Simulation Lab Renovation

at Vail Building, Northern Vermont University, Lyndon VT

ECONOMIC DEVELOPMENT ADMINISTRATION Award Number:**01-79-15129**

Project Manual

Volume 1: Divisions 1 - 33

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Prepared for:

Vermont State Colleges

Northern Vermont University – Vermont Technical College

Prepared by:

gbA
ARCHITECTURE & PLANNING

85 granite shed lane
montpelier, vermont 05602
802.229.1664 • 802.229.4822 FAX

www.gbarchitecture.com

PROJECT DIRECTORY

OWNER
Vermont State Colleges
PO Box 7
Montpelier, VT 05601

SIMULATION PROGRAM DIRECTOR
Michelle Stearns
Po Box 500
Randolph Center, VT 05061
Phone: 802-598-0564
Email: mls01080@vtc.vsc.edu

FACILITIES
Anthony Baraw (Director of Facilities)
Michael Stevens
(Mgr of Transformation Projects & Planning
Physical Plant Department
Lyndon, VT 05851
Email: anthony.baraw@northernvermont.edu
Michael.stevens@northernvermont.edu

ARCHITECT
gbA Architecture & Planning
Stephen Kredell, AIA,
85 Granite Shed Lane
Montpelier, VT 05602
Phone: 802-229-1664
Email: skredell@gbarchitecture.com

MECHANICAL
Slade Engineering
David Slade, P.E.
1727 Loop Road
Northfield, VT 05663
Ph. 802-777-3198
Email: david@sladevt.com

ELECTRICAL
Pearson & assocatiates
Alan S Gould
Ryan Roberts
PO Box 119
Waterbury, VT 05676
Phone: 802.862-8789
Email: alan.g@pearson@associates.com

DOCUMENT 00 0100 PROJECT MANUAL TABLE OF CONTENTS

DOCUMENT 00 1116 - INVITATION TO BIDDERS

1.1 PROJECT INFORMATION

A. Notice to Bidders: Bidders are invited to submit bids for Project as described in this Document according to the Instructions to Bidders.

B. Project Identification: SIM LAB RENOVATOIN at NORTHERN VERMONT UNIVERSITY, LYNDON CAMPUS.

1. Project Location: VAIL BUILDING, Lyndon Campus, Lyndon, Vermont.

C. Owner: Northern Vermont University.

1. Owner's Representative: Tony Baraw, (802) 272-6341, Anthony.baraw @northernvermont.edu.

D. Architect: gbA Architecture and Planning.

1. Project Architect: Stephen Kredell, gbA, 85 Granite Shed Lane, Montpelier VT 05602, (802) 229-1664, skredell@gbarchitecture.com.

E. Project Description: The Sim Lab Renovation at Northern Vermont University (Vail Building Renovation) consists primarily of work at Level 2. The project consists of the partial renovation of the Vail Building Hall, including approximately 1,300 SF of renovated area. The work will involve interior renovations including but not limited to new wall layouts, new finishes, reworking of and new mechanical/electrical/plumbing. No exterior envelope work is included.

F. Construction Contract: Bids will be received for the following Work:

1. General Contract (all trades).

1.2 BID SUBMITTAL AND OPENING

A. Owner will receive sealed bids until the bid time and date at the location indicated below. Owner will consider bids that are prepared in compliance with the Instructions to Bidders, and delivered by email or in person.

1. Bid Date: Wednesday, June 8, 2022.
2. Bid Time: 4:00 p.m., local time.
3. Location: Electronically
4. Bids to be submitted electronically to Anthony.baraw@northernvermont.edu, Michael.Stevens@northernvermont.edu, Skredell@gbarchitecture.com

1.3 BID SECURITY

A. No bids may be withdrawn for a period of 60 days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

B. A Bid Bond is required.

1.4 PRE-BID CONFERENCE

A. All the bidders will have the opportunity to tour the project. A site visit may be arranged through Anthony Baraw. Conformance with the University COVID Policy is required.
   1. Due to COVID considerations, meetings will be limited; Arrange subcontractor visits with Anthony Baraw at least 3 days prior to visit.
      a. Pre-registration is a mandatory requirement.
      b. Social distancing, face coverings, and related precautions are required.
      c. Anthony Baraw, Director of Facilities will be contacting each invited bidder to review their Covid Prevention Exposure Prevention Plan (CPEPP)
         1) Contractors must be vaccinated to visit campus
         2) Masks are to be worn at all times while on campus

1.5 DOCUMENTS

A. Procurement and Contracting Documents: Documents are available at the website listed - https://www.vsc.edu/employee-resources/rfps/

B. Documents can be e-mailed through skredell@gbarchitecture.com

1.6 TIME OF COMPLETION

A. Bidders shall begin the Work upon receipt of the Notice to Proceed and shall complete the Work by November 1, 2022.

1.7 BIDDER'S QUALIFICATIONS

A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. Insurance in a form acceptable to Owner will be required of the successful Bidder.

