specifications or upon the Drawings the words "directed," "required," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the

"direction," "requirement," "order," "designation," or "prescription" of the Associate Vice President for Operations is intended. Similarly, the words "approved," "acceptable," "satisfactory," or words of like import shall mean "approved by," or "acceptable to," or "satisfactory to" the Associate Vice President for Operations unless otherwise expressly stated.

- 1.1.24** Subcontractor: The person or persons, partnership, or corporation that enters into a contract with the Contractor for the performance of Work under this Contract, or the subcontractors of any tier of such individual or corporation.
- 1.1.25** Substantial Completion: The date the building or facility is operational or capable of serving its intended use even though all permanent installations are not in place. The determination as to the date of substantial completion shall be made pursuant to Article 8.3 of these General Conditions.
- 1.1.26** Summary of Work: a description of the scope of work to be performed by the Contractor and included in the project Specifications as part of the Contract Documents.
- 1.1.27** Systems Assurance: The totality of all quality control and assurance requirements specified in the Contract Documents.
- 1.1.28** Unit Schedule Breakdown: A detailed list of the Work activities required for project construction, other elements associated with fulfilling the requirements of the contract (bonds, insurance, etc.), major items of material or equipment, and the prices associated with them.
- 1.1.29** Work: All efforts as are required by the Contractor as they relate to the Contract Documents, including but not limited to, management, supervision, labor, material and equipment as are necessary to fulfill the Contractor's obligations under this agreement.

## **1.2 Intent of the Contract**

- 1.2.1** The Drawings and Specifications of the Contract are intended to require the Contractor to provide for everything reasonably necessary to accomplish the proper and complete finishing of the Work. All Work and materials included in the Specifications and not shown on the Drawings, or shown on the Drawings and not in the Specifications, shall be performed and/or furnished by the Contractor as if described in both. Any incidental materials and/or Work not specified in the Drawings and/or the Specifications which is, nevertheless, necessary for the true

development thereof and reasonably inferable there from, the Contractor shall understand the same to be implied and required, and shall perform all such Work and furnish all such materials as if particularly delineated or described therein. Should there be an obvious error or omission in the Drawings or Specifications, it shall be the Contractor's responsibility to complete the Work as reasonably required, consistent with the intent of such Drawings and Specifications as may be interpreted by SU.

- 1.2.2** Each Contractor shall abide by and comply with the true intent and meaning of the Drawings, the Specifications and other Contract Documents taken as a whole, and shall not avail itself of any omission or discrepancy appear or should any doubt exist, or any dispute arise as to the true intent and meaning of the Drawings, Specifications or other Contract Documents, or should any portion thereof be obscure, or capable of more than one interpretation, the Contractor shall immediately notify the A/E and seek correction or interpretation thereof prior to commencement of affected Work. The A/E shall issue a written interpretation with reasonable promptness. However, the Contractor shall make no claim against SU for expenses incurred or damages sustained on account of any error, discrepancy, omission, or conflict in the Contract Documents unless and only to the extent that the Contractor has submitted a written request for interpretation, clarification, or correction to the A/E and SU, and such written request has been received by the A/E and SU at least seven (7) working days prior to the date fixed for the opening of bids.

In addition, such claim shall only be recognized by SU if the matter raised by the written request has not been addressed by SU through the issuance of an addendum interpreting, clarifying, and/or correcting such error, discrepancy, omission or conflict. In case of dispute, the matter shall be referred to SU for a decision.

- 1.2.3** Each and every provision required by law to be inserted in the Contract Documents shall be deemed to have been inserted therein. If any such provision has been omitted or has not been correctly inserted, then upon application of either party, the contract shall be physically amended to provide for such insertion or correction.
- 1.2.4** The organization of the specifications into divisions, sections and articles, and the arrangement of Drawings shall not be construed by the Contractor as being intended to divide or allocate the Work among subcontractors in any manner or to establish the extent of the Work to be performed by any trade.



- 1.2.5** Unless otherwise provided in the Contract Documents, SU will furnish to the Contractor Drawings and Specifications, and additional instructions by means of supplemental Drawings as otherwise necessary for the proper execution of the Work at the Contractor's expense.
- 1.2.6** The Contractor shall do no Work without proper drawings and instructions, unless written authorization to proceed from the Associate Vice President for Operations is received by the Contractor. In giving such additional instructions, SU may make minor changes in the Work, not involving extra cost.
- 1.2.7** All drawings referred to, and any supplementary details as may be furnished and approved from time to time as the Work progresses, are understood as being included as part of the Contract.
- 1.2.8** The sequence of precedence pertaining to interpretation of Contract Documents is as follows:
- a. Executed Contract
  - b. Addenda/Bulletins/Instructions/Proposal Form
  - c. Supplemental General Conditions
  - d. Specifications, including General Conditions
  - e. Drawings, in the following order of precedence:
    - (1) Notes on Drawings
    - (2) Large scale details
    - (3) Figured dimensions
    - (4) Scaled dimensions

Where there may be a conflict in the Specifications or Drawings not resolvable by application of the provisions of this paragraph, then the more expensive labor, materials, or equipment shall be assumed to be required and shall be provided by the Contractor.

- 1.2.9** On all Work involving alterations, remodeling, repairs or installation within existing buildings, it shall be the responsibility of the Contractor, by personal inspection of the existing building, facility, plant or utility system, to ascertain the accuracy of any information given which may affect the quantity, size and/or quality of materials required for a satisfactorily completed contract, whether or not such information is indicated on the Drawings or included in the Specifications. The Contractor shall include the costs of all material and labor required to complete the Work based on reasonably observable conditions.

**2. ARTICLE 2 – OWNER**

**2.1 SU's Right to Stop Work**

**2.1.1** If the Contractor fails to correct defective Work or persistently fails to carry out the Work in accordance with the Contract Documents, SU's authorized representative may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated. Stoppage of the Work of one or more Contractors, however, shall not render SU liable for claims of any kind, including delays sustained by one Contractor as the result of the stoppage of the Work of another Contractor.

**2.2 SU's Right to Terminate**

**2.2.1** If the Contractor persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly the orderly progress of the Work in accordance with the approved schedule; if the Contractor fails to make prompt payment to subcontractors or for materials or labor; or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; or if the Contractor or any of its subcontractors is guilty of a substantial violation of a provision of the Contract Documents or otherwise defaults or neglects to carry out the Work in accordance with the Contract Documents or directives from SU, then SU may, without prejudice to any right or remedy, and after giving the Contractor and its surety three Working days written notice to forthwith commence and continue correction of such default or neglect with diligence and promptness, terminate the employment of the Contractor by the issuance of a written notice to that effect to the Contractor and its surety should both or either of them fail to comply with the demands of the original above mentioned three day notice.

**2.2.2** Upon such termination, SU may take possession of the site and of all the materials, equipment, and tools on the site, and may finish the Work by whatever method SU may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished. The person or firm designated to carry out such Work will be paid as authorized by SU, without entailing any personal liability upon the officers of SU issuing certificates or making such payments.

**2.2.3** If the unpaid balance of the contract sum exceeds the cost of finishing the Work (including liquidated damages for delays and all consequential damages sustained by SU originating from such breach of contract), such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and/or its surety shall pay the difference to SU, and this obligation shall survive the termination of the contract.

**2.2.4** If, within three (3) Working days following receipt of Notice of Termination by the Contractor's surety (the issuer of the performance and payment bonds), the said surety exercises its right to take over the Work and expeditiously commences to prosecute the same to completion, SU shall permit the surety to do so under the following terms and conditions:

- a. Evidence of the surety's intention to take over and complete the Contract shall be in writing over the signature of an authorized representative and served upon SU within three (3) Working days after receipt by the surety of the Notice of Termination.
- b. The execution of a written agreement between SU and the surety, whereby the latter undertakes and assumes the obligation to complete the balance of the Work of its defaulting Contractor in accordance with the terms and conditions of the Contract between SU and Contractor agreement, is to be performed by a substituted Contractor satisfactory to SU at the surety's sole cost and expense. Provision for payments to the surety or to the substituted Contractor of unpaid contract balances, if any, then in the hands of SU.
- c. The agreement between SU and the surety shall also expressly provide that the surety shall not be relieved from any of its obligations under the performance and payment bonds.
- d. All current obligations for labor and materials incurred and outstanding by the defaulting Contractor on this Project shall be paid without delay, subject to allowance of reasonable time to verify such claims by the surety.
- e. The parties expressly understand and agree that this agreement is without prejudice and is subject to such rights and remedies as either party (including the Contractor) may elect to assert after final completion and acceptance of the Work.

## **2.3 Owner's Representation**

**2.3.1** SU will be represented on the construction site by architects, engineers and project inspectors or other designated representatives. This technical staff may conduct on-site inspections, maintain logs of construction progress and problems encountered, review and process Contractor's invoices including stored materials on site, attend job meetings, serve as liaison between the A/E and Contractors, prepare and submit reports on special problems associated with the job, evaluate and process Change Orders, and

generally remain fully cognizant and informed by the Contractor of every aspect of ongoing construction. The Owner's representatives have only those duties which are required of an owner; responsibility for completion of this Project, pursuant to the Contract Documents, remains that of the Contractor(s).

## **2.4 Review of Contractor Claims and Disputes**

**2.4.1** Upon presentation by the Contractor of a request in writing, the Owner may review any decision or determination of SU representative or the A/E as to any claim, dispute or any other matter in question relating to the execution or progress of the Work or the interpretation of the Contract Documents.

Consistent with the intent of this Contract, the Owner may schedule a conference for the purpose of settling or resolving such claims, disputes or other matters. Where such a conference is conducted, the Contractor shall be afforded the opportunity to be heard on the matter in question.

Following review of the Contractor's request, SU and the Contractor may settle or resolve the disputed matter, provided however that any such settlement or resolution shall be subject to all requirements imposed by law, including where applicable, the New Jersey Contractual Liability Act (NJSA 59:13-1 *et seq.*).

**2.4.2** The following is the Claim and Dispute process. This process assumes continued disagreement at each step. Agreement can be reached at any point in this process.

1. Contractor issues a Request for Change Order to the designated SU representative & A/E in accordance with the terms and timing stated in Article 14 - CHANGES IN THE WORK
2. SU authorized representative issues preliminary response rejecting the claim in whole or in part within 10 days
3. Contractor notifies SU representative & A/E that the initial claim still stands within 10 days
4. A/E issues the Architect's final determination within 10 days
5. Contractor notifies the authorized SU representative & A/E that the initial claim still stands within 10 days
6. SU issues the final determination which is binding but subject to appeal in Appellate Court venue in Atlantic County, State of New Jersey.

## **2.5 Termination By The Owner For Convenience**

**2.5.1** The Owner may, at any time, terminate the Contract in whole or in any part for SU's convenience and without cause when the Owner in his/her sole discretion views termination is in the public interest.

**2.5.2** Upon receipt of an order of Termination for Convenience, the Contractor shall not proceed with any item of Work, which is not specified in the Order of Termination. The Contractor shall complete all items of Work specified in the Termination order. Such Work shall include punch list items and all Work necessary to ensure the safety of the public, to properly secure existing Work already constructed or partially constructed and to secure the Project site.

This Work so ordered shall be performed in accordance with the Contract Documents, and may include items of Work not in the original Contract. The Contract shall be considered substantially complete upon completion and acceptance of all items of Work specified in the Order, except punch list items. After completion of the punch list items and all documents required by the Contract, the Contract shall terminate upon issuance of a Final Certificate and Payment. The Owner reserves the right to declare in default a Contractor whom fails to carry out the conditions set forth in an Order of Termination for Convenience.

When SU orders termination of the Contract for Convenience, all completed items of Work as of that date will be paid for at the Contract price. Payment for partially completed Work will be paid for at agreed prices. Items which are eliminated in their entirety by such termination will be paid for only to the extent provided in Paragraph 2.5.3. Payment for new items, if any, will be made either at agreed prices or in accordance with Article 14.

Materials obtained by the Contractor for the Work but which have not been incorporated therein may, at the option of SU, be purchased from the Contractor at actual cost delivered to a prescribed location, or otherwise disposed of as mutually agreed.

Within 60 days of the effective termination date, the Contractor shall submit claims for additional costs actually incurred, not covered above or elsewhere in the Contract. Such claims may include such cost items as reasonable mobilization efforts, overhead expenses attributable to the Work performed, and subcontractor costs not otherwise paid for, actual idle labor cost if Work is stopped in advance of the termination date. Costs, which are prohibited under

provisions of the Contract and anticipated profits on Work not performed, are not allowed.

- 2.5.3** If acceptable material is ordered by the Contractor for the eliminated item prior to the date of notification of such elimination and if orders for such material cannot be canceled, it will be paid for at the actual cost to the Contractor. In such case, the material paid for becomes the property of SU and the actual cost of any further handling will be paid for. If the material is returnable to the vendor and if SU so directs the material shall be returned and the Contractor will be paid for the actual cost or charges made by the vendor for returning the material. The actual costs of handling returned material will be paid.

The actual costs or charges will be computed in the same manner as if the Work were to be paid for as provided in the Contract. However, no profit will be allowed.

**2.5.4** Post Termination Obligations

1. Cancel, or if so directed by the SU, transfer to SU all or any of the commitments and agreements made by Contractor relating to the Project, to the extent same are cancelable or transferable by Contractor.
2. Transfer to SU the manner, to the extent, and at the time directed by SU, all supplies, materials, and other property produced as a part of, or acquired in the performance of, Contractor's services in connection with the Project; and
3. Take such other actions as SU may reasonably direct.

**2.5.5** Ownership of Documents

All reports, analyses, data, Drawings, opinions and other material (collectively the "Documents") prepared and furnished by the Contractor under or for the Project shall be the property of SU whether the Project is completed or not, and shall be delivered to the SU on the earlier of (1) the Substantial Completion Date, or (2) the date of termination of this Agreement for any reason prior to Final Completion of the Project. If the Agreement is terminated for any reason prior to Final Completion of the Project, the Documents may be used by SU and its agents, employees, representatives and assigns, in whole or in part, or in modified form, for all purposes the SU may deem advisable in connection with completion and maintenance of and additions to the Project, without further employment of, or payment of any compensation to the Contractor.

**3. ARTICLE 3 -- A/E**

**3.1 The A/E**

**3.1.1** When SU provides full supervision and management of a project, the A/E's role is that of consultant to SU.

**3.2 Administration of the Contract**

**3.2.1** The A/E will provide a certain portion of the administration of the contract as hereinafter described.

**3.2.2** The A/E will monitor the execution and progress of the Work and will immediately notify the Owner of any related problems. The A/E will at all times be provided access to the Work. The Contractor shall provide facilities for such access so as to enable the A/E to perform its functions under the Contract Documents.

**3.2.3** The A/E will not be responsible for, nor has control or charge of, construction means, methods, techniques, sequences of procedures, or safety precautions and programs in connection with the Work. The A/E will not be responsible for, nor has control or charge of, the acts or omissions of the Contractors, subcontractors, or any of their agents or employees, or any other person performing any of the Work, but shall have the obligation to immediately inform the Owner of any inadequate performance of the project.

**3.2.4** The A/E has the authority to recommend rejection of Work which it believes does not conform to the Contract Documents. Whenever the A/E considers it necessary or advisable, it may request the Owner to provide special inspection or testing of the Work, whether or not such Work has been fabricated, installed or completed.

**3.2.5** The A/E will review, approve or take other appropriate action relating to Contractors' submittals, such as shop Drawings, product data and samples, to assure conformance with the design requirements and the Drawings and Specifications of the Work. Such actions shall be taken with reasonable promptness. Approval of a specific item shall not indicate approval of an assembly of which the item is a component.

**3.2.6** The A/E will periodically review the Contractors' as-built Drawings to ensure that they are up to date.

**3.3 Inspections - Substantial and Final Completion**

**3.3.1** The A/E, accompanied by the Contractor and the Owner's authorized representative, will conduct site inspections to determine the dates of Substantial and Final Completion and will receive and

compile written warranties and all other requisite documents assembled and supplied by the Contractor. The A/E will forward these documents to the Owner for review and certify final contract acceptance.

**3.4 Punch List Coordination**

**3.4.1** The Owner's authorized representative shall coordinate and conduct a project inspection for the development of a comprehensive punch list. The punch list participants will include the Contractor, A/E and the Owner's authorized representative.

**4. ARTICLE 4 – THE CONTRACTOR**

The Contractor shall perform the Work in accordance with the Contract Documents. This shall include, but not be limited to, the following requirements:

**4.1 Review of Contract**

**4.1.1** The Contractor has the duty to do the following: to thoroughly examine and become familiar with all the Contract Documents, including but not limited to the complete set of Drawings and Specifications of the entire Project; to note cases where it is specified that certain work or materials or both are to be omitted by one Contractor and to be furnished or installed by another; to carefully examine the site; to investigate and accurately determine the nature and location of the Work, the current equipment, labor and material conditions, and all matters which may in any way affect the Work or its performance. The Contractor is responsible to check and verify reasonably observable conditions outside the Contract Limit Lines to determine whether any conflict exists with the Work the Contractor is required to perform under the Contract. This includes a check on elevations, utility connections and other site data. As a result of such examination and investigation, the Contractor warrants and represents the full understanding of the intent and purposes of the Contract Documents and the Contractor's obligation thereunder and that the Contractor accepts responsibility for, and is prepared to execute and fulfill completely, by its construction work, the intent of the Contract, without exception and without reservation, at the price specified in the Contract.

**4.1.2** The Contractor shall carefully study and compare the Contract Documents during the progress of the Work and shall immediately report any error, inconsistency or omission to SU upon discovery. The Contractor shall immediately report any error, inconsistency or ambiguity detected during the course of the project to SU, and shall not continue with any Work which may be affected by such error until SU has had the opportunity to respond to and clarify the Work it wants performed in view of this information. Wherever any error, inconsistency or omission appears, it shall be disposed of pursuant to appropriate procedures set forth elsewhere herein.



- 4.1.3 Unless otherwise ordered in writing by the Owner, the Contractor shall perform no portion of the Work without approved Change Orders, approved shop Drawings, samples, or other approvals as may be applicable and required by the Contract Documents.
- 4.1.4 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, equipment, materials, tools, construction equipment and machinery, water, heat, utilities, transportation and other facilities and services necessary for the proper execution and completion of the Work, whether or not incorporated or to be incorporated in the Work.
- 4.1.5 The Contractor shall, at all times, enforce strict discipline and good order among its employees and shall not employ on the site any unfit person or anyone not skilled in the task assigned to him.
- 4.1.6 The Contractor shall be obligated to pay the prevailing wage rates as posted on the New Jersey Department of Labor's website and shall abide by the requirements of the State's Affirmative Action Program. The Contractor also shall be responsible to ensure that all principles of safety are carried out, as detailed in Article 12 of this document.

## 4.2 **New Jersey Prevailing Wage Act**

- 4.2.1 Each Contractor and subcontractor shall comply with the New Jersey Prevailing Wage Act Laws of 1963, Chapter 150, (N.J.S.A. 34:11-56.25 *et seq.*) and all amendments thereto, and this act is hereby made a part of every contract entered into on behalf of SU, except those contracts which are not within the contemplation of the act. Provisions of the act include the following stipulations and requirements:
  - a. All Workers employed in the performance of every contract in which the contract sum is in excess of \$2,000 and to which SU is a party shall be paid not less than the prevailing wage rate as designated by the Commissioner, Department of Labor or his or her duly authorized representative.
    - (1) Each Contractor and subcontractor performing public work for SU and which is subject to the provisions of the Prevailing Wage Act, shall post the prevailing wage rates for each craft and classification involved as determined by the Commissioner, Department of Labor. This posting shall include the effective date of any changes thereof, and shall be

displayed in prominent and easily accessible places at the site of the work or at such place or places as are used by the Contractor/subcontractor to pay workers' wages.

- (2) At the time of the bid due date, the bidder and the subcontractors must be registered in accordance with "The Public Works Contractor Registration Act" (N.J.S.A.34:11-56.48 et seq.). All questions regarding registration should be addressed to:

Contractor Registration Unit  
New Jersey Department of Labor and Workforce Development  
Division of Wage and Hour Compliance P O Box 389  
Trenton, New Jersey 08625-0389

Telephone: 609-292-9464  
Fax: 609-633-8591

- b. In the event it is found that any worker, employed by any Contractor or subcontractor covered by any contract in excess of \$2,000 for any public work to which SU is a party, has been paid a rate of wages less than the prevailing wage required by such contract, SU may terminate the Contractor's or subcontractor's right to proceed with the Work, or such part of the Work as to which there has been failure to pay required wages, and may otherwise prosecute the Work to completion.
- c. Nothing contained in the Prevailing Wage Act shall prohibit the payment of more than the prevailing wage rate to any worker employed on a public work.

### **4.3 Supervision and Construction Procedures**

**4.3.1** The Contractor shall supervise and direct the Work as skillfully and attentively as possible. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

**4.3.2** The Contractor shall employ a full-time competent person and necessary assistants, who shall be in attendance on the project site during the progress of the Work. The competent person shall represent the Contractor or Contractor's designated representative and all communications given to the competent person shall be as binding as if given to the Contractor. Important communications shall be

confirmed in writing. SU reserves the right to require a change in competent person if the competent person's performance, as judged by SU, is deemed to be inadequate. . -

The Contractor shall maintain email communication at the project site as well as at their home office.

**4.3.3** Each Contractor shall employ qualified competent craftsmen in their respective lines of Work.

**4.3.4** The various subcontractors shall likewise have competent project managers, superintendents and/or foremen in charge of their respective portions of the Work at all times. They shall not employ a person unfit or unskilled in the assigned area of Work. If it should become apparent that a subcontractor does not have its portion of the Work under control of a competent foreman, the responsible prime Contractor shall have the obligation to take appropriate steps to immediately provide proper supervision.

If, due to a trade agreement, standby personnel are required to supervise equipment installation or for any other purpose during the normal working hours of other trades, the Contractor normally required to provide the standby services shall evaluate and include the costs thereof in its bid price and shall provide said services without additional charge.

#### **4.4 Responsibility for the Work**

**4.4.1** The Contractor shall be responsible to SU and to any separate Contractors having a contract with SU on this Project, for the acts employees which injure, damage or delay such other Contractors in the performance of their work. This responsibility is not limited by the applicable provisions stated elsewhere in this document, but is in conjunction with and related to these provisions.

**4.4.2** Each Contractor shall be responsible for all damage or destruction caused directly or indirectly by its operations to all parts of the Work, both temporary and permanent, and to all adjoining property.

**4.4.3** Each Contractor shall, at its own expense, protect all finished Work liable to damage and keep the same protected until the project is completed and accepted. In the case of substantial completion accompanied by beneficial occupancy by SU, the Contractor's obligation to protect its finished work shall cease simultaneously with the occupancy of the portion or portions of the structure.

**4.4.4** Each Contractor shall defend, protect, indemnify and save harmless-SU and the A/E from all claims, suits, actions, damages

and costs of every name and description arising out of or resulting from the performance of the Contractor's Work and every tier of subcontractor working on the project under this Contract. This responsibility is not limited by the provisions of other indemnification provisions included elsewhere in this document.

**4.4.5** In order to protect the lives and health of its employees, the Contractor shall comply with all applicable statutes and pertinent provisions of the RSC Safety Manual and shall maintain accurate records of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work arising out of and in the course of employment on work under the contract. The Contractor alone shall be responsible for the safety, efficiency, and adequacy of its plant, appliances and methods, and for any damage or injury which may result from the Contractor's failure or improper construction, maintenance or operation.

**4.5 Permits - Laws – Regulations**

**4.5.1** Unless otherwise provided in the Contract Documents, SU will pay for DCA Construction Permit(s) and Special inspection(s) as may be required by the Department of Community Affairs (DCA). The Contractor shall provide in writing to SU all names, addresses, telephone numbers, email addresses, license numbers, and contact persons for all subcontractors who will be used on the project and are required to be listed on the DCA Construction Permit documents within three (3) days after issuance of the Notice of Award. accordance with the New Jersey Uniform Construction Code. No work requiring inspections and approval of construction code officials is to be covered or enclosed prior to inspection and approval by appropriate code enforcement officials.

**4.5.3** Soil conservation measures are to be in accordance with County Soil Conservation District requirements.

**4.5.4** All sewage disposal work shall conform to the regulations of the State's Department of Environmental Protection.

**4.5.5** SU will pay for all code inspections; however, it is each Contractor's responsibility to request inspections in a timely manner as to not delay the Work of the Project.

**4.5.6** Consistent with Section 4.4.4 of this document, each Contractor and every tier of subcontractor working on the project shall be responsible for and save harmless SU and A/E from all fines, penalties or loss incurred for, or by reason of, the violation of any municipal ordinance or regulation or law of the State while the said work is in progress.

- 4.5.7** All Contractors shall comply with the Federal Occupational Safety and Health Act of 1970 and all of the rules and regulations promulgated there under.
- 4.5.8** As a result of a finding by an appropriate finder of fact that a Contractor caused a substantial violation of a State, local or federal statute or regulation on said project, SU may declare the Contractor to be in default.
- 4.5.9** Prior to the start of any crane equipment operations, each Contractor shall make all necessary applications and obtain all required permits from the Federal Aviation Administration (F.A.A.). The sequence of operations, timing and methods of conducting the work shall be approved by the F.A.A. to the extent that it relates to its jurisdiction.
- 4.6 Storage, Cleaning and Final Clean Up**
- 4.6.1** Each Contractor shall confine its apparatus, the storage of its equipment, tools and materials, and its operations and workers to areas permitted by law, ordinances, permits, and contract limit as established in the Contract Documents, the rules and regulations of SU. The Contractor shall not unreasonably encumber the site or the premises with materials, tools and equipment premises and the job site free from the accumulation of all refuse, rubbish, scrap materials and debris caused by its operations, to ensure that at all times the premises and site shall present a neat, orderly, safe, and workmanlike appearance. This is to be accomplished as frequently as is necessary by the removal of such material, debris, etc. from the site and SU's premises. Loading, cartage, hauling and dumping will be at the Contractor's expense.
- 4.6.3** At the completion of the Work, the Contractor shall remove all of its tools, construction equipment, machinery, temporary staging, false work, formwork, shoring, bracing, protective enclosures, scaffolding, stairs, chutes, ramps, runways, hoisting equipment, elevators, derricks, cranes, etc. from the project site.
- 4.6.4** Should the Contractor not promptly and properly discharge its obligation relating to progress cleaning and final clean up, SU shall have the right to employ others and to charge the resulting cost to the Contractor, after first having given the Contractor a three Working day written notice of such intent.
- 4.6.5** The Contractor's responsibilities in final clean up refer to Closeout Section.

**4.6.6** All construction equipment, materials or supplies of any kind, character or description of value belonging to the Contractor and which remain on the job site for more than 30 calendar days from the date of the Final Completion issued through SU to the Contractor, shall become the absolute property of SU. It will be disposed of in any manner SU shall deem reasonable and proper.

**4.7 Cut-Overs, Interruptions to Existing Buildings**

**4.7.1** All cut-overs of mechanical and electrical services to existing buildings shall be scheduled and coordinated in advance with SU's representative and performed at a time convenient to SU so as not to unreasonably interfere with its operations.

**4.8 Non-Regular Workdays**

**4.8.1** Regular working hours shall be 7:00 a.m. to 3:30 p.m., Monday through Friday. Changes thereto may be granted with written approval from SU's representative. Any Work required to be performed after regular working hours or on Saturdays, Sundays, or legal holidays as may be reasonably required and consistent with contractual obligations, shall be performed without additional expense to SU.

The Contractor shall obtain approval from SU's representative for performance of work after regular working hours or on non-regular work days at least 24 hours prior to the commencement of overtime, unless such overtime work is caused by an emergency.

**4.9 Drawings, Specifications, Shop and As-Built Drawings**

**4.9.1** SU will furnish, after becoming aware of such need, additional instructions for the proper execution of the Work. All Drawings and instructions issued by SU shall be consistent with the Contract Documents and reasonably inferable from and executed in conformity with the Contract Documents. The Contractor shall do no work without proper Drawings and instructions. In giving such additional instructions, SU will have the authority to make minor changes in the Work, not involving extra cost. Drawings and instructions with such supplementary details furnished or approved are understood to be included and a part of the contract.

**4.9.2** Where certain of the work is shown in complete detail, but not repeated in similar detail in other areas of the Drawings, or if there is an indication of continuation with the remainder being shown only in outlines, the work shown in detail shall be understood to be required in other like portions of the project.

**4.9.3** The Contractor is responsible to review the Drawings and Specifications, and information describing the physical

characteristics of the site, including surveys, legal descriptions, data and drawings depicting existing conditions, subsurface conditions, environmental studies, reports or investigations provided by SU or the Architect. The Contractor shall not, at any time after the execution of its Contract, make any claims based upon insufficient data, or the Contractor's incorrect assumption of conditions, or any misunderstandings with regard to the nature, conditions or character of the Work to be performed under the Contract. The Contractor shall assume all risks resulting from any changes in conditions not under the control of SU, which may occur during the progress of the Work.

- 4.9.4** The Contractor shall, together with SU's representative, prepare a schedule of the proposed progress of the Work, fixing the dates when the various details and supplemental Drawings, if any, may be required. Within two weeks of the first field meeting, the Contractor shall submit to the A/E a shop drawing sample submission schedule which shall be used as a basis for complying with the overall progress schedule. Contractor shall also promptly submit, a reproducible transparent copy of all shop or setting drawings, details and schedules required for the Work of the various trades. The A/E will review the sample schedule with reasonable promptness. The Contractor shall promptly make any corrections, if required by the A/E, and resubmit a reproducible transparent copy for approval.
- 4.9.5** The Contractor shall not use the Contract Drawings for submission of shop Drawings. All shop drawing sizes shall be in multiples of 9" x 12" (e.g., 18" x 24", 24" x 27", 24" x 36", etc.) as approved by the A/E.
- 4.9.6** Attached to the Contractor's initial submission of such shop drawings or catalog data shall be an itemized schedule listing dates by which all other submissions will be forwarded to the A/E.

The Contractor also has the responsibility to submit coordination drawings whenever two or more trades are occupying common space. Any list of Drawings prepared by the A/E is for SU's convenience only, and shall not be construed as limiting the number of drawings the Contractor shall furnish.

- 4.9.7** If the Contractor desires to make any deviations or changes from the requirements of the Contract Documents the Contractor shall obtain the consent of the SU to such changes before submitting drawings showing such proposed changes. All drawings submitted by the Contractor shall have been checked and approved by the Contractor before submission. SU project number and the

Drawings and Specification references shall be noted on all submissions. Failure to comply with these instructions will be sufficient reason to return such drawings to the Contractor without any action being taken.

- 4.9.8** The Contractor shall keep on the project site at all times one set of Drawings to be marked "AS-BUILT." During the course of the Project, the Contractor shall mark these As-Built Drawings with colored pencils to reflect any changes, as well as dimension the location of all pipe runs, conduits, traps, footing depths or any other information not already shown on the Drawings or differing there from. All buried utilities outside the building shall be located by a metes and bounds survey performed by a licensed surveyor who shall certify as to its accuracy. These marked-up As-Built Drawings and surveys shall be made available to SU upon request at any time during the progress of the Work. These shall include the As-Built Drawings of principal sub-Contractors as well.
- 4.9.9** In instances where sepias, shop Drawings and/or erection drawings, of a scale larger than the Contract Drawings, are prepared by a Contractor, such drawings and sepias will be acceptable in lieu of marked-up Contract Drawings, provided they are updated as per section 4.9.8 above. A master sheet of the same dimensions as the Contract Drawings shall be prepared by the Contractor on a tracing which shall indicate, sheet by sheet, a cross-reference to all Shop Drawings pertaining to that drawing. All drawings and sepias as required in section 4.9.8 and this section shall be labeled "AS-BUILT" above the title block and dated.
- 4.9.10** The Contractor shall submit the "as-built" documents to the A/E, whether altered or not, with a certification as to the accuracy of the information thereon at the time of contract completion and before final payment will be made to the Contractor. After acceptance by the A/E, the Contractor will furnish two sets of all shop and/or erection drawings used for "as-built" documentation.
- 4.9.11** All "as-built" drawings as submitted by Contractors shall be labeled "AS- BUILT" above the title block and dated. This information shall be checked, edited and certified by the A/E, which shall then transpose such information from the Contractor's "as-built" drawings to the original tracings, certify that such tracings reflect as-built status, and deliver said tracings to SU. Where shop drawings have been used by the Contractor for "as-built" documentation, the tracing providing cross reference information, as described in section 4.9.9 of this document, shall be included in the set of "as-built" drawings furnished to SU.



#### **4.10 Samples**

The Contractor shall furnish, for approval, all samples as directed. The Work shall be in accordance with approved samples. Such samples shall be submitted promptly to SU, through the A/E, at the beginning of the Work, so as to give SU time to examine them. Any list of samples prepared by the A/E is for SU's convenience only, and shall not be construed as limiting the number of samples the Contractor shall furnish upon request of the A/E.

#### **4.11 Miscellaneous Drawings, Charts and Manuals**

**4.11.1** Sleeve and Opening drawings: Prior to installing service utilities or other piping, etc. through structural elements of the building, the Contractor shall prepare and submit, for approval of the architect and structural engineer, accurate dimensional drawings indicating the positions and sizes of all sleeves and openings required to accommodate the Work and installation of the Contractor's piping, equipment, etc. All such drawings must contain reference to the established dimensional grid of the building. Such drawings must be submitted in sufficient time to allow proper coordination with reinforcing steel shop drawings and proper placing in the field.

**4.11.2** Control Valve and Circuit Location Charts and Diagrams: Plumbing, HVAC and electrical Subcontractors shall prepare a complete set of inked or typewritten control valve and circuit location diagrams, charts and lists identifying and locating all such items, and shall place the charts, diagrams and lists under frame glass in appropriately designated equipment rooms, as directed. These Subcontractors shall also furnish one-line diagrams, as well as such color coding of piping and wiring and identifying charges as specified or required. This information is to be framed under glass and displayed where directed.

#### **4.12 Openings - Channels - Cutting and Patching**

The Contractor shall be responsible for furnishing and setting of sleeves, built-in items, anchors, inserts, etc. for its Work and for all cutting, fitting, closing in, patching, finishing, or adjusting of its Work in new and/or existing construction, as required for the completed installation. Where applicable, the Contractor shall build these items into the construction.

**4.12.1** The Contractor for general construction shall build recesses, channels, chases, openings and flues and shall leave or create holes where indicated on Drawings, or where directed, for steam, water or other piping, electrical conduits, switch boxes, panel boards, flues and ducts, or any other feature of the heating and ventilating Work. At least three copies shall be furnished to SU.

**4.12.2** The Contractor for general construction shall close, build-in, and

finish around or over all openings, chases, channels, pockets, etc., after installation has been completed.

- 4.12.3** Approval in writing from the Architect must first be obtained by the Contractor before cutting or boring through any floor beams, floor construction or supporting members.

#### **4.13 Tests**

- 4.13.1** The Contractor shall notify SU's authorized representative in writing of all work required to be inspected, tested or approved. The notice shall be provided no later than five (5) working days prior to the scheduled inspection, test or request for approval. The Contractor shall bear all costs of such inspections, tests or approvals, except for code inspections as stated in section 4.5.6 of this document. Additionally, Contractor shall be responsible to monitor the progress of all such inspections, tests or requests or approvals and notify SU's authorized representative immediately about any delays, failure to obtain any approval, or requirement for re-inspection or re-testing.
- 4.13.2** When mechanical, electrical or other equipment is installed, it shall be the responsibility of the installing Contractor to maintain, warrant and operate it for such period of time as required by the Contract Documents or as necessary for the proper inspecting and testing of the equipment and for adequately instructing SU's operating personnel. All costs associated with the maintenance, warranty, operations, inspection and testing of equipment, as well as instructing SU personnel, shall be borne by the Contractor. All tests shall be conducted in the presence of, and upon timely notice to, SU prior to acceptance of the equipment.
- 4.13.3** When SU requires special or additional inspections, testing or approvals, SU will direct the Contractor in writing to secure the service for such special or additional inspections, testing or approvals, and the Contractor shall give notice as detailed in section 4.13.1 of this document. In the event such special or additional inspections or testing reveal a failure of the Work to comply with the terms and conditions of the contract, the Contractor shall bear all costs thereof, including all costs incurred by SU made necessary by such failures.
- 4.13.4** The Contractor shall acquire inspection or testing services and manage the process using only those firms/entities provided by SU as may be required by the Contract Specifications.
- 4.13.5** All submittals of inspections and test reports or requests for approval shall be accompanied by a certification signed by the Contractor, attesting to the Contractor's knowledge of the submittal, acceptance of

its findings, acknowledgment that material testing meets the required standards, and certification of the report's representation of the facts. Failure to provide the written certification shall be grounds for rejection of the submittal.

- 4.13.6** In addition to the above, the Contractor agrees to insert in all contracts/purchase orders for inspection and testing the requirement for the inspection or testing firm/entity to submit, in conjunction with the report to the Contractor, a copy of the report directly to SU. The copy shall be held pending receipt of the Contractor's certification of the report. Further, the Contractor agrees to require all reports to be submitted within 14 calendar days of the test or inspection. Failure to provide reports within the required time shall be addressed pursuant to section 10.3.9 of these General Conditions.

#### **4.14 Equipment – Materials**

- 4.14.1** The Contractor warrants to SU and the A/E that all materials and equipment furnished under the Contract will be new, unless otherwise specified, and that all Work will be of good quality, free from faults, defects, and in conformance with Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective and rejected by SU or the A/E. If required by the A/E or SU, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of the other paragraphs contained in this document.
- 4.14.2** The original and two (2) copies of the request for approval of materials shall be forwarded to the A/E for approval. Each item of material listed shall be marked "As Specified" or "Unspecified" as the case may be.
- 4.14.3** The Contractor shall furnish and deliver the necessary equipment and materials in ample quantities and as frequently as required to avoid delay in the progress of the Work and shall store them so as not to cause interference with the orderly progress of the project.
- 4.14.4** The Contractor shall furnish and pay for all necessary transportation, storage, scaffolding, centering, forms, water, labor, tools, light and power and mechanical appliances and all other means, materials and supplies for properly prosecuting the Work under this Contract, unless expressly specified otherwise.

The Contractor shall make arrangements to have its representatives at

the site to accept delivered materials. SU will not accept materials, nor will they be held responsible for damage, theft, or disappearance of Contractor's materials, equipment, tools, etc.

**4.14.5** No materials, equipment, or supplies for the Work shall be purchased by the Contractor or any subcontractor subject to any lien or encumbrance or other agreement by which an interest is retained by the seller. The Contractor warrants, by signing its invoice, that it has good and sufficient title to all such material, equipment and supplies used by it in the Work, free from all liens, claims or encumbrances.

**4.15 Substitutions**

**4.15.1** In the event the Contractor should propose a substitution of the specified equipment or materials, it shall be its responsibility to submit proof of equality and to provide and pay for any tests which may be required by SU in order to evaluate such proposed substitution.

**4.15.2** Where any particular brand or manufactured article is specified, it shall be regarded as a standard. Similar products of other manufacturers, capable of equal performance and quality, in the opinion of SU, will be accepted if approved.

**4.15.3** Application for approval of a substitution by the Contractor shall include or conform to the following requirements:

- a. Furnish full and complete identification information including whether the item is included in the Specifications; in which case, identify the specification paragraph and section.
- b. Attach data indicating in detail whether and how the substitution differs, if at all, from the article specified. Submit documents which demonstrate proof of equality, along with an agreement to have such tests performed at the Contractor's own expense as may be required for approval by SU Representative or the A/E.
- c. If a credit is to be offered for the substitution, provide a detailed itemization of the amount of credit.
- d. If the proposed substitution involves a change in Scope of the Work of the Contractor or any subcontractor or trade under the Contract Documents, then the Contractor agrees to be responsible for any and all resulting added costs including any redesign.

**4.15.4** Substitution requests will not be considered until after the receipt of bids. After the award, in the event the lowest bid contractor proposes a substitution of the specified equipment or materials, it shall be their responsibility to submit proof of equality in accordance with the procedure outlined in Section 4.15 of the General Conditions. If the proposed substitution is rejected as an equivalent or better, the contractor shall be required to provide the specified equipment or materials.

**4.16 Subcontractor Approvals**

**4.16.1** Approval of a subcontractor or material supplier by the SU Representative and A/E shall not relieve the Contractor of the responsibility of complying with all provisions of the Contract Documents. The approval of a subcontractor does not imply approval of any material, equipment or supplies.

**4.17 Soil Borings**

**4.17.1** Soil borings or test pits or other subsurface information may be secured by an independent Contractor for SU prior to design and construction of a project and may be included in the Contract Documents for the Contractor's use.

The Contractor assumes full responsibility for interpretation of said borings, and SU shall have no responsibility or liability should the data provided prove to be incorrect or not representative. Other soil boring results and interpretations taken and made by the Contractor shall be provided to SU.

**4.18 Protection of Contractor's Property**

**4.18.1** The Contractor shall adequately secure and protect its own tools, equipment, materials and supplies. SU assumes no liability for any damage, theft or negligent injury to the Contractor's property.

**4.19 Patents**

**4.19.1** The Contractor shall hold and save the SU and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for or on account of any patented or non-patented invention, process, article or appliance manufactured or used in the performance of the contract, including its use by SU, unless otherwise specifically stipulated in the Contract Documents.

**4.19.2** License and/or royalty fees for the use of a process which is authorized by SU must be reasonable, and paid to the holder of the patent or his or her authorized licensee directly by SU and not by or through the Contractor.

**4.19.3** If the Contractor uses any design, device or materials covered by letters, patent or copyright, it shall provide for such use by suitable agreement with SU or such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or material in any way involved in the Work. The Contractor and/or its sureties shall indemnify and save harmless SU from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or material, or any trademark or copyright in connection with Work agreed to be performed under this Contract and shall indemnify SU for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the Work or after the completion of the Work.

**4.20 Right to Audit**

**4.20.1** SU reserves the right to audit the records of the Contractor in connection with all matters related to its contract. The Contractor agrees to maintain its records in accordance with generally accepted accounting principles, for a period of not less than three (3) years after receipt of final payment.

"Generally accepted accounting principles" is defined as follows: Accounting records must identify all labor and material costs and expenses, whether they are direct or indirect. The identity must include at least the project number for direct expenses and/or account number for indirect expenses. All charges must be supported by appropriate documentation including, but not limited to, canceled checks and other supporting documentation.

**4.20.2** The Contractor shall develop, maintain and make available to SU on request such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, change orders, all original estimates, takeoffs and other bidding documents, all subcontractors and supplier contracts and changes, all records showing all costs and liabilities incurred or to be incurred in connection with the project (including all subcontractor and supplier costs), all payment records and all records showing all costs incurred in labor and personnel of any kind, records and other data as SU may request concerning Work performed or to be performed under this Contract.

**4.20.3** The Contractor acknowledges and agrees that no claim for payment which is premised to any degree upon actual costs of the Contractor shall be recognized by SU except and to the extent that such actual costs are substantiated by records required to be maintained

under these provisions.

- 4.20.4** The Contractor shall require each subcontractor, to the extent of the Work to be performed by the subcontractor, to be bound to the Contractor to the terms of SU's Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor assumes, by these documents, to SU and its contractual parties.
- 4.20.5** The Contractor shall not grant to any subcontractor terms more favorable than those extended to the Contractor by SU.
- 4.20.6** The Contractor acknowledges and agrees that its obligation to establish, maintain and make available records and SU's right to audit as delineated herein shall extend to actual costs incurred by subcontractor in performing Work required under the contract or any supplemental agreement thereto. The Contractor shall require in each subcontract that the subcontractor establish, maintain and make available to SU all records as defined and delineated herein, relating to all Work performed under the subcontractor including Work performed by a sub- subcontractor.

#### **4.21 Contract Closeout**

- 4.21.1** Contract Closeout is described as certain collective Contract requirements indicating completion of the Work that are to be fulfilled near the end of the Contract time in preparation for final completion of the Work as well as final payment to the Contractor.
- 4.21.2** Contract Closeout is directly related to Substantial Completion therefore, the time of closeout may be either a single time period for the entire Work or a series of time periods for individual elements of the Work that have been certified as Substantially Complete at different dates.
- 4.21.3** Contract Closeout submittal includes but may not be limited to:
  - 1) Record Documents described throughout Contract Documents.
  - 2) As Built Drawings; disk and hard copy of both PDF & AutoCAD v. 2009 drawing files
  - 3) Warranties as required by Specifications.
  - 4) Copy of Final Change Order, if applicable.
  - 5) Copy of Final Application for Payment.
  - 6) Consent of Surety to Final Payment.
  - 7) Copy of Certificate Approval or Certificate of Compliance.
  - 8) Contractor's Confirmation of General Warranty.
  - 9) Letter from A/E that all Punch List items have been completed

to their satisfaction.

- 10) Operating, Instruction and Maintenance Manuals for Equipment (Mechanical, Plumbing, Electrical, etc.) all in accordance with the Specifications.
- 11) Contractor's Affidavit of training to SU in proper operation and maintenance of systems, equipment and similar items which were provided as part of the Work.
- 12) Attic stock in accordance with the specifications.

**4.21.4** Substantial Completion - The Contractor shall complete the following before requesting the A/E and/or SU representative inspection for Certification of Substantial Completion either for the entire Work or portions of the Work.

- 1) Contractor shall apply for, and SU have in its possession, DCA's Certificate granting occupancy or use.
- 2) The Contractor is to complete the work as is outlined within the Punch List as has been developed and issued by the A/E.
- 3) After completion of the punch list, A/E and/or SU representative will inspect to determine status of completion.
- 4) Should the A/E or SU representative determine that the Work is not Substantially Complete, the A/E or SU representative will promptly notify the Contractor, in writing, giving the reasons therefore
- 5) The Contractor shall remedy the deficiencies and notify the A/E and/or SU representative when ready for re-inspection
- 6) The A/E and SU representative will re-inspect the Work. When the A/E and SU representative concur that the Work is Substantially Complete, the Contractor will be notified in writing of any outstanding Punch List items to be completed or corrected as verified by the A/E and SU representative.
- 7) Contractor shall certify that:
  - a. Work has been inspected for compliance with the Contract Documents.
  - b. Work has been completed in accordance with the Contract Documents.
  - c. Equipment and systems have been tested, as required, and are operational.
  - d. Work is completed and ready for final inspection.

**4.21.5** Final Completion – The Contractor shall complete the following before requesting the A/E and/or SU representative final inspection for Certification of Final Completion of the Work and final payment.

- 1) Contractor shall apply for and SU shall have in its possession DCA's Final Certificate granting occupancy or use.
- 2) A/E and SU representative will conduct an inspection to verify status of completion.



- 3) Should the A/E and/or SU representative determine that the Work is incomplete or defective:
  - a. The Contractor will promptly be notified, in writing, listing the incomplete or defective Work.
  - b. The Contractor shall remedy the deficiencies promptly and notify the A/E and SU representative when ready for re-inspection.
  - c. When the A/E and SU representative determine that the Work is acceptable under the Contract Documents and that all required submittals have been made, SU representative will request the Contractor to submit a final application for payment.

**4.21.6** Final Cleaning – The Contractor’s responsibilities in final cleaning include but, may not be limited to the following:

- 1) Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from interior and exterior surfaces. Materials and rubbish shall not be thrown from building openings above the ground floor unless contained within chutes.
- 2) Repair, patch and touch-up marred surfaces to match adjacent finishes.
- 3) Clean ducts, blowers, and coils if air conditioning or heating units were operated during construction and replace all filters accordingly.
- 4) Sweep, mop, and buff resilient floors and base.
- 5) Dust walls, metal, wood, and similar finished materials.
- 6) Clean all cabinet and casework.
- 7) Dust and wash all plumbing and electrical fixtures. Remove stickers from all fixtures and devices accordingly.
- 8) Wash and buff or polish all non-resilient materials.
- 9) Vacuum carpet floors; clean as necessary.
- 10) Vacuum all floor areas if scheduled to receive floor finish by others.
- 11) Wash and polish all glass, inside and out; remove stickers and labels accordingly.
- 12) Replace broken or scratched glass with new glass.
- 13) Restore all landscaping, roadways and walkways to preexisting conditions. Damage to trees and plantings shall be repaired in the current or next planting season and such shall be guaranteed for one year from the date of repair and/or replanting.

**5. ARTICLE 5 – CONTRACTOR FOR GENERAL CONSTRUCTION: SPECIAL RESPONSIBILITIES**

**5.1 Unique Role of Responsibility – Staffing**

**5.1.1** The Contractor for general construction (hereinafter referred to as the Contractor) has the responsibility for being the supervisor, manager, overseer, coordinator and expeditor of all of the Contractors and of the total construction process and all of its parts, in accordance with the Contract Documents.

**5.2 Control and Coordination of Construction**

**5.2.1** SU relies upon the organization, management, skill, cooperation and efficiency of the Contractor to supervise, direct, control and manage the general construction work and the efforts of the other Contractors, so as to deliver the completed Project in conformance with the Contract Documents and within the scheduled time. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the A/E in the A/E's administration of the Contract, or by tests, inspections or approvals required or performed by other persons other than the Contractor, or other Contractors engaged by SU to perform specific work.

**5.2.2** The Contractor shall include in its bid an amount sufficient to cover the cost of furnishing necessary administrative and supervisory forces to coordinate its Work and that of its Subcontractors.

**5.2.3** All Subcontractors shall be responsible to the Contractor for performance of their contract work and for meeting those dates within the final project progress schedule.