END OF DOCUMENT 00 1116

DOCUMENT 004113 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: **Sim Lab Renovation**

C. Project Location: **Northern Vermont University, Lyndon Campus**

D. Owner: **Northern Vermont, Attn: Anthony Baraw**

E. Architect: **gbA Architecture and Planning.**

F. Architect Project Number: 2020-0003

G. EDA Award Number: **01-79-15129**

1.2 FEDERAL PARTICIPATION DISCLOSURE

A. This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the Federal laws and regulations associated with that program

1.3 METHOD OF AWARD

A. Lowest, responsive, responsible bidder shall be awarded the contract for the work.

1.4 AGREEMENT REQUIREMENTS

A. See *Sample Agreement* included in the Project Manual

1.5 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by gbA Architecture and Planning and the Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).

2. The above Base Bid **does not** include the following Deduct Alternate, as defined in the Contract Documents, including Section 012300 "Alternates".

a. ALTERNATE #1: $_____

b. ALTERNATE #2: $_____

1.6 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by the Owner, and shall fully complete the Work by November 1, 2022.

1.7 PROPOSED PROJECT TEAM

A. Bidder to designate the following personnel who will be assigned to the Project full time from start through Final Completion.

1. Project Manager:

_____

2. Superintendent:

_____

1.8 ACKNOWLEDGMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.

1.9 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2022.

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witnessed By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.:_____

(Affix Corporate Seal Here).

END OF DOCUMENT 00 4113

"General Decision Number: VT20220018 01/07/2022

Superseded General Decision Number: VT20210018

State: Vermont

Construction Type: Building

County: Caledonia County in Vermont.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022, Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $15.00 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022, Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least $11.25 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2022.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/07/2022

CARP0118-008 04/01/2013

	Rates	Fringes
CARPENTER (Including Acoustical Ceiling Installation and Industrial Only; Excluding Drywall Hanging)	$ 20.69	17.39

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* IRON0007-002 09/16/2021

	Rates	Fringes
IRONWORKER, REINFORCING	$ 27.98	23.84

SHEE0063-005 01/01/2016

	Rates	Fringes
SHEET METAL WORKER (HVAC Duct Installation Only)	$ 31.57	28.12

SUVT2011-003 02/10/2011

	Rates	Fringes
CARPENTER (Drywall Hanging Only)	$ 23.00	5.94
CARPENTER, Excludes Acoustical Ceiling Installation, and Drywall Hanging	$ 17.98	13.71
ELECTRICIAN	$ 20.24	7.27
LABORER: Common or General	$ 13.65	2.46
OPERATOR: Crane	$ 19.50	6.08
PAINTER: Brush Only	$ 16.11	4.14
PAINTER: Roller	$ 16.11	4.14
PLUMBER (HVAC Pipe Installation)	$ 25.35	5.79
PLUMBER, Excludes HVAC Pipe Installation	$ 24.04	8.25
ROOFER	$ 17.25	1.71
SPRINKLER FITTER (Fire Sprinklers)	$ 22.50	6.08

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic

violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union, which prevailed in the survey for this classification, which in this example would be Plumbers 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate

that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Division National Office Branch of Wage Surveys. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

OMB Number: 0610-0096
Expiration Date: 11/30/2021

U. S. DEPARTMENT OF COMMERCE
ECONOMIC DEVELOPMENT ADMINISTRATION

EDA CONTRACTING PROVISIONS
FOR CONSTRUCTION PROJECTS

These EDA Contracting Provisions for Construction Projects (EDA Contracting Provisions) are intended for use by recipients receiving federal assistance from the U. S. Department of Commerce - Economic Development Administration (EDA). They contain provisions specific to EDA and other federal provisions not normally found in non-federal contract documents. The requirements contained herein must be incorporated into all construction contracts and subcontracts funded wholly or in part with federal assistance from EDA.

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1. DEFINITIONS

Agreement – The written instrument that is evidence of the agreement between the Owner and the Contractor overseeing the Work.

Architect/Engineer - The person or other entity engaged by the Recipient to perform architectural, engineering, design, and other services related to the work as provided for in the contract.

Contract – The entire and integrated written agreement between the Owner and the Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

Contract Documents – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents.

Contractor – The individual or entity with whom the Owner has entered into the Agreement.

Drawings or Plans – That part of the Contract Documents prepared or approved by the Architect/Engineer that graphically shows the scope, extent, and character of the Work to be performed by the Contractor.

EDA - The United States of America acting through the Economic Development Administration of the U.S. Department of Commerce or any other person designated to act on its behalf. EDA has agreed to provide financial assistance to the Owner, which includes assistance in financing the Work to be performed under this Contract. Notwithstanding EDA's role, nothing in this Contract shall be construed to create any contractual relationship between the Contractor and EDA.

Owner – The individual or entity with whom the Contractor has entered into the Agreement and for whom the Work is to be performed.