**5.3 Layout and Dimensional Control – Surveying**

**5.3.1** The Contractor shall be responsible for locating and laying out the building and all of its parts on the site, in strict accordance with the Drawings, and shall accurately establish and maintain dimensional control. The Contractor shall employ and pay for the services of a competent and licensed New Jersey engineer or land surveyor (who shall be approved by DPMC) to perform all layout work, and to test the level of excavations, footing base plates, columns, walls and floor and roof lines, and furnish to the A/E, as the Work progresses, certifications that each of such levels is as required by the Drawings. The plumb lines of walls, etc., shall be tested and certified by the surveyor as the Work progresses.

**5.3.2** The engineer/surveyor, in the course of layout work both on the site and within the building, shall establish all points, lines, elevations, grades and bench marks for proper control and execution of the Work. The engineer/surveyor shall establish a single permanent bench mark

as directed, to which all three coordinates of dimensional control shall be topographical and utility survey data and all points, lines, elevations, grades and bench marks. Should any discrepancies be found between information given on Drawings and the actual site or field conditions, the Contractor shall notify the A/E of such discrepancy, and shall not proceed with any Work affected until receipt of written instructions from the A/E.

#### **5.4 Construction Access Routes**

**5.4.1** The Contractor shall be responsible for providing and maintaining unobstructed traffic lanes on the designated construction access routes either shown on the Contract Drawings or reasonably required so as to perform the Work, and shall provide and maintain all reasonably required safety devices. The Contractor shall provide any necessary additional materials, their grading and compaction, and shall remove snow and debris as necessary to provide and maintain the general serviceable condition of the access roadbed, as well as pedestrian ways.

#### **5.5 Project Sign**

**5.5.1** The Contractor shall erect and maintain one sign at the project site, as shown on the Drawings and located as directed by the A/E.

**5.5.2** Painting shall be done by a professional sign painter, with two coats of exterior paint, colors, letter face and layout as shown. No other sign will be permitted at the site.

**5.5.3** Upon completion of the Project, and when directed by the A/E or SU representative, the Contractor shall remove the sign. Should there be a change in the listed State officials; the Contractor shall make appropriate changes to the sign at its expense.

#### **5.6 Dust Control**

**5.6.1** The Contractor, at its expense, shall provide and maintain necessary temporary dust-proof partitions around areas of work in any existing building or in new building areas as directed by the A/E or SU representative.

#### **5.7 Repair of Finished Surfaces, Applied Finishes, Glass**

**5.7.1** The Contractor accepts sole responsibility for repair of uncontrolled dislodging, cracking, delaminating or peeling of finished surfaces such as concrete, pre-cast concrete, cast and natural stone, unit masonry, millwork, plaster, glass and applied finishes such as paint, and special coatings, within the contract scope and the limits of specified guarantee periods, regardless of the cause.

**5.7.2** The Contractor shall be responsible for replacement of all broken glass installed by it or by its subcontractors, after same has been installed, no matter by whom or what caused. The Contractor shall replace all broken, scratched or otherwise damaged glass before the completion and acceptance of the Work. The Contractor shall wash all glass on both sides at completion, or when directed, removing all paint spots, stains, plaster, etc.

**5.7.3** Nothing herein is intended to limit the right of the Contractor to seek payment from the party responsible for damages.

## **5.8 Photographs**

**5.8.1** With each application for payment until the exterior is completed, the Contractor shall submit progress photographs of the building, in duplicate to SU's representative, giving two views of each building as selected by the A/E, taken from the same points each month. This requirement shall apply to the creation of the new space only.

**5.8.2** The photographs shall be 8" by 10", shall bear the date of the exposure, SU project number and title and the names of the Contractor and the A/E. Fifty (50) digital images shall be submitted along with the traditional photographs indicated in section 5.8.1 above at the Contractor's option.

## **5.9 Warranty**

**5.9.1** Neither the final certificate of payment, nor any provision in the Contract Documents, nor partial or entire occupancy of the premises by SU shall constitute an acceptance of Work not done in accordance with the Contract Documents, nor shall it relieve the Contractor of liability with respect to any expressed or implied warranties or responsibility for faulty materials or workmanship. SU will give notice of observed defects with reasonable promptness.

**5.9.2** In addition to warranties otherwise specified in other sections of the Specifications, the Contractor and each individual subcontractor shall guarantee and warrant, in writing, the Work to be performed and all materials to be furnished under this Contract against defects in materials or workmanship, and shall pay for the value or repair of any damage to other work resulting there from for a period of one year or as specified from the date of Substantial Completion. All warranties, bonds, etc. required by the Specifications shall be in writing in requisite legal form and delivered to SU no later than time of submission of the invoice for final payment.

- 5.9.3** All subcontractors' warranties, bonds, etc. shall be underwritten by the Contractor, which shall obtain and deliver same to SU before the Work shall be deemed finished and accepted.
- 5.9.4** The Contractor shall, at its own expense and without cost to SU, within a reasonable time after receipt of written notice thereof, and without negatively impacting SU operations related to the Work, make good any defects in material or workmanship which may develop during stipulated guarantee periods, as well as any damage to other work caused by such defects or by their repairs. Any other defects in materials or workmanship not reasonably observable or discovered during the warranty period shall be repaired and/or replaced at the Contractor's expense, and such shall be completed within a reasonable time after written notice is given to the Contractor.
- 5.9.5** It is anticipated that certain permanent equipment will have to be activated during construction of the project to support construction operations. This would particularly be the case with respect to service elevators and those portions of the permanent heating system which might be required to provide temporary heat for interior finish operations. Regardless of when equipment is activated for use during construction, all equipment warranties must extend for the time periods required in these Specifications, starting as of the date of Substantial Completion or Final Completion of the Project by SU. All Contractors shall include in their base bids all costs necessary to provide extended warranties as necessary for any equipment which may be activated prior to final building acceptance by SU.

## **5.10 Security Services**

- 5.10.1** The Contractor shall provide security services throughout the period of construction to adequately protect the Work, stored materials and temporary structures located on the premises, and to prevent unauthorized persons from entering the construction site. The period of time and the hours of the day or night required for such services shall be established by the Contractor for general construction and must be sufficient to insure all Contractors' equipment and materials are adequately protected. If SU determines that adequate protection is not being provided and directs the Contractor for general construction to increase the service, such protection shall be provided at no extra cost to SU.

## **6. ARTICLE 6 -- TEMPORARY FACILITIES, UTILITIES AND SERVICES**

### **6.1 Field Offices**

- 6.1.1** The Contractor will provide onsite and maintain during the project construction a suitable weather-tight insulated field office conveniently located for reception and continuous use, and shall maintain therein a complete set of Contract Documents including Drawings, Specifications,

CPM network diagrams, Change Orders, logs, other details and correspondence. The field office shall contain approved and safe heating facilities and lighting, convenience outlets, a fire extinguisher, a minimum of two operating windows of 15 square feet each and an outside door with a handle, hasp and padlock.

**6.1.2** The field office may be removed upon enclosure of the building at a time directed by SU representative or the A/E; contents and operations will be transferred to the interior of the project building by the Contractor, and said offices shall be maintained by the Contractor until Final Completion of the Project, unless otherwise directed by SU.

**6.1.3** The Contractor shall be responsible for the maintenance of all temporary offices, janitorial service and other incidentals.

**6.1.4** Each Contractor shall provide its own telephone, data lines and equipment at no cost to the University.

**6.2 Temporary Storage, Staging and Shelter Structures**

**6.2.1** Each Contractor will provide and maintain, for its own use and as each deems necessary, suitable and safe temporary storage, tool shops, and employees' sheds for proper protection, storage work and shelter, respectively. Each Contractor shall maintain these structures properly and remove them at the completion of Work. Locations shall be directed by the Contractor. The Contractor making use of these areas shall be responsible for correcting defects and damage caused by such use and for keeping these areas clear and clean.

**6.3 Temporary Construction Operations/Services Facilities**

**6.3.1** Each Contractor shall be responsible for providing for its own requirements relative to storage areas, employee vehicular parking, equipment marshaling areas, excavation borrow/spoils designated areas, commercial canteen areas, etc. The Contractor shall locate these areas to suit project requirements, with SU's concurrence.

**6.4 Temporary Toilet Facilities**

**6.4.1** The Contractor shall provide and pay for suitable temporary toilets at an approved location on the site and prior to the start of any field Work. They shall comply with SU, State, local laws, and regulations. The Contractor will be responsible for maintenance, removal and relocation as described hereinafter.

**6.4.2** Toilets shall be serviced by a firm qualified and experienced in such functions.

- 6.4.3 Toilets shall be of the portable chemical type, mounted on skids, with screened enclosures with doors, each having a urinal and water closet.
- 6.4.4 Each unit shall be serviced at least twice a week, including the removing of waste matter, sterilizing, recharging tank, refilling tissue holders, and thoroughly cleaning and scrubbing of entire interior, which shall be maintained in a neat and clean condition.
- 6.4.5 When toilets are connected to water and sewer lines, precautions shall be taken to prevent freezing.
- 6.4.6 The temporary toilet units shall be removed from the Work site at the completion of the Work, or when so directed by SU or the A/E.
- 6.4.7 Workers are not to use existing SU facilities.

## **6.5 Temporary Drives and Walks**

- 6.5.1 The Contractor shall be responsible for keeping all roadways, drives and parking areas within or proximate to the site free and clear of debris, gravel, mud or any other site materials by ensuring that all reasonably necessary measures are taken to prevent such materials from being deposited on such surfaces. This includes, as may be appropriate, the cleaning of vehicle wheels, etc., prior to exit from the construction site. Should such surface require cleaning, the Contractor will clean these surfaces without additional cost to SU. The Contractor will be held accountable for any citations, fines or penalties imposed on SU for failing to comply with local rules and regulations.
- 6.5.2 Should the Contractor elect to commence construction of permanent driveways, parking areas or walks (other than general grading of temporary shop areas), the Contractor shall not do so without the approval of SU's representative. The Contractor shall not do so without having prepared the subgrade, as may be elsewhere required by the Specifications, nor will the Contractor be relieved from any responsibility for providing additional materials or for reworking the subgrade prior to completion of the Work, if so required to make the improvements conform fully with the Specifications.
- 6.5.3 The Contractor shall obtain permission in writing from SU before using any existing driveways or parking areas not specifically designated for such use in the Contract Documents for construction purposes.

The Contractor shall maintain such driveways and areas in good condition during the construction period, and at completion of the project shall leave them in the same condition as at the start of the

Work. Conditions before use should be carefully photographed or documented by the Contractor.

## **6.6 Temporary Water**

- 6.6.1** The Contractor shall provide, protect and maintain an adequate valved water supply to a convenient location for the use of all Contractors on the project during the period of construction, either by means of the permanent water supply line, or by the installation of a temporary water supply line. If the source of water supply is a well, provisions covering the supply water will include the installation of necessary power-driven pumping facilities by the plumbing Contractor. The well shall also be protected against contamination. The water supply shall be tested periodically by the Contractor, and if necessary, shall be chlorinated and filtered. All costs in providing water, other than the cost of the water itself, will be borne by the Contractor. Electrical services and hookups will be provided by the Contractor, which will pay all costs for this electrical Work. Should pumps be installed in connection with this water supply, electrical connections will be provided and paid for by the Contractor.
- 6.6.2** Temporary water may or may not be provided by SU at no charge to the Contractor, provided and to the extent it may be existing and available at the site immediately prior to and during construction. It is the obligation of Contractor requiring temporary facilities to investigate and make specific arrangements with the using agency for such facilities and to include in its proposal the cost of any additional facilities the Contractor may require for proper conduct of its Work.
- 6.6.3** The Contractor shall install its temporary and/or permanent water lines to the boiler room and heating equipment in sufficient time to be available for supplying water for testing and operation of the heating system, when such are needed to supply heat for the project.
- 6.6.4** The Contractor is responsible to protect all water lines from damage or freezing, be they permanent or temporary. Should water connections be made to an existing line, the plumbing Contractor shall provide a positive shut-off valve at its own cost and expense.
- 6.6.5** If the Contractor fails to carry out its responsibility in supplying water as set forth herein, the Contractor shall be held responsible for such failure, and SU shall have the right to take such action as is deemed proper for the protection and conduct of the Work and may deduct the cost involved in so doing from any sums due the Contractor.
- 6.6.6** The unauthorized use of campus fire hydrants as a source of temporary water is strictly prohibited. Unauthorized use of a campus fire hydrant may result in the immediate shut-down of the Project.



## **6.7 Temporary Light and Power**

- 6.7.1** The Contractor shall extend electrical service to the building or buildings at locations approved by SU; temporary electrical service shall be independent of the existing permanent service.
- 6.7.2** The Contractor shall pay for the cost of all electric energy used on distribution lines installed by the Contractor until the project is accepted by SU. The Contractor shall provide and pay for all maintenance, servicing, operation and supervision of the service and distribution facilities. The Contractor shall also connect, maintain and service any electrical equipment installed by the HVAC Contractor which may be necessary for maintaining heat whenever heat is required in the building, whether from the temporary or permanent system.
- 6.7.3** If the Contractor fails to carry out its responsibility in the supplying of uninterrupted light and power or other utility as set forth herein shall be held responsible for such failure and SU shall have the right to take such action as is deemed proper for the protection and conduct of the Work and shall deduct the costs involved from the amount due the Contractor.
- 6.7.4** There shall be no additional cost to SU because of standby requirements due to conflict in the normal working hours of the various trades. The Contractor shall provide temporary light and power to all trades during normal working hours of such trades. Where overtime work by the Contractor necessitates standby electricians or other trades, the Contractor shall be responsible for making appropriate arrangements, financial and otherwise, for such service at no cost to SU.
- 6.7.5** The Contractor shall observe the requirements of the Federal Occupational Safety and Health Act of 1970 with regard to temporary light and power.

## **6.8 Temporary Heat**

- 6.8.1** Prior to the building being enclosed by walls and roof, if the outside temperatures shall fall below 40 degrees F. at any time during the day or night, and heat is required for Work in progress or for its protection, the Contractor shall furnish, at their expense, acceptable means to provide sufficient temporary heat to maintain a temperature of not less than 45 degrees F.
- 6.8.2** Heating of field offices, storage spaces, concrete and masonry materials and working area, as required, shall be provided by the responsible Contractors.

- 6.8.3** As soon as the Contractor determines that the building, or a major unit thereof, is "generally enclosed" by walls and roof, the responsibility of supplying working area heat shall rest with the Contractor. When the outside temperature falls below 40 degrees F. at any time during the day or night, the Contractor shall furnish sufficient heat by the use and maintenance of LP gas heaters or other acceptable means to maintain a temperature of not less than 45 degrees F. within the enclosed area of the building at all times, and shall remove such heaters when no longer required.
- 6.8.4** The Contractor will be held responsible for providing temporary heat for all damages resulting from freeze-ups as a result of its Work.
- 6.8.5** The Contractor shall not assume that the permanent heating system or any part thereof will be available for furnishing of temporary heat during the period for which temporary heat is the responsibility of the Contractor. The Contractor's base bid price shall therefore include the cost of all equipment necessary for providing temporary heat as required under these Specifications.
- 6.8.6** All heating equipment at a minimum shall be OSHA-approved and connected to approved flues to the atmosphere.
- 6.8.7** Storage of cylinders within the building will not be permitted at any time. Fire extinguishers shall be provided by the Contractor on each floor where heaters are used and the areas must be adequately ventilated.
- 6.8.8** Contractors responsible for providing temporary heat shall train at least two dependable persons to oversee temporary heat operations.
- 6.8.9** For the purposes of establishing the beginning of the Contractor's obligation to provide temporary heat, a building or major unit thereof shall be considered generally enclosed when (a) the exterior walls have been erected, (b) a temporary roof or permanent roof is installed and in watertight condition, and (c) temporary or permanent doors are hung and window openings are closed with either permanent or temporary weather-tight enclosures (cardboard or woven materials are not to be used; however, any impervious transparent material reasonably intended for such purpose is acceptable).
- 6.8.10** SU reserves the right to permit the substitution of limited temporary enclosures in lieu of permanent construction for the attainment of a permanently tight building if such action is deemed by SU to be in the best interest of the project. This action will not be such as to create a future jeopardy to the environment integrity of the building as construction proceeds.

**6.8.11** When the permanent heating system provided by the Contractor is the source of the heat, the Contractor shall be responsible for paying for all water, electricity and fuel required for the operation of the permanent heating system until SU assumes beneficial occupancy/use of the project.

**6.8.12** Should electricians be required to supervise and maintain electrical equipment required for the provision of heat, the payment for the services of the supervisors and/or maintenance personnel shall be the responsibility of the Contractor.

Should the proper type of electric service not be available to supply electrical energy for the operation of the heating system in supplying temporary heat, it shall be the responsibility of the Contractor to provide a motor-driven generator unit of sufficient capacity, voltage and phasing to provide uninterrupted service for the operation of the heating system.

The Contractor shall pay the cost of all fuel consumed in the operation of the generating unit for supplying temporary heat. The Contractor shall provide uninterrupted electrical service to the heating, water and pumping equipment.

**6.8.13** If additional heat is required beyond that specified herein, the Contractor requiring such additional heat shall arrange and pay the additional costs thereof, at no expense to SU.

## **7. ARTICLE 7 – SUBCONTRACTORS**

### **7.1 Contractor - Subcontractor Relationship**

**7.1.1** Within 14 calendar days after award of the Contract, the Contractor shall provide written notification to SU of the names of subcontractors, other than those required to be listed in the bid proposed or as required for DCA Construction Permit to perform the principal parts of the Work and of such others as SU may direct. Contractor shall not employ any subcontractor without prior acceptance by SU, or any subcontractor that SU may reject within a reasonable time. The Contractor shall not employ any subcontractor that has been debarred, suspended or proposed for debarment by the State of New Jersey. The Contractor shall be responsible to review the debarment list each week, and notify SU of any change of status of any subcontractors. The Contractor shall certify in writing to SU all subcontractors used for the project have not been debarred, suspended or proposed for debarment by the State of New Jersey.

The list of proposed Subcontractors may be considered approved by SU if no reply is forwarded to the Contractor within 15 calendar days following receipt of the list by SU.

- 7.1.2** If SU has reasonable objection to any such proposed subcontractor, the Contractor shall substitute another subcontractor to which SU has no reasonable objection. Under no circumstances shall SU be obligated for additional cost due to such substitution.
- 7.1.3** The Contractor shall make no substitution for any subcontractor, person or firm previously selected and approved, without written notification to SU and receipt of SU's written approval for such substitution.
- 7.1.4** The Contractor acknowledges its full responsibility to SU for the acts and omissions of its subcontractors, and of persons and firms either directly or indirectly employed by them, equally to the extent that the Contractor is responsible for the acts and omissions of persons and firms directly or indirectly employed by it. Contractor acknowledges that it remains fully responsible for the proper performance of its contract irrespective of whether work is performed by the Contractor's own forces or by subcontractors engaged by the Contractor.
- 7.1.5** Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and SU.
- 7.1.6** By an appropriate agreement, written where legally required for validity, the Contractor shall require each subcontractor, to the extent of the Work performed by the subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these documents, assumes toward SU, the A/E and the other separate prime Contractors.
- Where appropriate, the Contractor shall require each subcontractor to enter into similar agreements with its sub-subcontractors.
- 7.1.7** The Contractor and all subcontractors agree that, in the employment of both skilled and unskilled labor, preference shall be given to residents of the State of New Jersey and eligible "Commerce-registered" small businesses, if such labor force is available.
- 7.1.8** The subcontractor or material supplier shall not relieve the Contractor, of the responsibility of complying with all provisions of the Contract Documents.

**8. ARTICLE 8 - RELATIONSHIP BETWEEN OWNER & CONTRACTOR**

**8.1 Owner's Right to Perform Work**

**8.1.1** SU may, and reserves the right to, enter upon the premises at any and all times during the progress of the Work, or cause others to do so, for the purpose of installing any apparatus or carrying on any construction not included in these Specifications or for any other reasonable purpose.

**8.2. Mutual Responsibility**

**8.2.1** The Contractor shall afford SU reasonable opportunity introduction and storage of their materials and equipment and the execution of their Work. The Contractor shall coordinate its Work with adjacent work and with other trades, so that no portion of the Work is delayed or not properly undertaken due to such lack or failure of cooperation.

**8.2.2** The Contractor shall lay out and install its Work at such time or times and in such manner as to facilitate the general progress of the Project.

**8.2.3** Before the completion of the Work contemplated herein, should it be deemed necessary by SU to do any work whatsoever in or about the structure, other than as provided for in the Contract Documents, the Contractor shall fully cooperate with such other individual or firm as SU may employ to do such work, so that such additional work may be performed without unreasonable interference. The Contractor shall afford said other individual or firm all reasonable facilities for doing such work. Other than for an extension of time, the Contractor shall make no claim to SU as a result of such work as is contemplated herein.

SU shall at all times have access to the Work whether it is in preparation or in progress, and the Contractor shall provide proper facilities for such access and for inspection. SU reserves the option to employ the services of a professional consultant to evaluate any phase of the Work deemed to be in the best interest of SU, but no evaluation performed shall in any way relieve the Contractor of its responsibilities under the Contract. The Contractor shall cooperate with the consultants and provide access to the Work and facilities for inspection. Should any portion of the Work or materials be found deficient or defective, the Contractor will pay the applicable fees of such consultant and be responsible for replacing the deficient or defective Work as required by the provisions stated elsewhere herein.

**8.2.4** Any costs caused by defective or ill-timed Work shall be borne by the responsible party.

**8.2.5** If the Contractor should destroy, damage or disturb the work of any other Contractor in or about the building or premises, the Contractor shall

immediately either replace the destroyed work and make good the damaged and disturbed work to the satisfaction of the A/E and SU, or shall reimburse the Contractor whose work has been destroyed, damaged or disturbed for the expense of replacing such work.

- 8.2.6** Should a Contractor sustain any damage through any act or omission of any other Contractor having a contract with SU, or through any act or omission of a subcontractor of any such Contractor, or through any act or omission of the A/E, the Contractor shall have no claims against SU for such damage, but shall have a right of action to recover such damages from the causing party or parties, in accordance with Section 8.4.2, which is included in SU's contract with all other such Contractors and the A/E.

### **8.3 Substantial Completion**

- 8.3.1** At the request of SU, and/or the A/E, the Contractor shall make a joint inspection of the Work, and if all determine that the Work is substantially completed, SU may give Notice of Substantial Completion for Beneficial Use. Such certification shall in no way relieve the Contractor of any contractual obligation or in any way relieve the Contractor from responsibility to promptly complete punch list Work.
- 8.3.2** Standard warranty period for equipment, workmanship and materials shall commence on the date of acknowledgment of substantial completion of the project or portions thereof so certified, or from the time of completion and acceptance of equipment, work or materials in question, whichever is later, unless specified to the contrary as a condition of partial acceptance.
- 8.3.3** Use and possession prior to completion: SU shall have the right to take possession of or use any completed or partially completed part of the Work. Prior to such possession or use, SU shall furnish the Contractor with an itemized list of Work remaining to be performed or corrected on such portions of the project as are to be possessed or used by SU, provided that failure to list any item of Work shall not be deemed an acceptance of any Work under the Contract. While SU has such possession or use, the Contractor, notwithstanding the provisions of Section 4.5 of this Contract entitled "Permits - Laws - Regulations," shall be relieved of the responsibility for the loss or damage to the Work resulting from SU possession or use. If such prior possession or use by SU delays the progress of the Work or causes additional expense to the Contractor, an equitable adjustment in the contract time of completion will be made and the Contract shall be modified in writing accordingly.

#### **8.4 Contractor's Claims for Damages**

**8.4.1** Any claims made by a Contractor against SU for damages or extra costs are governed by and subject to the New Jersey Contractual Liability Act, N.J.S.A. 59:13-1 et seq., as well as all the provisions in this Contract.

**8.4.2** Any Contractor or A/E having, or which shall hereafter have, a contract with SU, which by its own acts, errors or omissions, damages or unnecessarily delays the Work of the Owner or other Contractors by not properly cooperating with them or by not affording them reasonably sufficient opportunity or facility to perform work as may be specified, by reason of which act, error or omission of the said Contractor, the A/E or any other Contractor shall sustain damages, including delay damages, during the progress of the Work hereunder, then and in the event, the culpable party agrees to pay all costs and expenses incurred by the damaged Contractor(s) or A/E due to any such delays and/or damages whether by settlement, compromise or arbitration and the injured Contractor or A/E shall have a right to redress enforcement in court directly against the culpable party.

In addition, the culpable party agrees to defend, indemnify and save harmless the State from all such claims and damages. Nothing contained in this paragraph shall be construed to relieve the culpable Contractor or A/E from any liability or damage sustained on account of such acts, errors or omissions caused by any acts or omissions as specified in the above paragraph, and the Contractor's exclusive remedy shall be against the culpable party.

#### **8.5 SU's Right to Accelerate**

**8.5.1** SU may order and direct the Contractor responsible for delay as described in Section 8.2.3 of this document or as may be apparent as a result of observation of the work, to accelerate that Contractor's Work at any particular place or places by increasing its forces, Working overtime and/or on Saturdays, Sundays, and holidays as may be required to enable others to carry on with their own work in accordance with the project progress schedule. The cost of such acceleration efforts shall be borne entirely by the responsible Contractor and shall not be billed to SU.

#### **8.6 Time of Completion - Delay - Liquidated Damages**

**8.6.1** In the event the Contractor fails to complete the Work within the time stated in the Contract Documents, the Contractor may be liable to SU for Liquidated Damages as provided for in N.J.S.A. 18A:64-73 refer to Supplementary General Conditions for specific details.

**8.6.2** It is hereby understood and mutually agreed by and between the Contractor and SU that the date of the initiation, the dates of required intermediate milestones, and the time for completion, as

specified in the Contract of the Work to be done hereunder are essential conditions of this Contract.

- 8.6.3** The Contractor agrees that the Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and SU, that the time for the completion of the Work herein is a reasonable time.

If the Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, or any proper extension thereof granted by SU, then the Contractor does hereby agree, as a part consideration for the awarding of its Contract, to pay SU the amount specified in Section 8.6.1 above, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor may be held in default after the stipulated date in the Contract for completing the Work.

- 8.6.4** The amount of liquidated damages is fixed and agreed upon by and between the Contractor and SU because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages SU would in such event sustain, and said amount is agreed to be the amount of damages which SU would sustain, and said amounts shall be retained by SU as necessary to cover projected untimely completion of the contract work due to Contractor-caused delays.
- 8.6.5** It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any Work, the new time limit fixed by such extension should be of the essence of this Contract.
- 8.6.6** The Contractor shall not be charged with liquidated damages, or any excess cost when SU determines that the Contractor is without fault and the Contractor's reasons for the time extension are acceptable to SU.
- 8.6.7** The Contractor shall, within five (5) calendar days from the beginning of such delay, unless SU shall grant a further period of time prior to the date of final settlement of the contract, notify SU in writing of the causes of the delay. SU shall first ascertain the facts and the extent of the delay and shall notify the Contractor within a reasonable time that good cause has been shown to warrant the granting of such extension.



## **8.7 No Damage for Delay-Limitation on Claims Against the University**

**8.7.1** SU shall have the right to defer the beginning or to suspend the whole or any part of the Work herein contracted to be done whenever, in the opinion of SU, it may be necessary or expedient for SU to do so.

If the Contractor is delayed in the completion of the Work by act, neglect or default of SU, of the A/E or of any of the Contractors employed by SU upon the Work; by changes ordered in the Work; by strikes, lockouts, fire, unusual delay by common carriers, unavoidable casualties or any cause beyond the Contractor's control; or by any cause which SU shall decide to justify the delay; then for all such delays and suspensions, the Contractor shall be allowed one calendar day addition to the time herein stated for each and every calendar day of such delay so caused in the completion of the Work as specified in Section 8.6 above, the same to be determined by SU, and a similar allowance of extra time will be made for such other delays as SU may find to have been caused by SU. No such extension shall be made for any one or more of such delays unless, within ten (10) calendar days after the beginning of such delay, a written request for additional time shall be filed with SU. Apart from extension of time, no payment or allowance of any kind shall be made to the Contractor as compensation for damages on account of hindrance or delay from any cause in the progress of the Work, whether such delay is avoidable or unavoidable.

**8.7.2** The Contractor shall not be entitled to any damages or extra compensation against SU by reason of any delays in its works resulting from acts or omissions of any third parties irrespective of extension granted under the contract, including but not limited to delays caused by third parties such as the A/E, other contractors, utilities and governmental authorities.

**8.7.3** SU shall only be required to pay claims for additional compensation for delays caused by SU itself and only to the extent required by N.J.S.A. 2A:58B-3 for delayed performance caused by SU's own negligence, bad faith, active interference or other tortious conduct, but not for delays resulting from the negligence of others including others under the contract with SU. SU shall not be liable to the Contractor for extra compensation for any period of delay when there is a concurrent delay for which SU is not responsible.

## **8.8 Indemnification**

**8.8.1** The Contractor shall assume all risk of and responsibility for, and agrees to indemnify, defend and save harmless SU, the State of New Jersey, and its employees from and against, any and all claims, demands, suits, actions, recoveries, judgment and costs of expenses in

connection therewith on account of the loss of life, property, injury or damage to the person, body or property sustained by Stockton University or third parties, resulting from the performance of the project or through the negligence of the Contractor, or through any improper or defective machinery, implements or appliances used by the Contractor or Subcontractors in the Project, or through any act or omission on the part of the Contractor or its agents, employees or servants, or Subcontractors which shall arise from or result directly or indirectly from the Work and/or materials supplied under this Contract. This indemnification obligation is not limited by, but is in addition to, the insurance obligations contained in this agreement.

**8.8.2** In any and all claims against SU or the A/E or any of their agents or employees by any employees of the Contractor or subcontractor or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation under this Section 8.8 shall not be limited in any way as to the amount or type of damages compensation or benefits payable by or for the Contractor or any subcontractor under worker's or workmen's compensation acts, disability benefit acts, or other employee benefit acts.

## **8.9 Contract Time - Notice to Proceed**

**8.9.1** Contract time shall commence on the date of the Contractor's receipt of a written Notice to Proceed issued by SU. The Notice to Proceed will be issued by SU after SU's receipt and acceptance of properly executed Contract Documents, including performance and payment bonds. Unless otherwise ordered by SU in writing, the Contractor shall initiate its Contract Work at the site no later than 14 calendar days after its receipt of the Notice to Proceed.

**8.9.2** Provided the contract is not terminated pursuant to Section 2.2 of the Instructions to Bidders if, in the opinion of SU, the Contractor's delay in furnishing financial responsibility and performance or payment bonds causes a delay in the issuance of the Notice to Proceed, the time to complete the Work as specified in the contract may be reduced to reflect such delay.

**8.9.3** The Contractor shall perform no Work under this Contract until the required evidence of financial responsibility and bonds has been furnished. Thereafter, Work at other than the contract site may be undertaken. The Contractor shall perform no Work at the contract site except pursuant to a Notice to Proceed given by SU.

**8.9.4** A Notice to Proceed may be issued by SU at its convenience. Any right of the Contractor to any adjustment because of a delay in issuing a Notice to Proceed shall be determined in accordance with Section 2.1

entitled "SU's Right to Stop Work.

**9. ARTICLE 9 - PROJECT SCHEDULE**

**9.1 GENERAL REQUIREMENTS**

**9.1.1** The Work under this Contract will be planned, scheduled, executed, and reported pursuant to provisions of the General Conditions, Supplemental General Conditions (if any) and the specified dates in the Summary of Work.

**9.1.2** The Contractor shall in no way be relieved of its responsibility of complying with all of the requirements of the Contract Documents, including, but not limited to, the responsibility of completing the Work within the Contract time and the responsibility of planning, scheduling, and coordinating the Work. The Contractor is required to comply with all control procedures specified herein and with any reasonable changes that may be necessary in the opinion of SU during the Contract duration.

**9.1.3** All milestones or specific completion dates listed in these Specifications or elsewhere in the Contract Documents are considered essential to the satisfactory performance of the Contract and to the coordination of all Work on the project.

The specific completion dates listed represent the latest allowable completion dates. Earlier completion dates may be established as agreed by the Contractor and SU.

**9.1.4** Should the Contractor plan to complete the Work earlier than any required Milestone or Completion date, SU shall not be liable to the Contractor for any costs or damages if the Contractor is unable to complete the Work before such Milestone or Completion date.

**9.1.5** The Contractor shall provide all information and input required for the development of the schedule for the Work according to the requirements of this Article. The purpose of the project schedule shall be to:

- a. Assure adequate planning, scheduling and reporting during execution of the Contract.
- b. Assure coordination of the Work of the Contractor, subcontractors and suppliers.
- c. Assist the Contractor and SU in monitoring the progress of Work and evaluating proposed changes to the Contract and project schedule.
- d. Assist the Contractor and SU in the preparation and evaluation of the Contractor's monthly progress payments

**9.1.6** The Contractor shall involve all applicable Subcontractors in the schedule development, updating, and revisions as required.

## **9.2 BREACH**

**9.2.1** Failure of the Contractor to comply with the requirements of this Article shall constitute reason that the Contractor is failing to prosecute the Work with such diligence as will insure its completion within the Contract items shall be considered a breach of the Contract.

## **9.3 PROJECTS WITH CONSTRUCTION VALUES LESS THAN \$3,000,000.00 (PROGRESS SCHEDULE)**

**9.3.1** The Work under this Contract will be planned, scheduled, executed and reported using a bar chart schedule as described below unless otherwise noted in the Supplementary General Conditions.

### **9.3.2 Schedule Requirements**

1. Within ten (10) calendar days of the Notice to Proceed, the Contractor shall submit to A/E and SU representative for review and comment, a Progress Schedule for the construction work scope. The schedule shall provide a complete and detailed sequence of operations of the Work within the limits specified in the Contract.

a. The Progress Schedule diagram shall include:

1. The order of the Contractor's activities including dates for start and completion.
2. Conformance with and identification of the specific dates specified in the Contract Documents.
3. The description of Work by activity.
4. Offsite activities: The Contractor shall include in the Progress Schedule all procurement activities which lead to the delivery of long-lead materials to the site, (long-lead items are defined as those requiring more than one month between ordering and delivery to the site).

Offsite activities shall include the following:

- a. Dates of submittals, ordering, manufacturing or fabricating, and delivery of equipment and materials.
- b. All significant Contractor activities during the fabrication and erection/installation in a Contractor's plant or on a job site, including materials/equipment purchasing, and delivery.
- c. Contractor's Drawings and submittals to be prepared and submitted to the A/E. The Contractor shall be solely responsible for expediting the delivery of all material to be furnished by him so that construction progress is maintained according to the current

schedule for this Work.

Submittals, equipment orders and similar items are to be treated as schedule activities and shall be given appropriate activity numbers.

5. Delivery of SU furnished material and equipment.
  6. Shop fabrication and delivery.
  7. Testing of equipment and materials.
  8. All code compliance inspections.
- b. The identity and duration of activities comprising the Progress Schedule shall meet the following criteria:
1. Activity boundaries shall be easily measurable and descriptions shall be clear and concise. The beginning and end of each activity shall be readily verifiable, and progress should be quantifiable.
  2. Responsibility for each activity shall be identified with a single performing organization.
  3. Seasonal weather conditions, utility coordination, no-Work periods, expected job learning curves, and other foreseeable delays to activities shall be considered and included in the planning and scheduling of all Work.
2. The level of detail of the Progress Schedule shall be such that activity durations over twenty-one (21) working days shall be kept to a minimum except for non-construction activities such as shop drawing and sample submittals, fabrication and delivery of materials and equipment, delivery of equipment, concrete curing and General Conditions activities.
3. The Progress Schedule shall show a completion date for the project that is not later than the project's required completion date. All activity durations shall be given in calendar days. The Schedule also shall show the following for each activity:
- a. Work of outside contractors, e.g., utilities, power, and with any separate contractor.
  - b. Description.
  - c. Estimated duration.
  - d. Planned start (by calendar date).
  - e. Planned finish (by calendar date).
  - f. Activity codes.
4. The schedule shall be prepared with notations to show how sequence of Work is affected by requirements for phased

completion, Work by SU, pre-purchased materials, coordination with existing Work, limitations of continued occupancies, site restrictions, provisions for future Work, seasonal variations, environment control, and similar provisions of total project.

5. It is to be expressly understood and agreed by the Contractor that the Progress Schedule is an estimate to be revised from time to time as progress proceeds, and that SU does not guarantee that the Contractor can start Work activities on the start dates or complete Work activities on the finish dates shown in the initial schedule, or in an updated or revised schedule; nor does SU guarantee that the Contractor can always proceed in the sequence established by said schedule.

### **9.3.3 REVIEW AND ACCEPTANCE PROCESS**

1. SU representative will review and comment in writing those issues and/or concerns regarding the Contractor's Progress Schedule. The Contractor shall comply with all of the submission requirements of the Specifications as set forth above.
2. The Contractor shall revise and resubmit the Progress Schedule within seven (7) calendar days. SU representative will review and comment on the revised schedule.
3. If approved, the Progress Schedule will become the official Project Schedule and will be used to monitor progress of the Work, subject to such revisions made to the schedule as provided for herein or in the Contract Documents and to support requests for payment.
4. Acceptance by SU representative of the Contractor's Progress Schedule shall not relieve the Contractor of the responsibility for accomplishing the Work within every Contract required Milestone and completion date. SU representative disclaims any obligation or liability due to acceptance of the Progress Schedule.

### **9.3.4 SCHEDULE UPDATES**

1. The Contractor understands and agrees that their Progress Schedule is intended to accurately reflect at all times the status of the construction project. The Contractor also understands and agrees that updating the schedule is a key component of this requirement and will make every reasonable effort to provide current information.
2. Separate update meetings will be held to report schedule progress and to review the Contractor's application for progress payment.

3. SU representative will not be obligated to review or to process an application for progress payment until the Contractor has submitted an updated Progress Schedule and percentages of completion are agreed to by SU representative, A/E and Contractor.
4. Specific dates for updates shall be agreed and established by SU representative, A/E, and Contractor but, shall be at a minimum, monthly. These updates shall be coordinated with the Contractor's application for payment date.

### **9.3.5 SCHEDULE REVISIONS**

1. The Contractor understands and agrees that their Progress Schedule is intended to accurately reflect at all times the status of the construction project. The Contractor also understands and agrees that updating the schedule is a key component of this requirement and will make every reasonable effort so that the schedule accurately reflects current conditions.
2. Should the Contractor after approval of the initial Progress Schedule want to change the plan of construction, he shall submit the requested revisions to SU representative including a description of the logic for rescheduling the Work, methods of maintaining adherence to intermediate Milestones and specific dates and the reasons for the revisions. If the requested changes are accepted by SU, they will be incorporated by the Contractor into the Progress Schedule in the next reporting period.
3. If SU representative orders changes by Change Order that impact the Contract Milestones or specific dates stipulated, a Network showing the impact will be prepared by the Contractor and provided to SU. After SU accepts the Network, it will be incorporated into the Progress Schedule by the Contractor. No time extension for such changes shall be granted unless the change extends the project beyond the Contract Substantial Completion date.
4. If at any time during construction it appears to SU representative that the Contractor's schedule no longer represents the actual progress of the Work, SU representative will request in writing a revision to the schedule. Any out of sequence progress will be considered evidence that the schedule needs revising. The Contractor will have three (3) Working days to respond to that written request.

5. Failure to furnish any required submittal or information specified herein shall constitute a cause for withholding any part of progress payments pursuant to the General Conditions.

#### **9.3.6 RECOVERY SCHEDULE**

1. Should any of the conditions exist, such that certain activities shown on the Contractor's Progress Schedule fall behind schedule to the extent that any of the specific dates are in jeopardy, the Contractor shall be required at no extra cost to SU to prepare and submit to SU representative a supplementary Recovery Schedule, in a form and detail to regain compliance with the current accepted Progress Schedule. The preparation of a recovery schedule shall not be grounds for a Change Order or a Time Extension.
2. The Contractor shall perform the following after determination of the requirement for a Recovery Schedule:
  - a. Within three (3) calendar days, the Contractor shall submit a Recovery Schedule for review and acceptance to SU representative. The Recovery Schedule shall be prepared to similar level of detail as the Progress Schedule.
  - b. Any revisions necessary because of this review shall be resubmitted by the Contractor for acceptance within two (2) calendar days receipt of SU comments. SU accepted Recovery Schedule shall be the Schedule that the Contractor shall use in planning, organizing, directing, coordinating, performing, and executing the Work (including all activities of subcontractors, equipment vendors and suppliers) for the duration of the recovery schedule to regain compliance with the Progress Schedule.

#### **9.4 PROJECTS WITH CONSTRUCTION VALUE GREATER THAN OR EQUAL TO \$3,000,000.00 (CPM SCHEDULE)**

**9.4.1** The Work under this Contract will be planned, scheduled, executed and reported using the Critical Path Method (CPM).

#### **9.4.2 CPM REQUIREMENTS**

1. Within fifteen (15) calendar days of the Notice to Proceed the Contractor shall submit to A/E and SU representative for review and comment, a CPM Schedule for the construction/erection Work scope. The schedule shall provide a complete and detailed sequence of operations of the Work within the limits specified in the Contract.



- a. The CPM Schedule shall include:
  1. The order and interdependencies of the Contractor's activities and the major points of the interface or interrelation with the activities of others, including specific dates for completion. The following criteria shall form the basis for assembly of the logic:
    - a. What activity must be completed before a subsequent activity can be started?
    - b. What activities can be done concurrently? This includes activities with Start-To-Finish and Finish-To-Finish relationships with or without leads and lags.
    - c. What activities must be started immediately following a completed activity?
  2. Activities should be linked between major area separations of the project so that the individual areas do not imply complete independence. The critical path should run through all major areas, since the entire project must be completed.
  3. Conformance with and identification of the specific dates specified in the Contract Documents.
  4. The description of Work activity
  5. Off site activities:

Off site activities shall include the following:

    - a. Dates of submittals, ordering, manufacturing or fabricating, and delivery of equipment and materials.
    - b. All significant Contractor activities during the fabrication and erection/installation in a Contractor's plant or on a job site, including materials/equipment purchasing and delivery.
    - c. Contractor's drawings and submittals to be prepared and submitted to the A/E. The Contractor shall be solely responsible for expediting the delivery of all material to be furnished by him so that construction progress is maintained according to the current schedule for this Work.

Submittals, equipment orders and similar items are to be treated as schedule activities and shall be given appropriate activity numbers

6. Delivery of SU furnished material and equipment.
  7. Shop fabrication and delivery.
  8. Testing of equipment and materials.
  9. All code compliance inspections.
- b. The identity and duration of activities comprising the CPM Schedule shall meet the following criteria:
1. Activity boundaries shall be easily measurable and descriptions shall be clear and concise. The beginning and end of each activity shall be readily verifiable, and progress should be quantifiable.
  2. Responsibility for each activity shall be identified with a single performing organization.
  3. Seasonal weather conditions, utility coordination, no-work periods, expected job learning curves, and other foreseeable delays to activities shall be considered and included in the planning and scheduling of all Work.
2. The level of detail of the CPM Schedule shall be such that activity durations over twenty-one (21) working days shall be kept to a minimum except for non-construction activities such as shop drawing and sample submittals, fabrication and delivery of materials and equipment, delivery of equipment, concrete curing and General Conditions activities.
3. The CPM Schedule shall show an early completion date for the project that is not later than the project's required completion date. All activity durations shall be given in calendar days. The CPM Schedule also shall show the following for each activity:
- a. Interface with the work of outside contractors, e.g., utilities, power, and with any separate contractor
  - b. Description
  - c. Estimated duration
  - d. Early start (by calendar date)
  - e. Late start (by calendar date)
  - f. Early start (by calendar date)
  - g. Late finish date (by calendar date)
  - h. Total float available in Work days
  - i. Activity codes
  - j. The Critical Path for the project, with said path of activities being clearly and easily recognizable on the time-scaled CPM Schedule Diagram. The relationship between all non-critical activities and activities on the Critical Path shall also be clearly shown on the CPM Schedule Diagram.
  - k. The dollar value of each activity (Schedule of Values).

4. It is to be expressly understood and agreed by the Contractor that the CPM Schedule is an estimate to be revised from time to time as progress proceeds, and that SU does not guarantee that the Contractor can start work activities on the “early start” or “late start” dates or complete work activities on the “early finish” or the “late finish” dates shown in the initial schedule, or in an updated or revised schedule; nor does SU guarantee that the Contractor can always proceed in the sequence established by said schedule.

#### **9.4.3 REQUIRED SUBMITTALS**

The submittal of the contract scheduling documents shall include:

1. A plotter-generated time-scaled network diagram showing activity descriptions, durations and relationships between activities. The critical path should be easily identifiable.
2. The following reports:
  - a. Three (3) sorts of the standard CPM report, including as a minimum, activity numbers, descriptions, early and late start and finish dates, and total float; the report shall be sorted by Activity Number, Early Start, and Total Float.
  - b. Predecessors/successor report showing the above information plus predecessors and successors for each activity.
3. A computer disk containing the schedule data files. The Contractor shall develop the schedule using the Primavera scheduling system or an equivalent system. The Primavera system is preferred. SU has the right to accept or reject requests by the Contractor to use a scheduling system other than Primavera.

#### **9.4.4 REVIEW AND ACCEPTANCE**

1. SU will review the Contractor’s Schedule, including logic diagrams and computer-generated analysis. The Contractor shall comply with all of the submission requirements of the scheduling specification as set forth above entitled “Submittal.” If the Contractor submits a complete package that complies with the requirements, SU will review and comment in writing.
2. The Contractor shall revise and resubmit the CPM Schedule within seven (7) calendar days. SU will review and comment on the revised schedule.
3. Within seven (7) calendar days following acceptance of the revised schedule, the Contractor shall provide two (2) originals of the CPM Schedule with Computer Reports to SU for final

review and acceptance.

4. Upon acceptance, the CPM Schedule will become the official Project Schedule and will be used to monitor progress of the Work, subject to such revisions made to the schedule as provided for herein or in the Contract Documents and to support requests for payment.
5. Acceptance by SU representative of the Contractor's CPM Schedule shall not relieve the Contractor of the responsibility for accomplishing the Work within every Contract required Milestone and Completion date. SU representative disclaims any obligation or liability due to acceptance of the CPM Schedule.
6. If the Contractor fails to provide the schedules within the time prescribed or revisions to the schedule within the requested time, SU representative may withhold approval of payment until the Contractor submits the required information.

#### **9.4.5 SCHEDULE UPDATES**

1. The Contractor understands and agrees that their Progress Schedule is intended to accurately reflect at all times the status of the construction project. The Contractor also understands and agrees that updating the schedule is a key component of this requirement and will make every reasonable effort to provide current information.
2. Separate update meetings will be held to report schedule progress and to review the Contractor's application for progress payment. The application for progress payment is produced by the Contractor based on the Schedule of Values of the cost-loaded CPM.
3. SU representative will not be obligated to review or to process any application for progress payment until the Contractor has submitted an updated CPM Schedule and percentages of completion are agreed to by SU representative, A/E and Contractor.
4. When updating the computerized schedule, the Contractor must use the option that retains the original logic. Primavera calls this option "Retained Logic." Any option that overrides the original logic and allows activities that have started out of sequence to float to the project end date is not permitted.
5. Specific dates for updates shall be agreed and established by the

SU representative, A/E, and Contractor but, shall be at a minimum, monthly.

#### **9.4.6 SCHEDULE REVISIONS**

1. The Contractor understands and agrees that their schedule is intended to accurately reflect at all times the status of the construction project. The Contractor also understands and agrees that changes or revisions to the schedule are key components of this requirement and will make every reasonable effort to provide information as quickly as possible so that the CPM Schedule accurately reflects current conditions.
2. Should the Contractor after approval of the initial CPM Schedule want to change the plan of construction, he shall submit the requested revisions to SU representative including a description of the logic for rescheduling the work, methods of maintaining adherence to intermediate Milestones and specific dates and the reasons for the revisions. If the requested changes are accepted by SU, they will be incorporated by the Contractor into the CPM Schedule in the next reporting period.
3. The Contractor shall revise the schedule to include the effect of changes, acts of God or other conditions or events that have affected the CPM Schedule. SU representative will review and either approve or reject the changes in writing to the Contractor. If the requested changes are approved, the Contractor shall incorporate the changes into the CPM Schedule in the next reporting period.
4. If SU representative orders changes by Change Order that impact the Contract Milestones or specific dates stipulated, a schedule showing the impact will be prepared by the Contractor and provided to SU. After SU accepts the Network, it will be incorporated into the CPM Schedule by the Contractor. No time extension for such changes shall be granted unless the change extends the project beyond the Contract Substantial Completion date.
5. Neither the updating or revision of the Contractor's CPM Schedule nor the submission, updating, change or revision of any report or schedule for SU's review or non-objection of any such report or schedule shall have the effect of amending or modifying in any way, the Contract Time, any Contract Completion Date, or Contract Milestone Dates or of modifying or limiting in any way Contractor's obligations under this Contract.
6. If at any time during construction it appears to SU representative that the Contractor's schedule no longer

represents the actual progress of the Work, SU representative will request in writing a revision to the schedule. Any out of sequence progress will be considered evidence that the schedule needs revising. The Contractor will have three (3) working days to respond to that written request.

7. Failure to furnish any required submittal or information specified herein shall constitute a cause for withholding any part of progress payments pursuant to the General Conditions.

#### **9.4.7 RECOVERY SCHEDULE**

1. Should any of the conditions exist, such that certain activities shown on the Contractor's CPM Schedule fall behind schedule to the extent that any of the specific dates are in jeopardy, the Contractor shall be required at no extra cost to SU to prepare and submit to SU representative in a addition to the Project Schedule a supplementary Recovery Schedule, in a form and detail appropriate to the need to regain compliance with the current accepted CPM Schedule during the immediate subsequent pay period. The preparation of a recovery schedule shall not be grounds for a Change Order or a Time Extension.
2. The Contractor shall perform the following after determination of the requirement for a Recovery Schedule:
  - a. Within three (3) calendar days, the Contractor shall submit a Recovery Schedule for review and acceptance to SU representative. The Recovery Schedule shall be prepared to similar level of detail as the CPM Schedule and shall have a maximum duration of one (1) month.
  - b. Any revisions necessary because of this review shall be resubmitted by the Contractor for acceptance within two (2) calendar days receipt of SU comments. SU accepted Recovery Schedule shall then be the Schedule that the Contractor shall use in planning, organizing, directing, coordinating, performing, and executing the Work (including all activities of subcontractors, equipment vendors and suppliers) for its one (1) month duration to regain compliance with the CPM Schedule.

### **10. ARTICLE 10 – PAYMENTS**

#### **10.1. Contractor Payment Process**

- 10.1.1** Application for Payments shall be based on the approved Schedule of Values. The submission and approval of progress updates calculating the value of Work done for any given pay period for any

activity based on the percentage complete for that activity less the amount previously paid for past percentages complete and percent of retainage shall be an element of the evaluation of progress payments pursuant to the provisions of the General Conditions. An initial application for payment for expenditures not directly related to the Work accomplished at the project will be allowed before the acceptance of the Contractor's Progress Schedule. Requests for payment for Work items not included above may be denied without an approved schedule.

- 10.1.2** SU may make progress payments monthly as the Work proceeds, or at more frequent intervals as determined by SU, on estimates approved by of amounts for contract payments of the total contract price, showing the amount included therein for each principal category of the Work, in such detail as requested, to provide a basis for determining progress payments.

The schedule, as approved, shall be used only as a basis for the Contractor's estimates for progress payments, and approval by SU does not constitute acceptance of the allowability of costs to a specific element of Work. The Contractor is cautioned that no payment requests shall be approved until the Schedule of Values, (SOV) has been approved in writing by SU's authorized representative.

- 10.1.3** If a contractor has performed in accordance with the provisions of a contract with SU and the billing for the Work has been approved and certified by SU's authorized representative SU shall pay the amount due to the contractor for each periodic payment, final payment or retainage monies not more than 30 calendar days after the billing date, which for a periodic billing, shall be the periodic billing date specified in the contract. The billing shall be deemed approved and certified 20 days after the appropriate SU construction accounting office receives it unless SU's authorized representative provides, before the end of the 20-day period, a written statement of the amount withheld and the reason for withholding payment. If a subcontractor or sub subcontractor has performed in accordance with the provisions of its contract with the contractor or subcontractor and the Work has been accepted by SU's authorized representative, as applicable, and the parties have not otherwise agreed in writing, the contractor shall pay to its subcontractor and the subcontractor shall pay to its sub subcontractor within 10 calendar days of the receipt of each periodic payment, final payment or receipt of retainage monies, the full amount received for the Work of the subcontractor or sub subcontractor based on the Work completed or the services rendered under the applicable contract. In the case of ongoing Work on the same project

for which partial payments are made, the amount of money owed for Work already completed shall only be payable if the subcontractor or sub subcontractor is performing to the satisfaction of the contractor or subcontractor, as applicable.

- 10.1.4** In the preparation of estimates, SU has the discretion to authorize material delivered on the site and preparatory Work done to be taken into consideration. Material delivered to the Contractor at locations other than the site may also be taken into consideration if (a) such consideration is specifically authorized by the contract and (b) the Contractor furnishes the properly completed forms provided by SU related to the storage of materials.
- 10.1.5** In making such progress payments for contract Work completed, SU will retain 2% of the invoice amount as cash retainage unless the Contractor provides a Retainage Bond or “eligible collateral” as provided by Section 10.5 below.
- 10.1.6** All material and work covered by progress payments made shall thereupon become the sole property of the University, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of all materials and work upon which payments have been made or the restoration of any damaged work, or as waiving the right of the University to require the fulfillment of all of the terms and conditions of the Contract.
- 10.1.7** If performance and payment bonds are required under this contract, the University shall pay to the Contractor the total premiums paid by the Contractor to obtain the bonds. This payment shall be paid at one time to the Contractor together with the first progress payment otherwise due after the Contractor has (1) furnished the bonds (including coinsurance and reinsurance agreements, when applicable), (2) furnished evidence of full payment to the surety company, and (3) submitted a request for such payment. The payment by the University of the bond premiums to the Contractor shall not be made as increments of the individual progress payments and shall not be in addition to the contract price.
- 10.1.8** In addition to other warranties required by provisions of the contract and Specifications, the Contractor warrants that title to all Work, materials and equipment covered by an application for payment will pass to SU, either upon incorporation into the construction or upon receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances. This provision shall not be construed as relieving the Contractor from sole responsibility for the care and protection of materials and Work upon which payments have been made, or for the restoration of any damaged Work,



or as a waiver by SU of its rights to require fulfillment of all terms of the contract.

**10.1.9** Recommendation for approval of an invoice will constitute a representation by the A/E to SU, based on inspections at the site and data contained in the invoice, that the Work has progressed to the point indicated; that, to the best of the A/E's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents; and that the Contractor is entitled to payment in the amount certified.

By recommending approval of the invoice, however, the A/E shall not thereby be deemed to represent that it has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, or that it has reviewed the construction means, methods, techniques, sequences or procedures, or that it has made any examination to ascertain how and for what purpose the Contractor has used the moneys previously paid on account of the contract sum.

**10.1.10** No payment for Work will be approved until the Contractor has complied with the provisions of this Article.

**10.1.11** If any corporation licensed to do business in New Jersey shall be of delinquent in the payment of taxes due the State, unless under an active appeal process, SU may withhold moneys due the said corporation for the purpose of assuring the payment to the State of such taxes.

## **10.2 Invoices**

**10.2.1** Requests for payment under the contract for materials delivered or services rendered require the proper completion and submittal of specific forms to be provided by SU.

**10.2.2** The Contractor shall submit the completed request for payment packet to SU project representative once monthly. The Contractor shall submit a pencil copy for review by SU by the 20<sup>th</sup> of each month. The Contractor is to complete the payment application based on the projected completed work for the end of the pay period. Receipt of a properly completed request for payment packet will start the prompt payment clock, upon receipt at the Office of Facilities Planning and Construction, unless it is subsequently discovered to be incomplete or otherwise unacceptable and returned to the Contractor within 20 calendar days for correction. A properly completed request for payment shall be paid not more than 30 calendar days from date time-stamped by the Office of Facilities Planning & Construction.

**10.2.3** Request for payment packets shall be prepared and submitted in original plus two copies unless otherwise specified.

**10.2.4** For purpose of determining if interest begins to accrue under the State's Prompt Construction Payment Act, (NJSA 2A:30A-1 et seq.)

- a. A proper invoice will be deemed to have been received when it is time- stamped by the Office of Facilities Planning & Construction and acceptance of the materials delivered or services rendered has occurred;
- b. Payment shall be considered made on the date on which a check for such payment is dated;
- c. Payment terms offered by the Contractor will not be recognized by SU as a "required payment date.

### **10.3 Interest**

**10.3.1** Interest shall be paid on the amount due the Contractor pursuant to a properly executed SU invoice (see preceding Section 10.2) if the required payment is not made on or before the required payment date.

**10.3.2** The required payment date shall be 30 calendar days from the receipt of a properly executed SU invoice or 30 calendar days from receipt of supplies or services, whichever is later from the Contractor.

**10.3.3** Interest on amounts due shall be paid to the Contractor in accordance with the Prompt Construction Payment Act (NJSA 2A:30A-2).

### **10.4 Allowances**

**10.4.1** The Contractor shall include in its bid all allowances as may be set forth in the Contract Documents. The Contractor shall purchase the "allowed materials" as directed by SU on the basis of the lowest acceptable quote from at least three competitive offers. If the actual cost of the "allowed materials" is more or less than the stipulated allowance, the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the actual purchase cost without additional charges for overhead, profit, bond premium or any other incidental expenses. The cost of installation of the "allowed materials," unless otherwise specified, is to be included as the responsibility of the Contractor in whose contract the allowance is included, and the Contractor installing such "allowed materials shall not be entitled to additional payment for such installation.

Unless otherwise provided in the Contract Documents:

- a. These allowances shall cover the Contractor's true costs, including credit for any trade discount, of the materials and equipment required by the allowance, delivered at the site,

including all applicable taxes;

- b. The Contractor's costs for unloading and handling, labor, installation costs, overhead, profit and other expenses reasonably required in connection with such allowance items shall be included in the contract sum and not as part of the allowances; and
- c. Should the actual cost vary from the allowance, the contract sum shall be adjusted accordingly by change order, the amount of which will recognize changes, if any, of handling costs on the site, labor, installation costs, overhead, profit and other expenses resulting to the Contractor from any change in quantity only (not price) beyond that contemplated by the allowance.

#### **10.5 Retainage, Retainage Bond or Other Security for Retainage Amount.**

**10.5.1** SU shall withhold retainage from each progress payment in the amount of 2% of the approved billing, unless the Contractor posts a retainage bond with SU or deposits bonds or notes (“Eligible Collateral”) as provided below, in an amount equal to 2% of the total contract value. The cash retainage, retainage bond or eligible collateral will be held by SU until final completion and acceptance of the Work by the University.

**10.5.2** Retainage Bond: If the Contractor decides to submit a Retainage Bond in lieu of having retainage withheld from each progress payment, the Contractor shall submit the original bond to SU in the amount of 2% of the contract upon signing the contract and before starting the Work. SU shall approve the bond form and shall be named as the insured on the bond. If any change order results in an increase in the contract price, the contractor shall increase the face amount of the retainage bond by 2% of the amount of the Change Order.

**10.5.3** Deposit of Eligible Collateral in lieu of Retainage:  
If the contractor seeks to have the retainage amount secured by eligible collateral, the contractor shall notify the University of that intention in its bid, and shall submit a detailed list, description and valuation of the bonds or notes proposed as collateral to SU within 5 days of the Contractor’s receipt of notice of SU’s intent to award the contract to the Contractor. The eligible collateral proposed by the Contractor must meet the definition of “eligible collateral” in N.J.A.C. 3:34-1.2, and must be valued in an amount not less than 2% of the total contract amount. The acceptance of any eligible collateral in lieu of retainage or a retainage bond shall be approved by the University at the time the contract is executed. The Contractor will be required to execute a Custodial Account Control Agreement (“CAC Agreement”) in a form satisfactory to SU with a

financial institution located within this State which has been approved as a “public depository” by the N.J. Department of Banking. Within five business days of execution of the Contract and the CAC Agreement, the Contractor shall deposit the approved eligible collateral into the Custodial Account bearing interest at the rate currently paid by such institutions or associations on time or savings accounts. If any change order results in an increase in the total contract price, or in the event of a reduction in the value of the collateral as provided in the CAC Agreement, the contractor shall deposit into the Custodial Account additional eligible collateral to assure that the total value of the eligible collateral in the Custodial Account is maintained at not less than 2% of the total contract amount, including all approved change orders.

#### **10.6 Release of Retainage after Final Acceptance of the Work.**

- 10.6.1** Upon final completion and acceptance of the Work by SU, satisfactory completion, by the Contractor, of all contract close-out requirements, completion of a University audit on all contract values and payments, and after the Contractor shall have furnished the University with a release of claims against the University, arising by virtue of this contract, other than claims in stated amounts as may be specifically excepted by the Contractor from the release, the Contractor shall submit a properly executed invoice for final payment to SU project representative who will initiate the process of final payment review and approval. It is agreed by SU and the Contractor that the final acceptance date shall be the date the final payment application is received and time-stamped by the Office of Facilities Planning & Construction unless the final payment application is subsequently discovered to be incomplete or otherwise unacceptable and returned to the Contractor within 20 calendar days for correction.
- 10.6.2** All amounts of retainage withheld by SU under Section 10.5, less deductions or credits authorized by the final payment application or as provided by Section 10.6.5 below, shall be disbursed to the Contractor within 30 days of the final acceptance date.
- 10.6.3** If the Contractor has posted a retainage bond under Section 10.5, the bond, less deductions or credits authorized by the final payment application or as provided by Section 10.6.5 below, shall be released by SU within 30 days of the final acceptance date.
- 10.6.4** If the Contractor has entered into a CAC Agreement with SU under Section 10.5, the collateral deposited therein, and any interest accrued on such collateral or on the account, less deductions or credits authorized by the final payment application or as provided by Section 10.6.5 below, shall be returned to the

contractor within 30 days of the final acceptance date, unless otherwise specified in the CAC Agreement.

**10.6.5** If any Contractor licensed to do business in New Jersey shall be or become delinquent in the payment of taxes due the State, unless under an active appeal process, SU may withhold moneys due the Contractor for the purpose of assuring the payment to the State of such taxes.

**10.6.6** If for any reason the Contractor refuses final payment, the project shall be closed out by SU by the processing of a Final Invoice. All residual funds will be held in escrow by SU until all claims of SU and all Contractors are satisfied.

## **11. ARTICLE 11 -- UNCOVERING AND CORRECTION OF WORK**

### **11.1 Uncovering of Work**

**11.1.1** If any portion of the Work is covered prior to inspection by SU or the A/E, especially Work specifically required by the Contract Documents to be inspected, it shall be uncovered for observation.

Uncovering the replacement of covering shall be at the installation Contractor's expense. The Contractor is obligated to advise SU or the A/E of all Work scheduled to be covered which is reasonably subject to prior inspection before actual covering.

**11.1.2** If any other portion of the Work not specifically required to be inspected has been covered, which SU or the A/E did not request to observe prior to being covered, a request may subsequently be made to inspect such Work, and it shall be uncovered by the installation Contractor. If such

Work is found to be in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate change order, be reimbursed by SU. If such Work is found not to be in accordance with the Contract Documents, the Contractor shall pay all associated costs, unless it is found that this condition was caused by SU, in which event SU shall be responsible for the payment of such costs.

### **11.2 Correction of Work**

**11.2.1** The Contractor shall promptly correct all Work rejected by SU or the A/E as defective or failing to conform to the Contract Documents, whether observed before or after final acceptance and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including the A/E's additional services, if any.

**11.2.2** The Contractor shall remove from the site all portions of the Work which are defective or non-conforming and which have not been corrected, unless removal is waived by SU.

**11.2.3** If the Contractor fails to correct defective or non-conforming Work in a

timely manner, SU may make arrangements for such correction by others and charge the cost of so doing to the responsible Contractor and/or its sureties.

- 11.2.4** If the Contractor does not proceed with the correction of such defective or non-conforming Work within 72 hours, fixed by written notice from SU or the A/E, SU may cause the removal and correction of the Work and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay for the cost of such removal and storage within 14 calendar days thereafter, SU may, upon 14 calendar days additional written notice, sell such material and equipment at auction or at private sale and shall account for the net proceeds thereof, after deducting all of the costs which are the responsibility of the Contractor, including compensation for the A/E's additional services, if any.

If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate credit change order shall be issued. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor and/or its surety shall pay the difference to SU.

- 11.2.5** The Contractor shall be responsible for the cost of making good all Work destroyed or damaged by such correction or removal.

- 11.2.6** Nothing contained herein shall be construed to establish a period of limitation, with respect to any other obligation which the Contractor might have under the Contract Documents.

**11.3 Acceptance of Defective or Non-Conforming Work**

- 11.3.1** SU may determine that the best interests of SU will be served by accepting defective or non-conforming Work instead of requiring its removal and correction. In such instance a change order will be issued to reflect an appropriate and equitable and reduction in the contract sum. Such adjustment shall be effected regardless of final payment having previously been made, and the Contractor and/or its surety shall be responsible for promptly providing any funds due SU as a result thereof.

**12. ARTICLE 12 -- PROTECTION OF PERSONS AND PROPERTY**

**12.1 Safety Precautions and Programs**

- 12.1.1** The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. It is the responsibility of the Contractor to maintain total control of safety to ensure that its employees, its subcontractors, occupants, and the general public will be provided an environment free of recognized hazards during construction and renovation activities. Prior to

the start of the work, the Contractor shall provide a Site Specific Safety Plan to SU within 14 calendar days after issuance of Notice to Proceed so the plan can be reviewed. The Contractor shall require that all subcontractors of any tier comply with the Site Specific Safety Plan provided by the Contractor. The Contractor shall assume all costs related to, but not limited to, personal protective equipment, training, or compliance requirements. Failure to include the cost of complying with all applicable laws, ordinances, rules, or regulations by authorities having jurisdiction will not relieve the Contractor from the obligation to implement these requirements.

Contractor shall designate a responsible member of its organization at the site, whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor, in writing, to SU and the A/E.

## **12.2 Safety of Persons and Property**

**12.2.1** Contractor shall take all reasonable precautions for the safety and security of, and shall provide all reasonable protection to prevent damage, injury or loss to:

- a. Every employee on the Work and all other persons who may be affected thereby;
- b. All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor, or any of its subcontractors or sub-subcontractors; and
- c. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

**12.2.2** The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.

**12.2.3** The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including, but not limited to, rails, night-lights, the posting of danger signs and other warnings against hazards, promulgating safety regulations, notifying owners and users of adjacent utilities and other means of protection against accidental injury or damage to persons and property.

**12.2.4** When the use of hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified

personnel. Storage of hazardous materials shall be placed in storage of approved containers for that specific material and Contractor shall provide to SU the M.S.D.S. for all hazardous materials.

**12.2.5** No Contractor shall load or permit any part of the Work to be loaded so as to endanger its safety.

**12.2.6** The Contractor shall promptly remedy all damage or loss to any property caused in whole or in part by the Contractor, any of its subcontractors, sub-subcontractors, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible, except damage or loss attributable to the acts or omissions of SU or A/E, or anyone directly or indirectly employed by either of them or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to its obligations stated elsewhere herein.

The Contractor shall provide all necessary means to make weather-tight any opening, access or any area that will cause or have the potential to cause any type of weather from entering into the building.

The Contractor shall provide weather-tight materials to protect all interior equipment, devices, or contents. The Contractor shall be responsible for any damages to the building, equipment, devices, or contents of the Owner as a result of weather entering into the building.

For those conditions where life and health safety warrants an immediate response and/or repairs, the contractor shall address the matter(s) accordingly with due diligence.

### **12.3 Construction Safety Act**

In order to protect the lives and health of the employees working under the Contract, the Contractor shall comply with all pertinent provisions of the "Contract Work Hours and Safety Standards Act" (N.J.S.A. 34:5-166, *et seq.*), as amended, commonly known as the "Construction Safety Act", as it pertains to health and safety standards; and shall maintain an accurate record of all cases of death, occupational disease and injury requiring medical attention or causing loss of time from work arising out of or in the course of employment on the work under the Contract.

In addition, Contractor and all its subcontractors shall comply with O.S.H.A, SU Safety Manual and any applicable local codes and ordinances.

### **12.4 Emergencies**

**12.4.1** In any emergency affecting the safety of persons or property, the Contractor shall act with diligence, at its discretion, to prevent threatening injury, damage or loss.



In such case, the Contractor shall immediately notify SU Campus Police, SU representative, and Office of Facilities Planning & Construction of the action taken and shall forthwith prepare and submit a detailed report of said action.

**12.4.2** Wherever the Contractor has taken no action, but has notified SU or wherever SU has otherwise been made aware of any emergency threatening injury to persons, or loss or damage to Work or adjacent property, the Contractor shall act only as instructed or authorized by SU.

**12.4.3** Prior to commencement of the Work, Contractor shall provide SU with the names and contact information for Contractor's employees and subcontractors who are available 24 hours, seven days a week, in case of emergency.

### **13. ARTICLE 13 -- INSURANCE AND INDEMNITY AND BOND REQUIREMENTS**

#### **13.1 Contractor Insurance Requirements**

**13.1.1** The Contractor shall secure and maintain in force for the term of the Contract, insurance coverage provided herein. All insurance coverage is subject to the approval of SU and shall be issued by an insurance company authorized to do business in the State of New Jersey and which maintains an A.M. Best rating of A- (VII) or better. The Contractor shall provide SU with current Certificates of Insurance for all coverage and renewals thereof which must contain the provision that the insurance provided in the certificate shall not be canceled for any reason except after thirty (30) days written notice to SU.

All insurance required herein shall contain a waiver of subrogation in favor of SU. Commercial General Liability insurance, Comprehensive Automobile Liability and Excess Liability umbrella form insurance, required herein, shall name SU, the State of New Jersey, the New Jersey Educational Facilities Authority, the Architect/Engineer and Construction Manager as additional insured's.

**13.1.2** Commercial General Liability insurance written on an occurrence form including independent contractor liability, product/completed operations liability, contractual liability, covering but not limited to the liability assumed under the indemnification provisions of this Contract. Coverage for bodily injury and property damage claims arising out of the professional acts of the general contractor and subcontractors shall also be included. The policy shall not include any endorsement that restricts or reduces coverage as provide by the ISO CG0001 form without the approval of SU.

The minimum limits of liability shall not be less than a combined single limit of one million dollars (\$1,000,000) per occurrence, three million dollars (\$3,000,000) general aggregate, three million dollars (\$3,000,000)

product/completed operations aggregate. A “per project endorsement” shall be included, so that the general aggregate limit applies separately to the project that is the subject of this Contract.

**13.1.3** Comprehensive Automobile Liability covering owned, non- owned, and hired vehicles. The limits of liability shall not be less than a combined single limit of one million dollars (\$1,000,000) per occurrence.

**13.1.4** Worker's Compensation Insurance applicable to the laws of the State of New Jersey and other State or Federal jurisdiction required to protect the employees of the Contractor and any Subcontractor who will be engaged in the performance of this Contract. The certificate must also indicate that no proprietor, partner, executive officer or member is excluded.

This insurance shall include Employers' Liability Protection with a limit of liability not less than one million dollars (\$1,000,000) bodily injury, each occurrence, one million dollars (\$1,000,000) disease, each employer, and one million dollars (\$1,000,000) disease, aggregate limit. Including the employer's liability insurance under the umbrella insurance can satisfy the limit requirements.

**13.1.5** **5** The Contractor shall obtain and maintain a separate Owners and Contractor's Protective Liability Insurance Policy for the same limits of liability as specified for the Commercial General Liability Insurance in the name of SU, the State of New Jersey and the New Jersey Educational Facilities Authority. The Architect/Engineer, and the Construction Manager are to be the named as additional insured. The policy shall be maintained in force for the term of the Project or one year, whichever is longer.

**13.1.6** Excess Liability, umbrella insurance form, applying excess of primary to the commercial general liability, commercial automobile liability and employer's liability insurance shall be provided with minimum limits of ten million dollars (\$10,000,000) per occurrence, ten million dollars (\$10,000,000) general aggregate, and ten million dollars (\$10,000,000) products/completed operations.

**13.1.7** The contractor shall be responsible for obtaining Certificates of Insurance for all coverages described in 13.1.2 and 13.1.4 and renewals thereof for each subcontractor and their sub-tier subcontractors prior to the subcontractor's beginning Work on the Project. The contractor shall not require subcontractors or their sub-tier subcontractors to comply with paragraph 13.1.5, Owners and Contractors Protective Liability Policy or paragraph 13.1.6, Excess Liability, umbrella form.

The contractor shall provide copies of all subcontractor and their sub-tier subcontractors' certificates of insurance to the University upon request.

## **13.2 Insurance To Be Carried By Stockton University**

**13.2.1** SU shall provide; insurance protection in the form of a Builders Risk Insurance or similar Policy upon the structure for which the Work on this Contract is to be done. The structure will be insured for 100% of the insurable replacement value thereof including materials, owned by SU, in place or to be used as part of the permanent construction including surplus materials.

**13.2.2** This insurance shall not protect against damage or loss to any of the Contractor's or Subcontractor's tools, equipment, scaffolding, staging towers or forms, Contractor's materials and sheds or other temporary structures erected for used by the Contractor or Subcontractors. It is understood that the Contractor will, at their own expense, carry all insurance which may be required to provide the necessary protection against such loss or damage herein described which insurance shall contain a waiver of any right of subrogation against SU.

**13.2.3** The insurance procured by SU under this paragraph may provide for a deductible. SU shall be responsible for payment of any deductible for any builder's risk loss it may make claim for under this policy.

**13.2.4** The Contractor shall immediately notify SU in writing and take any other appropriate steps as may be required under the standard Builder's Risk Insurance Policy in effect in the event of any loss. Prior to the acceptance of the building by SU, the Contractor shall, at SU 's option, replace and repair the damaged Work as originally provided in the Drawings and Specifications at no additional compensation to that provided in the original contract.

**13.2.5** All losses will be adjusted with, and payable to, SU.

**13.2.6** Builders Risk insurance protection as described herein shall not relieve the Contractor from its obligation to complete, according to Plans and Specifications, the project covered by the contract, and the Contractor and their Surety shall be obligated to full performance of the Contractor's undertaking.

## **13.3 Performance and Payment Bond**

**13.3.1** The successful bidder shall furnish, within ten (10) calendar days after the intent to award letter, both a performance bond substantially in the statutory form NJSA 2A:44-147 in an amount equal to one hundred percent (100%) of the total contract price as security for the faithful performance of this contract and a payment bond in statutory form in amount equal to one hundred percent (100%) of the contract price as security for the payment of all persons and firms performing labor and furnishing materials in connection with this contract. The performance bond and the payment bond may be combined or in separate instruments in accordance with law. No contract shall be executed unless and until each bond is submitted to

and approved by SU. The surety must be presently authorized to do business in the State of New Jersey.

- 13.3.2** The cost of bonds shall be paid for by the Contractor.
- 13.3.3** If at any time SU, for justifiable cause, is dissatisfied with any surety which has issued or proposes to issue a performance or payment bond, the contractor shall, within ten (10) calendar days after notice from SU to do so, substitute an acceptance bond (or bonds). The substituted bond(s) shall be in such form and sum and executed by such other surety or sureties as may be satisfactory to SU. The premiums on such bond(s) shall be paid by the contractor.
- 13.3.4** No contract shall be executed and/or no payment made under a contract until the new surety or sureties shall have furnished such an acceptable bond to SU.
- 13.3.5** Bonds must be legally effective as of the date the contract is signed. Each must indicate the contractor's name exactly as it appears on the contract.

Current attorney-in-fact instruments and financial statement of the surety must be included with the bonds. Bonds must be executed by an authorized officer of the surety. Bonds furnished under this section shall be issued by a surety that meets the standards set forth in NJSA 18A: 64-68 et seq. including the requirement that the surety shall hold a current certificate of authority issued by the United States Secretary of Treasury, pursuant to 31 U.S.C. section 9305, that is valid in the State of New Jersey as listed annually in the United States Treasury Circular 570.

- 13.3.6** The Payment and Performance Bond shall be accompanied by a completed "Surety Disclosure Statement and Certification" substantially in the form prescribed in N.J.S.A. 18A:64-68 (e) and executed by the authorized representative for the Surety.

(The "Surety Disclosure Statement and Certification" form is attached as an exhibit to the Instruction to Bidders).

## **14. ARTICLE 14 -- CHANGES IN THE WORK**

### **14.1 Changes to Contract**

- 14.1.1** SU may at any time, by written order designated or indicated to be a change order, make any change in the Work within the general scope of the contract, including, but not limited to, changes:
- a. In the Specifications (including Drawings and designs);
  - b. In the method or manner of performance of the Work;
  - c. In SU-furnished facilities, equipment, materials, services, or site;  
or
  - d. Directing acceleration in the performance of the Work.

### **14.2 Requests for Equitable Adjustment**

- 14.2.1** The Contractor agrees to prepare and submit, within 20 calendar days of encountering any conditions it considers a change, or upon receiving official notice of a proposed change or written direction to proceed with a change, a current SU form entitled "Contractor Change Order Request" to SU's designated project representative. An original and two (2) copies shall be submitted.
- 14.2.2** All requests for contract time extensions must be in writing accompanied by copies of the current (approved) progress schedule and copies of the revised (proposed) progress schedule detailing the incorporation of the changed Work and the effects of such incorporation on progress. Failure to provide the schedule data shall be grounds for rejection of the request.
- 14.2.3** Notwithstanding any other portion of this Contract, any time extensions for changes in the Work depend upon the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The contract modification making such time extension will provide for an extension of contract completion date only for those specific elements so delayed, and will not alter the contract completion dates for other portions of the Work. This Contract modification may further provide for an equitable readjustment of liquidated damages pursuant to the new completion schedule.
- 14.2.4** The Contractor, in connection with any request it makes for an equitable adjustment, shall furnish a price breakdown, itemized as required by SU. Unless otherwise directed, the breakdown shall cover all Work involved in the change whether such Work was deleted, added or changed. Further, the breakdown shall be in sufficient detail to permit an analysis of all costs, as well as overhead and profit.

Any amount proposed for subcontracts shall be supported by a similar price breakdown. In addition, if the request includes a time extension, a justification (see Section 14.2.2) shall also be furnished. The request,

together with the price breakdown and time extension justification, shall be furnished by the date specified.

**14.2.5** If any change under this article causes an increase or decrease in the Contractor's cost of, or the time required for, the performance of any part of the Work under this Contract, whether or not changed by any such order, an equitable adjustment may be made in the contract price or delivery schedule or both, and the contract modified in writing accordingly.

**14.2.6** When the contract time is increased as a result of a change, the resulting change in contract amount will include the cost of extended performance, computed in accordance with the terms of this article.

**14.2.7** The following guidelines shall apply in computing overhead and profit for the negotiation of equitable adjustments; under all provisions of this Contract the guidelines shall be applicable for deleted Work as well as additional Work. When a change consists of both added and deleted Work, the applicable guideline shall be applied to the net cost or credit. In any event, the following guidelines shall apply to all requests for an equitable adjustment:

- a. Overhead will be the sum of:
  - 10 percent (10%) of costs as defined in Section 1.1.11. Note: Costs for supervision and field office personnel (including superintendents and labor foreman) are only paid as part of the Overhead calculation. The calculation of Overhead for the Contractor for Work performed by subcontractors shall be based on their actual costs, before overhead and profit
- b. For rented equipment, the standard rates listed in the current edition of the Rental Rate Blue Book for Construction Equipment shall be used to determine the rental rate. Rentals will be paid on a daily, weekly or the monthly rate stated, depending on which rate is most economical for SU. The Contractor will be allowed only 65 percent (65%) of the rental rate on Contractor-owned equipment.
- c. Bond premiums & insurance, if applicable, will be allowed at actual cost for the equitable adjustment allowed and no overhead or profit permitted.

**14.2.8 Contractor's Profit**

- a. The prime Contractor's profit on work performed with its own forces will be five Percent (5%) of costs, bond premiums and insurance excluded.
- b. The prime Contractor's profit on the subcontractor's Work will be five percent (5%) of the subcontractor's costs. The

Contractor agrees to incorporate this article in each of its subcontracts.

**14.2.9** The SU, in order to avoid delays in the progress of Work or when in the best interests of SU, has the discretion to direct the Contractor, in writing, to proceed with a change without a prior agreement on costs. Such direction shall be in the form of an un-priced change order or letter of direction.

If the Contractor intends to assert a request for an equitable adjustment under this article, the Contractor must submit to SU's designated project representative an SU supplied form completed in sufficient detail and in accordance with this article within 20 calendar days after receipt of an un-priced change order or letter of direction.

**14.2.10** Where the cost of property made obsolete or excess as a result of a change is included in the Contractor's request for adjustment, SU shall have the right to prescribe the manner of disposition of such property.

**14.2.11** Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of section 2.4 of this document. However, nothing in this article shall excuse the Contractor from proceeding with the contract as changed.

**15. ARTICLE 15 -- ASSIGNMENT OF ANTITRUST CLAIM(S)**

**15.1 Assignment of Antitrust Claim(s)**

**15.1.1** The Contractor recognizes that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the ultimate purchaser. Therefore, and as consideration for executing this Contract, the Contractor, acting herein by and through its duly authorized agent, hereby conveys, sells, assigns, and transfers to SU of New Jersey, for itself and on behalf of its political subdivisions and public agencies, all right, title and interest to all claims and causes of action it may now or hereafter acquire under the antitrust laws of the United States or the State of New Jersey, relating to the particular goods or services purchased or acquired by the State of New Jersey or any of its political subdivisions or public agencies pursuant to this Contract.

In connection with this assignment, the following are the express obligations of the Contractor:

- a. It will take no action which will in any way diminish the value of the rights conveyed or assigned hereunder.
- b. It will advise the Attorney General of New Jersey:
  - a. In advance of its intention to commence any action on its

own behalf regarding any such claim or cause(s) of action;

- b. Immediately upon becoming aware of the fact that an action has been commenced on its behalf by some other person(s) of the tendency of such action.
- c. It will notify the defendants in any antitrust suit of the fact of the within assignment at the earliest practicable opportunity after the Contractor has initiated an action on its own behalf or becomes aware that such an action has been filed on its behalf by another person. A copy of such notice will be sent to the Attorney General of New Jersey.

Furthermore, it is understood and agreed that in the event any payment under any such claim or cause of action is made to the Contractor, it shall promptly pay over to the State of New Jersey the allotted share thereof, if any, assigned to the State hereunder.

## **16. ARTICLE 16 -- AFFIRMATIVE ACTION REQUIREMENTS**

### **16.1 Policy Statement**

The laws of New Jersey (N.J.S.A. 10:5-31 et seq.) provide that no public Works Contractor can be awarded nor any moneys paid until the prospective Contractor has agreed to contract performance which complies with the approved Affirmative Action Plan. The law applies to each political subdivision and agency of the State and includes procurement and service contracts, as well as construction contracts. This section was prepared to explain the affirmative action requirements and procedures for public agencies awarding contracts and for Contractors bidding on contracts.

To assure effective application of the affirmative action law while allowing the business operations of government to proceed efficiently, these regulations (see N.J.A.C. 17:27) are designed to minimize administrative paperwork and delays.

### **16.2 Mandatory Language**

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

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be



limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

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

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

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

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

- (A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in

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

- (B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:
- (1) To notify the public agency compliance officer, the Dept. of LWD, Construction EEO Monitoring Program, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27- 5.3, of its workforce needs, and request referral of minority and women workers;
  - (2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;
  - (3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;
  - (4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;
  - (5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards

set forth in this regulation, as well as with applicable Federal and State court decisions;

- (6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:
  - (i) The contractor or subcontractor shall interview the referred minority or women worker.
  - (ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Dept. of LWD, Construction EEO Monitoring Program. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.
  - (iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Dept. of LWD, Construction EEO Monitoring Program, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.
  - (iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Dept. of LWD, Construction EEO Monitoring Program.
- (7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Dept. of LWD, Construction EEO Monitoring

Program and submitted promptly to the Dept. of LWD, Construction EEO Monitoring Program upon request.

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

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

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

- (D) The contractor and its subcontractors shall furnish such reports or other documents to the Dept. of LWD, Construction EEO Monitoring Program as may be requested by the Dept. of LWD, Construction EEO Monitoring Program from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Dept. of LWD, Construction EEO Monitoring Program

for conducting a compliance investigation pursuant to N.J.A.C. 17:27-1.1 et seq.

## **17. ARTICLE 17 – OTHER STATUTORY/MANDATORY REQUIREMENTS BEFORE CONTRACT AWARD**

### **17.1 Political Contributions Disclosure**

Compliance with the requirements of Public Law 2005, Chapter 51 (N.J.S.A.19:44A-20.13-20.25) and any derivative statutes or regulations resulting thereof and Executive Order 117, effective November 15, 2008 (Political Contributions Disclosure) and throughout the contract term. The firm understands that failure to abide by the requirements of this statute and to continue to do so, constitutes a material breach of contract in the award or performance of this Contract such that the firm may be disqualified or payments made pursuant to this Contract may be withheld until compliance is perfected.

Prior to contract award the firm shall provide proof that it is compliant with the Requirements of Chapter 51, “Political Activity Disclosure”, dated September 22, 2004 and any statutes or regulations which result thereof and Executive Order 117 effective November 15, 2008 ensure that during the course of this Contract that it remains compliant. The firm agrees to notify the University if at any time it is no longer compliant.

The firm understands the University is prohibited from awarding this Contract or issuing payments until the State Treasurer or his designee gives approval that the requirements of the Public Law have been met.

### **17.2 Business Registration**

Compliance with the requirements of P.L. 2004, c. 57 et seq. (Business Registration) and throughout the contract term. The firm understands that failure to abide by the requirements of this statute and to continue to do so, constitutes a material breach of contract in the award or performance of this Contract such that the firm may be disqualified or payments pursuant to the contract may be withheld until compliance is perfected.

Further the firm agrees to advise in writing any subcontractors of the need to comply with this requirement. The firm shall maintain a current list of such subcontractors and their addresses and shall submit the list as needed by the University during the course of performance of this Contract. Prior to contract award, the firm shall provide a copy of its valid Business registration certificate, pursuant to P.L. 2004, c.57 and ensure that such registration remains in effect throughout the period of this Contract. The firm agrees to notify the University if at any time its Business Registration becomes invalid.

Further, the Contractor agrees to procure from any subcontractor’s proof of compliance with the Act prior to performing any services pursuant to this Contract. Should firm or any subcontractors fail to maintain a valid registration they understand that the University is prohibited from issuing payments under this

Contract until a valid registration is obtained.

### **17.3 Conflict of Interest**

At no time during the term of the Contract to be awarded hereunder shall the Contractor or any officer, director, general or limited partner or employee of the Contractor: (1) hold an equity or other economic interest in; (2) have a contractual or other business relationship with; or (3) be an officer, director, general or limited partner or employee of any business entity, including but not limited to, corporations, partnerships, limited liability companies and joint ventures, having a business relationship with Stockton University.

The Contractor shall have a continuing affirmative obligation to advise the University of any potential or actual conflict of interest that may arise with respect to its obligations under the Contract.

**END OF GENERAL CONDITIONS**

# **Safety Manual**

*Stockton University*

*Safety Manual*



1.1 Introduction..... 5

    1.2 Definitions..... 6

2.1 Safety Policy Statement..... 7

    2.2 Objectives..... 7

    2.3 Policy Statement..... 7

3.1 Responsibilities ..... 8

    3.2 General Overview..... 8

    3.3 General Contractor Safety Coordinator..... 9

    3.4 General Contractor Safety Coordinator Responsibilities..... 10

    3.5 Subcontractor Competent Person ..... 10

    3.6 Communications Responsibility..... 11

    3.7 Safety Responsibility Matrix..... 12

4.1 Safety-Related Meetings and Training..... 13

    4.2 Safety Orientation Training..... 13

    4.3 Toolbox Safety Meetings ..... 13

    4.4 Progress / Coordination Meetings..... 13

    4.5 Weekly Safety Meeting..... 13

    4.6 Pre-Shift Hazard Recognition Training..... 14

    4.7 Management Commitment Workshops..... 14

    4.8 Required Training by Trades..... 14

5.1 Project Compliance Procedures ..... 14

    5.2 Verbal Warning Citation ..... 15

    5.3 Written Warning Citation ..... 15

    5.4 Removal from Site..... 15

    5.5 Safety Violations ..... 15

6.0 Record-Keeping and Files..... 16

7.1 Job Site Inspections ..... 17

    7.2 Inspections..... 17

    7.3 Corrective Measures ..... 17

    7.4 Non-Abatement ..... 18

    7.5 Work Stoppage..... 18

8.1 Substance Abuse Program ..... 18

    8.2 Substance Abuse..... 18

9.1 Accident / Injury Management ..... 19

9.2 Accident Reporting ..... 19

9.3 Principal’s Meeting for Lost-Time Accidents ..... 19

9.4 Accident Investigation ..... 19

9.5 Report of Accidents Involving School Occupants ..... 20

9.6 Report of Builder’s Risk Claim and/or Incident ..... 20

9.7 Accident Analysis. .... 20

10.0 Project Safety and Health Minimum Requirements ..... 20

Subpart A - General ..... 20

Subpart B - General Interpretations ..... 20

Subpart C - General Safety and Health Provisions ..... 20

Subpart D - Occupational Health and Environmental Controls ..... 22

Subpart E - Personal Protective Equipment (PPE) ..... 23

Subpart F - Fire Protection and Prevention. .... 25

Subpart G - Signs, Signals, and Barricades. .... 25

Subpart H - Materials Handling, Storage, Use, and Disposal ..... 27

Subpart I - Tools - Hand and Power ..... 27

Subpart J - Welding and Cutting ..... 28

Subpart K - Electrical ..... 29

Subpart L - Scaffolds. .... 31

Subpart M - Fall Protection ..... 32

Subpart N - Cranes, Derricks, Hoists, Elevators, and Conveyors ..... 35

Subpart O - Motor Vehicles, Mechanized Equipment, Etc. .... 36

Subpart P - Excavations. .... 37

Subpart Q - Concrete and Masonry Construction ..... 38

Subpart R - Steel Erection (and Pre-cast Concrete Erection) ..... 38

Subpart S - Tunnels and Shafts, Caissons, Cofferdams, Etc. .... 40

Subpart T - Demolition ..... 41

Subpart U - Blasting and Use of Explosives ..... 41

Subpart V - Power Transmission and Distribution ..... 41

Subpart W - Rollover Protective Structures, Overhead Protection ..... 41

Subpart X - Stairways and Ladders ..... 41

Subpart Y - Commercial Diving Operations ..... 42

---

*Subpart Z - Toxic and Hazardous Substances* ..... 42

11.0 *Waste Disposal* ..... 42

12.0 *Site Security / Access Control.* ..... 42

## 1.0 Introduction

This Safety Manual applies to the Work performed on any Project as defined by the Contract Documents. All Contractors shall comply, and require all subcontractors to comply, with this Safety Manual. Non-compliance shall be construed as a breach of Contract, which could subject the Contractor to damages, default, termination of Contract, withholding of progress payments, or any other Contract remedy. If the Owner fails to take action for any non-compliance by a Contractor, it will not be considered a waiver of the Owner's right to act for any subsequent breach of Contract. Nothing shall be construed to limit the rights of the Owner to act at law or in equity.

This Safety Manual is intended to establish uniform policies and procedures for all Contractors and their subcontractors, with the goal of reducing accident frequency and severity. These policies and procedures include, but are not limited to, the following:

- The safety requirements of this Safety Manual are a supplementary document to all government rules, codes, and regulations. It is understood that the ultimate responsibility for providing a safe place to work rests with the Contractor (GC). In the event that the GC causes any unsafe conditions to occur which cause delay or damage to the project, equipment, and injuries to personnel, the GC shall be fully responsible for all damages and related costs. The GC shall indemnify and hold harmless the Construction Manager, Owner, and A/E for such damages and related costs
- It is the responsibility of the Contractor to maintain total control of safety to ensure that its employees, its subcontractors, owner occupants, and the general public will be provided an environment free of recognized hazards during construction and renovation activities.
- The Contractor shall conform to the requirements addressed in the Occupational Safety and Health Act of 1970 ("OSHA") and all additions and revisions thereto, and this Safety Manual. **This Safety Manual shall be the governing document related to safety issues to which Contractors and all subcontractors shall conform, unless more detailed or stringent requirements are included in the Site-Specific Health and Safety Plan.**
- Prior to the start of the Work, the Contractor shall provide a Site-Specific Health and Safety Plan to the owner Project Representative and/or the CM in a timely manner so that the plan can be reviewed by the owner and/or CM no less than fourteen (14) calendar days prior to any work beginning on the job site. The Contractor shall obtain a copy of each subcontractor's job safety analysis and provide copies to the CM. The Contractor shall require that all subcontractors of any tier comply with the site-specific plans provided by the Contractor and subcontractor, and this Safety Manual.
- The Contractor shall assume all costs related to, but not limited to, personal protective equipment, all training requirements, and all requirements of this Safety Manual.
- Failure to include the cost of complying with these safety measures in a bid will not relieve the Contractor from the obligation to implement the requirements in this Safety Manual.

- Whenever the Contractor or any subcontractor has knowledge of, or is notified of, an unsafe act or unsafe condition, it shall immediately take steps to correct the unsafe act or unsafe condition.
- If the Contractor or any subcontractor refuses to correct an unsafe act or unsafe condition, the Owner's Project Representative is authorized to stop that portion of the Work until the Work can continue in accordance with the requirements of this Safety Manual. The cost to bring the Work activity into compliance shall be the responsibility of the Contractor and at no time shall the costs be borne by the Owner. In addition, a tradesperson may be required to be retrained before returning to work
- Violations of OSHA, US EPA, and various New Jersey agencies can result in the issuance of fines by these organizations. The Contractor shall be responsible for any such fines.
- It is agreed and understood by the Contractor that this Safety Manual is an integral part of the Contract Documents and the Contractor shall incorporate its terms in all of its subcontracts and require its inclusion in subcontracts of all tiers.
- After reading this Safety Manual, the Contractor is required to send to the Owner's Project Representative and CM a copy of its Project Safety Program and prior to starting any work.
- The Construction Manager shall review the safety programs developed by each of the Contractors. The Construction Manager's responsibilities for safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager. The Construction Manager shall not be responsible for any Contractor's implementation of or compliance with its safety programs, or for initiating, maintaining, monitoring, or supervising the implementation of such program or the procedures and precautions associated therewith, or for the coordination of any of the above with the other Contractors performing the Work at the site. The Construction Manager shall not be responsible for the adequacy or completeness of any Contractor's safety programs, procedures or precautions. The General Contractor shall have sole responsibility for the safe performance at the construction site and all workers associated with the construction of this project.
- If unsafe conditions are observed by the CM, the CM shall notify Contractor(s) to take appropriate corrective measures. The CM shall report to the UNIVERSITY, as part of each monthly report, any safety violations and actions taken to protect the safety of persons and property engaged in the work. The CM shall act on behalf of the UNIVERSITY in a manner which preserves the Contractor(s) sole responsibility for the site and personnel safety.

### ***1.1 Definitions***

- **Client / Owner**

Means Stockton University (SU) in which the Projects are located.

- **Contractor/General Contractor ("GC")**

Means a person or firm engaged by SU to undertake Construction Work.

- **Construction Work or Work**

Means the services performed by a Contractor or any Subcontractor on the Projects, whether completed or partially completed and includes all other labor, materials, equipment and services provided or to be provided to fulfill such obligations.

- **“near miss” incident**

Means an undesired event that, under slightly different circumstances, could result in personal harm or property damage. These “near miss” incidents shall be reported to the Client’s Safety Department or Risk Management Unit (RMU) and CM within 24 hours.

- **Client/Owner Safety Coordinator**

A staff person assigned to oversee the safety and health issues on behalf of the SU.

- **OSHA**

Occupational Safety and Health Administration that administers the Occupational Safety and Health Act of 1970.

- **Construction Manager (CM)**

Means the firm engaged by the SU to provide overall construction management services, oversight, and reporting in connection with the Projects undertaken by SU.

- **SU - Project Representative(s)**

Means an SU staff person(s) assigned to oversee the Project on behalf of SU.

- **Subcontractor**

Means the Contractor to whom a Contractor or other Subcontractor subcontracts part of the Construction Work for which such Contractor or other Subcontractor is responsible.

- **Subconsultant**

Means the Professional Services Consultant providing services directly, or indirectly, to the Owner, Architect, Engineers, or CM.

## **2.0 Safety Policy Statement**

### ***2.1 Objectives***

- To minimize accidents and injuries to Contractor and all subcontractor personnel, client/owner occupants, and members of the public.
- To minimize any damage to the property of the client, the environment, or adjoining property owners and others during the construction process.

### ***2.2 Policy Statement***

The safety of persons and property is of paramount importance to SU. This Safety Manual is provided to assist in establishing effective safety programs as an integral part of the overall success of the Project(s).

The Contractor shall comply, and require all subcontractors to comply, with this Safety Manual, as well as OSHA requirements and all additions and revisions thereto, as well as other applicable federal, State, and local requirements.

The Contractor's on-site supervisory personnel are responsible for maintaining safe and healthy working conditions and for strictly enforcing all safety and health policies and regulations. All Contractor and subcontractor employees shall comply with these rules and regulations.

The Contractor hereby acknowledges that the Work on SU Project(s) property is granted by permission of SU, the Client. The Contractor acknowledges that the Work may be occurring in a learning environment and hereby agrees its on-site operations, and the on-site operations of its subcontractors, will not impact nor impede the learning environment. Further, the Contractor agrees, without condition or reservation, that **there shall be no fraternization between the Contractor's employees, or any subcontractor's employees, and any students.** Failure to comply with this provision by a Contractor's or subcontractor's employee(s) shall result in a request by SU that the employee(s) immediately be removed from the Project Site. There shall be ZERO TOLERANCE and the Contractor shall have no recourse in the event SU or its authorized representative enacts this provision.

### **3.0 Responsibilities**

SU will hold the Contractor responsible for the implementation of the safety, health, and environmental requirements of this Safety Manual for the Work, whether done by its own employees or by subcontractors.

The Contractor and each subcontractor shall implement effective safety and risk control programs. The prevention of accidents and protection of property shall receive SU and management's top priority, support, and participation.

#### ***3.1 General Overview***

The Contractor and all subcontractors shall:

- Agree to participate in and abide by the Owner's Safety Program and OSHA Safety Regulations. If there is ever a discrepancy between the two plans the more stringent requirement will be required.
- Use safety planning (Job Safety Analysis) as a tool to reduce injury to persons and property.
- Conduct daily inspections to locate and abate unsafe conditions and practices before they result in bodily injury or property loss.
- Provide site-specific plans/job safety analysis to the Contractor, which are to be maintained by the Contractor at the Project Site.
- Establish and/or maintain a site perimeter with a minimum eight (8) foot high chain link fence with appropriately placed, securable ingress and egress. Consideration for debris netting

shall be made.

- Establish Green Zones (safe) and Red Zones (unsafe) for all non-construction traffic.
- Protect the occupants, public, and property adjacent to the Project Site, as well as the environment.
- Keep all sidewalks; entrances to buildings, lobbies, corridors, aisles, doors, or exits that remain in use by SU or the public clear of obstructions. The Fire Marshal or AHJ (Authority Holding Jurisdiction) shall approve all exits, temporary or permanent.
- Provide first-aid kits in accordance with OSHA standards (29 CFR 1926.50).
- Implement a site-wide 100% six (6) foot fall protection policy. This shall include all types of scaffolding and steel erection.
- Signs. The General Contractor and Subcontractors shall obey the directives of all project signs. General Contractor shall post signs and other warnings, as necessary for the safe performance and completion of Contractor's work.
- The Contractor shall be responsible, and shall require each subcontractor to be responsible, for the safety and health of their own employees, regardless of who created the hazard.

### ***3.2 General Contractor Safety Coordinator***

The General Contractor shall designate an employee as a Safety Coordinator who has, at a minimum, completed a 30-Hour OSHA Construction Industry Outreach Training Program to assume the roles and responsibilities as outlined in the Safety Manual. The client/owner reserves the right to require the General Contractor to provide a full-time Safety Coordinator at any time at the General Contractor's expense, if safety issues persist

.A General Contractor Safety Coordinator is an individual with duties related to the safety of the Contractor's employees as well as the safety of all subcontractors working under the Contractor. This individual shall have the authority to initiate corrective actions for needed safety improvements. Below are the requirements for the General Contractor Safety Coordinator:

- The General Contractor Safety Coordinator is required to have completed the 30-Hour OSHA Construction Industry Outreach Training Program. He/she is also required to have completed scaffold training and have knowledge of, and experience in, the construction industry. When the client/owner requires that the General Contractor's Safety Coordinator is full-time, the General Contractor Safety Coordinator is prohibited from performing other duties on the project site.

The Contractor shall provide a resume of the qualifications of the assigned General Contractor Safety Coordinator to the client/owner Safety Coordinator and CM no later than fourteen (14) calendar days prior to work being initiated at the job site. The Client/Owner and/or CM has the authority to



approve or disapprove of the Contractor's assigned General Contractor Safety Coordinator. The General Contractor Safety Coordinator must be in place prior to the Contractor beginning work on the Project Site and must remain on-site until the work is completed.

Changes to existing General Contractor Safety Coordinators, shall also be submitted to the Client/Owner and/or CM and be approved prior to the person assuming the position.

### ***3.3 General Contractor Safety Coordinator Responsibilities***

The General Contractor Safety Coordinator shall be responsible for:

- Promoting total job safety with all employees and visitors.
- Administration, implementation, and execution of this Safety Manual and
- OSHA Construction Regulations on the Project Site in cooperation with representatives from the CM, and the SU - Risk Management Unit (RMU).
- Continuously monitor and ensure contractors and subcontractors adherence to safety requirements.
- Performing accident investigations.
- Providing safety orientation and ensuring that all Contractor and subcontractor employees attend Safety Orientation and Trade Training (see Section 4.1 Safety Orientation Training and Section 4.7 Required Training by Trades).
- Ensure that stickers are displayed on hard hats, indicating attendance at safety orientation.
- Ensuring the proper use and care of personal protective equipment by all employees.
- Making daily safety inspection.
- Making, at a minimum, weekly documented safety inspections and initiating appropriate corrective actions to rectify safety deficiencies.
- Developing site specific Emergency Action Plan, review monthly for changes, and modifying the plan as conditions on the site changes. Issue to all subcontractors, CM, and SU and conduct additional training / orientation as needed.
- Maintaining the GC first-aid kit and monitoring subcontractors' first-aid kits.
- Ensuring site access control measures are implemented.
- Cooperate fully with SU Project Representative and CM Management team.

### ***3.4 Subcontractor Competent Person***

The Contractor shall require each subcontractor to have a Subcontractor Competent Person to plan for and oversee safety regardless of the number of trade employees on-site. This Subcontractor Competent Person is required to have completed an OSHA 10-Hour course for construction safety and shall meet the definition of a competent person as defined by this Safety Manual and OSHA standards (29 CFR 1926.32).

The Subcontractor Competent Person shall:

- Use pre-task planning, instructing workers on safe work practices and methods to prevent injury, damage to property, and loss of productive time.
- Ensure that stickers are displayed on hard hats, indicating attendance at safety orientation.
- Supply and enforce the use of personal protective equipment. A sign that states, “Hard hats, safety glasses, and proper work shoes are required beyond this point” is to be clearly posted at each construction site entrance.
- Orient workers with the safety requirements applicable to their work. This is in addition to the required safety orientation training (described in Section 4.1 Safety Orientation Training and Section 4.7 Required Training by Trades).
- Hold weekly “toolbox” safety meetings with his/her work crews. Documentation of these meetings is required and must include topics and content as well as a list of attendees. Documentation of these meetings must be sent to, and maintained by, the CM. These meetings are to be held Monday through Friday.
- Conduct daily safety inspections of his/her work area.
- Assist in accident investigations.
- Assure that proper first-aid equipment is available according to the Work being performed and ensure that treatment is administered to injured employees.

### ***3.5 Communications Responsibility***

Although many existing hazards may be corrected through informal communications, all corrective actions must be documented, with copies forwarded to the Contractor, if the condition is identified by a subcontractor, then to the CM and Owner/Client.

3.6 Safety Responsibility Matrix

Please see the following page for the Safety Responsibility Matrix.

**SAFETY RESPONSIBILITY MATRIX**

	SU	CM	GC	Subcontractors	A/E
Site-Specific Health & Safety Plan - Development & Approval	A	X	■M		
Develop Master Emergency Action Plan	X	X	■M	X	
Job Safety Analysis (i.e.; Critical Lift, Welding) - Development & Approval	X	X	A ■	■ X	
Safety Orientation	X	X	■M	■	
Tool Box Training	X	X	X ■	X	
Maintain all Safety Training Records	X	X	■M	X	
Site Safety Inspections	X	X	■M		
Daily Safety Inspections & Record Keeping	X	X	■M	X	
Periodic Inspections Reporting & Record Keeping	X	X	■M	X	
Remedy Safety Violations/Re-inspect	X	X	■M	■	
Accident Investigations	X	X	■M	X	
Maintain Material Safety Data Sheets (MSDS)	X	X	■M	■	
Shut Down Portions of Work	*	X	X	X	
Shut Down Entire Job	A*	X	X	X	
Provide Student/Faculty Safety Orientation	XM	■			
Project Safety Meetings	XM	X	■	X	

Legend	Lead ■	Review / Comment / or Assist X	Approve A	Monitor M	
	* - Shutting Down Portions of Work may be performed individually by the Client/Owner's Project Manager, CM Authorized Representative, Director of Facilities Planning and Construction, or Executive Director of Facilities Planning and Plant Manager.				
	A*- Shutting Down the Entire Job may be done by the Client/Owner (with approval of the Director of Facilities Planning and Construction or Executive Director of Facilities Planning and Plant Manager, or, in his absence, his designated Project Manager.				

## **4.0 Safety-Related Meetings and Training**

The following meetings and training will be required on the Project(s). The General Contractor must maintain documentation of the meeting, content, and attendance.

### ***4.1 Safety Orientation Training***

- All new employees assigned to the Project shall be properly trained. This training shall include, (but not be limited to) hazard recognition, site-specific health and safety requirements, emergency procedures, Personal Protective Equipment (PPE), and first-aid/medical procedures.
- This safety orientation must occur before beginning the Work at the Project Site. The Contractor's Safety Coordinator will conduct the safety orientation training. The Contractor is responsible for ensuring that all site personnel attend these meetings. Individuals completing this safety orientation training will be provided with a hardhat sticker, which must be displayed.
- The Contractor shall provide safety training for all project personnel in regard to the specific safety requirements and rules related to his/her Work and Trade (see Section 4.7 Required Trade Training).

### ***4.2 Toolbox Safety Meetings***

The Contractor and each subcontractor shall conduct weekly toolbox safety meetings on Mondays through Fridays with all of their employees performing Work at the Project Site. The General Contractor Safety Coordinator and/or the Subcontractor Competent Person shall conduct this training.

The meetings shall cover any hazardous work conditions, unsafe work practices that have been identified, safe working practices, analysis of any accidents that have occurred on the Project Site, safety rules and regulations, and any related safety material.

- This training shall be documented on a Toolbox Training Form by the Contractor and shall include names of employees attending the training and an outline of all topics discussed.

### ***4.3 Progress / Coordination Meetings***

The intention of these meetings is to discuss the progress and coordination of the Work being performed by various trades so that they may work together to complete the Project in a timely and safe manner. The CM is responsible for scheduling, chairing, and reporting minutes from weekly progress meetings. Safety shall be a part of the agenda of the Progress Coordination Meetings, since verbal reports of the various safety representatives will become part of the meeting minutes. Minutes from the meeting shall reflect safety items discussed and any proposed resolution to safety-related issues.

### ***4.4 Weekly Safety Meeting***

The GC is responsible for scheduling, chairing, and reporting minutes. Attendance at this meeting shall be mandatory for the General Contractor Safety Coordinator(s) and all Subcontractor Competent Persons. The purpose of this meeting shall be to discuss any hazardous working conditions that have been observed, identify possible hazards in future work, and discuss all other health and safety issues pertaining to the Project. The CM shall be invited to attend and provide

any safety observations and recommendations for correction.

#### ***4.5 Pre-Shift Hazard Recognition Training***

- Every Contractor/subcontractor shall be required to hold pre-shift hazard recognition training with each work crew working when the following conditions are planned for a shift:
  - Any walking/working surface that is at an elevation of six feet or greater will require 100% fall protection.
  - Scaffold erection and dismantling.
  - Crane and all material-hoisting operations.
  - Non-routine work operations, e.g., emergency procedures.
  - Any other potentially hazardous activities that pose an abnormal risk of injury to employees as identified by SU, its authorized representatives, and the CM.

#### ***4.6 Management Commitment Workshops***

Commitment workshops will be held at the Project Site in order to orient management members of the General Contractor's workforce. The General Contractor and his Subcontractors will be required to have, at a minimum, owner or senior executive, project manager, lead superintendent, foreman, and safety representative in attendance.

#### ***4.7 Required Training by Trades***

It shall be the General Contractor's responsibility to ensure that all personnel entering the project sites have adequate safety training applicable to their particular trade.

##### **▪ Operating Engineers**

- Copies of the New Jersey Department of Labor Crane Operator License or Certification from the National Commission for the Certification of Crane Operations (NCCCO) will be shown to the CM and the General Contractor.

##### **▪ Toolbox Safety Meetings**

- Tool Box Safety Meetings will be conducted Mondays through Fridays as per A.2.

### **5.0 Project Compliance Procedures**

The Safety Manual is designed to ensure compliance with the requirements of OSHA and all additions and revisions thereto, as well as other applicable federal, State, and local requirements, this Safety Manual, and site-specific manuals. Workers performing the Work in an unsafe manner

that would endanger the employee, other workers, occupants, or the public will be subject to discipline or removal from the site at the request of the SU and/or CM.

The Client/Owner and/or CM, in conjunction with the General Contractor Safety Coordinator, shall determine the course of action best suited to the circumstances. The steps to be taken shall be progressive, except in the most egregious circumstances, and shall include the following:

### ***5.1 Verbal Warning Citation***

As the first step in correcting unacceptable behavior, the worker's competent person/ safety coordinator shall review the pertinent facts with the employee. He/she will consider the severity of the problem and the worker's past performance. A verbal warning shall be issued to the worker, which shall be documented and placed in the appropriate file on site, with a copy forwarded to the CM and the SU Project Representative.

### ***5.2 Written Warning Citation***

If the unacceptable performance continues, the next step will be a written warning. The written warning shall clearly state the safety policy that was violated and steps the worker must take if it is to be corrected. A written warning requires the General Contractor Safety Coordinator to assure that the worker has satisfactorily completed an appropriate training session related to the safety policy violated. This training must be completed within ten (10) working days from issuance of the written warning. Documentation, with copies forwarded to the Contractor, the CM, and the SU Project Representative, is to be maintained in the worker's personnel file. The General Contractor will monitor completion of the worker's retraining.

### ***5.3 Removal from Site***

The SU may request that a worker be removed from a Project Site for safety violations, whether or not verbal and/or written citations have been given.

### ***5.4 Safety Violations***

- When the GC is notified of a safety violation by the SU Project Representative or CM, the General Contractor shall stop the work and take immediate corrective action to assess the task being performed. The task will not be resumed until all affected employees have reviewed changes to the task JSA and signed-off the new document.
- In the event that the GC causes any unsafe conditions to occur which cause delay or damage to the project, equipment, and injuries to personnel, the GC shall be fully responsible for all damages or related costs. The GC shall indemnify and hold harmless the Construction Manager, Owner, and A/E for such damages and related costs.

- In the event the GC fails to respond to and correct any safety violation immediately upon notification, the Construction Manager and SU reserves the right to take whatever corrective actions are deemed necessary, and the cost of such actions shall be charged to the GC.
- The CM and SU are authorized to issue violation notices including monetary penalties of:
  1. \$200 for first violation
  2. \$500 for second violation
  3. \$1,000 for third violation

Such amounts will be deducted from the General Contractor contract amount via change order and \$ amounts will be placed in a “Safety Incentive Program”. The money will be used toward the project as safety awards, acknowledgements, gifts, etc. to incentivize the labor force to conduct their jobs safely and to promote safety awareness on the project.

- GC employees that do not adhere to the site safety rules will either receive a verbal or written safety citation. The level of the citation will depend on the severity of the violation. Citations and violations may be issued with monetary penalties as described above.
- Verbal warnings are for any minor issue that, by itself, would not produce either immediate major injury or death. (Example: not wearing work gloves).
- The SU has the right to remove worker, foremen, and/or supervisors who consistently continue to ignore safety concerns and/or continue to violate safety rules and regulations. At the SU option, zero tolerance violations will result in immediate removal of the violating worker from the site.
- The SU has a zero tolerance policy for all of the following: Fall Protection, Confined Space, Lockout/Tag out, Hot Work Permits, Firearms, Drugs and Alcohol, Smoking, Cameras, Work Place Violence and Harassment.
- Zero violations will be considered for:
  1. Fall Protection, Confined Space, Lockout/Tag out and Hot Work Violations will result in an immediate stoppage of the work, reorientation and retraining before the employee/ employee’s involved can return to work.
  2. Work Place Violence, Harassment, Firearms, Drugs, Alcohol and Camera violations may result in being banned from the project site, permanently.

## **6.0 Record-Keeping and Files**

The CM shall maintain a master or central file for safety and health related documentation on the Project Site. Files shall be maintained in such a manner that distinguishes the Contractor and each subcontractor. Should a project be of such size that the CM is not onsite; the Contractor shall

maintain the files and provide a copy to the CM and, upon request, the SU Project Representative.

The SU and its designated representatives shall have the right to review all documentation at any time upon request. If applicable, the Contractor shall give full cooperation, and require the full cooperation of all subcontractors, during these reviews.

The following documentation shall be in the CM's safety files, unless otherwise noted:

- Written site-specific safety and health plans for the Contractor and all subcontractors.
- Hazard communication program, including current Material Safety Data Sheets (MSDS). A Project site-specific MSDS file shall be maintained on-site by the CM for employee review. The Contractor must submit, and require each subcontractor to submit, a copy of the MSDSs for those compounds to be used on-site at the Project. This submission should include only those compounds to be used on-site, not a compendium of all MSDSs for the entire company. All MSDS sheets shall be on file prior to those compounds being allowed on-site.
- Contractor and subcontractor daily job site safety inspection reports, including documentation of corrective measures.
- Documentation of weekly "toolbox" safety meetings, including names of employees attending the training and an outline of all topics discussed.
- Accident investigation reports, including "near-miss" incidents.
- Competent person qualifications and identification.
- OSHA Forms 300, and 300a.
- Job Hazard Analysis (JHA) / Job Safety Analysis (JSA).
- Copies of weekly safety inspection reports.
- Progress/Coordination meeting minutes.
- All documentation required by other sections of this Safety Manual.

## **7.0 Job Site Inspections**

### ***7.1 Inspections***

The Contractor shall require each Subcontractor Competent Person to conduct daily safety and health inspections for the Work in his/her respective area of the Project Site. Documentation of all identified deficiencies and corrective actions taken shall be maintained by the Contractor for review by the CM, SU Project Representative, and the SU Risk Management Unit (RMU). If requested by CM, the GC shall provide copies of daily safety reports to CM and SU.



An essential part of isolating the construction process from SU occupants will be the perimeter protection or fence. It is imperative that perimeter fencing be inspected daily (including weekends and holidays) for defects, for damage, and for areas of the fence that could be compromised so persons could gain access. Repairs must be immediate. No exceptions. Additionally, Green Zones (safe) and Red Zones (unsafe) will be defined and clearly marked for all non-construction traffic. The Contractor has the responsibility to protect the SU occupants and the public from the hazards associated with construction, regardless of how difficult it may be.

### ***7.2 Corrective Measures***

Corrective measures to abate all deficiencies shall be completed immediately if life-threatening/serious conditions exist or no later than the end of the working shift for non-life threatening/serious conditions. All Work shall be stopped, or effective interim safeguarding implemented, until life-threatening conditions are corrected. All corrective measures shall be documented and available for review by the CM and the SU Project Representative.

If a deficiency cannot be abated immediately, a notice shall be provided to the CM, outlining the reasons and steps taken as an interim measure to control the potential hazard.

### ***7.3 Non-Abatement***

If the Contractor or any subcontractor fails to make corrections to identified deficiencies in a timely manner, the CM will:

- Notify the Contractor and appropriate subcontractor in writing to take prompt corrective action to eliminate construction safety and health hazards.
- Reinforce that any costs incurred to correct the hazard will be back-charged to the Contractor.
- Provide written notification that will describe specific Contract or code violations.
- Report in writing to the Contractor/subcontractor the names of individuals and their supervisors who are observed to violate construction safety requirements, with copies to the SU. If necessary, the SU may require the Contractor to remove these individuals and/or their supervisors from the job site.

### ***7.4 Work Stoppage***

The SU has authorized the following staff to order, at the Contractor's expense, a work stoppage until unsafe conditions are abated.

- Shutting Down Portions of Work may be performed individually by the SU Project Representative CM Authorized Representative, Director of Design and Construction. The SU Risk Management Unit (RMU) in consultation with SU Project Representative or the CM.
- Shutting Down the Entire Job may be done by the SU Project Representative (with approval of Director of Design & Construction).

## **8.0 Substance Abuse Program**

### ***8.1 Substance Abuse***

It is the policy of the SU that all construction sites be drug and alcohol free. All employees of any contractor working at the job site shall refrain from the illegal use, possession, sale or distribution of drugs. All employees of any contractor working at the job site shall refrain from all use, possession, sale or distribution of alcoholic beverages at the job site, and shall also refrain from the use of alcoholic beverages outside the job site if such use in any way impairs their ability to work. The SU may require that the contractor remove from the job site any employee who violates this policy and the contractor shall remove any employee from the job site if requested by the SU or CM.

## **9.0 Accident / Injury Management**

### ***9.1 Accident Reporting***

**All accidents** resulting in employee injury, property damage, or involving the public shall be reported by the injured/responsible worker's Subcontractor Competent Person (if a subcontractor employee) or by the General Contractor Safety Coordinator (if a Contractor employee) immediately to the SU Project Representative and the CM.

It is the Contractor's responsibility to ensure that related reports are electronically transmitted to the SU Project Representative, the SU Risk Management Unit (RMU), and the CM, describing the occurrence, how the injured was (were) treated on-site or at the designated medical facility, and any follow-up treatment necessary for the worker(s) involved.

- For a **minor incident**, when the worker(s) was treated on-site, the report must be filed within twenty-four (24) hours.
- For a **major incident**, when the worker(s) was taken to the designated medical facility, the SU Project Representative, the SU Risk Management Unit (RMU), and the CM must be contacted immediately by telephone.

### ***9.2 Principal's Meeting for Lost-Time Accidents***

If a Contractor or subcontractor employee experiences or causes a lost-time accident on the Project, the CM, SU Project Representative, and the SU Risk Management Unit (RMU), the GC and/or subcontractor (if any), or designee shall attend a meeting at the job site to discuss the incident. This meeting will be called by the CM and will be held within seventy-two (72) hours from the time of the incident.

### ***9.3 Accident Investigation***

- The General Contractor Safety Coordinator shall complete a Project-specific accident investigation report

The Contractor shall cooperate, and require the cooperation of all subcontractors, in the investigation, analysis, and defense of any claim, accident, occurrence, or insured loss. The accident investigation report shall be completed by the end of the working day/shift of the accident. Identification and review of accident causes shall be established and completed, identifying corrective actions, persons responsible for corrective actions, and date of completion. Follow-up documentation verifying corrective actions shall be required.

Copies of all accident investigation documentation shall be submitted to the CM, SU Project Representative, and the SU Risk Management Unit (RMU). If required by law, injury notification to OSHA shall be made by the GC, which shall then also notify the CM, SU Project Representative, and the SU Risk Management Unit (RMU) or designee immediately.

#### ***9.4 Report of Accidents Involving Occupants***

The Contractor shall make reporting of any incidents, accidents, or injuries involving students, staff, or the general public, immediately to the CM and the SU Project Representative, and the SU Risk Management Unit (RMU). A thorough written investigation of any incident or accident must be completed by the end of the working day/shift of the accident by the Contractor with a copy to the CM, SU Project Representative and the SU Risk Management Unit (RMU) or designee.

#### ***9.5 Report of Builder's Risk Claim and/or Incident***

The Contractor to the CM, SU Project Representative and the SU Risk Management Unit (RMU) or designee shall report any potential Builder's Risk claim or incident immediately.

#### ***9.6 Accident Analysis***

To identify root causes of accidents and at-risk behavior that directly contributed to an accident, or that have the potential to contribute to an accident, The General Contractor Safety Coordinator shall be required, at the discretion of the SU Project Representative, to meet and analyze accidents. Accident trends shall be identified and plans developed to prevent injury, to develop specific action plan to address root causes and at-risk behaviors, and to implement corrective actions.

### **10.1 Project Safety and Health Minimum Requirements**

The minimum Safety and Health requirements are those contained in OSHA Construction Safety Standards (29 CFR 1926) as well as any other applicable federal, State, municipal, or collective bargaining agreement. The Project Safety Manual includes compliance with all applicable standards as well as those itemized below which exceed OSHA standards. **For any Contractor or subcontractor that has been granted exemptions or variances for specific OSHA regulations and/or standards, these exemptions or variances DO NOT APPLY to this Project, unless specifically approved by the SU Project Representative.**

#### ***Subpart A—General***

The requirements of 29CFR 1926.1 applies to all SU Construction Projects.

***Subpart B—General Interpretations***

The requirements of 29CFR 1926.10 applies to all SU Construction Projects.

***Subpart C—General Safety and Health Provisions*****➤ C-1—Competent Person Requirements**

A Competent Person is defined by OSHA standards (29 CFR 1926.32(f)).

The Contractor shall provide the CM and the SU Project Representative with a matrix outlining employee(s) designated as a competent person(s). This matrix will be:

- Submitted to the CM prior to commencing the Work on-site.
- Supported by documentation of the credentials of each individual identified in this matrix, including training certificates, resumes outlining years of experience, competent person cards, etc.
- Certified to the SU that the competent person will be on-site during all times when the Work under his/her competency is in progress.

The Contractor shall also obtain the matrix described above from each subcontractor and maintain these matrices at the Project Site.

**➤ C-2—Job Hazard Analysis**

- Prior to the start of the Work activities, the Contractor shall require each subcontractor to submit, in writing, a detailed Job Hazard Analysis (“JHA”) of every task to be performed for each construction activity and as may be requested by the CM.
- This analysis shall be ongoing and submitted for new tasks prior to the start of the Work activity.
- Prior to the start of Work, the Subcontractor Competent Person shall be required to discuss the JHAs with individual work crews and shall provide documentation of these discussions to the Contractor.

**➤ C-3—Confined Spaces**

- The SU Projects require implementation of OSHA standard (29 CFR 1910.146)-Permit Required Confined Space standard. The CM has the right, but not an obligation, to monitor the implementation of this procedure by the Contractor and individual subcontractors. The CM will have the Contractor sign the permit, which will be kept on-site by the CM.

- The Contractor shall require each subcontractor to perform atmospheric testing prior to entering a confined space. At a minimum, a four (4)-gas monitor (carbon dioxide, oxygen, lower explosive limit, and hydrogen sulfide) shall be used.
- The Contractor is responsible for the costs of any PPE and rescue equipment for confined space entry.
- The GC shall provide all pumping and ventilation equipment required to accomplish and work within manholes or other confined spaces. Air monitoring, and all safety provisions shall be performed in strict conformance with OSHA requirements. GC personnel are to be air packed trained through their own training programs and GC is responsible to provide their own air packs. GC is required to provide all necessary entry - rescue equipment, tripod, full body harness, lifelines or equivalent, for all entries. GC is responsible to provide air monitoring during the entire time of entry. GC is responsible to provide documentation of training for all employees involved in confined space operations prior to performing the work.

➤ **C-4—Illumination**

- If there is a need for additional general or specific task lighting, this lighting must be wired with NM Cable or its equivalent as determined by the National Electrical Code (NFPA-70).
- The minimum illumination on a job site shall be ten foot-candles.

➤ **C-5—Emergency Action Plans**

- The Contractor is responsible for developing an emergency action plan. This plan must be coordinated with the master emergency action plan developed and implemented by the SU.
- The Contractor shall require each subcontractor to cooperate with the master emergency action plan, including participating in emergency drills as dictated by the CM and SU.
- An emergency evacuation plan shall be part of the Emergency Action Plan. Minimally the plan shall contain means of egress, which shall be updated as the building progresses, identification of a “muster point” and the procedures for accounting for all workers.

***Subpart D—Occupational Health and Environmental Controls***

➤ **D-1—Hazard Communication**

- The Contractor must submit, and require each subcontractor to submit, a copy of its written hazard communication program to the CM prior to beginning the

Work on the Project Site. (This is in addition to maintaining a copy of its own and all subcontractors' programs at its own site trailer/field office.)

- The Contractor must submit, and require each subcontractor to submit, to the CM a copy of the MSDSs for those compounds to be used at the Project Site. This submission should include only those compounds to be used on-site, not a compendium of all MSDSs for the entire company. Again, no compound is allowed on-site without an MSDS on file.
- It is the Contractor's and each subcontractor's responsibility to train their personnel in accordance with the OSHA standards (29 CFR 1926.59).

➤ **D-2—Potable Water**

- The Contractor and all subcontractors must supply adequate potable water whenever they have personnel on-site and follow OSHA standards for distribution (29 CFR 1926.51).

➤ **D-3—Sanitary Facilities**

- The General Contractor shall comply with OSHA regulations with regards to sanitary facilities.

***Subpart E—Personal Protective Equipment (PPE)***

All workers and visitors to the Project Site shall be required to wear a hard hat, safety glasses, and proper footwear.

➤ **E-1—Eye and Face Protection**

- All personnel shall wear safety glasses 100% of the time as soon as they enter the construction site.
- Minimum eye protection shall include approved safety glasses **with side shields**, which meet the standards specified in ANSI Z-87.1-1989. This shall also include prescription eyewear.
- During the following operations, eye and face protection, in addition to approved safety glasses, are required:
  - Welding, burning, or cutting with torches.
  - Using abrasive wheels, chop saws, portable grinders, or files. □
  - Chipping concrete, stone, or metal.
  - Drilling or working under dusty conditions.
  - Using explosive actuated fastening or nailing tools.
  - Overhead work.
  - Work with hazardous liquids or gases.

➤ **E-2—Head Protection**

- All personnel shall wear hardhats that meet ANSI Z-89.1-1997, **100% of the time** as soon as they enter the construction site.
- **Hard hats shall display the Contractor's or subcontractor's name and/or decal indicating whom the employee works for, as well as the safety orientation sticker.**
- Workers exposed to electrical voltage of 600 volts or greater shall wear hardhats that meet the requirements of ANSI Z-89.1-1997 Class E & G type hardhats.

➤ **E-3—Hearing Protection**

- Any construction personnel exposed to a noise level of eighty-five (85) decibels or higher, regardless of the duration of the activity being performed, shall wear hearing protection, which shall be supplied by the employer. All hearing protection devices shall meet the requirements of ANSI S.319.

➤ **E-4—Shoes and Foot Protection**

- Well-constructed boots/shoes are required for all SU Projects. Specific requirements include ankle protection and substantial, flexible soles. Exposure hazards dictate whether or not a protective toe guard will be required.
- Sneakers, tennis shoes, athletic shoes of any type, sandals, high heels, or street shoes **shall not** be worn by construction personnel while on a Project Site.
- Visitors to the site shall be monitored for appropriate footwear.

➤ **E-5—Clothing**

- Suitable clothing for construction shall be worn on the Project Site.
- No tank tops, shorts, cut-offs, or ripped or torn clothing are allowed on the Project Site.
- Shirts with sleeves, at least four (4) inches in length, shall be worn at all times. All shirts shall be hemmed at the neck, sleeve, and tail. "Muscle/tank top" type shirts are prohibited.
- Full-length pants are required. Shorts and sweat pants are prohibited.
- Polyester or similar material is not allowed.
- Dangling jewelry may not be worn.
- Long hair, which can be caught in moving equipment parts, must be restrained.

- Frayed pants or clothes with holes pose fire or other hazards and are not allowed on job sites.
- **E-6—Safety Belts, Harnesses, Lifelines, Lanyards**
  - Only full-body harnesses meeting ANSI Z359.1 shall be used for personal fall protection. **Safety belts are not legal.**
  - Refer to Subpart M of this Manual for the fall protection requirements.
- **E-7—Hand Protection**
  - Appropriate types of gloves or other methods of hand protection shall be used where required by the nature of the hazard.
- **E-8—Respiratory Protection**
  - The requirements of 29 CFR 1910.134 applies to all SU construction projects.

### ***Subpart F—Fire Protection and Prevention***

- **F-1—Open Burning**
  - No open burning is allowed on SU Projects.
- **F-2—Hot Work Permit**
  - The Contractor shall require that any subcontractor involved in hot work (including, but not limited to, welding and cutting) activities perform work under a hot work permit system in coordination with the CM. A fire watch is required to be equipped with a proper fire extinguisher and wear a reflective vest.
  - See Subpart J on Page 27 of this manual for welding and cutting requirements.

### ***Subpart G—Signs, Signals, and Barricades***

- **G-1—Working in Occupied Buildings**

In order to protect the safety and health of the students and staff of SU, the General Contractor must include in their site-specific safety manual a section on protecting the occupants. Also, the tradespersons and construction activities must be separate. In addition, the contractor should have available a wet/dry vacuum cleaner and high velocity fans available for emergencies. These emergencies can include smoke or water penetration.

The General Contractor shall include, but not be limited to, considering the following areas in situations where construction is to take place in or adjacent to a facility that is occupied by students and/or staff:



- The CM, the General Contractor, and SU Project Representative shall meet to discuss scheduling and means to minimize any interruption to the educational process.
- Pre-construction testing and planning such that areas disturbed by renovation and demolition must be tested for lead and asbestos. If either is disturbed, plans and procedures must be made to protect the occupants.

If possible, the construction of a demising wall may be established between the construction areas and the educational or administrative spaces such that a satisfactory seal exists.

- Exterior separation of spaces outside of the building perimeters including total site control to minimize risk of unauthorized entry to associated areas.
- As required in another section of this manual, an eight-foot high chain-link fence shall be erected and/or maintained around construction activities.
- Coordination with facility staff to minimize construction air infiltration into the existing facility by way of the mechanical/HVAC system.
- Establishing means of egress and access into the occupied facility for students, faculty, and construction workers. This shall be established to meet the requirements of NJ Building Code, the local Fire Official, and the SU administration, including necessary security, lighting, and signage. Include fire and life safety drills as needed by building occupants.
- In situations where work is taking place inside of pre-existing building, all gates/doors into construction areas shall be locked at all times except when a worker/guard is in attendance to prevent unauthorized entry. All construction management and tradespersons shall sign-in when entering the construction area through a gate/door designated by the General Contractor with input from the CM and SU Project Representative. This will insure that all personnel are accounted for should an evacuation be required.
- As required in another section of this manual, the General Contractor shall purchase and distribute to all tradespersons who have completed the site-specific safety orientation identification badges.
- Contractor should take all necessary steps to minimize any occurrences of indoor air quality (IAQ) concerns throughout the construction project.
- On an as needed basis, testing of air quality should be performed as required by state fire code, no smoking is allowed on SU project sites.

➤ **G-2—Separation of Construction Area**

- Clear separation between construction areas (Red Zones) and areas occupied by occupants (Green Zones) shall be present at all times.
- The Contractor or any subcontractor shall not be permitted to work within confines of the operating spaces without prior written approval from the CM and/or SU Project Representative. All requests shall be submitted in writing at least ten (10) working days prior to the date being requested. Written requests shall detail every aspect of the Work to be completed.
- The CM may restrict access to occupied areas to periods including, but not limited to, non-operation hours, weekends, holidays, and nights on a site-specific basis.
- It is the policy of the SU that construction shall work around education; education will not work around construction.

***Subpart H—Materials Handling, Storage, Use, and Disposal***

- Deliveries. The GC and Subcontractor shall direct all shipments and deliveries related to the Work to the designated gate for site access. Deliveries shall be properly marked and identified with the name of the project, project number, and Subcontractor's name. The GC, his Subcontractors, and their authorized representative will be required to sign for their deliveries. All delivery personnel shall adhere to the project minimum safety standards. Each GC and his Subcontractors shall provide Flagmen, where necessary. Large deliveries of equipment or materials, which will require road blockages or otherwise restrict access to the project site, shall be coordinated with the Construction Manager at least one (1) week in advance. Unloading large deliveries, which involve cranes or hoists, shall be performed in accordance with OSHA and the Project's Safety Program Procedures.
- Material Storage. Materials and equipment shall be properly stored in designated locations determined by the General Contractor after commencing within accordance with safe practices for stacking height, tie-off, and protection. Materials shall not be stacked or stored in any area unless prior authorization is received. All materials stored in the building shall be maintained in a neat and orderly fashion. All materials shall be stored off the floor on pallets, racks, scaffolds, etc. Materials designated for interior use must be protected from moisture at all times.
- Flammable/ Combustible Material. Bulk storage of all flammable or combustible materials shall be a minimum of fifty (50) feet from any building. No more than one (1) day's working supply of flammable or combustible materials shall be permitted in the building. Only UL/ FM approved containers and dispensing facilities shall be used.

➤ **H-1—Disposal**

- The Contractor and every subcontractor are responsible for disposal of their own construction debris and the proper action to keep areas around dumpsters clean.

➤ **H-2—Unattended Tools & Equipment**

- Tools and equipment shall not be left unattended while in areas occupied or accessed by SU occupants. Offending parties shall be escorted from the job site and not allowed to re-enter until properly restrained.

*Subpart I—Tools - Hand and Power*

➤ **I-1—Portable Power Tools**

- All portable power tools must be inspected as per OSHA standards (29 CFR 1926.300). Additionally, the Contractor shall require all subcontractors to institute the Project's tool inspection Manual as below:
  - Extension Cords used with portable tools must be of heavy-duty three-wire type and an inspection procedure for extension cords shall be implemented.
  - Flat extension cords are prohibited.
  - Damaged electrical cords will not be allowed. (Refer to Subpart K, paragraph K-3, of this Manual for general electrical cord and grounding requirements.)
  - Tools with defective electrical cords will be immediately taken out of service by an effective method. Cutting off the cord or applying a locked cover for the plug would be considered effective methods. Anyone observed using defective tools or extension cords shall be required to attend retraining.

➤ **I-2—Ground Fault Circuit Interrupter (“GFCI”)**

- The Contractor or subcontractor will maintain GFCIs on all generators or power supplies for which they are responsible.
- Refer to Subpart K of this Manual for general electrical requirements.

*Subpart J—Welding and Cutting*

➤ **J-1—Hot Work Permit**

- A Hot Work Permit is required at all times for any welding, brazen, and/or torch cutting.
- Permit applications will be reviewed and approved by the GC as soon as possible, but approval may take as much as four (4) hours.

➤ **J-2—Fire Watch**

- As part of the hot work permit procedure, a fire watch is required during the actual work as well as a final inspection of the site two (2) hours after the completion of the hot work. A proper fire watch reflective vest and a proper-sized (minimum ten (10) pound ABC) fire extinguisher are required.

➤ **J-3—Welding & Cutting Equipment**

- All welding and cutting equipment must be labeled with the owning Contractor or subcontractor's name.
- Welding leads and cutting hoses shall be kept clear of walkways and stairways.

➤ **J-4—Cylinders**

- Oxygen and acetylene cylinders shall be identified with the name of the Contractor or subcontractor on each.
- Cylinders shall not be stored inside buildings.
- Oxygen and acetylene tanks shall not be stored within twenty (20) feet of each other, unless separated by a ½-hour fire rated barrier.
- Operation and use of oxygen and acetylene tanks shall be in accordance with OSHA Standards.

➤ **J-5—Disposal**

- Spent welding rods shall be picked up and disposed of daily.

***Subpart K—Electrical***

➤ **K-1—Temporary Electrical Work**

- All temporary electrical work shall be in accordance with the pertinent provisions of the National Electrical Code (NFPA-70) and local standards.

➤ **K-2—Ground Fault Circuit Interrupter (“GFCI”)**

- All 110-120 volt, single phase, 15 and 20 amp temporary power circuits (with the exception of temporary lighting) shall have ground GFCIs installed.
- All portable generators shall have properly functioning GFCI outlets.
- All portable generators shall be properly vented.

- GFCI receptacles and circuit breakers shall be tested weekly with a multi-range GFCI tester (the tests shall be documented) to ensure the GFCI is properly functioning and protecting the worker.
- Contractor or subcontractors using the permanent electrical supply to the building must use portable GFCIs.

➤ **K-3—Extension Cords**

- Extension cords used with portable tools must be of heavy-duty three (3) -wire type.
- Flat extension cords are prohibited.
- Damaged electrical cords will not be allowed.
- All extension cords will be suspended seven (7) feet above the floor or working surface. Extension cords will not be fastened with staples, hung from nails, or suspended by non-insulating wire.
- The Contractor is responsible for all cords being used at the Project Site.

➤ **K-4—Lockout / Tag-Out**

- Electrical equipment or machinery shall be de-energized and rendered inoperative prior to work beginning on the equipment.
- The electrical contractor shall be required to develop a site-specific LockOut/TagOut program for all site contractors to follow. **Lockout/tag-out shall be performed in accordance with OSHA standard (29 CFR 1910.147).**
- The failure to follow lockout/tag-out procedures will result in immediate removal from the Project Site.
- Unauthorized removal or tampering with locks or tags which are utilized, as part of a lockout/tag-out will result in the SU requiring immediate removal from the Project Site.

➤ **K-5—Circuits**

- Circuits with voltages greater than 110-120 volts must be identified with the actual voltage, and higher voltages shall have “danger” or “warning” signs posted.

➤ **K-6—Conductive Material**

- Fish tapes or lines made of metal or any other conductive material are prohibited. Non-conductive tapes and lines will be used in their place.

### *Subpart L—Scaffolds*

Under certain conditions, the CM may require certification from professional engineers (“PEs”) for the erection of scaffolding.

Free-standing scaffold towers used externally must not be higher to the top platform level than three times the minimum base dimension, unless secured to a permanent structure. For internal use only, the height to platform may rise to 3.5 times the minimum base dimension. Wheels must be locked when towers are in use. No person is permitted to remain on a tower platform while a tower is being moved.

#### ➤ **L-1—Scaffolding Competent Person**

- Prior to beginning any scaffold erection, the Contractor shall submit, and require its subcontractors to submit, the name and credentials of its scaffolding competent person to the CM.

#### ➤ **L-2—Scaffold Inspection**

- The Contractor shall maintain an approved scaffold inspection with a tag system on the scaffold with daily inspections and signatures of an OSHA-defined competent person.

#### ➤ **L-3—Common Scaffolding**

- Common scaffolding shared by subcontractors must be PE-designed and the actual installation inspected and approved by a PE, at the discretion of the CM. The PE must also review the design and inspect the scaffolding prior to its next intended use by a different subcontractor.

#### ➤ **L-4—Outriggers**

- Scaffolding with any dimension of forty-five (45) inches or more shall be equipped with outriggers.

#### ➤ **L-5—Carpenter Bracket Scaffolds**

- Carpenter bracket scaffolds over four (4) feet in height shall be protected by standard guardrails.

#### ➤ **L-6—Guardrails**

- All scaffolds, Baker-type, over four (4) feet in height, having a minimum horizontal dimension in either direction of forty-five (45) inches or less, shall have standard guardrails.

- Standard guardrails shall be installed on any scaffolding work level that is six (6) feet above a lower level. If a standard guardrail is not feasible, a personal fall arrest system (including, but not limited to, harness, lanyard, and anchor) shall be used.

➤ **L-7—Scaffold Planking**

- All scaffold planking shall be free of knots and cracks and shall completely cover the work platform. All planking used on a scaffold shall be stamped “SCAFFOLD PLANK” or SCF PLK,” and shall meet requirements of Subpart L of the OSHA Standards.
- Only planking that has been inspected prior to placement and that has had its ends color-coded “green” is permissible for scaffold planking.
- Planking that is damaged or that has not been inspected shall be color-coded “red” and cannot be used for scaffold planking.
- All scaffolds and planking shall be tagged, inspected daily, and signed off by an OSHA-defined competent person.

➤ **L-8—Elevated Work Levels**

- Debris fencing, netting, or other methods to protect personnel and property below shall be provided at all elevated work levels of scaffolding.

➤ **L-9—Toe Boards**

- Toe boards on scaffolding are required per OSHA standards (29 CFR 1926.451(h)) or as determined by the competent person.

***Subpart M—Fall Protection***

This project shall comply with the following Falls Mandate Requirements:

- A. Vertical Access to Working Floors: Access to poured floors:
  - 1) Stairs poured with deck
  - 2) Pre-cast poured with deck steel structure
  - 3) Set stairs with deck
- B. Access to Framing Erection Floor
  - 1) Scaffold stairs with handrails up to and including roof level and at multiple locations.
- C. Frame Erection
  - 1) Structural Steel Erection to be completed with mechanical lifts (i.e., aerial lifts/buckets)
- D. Perimeter protection

- 1) Five foot (60") high perimeter protection covered with netting at all floors including roof level
  - 2) Provide (3) wire ropes at every floor and around all floor openings including roof level.
- E. Lifting over or adjacent to or beyond the site boundary then adequate physical protection will be provided using:
- 1) Access separate for vehicles/personnel
  - 2) Sidewalk canopies
  - 3) Road/sidewalk closures
  - 4) Flag personnel
- F. Working Platforms
- 1) Working platforms fit for purpose via pre-task planning
- G. Fixed access system
- 1) Scaffold system in or around existing structure, erection and dismantling to be completed using 100% tie off.
- H. Mechanical access system
- 1) Working platforms fit for purpose via pre-task planning
- I. Elevator shafts
- 1) Full height protection with lockable access door at all elevator shaft openings.
- J. Service shafts and risers
- 1) Safety straps installed at all shaft and riser locations
  - 2) Installation and dismantling of shaft and riser protection shall be 100% tie off
  - 3) 2 layers of horizontal protection or full height perimeter protection
- K. Excavations , Pits and Holes
- 1) Excavations – Install warning fence (i.e. snow/orange construction fence) around perimeter (10 foot back if possible) with designated separate access points for people and equipment.
  - 2) Trenches – When not actively working the trench, install warning fence (i.e. snow/orange construction fence) around perimeter (10 foot back if possible) with designated access points for people and equipment.
  - 3) Access to mass excavations/foundations (minimum 2 access points) via:
    - (a) ramp (all workers to have bright colored vests and be separated from equipment)
    - (b) scaffold stairs
    - (c) prefabricated stairs
- L. Ladders – Ladders shall only be used for access and not as a place of work unless three points of contact can be maintained. The use of platform ladders should be used as an alternative to step ladders. The use of step ladders should be restricted to areas where no suitable alternative (e.g. scissor lifts and podium steps) can be utilized and only for light, short duration work (i.e. lasting less than 15 minutes).



➤ **M-1—Personal Fall Protection System**

- Personnel working at a level exposed to a fall distance of six (6) feet or greater (or less if a fall would result in the likelihood of a serious injury or death) shall be protected by the means of a personal fall protection system.

➤ **M-2—Fall Prevention Controls**

- Fall prevention controls shall be based on the principles established by engineering and design techniques for elimination and prevention of fall hazards and shall be utilized above the use of personal protective equipment.
- When it is not feasible to provide fall prevention controls, workers exposed to falls shall be provided with and use a full body harness, retractable lanyards, lanyards with shock absorbers, and anchorage points as specified per OSHA standards (29 CFR 1926 Subpart M).
- Holes, shafts, and edges, from or through which persons could fall a distance of more than six (6) feet, must be clearly marked with signage or other means and be adequately protected.

➤ **M-3—Body Belts**

- Body belts are not permitted on the Project Site as a component of the personal fall protection system.

➤ **M-4—Task Specific Fall Protection Plan**

- The Contractor shall require all subcontractors performing structural erection activities (such as pre-cast concrete and steel erection) to include in their site-specific safety plan a “Task-Specific Fall Protection Plan”, which complies with the six (6) foot fall protection requirement.

➤ **M-5—Ladders**

- Scaffolds and Platform Ladders. The Project’s Fall Mandate Policy requires the use of scaffolds or mechanical lifts during all phases of construction. The use of other means of vertical access will be on a task specific basis only. Contractor is required to provide either the permanent project stairs or scaffold type ladders to the roof level during or immediately after steel erection to provide a safer vertical access. Use of standard “A” frame step ladders will not be permitted without a written JHA and pre-use review by the CM.
- Ladders (straight, extension, and step) shall be used only for employee access and short-duration (15 mins or less) miscellaneous light work where three (3)

point contact with the ladder can be maintained.

- If ladders are to be used for performing long-duration (more than 15 mins) heavy work at heights six (6) feet and greater (or any height where the likelihood of a serious or fatal injury exists), the fall hazards shall be controlled through the use of a personal fall protection system, scissor lifts, and/or podium steps.
- Fiberglass or wood ladders only shall be used. Aluminum or other conductive portable ladders are not permitted on a Project Site.
- Aerial and Scissor Lifts. The General Contractor and his Subcontractors shall ensure all lifts arrive on the project site in proper working condition and with current third party certification that said unit is safe to use. Employees utilizing said lifts shall be trained by a qualified third party to operate the specific lift, according to the applicable ANSI and manufacturer's guidelines. Documentation of both certifications shall be provided to the Construction Manager prior to work commencing. All lifts on the project site must be equipped with audible and visual (strobe lights) motion warning systems. Additionally, all lifts must be equipped with manufacturer installed, engineered fall restraint anchorage points. All employees working in lifts must work within the confines of the guardrail system or bucket, with their feet on the deck and be anchored to the engineered anchorage point utilizing a full body harness and shock absorbing lanyard system. No body belts will be permitted.

### ***Subpart N—Cranes, Derricks, Hoists, Elevators, and Conveyors***

#### **➤ N-1—Inspections**

- All operating engineers and other equipment operators shall present the CM with their license, which shall be kept on file with the CM.
- A copy of the OSHA required annual inspection shall be submitted to the CM at least twenty-four (24) hours prior to the crane arriving on-site.
- A competent person shall perform and document all manufacturer-required inspections prior to and during each use. Documentation of all manufacturer required inspections shall be maintained by the subcontractor for review by the CM and SU Project Representative.

#### **➤ N-2—Pile Driving**

- The crane requirements apply to pile driving equipment and caisson equipment.

➤ **N-3—Other Mobile Equipment**

- Lulls and other mobile equipment, not classified as cranes, shall be in compliance with other appropriate OSHA standards such as (29 CFR 1910.178) Powered Industrial Trucks.
- Unless a vehicle does not come with seat belts, operators at all times, no exceptions, shall wear seat belts.

➤ **N-4—Load Chart**

- Cranes must have a load chart and operations manual that is for the exact model of crane.
- The Contractor shall require its subcontractor to certify that the operator has read the operator's manual and can interpret the load chart.
- The Contractor shall require all subcontractors to certify that the operator has been advised that he/she shall not exceed the load chart.

➤ **N-5—Capacity**

- For lifts of any load that are more than 60% of a crane's rate capacity the CM and SU Project Representative shall be notified prior to the lift.

➤ **N-6—Operator Qualifications:**

- A valid New Jersey Crane Operator License is required. A copy of this license must be maintained on the job site in the Contractor's and subcontractor's central file for safety and health documentation.
- All operators must be experienced in the type of crane being used.
- An up-to-date resume detailing the operator's qualifications (including, but not limited to, years of experience and previous jobs worked on) shall be maintained in the Contractor's and subcontractor's files at the job site.

➤ **N-7—Anti-Two Blocking Device**

- All cranes operating on the construction site shall be equipped with a functioning "anti-two blocking" device.

➤ **N-8—Communications**

- There shall be two means of communications between crane operator and signal person. If the signal person is visible to the operator, then two-way radios shall

serve as back up. If the signal person is not visible to the crane operator, then a hard-wired phone system shall be the primary means of communication with two-way radios as back up.

➤ **N-9—Soil Capacity**

- Under certain soil conditions, the CM and SU Project Representative may require that a Professional Engineer (PE) inspect and certify that the soil is capable of supporting the weight of the intended crane and the anticipated loads. The PE may require additional cribbing or other material to support the loads.

***Subpart O—Motor Vehicles, Mechanized Equipment, Etc.***

- Equipment. The General Contractor and his Subcontractors shall supply all equipment required for the performance of the Work of this Contract. Equipment shall be maintained in safe operating condition, and employees shall be properly trained in correct operating procedures and documentation of said training provided to the Construction Manager prior to performing work. (All cranes, aerial and scissor) material-handling equipment must have a valid certificate of inspection, as required by the manufacturer and safety checklists must be submitted on a daily basis).
- Where any Federal, State, or Local regulations require special training and/or licensing for operators of specific equipment, the General Contractor and his Subcontractors shall provide the Construction Manager copies of the required training documentation and required licenses for each employee required to operate the specific equipment.

➤ **O-1—Riding Mobile Equipment**

- No one shall ride in a vehicle or mobile equipment unless it is designed to accommodate additional personnel. Violators shall be removed from the Project Site.

➤ **O-2—Pick-Up Trucks**

- Riding in the back of pick-up trucks shall not be allowed.

➤ **O-3—Non-Licensed Motorized Equipment**

- ATVs, golf carts, or other non-licensed, motorized equipment used to transport people and or tools/equipment shall be inspected and operated in conformance with ANSI, DOT, OSHA, and any other appropriate governing body.

***Subpart P—Excavations***

- Excavations. The GC shall investigate all existing underground conditions, and obtain necessary approvals and permits and notify the state one call system (where applicable) prior to commencing any excavation work.
- The contractor on this project will be required to conduct his own investigation using the

necessary equipment/detectors/tools to locate existing utilities prior to excavation.

- All excavation work shall be performed in strict conformance with the OSHA regulations, and the GC shall provide a competent person (per OSHA) and all required shoring, bracing, and protective barricades and rails to accomplish the Work in a safe manner.
- Where there is a risk of injury from persons, plant and/or materials falling into excavations, pits and holes or from the collapse of the excavation sides, barriers or edge protection should be provided or the edges sloped to gradients, which prevent falls, and/or a suitably designed trench support system should be introduced. Where water is present, additional measures should be taken to prevent grounding.
- Any excavations shall be barricaded with fencing or equal and marked with suitable warning lights.
  - **P-1—Excavation Permit**
    - All excavation shall be in accordance with applicable OSHA Standards.
  - **P-2—Soil Classification**
    - All soils shall be classified as type “C” until the competent person can demonstrate the soil can be reclassified as another type, using acceptable soil analysis practices.
  - **P-3—Barricades**
    - All open excavations and trenches shall be barricaded or adequately guarded at all times with high-visible material.
  - **P-4—Contaminated Soil**
    - The SU may have areas with contaminated soil. Depending on the nature and extent of hazards related to this contamination, specific safeguarding methods shall be implemented.

### ***Subpart Q—Concrete and Masonry Construction***

All concrete and masonry construction shall be in accordance with applicable OSHA Standards.

### ***Subpart R—Steel Erection (and Pre-cast Concrete Erection)***

- **R-1—Hoisting, Rigging, and Loads**
  - Under certain soil conditions, the SU Project Representative and/or CM may require that a Professional Engineer (PE) inspect and certify that the soil is capable of supporting the weight of the intended crane and anticipated loads. The PE may require additional cribbing or material.

- A safe means of access to the level being worked on shall be maintained. Climbing and sliding on columns or diagonals are not allowed.
- Containers, buckets, bags, etc. shall be provided for storing or carrying bolts or rivets. When bolts, drift-pins, or rivet heads are being removed, a means shall be provided to prevent accidental displacement. Tools shall be secured in such a manner to prevent accidental falling.
- Lifeline attachments, dynamic fall restraints, and other fall protection provisions shall be considered during shop drawing preparation, shall be incorporated in fabricated pieces, and shall have safety lines or devices attached prior to erection wherever possible.
- A tag line of appropriate length shall be used to control all loads or portions thereof.
- For the protection of other trades on the Project, signs shall be posted in the erection area, "Danger: Men Working Overhead".
- When loads are being hoisted, all personnel are to be prevented from walking under the lift.
- No one shall be permitted to ride a load under any circumstances.
- Material shall not be hoisted to a structure unless it is ready to be put into place and secured.
- Bundles of sheets or small material shall be so secured as to prevent falling out from the rigging.

➤ **R-2—Fall Protection Requirements**

- The use of personal fall arrest systems shall be rigorously enforced during steel and pre-cast concrete erection.
- The contractor shall implement a site-wide 100% six (6) foot fall protection policy. This shall include all activities including steel erection and scaffolding operations, where a worker is exposed to a fall greater than six (6) feet, shall be protected by a fall protection system such as guardrails, safety nets, personal fall arrest system, hole covers, or fall restraint system. Steel erection shall be accomplished using either aerial platform/buckets or other acceptable means.
- The exception contained within OSHA standards (29 CFR 1926.501.b.12) allowing for a written fall protection program in lieu of this requirement is not acceptable for the Project and is prohibited.

➤ **R-3—Perimeter Protection**

- Provide (3) three wire ropes at a total height of five feet (60”), at every floor and around all floor openings including roof level.
- Provide orange netting to full 60” height of all perimeter protection.
- Guardrails are to be provided at all working places including roof level and other locations where persons or materials could fall more than 6 feet. Where this can physically not be achieved, suitable and sufficient fall protection devices that do not rely on individuals should be provided and used to establish a safe place of work. Harnesses and personal protective equipment must be used as a last resort.
- All wire rope cable connections shall have loop connections (butt-splicing is prohibited) and will require a minimum of two (2) wire Crosby rope clips as specified in OSHA standards (29 CFR 1926.251 Subpart H, Table H-20).
- If the wire rope cable system has been designed for an anchorage point for a personal fall arrest system, at least three (3) wire rope clips must be used as specified in OSHA standards (29 CFR 1926.251 Subpart H, Table H-20).
- Any systems used for an anchorage of personal fall arrest systems shall be inspected and approved by the competent person using the cable for this purpose.
- Turnbuckles will be installed at suitable intervals to maintain the tightness of the wire rope but in no instance less than one (1) per perimeter side.
- All anchorage for the wire rope cable will be capable of withstanding a minimum of 200 pounds of force if the wire rope is used as a guardrail system or a minimum of 5,000 pounds of force per person attached if the wire rope is used as an anchorage for a personal fall arrest system.

➤ **R-4—Erection Plan**

- The erection subcontractor shall have a qualified person prepare a site-specific safety erection plan prior to the erection of structural members. This erection plan shall be reviewed with the CM and SU Project Representative.
- An erection subcontractor qualified person shall approve all changes in the safety erection plan.
- A copy of the erection plan shall be maintained at the job site, showing all approved changes.

- The implementation of the erection plan shall be under the supervision of a competent person.

### ***Subpart S—Tunnels and Shafts, Caissons, Cofferdams, Etc.***

All tunnels and shafts, caissons, cofferdams, etc., shall be in accordance with applicable OSHA Standards.

### ***Subpart T—Demolition***

All demolition shall be in accordance with applicable OSHA Standards.

- Dust and Fumes. The GC shall not perform any Work, which generates excessive dust or fumes in or adjacent to any portions of the project where such dust or fumes will create a negative impact on adjacent parking lots, streets, buildings, etc. The GC shall provide suitable ventilation and dust control measures to maintain satisfactory conditions, or perform such work after the normal working hours of potentially impacted areas. GC agrees to provide all cleaning and cleanup reasonably required by the Construction Manager pertaining to the GC's work to the extent such requirements are in excess of those contained in this paragraph.

### ***Subpart U—Blasting and Use of Explosives***

#### **➤ U-1—State & Local Laws**

- The authority having jurisdiction (i.e., local or state fire marshal) should be contacted by the GC in accordance with State and local laws.

### ***Subpart V—Power Transmission and Distribution***

All power transmission and distribution shall be in accordance with applicable OSHA Standards.

### ***Subpart W—Rollover Protective Structures, Overhead Protection***

All rollover protective structures and overhead protection shall be in accordance with applicable OSHA Standards.

### ***Subpart X—Stairways and Ladders***

#### **➤ X-1—Conductive Ladders**

- Fiberglass or wood ladders only shall be used. Aluminum or other conductive portable ladders are not permitted on a Project Site.

#### **➤ X-2—Personal Fall Protection**

- When working on/from ladders at an elevation (measured from the feet of the worker) above six (6) feet, workers are required to be protected by personal fall



arrest and restraint system. Workers may ascend and descend ladders above six (6) feet elevation without personal arrest systems.

➤ **X-3—Stairways**

- Stairways may only be used when the stairwell tread and guardrails are in place. Stairways, which do not have stairwell treads and railings, shall be barricaded to prevent use.

➤ **X-4—Tipping or Falling Exposure**

- All extension or other ladders, except stepladders, shall be tied off.

***Subpart Y—Commercial Diving Operations***

All commercial diving operations shall be in accordance with applicable OSHA Standards.

***Subpart Z—Toxic and Hazardous Substances***

All toxic and hazardous substances shall be in accordance with applicable OSHA Standards.

**11.0 Waste Disposal**

**This section contains only requirements as applied to disposal of construction supplies and materials. Nothing in this section shall be interpreted to limit or replace any federal, State, or local EPA requirements or standards.**

- A Contractor who creates, may be expected to create, or could accidentally create a material that could be classified to be hazardous waste shall provide to the CM a copy of their EPA disposal number and other pertinent information.
- All hazardous waste, or waste that could be considered hazardous waste, as determined by the methodology and definitions from environmental regulators, will be stored and collected in special areas and disposed of as directed by the SU Project Representative.
- No material is to be abandoned on a Project Site. If material found on a Project Site can be traced to a Contractor, that Contractor will be responsible for all expenses involved in collecting, moving, cleaning, and disposing of all material in the area where the material was abandoned.
- Should a potentially hazardous condition be discovered the GC shall immediately notify the CM, and SU Project Representative.

**12.0 Site Security/Access Control**

An effective means of controlling personnel entering and exiting the site is to be implemented. The objective is to check that the worker is authorized to perform the work and that they have received a suitable orientation. This will also ensure that the public are protected and that all visitors are treated in accordance with standard protocol.

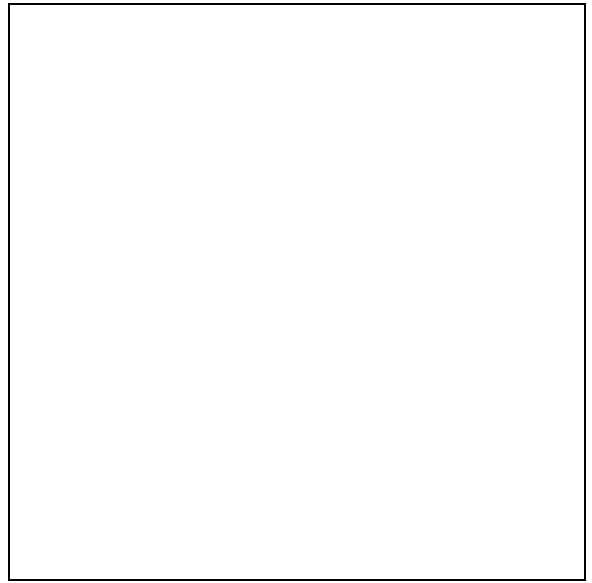
Site Access/Security is to be provided as follows:

- A physical barrier is installed to prevent access to the workplace. Examples of such barriers include fencing, covered walkways, temporary walls or other physical barriers.
- The site logistics plan must include a separate access point for vehicular traffic to segregate persons from risk of injury.
- Signage is to be placed at each entrance/exit point to communicate the need to check in.
- The site access points are to be placed so that an effective means of control can be implemented to prevent the public from unauthorized entry.
- Consideration should be given to reducing the number of access points to reduce the possibility of unauthorized access.
- A minimum of two exit points are to be maintained to ensure the site can be evacuated in case of an emergency.
- Entry points are to be manned by a site access control person (SACP) while in use. Those not manned by SACP must be closed at all times unless, and until, they can be controlled by a SACP.
- A system is to be implemented to readily identify workers who have received an orientation. A colored sticker on a hard hat is an acceptable means of identification.
- Access points used for vehicular traffic are to be controlled by rolling gates in preference to swing gates where room allows.
- All workers must receive a full orientation before commencing work.
- All workers receiving an orientation are required to sign a document confirming they understood the content. This document will enable the site team to keep track of the workforce.
- All visitors are to check in with the General Contractor and/or CM and must be accompanied on the site. They are to sign a hold harmless release form.
- Delivery drivers (including UPS, FedEx, USPS, etc) are exempt from requiring a full orientation; however, they should not be allowed to walk the site freely.
- All workers working in occupied facilities will be required to wear an ID badge with the minimum required information (company name, name, picture ID, project name, ID badge number).
- The General Contractor will be responsible for issuing the ID badges to all workers in a format acceptable to the SU and/or CM.
- The SU and CM reserve the right to require all workers to wear ID badges at any time. Badges shall be worn in a visible location by the employee at all times while working on the project, and which shall be returned upon termination of employment.
- Inspection. All vehicles and personnel entering or leaving the project site are subject to security checks and searches at the discretion of the SU Representative or Construction Manager's team.
- Speed Limit. The speed limit within the project is 5 MPH if conditions or the character of the subject vehicle allow. General Contractor and his Subcontractors employees operating vehicles in excess of the speed limit, or in any otherwise unsafe manner, will be directed to leave the site and not be permitted to return.
- Pedestrians. Pedestrians have the uncontested right-of-way at all times.

- Cameras. Cameras are not permitted within the project site without prior consent of the Construction Manager and Owner. This includes all video recording devices, as well as mobile devices (mobile phones, PDA's, etc.) which contain cameras or video recording equipment.
- Site Parking. General Contractor and his Subcontractors employee parking within the project site is permitted. Vehicles permitted to park on the project site shall be insured by the General Contractor or Subcontractor's company. General Contractor and his Subcontractor's vehicles may park outside the parking project area in areas designated or assigned by the SU and/or Construction Manager.
- Trailers. The General Contractor and his Subcontractors shall locate approved field office or material storage trailers only in designated areas. Trailers shall be properly maintained, and the surrounding area kept clean and free of litter or debris. Trailer space will be designated by the Construction Manager and/or the Owner. Due to space limitations, trailer space will be limited. Refer to the generic site logistics plans as shown in the Contract Documents. Trailers must have an electrical certification (current) prior to coming on site. All trailers must have a lockable electrical disconnecting means.
- Temporary Services. The General Contractor shall not make any connections to services or utilities (i.e.: electric, water, steam, air, gas, tele/data, etc.) for temporary use unless approved by the Construction Manager and utility owner. Temporary services (both hook-up and maintenance/usage) to each of the General Contractor and his Subcontractors trailers are the responsibility of the General Contractor unless notified otherwise.
- Emergency Procedures. The General Contractor shall immediately report any damage to site utility or service piping or power systems to the SU Police Department and Construction Manager. All emergencies shall be reported as stated in the Emergency Action Plan.

**B190011**  
**F-Wing Main Campus Building**  
**100 Level Interior Renovations**

**Specifications – Dated 5/9/19**



## **STOCKTON UNIVERSITY**

# **PROPOSED INTERIOR RENOVATION TO “F” WING – MAIN CAMPUS BUILDING**

## **Technical Specifications**

**Bid No.**

**B190011**

## **INDEX OF SPECIFICATIONS**

<u>SECTION #</u>	<u>SECTION IDENTIFICATION</u>
01 00 00	GENERAL REQUIREMENTS
01 10 00	SUMMARY
01 20 00	PRICE AND PAYMENT PROCEDURES
01 30 00	ADMINISTRATIVE REQUIREMENTS
01 32 16	CONSTRUCTION SCHEDULE
01 33 00	SUBMITTAL PROCEDURES
01 33 23	SHOP DRAWINGS, PRODUCT DATA, SAMPLES & PHOTOGRAPHS
01 40 00	QUALITY REQUIREMENTS
01 60 00	PRODUCT REQUIREMENTS
01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS
01 71 00	CLEANING
01 73 29	CUTTING AND PATCHING
02 41 19	SELECTIVE DEMOLITION
02 41 26	SELECTIVE ELECTRICAL DEMOLITION
05 40 00	COLD-FORMED METAL FRAMING
06 10 00	ROUGH CARPENTRY
07 21 00	THERMAL INSULATION
07 90 00	JOINT SEALERS
08 11 13	STEEL DOOR & WINDOW FRAMES
08 14 00	WOOD DOORS
08 71 00	DOOR HARDWARE
08 80 00	GLAZING
09 21 16	GYPSUM BOARD ASSEMBLIES
09 22 16	NON-LOAD BEARING METAL FRAMING SYSTEM
09 30 00	CERAMIC TILE
09 51 13	ACOUSTICAL CEILINGS
09 65 00	RESILIENT FLOORING
09 90 00	PAINTS AND COATINGS
10 00 00	MISCELLANEOUS SPECIALTIES
10 14 00	INTERIOR SIGNAGE
10 28 00	TOILET AND BATH ACCESSORIES
12 35 30	CASEWORK
21 13 13	WET-PIPE SPRINKLER SYSTEM
22 05 23	GENERAL DUTY VALVES FOR PLUMBING PIPING
22 05 29	HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
22 05 53	IDENTIFICATION FOR PLUMBING AND EQUIPMENT
22 07 19	PLUMBING PIPING INSULATION
22 11 16	DOMESTIC WATER PIPING
22 13 16	SANITARY WASTE AND VENT PIPING
22 13 19	SANITARY WASTE PIPING SPECIALTIES
23 31 13	METAL DUCTS
26 05 19	LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
26 05 23	CONTROL-VOLTAGE ELECTRICAL POWER CABLES
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 05 33	RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

SECTION 01 00 00

GENERAL REQUIREMENTS

- 1.0 **DESCRIPTION:** Work included in this project shall be for the
- PROPOSED INTERIOR RENOVATIONS TO  
“F” WING – MAIN CAMPUS BUILDING  
STOCKTON UNIVERSITY**
- 1.1 **LOCATION:** STOCKTON UNIVERSITY, 101 VERA KING FARRIS DRIVE,  
GALLOWAY, NEW JERSEY
- 1.2 **If there are any conflicts in the specifications the University’s General Conditions would take precedence.**
- 2.0 **CONTRACTOR’S RESPONSIBILITY:**
- 2.1 **Once the project has been awarded, the General Contractor, his employees including subcontractors and their employees will each be required to coordinate with the Facility of Planning and Construction of Stockton University to gain access to the site and before the start of any work.**
- 2.2 Verify all measurements and conditions in the field.
- 2.3 Before starting work, examine all adjoining work on which the work of these specifications depend. Perform corrective work to all existing conditions necessary to make these specifications perform in all respects.
- 2.4 **APPLICABLE DOCUMENTS:** Publications, specifications and standards listed in this Specification form a part of the Specification to the extent indicated by the reference thereto. Unless otherwise indicated, the issue of effect on the date of issuing the Invitation for bids shall apply.
- 2.5 **PROGRESS CHART:** Within ten (10) days of the receipt of Notice to Proceed and prior to commencement of work, the Contractor shall submit and receive approval for a Progress Chart indicating the planned starting and completion dates for all work items.
- 2.6 **PRICE SCHEDULE:** Along with the Progress Chart, the Contractor shall submit a price schedule for each work item, indicating his breakdown for labor, material and equipment. Definitions applying are as follows:
- 2.6.1 **LABOR COST:** Direct labor wages and benefits, labor insurance, supervisory labor, small hand tools chargeable to labor, prorated cost of job expenses such as field office and telephone, prorated percentage of general (main office) overhead and percentage of profit.
- 2.6.2 **MATERIAL COST:** Direct material costs delivered to the site, prorated percentage of job expenses, general overhead and profit.

- 2.6.3 **EQUIPMENT COST:** Plant and equipment charges, prorated percentage of job expenses, general overhead and profit.
- 2.7 **INTENT OF DRAWINGS AND SPECIFICATIONS:** The intent of the drawings and specifications is to provide for the completion of the work in every detail that is described therein. The Contractor shall furnish all labor; materials, equipment, tools, transportation and necessary supplies such as may be reasonably required to complete the work in accordance with the drawings.
- 2.8 **REPAIR OF EXISTING WORK:** The work shall be carefully laid out in advance. Where cutting or patching surfaces is necessary for proper installation, the work shall be carefully done by skilled mechanics. Any damage to the building or equipment caused by the Contractor shall be repaired by skilled mechanics of the trades involved, at no additional costs to the Owner. The Contractor shall patch and refinish all damaged surfaces caused by this work so as to match adjacent surfaces in material, texture and color to the satisfaction of the Architect.
- 2.9 **MATERIALS APPROVED:**
- 2.9.1 Catalog cuts and other information shall be submitted by the Contractor as required herein and as necessary to secure approval of the material and methods to be incorporated into the work.
- 2.9.2 Four (4) copies of catalogs and other printed information shall be submitted. One (1) copy of printed matter will be returned to the Contractor for his use.
- 2.9.3 All submittals shall be made using the “Shop Drawing/Material Approval Request” form. Submittals shall be numbered sequentially and shall include the information required.
- 2.9.4 Within ten (10) days after receipt of Notice to Proceed, the Contractor shall submit a submittals log indicating all required submittals and dates to be submitted.
- 3.0 **METHODS OF MATERIAL QUALIFICATION:**
- 3.0.1 Each material and product can be incorporated into the work and shall conform to the specifications. The Contractor may use any of the following methods to demonstrate compliance with the specifications except as otherwise required.
- 3.0.2 Certificates of Compliance with specification requirements signed by an authorized officer of the manufacturer, processor or approved trade association involved. Such certificates shall show the name and address of the Contractor and the name and location of the project.
- 3.0.3 All materials shall be installed as per manufacturer guide specifications.
- 3.0.4 Labeling by the manufacturer on unbroken and unopened containers.
- 3.0.5 Official marking or labeling by recognized grading organization or national code association indicating compliance.



- 3.1 **DELIVERY, STORAGE, AND HANDLINGS:**
- 3.1.1 Deliver materials to the job site in the manufacturer's sealed and undamaged containers or wrappings.
- 3.1.2 Each product delivered shall be identified with the manufacture's name, date of manufacture, lot name and trade name.
- 3.1.3 Store materials up off the ground under cover, protected from weather and construction activities.
- 3.1.4 The Contractor shall store all material on the job site at his own risk. The Owner will not be responsible for any lost material.
- 3.2 **PRECONSTRUCTION MEETING:** A preconstruction meeting is required and will be arranged for some convenient date after contract award, but before the start of site work.
- 4.0 **INSPECTION:** The Contractor shall keep the Architect fully informed of contract operations and plans so that he may arrange to be present at various times when work is being performed.
- 5.0 **HOURS OF WORK:** All construction operations shall be performed between the hours of 8 a.m. and 4:30 p.m. local time, Monday through Friday inclusive, pending approved schedule by owner. If the Contractor desires to carry on work outside of these hours, he shall submit an application to the Owner for approval at least seventy-two (72) hours in advance. No such work outside the regular hours established above shall be undertaken without approval of the Owner and at no additional cost to the Owner.
- 6.0 **UTILITIES:** Electricity and water, as available, will be furnished by the Owner for construction purposes at no cost, provided that these utilities are not overloaded.
- 7.0 **TOILET FACILITIES:** Shall be provided by and maintained by the Contractor.
- 8.0 **REMOVAL:** All material and debris removed shall become the property of the Contractor and shall be removed from the site during and after the work. Debris and waste material shall not be discharged into surrounding area. None of the materials being removed may be reused, except as noted on the drawings. All debris removed shall be properly disposed of in approved sites.
- 9.0 **SAFETY BARRICADE:** Provide steel tubular scaffold system with 3" thick wood boards to allow a protected route of travel from all exits. Protective scaffolding shall extend a minimum of 8' from face of building; provide construction fencing around site – 6' high chain link.
- 10.0 **MANUFACTURER'S REPRESENTATIVE'S RESPONSIBILITIES:**
- 10.0.1 Keeping the Architect informed on a periodic basis as to the progress and quality of the work.
- 10.0.2 Calling to the attention of the Contractor those matters which he considers to be in violation of the contract requirements.
- 10.0.3 Reporting to the Architect any failure or refusal of the Contractor to correct unacceptable practices.

- 10.0.4 Conducting preliminary and subsequent job site meetings with the Contractor's official job representative.
- 10.0.5 Rendering any other inspection services which the Architect may designate.
- 10.0.6 Inspecting, after completion of work, the extent to which the Contractor has complied with these specifications.
- 10.0.7 The presence and activities of the manufacturers and the Architect shall in no way relieve the Contractor of his contractual responsibilities.

## 11.0 **TEMPORARY TRAILERS**

- A. The Contractor shall provide a temporary CONSTRUCTION OFFICE (Total of 1)
- B. Temporary Construction Office shall have:
  - a. Phone, Fax, Table and 6 Chairs
  - b. Heat
  - c. Electricity
- C. Temporary construction office to be field set at location selected by Owner.

## 12.0 **ENCLOSURES AND FENCING**

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 feet high fence around construction site; equip with vehicular [and pedestrian] gates with locks.
- C. Exterior Enclosures:
  - Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons.
  - Provide access doors with self-closing hardware and locks.
- D. Interior Enclosures:
  - 1. Provide temporary partitions [and ceilings] as indicated on Drawings to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.
  - 2. Construction: Framing, plywood & gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces:
    - a. Insulated to R 13 min.
    - b. STC rating of 35 in accordance with ASTM E90.
    - c. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84, NFPA 255, UL 723.
    - d. Fire Rated Construction: To match existing rating.
    - e. Tested Rating: Determined in accordance with ASTM E119.
  - 3. Paint surfaces exposed to view from Owner occupied areas.

13.0 **WORK PERFORMED:** The General Contractor shall certify that a minimum of 25% of the work shall be performed by his direct staff, not sub-contractors.

END OF SECTION

## SECTION 01 10 00

### SUMMARY

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Contract description.
- B. Work by Owner.
- C. Contractor's use of site and premises.
- D. Work sequence.
- E. Owner occupancy.
- F. Specification Conventions.

##### 1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes:
  - 1. See construction drawings for entire scope of work.
- B. Perform Work of Contract under fixed cost contract with Owner in accordance with Conditions of Contract.

##### 1.3 WORK BY OWNER

- A. Work under this contract includes:
  - 1. See construction drawings for a list of work by Owner.

##### 1.4 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Limit use of site and premises to allow:
  - 1. Owner occupancy.
  - 2. Work by Others.
  - 3. Use of site and premises by the public.
- B. Emergency Building Exits during Construction.

##### 1.5 WORK SEQUENCE

- A. Construct Work in phases to accommodate Owner's occupancy requirements during construction period, coordinate construction schedule and operations with Owner.

1.6 OWNER OCCUPANCY

- A. The Owner will occupy the premises during the entire period of the construction phase of construction.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.7 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

END OF SECTION

## SECTION 01 20 00

### PRICE AND PAYMENT PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Schedule of values.
- B. Applications for payment.
- C. Change procedures.
- D. Defect assessment.
- E. Unit prices.

##### 1.2 SCHEDULE OF VALUES

- A. Submit printed schedule on AIA Form G703 - Continuation Sheet for G702.
- B. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
- C. Include in each line item, amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.
- D. Include within each line item, direct proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, with each Application for Payment.

##### 1.3 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.

- F. Substantiating Data: When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
1. Current construction photographs.
  2. Partial release of liens from major subcontractors and vendors.
  3. Record documents for review by Owner which will be returned to Contractor.
  4. Affidavits attesting to off-site stored products.
  5. Construction progress schedules, revised and current.

#### 1.4 CHANGE PROCEDURES

- A. See AIA A201 – 2007 General Conditions of the Contract for Construction for all required forms and submittal procedures.

END OF SECTION

## SECTION 01 30 00

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Pre-installation meetings.
- F. Cutting and patching.
- G. Special procedures.

##### 1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.



### 1.3 PRECONSTRUCTION MEETING

- A. Owner will schedule meeting after Notice of Award.
- B. Attendance Required: Owner, Architect and Contractor.
- C. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
  - 5. Designation of personnel representing parties in Contract and Architect.
  - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 7. Scheduling.
- D. Record minutes and distribute copies within two days after meeting to participants, with one copy to Architect, Owner and those affected by decisions made.

### 1.4 SITE MOBILIZATION MEETING

- A. Architect will schedule meeting at Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Architect, Special Consultants, and Contractor, Contractor's Superintendent and major Subcontractors.
- C. Agenda:
  - 1. Use of premises by Owner and Contractor.
  - 2. Owner's requirements.
  - 3. Construction facilities and controls provided by Owner.
  - 4. Temporary utilities provided by Owner.
  - 5. Schedules.
  - 6. Application for payment procedures.
  - 7. Procedures for testing.
  - 8. Procedures for maintaining record documents.
  - 9. Requirements for start-up of equipment.
  - 10. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with one copy to Architect, Owner and those affected by decisions made.

### 1.5 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals.

- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner and Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of Work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems impeding planned progress.
  - 5. Review of submittals schedule and status of submittals.
  - 6. Review of off-site fabrication and delivery schedules.
  - 7. Maintenance of progress schedule.
  - 8. Corrective measures to regain projected schedules.
  - 9. Planned progress during succeeding work period.
  - 10. Coordination of projected progress.
  - 11. Maintenance of quality and work standards.
  - 12. Effect of proposed changes on progress schedule and coordination.
  - 13. Other business relating to Work.
- E. Record minutes and distribute copies within two days after meeting to participants, with one copy to Architect, Owner and those affected by decisions made.

#### 1.6 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific section.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with one copy to Architect, Owner and those affected by decisions made.

### PART 2 EXECUTION

#### 2.1 CUTTING AND PATCHING

- A. RELATED DOCUMENTS
  - 1. Drawings and General Provisions of Contract, including but not limited to, General and Supplementary Conditions and other Division 1, Specification Sections, apply to work of this Section.

B. DESCRIPTION OF WORK

1. Definitions: “Cutting and Patching” includes cutting into existing construction to provide for the installation or performance of other Work and subsequent fitting and patching required to restore surfaces to their original conditions.
2. “Cutting and Patching” is performed for coordination of the Work, to uncover work for access or inspection, to obtain samples for testing, to permit alternations to be performed, or for other similar purposes.
3. Cutting and Patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to the “Cutting and Patching” under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be “Cutting and Patching”.

C. QUALITY ASSURANCE

1. Requirements for Structural Work: Do not cut and patch structural work without prior approval of a structural engineer.
2. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.

D. SUBMITTALS

1. Procedural Proposal for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal.
2. List products to be used and firms that will perform work.
3. Give dates when work is expected to be performed.
4. List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be out-of-service temporarily. Indicate how long utility service will be disrupted.
5. Approval by the Design Consultant or Project Management Firm to proceed with cutting and patching work does not waive the Design Consultant’s or Project Management Firm’s right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

E. MATERIALS

1. General: Except as otherwise indicated, or as directed by the Design Consultant or Project Management Firm, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

F. INSPECTION

1. Before cutting, examine the surface to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered notify Project Management Firm immediately. Execute cutting (including excavation) fitting or patching of work required to: make several parts fit properly; uncover work to provide for installation or ill-timed work; remove and replace defective work; remove and replace work not conforming to requirements of Contract Documents.

G. PREPARATION

1. Temporary Support: To prevent failure provide temporary support of work to be cut.
2. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

H. PERFORMANCE

1. General: Except as otherwise indicated or as approved by the Design Consultant or Project Management Firm, proceed with cutting and patching at the earliest feasible time and complete work without delay.
2. Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.
3. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.
4. Comply with requirements of applicable Sections of Division 2 where cutting and patching require excavating and backfilling.
5. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

6. Where feasible, inspect and test patched areas to demonstrate integrity of work.
7. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
8. Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance, remove existing floor and wall coverings and replace with new materials.
9. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coat.

#### I. CLEANING

1. Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely, point mortar, oils, putty, and items of similar nature. Thoroughly clean piping, conduit, and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition

### 2.2 SPECIAL PROCEDURES

- A. Materials: As specified in product sections; match existing with new products for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- E. Remove debris and abandoned items from area and from concealed spaces.
- F. Prepare surface and remove surface finishes to permit installation of new work and finishes.
- G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original condition.
- I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to renewed condition for each material, with neat transition to adjacent finishes. Coordinate with construction documents.

- J. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- K. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Architect/Engineer for review.
- L. Where change of plane of 1/4 inch or more occurs, request instructions from Architect/Engineer.
- M. Trim existing doors to clear new floor finish. Refinish trim to original condition. Coordinate with construction documents.
- N. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- O. Finish surfaces as specified in individual product sections.

END OF SECTION

## SECTION 01 32 16

### CONSTRUCTION SCHEDULE

#### 1.0 GENERAL:

##### 1.1 DESCRIPTION:

- 1.1.1 Work Included: To assure adequate planning and execution of the work so that the work is completed within the number of calendar days allowed in the contract, and to assist the Owner in appraising the reasonableness of the proposed schedule and in evaluating progress of the work, prepare and maintain the schedules and reports described in this section.
- 1.1.2 Definitions: "Day" used throughout the contract, unless otherwise stated, means "Calendar Day".

##### 1.2 QUALITY ASSURANCE:

- 1.2.1 Qualifications of Scheduling Personnel: Employ a scheduler who is thoroughly trained and experienced in compiling construction schedule data, in analyzing by use of Critical Path Method or PERT, and in preparation and issue of periodic reports as required below.
- 1.2.2 Reference Standards: Perform all data preparation, analysis, charting and updating in accordance with all recommendations contained in the current edition of "CPM in Construction" Manual of Associate General Contractors, or in accordance with other standards approved by the State.
- 1.2.3 Reliance Upon Approved Schedule:
- 1.2.4 The construction schedule as approved by the Owner will be an integral part of the Contract and will establish interim Contract Completion dates for the various activities.
- 1.2.5 Should any activity not be completed within fifteen (15) days after the stated scheduled date, the Owner shall have the right to order the Contractor to expedite completion of the activity by whatever means the Owner deems appropriate and necessary, without additional compensation to the Contractor.
- 1.2.6 Should any activity be thirty (30) or more days behind schedule, the Owner shall have the right to perform the activity or have activity performed by whatever method the Owner deems appropriate.
- 1.2.7 Costs incurred by the Owner in connection with expediting construction activity under this Article shall be reimbursed to the Owner by the Contractor.
- 1.2.8 It is expressly understood and agreed that failure by the Owner to exercise the option to either order the Contractor to expedite an activity or to expedite the activity by other means shall not be considered precedent setting for any other activities.

### 1.3 SUBMITTALS:

- 1.3.1 General: Comply with the provisions of Section 013000.
- 1.3.2 Preliminary Analysis: Within ten (10) days after receipt of Notice to Proceed, submit one (1) reproducible copy and four (4) prints of a preliminary construction schedule, plus four (4) prints of proposed format or Materials Status Reports, prepared in accordance with Part Three of this Section.
- 1.3.3 Construction Schedule: Within twenty (20) days after receipt of Notice to Proceed, submit one (1) reproducible and four (4) prints of construction schedule prepared in accordance with Part Three of this Section. Update the construction schedule on a monthly basis.
- 1.3.4 Periodic Report:
- 1.3.5 On the first working day of each month following submittal described in Paragraph 1.3 above, submit four (4) prints of the construction schedule updated as described in Part Three of this Section.
- 1.3.6 Accompanying each periodic submittal of construction schedule, submit four (4) prints of the Materials Status Reports updated as described in Part Three of this Section.

### 2.0 PRODUCTS:

#### 2.1 CONSTRUCTION ANALYSIS:

- 2.1.1 Diagram: Graphically show the order and interdependence of all activities necessary to complete the work, and the sequence in which each activity is to be accomplished, as planned by the Contractor and his project field superintendent in coordination with all subcontractors whose work is shown on the diagram. Activities shown on the diagram shall include, but are not necessarily limited to:
  - a. Project mobilization;
  - b. Submittals and approvals of Shop Drawings and Samples;
  - c. Procurement of equipment and critical materials;
  - d. Fabrication of special material and equipment, and their installation and testing;
  - e. Final cleanup;
  - f. Final inspection and testing;
  - g. All activities by the governing agencies that affect progress, required dates for completion, or both, for all and for each part of the work.
- 2.1.2 The detail of information shall be such that duration times of activities shall normally range from one (1) to fifteen (15) days. The selection and number of activities shall be subject to the Owner's approval.
- 2.1.3 Show on the diagram, as a minimum for each activity, preceding and following event numbers, description of each activity, cost and activity duration in calendar days. Submit diagram on a sheet 75 cm (30") high by the width required.



- 2.2 Mathematical Analysis: Furnish a mathematical analysis of the diagram by manual or computer-aided means, including a tabulation of each activity. Show the following information as a minimum for each activity:
- a. Preceding and following event number;
  - b. Activity descriptions;
  - c. Earliest start date (by calendar date);
  - d. Latest start date (by calendar date);
  - e. Earliest finish date (by calendar date);
  - f. Latest finish date (by calendar date);
  - g. Slack or float (by calendar days);
  - h. Monetary value of the activity;
  - i. Percentage of activity completed;
  - j. Contractor's earnings based on portion of activity completed.
- 2.2.1 The means used in making the mathematical analysis shall be capable of compiling the total value of completed and partially completed activities, and be capable of accepting modifications approved for time and logic adjustments.
- 2.3 Periodic Reports: If computer-aided means are used, list the activities in computer printout sorts as follows:
- a. By the preceding event number from lowest to highest, and then in order of the following event numbers;
  - b. By the amount of float, then in order of preceding event numbers, and then in order of succeeding event numbers.
  - c. In order of preceding event numbers, and then in order of succeeding event numbers (show the dollar amount and dollars spent to date for each activity);
  - d. Other sorts requested by the Owner, for which the Contractor will be reimbursed in accordance with the General Conditions provisions for "Changes."
- 2.4 MATERIAL STATUS REPORTS:
- 2.4.1 Format: The Contractor's standard materials status report form will be acceptable if, in Architect's judgment, it provides sufficient pertinent data to determine that materials procurement flow is adequate for all needs of the work.
- 2.4.2 Content: Show at least the following information:
- 2.4.3 Item Description, listed in accordance with Specifications Section Number in which the item is called for:
- 2.4.4 Purchase Order Number and Date of Issue:
- 2.4.5 Vendor Name:
- 2.4.6 Date Shipped and Shipping Means Utilized:
- 2.4.7 Estimated Date of Arrival at Job Site.

2.4.8 Actual Date of Arrival at Job Site, and Receiving Report Number.

2.5 Data Processing: Process the data by manual or computer-aided methods, but to a degree of promptness and accuracy assuring complete display of all pertinent current information at date of each periodic report.

### 3.0 EXECUTION:

#### 3.1 PRELIMINARY ANALYSIS:

##### 3.1.1 Contents:

- a. Show all activities of the Contractor under this work for the period between receipt of Notice to Proceed and Submittal of Construction Schedule required as noted above.
- b. Show the Contractor's general approach to remainder of the work.
- c. Show cost of all activities scheduled for performance before submittal and approval of the construction schedule.

3.1.2 Submittals shall be in accordance with Paragraphs.

3.2 CONSTRUCTION SCHEDULE: As soon as practicable after receipt of Notice to Proceed, complete the Construction Analysis described in Article 2.1 above, in preliminary form. Meet with the Architect, review contents of proposed construction schedule, and make all revisions agreed upon. Submit in accordance with Paragraph 1.3 above.

##### 3.2.1 Schedule Information:

- a. Notice to Proceed - June 10, 2019
- b. Project Completion - August 23, 2019
- c. Project Duration - 75 Calendar Days

3.3 MATERIAL STATUS REPORT: As soon as practicable after receipt of Notice to Proceed, meet with the State, review contents of proposed Materials Status Reports, and make all revisions to format agreed upon.

#### 3.4 PERIODIC REPORTS:

##### 3.4.1 Construction Schedule, Contents:

- d. Report actual progress by updating the mathematical analysis.
- e. Note on the summary report, or clearly show on a revised issue of affected portions of the detailed diagram, all revisions causing changes in the detailed program.
- f. Revise the summary report as necessary for clarity.
- g. Show activities or portions of activities completed during the reporting period and their actual value.
- h. State the percentage of work actually completed and schedule as the report date, and the progress along the critical path in terms of days ahead of or behind the allowable dates.
- i. If the work is behind schedule, also report progress along other paths with negative slack.
- j. Include a narrative report which shows, but is not necessarily limited to:

- i. A description of the problem areas, current and anticipated;
- ii. Delaying factors, and their impact;
- iii. An explanation of corrective actions taken or proposed.

3.4.2 Show the date of latest revision. Submit in accordance with the provisions above.

3.5 Materials Status Reports:

3.5.1 On the letter of transmittal accompanying periodic reports, on an accompanying summary sheet, or by other means acceptable to the Architect, clearly indicate those items the delivery of which are critically overdue or otherwise hazardous to maintenance of the approved schedule.

3.5.2 Submit in accordance with the provisions above.

3.6 REVISIONS: Make only those revisions to approved Construction Schedule and approved Materials Status Reports as are approved in advance by the Architect.

4.0 SUBMISSION: A progress schedule shall be updated monthly by the General Contractor, with coordination of the other prime contractors (as required). This updated schedule shall be submitted to the Architect at the first job meeting and each meeting thereafter. If schedule is not submitted, request for payment may be withheld.

END OF SECTION

## SECTION 01 33 00

### SUBMITTAL PROCEDURES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Product data.
- E. Shop drawings.
- F. Samples.
- G. Design data.
- H. Test reports.
- I. Certificates.
- J. Manufacturer's instructions.
- K. Manufacturer's field reports.
- L. Erection drawings.

##### 1.2 SUBMITTAL PROCEDURES

- A. Transmit each submittal with AIA Form G810.
- B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- C. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite Project, and deliver to Architect at business address. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

- G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- H. Allow space on submittals for Contractor and Architect review stamps.
- I. When revised for resubmission, identify changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

### 1.3 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 15 days after date of Owner-Contractor Agreement. After review, resubmit required revised data within ten days.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated horizontal bar chart with separate line for each section of Work, identifying first work day of each week.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Submit separate schedule of submittal dates for shop drawings, product data and samples, including dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.
- I. Revisions To Schedules:
  - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
  - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
  - 3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect.

### 1.4 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use as indicated on drawings and specifications, with name of manufacturer, trade name, model number of each product and specification section.

- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation and reference standards.

#### 1.5 PRODUCT DATA

- A. Product Data: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of copies Contractor requires, plus two copies Architect will retain.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements and location of utility outlets for service for functional equipment and appliances.
- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 017000.

#### 1.6 SHOP DRAWINGS

- A. Shop Drawings: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D.
  - 1. Submit number of opaque reproductions Contractor requires, plus two copies Architect will retain
  - 2. Shop drawing review is based on submission of specified items as indicated in the construction documents and specifications. Product substitutions are allowed and must be substantiated and verified by filling out Yezzi Associates "Proposed Substitution Certification" form included in the bid submission package. Architects shop drawing review is limited to one submission per product - subsequent submission and review time for same product or substitution review time incurred by the architect will be billed to the general contractor at a rate of \$100/hr. Additional review time due to resubmissions specifically requested by

the architect in order to finalize product submission and conformance with construction documents and design intent will not incur any additional charges.

- E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 017000.

## 1.7 SAMPLES

- A. Samples: Submit to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Samples For Selection as Specified in Product Sections:
  - 1. Submit to Architect for aesthetic, color or finish selection.
  - 2. Submit samples of finishes from full range of manufacturers' standard colors, textures and patterns for Architect selection.
- C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample, with full Project information.
- E. Submit number of samples specified in individual specification sections; Architect will retain one sample.
- F. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- G. Samples will not be used for testing purposes unless specifically stated in specification section.
- H. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in Section 017000.

## 1.8 DESIGN DATA

- A. Submit for Architect's knowledge as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

## 1.9 TEST REPORTS

- A. Submit for Architect's knowledge as contract administrator or for Owner.
- B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Architect, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

#### 1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting and finishing, to Architect for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

#### 1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Architect's benefit as contract administrator or for Owner.
- B. Submit report in duplicate within 5 days of observation to Architect for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.13 ERECTION DRAWINGS

- A. Submit drawings for Architect's benefit as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

### PART 2 PRODUCTS

Not Used.

### PART 3 EXECUTION

Not Used.

END OF SECTION



## SECTION 01 33 23

### SHOP DRAWINGS, PRODUCT DATA, SAMPLES & PHOTOGRAPHS

#### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary conditions and other Division-1 Specification sections, apply to work of this section.

##### 1.2 DESCRIPTION OF REQUIREMENTS

- A. General: This section specifies procedural requirements for non-administrative submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.
- B. Refer to other Division-1 Sections and other contract documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:
  - 1. Permits
  - 2. Payment applications
  - 3. Performance and payment bonds.
  - 4. Insurance certificates
  - 5. Inspection and test reports
  - 6. Schedule of values
  - 7. Progress reports
  - 8. Listing of subcontractors.
- C. Shop drawings are technical drawings and data that have been specially prepared for this project, including but not limited to the following items:
  - 1. Fabrication and installation drawings
  - 2. Setting diagrams
  - 3. Shopwork manufacturing instructions
  - 4. Templates
  - 5. Patterns
  - 6. Coordination drawings (for use on-site)
  - 7. Schedules
  - 8. Design mix formulas
  - 9. Contractor's engineering calculations
- D. Standard information prepared without specified reference to a project is not considered to be shop drawings.

- E. Product data includes standard printed information on manufactured products that has not been specially-prepared for this project, including but not limited to the following items:
1. Manufacturer's product specifications and installation instructions.
  2. Standard color charts.
  3. Catalog cuts
  4. Roughing-in diagram and templates
  5. Standard wiring diagrams
  6. Printed performance curves
  7. Operational range diagrams
  8. Mill reports
  9. Standard product operating and maintenance manuals
- F. Samples are physical examples of work, including but not limited to the following items.
1. Partial sections of manufactured or fabricated work
  2. Small cuts or containers of materials
  3. Complete units of repetitively-used materials
  4. Swatches showing color, texture and pattern
  5. Color range sets
  6. Units of work to be used for independent inspection and testing
- G. Mock-ups are special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal of sample submittals.
- H. Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:
1. Specially-prepared and standard printed warranties
  2. Maintenance agreements
  3. Workmanship bonds
  4. Survey data and reports
  5. Project photographs
  6. Testing and certification reports
  7. Record drawings
  8. Field measurement data
  9. Operating and maintenance manuals
  10. Keys and other security protection devices
  11. Overrun stock

### 1.3 SUBMITTAL PROCEDURES:

- A. General: Refer to the General Conditions for basic procedures for submittal handling.
1. Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other

submittals and related activities such as testing, purchasing fabrication, delivery and similar activities that require sequential activity.

Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect/Engineer's need to review a related submittal requiring coordination with other submittals until related submittals are forthcoming.

2. Coordination of Submittal Times: Prepare and transmit all submittals to the architect/Engineer within seven (7) days of Notice of Award Notice to Proceed period. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Architect/Engineer's need to review submittals concurrently for coordination.
3. Review Time: Allow sufficient time within the fourteen (14) days period so that the installation will not be delayed as a result of the time required to properly process submittals, including time for re-submittal, if necessary. Advise the Architect/Engineer on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.

Allow two weeks for the Architect/Engineer's initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The architect/Engineer will advise the contractor promptly when it is determined that a submittal being processed must be delayed for coordination.

No extension of time will be authorized because of the contractor's failure to transmit submittals to the Architect/Engineer sufficiently in advance of the work.

4. Submittal Preparation: Mark each submittal with a permanent label for identification. Provide the following information on the label for proper processing and recording of action taken.
  - a. Project name
  - b. Date
  - c. Name and address of Contractor
  - d. Name and address of sub-contractor
  - e. Name and address of supplier
  - f. Name of manufacturer
  - g. Number and title of appropriate specification section
  - h. Drawing number and detail references, as appropriate
  - i. Similar definitive information as necessary

Provide a space on the label for the Contractor review and approval markings, and a space for the Architect/Engineer's "Action" marking.

5. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the architect/Engineer, and to other destinations as indicated, by use of a transmittal form. Submittals

received from sources other than the Contractor will be returned to the sender “without action”.

6. Transmittal Form: Provide on the form places for the following information:

- a. Project name
- b. Date
- c. To
- d. From
- e. Category and type of submittal
- f. Submittal purpose and description
- g. Submittal and transmittal distribution records
- h. Signature of transmitter

Contractor’s certification stating that the information submitted complies with the requirements of the Contract Documents, with a place for the Contractor’s signature.

Record relevant information and requests for data on the transmittal form. On the transmittal form, or on a separate sheet attached to the form, record deviations from the requirements of the Contract Documents, if any, including minor variations and limitations.

#### 1.4 SPECIFIC SUBMITTAL REQUIREMENTS:

- A. General: Specific submittal requirements for individual units of work are specified in the applicable specification section. Except as otherwise indicated in the individual specification sections, comply with the requirements specified herein for each type of submittal.

Where it is necessary to provide intermediate submittals between the initial and final submittals, provide and process intermediate submittals in the same manner as for initial submittals.

- B. Shop Drawings: Information required on shop drawings includes, dimensions, identification of specific products and materials, which are included in the work, compliance with specified standards and notations of coordination requirements with other work. Provide special notation of dimensions that have been established by field measurement. Deviations, modifications, additions or deletions from the contract documents must be specifically called out on the shop drawings by way of a cloud, note or request for review or clarification.

Refer to Division-23 and Division-26 sections for additional general requirements applicable to shop drawings for mechanical and electrical work, respectively.

Do not permit shop drawings copies without an appropriate final “Action” marking by the Architect/Engineer to be used in connection with the work.

Preparation: Submit newly prepared information, drawn to accurate scale on sheets not less than 8 –1/2” x 11”; except for actual pattern or template type drawings, the maximum sheet size shall not exceed 36” x 48”. Indicate the name of the firm that

Shop Drawings, Product Data,  
Samples & Photographs  
013323-4

prepared each shop drawing and provide appropriate project identification in the title block. Provide a space not less than 20 sq. in. beside the title block for marking the record of the review process and the Architect/Engineer's "Action" marking.

Do not reproduce contract documents or copy standard printed information as the basis of shop drawings.

- C. Initial Submittal: Provide one correctable translucent reproducible print and one blue-line or black-line print; the reproducible print will be returned.
- D. Product Data: General information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associates and testing agencies, and the application of their labels and seals (if any), special notation of dimensions which have been verified by way of field measurement, and special coordination requirements for interfacing the material, product or system with other work.

Refer to Division-23 and Division-26 sections for additional general requirements applicable to product data for mechanical and electrical work respectively.

- E. Samples: Submit samples for the Architect/Engineer's visual review of general generic kind, color, pattern, and texture, and for a final check of the coordination of these characteristics with other related elements of the work. Samples are also submitted for quality control comparison of these characteristics between the final sample submittal and the actual work as it is delivered and installed.

Refer to individual work sections of these specifications for additional sample requirements, which may be intended for examination or testing of additional characteristics. Compliance with other required characteristics is the exclusive responsibility of the Contractor; such as, compliance is not considered in the Architect/Engineer's review and "Action" indication of sample submittals.

Documentation required specifically for sample submittals, includes a generic description of the sample, the sample source or the product name or manufacturer, compliance with governing regulations and recognized standards. In addition, indicate limitations in terms of availability, sizes, delivery time, and similar limiting characteristics.

Refer to individual sections of these specifications for samples, which, because of their relatively high cost or other special considerations, are intended to be returned to the Contractor for incorporation in the work. Such samples must be in an undamaged condition at the time of use. On the transmittal form to the Architect/Engineer, indicate such special requests regarding the disposition of sample submittals.

- F. Submittal: At the Contractor's option, and depending upon the nature of the anticipated response from the Architect/engineer, the initial submittal of samples may be either a preliminary submittal or a final submittal.
- G. Preliminary submittal, of a single set of samples, is required where requirements indicate the Architect/Engineer's selection of color, pattern, texture or similar characteristics from a manufacturer's range of standard choices is necessary.

Preliminary submittals will be reviewed and returned with the Architect/Engineer's "Action" marking.

- H. Final Submittals: Submit 3 sets of samples in the final submittal, one set will be returned.

#### 1.5 MISCELLANEOUS SUBMITTALS:

- A. Inspection and Test Reports: Classify each inspection and test report as being either "shop drawings" or "product data" depending on whether the report is specially prepared for the project, or a standard publication of workmanship control testing at the point of production. Process inspection and test reports accordingly.
- B. Warranties: Refer to section "Products and Substitutions" for specific general requirements on warranties, product bonds, workmanship bonds and maintenance agreement. In addition to copies desired for the Contractor's use, furnish 2 executed copies of such warranties, bonds or agreements. Provide 2 additional copies where required for maintenance manuals.
- C. Project Photographs: The lead Contractor shall furnish 2 prints each of 3 project photographs at monthly intervals and at completion of project 2 prints each of 4 interior and 4 exterior photographs. Comply with Architect/Engineer's direction concerning desired vantage points for shots.  
  
Photographs shall be 8" x 10" glossy color prints on single-weight commercial grade stock, with extra 3/4" wide margin punched for standard 3-ring binder and a copy of negatives. Identify each print on the backside with name and address of photographer, name of project, date of shot and description of vantage point. Also provide final photographs on compact disks, digital video disks, USB thumb drives or SD cards using JPEG file format.
- D. Survey Data: Refer to Section 010000 "General Requirements" for specific general requirements on property surveys, field measurements, quantitative records of actual work, damage surveys and similar data required by the individual sections of these specifications. None of the specified copies will be returned.
- E. Survey Copies: Furnish 2 copies of general survey data. Provide 10 copies of the final property survey.
- F. Records of Actual Work: Furnish 4 copies of records of actual work, one of which will be returned for inclusion in the record documents as specified in Section 017000.
- G. Closeout Submittals: Refer to Section 017000 and to individual sections of these specifications for specific submittal requirements of project closeout information, materials, tools, and similar items.

## 1.6 ARCHITECT/ENGINEER'S ACTION:

Action stamp: The Architect/Engineer will stamp each submittal to be returned with a uniform, self explanatory action stamp, approximately marked and executed to indicate whether the submittal returned is for a) unrestricted use, b) final-but-restricted use or c) must be revised and resubmitted; or d) without action (as explained on the transmittal form).

- A. Final Unrestricted Release: Where the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.

Marking: "NO EXCEPTIONS TAKEN"

- B. Final-But-Restricted-Release: When the submittals are marked as follows, the work covered by the submittal may proceed provided it complies with both the Architect/Engineer's notations or corrections on the submittals and with the requirements of the contract documents; acceptance of the work will depend on that compliance.

Marking: "EXCEPTION TAKEN AS NOTED"

- C. Returned for re-submittal: when the submittal is marked as follows, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery or other activity. Revise the submittal or prepare a new submittal in accordance with the Architect/Engineer's notations stating the reasons for returning the submittal; resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the following marking to be used at the project site, or else where work is in progress.

Marking "REVISE AND RESUBMIT"

- D. Other Action: Where the submittal is returned, marked with the Architect/Engineer's explanation, for special processing or other Contractor activity, or is primarily for information or record purposes, the submittal will be marked.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION.

## SECTION 01 40 00

### QUALITY REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Quality control and control of installation.
- B. Tolerances
- C. References.
- D. Mock-up requirements.
- E. Testing and inspection services.
- F. Manufacturers' field services.
- G. Examination.
- H. Preparation.

##### 1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

##### 1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.



- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

#### 1.5 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Architect/Engineer.

#### 1.6 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.
  - 1. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Architect/Engineer and authority having jurisdiction.

1. Laboratory: Authorized to operate at Project location.
  2. Laboratory Staff: Maintain full time registered Engineer specialist on staff to review services.
  3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Architect/Engineer or Owner.
- D. Reports will be submitted by independent firm to Architect/Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify Architect/Engineer and independent firm 36 hours prior to expected time for operations requiring services.
  2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Architect/Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
- H. Agency Responsibilities:
1. Test samples of mixes submitted by Contractor.
  2. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
  3. Perform specified sampling and testing of products in accordance with specified standards.
  4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  5. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or products.
  6. Perform additional tests required by Architect/Engineer.
  7. Attend preconstruction meetings and progress meetings.
- I. Agency Reports: After each test, promptly submit 3 copies of report to Architect/Engineer and to Contractor. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
1. Date issued.
  2. Project title and number.
  3. Name of inspector.
  4. Date and time of sampling or inspection.
  5. Identification of product and specifications section.
  6. Location in Project.

7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

J. Limits On Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

## 1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Architect/Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01 33 00 - Submittal Procedures, MANUFACTURERS' FIELD REPORTS article.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION

## SECTION 01 60 00

### PRODUCT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Products.
- B. Product delivery requirements.
- C. Product storage and handling requirements.
- D. Product options.
- E. Product substitution procedures.
- F. Equipment electrical characteristics and components.

##### 1.2 PRODUCTS

- A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.
- C. Furnish interchangeable components from same manufacturer for components being replaced.

##### 1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

##### 1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

#### 1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed, unless specifically otherwise indicated.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article, and filling out the “Substitution Certification” form.

#### 1.6 PRODUCT SUBSTITUTION PROCEDURES

- A. Architect/Engineer will consider requests for Substitutions only within 10 days after date of Owner-Contractor Agreement.
- B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and fill out the “Substitution Certification” form and submit with all backup data.
- D. A request constitutes a representation that Bidder/Contractor:
  - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
  - 2. Will provide same warranty for Substitution as for specified product.
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent.

5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents.
- F. Substitution Submittal Procedure:
  1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution, along with "Substitution Certification" form.
  2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
  3. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

## PART 2 PRODUCTS

### 2.1 EQUIPMENT ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Wiring Terminations: Furnish terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Include lugs for terminal box.
- B. Cord and Plug: Furnish minimum 6 foot (2 m) cord and plug including grounding connector for connection to electric wiring system. Cord of longer length is specified in individual specification sections.

## PART 3 EXECUTION

Not Used.

END OF SECTION

## SECTION 01 70 00

### EXECUTION AND CLOSEOUT REQUIREMENTS

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Testing, adjusting and balancing.
- F. Protecting installed construction.
- G. Project record documents.
- H. Operation and maintenance data.
- I. Manual for materials and finishes.
- J. Manual for equipment and systems.
- K. Spare parts and maintenance products.
- L. Product warranties and product bonds.
- M. Maintenance service.

##### 1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's review.
- B. Provide submittals to Architect/Engineer required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- D. Owner will occupy all portions of building as specified in Section 01 10 00 - Summary.
- E. See General Conditions and Supplementary General Conditions of the Contract for Construction for further information on 5% line item for Close Out Documentation, and Overhead, Profit and Bonding



### 1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from site.

### 1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Architect/Engineer and Owner seven days prior to start-up of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative or Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01 33 00 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

### 1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion and final inspection.
- B. Demonstrate Project equipment instructed by qualified manufacturer's representative who is knowledgeable about the Project.

- C. For equipment or systems requiring seasonal operation, perform demonstration for other season within 4 months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time, at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. Required instruction time for each item of equipment and system is specified in individual sections.

#### 1.6 TESTING, ADJUSTING AND BALANCING

- A. Reports will be submitted by independent firm to Architect/Engineer indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents. General contractor is to cover costs for all testing and reports.

#### 1.7 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

#### 1.8 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.

5. Reviewed Shop Drawings, Product Data, and Samples.
  6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
  - C. Store record documents separate from documents used for construction.
  - D. Record information concurrent with construction progress, not less than weekly.
  - E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
    1. Manufacturer's name and product model and number.
    2. Product substitutions or alternates utilized.
    3. Changes made by Addenda and modifications.
  - F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
    1. Measured depths of foundations in relation to finish first floor datum.
    2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
    3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
    4. Field changes of dimension and detail.
    5. Details not on original Contract drawings.
  - G. Submit three (3) electronic copies of all record drawings and approved shop drawings on thumb drives to Architect/Engineer.

#### 1.9 OPERATION AND MAINTENANCE DATA

- A. Submit three (3) electronic copies of all operation and maintenance data on thumb drives to Architect/Engineer.
- B. Prepare cover with title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Subdivide content with permanent divider pages, logically organized as described below; with tab titling clearly identified.
- D. Drawings: Submit electronically with O&M documentation.
- E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, in three parts as follows:
  1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
  2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - a. Significant design criteria.
    - b. List of equipment.

- c. Parts list for each component.
  - d. Operating instructions.
  - e. Maintenance instructions for equipment and systems.
  - f. Maintenance instructions for all finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
3. Part 3: Project documents and certificates, including the following:
- a. Approved shop drawings and product data.
  - b. Air and water balance reports.
  - c. Certificates.
  - d. Originals and 2 Photocopies of warranties and bonds.

#### 1.10 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned with Architect/Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit three sets of revised final volumes in final form within 10 days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.
- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product specification sections.
- I. Include listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.11 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content of document sets as required prior to final submission.
- D. Submit three sets of revised final volumes in final form within 10 days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed, by label machine.
- G. Include color coded wiring diagrams as installed.
- H. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.
- I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- J. Include servicing and lubrication schedule, and list of lubricants required.
- K. Include manufacturer's printed operation and maintenance instructions.
- L. Include sequence of operation by controls manufacturer.
- M. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- N. Include control diagrams by controls manufacturer as installed.
- O. Include Contractor's coordination drawings, with color coded piping diagrams as installed.
- P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Q. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- R. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.

- S. Additional Requirements: As specified in individual product specification sections.
- T. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

#### 1.12 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

#### 1.13 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time Of Submittals:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
  - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

#### 1.14 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components indicated in specification sections for two years minimum from date of Substantial Completion.
- B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

- C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.
- D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

#### PART 2 PRODUCTS

Not Used.

#### PART 3 EXECUTION

Not Used.

END OF SECTION

## SECTION 01 71 00

### CLEANING

#### PART 1 - GENERAL

##### 1.01 WORK INCLUDED

Contractor shall maintain the project site and adjacent areas affected by the work as specified below.

##### 1.02 DESCRIPTION

- A. During its progress, i.e. on a daily basis and at its completion, and as required by the General Conditions, the work and the adjacent areas affected thereby shall be kept cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the Owner, the public and property owners will be inconvenienced as little as possible.
- B. Requirements of Regulatory Agencies:
  - 1. In addition to the requirements herein, maintain the cleanliness of the Work and surrounding premises within the Work limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes and regulations.
  - 2. Comply with all federal, state and local anti-pollution laws, ordinances, codes and regulations when disposing of waste materials, debris and rubbish.
- C. Scheduling of Cleaning and Disposal Operations:
  - 1. So that dust, wash water or other contaminants generated during such operations do not damage or mar pained or finished surfaces.
  - 2. To prevent accumulation of dust, dirt, debris, rubbish and waste materials on or within the Work or on the premises surrounding the Work.
- D. Waste Disposal:
  - 1. The Contractor shall not delegate waste disposal or dumpster services to a subcontractor, but shall take charge of all cleanup disposal needs.
  - 2. Dispose of all waste materials, debris and rubbish off the plant site at an approved disposal site.



3. Do not burn or bury rubbish or waste materials on the work site.
4. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner improperly.
5. Do not discharge wastes into streams or waterways.

E. Cleaning Materials:

1. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
2. Use each type of cleaning material on only those surfaces recommended by the cleaning material manufacturer.
3. Use only materials which will not create hazards to health or property.

F. During Construction:

1. Keep the Work and surrounding premises within work limits free of accumulations of dirt, dust, waste materials, debris and rubbish.
2. Keep dust generating areas wetted down so as to prevent the entry of dust into surrounding equipment.
3. Provide suitable containers for storage of waste materials, debris and rubbish until time of disposal.
4. Dispose of waste, debris and rubbish off site at legal disposal areas.

G. When Project is Completed:

1. Remove and dispose of all excess or waste materials, debris, rubbish, and temporary facilities from the site structures and all facilities.
2. Repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to condition specified.
3. Remove spatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.
4. Repair, patch and touch up chipped, scratched, dented or otherwise marred surfaces to match specified finish.

5. Remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.
6. Wash and shine mirrors, glazing and polished surfaces.
7. Clean all floors, slabs, pavements, and ground surfaces.
8. Maintain cleaning until acceptance and occupation by Owner.

END OF SECTION

## SECTION 01 73 29

### CUTTING AND PATCHING

#### PART 1 – GENERAL

##### 1.1 Related Documents

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

##### 1.2 SUMMARY

- A. Provide cutting and patching work, comply with project requirements for:
  - 1. Demolition of existing construction as shown on plans and as required for new work. Note demolition plans illustrate generally work to be removed. **The contractor shall inspect site prior to Bid and include all demolition work required to perform new work. All demolition and patching work shall be considered in the contract scope.**

#### PART 2 – PRODUCTS

##### 2.1 MATERIALS

- A. Match existing materials for cutting and patching work with new materials conforming to project requirements or existing conditions if not herein specified.

#### PART 3 – EXECUTION:

- A. Inspect conditions prior to work to identify scope and type of work required. Notify Owner of work requiring interruption to building services or Owner's operations. Conform to project requirements listed above.
- B. Clean work area and areas affected by cutting and patching operations.
- C. The Building will be occupied during construction, the Contractor shall conform to all OSHA Standard, protect all openings, doorways and walkways during construction.

END OF SECTION

## SECTION 02 41 19

### SELECTIVE DEMOLITION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes all demolition work required to perform new work.

##### 1.2 SUBMITTALS

- A. Shop Drawings and Schedule: Describe demolition, removal procedures, sequence and schedule.

#### PART 2 EXECUTION

##### 2.1 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices.
- B. Notify owner of work, which may affect their property, potential noise, utility outage, or disruption. Coordinate all work with Owner.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as required.
- D. Protect existing landscaping materials and structures to remain.
- E. Erect and maintain weatherproof airtight closures for exterior openings.
- F. Erect and maintain temporary partitions to prevent spread of dust, odors and noise to permit continued Owner occupancy.
- G. Protect existing items indicated to remain.

##### 2.2 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent building areas.
- B. Conduct operations with minimum interference to public or private accesses.
- C. Maintain protected egress and access at all times. Do not close or obstruct roadways or sidewalks without permits.
- D. Cease operations immediately when adjacent structural components appear to be in danger. Notify authority having jurisdiction and Architect/Engineer.

2.3 SELECTIVE DEMOLITION

- A. Demolish and remove components in orderly and careful manner, in sequence outlined in submitted and approved schedule.
- B. Protect existing supporting structural members.

2.4 CLEAN UP

- A. Remove demolished materials from site as work progresses.
- B. Leave areas of work in clean condition.
- C. Dispose of all debris in accordance with all State and Municipal requirements. Provide load tickets where applicable.

END OF SECTION

## SECTION 02 41 26

### SELECTIVE ELECTRICAL DEMOLITION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Removal of existing electrical equipment, wiring, and conduit in areas to be remodeled; removal of designated construction; dismantling, cutting and alterations for completion of the Work.
  - 2. Disposal of materials.
  - 3. Storage of removed materials.
  - 4. Identification of utilities.
  - 5. Salvaged items.
  - 6. Protection of items to remain as indicated on Drawings.
  - 7. Relocate existing equipment to accommodate construction.
  
- B. Related Sections:
  - 1. Section 02 41 19 - Selective Demolition.

##### 1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work. Describe demolition removal procedures and schedule.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of capped utilities, conduits and equipment abandoned in place.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with local Municipality and state regulation standard.

##### 1.5 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

## 1.6 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.

## 1.7 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements, 01 32 16 - Construction Progress Schedule: Requirements for scheduling.
- B. Schedule work to coincide with new construction.
- C. Perform noisy, malodorous, and/or dusty work:
  - 1. During work.
- D. Cease operations immediately when structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

## 1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Conduct demolition to minimize interference with adjacent and occupied building areas.
- C. Coordinate demolition work with Owner.
- D. Coordinate and sequence demolition so as not to cause shutdown of operation of surrounding areas.
- E. Shut-down Periods:
  - 1. Arrange timing of shut-down periods of in service panels with Owner. Do not shut down any utility without prior written approval.
  - 2. Keep shut-down period to minimum or use intermittent period as directed by Owner.
  - 3. Maintain life-safety systems in full operation in occupied facilities.
- F. Identify salvage items in cooperation with Owner.

## PART 2 PRODUCTS

Not Used

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

- B. Verify wiring and equipment indicated to be demolished serve only abandoned facilities.
- C. Verify termination points for demolished services.

### 3.2 PREPARATION

- A. Erect, and maintain temporary safeguards, including warning signs and lights, barricades, and similar measures, for protection of the public, Owner, Contractor's employees, and existing improvements to remain.
- B. Temporary egress signage and emergency lighting

### 3.3 DEMOLITION

- A. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installation.
- B. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- C. Remove conduit, wire, boxes, and fastening devices to avoid any interference with new installation.
- D. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- E. Reconnect equipment being disturbed by renovation work and required for continue service to nearest available panel.
- F. Disconnect or shut off service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit and wiring which are not part of final project.
- G. Install temporary wiring and connections to maintain existing systems in service during construction.
- H. Perform work on energized equipment or circuits with experienced and trained personnel.
- I. Remove, relocate, and extend existing installations to accommodate new construction.
- J. Repair adjacent construction and finishes damaged during demolition and extension work.
- K. Remove exposed abandoned grounding and bonding components, fasteners and supports, and electrical identification components, including abandoned components above accessible ceiling finishes. Cut embedded support elements flush with walls and floors.
- L. Clean and repair existing equipment to remain or to be reinstalled.



- M. Protect and retain power to existing active equipment remaining.
- N. Cap abandoned empty conduit at both ends.
- O. Perform Work in accordance with applicable code standards.

#### 3.4 EXISTING PANELBOARDS

- A. Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers.
- B. Tag unused circuits as spare.
- C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.
- D. Remove existing wire no longer in use from panel to equipment.
- E. Provide new updated directories where more than three circuits have been modified or rewired.

#### 3.5 SALVAGE ITEMS

- A. Remove and protect items indicated on Drawings to be salvaged and turn over to Owner.
- B. Items of salvageable value may be removed as work progresses. Transport salvaged items from site as they are removed.

#### 3.6 REUSABLE ELECTRICAL EQUIPMENT

- A. Carefully remove equipment, materials, or fixtures which are to be reused.
- B. Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.
- C. Relocate existing lighting fixtures as indicated on Drawings. Clean fixtures and re-lamp. Test fixture to see if it is in good working condition before installation at new location.

#### 3.7 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements & 01 71 00 - Cleaning: Requirements for cleaning.
- B. Remove demolished materials as work progresses. Legally dispose.
- C. Keep workplace neat.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Do not permit traffic over unprotected floor surface.

END OF SECTION

## SECTION 05 40 00

### COLD-FORMED METAL FRAMING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Interior non load-bearing wall framing.
- B. Related Sections include the following:
  - 1. Division 13 Section "Structural Retrofit Roof Sub-Framing System".

##### 1.3 DEFINITIONS

- A. Minimum Uncoated Steel Thickness: Minimum uncoated thickness of cold-formed framing delivered to the Project site shall be not less than 95 percent of the thickness used in the cold-formed framing design. Lesser thicknesses shall be permitted at bends due to cold forming.

##### 1.4 SUBMITTALS

- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining Work.
- C. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency indicating steel sheet complies with requirements.
- D. Welding Certificates: Copies of certificates for welding procedures and personnel. This document is to be included with the bid; refer to the Bid Document Checklist.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified. This document is to be included with the bid; refer to the Bid Document Checklist.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance. This document is to be included with the bid; refer to the Bid Document Checklist.
- B. Mill certificates signed by steel sheet producer or test reports from a qualified independent testing agency indicating steel sheet complies with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, chemical requirements, ductility, and galvanized-coating thickness.
- C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- D. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel," and AWS D1.3, "Structural Welding Code--Sheet Steel."
- E. AISI Specifications: Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members" or "Load and Resistance Factor Design Specification for Cold-Formed Steel Structural Members" and the following for calculating structural characteristics of cold-formed metal framing.
  - 1. CCFSS Technical Bulletin: "AISI Specification Provisions for Screw Connections."

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Allied American Studco, Inc.
  - 2. California Metal Systems, Inc.
  - 3. Clark Steel Framing Industries.
  - 4. Consolidated Systems, Inc.
  - 5. Design Shapes in Steel.
  - 6. Knorr Steel Framing Systems.

7. Steel Construction Systems.
8. United Metal Products, Inc.
9. Or Architect/Owner approved equal.

## 2.2 MATERIALS

- A. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
  1. Grade: 33 for minimum uncoated steel thickness of 0.0428 inch and less; 40 for minimum uncoated steel thickness of 0.0538 inch and greater.
  2. Coating: G60.

## 2.3 NON-LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, complying with ASTM C 955, and as follows:
  1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
  2. Flange Width: 1 -5/8 inches.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, complying with ASTM C 955, and as follows:
  1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
  2. Flange Width: 1-1/4 inches.
- C. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal and lateral loads, and as follows:
  1. Minimum Uncoated-Steel Thickness: 0.0428 inch.
  2. Flange Width: A minimum of 2 inches.

## 2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
  1. Supplementary framing.
  2. Bracing, bridging, and solid blocking.
  3. Web stiffeners.
  4. End clips.
  5. Foundation clips.
  6. Gusset plates.
  7. Stud kickers, knee braces, and girts.

## 2.5 ANCHORS, CLIPS, AND FASTENERS

- A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123.
- B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- D. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- E. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- F. Welding Electrodes: Comply with AWS standards.

## 2.6 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.
- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.

## 2.7 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
  - 1. Fabricate framing assemblies using jigs or templates.
  - 2. Cut framing members by sawing or shearing; do not torch cut.
  - 3. Fasten cold-formed metal framing members by welding. Wire tying of framing members is not permitted. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
  - 4. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

5. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
  - C. Fabrication Tolerances: Fabricate assemblies' level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
    1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
    2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction.

### 3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated.
- C. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
  1. Cut framing members by sawing or shearing; do not torch cut.
  2. Fasten cold-formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

- D. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.
- E. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- G. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- I. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

#### 3.4 NON-LOAD-BEARING-WALL INSTALLATION

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.
- B. Fasten both flanges of studs to top and bottom track, unless otherwise indicated. Space studs as follows:
  - 1. Stud Spacing: 16 inches.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
  - 1. Install single deep-leg deflection tracks and anchor to building structure.
- E. Install horizontal bridging in curtain-wall studs, spaced in rows indicated on Shop Drawings but not more than 54 inches apart. Fasten at each stud intersection.
  - 1. Bridging: Cold-rolled steel channel welded or mechanically fastened to webs of punched studs.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain-wall-framing system.



### 3.5 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted, cold-formed metal framing. Paint framing surfaces with same type of shop paint used on adjacent surfaces.
- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 06 10 00  
ROUGH CARPENTRY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes blocking in wall openings; wood furring and grounds; electrical panel back boards and concealed wood blocking.

1.2 SUBMITTALS

- A. Shop Drawings: Indicate framing system, loads and cambers, bearing details, framed openings.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with the following agencies:
  - 1. Lumber Grading Agency: Certified by NIST PS 20.
  - 2. Plywood Grading Agency: Certified by APA/The Engineered Wood Association.
- B. Surface Burning Characteristics:
  - 1. Fire Retardant Treated Materials: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Apply label from agency approved by authority having jurisdiction to identify each fire retardant treated material.
- D. Perform Work in accordance with authorities having jurisdiction.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

- A. Lumber Grading Rules: WWPA G-5.
- B. Sill Plate: Pressure treated .40 cca / syp.

2.2 SHEATHING MATERIALS

- A. Plywood Roof Sheathing: Plywood; Exposure Durability 1; sanded.
- B. Plywood Wall Sheathing: Structural I; Exposure Durability 1; sanded.

2.3 ACCESSORIES

- A. Fasteners: Plain finish elsewhere.

- B. Die Stamped Connectors:
- C. Structural Framing Connectors: Galvanized steel, sized to suit framing conditions.
- D. Anchors: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolt or ballistic fastener for anchorages to steel.
- E. Sill Gasket: Plate width, closed cell foam strip.
- F. Sill Flashing (Under Sill Gasket): Polyethylene sheet or Galvanized steel.

## PART 3 EXECUTION

### 3.1 FRAMING

- A. Erect wood framing members in accordance with the International Building Code, latest edition. Place members level and plumb. Place horizontal members crown side up.
- B. Place sill gasket directly on sill flashing.
- C. Bridging to be provided and installed as per manufacturer specifications.

### 3.2 SHEATHING

- A. Secure sheathing with ends staggered, over firm bearing.

### 3.3 SITE APPLIED WOOD TREATMENT

- A. Treat site-sawn cuts. Brush apply two coats of preservative treatment on untreated wood in contact with cementitious materials, roofing, and related metal flashings.
- B. Allow preservative to cure prior to erecting members.

END OF SECTION

## SECTION 07 21 00

### THERMAL INSULATION

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes board thermal insulation and adhesive vapor retarder at cavity wall construction, perimeter foundation wall, exterior wall behind wall finish, batt thermal insulation and vapor retarder in ceilings, exterior wall and roof construction;

##### 1.2 SYSTEM DESCRIPTION

- A. System performance to provide continuity of thermal barrier and vapor retarder at building enclosure elements in conjunction with air barrier materials.
- B. Vapor Retarder Permeance: Maximum 1 perm (57 ng/Pa/s/sq m) when tested in accordance with ASTM E96, Procedure A.

##### 1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data including thermal performance of materials.

##### 1.4 QUALITY ASSURANCE

- A. Furnish and label cellulose loose fill insulation in accordance with CPSC 16 CFR 1209 and CPSC 16 CFR 1404.
- B. Insulation Installed in Concealed Locations Surface Burning Characteristics:
  - 1. Foam Plastic Insulation: Maximum 75/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
  - 2. Cellulose Loose Fill Insulation: 450 smoke developed index when tested in accordance with ASTM E84.
  - 3. Other Insulation: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- C. Insulation Installed in Exposed Locations Surface Burning Characteristics:
  - 1. Cellulose Loose Fill Insulation: 450 smoke developed index when tested in accordance with ASTM E84.
  - 2. Other Insulation Materials: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
  - 3. Attic Floor Insulation: Minimum 0.12 watt per sq cm critical radiant flux when tested in accordance with ASTM E970.
- D. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board and cellulose loose fill insulation package.
- E. Perform Work in accordance with State Building Code requirements standard.

- F. Maintain one copy of each document on site.

## PART 2 PRODUCTS

### 2.1 BUILDING INSULATION

- A. Manufacturers:
  1. AFM - Molded Polystyrene Insulation;
  2. EPS - Molded Polystyrene Insulation;
  3. W.R. Grace Construction Products;
  4. DiversiFoam Products;
  5. Dow Chemical;
  6. Tenneco Foam Products;
  7. UC Industries/Owens Corning;
  8. Celotex;
  9. Substitutions: Architect/Owner Approved Equal.

### 2.2 COMPONENTS

- A. Mineral Fiber Insulation: ASTM C612 Class 1, mineral fiber rigid board
  1. Board Edges: Square. R values as indicated on Drawings.
- B. Glass Fiber Insulation, R values as indicated on Drawings.
- C. Batt Insulation: ASTM C665, batt blanket, R values as indicated on Drawings

### 2.3 ACCESSORIES

- A. Adhesive: Type recommended by insulation manufacturer for application.
- B. Air Barrier: In accordance with SWRI-Sealant and Caulking Guide Specification requirements for material and installation.
- C. Tape: Bright aluminum, mesh reinforced.
- D. Insulation Fasteners: Impaling clip of galvanized steel with washer retainer and clips, to be mechanically fastened to surface to receive board insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- E. Protective Boards: Cementitious 1/4 inch (6mm) thick.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

## 3.2 INSTALLATION

### A. Batt Insulation:

1. Install where indicated on drawings without gaps or voids.
2. Fit insulation tight in spaces. Leave no gaps or voids.
3. Install friction fit insulation tight to framing members, completely filling prepared spaces.

END OF SECTION

## SECTION 07 90 00

### JOINT SEALERS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes sealants and joint backing.

##### 1.2 SUBMITTALS

- A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

##### 1.3 ENVIRONMENTAL REQUIREMENTS

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

#### PART 2 PRODUCTS

##### 2.1 JOINT SEALERS

- A. Manufacturers:
  - 1. Dow Corning Corp.
  - 2. GE Silicones.
  - 3. Mameco International Inc.
  - 4. Pecora Corp.
  - 5. Sika Corp.
  - 6. Substitutions: Architect/Owner Approved Equal
- B. Product Description:
  - 1. General Purpose Exterior Nontraffic Sealant: Acrylic, solvent release curing; ASTM C920, Grade NS, Class 12-1/2, Uses M, G, and A; single or multi-component.
    - a. Color: Colors as selected.
    - b. Applications: Use for:
      - 1) Control, expansion, and soft joints in masonry.
      - 2) Joints between concrete and other materials.
      - 3) Joints between metal frames and other materials.
      - 4) Other exterior nontraffic joints for which no other sealant is indicated.
  - 2. General Purpose Traffic Bearing Sealant: Polyurethane; ASTM C920, Grade P, Class 25, Use T; single or multi-component.
    - a. Color: Colors as selected.
    - b. Applications: Use for exterior and interior pedestrian traffic bearing joints.

3. Exterior Compressible Gasket Expansion Joint Sealer: ASTM D2628, hollow neoprene (polychloroprene) compression gasket.
  - a. Color: Black color.
  - b. Size and Shape: As indicated on Drawings.
  - c. Applications: Use for exterior wall expansion joints.
4. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, non-drying, non-skinning, non-curing.
  - a. Applications: Use for concealed sealant bead in sheet metal work and concealed sealant bead in siding overlaps.
5. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, single component, paintable.
  - a. Color: Colors as selected.
  - b. Applications: Use for interior wall and ceiling control joints, joints between door and window frames and wall surfaces, and other interior joints for which no other type of sealant is indicated.
6. Bathtub/Tile Sealant : White silicone; ASTM C920, Uses M and A; single component, mildew resistant.
  - a. Applications: Use for joints between plumbing fixtures and floor and wall surfaces, and joints between kitchen and bathroom toilet room counter tops and wall surfaces.
7. Acoustical Sealant : Butyl or acrylic sealant; ASTM C920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skinning.
  - a. Applications: Use for concealed locations only at acoustically rated construction.
    - 1) Provide sealant bead between top stud runner and structure and between bottom stud track and floor.

## 2.2 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 D1667, 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

### 3.1 EXAMINATION

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



### 3.2 PREPARATION

- A. Remove loose materials and foreign matter impairing adhesion of sealant.
- B. Clean and prime joints.
- C. Perform preparation in accordance with ASTM C1193.

### 3.3 INSTALLATION

- A. Perform installation in accordance with ASTM C1193.
- B. Perform acoustical sealant application work in accordance with ASTM C919.
- C. 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].
- D. Install bond breaker where joint backing is not used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- F. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- G. Tool joints concave channel shaped.

END OF SECTION

## SECTION 08 11 13

### STEEL DOOR & WINDOW FRAMES

#### PART 1 GENERAL

##### 1.0 SUMMARY

- A. Section includes non-rated and fire rated steel door & window frames.

##### 1.2 SUBMITTALS

- B. Shop Drawings: Indicate door/window and frame elevations, fastening method, internal reinforcements, and cutouts for hardware and finishes.
- C. Product Data: Submit door/window and frame configurations, location of cutouts for hardware reinforcement.

##### 1.3 QUALITY ASSURANCE

- D. Perform Work in accordance with the Public Work's standard.
- E. Perform Work in accordance with the following:
  - 1. SDI-100-Standard Steel Doors and Frames.
  - 2. DHI - Door Hardware Institute - The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
  - 3. Fire Rated Doors, Panels and Frames:
    - a. Product Construction: ASTM E152. NFPA 252. UL 10B.
    - b. Product Installation: NFPA 80.

#### PART 2 PRODUCTS

##### 2.1 STEEL DOOR AND WINDOW FRAMES

- A. Manufacturers:
  - 1. Pioneer Industries.
  - 2. Republic Builders Products.
  - 3. Substitutions: Architect/Owner Approved Equal

##### 2.2 COMPONENTS

- A. Exterior Frames: 14 gauge thick material, base metal thickness (galvanized).
- B. Interior Frames: 16 gauge thick material, base metal thickness.

## 2.3 ACCESSORIES

- A. Silencers: Resilient rubber fitted into drilled hole.

## 2.4 FABRICATION

- A. Fabricate frames with hardware reinforcement welded in place. Protect frame hardware preparations with mortar guard boxes.
- B. Configure exterior frames with profile to receive recessed weather-stripping.
- C. Fabricate frames welded units for cmu walls; as knock down units for board partitions.
- D. Fabricate frames to suit masonry wall coursing with 4 inches head member.
- E. Prepare interior frames for silencers and install.
- F. Attach fire-rating label to each fire rated doorframe.

## 2.5 SHOP FINISHING

- A. Steel Sheet: Galvanized to ASTM A653/A653M G60.
- B. Primer: Baked.
- C. Shop Finish: Baked enamel.
- D. Coat inside of frame profile with bituminous coating.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify opening sizes and tolerances are acceptable.

### 3.2 INSTALLATION

- A. Install doors and window frames in accordance with SDI-100.
- B. Coordinate installation of doors and window frames with installation of hardware specified in Section 087100.
- C. Coordinate door and window frames with masonry gypsum board wall construction for frame anchor placement.
- D. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- E. Install door louvers plumb and level (where indicated on drawings).

F. Adjust door for smooth and balanced door movement.

G. Tolerances:

1. Maximum Diagonal Distortion: 1/16 inch, measured with straight edge, corner to corner.

### 3.3 SCHEDULE

A. Refer to Drawings for Schedule and details.

### 4.0 GLAZING

A. Refer to section 08 80 00 GLAZING

END OF SECTION

## SECTION 08 14 00

### WOOD DOORS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes wood doors, fire-rated and non-rated.

##### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate door and frame elevations, cutouts for glazing and hardware preparation.
- B. Samples: Submit two (2) of door veneer, illustrating wood grain, color and finish.

##### 1.3 QUALITY ASSURANCE

- A. Perform work in accordance with the following:
  - 1. NWWDA I.S.1.
  - 2. Fire Door and Panel Construction: Conform to ASTM E152., NFPA 252., UL 10B.
  - 3. Installed Door and Panel Assembly: Conform to NFPA 80 for fire rated class as indicated on Drawings.

##### 1.4 WARRANTY

- A. Furnish five (5) year manufacturer warranty to include delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

#### PART 2 PRODUCTS

##### 2.1 WOOD DOORS

- A. Manufacturers:
  - 1. VT Industries
  - 2. Graham
  - 3. Mohawk
  - 4. Eggers Industries
  - 5. Pinecrest Inc.
  - 6. Weyerhaeuser
  - 7. Substitutions: Architect/Owner Approved Equal.
- B. Product Description: Solid core wood doors, fire-rated, glazed design, wood veneer, factory-finished.
  - 1. Interior Doors: 1-3/4 inches thick, solid core, five-ply construction; fire-rated as indicated on Drawings; in any case not less than 1 hour, including frames.

## 2.2 COMPONENTS

- A. Core:
  - 1. Core Solid, Non-Rated: NWWDA, Type Solid particleboard mat formed, board core including lock blocks, vertical edge bands, and top and bottom rails.
  - 2. Core Solid, Rated: Non-combustible mineral core.
  
- B. Flush Door Facing:
  - 1. Wood veneer: Comply with WDMA TR-8 requirements – Premium Oak species wood, rotary sliced; book match grain, for transparent finish.
  - 2. Adhesive: NWWDA, Type II-water resistant.

## 2.3 ACCESSORIES

- A. Glass Stops: Wood of same species as door facing conforming to UL requirements.

## 2.4 FABRICATION

- A. Fabricate non-rated doors in accordance with NWWDA I.S.1 requirements.
- B. Fabricate fire rated doors in accordance with NWWDA I.S.1 and To UL; Warnock Hersey requirements. Attach fire rating label to door edge.
- C. Astragals for Double Doors: Wood “T” shaped, recessed at face edge.
- D. Fabricate doors with hardware reinforcement blocking in place.
- E. Factory machine doors for finish hardware.
- F. Factory fit doors for frame opening dimensions identified on shop drawings.

## 2.5 FINISH

- A. Factory finish doors in accordance with approved sample.
- B. Seal door top edge with color sealer to match door facing.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install doors in accordance with NWWDA I.S.1 requirements, and NFPA 80 requirements for fire rating label.
- B. Coordinate installation of glass and glazing.
- C. Install door louvers plumb and level.

- D. Coordinate installation of doors with installation of metal frames specified in Section 111910 Hollow Metal Doors, Frames, & Window Frames and hardware specified in Section 087100 Door Hardware. Glass specified in Section 088000 Glazing.
- E. Adjust door for smooth and balanced door movement.
- F. Tolerances:
  - 1. Conform to NWWDA requirements for fit and clearance tolerances and maximum diagonal distortion.

### 3.2 SCHEDULE

- A. Refer to Door and Frame Schedule on Drawings.
- B. Coordinate with Electrical and Fire protection drawings.

END OF SECTION

## SECTION 08 71 00

### DOOR HARDWARE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes hardware for exterior doors, thresholds, weather-stripping, seals and door gaskets.

##### 1.2 SYSTEM DESCRIPTION

- A. Provide door hardware listed by UL or Warnock Hersey, or other testing laboratory approved by applicable authorities.
  - 1. Hardware: Tested in accordance with NFPA 252.

##### 1.3 SUBMITTALS

- A. Shop Drawings: Indicate locations and mounting heights of each type of hardware, electrical characteristics and connection requirements.
- B. Samples: Submit hinge, latchset, lockset, and closer, illustrating style, color, and finish. Incorporate into the work.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

##### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with the following requirements:
  - 1. ANSI/BHMA A156 series.
  - 2. NFPA 80 - Fire Doors and Windows.
  - 3. NFPA 101 - Life Safety Code.
- B. Coordination: Coordinate work of this section with other directly affected sections requiring integral reinforcement for door hardware.
- C. Supplier: Company specializing in supplying commercial door hardware with minimum three years documented experience, approved by primary hardware manufacturers.

##### 1.6 WARRANTY

- A. Furnish five year manufacturer warranty for door hardware.

##### 1.7 MAINTENANCE SERVICE

- A. Provide service and maintenance services of door closers for one year from Date of Substantial Completion.



- B. Provide special wrenches and tools applicable to each different or special hardware component.

## PART 2 PRODUCTS

### 2.1 DOOR HARDWARE – TO MEET OWNERS GUIDE

- A. Manufacturers:
  - 1. Basis of Design:
    - a. Hinges: McKinley, Stanley
    - b. Locksets: Stanley BEST BASIS V Magnetic (Electronic Locks)  
Sargent (Mechanical Locks)
    - c. Latch Sets: Stanley (Electronic) Sargent (Mechanical)
    - d. Cylinders: Best SFIC (Electronic) Sargent LFIC (Mechanical)
    - e. Exit Device: Precision PHI Best
    - f. Closers: Stanley D-4550
    - g. Operators: Stanley Magic Force Operator
  - 2. Substitutions: Architect/Owner Approved Equal

### 2.2 COMPONENTS

- A. General Hardware Requirements: Where not specifically indicated, comply with applicable ANSI A156 standard for type of hardware required. Furnish each type of hardware with accessories as required for applications indicated and for complete, finished, operational doors.
  - 1. Templates: Furnish templates or physical hardware items to door and frame manufacturers sufficiently in advance to avoid delay in Work.
  - 2. Reinforcing Units: Furnished by door and frame manufacturers; coordinated by hardware supplier or hardware manufacturer.
  - 3. Fasteners: Furnish as recommended by hardware manufacturer and as required to secure hardware.
    - a. Finish: Match hardware item being fastened.
  - 4. Electrical Devices: Make provisions and coordinate requirements for electrical devices and connections for hardware.
- B. Hinges: ANSI A156.1, Ball Bearing 4.5 x 4.5 ,complying with following general requirements unless otherwise scheduled.
  - 1. Widths: Sufficient to clear trim projection when door swings 180 degrees.
  - 2. Number: Furnish hinges for each door leaf at all doors.
- C. Locksets and Latchsets: Furnish locksets compatible with specified cylinders. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt verify type of cutouts provided in metal frames.
  - 1. Bored Cylindrical Locksets and Latchsets: ANSI/BHMA A156.2, Series 4000, Grade 1 unless otherwise indicated.
  - 2. Interconnected Locksets: ANSI/BHMA A156.12, Series 5000, Grade 1 unless otherwise indicated.
  - 3. Auxiliary Locksets: ANSI/BHMA A156.5, Grade 1, rim locks unless otherwise indicated.

- D. Exit Devices: ANSI/BHMA A156.3, Grade 1 rim type, with push pad , unless otherwise indicated. Furnish standard strikes with extended lips to protect trim from being marred by latch bolt verify type of cutouts provided in metal frames.
  - 1. Basis of Design: Precision APEX 2000 series exit devices with specified trim.
  
- E. Cylinders: ANSI/BHMA A156.5, Grade 1, removable cylinders interchangeable core type cylinders in compliance with the Universities keying system.
  - 1. Keying: Cylinders and keying to be purchased by the Contractor and coordinated with the Owner. 7 -pin for Best Cylinders and 6-pin for Sargent cylinders.
  - 2. Supply keys in the following minimum quantities:
    - a. (2) Change Keys for each core type.
  
- F. Closers: ANSI/BHMA A156.4 , surface mounted closers; full rack and pinion type with steel spring and non-freezing hydraulic fluid; closers required for fire rated doors unless otherwise indicated.
  - 1. Adjustability: Furnish controls for regulating closing, latching, speeds, and back checking.
  - 2. Arms: Type to suit individual condition; parallel-arm closers at reverse bevel doors and where doors can swing full 180 degrees.
  - 3. Location: Mount closers on inside of exterior doors, room side of interior doors typical; mount on pull side of other doors.
  - 4. Operating Pressure: Maximum operating pressure as follows.
    - a. Interior Doors: Maximum 5 pounds
    - b. Exterior Doors: Maximum 10 pound
    - c. Fire Rated Doors: As required for fire rating, maximum 15 pounds
  
- G. Door Controls and Overhead Holders: Furnish with accessories as required for complete operational installation.
  - 1. Manual Door Holders and Overhead Stops: ANSI/BHMA A156.8, Grade 1
  
- H. Push/Pulls, Manual and Automatic Bolts, Protection Plates, Gaskets, Thresholds, and Trim: Furnish as indicated in Schedule, with accessories as required for complete operational door installations.
  - 1. Push/Pulls: ANSI/BHMA A156.6; Furnish straight push-pull
  - 2. Manual Bolts: ANSI/BHMA A156.16 Grade 1 top and bottom flush bolts, with dust-proof floor strike.
  - 3. Kickplates, Mop Plate, Armor Plate: ANSI/BHMA A156.6, metal; height indicated in Schedule by 1 inch less than door width; stainless steel.
  - 4. Weatherstripping: Furnish continuous weatherstripping at top and sides of exterior doors.
  - 5. Thresholds: Maximum 1/2 inch height; requirements to ensure accessibility for persons with disabilities.
  - 6. Wall Stops: ANSI/BHMA A156.1, Grade 1, 3 inch wall stop, concave pad wall stop with no visible screws.
  - 7. Floor Stops: ANSI/BHMA A156.1 Grade 1 standard floor type with no visible screws; furnish with accessories as required for applications indicated.

## 2.3 ACCESSORIES

- A. Lock Trim: Furnish levers with escutcheon plate as indicated in Schedule as selected from manufacturer's full range of levers and roses.

- B. Through Bolts: Through bolts and grommet nuts are not permitted on door faces in occupied areas unless no alternative is possible.

## 2.4 FINISHING

- A. Finishes: ANSI/BHMA A156.18; with following finishes except where otherwise indicated in Schedule.
  - 1. Hinges and Pivots:
    - a. BHMA 626, satin finish.
  - 2. Typical Exterior Exposed and High Use Interior Door Hardware:
    - a. BHMA 626, satin chromium.
    - b. BHMA 626, satin chromium.
    - c. BHMA 626, satin chromium.
  - 3. Closers: Finish appearance to match door hardware on same face of door.
    - a. BHMA 689, aluminum painted.
    - b. EN finish for Sargent.
  - 4. Thresholds: Finish appearance to match door hardware on exterior face of door.
    - a. BHMA 628, satin aluminum, clear anodized.
  - 5. Other Items: Provide manufacturer's standard finishes to match similar hardware types on same door, and maintain acceptable finish considering anticipated use and BHMA category of finish.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify doors and frames are ready to receive work and dimensions are as indicated.
- B. Verify electric power is available to power operated devices and is of correct characteristics.

### 3.2 INSTALLATION

- A. Coordinate mounting heights with door and frame manufacturers. Use templates provided by hardware item manufacturer.
- B. Mounting Heights From Finished Floor to Center Line of Hardware Item: Comply with manufacturer recommendations and applicable codes.

### 3.3 SCHEDULE

Refer to Schedule on Drawings.

END OF SECTION

## SECTION 08 80 00

### GLAZING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes glass, glazing for metal frames, doors, and windows.
  - 1. Glass and glazing materials and installation requirements are included in this section for other sections referencing this section.

##### 1.2 SYSTEM DESCRIPTION

- A. System performance to achieve continuity of building enclosure air barrier and vapor retarder with glass and glazing materials of this section.
- B. Design Tolerances: Size glass to withstand dead loads and positive and negative wind loads acting normal to plane of glass.

##### 1.3 SUBMITTALS

- A. Product Data on Glass Types Specified: Submit physical and environmental characteristics, size limitations, and special installation requirements.
- B. Product Data on Glazing Compounds: Submit chemical characteristics, limitations, special application requirements. Identify available colors.
- C. Samples: Submit two (2) samples, illustrating glass.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, GANA Laminated Glass Design Guide and SIGMA for glazing installation methods.

##### 1.5 WARRANTY

- A. Furnish ten year manufacturer warranty including coverage for sealed glass units from seal failure, interpane dusting, misting, and replacement of defective glass.
- B. Furnish ten year warranty to include coverage for delamination of laminated glass and replacement of defective glass.

#### PART 2 PRODUCTS

##### 2.1 GLAZING

- A. Manufacturers:
  - 1. TGP Technical Glass Products.
  - 2. Arch Aluminum & Glass LC.

3. Glass Unlimited Inc / Ambiance.
4. Graham FRP Composites.
5. Inkan Ltd.
6. PPG Industries.
7. Substitutions: Architect/Owner Approved Equal.

## 2.2 COMPONENTS

- A. Flat Glass (Type FG): Total composite unit thickness 1 inch (1/4 inch glazing + 1/2 inch air space + 1/4 inch glazing) (Each glazing pane thickness minimum 1/4 inch).
1. Clear Float Glass (Type FG-CF): ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
  2. Clear Heat Strengthened Glass (Type FG-CH): ASTM C1048, Kind HS, heat strengthened, Condition A uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
  3. Low E Clear Float Glass (Type FG-EC): Clear float glass Type FG-CF, with low emissivity coating on inner surface.
  4. Low E Clear Heat Strengthened Glass (Type FG-EHC): Clear heat strengthened glass Type FG-CH, with low emissivity coating on inner Number 2 surface.
  5. Low E Tinted Heat Strengthened Glass (Type FG-EHT) (exterior application): Tinted heat strengthened glass Type FG-TH, with low emissivity coating on inner surface.
    - a. Tint: As selected.
- B. Safety Glass (Type SG): Conform to ANSI Z97.1, minimum thickness 1/4 inch unless otherwise indicated.
1. Clear Tempered Glass (Type SG-CT): ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select; with horizontal tempering.
    - a. Tinted Tempered Glass (Type FG-TT): ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat.
- C. Fire Rated, safety-rated, wired glass: (basis of design)
1. Manufacturer: "TGP Technical Glass Products"
  2. Model: WireLite NT
  3. Thickness: 1/4"
  4. Fire rated for 20, 45, 60 and 90 minutes.
  5. Impact safety-rated per ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
  6. Wired glass with high performance surface-applied fire rated film.
  7. 3-year warranty.
  8. Install as per manufacturers specifications and requirements.
  9. Submit complete shop drawings for review and approval prior to construction.
  10. Substitutions: Architect/Owner Approved Equal.

## 2.3 ACCESSORIES

- A. Elastomeric Glazing Sealants: Materials compatible with adjacent materials including glass, laminated glass core, insulating glass seals and glazing channels.
1. Silicone Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component; solvent curing;

capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25.

- a. Color: As selected.
  - b. Structural Silicone: Furnish high-modulus structural silicone glazing materials where sealant bonds glass to substrate.
2. Polysulfide Glazing Sealant: ASTM C920, Type M, Grade NS, Class and Use suitable for glazing application indicated; two component; chemical curing, non-sagging type; cured Shore A hardness of 15 to 25.
    - a. Color: As selected.
  3. Polyurethane Glazing Sealant: [ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35.
    - a. Color: As selected.
  4. Acrylic Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated; single component, solvent curing, non-bleeding; cured Shore A hardness of 15 to 25.
    - a. Color: as selected.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify openings for glazing are correctly sized, within tolerance, and glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

### 3.2 PREPARATION

- A. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- B. Prime surfaces scheduled to receive sealant.

### 3.3 INSTALLATION

- A. Perform installation in accordance with GANA Glazing Manual.
  1. Glazing Sealants: Comply with ASTM C1193.
  2. Fire Rated Openings: Comply with NFPA 80

### 3.4 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass and adjacent surfaces.

END OF SECTION

## SECTION 09 21 16

### GYPSUM BOARD ASSEMBLIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes gypsum board with joint treatment.

##### 1.2 SYSTEM DESCRIPTION

- A. Conform to applicable code for fire rated assemblies and in conjunction with Drawings.

##### 1.3 SUBMITTALS

- A. Product Data: Submit data on gypsum board, joint tape and joint compound.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C840.; GA-201 - Gypsum Board for Walls and Ceilings; GA-214 - Recommended Specification: Levels of Gypsum Board Finish.; GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

#### PART 2 PRODUCTS

##### 2.1 GYPSUM BOARD ASSEMBLIES

- A. Manufacturers:
  - 1. G-P Gypsum Corp.
  - 2. National Gypsum Co.
  - 3. United States Gypsum Co.
  - 4. Substitutions: Architect/Owner Approved Equal.

##### 2.2 COMPONENTS

- A. Gypsum Board Types: 5/8 inch thick, type “x” fire rated, and impact resistant, maximum available length in place; ends square cut, tapered edges; unless noted otherwise as follows:
  - 1. Moisture Resistant Type: ASTM C630.
  - 2. Abuse-Resistant Type (Category 3): ASTM D4977; ASTM D5420 (Category 2).
  - 3. Cement Board: ASTM D2394
  - 4. Exterior Sheathing – Dens-Glass Gold (or equal): ASTM D3273

##### 2.3 ACCESSORIES

- A. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
- B. Corner Beads: Metal.

- C. Edge Trim: GA-216, Type LC bead.
- D. Joint Materials: ASTM C475; GA-201 and GA-216, reinforcing tape, joint compound, adhesive, and water.
- E. Fasteners: ASTM C1002 Type S12 hardened screws. and GA-216.
- F. Adhesive: ASTM C557. GA-216.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify site conditions are ready to receive work.

#### 3.2 INSTALLATION

- A. Gypsum Board:
  - 1. Install gypsum board in accordance with GA-216 and GA-600.
  - 2. Fasten gypsum board to furring or framing with screws.
  - 3. Place control joints consistent with lines of building spaces as directed by Architect.
  - 4. Place corner beads at external corners as indicated on Drawings. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
  - 5. Seal cut edges and holes in moisture resistant gypsum board with sealant.
- B. Joint Treatment:
  - 1. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 2. Feather coats onto adjoining surfaces so camber is maximum 1/32 inch
- C. Tolerances: Maximum Variation from Flat Surface: 1/8inch in 10 feet in any direction.

### PART 4 PAPER TYPE

- A. Paperless type gypsum board. All Gypsum Board is to be paper type only.

END OF SECTION



## SECTION 09 22 16

### NON-LOAD BEARING METAL FRAMING SYSTEM

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes metal stud framing and accessories at interior locations.
- B. Related Sections:
  - 1. Section 054000 - Cold-Formed Metal Framing.
  - 2. Section 092116 - Gypsum Board Assemblies.

##### 1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 2. ASTM A591/A591M - Standard Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
  - 3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
  - 5. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
  - 6. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
- B. National Association of Architectural Metal Manufacturers:
  - 1. NAAMM ML/SFA 540 - Lightweight Steel Framing Systems Manual.
- C. SSPC: The Society for Protective Coatings:
  - 1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

##### 1.3 SYSTEM DESCRIPTION

- A. Exterior Wall: Metal stud framing system infill, with batt insulation and interior gypsum board indicated on wall types.
- B. Interior Walls: Metal stud framing system with batt type acoustic insulation and interior gypsum board indicated on wall types.
- C. Maximum Allowable Deflection: 1: 120 span.
- D. Wall System:
  - 1. Design to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.

2. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Shop Drawings:
  1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, type and location of fasteners, and accessories or items required of other related work.
  2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement to framing connections.
- C. Product Data: Submit data describing standard framing member materials and finish, product criteria, load charts, limitations.
- D. Manufacturer's Installation Instructions: Submit special procedures, perimeter conditions requiring special attention.

#### 1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with ASTM C754.
- B. Form, fabricate, install, and connect components in accordance with NAAMM ML/SFA 540.
- C. Furnish framing materials in accordance with SSMA - Product Technical Information.
- D. Maintain one copy of each document on site.

#### 1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
  1. Framing Manufacturer: Current member of Steel Stud Manufacturers Association.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.
- C. Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and licensed at Project location.

#### 1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

## 1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

## PART 2 PRODUCTS

### 2.1 METAL FRAMING SYSTEM

- A. Manufacturers:
  - 1. Clark Steel Framing Systems
  - 2. Dietrich Industries, Inc.
  - 3. Harrison Manufacturing Co.
  - 4. Marino/Ware
  - 5. Unimast Incorporated
  - 6. Substitutions: Architect/Owner Approved Equal.

### 2.2 COMPONENTS

- A. Framing System Components: ASTM C645.
- B. Studs: ASTM A653/A653M, non-load bearing rolled steel, channel shaped, punched for utility access, as indicated on wall types.
- C. Tracks and Headers: Same material and thickness as studs, bent leg retainer notched to receive studs [with provision for crimp locking to stud. Ceiling Runners: With extended leg retainer.
- D. Furring and Bracing Members: Of same material as studs; thickness to suit purpose.
- E. Fasteners: ASTM C1002, self drilling, self tapping screws.
- F. Sheet Metal Backing: 0.03 galvanized steel for reinforcement.
- G. Anchorage Devices: Power actuated.
- H. Acoustic Sealant: As specified in Section 09 21 16.
- I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type II Organic.

### 2.3 FABRICATION

- A. Fabricate assemblies of framed sections to sizes and profiles required.
- B. Fit, reinforce, and brace framing members to suit design requirements.
- C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

### 2.4 SHOP FINISHING

- A. Studs: Galvanize to G90, Z275 coating class.

- B. Tracks and Headers: Galvanize to G90, Z275 coating class.
- C. Accessories: Same finish as framing members.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify rough-in utilities are in proper location.

### 3.2 INSTALLATION

- A. Align and secure top and bottom runners at 24 inches oc.
- B. Place two beads of acoustic sealant between runners and substrate, studs and adjacent construction to achieve vapor seal and acoustic seal.
- C. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.
- D. Install studs vertically at 16 inches oc.
- E. Align stud web openings horizontally.
- F. Secure studs to tracks using fastener method. Do not weld.
- G. Stud splicing not permissible.
- H. Fabricate corners using minimum of three studs.
- I. Double stud at wall openings, door and window jambs, not more than 2 inches (50 mm) from each side of openings.
- J. Brace stud framing system rigid.
- K. Coordinate erection of studs with requirements of door frames, window frames, install supports and attachments.
- L. Coordinate installation of wood bucks, anchors, and wood blocking with electrical and mechanical work to be placed within or behind stud framing.
- M. Blocking: Secure wood blocking to studs. [Secure steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, opening frames.
- N. Refer to Drawings for indication of partitions extending to finished ceiling only and for partitions extending through ceiling to structure above. Maintain clearance under

structural building members to avoid deflection transfer to studs. Install extended leg ceiling runners.

- O. Coordinate placement of insulation in stud spaces after stud frame erection.

### 3.3 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Indicated Position: 1/8 inch in 10 feet.
- C. Maximum Variation From Plumb: 1/8 inch in 10 feet.

END OF SECTION

## SECTION 09 30 00

### CERAMIC TILE

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes ceramic, ceramic mosaic, quarry, tile for interior floor and wall applications; cementitious backer board as tile substrate; and thresholds at door openings.

##### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate patterned applications and thresholds.
- B. Product Data: Submit instructions for using grouts and adhesives.
- C. Samples: Submit mounted tile and grout on two plywood panels, 6 x 6 inch in size illustrating pattern, color variations, and grout joint size variations.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

##### 1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with TCA Handbook and ANSI A108.1 Series/A118.1 Series.
- B. Maintain one copy of each document on site.
- C. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.
- D. Installer: Company specializing in performing Work of this section with minimum three documented experience approved by manufacturer.

##### 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not install adhesives in unventilated environment.
- B. Maintain ambient and substrate temperature of 50 degrees F
- C. Installation of mortar materials.

## PART 2 PRODUCTS

### 2.1 TILE

- A. Manufacturers: All products same manufacturer.
  - 1. Dal-Tile
  - 2. Substitutions: Architect/Owner Approved Equal.

### 2.2 COMPONENTS

- A. Ceramic Floor Tile: ANSI A137.1, conforming to the following:
  - 1. Manufacturer: Daltile
  - 2. Model: Marble Falls, Glazed Ceramic Tile
  - 3. Size: 18" x 18" x 5/16"
  - 4. Color: As selected by Owner.
  - 5. Substitutions: Architect/Owner Approved Equal.
- B. Ceramic Wall Tile: ANSI A137.1, conforming to the following:
  - 1. Manufacturer: Daltile
  - 2. Model: Marble Falls, Glazed Ceramic Tile
  - 3. Size: 5 1/4" x 8 1/2" x 5/16"
  - 4. Color: As selected by Owner.
  - 5. Substitutions: Architect/Owner Approved Equal.
- C. Base: Same as wall tile. Match tile for moisture absorption, surface finish, and color.
- D. Wainscot Cap: Bullnose tile to match wall tile.
- E. Grout Materials:
  - 1. Latex-Portland cement type as specified in ANSI A118.6; color as selected.
  - 2. Silicone Rubber Grout: Silicone sealant, moisture and mildew resistant type, complying with ANSI A118.6, color as selected use for shower floors and walls.
- F. Cementitious Backer Board: ANSI A118.9; High density, glass fiber reinforced, 5/8 inch thick; 2 inch wide coated glass fiber tape for joints and corners; manufactured by U.S.G.
- G. Tile Floor Edging: Square.

### 2.3 EXAMINATION

- A. Verify surfaces are ready to receive work.

### 2.4 PREPARATION

- A. Install cementitious backer board. Tape joints and corners, cover with skim coat of dry-set mortar to featheredge.

## 2.5 INSTALLATION

- A. Install tile, thresholds, and grout in accordance with applicable requirements of ANSI A108.1 through A108.10, and TCA Handbook recommendations.
- B. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor, base and wall joints. Sharp edges at all exposed corners will not be accepted.
- C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
- D. Grout tile joints. Use standard grout unless otherwise indicated.
- E. Floors:
  - 1. Over interior concrete substrates, install in accordance with TCA Handbook Method F113, dry-set or latex-portland cement bond coat F116, organic adhesive, with standard grout, unless otherwise indicated.
    - a. Where waterproofing membrane is indicated, install in accordance with TCA Handbook Method F122, with latex-portland cement grout.
- F. Showers And Bathtub Walls:
  - 1. At tiled shower receptors install in accordance with TCA Handbook Method B415, mortar bed floor, and W244, thin-set over cementitious backer unit walls.
  - 2. Grout with silicone rubber grout.
  - 3. Seal joints between tile work and other work with sealant.
- G. Wall Tile:
  - 1. Over cementitious backer units install in accordance with TCA Handbook Method W244, using membrane at toilet rooms, kitchens, locker rooms and W223, organic adhesive.
  - 2. Over gypsum wallboard metal studs install in accordance with TCA Handbook Method W243, thin-set with dry-set or latex-portland cement bond coat W223, thin-set with organic adhesive, unless otherwise indicated.
  - 3. Over interior concrete and masonry install in accordance with TCA Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

END OF SECTION



SECTION 09 51 13  
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes suspended metal grid ceiling system and acoustic tile.

1.2 SYSTEM DESCRIPTION

- A. Provide system capable of supporting imposed loads with deflection limited to 1:360.
- B. Installed System: Conform to UL rating for ceiling assemblies.
- C. Conform to applicable code for fire rated assembly and combustibility requirements.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data.
- B. Samples: Submit ceiling tile suspension and all related accessories, including seismic struts.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience, approved by manufacturer.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain uniform temperature of minimum 60 degrees F and maximum humidity acoustic unit installation.

## PART 2 PRODUCTS

### 2.1 SUSPENDED ACOUSTICAL CEILINGS

- A. Manufacturers:
1. Armstrong (Basis of design)
  2. Unika Vaev (Basis of design)
  3. Substitutions: Architect/Owner Approved Equal.

### 2.2 COMPONENTS

- A. ACT-1, Acoustic Tiles: ASTM E1264 conforming to the following:
1. Manufacturer: Unika Vaev
  2. Model #: Ecoustic Matrix Ceiling Tile
  3. Nominal Size: 24 x 24 inches.
  4. Thickness: 2 9/16"
  5. NRC: 0.75
  6. Fire Resistance: Class A
  7. Color: As selected by Architect/Owner from all available colors.
  8. Substitutions: Architect/Owner Approved Equal.
- B. ACT-2, Acoustic Tiles: ASTM E1264 conforming to the following:
1. Manufacturer: USG
  2. Model #: Radar Basic Acoustical Panels 2110.
  3. Nominal Size: 24 x 24 inches.
  4. Thickness: 5/8"
  5. NRC: 0.55
  6. CAC: 33
  7. Fire Resistance: Class A
  8. Color: White.
  9. Substitutions: Architect/Owner Approved Equal.
- C. Grid System:
1. Fire Rated Grid: DONN DXL Fire rated Grid System 15/16".
    - a. USG Interiors (Basis of Design)
    - b. Substitutions: Architect/Owner Approved Equal
    - c. Install as per manufacturer specifications.
  2. Seismic: Installation to be in compliance with the manufacturer's requirements for a Standard Seismic Application, IBC Category "C".
  3. Accessories: Stabilizer bars, clips, splices, edge moldings, hold down clips, etc, as required for suspended grid system, seismic application.
  4. Grid Materials: Commercial quality cold rolled steel with galvanized coating.
  5. Grid Finish: Color as selected by Architect/Owner from all available standard & advantage colors.
  6. Support Channels and Hangers: Galvanized steel, size and type to suit application and ceiling system flatness requirement specified.
- D. See information on security ceilings in Miscellaneous Section of specifications.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify layout of hangers does not interfere with other work.

### 3.2 INSTALLATION

- A. Suspension System:
  - 1. Install system in accordance with ASTM C636, AND UL.
  - 2. Coordinate location of hangers with other work. Where components prevent regular spacing of hangers, reinforce system to span extra distance.
  - 3. Hang system independent of walls, columns, ducts, pipes and conduit.
  - 4. Locate system on room axis leaving equal border units according to reflected plan.
  - 5. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths.
  - 6. Install only in conditioned spaces.
- B. Acoustic Units:
  - 1. Install acoustic units' level, free from damage, twist, warp or dents.
- C. Tolerances: Variation from Flat and Level Surface: 1/8 inch in 10 feet.

END OF SECTION

SECTION 09 65 00

RESILIENT FLOORING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes resilient tile flooring and base.

1.2 SYSTEM DESCRIPTION

- A. Resilient Flooring: Conform to applicable code for flame/smoke rating requirements of 75/450 in accordance with ASTM E84 and critical radiant flux (CRF) of 0.45 in accordance with ASTM E648.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data.
- B. Samples:
  - 1. Submit manufacturer's complete set of color samples for initial selection.
  - 2. Submit two samples, 12 x 12 inch in size illustrating color and pattern for each resilient flooring product specified.

1.4 CLOSEOUT SUBMITTALS

Operation and Maintenance Data: Submit maintenance instruction and data.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities with 500 miles of Project.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.6 ENVIRONMENTAL REQUIREMENTS.

- A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
- B. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

## PART 2 PRODUCTS

### 2.1 RESILIENT FLOORING

- A. Manufacturers:
  - 1. Armstrong (Basis of Design)
  - 2. Substitutions: Architect/Owner Approved Equal.

### 2.2 COMPONENTS

- A. LVT-1, Luxury Vinyl Tile
  - 1. Manufacturer: Armstrong
  - 2. Model: Natural Creations Classics (Wood Look) LVT
  - 3. Size: Varies based on final selection.
  - 4. Overall Thickness: 0.125"
  - 5. Wear Layer Thickness: 0.020"
  - 6. Color/Pattern: As selected by Architect/Owner from all available colors/patterns.
  - 7. Substitutions: Architect/Owner Approved Equal.
- B. B-1, Vinyl Wall Base
  - 1. Manufacturer: Johnsonite
  - 2. Height: 4".
  - 3. Thickness: 0.080".
  - 4. Finish: Satin.
  - 5. Length: Roll.
  - 6. Substitutions: Architect/Owner Approved Equal.

### 2.3 ACCESSORIES

- A. Sub floor Filler: Cementitious type recommended by floor material manufacturer.
- B. Primers and Adhesives: Waterproof; types recommended by floor material manufacturer.
- C. Moldings and Edge Strips: Same material as flooring.
- D. Sheet Flooring Vinyl Welding Rod: Solid vinyl bead produced by manufacturer of vinyl flooring for heat welding seams, in color matching field color.
- E. Feature Strips: Same material as flooring.
- F. Sealer and Wax: Types recommended by floor material manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify concrete floors are dry to maximum moisture content as recommend by manufacturer, and exhibit negative alkalinity, carbonization and dusting.

### 3.2 PREPARATION

- A. Clean substrate.
- B. Fill minor low spots and other defects with sub-floor filler.
- C. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances that cannot be removed.

### 3.3 INSTALLATION

- A. Spread adhesive and set flooring in place. Press tile flooring to attain full adhesion.
- B. Install tile flooring with joints and seams parallel to building lines. Allow minimum ½ full size tile width at room or area perimeter.
- C. Scribe flooring to produce tight joints at items penetrating flooring.
- D. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Secure resilient strips by adhesive.
- F. Adhere base tight to wall and floor surfaces.
- G. Fit joints tightly and make vertical. Miter internal corners. At external corners, use premolded units.

### 3.4 CLEANING

- A. Remove excess adhesive from floor surfaces without damage.
- B. Wax per manufacturers specifications.
- C. Provide additional tile to the owner for each type and color of tile installed.
  - 1. Provide 5% of tile installed.
  - 2. Extra Tile is to be supplied to the owner in clearly marked un-opened boxes.

## PART 4 BONDING AGENT

### 4.0 BONDING

- A. Tile to be installed with a Bonding Agent as approved by the Tile Manufacturer.
  - a. Installer to verify the sub flooring.
  - b. Base for installation of tile meets Tile Manufacturer guide specifications.

- c. For installation (verify moisture content and other items).
- d. By installing said flooring the Tile Manufacturer and installer has accepted the filed conditions prior to installation.

END OF SECTION

## SECTION 09 90 00

### PAINTS AND COATINGS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes surface preparation and field application of paints and other coatings.

##### 1.2 SUBMITTALS

- A. Product Data: Submit data on finishing products and special coating.
- B. Samples: Submit two (2) paper chip samples, 2 inches x 2 inches in size illustrating range of colors and textures available for each surface finishing product scheduled.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: Submit maintenance and cleaning instructions.

##### 1.4 QUALITY ASSURANCE

- A. Surface Burning Characteristics:
  - 1. Fire Retardant Finishes: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
- B. Perform Work in accordance with State of New Jersey Public Work's standard.
- C. Maintain one copy of each document on site.

##### 1.5 ENVIRONMENTAL REQUIREMENTS

- A. Store and apply materials in environmental conditions required by manufacturer's instructions.

#### PART 2 PRODUCTS

##### 2.1 PAINTS AND COATINGS

- A. Manufacturers:
  - 1. Benjamin Moore.
  - 2. Sherman Williams.
  - 3. Coronado Paints.
  - 4. Pratt and Lambert.
  - 5. Devoe Paint Co.
  - 6. MAB Paints.
  - 7. PPG Architectural Finishes.
  - 8. Cabot
  - 9. Substitutions: Architect/Owner Approved Equal.



## 2.2 COMPONENTS

- A. Coatings: Ready mixed except field catalyzed coatings of good flow and brushing properties, capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve finishes specified.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify substrate conditions are ready to receive Work.
- B. Measure moisture content of porous surfaces using electronic moisture meter. Do not apply finishes unless moisture content is less than 15 percent.

### 3.2 PREPARATION

- A. Correct minor defects and clean surfaces affecting work of this section.
- B. Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or applying finishes.
- C. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- D. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- E. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove foreign matter. Remove oil and grease with solution of tri-sodium phosphate, rinse well and allow to dry.
- F. Uncoated Steel and Iron Surfaces: Remove scale by wire brushing, sandblasting, and clean by washing with solvent. Apply treatment of phosphoric acid solution. Prime paint after repairs.
- G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Clean surfaces with solvent. Prime bare steel surfaces.
- H. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior paintable caulking compound after prime coat has been applied.

### 3.3 APPLICATION

- A. Sand wood surfaces lightly between coats to achieve required finish.
- B. Where clear finishes are required, tint fillers to match wood.
- C. Prime concealed surfaces of exterior woodwork with primer paint.
- D. Cleaning: As work proceeds, promptly remove finishes where spilled, splashed, or spattered.

### 3.4 SCHEDULE - EXTERIOR SURFACES

- A. Wood - Painted (Opaque):
  - 1. One coat of alkyd primer sealer.
  - 2. Two coats of acrylic semigloss.
- B. Concrete, Concrete Block, Restored Masonry:
  - 1. One coat of primer sealer latex.
  - 2. One coat of latex flat.
- C. Gypsum Board Cement Plaster Soffits:
  - 1. One coat of primer sealer latex.
  - 2. One coat of latex flat.
- D. Steel - Shop Primed:
  - 1. Touch-up with zinc rich primer.
  - 2. Two coats of alkyd enamel, semi-gloss.
- E. Steel - Galvanized:
  - 1. One coat of galvanize primer.
  - 2. Two coats of alkyd enamel, semi-gloss.

### 3.5 SCHEDULE - INTERIOR SURFACES

- A. Concrete, Concrete Block:
  - 1. One coat of primer sealer latex.
  - 2. Two coats latex, Eggshell.
- B. Steel - Galvanized:
  - 1. Touch-up with one coat of galvanize primer.
  - 2. Two coats of alkyd enamel, semi-gloss.
- C. Plaster, Gypsum Board:
  - 1. One coat of alkyd primer sealer.
  - 2. Two coats latex enamel, Eggshell.

## PART 4 MANUFACTURER PREPARATION & COATING RECOMMENDATIONS

### 4.1 SURFACE PREPARATION

- A. All existing painted areas should be thoroughly cleaned using the most practical and efficient method to remove dirt, dust, oils, fingerprints, graffiti and all other surface contaminants. Utilize proper and suitable cleaners as necessary to accomplish the task. Both the KrudKutter Gloss Off and KrudKutter Graffiti Remover can be considered as possible choices or architect approved equal.
- B. All painted block wall and metal frame areas should be further inspected, and possible loose or loosely adhering paint should be properly prepared and removed back to a firm substrate.
- C. The above recommendations supersede any conflicting items in PART 3.2 above.

### 4.2 SCHEDULE OF COATINGS

- A. Interior Block Walls- Existing and painted with unknown coatings, possible peeling / bare block areas:
  - 1. Spot primer for bare masonry ONLY: S-W Loxon Concrete & Masonry Primer A24 or Architect approved equal.
  - 2. Full overall primer for painted wall areas ONLY: S-W Adhesion Primer B51W8050 or Architect approved equal.
  - 3. Finish with (2) two coats of S-W Promar 200 Zero VOC Interior Latex Egg-Shell B20-2600, (2) two coats of S-W Promar 200 Zero VOC Interior Latex Lo Sheen Egg-Shell B24-2600, or Architect/Owner approved equal.
- B. Interior Metal Door Frames- Existing and painted with unknown coatings, possible peeling / bare metal areas.
  - 1. Spot primer for bare metal ONLY: S-W Pro Industrial Pro-Cryl WB Universal Primer B66-310 or Architect approved equal.
  - 2. Full overall primer for painted areas ONLY: S-W Adhesion Primer B51W8050 or Architect approved equal.
  - 3. Finish with (2) two coats of S-W ProClassic Interior WB Acrylic-Alkyd Semi-Gloss B34W850 or Architect/Owner approved equal.
- C. The above recommendations supersede any conflicting items in PART 3.5 above.

END OF SECTION

## SECTION 10 00 00

### MISCELLANEOUS SPECIALTIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes full height shades, markerboards, floor display case.

##### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate component locations, dimensions, details of blocking and attachment, anchors, and finish as applicable for ALL items.
- B. Product Data: Submit data on Product, accessories.
- C. Samples: Submit two samples, illustrating surface finish and color as required by item.

##### 1.3 CLOSEOUT SUBMITTALS

- A. Operating and Maintenance Data: Submit instructions for recharging fire extinguishers.

##### 1.4 QUALITY ASSURANCE

- A. To conform with the warranties as stipulated by the individual manufacturer specified.

#### PART 2 PRODUCTS

##### 2.1 MANUFACTURERS

- A. Manufacturers:
  - 1. As specified for each item.
  - 2. Substitutions: Architect/Owner Approved Equal

##### 2.2 COMPONENTS

- A. Full Height Shades
  - 1. Provide and install full height shades as indicated on construction drawings.
  - 2. Manufacturer: "Mecho Systems"
  - 3. Model #: Mecho / 5 System
  - 4. Location: At all existing windows / storefront.
  - 5. Color, pattern, and material as selected by Owner.
  - 6. Provide and install all necessary fasteners and all related accessories as required by the manufacturer for a complete and finished installation.
  - 7. Install as per manufacturer's specifications & requirements.
  - 8. Submit complete shop drawings for review and approval prior to construction.
  - 9. Substitutions: Architect/Owner Approved Equal.

- B. Markerboards
1. Provide and install markerboards as indicated on construction drawings.
  2. Manufacturer: "Claridge"
  3. Model #: Series 4 with aluminum trim
  4. Height: 4'-0"
  5. Length: As indicated on plans.
  6. Provide and install all necessary fasteners and all related accessories as required by the manufacturer for a complete and finished installation.
  7. Install as per manufacturer's specifications & requirements.
  8. Submit complete shop drawings for review and approval prior to construction.
  9. Substitutions: Architect/Owner Approved Equal.
- C. Floor Display Case
1. Provide and install custom floor display case as indicated on construction drawings.
  2. Manufacturer: "Waddell"
  3. Model #: Reliant Case #2176
  4. Case Dimensions: 80" x 72" x 16" four sided.
  5. Materials, Finishes, and Colors: Case back, frame finish, base, & cornice material, finish, and color as selected by Owner from all available options. Samples of all materials, finishes, and colors are to be provided for Owner review and selection.
  6. Shelving: (4) 14" x 35-1/2" x 1/4" half length adjustable shelves, fully adjustable in 1" increments, 25lb load capacity.
  7. Door & Locking: Sliding glass door with locking mechanism, including (2) keys.
  8. Lighting: Lighted cornice with a 48" LED strip light with standard cord.
  9. Provide and install all necessary fasteners and all related accessories as required by the manufacturer for a complete and finished installation.
  10. Install as per manufacturer's specifications & requirements.
  11. Submit complete shop drawings for review and approval prior to construction.
  12. Substitutions: Architect/Owner Approved Equal.

## PART 3 EXECUTION

- 3.1 Examination
- 3.2 Verify surfaces and internal wall blocking are ready to receive work and opening dimensions are as indicated on shop drawings and/or instructed by manufacturer
- 3.3 INSTALLATION
- A. Establish exact locations and layout in accordance with shop drawings.
- B. Secure units' level and plumb.
- 3.4 SPECIAL NOTE
- All items indicated in this section require the contractor to provide shop drawings. All items to be installed as per manufacturer's guide specifications.

END OF SECTION

SECTION 10 14 00  
INTERIOR SIGNAGE

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes interior signs.

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures.
- B. Shop Drawings: Indicate sign styles, lettering font, foreground and background colors, locations, overall dimensions of each sign.
- C. Samples: Submit two signs of each sign type, to match specified sign sizes, illustrating type, style, letter font, and colors specified; method of attachment.
- D. Manufacturer's Installation Instructions: Submit installation template and attachment devices.

1.3 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements.
- B. Package signs, labeled in name groups.
- C. Store adhesive attachment tape at ambient room temperatures.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not install signs when ambient temperature is lower than recommended by manufacturer.
- C. Maintain this minimum temperature during and after installation of signs.

## PART 2 PRODUCTS

2.1 INTERIOR SIGNS – Provide 1 sign per door; all doors, new and existing, are to receive a minimum of 1 sign each.

A. Manufacturers:

1. AC Display Studios (**Basis of Design**)  
Contact: Bob Boyd 609-345-0814
2. Substitutions: Architect/Owner Approved Equal

B. Product Description: Refer to drawings for additional information & requirements.

## 2.2 COMPONENTS

A. Signs:

1. Face Color: Color as selected by Owner
2. Core Color: Color as selected by Owner
3. Total Thickness: 1/8" minimum
4. Sign Dimensions: Restrooms: 6" x 8" ADA Room Sign  
All other rooms: 5" x 5" ADA Room Sign  
3.4" x 5" Business Card Sign
5. Character Font: As selected by Owner
6. All signs to have Grade II Braille Translation
7. All Signs to conform to ICC/ANSI A117.1 -2009
8. Coordinate with Owner for exact room names, numbers, & locations prior to construction.
9. Submit color choices and letter styles to Architect for selection
10. Refer to construction drawings for additional information & requirements.

## 2.3 ACCESSORIES

A. Mounting Hardware: Chrome screws.

B. Tape Adhesive: Double sided tape, permanent adhesive.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

### 3.2 INSTALLATION

A. Install signs after doors surfaces are finished; locations to be determined with Owner and Architect.

B. Signs are to be wall mount, level, located adjacent to corresponding door location.

END OF SECTION

## SECTION 10 28 00

### TOILET AND BATH ACCESSORIES

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes toilet and washroom accessories.

##### 1.2 SUBMITTALS

- A. Product Data: Submit data on accessories describing size, finish, details of function, attachment methods.
- B. Samples: Submit two samples of each accessory, illustrating color and finish.

#### PART 2 PRODUCTS

##### 2.1 TOILET AND BATH ACCESSORIES

- A. Manufacturers:
- B.
  - 1. Bradley Washroom Accessories
  - 2. Bobrick Washroom Accessories
  - 3. Bay West Washroom Accessories
  - 4. Rubbermaid Washroom Accessories
  - 5. Substitutions: Architect/Owner Approved Equal.

##### 2.2 COMPONENTS

- A. Products listed on Drawings
- B. Furnish 3 sets of keys for each accessory to Owner. (as applicable)

#### PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Verify exact location of accessories for installation.

##### 3.2 PREPARATION

- A. Deliver inserts and rough-in frames to site. Provide templates and rough-in measurements.



### 3.3 INSTALLATION

- A. Install plumb and level, securely and rigidly anchored to substrate.
- B. Mounting Heights and Locations: As required by accessibility regulations; ICC/ANSI A117.1 - 2009
  - 1. Coordinate with Drawings.
  - 2. Coordinate all clearances and mounting locations prior to accessory installation and report any dimensional discrepancies or conflicts to the architect for review.

### 3.4 SCHEDULES

- A. Refer to Drawings for Schedule of accessories; model numbers and mounting heights.

END OF SECTION

## SECTION 12 35 30

### CASEWORK

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes shop fabricated plastic laminate casework units and designated.

##### 1.2 SUBMITTALS

- A. Shop Drawings: Indicate casework locations, scale plans, elevations, clearances required and finishes.
- B. Product Data: Submit data on component profiles, sizes, assembly methods, and schedule of finishes.
- C. Samples: Submit two panels, 4 x 4 inches in size illustrating cabinet, backsplash and counter top finish.
- D. Samples: Submit hardware samples.

##### 1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Manufacturers Requirements.

##### 1.4 ENVIRONMENTAL REQUIREMENTS

- A. Install after interior temperature and humidity are controlled and stabilized.

##### 1.5 MANUFACTURER

- A. Manufacturer:
  - 1. Mastercraft Woodworking Co., Inc.
  - 2. Substitutions: Architect/Owner Approved Equal

#### PART 2 PRODUCTS

##### 2.1 CABINETS

- A. Cabinet Construction:
  - 1. Design "Reveal Overlay Design" as defined by the Architectural Woodwork Institute.
  - 2. Joinery: Dowel Construction.
  - 3. Bases: Integral toe-base made of same material and finishes as cabinet.

4. Tops and Bottoms: Full solid tops and bottoms of ¾" particleboard. Semi-exposed surfaces to be covered with thermo-fused melamine with 1 mm PVC edge banding.
5. Ends and Partitions: ¾" particleboard construction. Exposed surfaces to be covered with melamine cabinet liner. Exposed edges to have 1 mm PVC edge banding.
6. Adjustable Shelves: 1" particleboard with thermo-fused melamine surfaces and 1 mm PVC edge banding.
7. Doors and Drawer Fronts: Overlay design constructed of 3/4": high-pressure vertical grade NEMA GP28 laminate exterior and high-pressure cabinet liner interior. All edges to have 3mm PVC edge banding.
8. Drawers: Drawer box assembled with dowels spaced at 1¼". Constructed of 5/8" MDF with white melamine laminate on interior and exterior surface3s. Edges to have 1 mm PVC edge banding.

## 2.2 HARDWARE

- A. Hardware:
  1. Hinges: 2-3/4", five knuckle, overlay type, hospital tipped. .090-inch thick steel.
  2. Pulls: 4-inch wire type.
  3. Drawer Suspensions: Bottom mount, epoxy coated with 120-pound minimum load capacity.
  4. Door Catches: Magnetic type with slotted screw adjustment.
  5. Adjustable Shelf Support: Heavy-duty nylon shelf clips.
  6. Locks: Five-tumbler cam type lock. Keyed different with master keying system.
  7. Finishes: All available options from standard finishes.

## 2.3 COUNTERTOPS

- A. Countertops: Tops to be constructed of 1" thick plywood construction. \*All exposed tops and sides to have plastic laminate finishes. Top dimensions shall be seamless. The choice of all standard plastic laminate styles to be provided to the architect for selection.
- B. As basis of design, all plastic laminate surfaces are to be as manufactured by "Wilsonart", model: High Wear Laminate, General Purpose (HGS) Type 107HW or an Architect/Owner Approved Equal. Styles and colors to be selected by Owner/Architect from all available standard options pertaining to this series.
- C. Backsplashes: Provide full height plastic laminate backsplash at all cabinets located against full height wall conditions (i.e.: kitchenette, employee break room area, etc.). Coordinate with architect for exact locations.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify adequacy of backing and location of mechanical and electrical outlets.

### 3.2 PREPARATION

- A. Install supplementary support framing.

### 3.3 INSTALLATION

- A. Set and secure casework in place rigid, plumb, and level.
- B. Provide cutouts for plumbing fixtures, appliances, and other fixtures and fittings.
- C. Use fixture attachments at concealed locations for wall mounted components.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units and counter tops.
- E. Carefully scribe casework against other building materials, leaving gaps of 1/32 inches maximum. Use filler strips not additional overlay trim for this purpose.
- F. Secure cabinet and counter bases to walls and floor using appropriate anchorage depending on installation locations.
- G. Adjust moving or operating parts to function smoothly and correctly.
- H. Install backsplashes and end splashes.
- I. Installation shall be performed by the manufacturer's authorized representative and shall conform to the manufacturer's procedures.
- J. All connecting hardware, fillers, and closure panels shall be provided as required.
- K. Clean all casework upon completion.

### PART 4 WARRANTY

- A. Warranty: All casework furnished under this section shall be guaranteed for a period of one year after final Certificate of Occupancy notice.

END OF SECTION

## SECTION 211313 - WET-PIPE SPRINKLER SYSTEMS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Pipes, fittings, and specialties.
  - 2. Sprinklers.

#### 1.2 SYSTEM DESCRIPTIONS

- A. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply through alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device.
- B. The building is equipped with an existing sprinkler system. The subject space consists of existing sprinkler heads. The existing system shall be modified, and additional sprinkler heads installed as indicated on the drawings to accommodate the renovation scope of work. The contractor is charged with the responsibility of providing signed and sealed shop drawings and hydraulic calculation for issuance of permit.

#### 1.3 PERFORMANCE REQUIREMENTS

- A. Standard-Pressure Piping System Component: Listed for 175-psig (1200-kPa) minimum working pressure.
- B. Delegated Design: Design sprinkler system(s), including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Sprinkler system design shall be approved by authorities having jurisdiction.
  - 1. Margin of Safety for Available Water Flow and Pressure: 10 percent, including losses through water-service piping, valves, and backflow preventers.
  - 2. Sprinkler Occupancy Hazard Classifications:
    - a. Electrical Equipment Rooms: Ordinary Hazard, Group 1.
    - b. General Storage Areas: Ordinary Hazard, Group 1.
    - c. Office and Public Areas: Light Hazard.
  - 3. Minimum Density for Automatic-Sprinkler Piping Design:
    - a. Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft. (4.1 mm/min. over 139-sq. m) area.
    - b. Ordinary-Hazard, Group 1 Occupancy: 0.15 gpm over 1500-sq. ft. (6.1 mm/min. over 139-sq. m) area.

4. Maximum Protection Area per Sprinkler: Per UL listing.
  5. Maximum Protection Area per Sprinkler:
    - a. Office Spaces: 225 sq. ft. (20.9 sq. m).
    - b. Storage Areas: 130 sq. ft. (12.1 sq. m).
    - c. Mechanical Equipment Rooms: 130 sq. ft. (12.1 sq. m).
    - d. Electrical Equipment Rooms: 130 sq. ft. (12.1 sq. m).
    - e. Other Areas: According to NFPA 13 recommendations unless otherwise indicated.
- D. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13 and ASCE/SEI 7.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For wet-pipe sprinkler systems. Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For sprinkler systems indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- C. Welding certificates.
- D. Field Test Reports and Certificates: Indicate and interpret test results for compliance with performance requirements and as described in NFPA 13. Include "Contractor's Material and Test Certificate for Aboveground Piping."
- E. Field quality-control reports.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

#### 1.7 QUALITY ASSURANCE

- A. Installer Qualifications:

1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
  - a. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.
- B. Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
  1. NFPA 13, "Installation of Sprinkler Systems."

## PART 2 - PRODUCTS

### 2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

### 2.2 STEEL PIPE AND FITTINGS

- A. Standard Weight, Black-Steel Pipe: ASTM A 53/A 53M, Type E, Grade B. Pipe ends may be factory or field formed to match joining method.
- B. Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.
- C. Galvanized, Steel Couplings: ASTM A 865, threaded.
- D. Galvanized, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- E. Malleable- or Ductile-Iron Unions: UL 860.
- F. Cast-Iron Flanges: ASME 16.1, Class 125.
- G. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
- H. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.
- I. Grooved-Joint, Steel-Pipe Appurtenances:
  1. Pressure Rating: 175 psig (1200 kPa) minimum.

2. Galvanized, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
3. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

### 2.3 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch (3.2 mm) thick or ASME B16.21, nonmetallic and asbestos free.
  1. Class 125, Cast-Iron Flat-Face Flanges: Full-face gaskets.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

### 2.4 SPRINKLER SPECIALTY PIPE FITTINGS

- A. Branch Outlet Fittings:
  1. Standard: UL 213.
  2. Pressure Rating: 175 psig (1200 kPa) minimum.
  3. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
  4. Type: Mechanical-T and -cross fittings.
  5. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
  6. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
  7. Branch Outlets: Grooved, plain-end pipe, or threaded.
  8. Branch Outlet: Threaded, for sprinkler.
- B. Adjustable Drop Nipples:
  1. Standard: UL 1474.
  2. Pressure Rating: 250 psig (1725 kPa) minimum.
  3. Body Material: Steel pipe with EPDM-rubber O-ring seals.
  4. Size: Same as connected piping.
  5. Length: Adjustable.
  6. Inlet and Outlet: Threaded.
- C. Flexible, Sprinkler Hose Fittings:
  1. Standard: UL 1474.
  2. Type: Flexible hose for connection to sprinkler, and with bracket for connection to ceiling grid.
  3. Pressure Rating: 175 psig (1200 kPa) minimum.
  4. Size: Same as connected piping, for sprinkler.



## 2.5 SPRINKLERS

### A. General Requirements:

1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
2. Pressure Rating for Residential Sprinklers: 175 psig (1200 kPa) maximum.
3. Pressure Rating for Automatic Sprinklers: 175 psig (1200 kPa) minimum.
4. Pressure Rating for High-Pressure Automatic Sprinklers: 250 psig (1725 kPa) minimum.

### B. Automatic Sprinklers with Heat-Responsive Element:

1. Nonresidential Applications: UL 199.
2. Characteristics: Nominal 1/2-inch (12.7-mm) orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.

### C. Sprinkler Escutcheons: Materials, types, and finishes for the following sprinkler mounting applications. Escutcheons for concealed, flush, and recessed-type sprinklers are specified with sprinklers.

1. Ceiling Mounting: Chrome-plated steel, one piece, flat with 1-inch (25-mm) vertical adjustment.

## PART 3 - EXECUTION

### 3.1 PIPING INSTALLATION

#### A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.

#### B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.

#### C. Install seismic restraints on piping. Comply with requirements for seismic-restraint device materials and installation in NFPA 13.

#### D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

#### E. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.

#### F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger end connections.

#### G. Install sprinkler piping with drains for complete system drainage.

- H. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13.
- I. Fill sprinkler system piping with water.
- J. Install sleeves for piping penetrations of walls, ceilings, and floors.
- K. Install escutcheons for piping penetrations of walls, ceilings, and floors.

### 3.2 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install unions adjacent to each valve in pipes NPS 2 (DN 50) and smaller.
- C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 (DN 65) and larger end connections.
- D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- F. Flanged Joints: Select appropriate gasket material in size, type, and thickness suitable for water service. Join flanges with gasket and bolts according to ASME B31.9.
- G. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- H. Twist-Locked Joints: Insert plain end of steel pipe into plain-end-pipe fitting. Rotate retainer lugs one-quarter turn or tighten retainer pin.
- I. Steel-Piping, Pressure-Sealed Joints: Join lightwall steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- J. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
  - 1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.
- K. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.

- L. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.
- M. Steel-Piping, Pressure-Sealed Joints: Join Schedule 5 steel pipe and steel pressure-seal fittings with tools recommended by fitting manufacturer.
- N. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

### 3.3 SPRINKLER INSTALLATION

- A. Install sprinklers into flexible, sprinkler hose fittings and install hose into bracket on ceiling grid.

### 3.4 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

### 3.5 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
  - 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
  - 2. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
  - 3. Coordinate with fire-alarm tests. Operate as required.
  - 4. Coordinate with fire-pump tests. Operate as required.
- C. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

### 3.6 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Remove and replace sprinklers with paint other than factory finish.

### 3.7 PIPING SCHEDULE

- A. Wet-pipe sprinkler system, NPS 2 (DN 50) and smaller shall be one of the following:

1. Standard-weight, black-steel pipe with threaded ends; galvanized, gray-iron threaded fittings; and threaded joints.
  2. Standard-weight, black-steel pipe with cut or roll grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
- B. Standard-pressure, wet-pipe sprinkler system, NPS 2-1/2 to NPS 6 (DN 65 to DN 150) shall be one of the following:
1. Standard-weight, galvanized-steel pipe with cut-grooved ends; galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
  2. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.

### 3.8 SPRINKLER SCHEDULE

- A. Use sprinkler types in subparagraphs below for the following applications:
1. Rooms without Ceilings: Upright sprinklers.
  2. Rooms with Suspended Ceilings: Concealed sprinklers.
  3. Spaces Subject to Freezing: Upright sprinklers.
- B. Provide sprinkler types in subparagraphs below with finishes indicated.
1. Concealed Sprinklers: Rough brass, with factory-painted white cover plate.
  2. Upright Sprinklers: Chrome plated in finished spaces exposed to view; rough bronze in unfinished spaces not exposed to view; wax coated where exposed to acids, chemicals, or other corrosive fumes.

END OF SECTION 211313

## SECTION 220523 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Brass ball valves.
  - 2. Bronze ball valves.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of valve indicated.

#### 1.3 QUALITY ASSURANCE

- A. ASME Compliance: ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
- B. NSF Compliance: NSF 61 for valve materials for potable-water service.

### PART 2 - PRODUCTS

#### 2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to valve schedule articles for applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.
- D. Valve Actuator Types:
  - 1. Handlever: For quarter-turn valves NPS 6 (DN 150) and smaller.
- E. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions and the following features:
  - 1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
- F. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.
2. Solder Joint: With sockets according to ASME B16.18.
3. Threaded: With threads according to ASME B1.20.1.

## 2.2 BRASS BALL VALVES

### A. One-Piece, Reduced-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Kitz Corporation.
2. Description:
  - a. Standard: MSS SP-110.
  - b. CWP Rating: 400 psig (2760 kPa).
  - c. Body Design: One piece.
  - d. Body Material: Forged brass.
  - e. Ends: Threaded.
  - f. Seats: PTFE or TFE.
  - g. Stem: Brass.
  - h. Ball: Chrome-plated brass.
  - i. Port: Reduced.

## 2.3 BRONZE BALL VALVES

### A. One-Piece, Reduced-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. American Valve, Inc.
  - b. Conbraco Industries, Inc.; Apollo Valves.
  - c. NIBCO INC.
2. Description:
  - a. Standard: MSS SP-110.
  - b. CWP Rating: 400 psig (2760 kPa).
  - c. Body Design: One piece.
  - d. Body Material: Bronze.
  - e. Ends: Threaded.
  - f. Seats: PTFE or TFE.
  - g. Stem: Bronze.
  - h. Ball: Chrome-plated brass.
  - i. Port: Reduced.

## PART 3 - EXECUTION

### 3.1 VALVE INSTALLATION

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

### 3.2 ADJUSTING

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

### 3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
  - 1. Shutoff Service: Ball valves.
  - 2. Throttling Service: ball valves.

### 3.4 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

- A. Pipe NPS 2 (DN 50) and Smaller:
  - 1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
  - 2. Bronze Angle Valves: Class 125, bronze disc.
  - 3. Ball Valves: One piece bronze with bronze trim.
  - 4. Bronze Swing Check Valves: Class 125, bronze disc.
- B. Pipe NPS 2-1/2 (DN 65) and Larger:
  - 1. Iron Valves, NPS 2-1/2 to NPS 4 (DN 65 to NPS 100): May be provided with threaded ends instead of flanged ends.
  - 2. Iron Swing Check Valves: Class 125, metal seats.
  - 3. Iron Swing Check Valves with Closure Control: Class 125, lever and spring.

END OF SECTION 220523

## SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

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

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
  - 1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
  - 2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
  - 3. Design seismic-restraint hangers and supports for piping and equipment and obtain approval from authorities having jurisdiction.

#### 1.3 ACTION SUBMITTALS

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

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

#### 1.5 QUALITY ASSURANCE

- A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.



## PART 2 - PRODUCTS

### 2.1 METAL PIPE HANGERS AND SUPPORTS

#### A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pregalvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

### 2.2 TRAPEZE PIPE HANGERS

- #### A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

### 2.3 THERMAL-HANGER SHIELD INSERTS

- #### A. Insulation-Insert Material for Cold Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig (862-kPa) minimum compressive strength and vapor barrier.
- #### B. Insulation-Insert Material for Hot Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig (862-kPa) minimum compressive strength.
- #### C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.
- #### D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.
- #### E. Insert Length: Extend 2 inches (50 mm) beyond sheet metal shield for piping operating below ambient air temperature.

### 2.4 FASTENER SYSTEMS

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

## 2.5 PIPE POSITIONING SYSTEMS

- A. Description: IAPMO PS 42, positioning system of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

## 2.6 EQUIPMENT SUPPORTS

- A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

## 2.7 MISCELLANEOUS MATERIALS

- A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.
- B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.
  - 1. Properties: Nonstaining, noncorrosive, and nongaseous.
  - 2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

## PART 3 - EXECUTION

### 3.1 HANGER AND SUPPORT INSTALLATION

- A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.
- B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
  - 1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
  - 2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.
- C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.
- D. Fastener System Installation:
  - 1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.

2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
- E. Pipe Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. See Division 22 plumbing fixture Sections for requirements for pipe positioning systems for plumbing fixtures.
  - F. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
  - G. Equipment Support Installation: Fabricate from welded-structural-steel shapes.
  - H. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
  - I. Install lateral bracing with pipe hangers and supports to prevent swaying.
  - J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 (DN 65) and larger and at changes in direction of piping. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
  - K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.
  - L. Insulated Piping:
    1. Attach clamps and spacers to piping.
      - a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
      - b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
      - c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.
    2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
      - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
    3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.
      - a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN 100) and larger if pipe is installed on rollers.
    4. Shield Dimensions for Pipe: Not less than the following:

- a. NPS 1/4 to NPS 3-1/2 (DN 8 to DN 90): 12 inches (305 mm) long and 0.048 inch (1.22 mm) thick.
  - b. NPS 4 (DN 100): 12 inches (305 mm) long and 0.06 inch (1.52 mm) thick.
  - c. NPS 5 and NPS 6 (DN 125 and DN 150): 18 inches (457 mm) long and 0.06 inch (1.52 mm) thick.
  - d. NPS 8 to NPS 14 (DN 200 to DN 350): 24 inches (610 mm) long and 0.075 inch (1.91 mm) thick.
  - e. NPS 16 to NPS 24 (DN 400 to DN 600): 24 inches (610 mm) long and 0.105 inch (2.67 mm) thick.
- 5. Pipes NPS 8 (DN 200) and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
  - 6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

### 3.2 METAL FABRICATIONS

- A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.
- B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.
- C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove welding flux immediately.
  - 4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

### 3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches (40 mm).

### 3.4 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
  - 1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).

- B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

### 3.5 HANGER AND SUPPORT SCHEDULE

- A. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.
- B. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.
- C. Use carbon-steel pipe hangers and supports and metal trapeze pipe hangers and attachments for general service applications.
- D. Use copper-plated pipe hangers and stainless- steel attachments for copper piping and tubing.
- E. Use padded hangers for piping that is subject to scratching.
- F. Use thermal-hanger shield inserts for insulated piping and tubing.
- G. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
  1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated, stationary pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).
  2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F (566 deg C), pipes NPS 4 to NPS 24 (DN 100 to DN 600), requiring up to 4 inches (100 mm) of insulation.
  3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36 (DN 20 to DN 900), requiring clamp flexibility and up to 4 inches (100 mm) of insulation.
  4. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8 (DN 15 to DN 200).
  5. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).
  6. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
  7. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
  8. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30 (DN 25 to DN 750), from two rods if longitudinal movement caused by expansion and contraction might occur.
  9. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 (DN 50 to DN 1050) if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.

- H. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24 (DN 24 to DN 600).
  2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 (DN 20 to DN 600) if longer ends are required for riser clamps.
- I. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
  2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.
- J. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
  2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joint construction, to attach to top flange of structural shape.
  3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
  4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
  5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
  6. C-Clamps (MSS Type 23): For structural shapes.
  7. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
    - a. Light (MSS Type 31): 750 lb (340 kg).
    - b. Medium (MSS Type 32): 1500 lb (680 kg).
    - c. Heavy (MSS Type 33): 3000 lb (1360 kg).
  8. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
  9. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.
- K. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
  2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
  3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.
- L. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

- M. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION 220529

## SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Pipe labels.

#### 1.2 ACTION SUBMITTAL

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

### PART 2 - PRODUCTS

#### 2.1 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Metalized plenum rated, preprinted, color-coded, with lettering indicating service, and showing flow direction.
- B. Pipe Labels: Metalized plenum rated formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.
- C. Self-Adhesive Pipe Labels: Printed metalized plenum rated with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.
  - 1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
  - 2. Lettering Size: At least 1-1/2 inches (38 mm) high.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

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



### 3.2 PIPE LABEL INSTALLATION

- A. Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
1. Near each valve and control device.
  2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
  3. Near penetrations through walls, floors, ceilings, and inaccessible enclosures.
  4. At access doors, manholes, and similar access points that permit view of concealed piping.
  5. Near major equipment items and other points of origination and termination.
  6. Spaced at maximum intervals of 50 feet (15 m) along each run. Reduce intervals to 25 feet (7.6 m) in areas of congested piping and equipment.
  7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.
- B. Pipe Label Color Schedule:
1. Domestic Water Piping:
    - a. Background Color: Blue.
    - b. Letter Color: White.
  2. Sanitary Waste and Storm Drainage Piping:
    - a. Background Color: Black.
    - b. Letter Color: White.

END OF SECTION 220553

## SECTION 220719 - PLUMBING PIPING INSULATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes insulating the following plumbing piping services:
  - 1. Domestic hot-water piping.
  - 2. Supplies and drains for handicap-accessible lavatories and sinks.

#### 1.2 ACTION SUBMITTALS

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

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

#### 1.4 QUALITY ASSURANCE

- A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.
  - 1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
- B. Comply with the following applicable standards and other requirements specified for miscellaneous components:
  - 1. Supply and Drain Protective Shielding Guards: ICC A117.1.

### PART 2 - PRODUCTS

#### 2.1 INSULATION MATERIALS

- A. Comply with requirements in "Piping Insulation Schedule, General," and "Indoor Piping Insulation Schedule," articles for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

- C. Products that encounter stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- E. Mineral-Fiber, Preformed Pipe Insulation:
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Fibrex Insulations Inc.; Coreplus 1200.
    - b. Johns Manville; Micro-Lok.
    - c. Knauf Insulation; 1000-Degree Pipe Insulation.
    - d. Manson Insulation Inc.; Alley-K.
    - e. Owens Corning; Fiberglas Pipe Insulation.
  - 2. Type I, 850 Deg F (454 Deg C) Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

## 2.2 ADHESIVES

- A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.
- B. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-82.
    - b. Eagle Bridges - Marathon Industries; 225.
    - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 85-20.
    - d. Mon-Eco Industries, Inc.; 22-25.
  - 2. For indoor applications, adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 3. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## 2.3 MASTICS

- A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.
  - 1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below-ambient services.
  - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-80/30-90.
    - b. Vimasco Corporation; 749.
  - 2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm (0.009 metric perm) at 43-mil (1.09-mm) dry film thickness.
  - 3. Service Temperature Range: Minus 20 to plus 180 deg F (Minus 29 to plus 82 deg C).
  - 4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
  - 5. Color: White.

## 2.4 SEALANTS

- A. Joint Sealants:
  - 1. Joint Sealants for Cellular-Glass Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
    - b. Eagle Bridges - Marathon Industries; 405.
    - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 30-45.
    - d. Mon-Eco Industries, Inc.; 44-05.
    - e. Pittsburgh Corning Corporation; Pittseal 444.
  - 2. Materials shall be compatible with insulation materials, jackets, and substrates.
  - 3. Permanently flexible, elastomeric sealant.
  - 4. Service Temperature Range: Minus 100 to plus 300 deg F (Minus 73 to plus 149 deg C).
  - 5. Color: White or gray.
  - 6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. FSK and Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Childers Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; CP-76.
  - b. Eagle Bridges - Marathon Industries; 405.
  - c. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; 95-44.
  - d. Mon-Eco Industries, Inc.; 44-05.
2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F (Minus 40 to plus 121 deg C).
5. Color: Aluminum.
6. For indoor applications, sealants shall have a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealants shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## 2.5 FIELD-APPLIED FABRIC-REINFORCING MESH

- A. Woven Polyester Fabric: Approximately 1 oz./sq. yd. (34 g/sq. m) with a thread count of 10 strands by 10 strands/sq. in. (4 strands by 4 strands/sq. mm), in a Leno weave, for pipe.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Foster Brand, Specialty Construction Brands, Inc., a business of H. B. Fuller Company; Mast-A-Fab.
    - b. Vimasco Corporation; Elastafab 894.

## 2.6 FIELD-APPLIED JACKETS

- A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

## 2.7 TAPES

- A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
  1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. ABI, Ideal Tape Division; 428 AWF ASJ.
    - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
    - c. Compac Corporation; 104 and 105.
    - d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches (75 mm).
3. Thickness: 11.5 mils (0.29 mm).
4. Adhesion: 90 ounces force/inch (1.0 N/mm) in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch (7.2 N/mm) in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

## 2.8 SECUREMENTS

- A. Staples: Outward-clinching insulation staples, nominal 3/4-inch- (19-mm-) wide, stainless steel or Monel.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

### 3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
- B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified.
- C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
- D. Install insulation with longitudinal seams at top and bottom of horizontal runs.
- E. Install multiple layers of insulation with longitudinal and end seams staggered.
- F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.
- G. Keep insulation materials dry during application and finishing.
- H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
- I. Install insulation with least number of joints practical.
- J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
  1. Install insulation continuously through hangers and around anchor attachments.

2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
  3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
  4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
- K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
- L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
- M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
- N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

### 3.3 PENETRATIONS

- A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.
- B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

### 3.4 GENERAL PIPE INSULATION INSTALLATION

- A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

### 3.5 INSTALLATION OF MINERAL-FIBER PREFORMED PIPE INSULATION

- A. Insulation Installation on Straight Pipes and Tubes:
1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
  2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
  3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches (150 mm) o.c.
- B. Insulation Installation on Pipe Fittings and Elbows:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed insulation elbows and fittings are not available, install mitered sections of pipe insulation, to a thickness equal to adjoining pipe insulation. Secure insulation materials with wire or bands.

C. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed sections of same material as straight segments of pipe insulation when available.
2. When preformed sections are not available, install mitered sections of pipe insulation to valve body.
3. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
4. Install insulation to flanges as specified for flange insulation application.

### 3.6 FIELD-APPLIED JACKET INSTALLATION

- A. Where metal jackets are indicated, install with 2-inch (50-mm) overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches (300 mm) o.c. and at end joints.

### 3.7 FIELD QUALITY CONTROL

- A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect pipe, fittings, strainers, and valves, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to three locations of straight pipe, three locations of threaded fittings, three locations of welded fittings, two locations of threaded strainers, two locations of welded strainers, three locations of threaded valves, and three locations of flanged valves for each pipe service as requested.

- C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

### 3.8 PIPING INSULATION SCHEDULE, GENERAL

- A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

### 3.9 INDOOR PIPING INSULATION SCHEDULE

- A. Domestic Hot and Recirculated Hot Water: Insulation shall be one of the following:



1. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch (13 mm) thick.
- B. Exposed Sanitary Drains, Domestic Water, Domestic Hot Water, and Stops for Plumbing Fixtures for People with Disabilities: Insulation shall be one of the following:
  1. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch (13 mm).

3.10 INDOOR, FIELD-APPLIED JACKET SCHEDULE

- A. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
- B. If more than one material is listed, selection from materials listed is Contractor's option.
- C. Piping, Concealed:
  1. None.
- D. Piping, Exposed:
  1. Metal Jacket.

END OF SECTION 220719

## SECTION 221116 - DOMESTIC WATER PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes under-building-slab and aboveground domestic water pipes, tubes, and fittings inside buildings.

### PART 2 - PRODUCTS

#### 2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.
- B. Potable-water piping and components shall comply with NSF 14 and NSF 61. Plastic piping components shall be marked with "NSF-pw."

#### 2.2 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L and ASTM B 88, Type M water tube, drawn temper.
- B. Soft Copper Tube: ASTM B 88, Type K and ASTM B 88, Type L water tube, annealed temper.
- C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.
- D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
- E. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- F. Copper Unions:
  - 1. MSS SP-123.
  - 2. Cast-copper-alloy, hexagonal-stock body.
  - 3. Ball-and-socket, metal-to-metal seating surfaces.
  - 4. Solder-joint or threaded ends.

#### 2.3 TRANSITION FITTINGS

- A. General Requirements:
  - 1. Same size as pipes to be joined.
  - 2. Pressure rating at least equal to pipes to be joined.
  - 3. End connections compatible with pipes to be joined.

## 2.4 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Capitol Manufacturing Company; member of the Phoenix Forge Group.
    - b. Central Plastics Company.
    - c. Hart Industries International, Inc.
    - d. Jomar International.
    - e. Matco-Norca.
    - f. McDonald, A. Y. Mfg. Co.
    - g. Watts; a division of Watts Water Technologies, Inc.
    - h. Wilkins; a Zurn company.
    - i. <Insert manufacturer's name>.
  - 2. Standard: ASSE 1079.
  - 3. Pressure Rating: 125 psig (860 kPa) minimum at 180 deg F (82 deg C).
  - 4. End Connections: Solder-joint copper alloy and threaded ferrous.

## PART 3 - EXECUTION

### 3.1 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  - 1. Apply appropriate tape or thread compound to external pipe threads.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Braze Joints" chapter.
- E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."
- F. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

### 3.2 DIELECTRIC FITTING INSTALLATION

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric couplings.

### 3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices as required by local authority having jurisdiction.
- B. Comply with requirements for pipe hanger, support products, and installation in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."
  - 1. Vertical Piping: MSS Type 8 or 42, clamps.
  - 2. Individual, Straight, Horizontal Piping Runs:
    - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
    - b. Longer Than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
  - 3. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
  - 4. Base of Vertical Piping: MSS Type 52, spring hangers.
- C. Support vertical piping and tubing at base and at each floor.
- D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch (10 mm).
- E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
  - 1. NPS 3/4 (DN 20) and Smaller: 60 inches (1500 mm) with 3/8-inch (10-mm) rod.
  - 2. NPS 1 and NPS 1-1/4 (DN 25 and DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.
  - 3. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 96 inches (2400 mm) with 3/8-inch (10-mm) rod.
- F. Install supports for vertical copper tubing every 10 feet (3 m).

### 3.4 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

### 3.5 IDENTIFICATION

- A. Identify system components. Comply with requirements for identification materials and installation in Division 22 Section "Identification for Plumbing Piping and Equipment."

### 3.6 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:

1. Piping Inspections:

- a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
- b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
  - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
  - 2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
- c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
- d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

- a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
- b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
- c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
- d. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
- e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
- f. Prepare reports for tests and for corrective action required.

- B. Domestic water piping will be considered defective if it does not pass tests and inspections.

### 3.7 CLEANING

- A. Clean and disinfect potable domestic water piping as follows:
  - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
  - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
    - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    - b. Fill and isolate system according to either of the following:
      - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
      - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
    - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
    - d. Repeat procedures if biological examination shows contamination.
    - e. Submit water samples in sterile bottles to authorities having jurisdiction.
- B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

### 3.8 PIPING SCHEDULE

- A. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- B. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
- C. Aboveground domestic water piping, NPS 2 (DN 50) and smaller shall be one of the following:
  - 1. Hard copper tube, ASTM B 88, Type L; cast or wrought-copper, solder-joint fittings; and soldered joints.

END OF SECTION 221116

## SECTION 221316 - SANITARY WASTE AND VENT PIPING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Pipe, tube, and fittings.
  - 2. Specialty pipe fittings.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] requirement.

#### 1.3 ACTION SUBMITTALS

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

#### 1.4 QUALITY ASSURANCE

- A. Piping materials shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF/ANSI 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

### PART 2 - PRODUCTS

#### 2.1 PIPING MATERIALS

- A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

#### 2.2 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 74, Service class.
- B. Gaskets: ASTM C 564, rubber.

### 2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

- A. Pipe and Fittings: ASTM A 888 or CISPI 301.

### 2.4 ABS PIPE AND FITTINGS

- A. Solid-Wall ABS Pipe: ASTM D 2661, Schedule 40.
- B. Cellular-Core ABS Pipe: ASTM F 628, Schedule 40.
- C. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.
- D. Solvent Cement: ASTM D 2235.
  - 1. ABS solvent cement shall have a VOC content of 325 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 2. Solvent cement shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## PART 3 - EXECUTION

### 3.1 PIPING INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping at indicated slopes.
- F. Install piping free of sags and bends.
- G. Install fittings for changes in direction and branch connections.
- H. Install seismic restraints on piping as required by the local authority having jurisdiction.
- I. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn,



double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

- J. Install soil and waste drainage and vent piping at the following minimum slopes unless otherwise indicated:
  - 1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 (DN 80) and smaller; 2 percent downward in direction of flow for piping NPS 4 (DN 100) and larger.
  - 2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
  - 3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.
- K. Plumbing Specialties:
  - 1. Install backwater valves in sanitary waste gravity-flow piping.
  - 2. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary drainage gravity-flow piping.
- L. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.
- M. Install sleeves for piping penetrations of walls, ceilings, and floors.
- N. Install sleeve seals for piping penetrations of concrete walls and slabs.
- O. Install escutcheons for piping penetrations of walls, ceilings, and floors.

### 3.2 JOINT CONSTRUCTION

### 3.3 VALVE INSTALLATION

- A. Backwater Valves: Install backwater valves in piping subject to backflow.
  - 1. Horizontal Piping: Horizontal backwater valves. Use normally closed type unless otherwise indicated.

### 3.4 HANGER AND SUPPORT INSTALLATION

- A. Comply with requirements for seismic-restraint devices.
- B. Comply with requirements for pipe hanger and support devices and installation specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."
  - 1. Install carbon-steel pipe hangers for horizontal piping in noncorrosive environments.
  - 2. Install carbon-steel pipe support clamps for vertical piping in noncorrosive environments.
  - 3. Vertical Piping: MSS Type 8 or Type 42, clamps.

4. Install individual, straight, horizontal piping runs:
  - a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.
  - b. Longer Than 100 Feet (30 m): MSS Type 43, adjustable roller hangers.
5. Multiple, Straight, Horizontal Piping Runs 100 Feet (30 m) or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
- C. Support horizontal piping and tubing within 12 inches (300 mm) of each fitting, valve, and coupling.
- D. Support vertical piping and tubing at base and at each floor.
- E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.
- F. Install hangers for ABS and PVC piping with the following maximum horizontal spacing and minimum rod diameters:
  1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
  2. NPS 3 (DN 80): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
  3. NPS 4 and NPS 5 (DN 100 and DN 125): 48 inches (1200 mm) with 5/8-inch (16-mm) rod.
- G. Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

### 3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to existing piping systems. exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect drainage and vent piping to the following:
  1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
  2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
  3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.
  4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
  5. Install horizontal backwater valves with cleanout cover flush with floor where indicated on the drawings.
  6. Equipment: Connect drainage piping as indicated.

- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections according to the following unless otherwise indicated:
  - 1. Install unions, in piping NPS 2 (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment.
  - 2. Install flanges, in piping NPS 2-1/2 (DN 65) and larger, adjacent to flanged valves and at final connection to each piece of equipment.

### 3.6 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
  - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
  - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
  - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
  - 2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
  - 3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping except outside leaders on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water (30 kPa). From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
  - 4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg (250 Pa). Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
  - 5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
  - 6. Prepare reports for tests and required corrective action.

### 3.7 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.

### 3.8 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 (DN 100) and smaller shall be one of the following:
  - 1. Hubless Cast-iron pipes.
  - 2. Bell-spigot Cast-iron pipe.
- C. Aboveground, vent piping NPS 4 (DN 100) and smaller shall be one the following:  
Hubless Cast-iron pipe.

END OF SECTION 221316

## SECTION 221319 - SANITARY WASTE PIPING SPECIALTIES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following sanitary drainage piping specialties:
  1. Cleanouts.
  2. Floor drains.
  3. Miscellaneous sanitary drainage piping specialties.

#### 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories for grease interceptors.

#### 1.3 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

### PART 2 - PRODUCTS

#### 2.1 CLEANOUTS

- A. Exposed Cast-Iron Cleanouts:
  1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Josam Company; Josam Div.
    - b. MIFAB, Inc.
    - c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
    - d. Tyler Pipe; Wade Div.
    - e. Watts Drainage Products Inc.
    - f. Zurn Plumbing Products Group; Specification Drainage Operation.
  2. Standard: ASME A112.36.2M for cleanout test tee.
  3. Size: Same as connected drainage piping
  4. Body Material: match connected piping.
  5. Closure: Raised-head, plastic plug.
  6. Closure Plug Size: Same as or not more than one size smaller than cleanout size.
- B. Cast-Iron Floor Cleanouts :

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Josam Company; Josam Div.
  - b. Oatey.
  - c. Sioux Chief Manufacturing Company, Inc.
  - d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
  - e. Tyler Pipe; Wade Div.
  - f. Watts Drainage Products Inc.
  - g. Zurn Plumbing Products Group; Light Commercial Operation.
  - h. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M for adjustable housing cleanout.
3. Size: Same as connected branch.
4. Type: Adjustable housing..
5. Body or Ferrule: Cast iron.
6. Clamping Device: not required.
7. Outlet Connection: Spigot.
8. Closure: Brass plug with straight threads and gasket.
9. Adjustable Housing Material: Cast iron with threads.
10. Frame and Cover Material and Finish: Nickel-bronze, copper alloy.
11. Frame and Cover Shape: Round.
12. Top Loading Classification: Light Duty.
13. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

## 2.2 FLOOR DRAINS

### A. Cast-Iron Floor Drains:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Commercial Enameling Co.
  - b. Josam Company; Josam Div.
  - c. MIFAB, Inc.
  - d. Prier Products, Inc.
  - e. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
  - f. Tyler Pipe; Wade Div.
  - g. Watts Drainage Products Inc.
  - h. Zurn Plumbing Products Group; Light Commercial Operation.
  - i. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Seepage Flange: Not required.
6. Anchor Flange: required.
7. Clamping Device: required.

8. Outlet: Bottom.
9. Backwater Valve: Not required.
10. Coating on Interior and Exposed Exterior Surfaces: Not required.
11. Sediment Bucket: as indicated on drawings.
12. Top or Strainer Material: Nickel bronze.
13. Top of Body and Strainer Finish: Nickel bronze.
14. Top Shape: Round.
15. Top Loading Classification: Light Duty.
16. Funnel: as indicated on the drawings.
17. Inlet Fitting: as indicated on the drawings.

## 2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

### A. Deep-Seal Traps:

1. Description: Cast-iron or bronze casting, with inlet and outlet matching connected piping and cleanout trap-seal primer valve connection.
2. Size: Same as connected waste piping.
  - a. NPS 2 (DN 50): 4-inch- (100-mm-) minimum water seal.
  - b. NPS 2-1/2 (DN 65) and Larger: 5-inch- (125-mm-) minimum water seal.

### B. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 (DN 15) side inlet.

### C. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
  1. Size same as drainage piping up to NPS 4 (DN 100). Use NPS 4 (DN 100) for larger drainage piping unless larger cleanout is indicated.
  2. Locate at each change in direction of piping greater than 45 degrees.

3. Locate at minimum intervals of 50 feet (15 m) for piping NPS 4 (DN 100) and smaller and 100 feet (30 m) for larger piping.
  4. Locate at base of each vertical soil and waste stack.
- B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- D. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
1. Position floor drains for easy access and maintenance.
  2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
    - a. Radius, 30 Inches (750 mm) or Less: Equivalent to 1 percent slope, but not less than 1/4-inch (6.35-mm) total depression.
    - b. Radius, 30 to 60 Inches (750 to 1500 mm): Equivalent to 1 percent slope.
    - c. Radius, 60 Inches (1500 mm) or Larger: Equivalent to 1 percent slope, but not greater than 1-inch (25-mm) total depression.
  3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
  4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.
- E. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
  2. Size: Same as floor drain inlet.
- F. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.
- G. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.
- H. Install vent caps on each vent pipe passing through roof.
- I. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

### 3.2 CONNECTIONS

- A. Install piping adjacent to equipment to allow service and maintenance.



3.3 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

## SECTION 233113 - METAL DUCTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Rectangular ducts and fittings.
  - 2. Round ducts and fittings.
  - 3. Sheet metal materials.
  - 4. Sealants and gaskets.
  - 5. Hangers and supports.
  - 6. Seismic-restraint devices.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.
- B. Structural Performance: Duct hangers and supports and seismic restraints shall withstand the effects of gravity and seismic loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems."
  - 1. Seismic Hazard Level B: Seismic force to weight ratio, 0.30.
- C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings:
  - 1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
  - 2. Factory- and shop-fabricated ducts and fittings.
  - 3. Duct layout indicating sizes, configuration, and static-pressure classes.
  - 4. Elevation of top of ducts.
  - 5. Dimensions of main duct runs from building grid lines.
  - 6. Fittings.
  - 7. Reinforcement and spacing.

8. Seam and joint construction.
9. Penetrations through fire-rated and other partitions.
10. Equipment installation based on equipment being used on Project.
11. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
12. Hangers and supports, including methods for duct and building attachment, seismic restraints, and vibration isolation.

## PART 2 - PRODUCTS

### 2.1 RECTANGULAR DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.
- B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
- D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

### 2.2 ROUND DUCTS AND FITTINGS

- A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.
  1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Lindab Inc.
    - b. McGill AirFlow LLC.
    - c. SEMCO Incorporated.
    - d. Sheet Metal Connectors, Inc.

e. Spiral Manufacturing Co., Inc.

- B. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

## 2.3 SHEET METAL MATERIALS

- A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.
- B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.
1. Galvanized Coating Designation: G60 (Z180).
  2. Finishes for Surfaces Exposed to View: Mill phosphatized.
- C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.
- D. Aluminum Sheets: Comply with ASTM B 209 (ASTM B 209M) Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.
- E. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.
- F. Tie Rods: Galvanized steel, 1/4-inch (6-mm) minimum diameter for lengths 36 inches (900 mm) or less; 3/8-inch (10-mm) minimum diameter for lengths longer than 36 inches (900 mm).

## 2.4 SEALANT AND GASKETS

- A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.
- B. Two-Part Tape Sealing System:
1. Tape: Woven cotton fiber impregnated with mineral gypsum and modified acrylic/silicone activator to react exothermically with tape to form hard, durable, airtight seal.
  2. Tape Width: 4 inches (102 mm).
  3. Sealant: Modified styrene acrylic.
  4. Water resistant.

5. Mold and mildew resistant.
6. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
7. Service: Indoor and outdoor.
8. Service Temperature: Minus 40 to plus 200 deg F (Minus 40 to plus 93 deg C).
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum.
10. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
11. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg (2500 Pa), positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

D. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

E. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

## 2.5 HANGERS AND SUPPORTS

- A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.
- B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
- C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

- D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.
- E. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.
- F. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.
- G. Trapeze and Riser Supports:
  - 1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
  - 2. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

## 2.6 SEISMIC-RESTRAINT DEVICES

- A. Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Cooper B-Line, Inc.; a division of Cooper Industries.
  - 2. Ductmate Industries, Inc.
  - 3. Hilti Corp.
  - 4. Kinetics Noise Control.
  - 5. Loos & Co.; Cableware Division.
  - 6. Mason Industries.
  - 7. TOLCO; a brand of NIBCO INC.
  - 8. Unistrut Corporation; Tyco International, Ltd.
- B. General Requirements for Restraint Components: Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
  - 1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.
- C. Channel Support System: Shop- or field-fabricated support assembly made of slotted steel channels rated in tension, compression, and torsion forces and with accessories for attachment to braced component at one end and to building structure at the other end. Include matching components and corrosion-resistant coating.
- D. Restraint Cables: ASTM A 603, galvanized steel cables with end connections made of cadmium-plated steel assemblies with brackets, swivel, and bolts designed for restraining cable service; and with an automatic-locking and clamping device or double-cable clips.
- E. Hanger Rod Stiffener Reinforcing steel angle clamped to hanger rod.
- F. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

## PART 3 - EXECUTION

### 3.1 DUCT INSTALLATION

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.
- B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.
- C. Install round ducts in maximum practical lengths.
- D. Install ducts with fewest possible joints.
- E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.
- F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.
- G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.
- H. Install ducts with a clearance of 1 inch (25 mm), plus allowance for insulation thickness.
- I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.
- J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches (38 mm).
- K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Division 23 Section "Air Duct Accessories" for fire and smoke dampers.
- L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

### 3.2 DUCT SEALING

- A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

### 3.3 HANGER AND SUPPORT INSTALLATION

- A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."
- B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
  - 1. Where practical, install concrete inserts before placing concrete.
  - 2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
  - 3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches (100 mm) thick.
  - 4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches (100 mm) thick.
  - 5. Do not use powder-actuated concrete fasteners for seismic restraints.
- C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches (610 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.

### 3.4 SEISMIC-RESTRAINT-DEVICE INSTALLATION

- A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems".
  - 1. Space lateral supports a maximum of 40 feet (12 m)o.c., and longitudinal supports a maximum of 80 feet (24 m) o.c.
  - 2. Brace a change of direction longer than 12 feet (3.7 m).
- B. Select seismic-restraint devices with capacities adequate to carry present and future static and seismic loads.
- C. Install cables so they do not bend across edges of adjacent equipment or building structure.
- D. Install cable restraints on ducts that are suspended with vibration isolators.
- E. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction.
- F. Attachment to Structure: If specific attachment is not indicated, anchor bracing and restraints to structure, to flanges of beams, to upper truss chords of bar joists, or to concrete members.
- G. Drilling for and Setting Anchors:
  - 1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcement or embedded items during drilling. Notify the Architect if reinforcing steel or other embedded items are encountered during



drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.

2. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
3. Set anchors to manufacturer's recommended torque, using a torque wrench.
4. Install zinc-coated steel anchors for interior applications and stainless-steel anchors for applications exposed to weather.

### 3.5 CONNECTIONS

- A. Make connections to equipment with flexible connectors.
- B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

### 3.6 DUCT SCHEDULE

#### A. Supply Ducts:

##### 1. Ducts Connected to VAV Units:

- a. Pressure Class: Positive 2-inch wg (500 Pa).
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 12.

#### B. Return Ducts:

##### 1. Ducts Connected to Air-Handling Units:

- a. Pressure Class: Positive or negative 2-inch wg (500 Pa).
- b. Minimum SMACNA Seal Class: A.
- c. SMACNA Leakage Class for Rectangular: 6.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

#### C. Exhaust Ducts:

##### 1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

- a. Pressure Class: Negative 1-inch wg (250 Pa).
- b. Minimum SMACNA Seal Class: A if negative pressure, and A if positive pressure.
- c. SMACNA Leakage Class for Rectangular: 12.
- d. SMACNA Leakage Class for Round and Flat Oval: 6.

#### D. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

- a. Velocity 1000 fpm (5 m/s) or Lower:
    - 1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
    - 2) Mitered Type RE 4 without vanes.
  - 2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."
    - a. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
    - b. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vaness and Vane Runners," and Figure 4-4, "Vane Support in Elbows."
  - 3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."
    - a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.
      - 1) Velocity 1000 fpm (5 m/s) or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
      - 2) Radius-to Diameter Ratio: 1.5.
    - b. Round Elbows, 12 Inches (305 mm) and Smaller in Diameter: Stamped or pleated.
    - c. Round Elbows, 14 Inches (356 mm) and Larger in Diameter: Standing seam.
- E. Branch Configuration:
- 1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."
    - a. Rectangular Main to Rectangular Branch: 45-degree entry.
    - b. Rectangular Main to Round Branch: Spin in.
  - 2. Round: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.
  - 3.
    - a. Velocity 1000-1500 fpm (7.6 m/s) or Higher: 45-degree lateral.

END OF SECTION 233113

## SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Building wires and cables rated 600 V and less.
  - 2. Connectors, splices, and terminations rated 600 V and less.

#### 1.2 ACTION SUBMITTALS

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

#### 1.3 INFORMATIONAL SUBMITTALS

- A. Field quality-control test reports.

#### 1.4 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

### PART 2 - PRODUCTS

#### 2.1 CONDUCTORS AND CABLES

- A. Copper Conductors: Comply with NEMA WC 70.
- B. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.
- C. Multiconductor Cable: Comply with NEMA WC 70 for armored cable with ground wire.

#### 2.2 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. AFC Cable Systems, Inc.

2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.
6. <Insert manufacturer's name.>

- B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

## PART 3 - EXECUTION

### 3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger as indicated on the drawings. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

### 3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-THWN, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Metal-clad cable, Type MC.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Metal-clad cable, Type MC.
- F. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.
- G. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- H. Class 2 Control Circuits: Type THHN-THWN, in raceway.

### 3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members and follow surface contours where possible.
- E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."
- F. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- G. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
  - 1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.
- H. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches (150 mm) of slack.

#### 3.4 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.

#### 3.5 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly.

END OF SECTION 260519

## SECTION 260523 - CONTROL-VOLTAGE ELECTRICAL POWER CABLES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. UTP cabling.
  - 2. RS-232 cabling.
  - 3. RS-485 cabling.
  - 4. Low-voltage control cabling.
  - 5. Control-circuit conductors.
  - 6. Identification products.

#### 1.2 DEFINITIONS

- A. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control and signaling power-limited circuits.
- B. Open Cabling: Passing telecommunications cabling through open space (e.g., between the studs of a wall cavity).

#### 1.3 ACTION SUBMITTALS

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

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.

#### 1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of an NRTL.
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 50 or less.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Test cables upon receipt at Project site.
- B. Test each pair of UTP cable for open and short circuits.

### PART 2 - PRODUCTS

#### 2.1 PATHWAYS

- A. Support of Open Cabling: NRTL labeled for support of Category 5e cabling, designed to prevent degradation of cable performance and pinch points that could damage cable.
  1. Support brackets with cable tie slots for fastening cable ties to brackets.
  2. Lacing bars, spools, J-hooks, and D-rings.
  3. Straps and other devices.
- B. Conduit and Boxes: Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems." Flexible metal conduit shall not be used.
  1. Outlet boxes shall be no smaller than 2 inches (50 mm) wide, 3 inches (75 mm) high, and 2-1/2 inches (64 mm) deep.

#### 2.2 BACKBOARDS

- A. Description: Plywood, fire-retardant treated, 3/4 by 48 by 96 inches (19 by 1220 by 2440 mm). Comply with requirements for plywood backing panels in Division 06 Section "Rough Carpentry."

#### 2.3 UTP CABLE

- A. Description: 100-ohm, four-pair UTP.
  1. Comply with ICEA S-90-661 for mechanical properties.
  2. Comply with TIA/EIA-568-B.1 for performance specifications.
  3. Comply with TIA/EIA-568-B.2, Category 5e.
  4. Listed and labeled by an NRTL acceptable to authorities having jurisdiction as complying with UL 444 and NFPA 70 for the following types:
    - a. Communications, General Purpose: Type CM or Type CMG
    - b. Communications, Plenum Rated: Type CMP complying with NFPA 262.

- c. Communications, Riser Rated: Type CMR complying with UL 1666.
- d. Communications, Limited Purpose: Type CMX.
- e. Multipurpose: Type MP or Type MPG.
- f. Multipurpose, Plenum Rated: Type MPP, complying with NFPA 262.
- g. Multipurpose, Riser Rated: Type MPR complying with UL 1666.

## 2.4 UTP CABLE HARDWARE

- A. UTP Cable Connecting Hardware: IDC type, using modules designed for punch-down caps or tools. Cables shall be terminated with connecting hardware of the same category or higher.

## 2.5 RS-232 CABLE

- A. Plenum-Rated Cable: NFPA 70, Type CMP.
  - 1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
  - 2. Plastic insulation.
  - 3. Individual aluminum foil-polyester tape shielded pairs with 100 percent shield coverage.
  - 4. Plastic jacket.
  - 5. Pairs are cabled on common axis with No. 24 AWG, stranded (7x32) tinned-copper drain wire.
  - 6. Flame Resistance: Comply with NFPA 262.

## 2.6 RS-485 CABLE

- A. Plenum-Rated Cable: NFPA 70, Type CMP.
  - 1. Paired, two pairs, No. 22 AWG, stranded (7x30) tinned-copper conductors.
  - 2. Fluorinated ethylene propylene insulation.
  - 3. Unshielded.
  - 4. Fluorinated ethylene propylene jacket.
  - 5. Flame Resistance: NFPA 262, Flame Test.

## 2.7 LOW-VOLTAGE CONTROL CABLE

- A. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
  - 1. One pair, twisted, No. 16 AWG, stranded (19x29) tinned-copper conductors.
  - 2. PVC insulation.
  - 3. Unshielded.
  - 4. PVC jacket.
  - 5. Flame Resistance: Comply with NFPA 262.
- B. Plenum-Rated, Paired Cable: NFPA 70, Type CMP.
  - 1. One pair, twisted, No. 18 AWG, stranded (19x30) tinned-copper conductors.
  - 2. Fluorinated ethylene propylene insulation.
  - 3. Unshielded.



4. Plastic jacket.
5. Flame Resistance: NFPA 262, Flame Test.

## 2.8 CONTROL-CIRCUIT CONDUCTORS

- A. Class 1 Control Circuits: Stranded copper, Type THHN-THWN in raceway, complying with UL 83.
- B. Class 2 Control Circuits: Stranded copper, Type THHN-THWN, in raceway complying with UL 83.
- C. Class 3 Remote-Control and Signal Circuits: Stranded copper, Type TW or Type TF, complying with UL 83.

## 2.9 IDENTIFICATION PRODUCTS

- A. Comply with UL 969 for a system of labeling materials, including label stocks, laminating adhesives, and inks used by label printers.
- B. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF PATHWAYS

- A. Comply with TIA/EIA-569-A for pull-box sizing and length of conduit and number of bends between pull points.
- B. Comply with requirements in Division 26 Section "Raceway and Boxes for Electrical Systems" for installation of conduits and wireways.
- C. Install manufactured conduit sweeps and long-radius elbows if possible.
- D. Pathway Installation in Equipment Rooms:
  1. Position conduit ends adjacent to a corner on backboard if a single piece of plywood is installed or in the corner of room if multiple sheets of plywood are installed around perimeter walls of room.
  2. Install cable trays to route cables if conduits cannot be located in these positions.
  3. Secure conduits to backboard if entering room from overhead.
  4. Extend conduits 3 inches (75 mm) above finished floor.
  5. Install metal conduits with grounding bushings and connect with grounding conductor to grounding system.
- E. Backboards: Install backboards with 96-inch (2440-mm) dimension vertical. Butt adjacent sheets tightly and form smooth gap-free corners and joints.

### 3.2 INSTALLATION OF CONDUCTORS AND CABLES

A. Comply with NECA 1.

B. General Requirements for Cabling:

1. Comply with TIA/EIA-568-B.1.
2. Comply with BICSI ITSIM, Ch. 6, "Cable Termination Practices."
3. Terminate all conductors; no cable shall contain unterminated elements. Make terminations only at indicated outlets, terminals, and cross-connect and patch panels.
4. Cables may not be spliced. Secure and support cables at intervals not exceeding 30 inches (760 mm) and not more than 6 inches (150 mm) from cabinets, boxes, fittings, outlets, racks, frames, and terminals.
5. Bundle, lace, and train conductors to terminal points without exceeding manufacturer's limitations on bending radii, but not less than radii specified in BICSI ITSIM, "Cabling Termination Practices" Chapter. Install lacing bars and distribution spools.
6. Do not install bruised, kinked, scored, deformed, or abraded cable. Do not splice cable between termination, tap, or junction points. Remove and discard cable if damaged during installation and replace it with new cable.
7. Cold-Weather Installation: Bring cable to room temperature before dereeling. Heat lamps shall not be used for heating.
8. Pulling Cable: Comply with BICSI ITSIM, Ch. 4, "Pulling Cable." Monitor cable pull tensions.

C. UTP Cable Installation:

1. Comply with TIA/EIA-568-B.2.
2. Install 110-style IDC termination hardware unless otherwise indicated.
3. Do not untwist UTP cables more than 1/2 inch (12 mm) from the point of termination to maintain cable geometry.

D. Installation of Control-Circuit Conductors:

1. Install wiring in raceways. Comply with requirements specified in Division 26 Section "Raceway and Boxes for Electrical Systems."

E. Open-Cable Installation:

1. Install cabling with horizontal and vertical cable guides in telecommunications spaces with terminating hardware and interconnection equipment.
2. Suspend copper cable not in a wireway or pathway a minimum of 8 inches (200 mm) above ceilings by cable supports not more than 60 inches (1525 mm) apart.
3. Cable shall not be run through structural members or in contact with pipes, ducts, or other potentially damaging items.

F. Separation from EMI Sources:

1. Comply with BICSI TDMM and TIA/EIA-569-A recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

2. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (305 mm).
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (600 mm).
3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (305 mm).
4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures shall be as follows:
  - a. Electrical Equipment Rating Less Than 2 kVA: No requirement.
  - b. Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (75 mm).
  - c. Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).
5. Separation between Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).
6. Separation between Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

### 3.3 REMOVAL OF CONDUCTORS AND CABLES

- A. Remove abandoned conductors and cables.

### 3.4 CONTROL-CIRCUIT CONDUCTORS

- A. Minimum Conductor Sizes:
  1. Class 1 remote-control and signal circuits, No 14 AWG.
  2. Class 2 low-energy, remote-control, and signal circuits, No. 16 AWG.
  3. Class 3 low-energy, remote-control, alarm, and signal circuits, No 12 AWG.

### 3.5 FIRESTOPPING

- A. Comply with requirements in Division 07 Section "Penetration Firestopping."

### 3.6 GROUNDING

- A. For data communications wiring, comply with ANSI-J-STD-607-A and with BICSI TDMM, "Grounding, Bonding, and Electrical Protection" Chapter.
- B. For low-voltage wiring and cabling, comply with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems."

### 3.7 IDENTIFICATION

- A. Identify system components, wiring, and cabling according to TIA/EIA-606-A. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections.
- C. Tests and Inspections:
  - 1. Visually inspect UTP cable jacket materials for UL or third-party certification markings. Inspect cabling terminations to confirm color-coding for pin assignments, and inspect cabling connections to confirm compliance with TIA/EIA-568-B.1.
  - 2. Visually inspect cable placement, cable termination, grounding and bonding, equipment and patch cords, and labeling of all components.
  - 3. Test UTP cabling for DC loop resistance, shorts, opens, intermittent faults, and polarity between conductors. Test operation of shorting bars in connection blocks. Test cables after termination but not after cross connection.
    - a. Test instruments shall meet or exceed applicable requirements in TIA/EIA-568-B.2. Perform tests with a tester that complies with performance requirements in "Test Instruments (Normative)" Annex, complying with measurement accuracy specified in "Measurement Accuracy (Informative)" Annex. Use only test cords and adapters that are qualified by test equipment manufacturer for channel or link test configuration.
- D. Document data for each measurement. Print data for submittals in a summary report that is formatted using Table 10.1 in BICSI TDMM as a guide, or transfer the data from the instrument to the computer, save as text files, print, and submit.
- E. End-to-end cabling will be considered defective if it does not pass tests and inspections.
- F. Prepare test and inspection reports.

END OF SECTION 260523

## SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes:
  - 1. Hangers and supports for electrical equipment and systems.

#### 1.2 QUALITY ASSURANCE

- A. Comply with NFPA 70.

### PART 2 - PRODUCTS

#### 2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Allied Tube & Conduit.
    - b. Cooper B-Line, Inc.; a division of Cooper Industries.
    - c. ERICO International Corporation.
    - d. GS Metals Corp.
    - e. Thomas & Betts Corporation.
    - f. Unistrut; Tyco International, Ltd.
    - g. Wesanco, Inc.
  - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
  - 3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
  - 4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
  - 5. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

- D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
  - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
  - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
  - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
  - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
  - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
  - 6. Toggle Bolts: All-steel springhead type.
  - 7. Hanger Rods: Threaded steel.

## 2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

## PART 3 - EXECUTION

### 3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

### 3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

- B. Raceway Support Methods: In addition to methods described in NECA 1, support by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - 4. To Existing Concrete: Expansion anchor fasteners.
  - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
  - 6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts and beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
  - 7. To Light Steel: Sheet metal screws.
  - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

### 3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

### 3.4 PAINTING

- 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: clean and touchup paint on field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

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

END OF SECTION 260529



## SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Metal conduits, tubing, and fittings.
2. Metal wireways and auxiliary gutters.
3. Boxes, enclosures, and cabinets.

#### 1.2 ACTION SUBMITTALS

- ##### A. Product Data:
- For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

#### 1.3 INFORMATIONAL SUBMITTALS

- ##### A. Coordination Drawings:
- Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
1. Structural members in paths of conduit groups with common supports.
  2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.
- ##### B. Seismic Qualification Certificates:
- For enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.

### PART 2 - PRODUCTS

#### 2.1 METAL CONDUITS, TUBING, AND FITTINGS

- ##### A. Listing and Labeling:
- Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- ##### B. IMC:
- Comply with ANSI C80.6 and UL 1242.
- ##### C. EMT:
- Comply with ANSI C80.3 and UL 797.
- ##### D. Fittings for Metal Conduit:
- Comply with NEMA FB 1 and UL 514B.
1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886 and NFPA 70.
  2. Fittings for EMT:

- a. Material: Steel.
  - b. Type: Setscrew or compression.
- 3. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
  - 4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
- E. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

## 2.2 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type as indicated on drawings unless otherwise indicated, and sized according to NFPA 70.
- 1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

## 2.3 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- E. Metal Floor Boxes:
- 1. Material: Cast metal or sheet metal.
  - 2. Shape: Rectangular.
  - 3. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- F. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb (23 kg). Outlet boxes designed for attachment of luminaires weighing more than 50 lb (23 kg) shall be listed and marked for the maximum allowable weight.
- G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

- H. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- I. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- J. Device Box Dimensions: 4 inches square by 2-1/8 inches deep (100 mm square by 60 mm deep).
- K. Gangable boxes are allowed.

## PART 3 - EXECUTION

### 3.1 RACEWAY APPLICATION

- A. Indoors: Apply raceway products as specified below unless otherwise indicated.
  - 1. Exposed, Not Subject to Physical Damage: EMT.
  - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
  - 3. Exposed and Subject to Severe Physical Damage: IMC.
  - 4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
  - 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Damp or Wet Locations: IMC.
  - 6. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- B. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
  - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
  - 2. EMT: Use setscrew or compression, fittings. Comply with NEMA FB 2.10.
  - 3. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- D. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.
- E. Install surface raceways only where indicated on Drawings.

### 3.2 INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

- B. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- D. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- E. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- F. A. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- G. Stub-ups to Above Recessed Ceilings:
  - 1. Use EMT, IMC, or RMC for raceways.
  - 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- H. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- I. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- K. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- L. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- M. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements.
- N. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between the box and cover plate or the supported equipment and box.
- O. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.
- P. Locate boxes so that cover or plate will not span different building finishes.

- Q. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- R. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- S. Set metal floor boxes level and flush with finished floor surface.
- T. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

### 3.3 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies.

### 3.4 FIRESTOPPING

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies.

### 3.5 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
  - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.

END OF SECTION 260533

**Supplementary General Conditions**  
**Dated Dated 5/9/19**

**SUPPLEMENTARY GENERAL CONDITIONS**  
**F-Wing Main Campus Building 100 Level Interior Renovations**  
**Bid Number: B190011**

8.6.2            **Add 8.6.2 CONSTRUCTION TIME:**

1. Notice to Proceed (NTP) June 10, 2019
2. Final Completion (FC) August 23, 2019
3. Project Duration - 75 Calendar Days

10.4            **Add 10.4.d SCHEDULE OF ALLOWANCES**

Allowance AL-1: Contingency Allowance: The Contractor shall include Twenty-Five Thousand Dollars (\$25,000.00) in its base bid to address unforeseen conditions and / or minor scope adjustments that may be encountered or arise during the project. Work shall not be billed against the Allowance without prior written approval from the Owner and the Contractor is obligated to substantiate in detail costs incurred for allowance work. Unused portions of this allowance shall be credited back to the owner against the Lump Sum Bid Amount at the completion of the project.