Project – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

Recipient – A non-Federal entity receiving a Federal financial assistance award directly from EDA to carry out an activity under an EDA program, including any EDA-approved successor to the entity.

Specifications – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

Subcontractor – An individual or entity having direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

Work – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

2. APPLICABILITY

The Project to which the construction work covered by this Contract pertains is being assisted by the United States of America through federal assistance provided by the U.S. Department of Commerce - Economic Development Administration (EDA). Neither EDA, nor any of its departments, entities, or employees is a party to this Contract. The following EDA Contracting Provisions are included in this Contract and all subcontracts or related instruments pursuant to the provisions applicable to such federal assistance from EDA.

3. FEDERALLY REQUIRED CONTRACT PROVISIONS

(a) All contracts in excess of the simplified acquisition threshold - currently fixed at $150,000 (*see* 41 U.S.C. §§ 134 and 1908) must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

(b) All contracts in excess of $10,000 must address termination for cause and for convenience by the Recipient including the manner by which it will be effected and the basis for settlement.

(c) All construction contracts awarded in excess of $10,000 by recipients of federal assistance and their contractors or subcontractors shall contain a provision requiring compliance with Executive Order 11246 of September 24, 1965, *Equal Employment Opportunity*, as amended by Executive Order 11375 of October 13, 1967, and Department of Labor implementing regulations at 41 C.F.R. part 60.

(d) All prime construction contracts in excess of $2,000 awarded by Recipients must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) as supplemented by Department of Labor regulations at 29 C.F.R. part 5. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations at 29 C.F.R. part 3.

(e) All contracts awarded by the Recipient in excess of $100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704 (the Contract Work Hours and Safety Standards Act) as supplemented by Department of Labor regulations at 29 C.F.R. part 5.

(f) All contracts must include EDA requirements and regulations that involve a requirement on the contractor or sub-contractor to report information to EDA, the Recipient or any other federal agency.

(g) All contracts must include EDA requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract.

(h) All contracts must include EDA requirements and regulations pertaining to copyrights and rights in data.

(i) All contracts and subgrants in excess of $150,000 must contain a provision that requires compliance with all applicable standards, orders, or requirements issued under the Clean Air Act (42 U.S.C. § 7401 *et seq.*) and the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1251 *et seq.*), and Executive Order 11738, *Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act With Respect to Federal Contracts, Grants, or Loans*.

(j) Contracts must contain mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C.§ 6201).

(k) Contracts must contain a provision ensuring that contracts are not to be made to parties on the government wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. part 180.

(l) Contracts must contain a provision ensure compliance with the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352) under which contractors that apply or bid for an award of $100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

(m) If the Recipient is a state agency or agency of a political subdivision of a state, any contract awarded must contain a provision ensuring compliance with section 6002 of the Solid Waste Disposal Act (42 U.S.C. § 6962), as amended by the Resource Conservation and Recovery Act related to the procurement of recovered materials.

4. REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion of correction.

5. INSPECTION BY EDA REPRESENTATIVES

The authorized representatives and agents of EDA shall be permitted to inspect all work, materials, payrolls, personnel records, invoices of materials, and other relevant data and records.

6. EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS

(a) The Owner, EDA, or the Comptroller General of the United States, or any of their duly authorized representatives shall, generally until three years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders that do not exceed $10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the Owner, EDA, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

7. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due to the Contractor in accordance with the progress schedule. The Contractor also shall furnish the Owner (a) a detailed estimate giving a complete breakdown of the contract price and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only to determine the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

8. CONTRACTOR'S TITLE TO MATERIAL

No materials, supplies, or equipment for the work shall be purchased by the Contractor or by any subcontractor that is subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants and guarantees that he/she has good title to all work, materials, and equipment used by him/her in the Work, free and clear of all liens, claims, or encumbrances.

9. INSPECTION AND TESTING OF MATERIALS

All materials and equipment used in the completion of the Work shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. Materials of construction, particularly those upon which the strength and durability of any structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for intended uses.

10. "OR EQUAL" CLAUSE

Whenever a material, article, or piece of equipment is identified in the Contract Documents by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers and vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Architect/Engineer, of equal substance and function. However, such substitution material, article, or equipment shall not be purchased or installed by the Contractor without the Architect/Engineer's written approval.

11. PATENT FEES AND ROYALTIES

(a) Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Architect/Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner in the Contract Documents.

(b) To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner and the Architect/Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

12. CLAIMS FOR EXTRA COSTS

No claims for extra work or cost shall be allowed unless the same was done in pursuance of a written order from the Architect/Engineer approved by the Owner.

13. CONTRACTORS AND SUBCONTRACTORS INSURANCE

(a) The Contractor shall not commence work under this Contract until the Contractor has obtained all insurance reasonably required by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until the insurance required of the subcontractor has been so obtained and approved.

(b) Types of insurance normally required are:

(1) Workmen's Compensation
(2) Contractor's Public Liability and Property Damage
(3) Contractor's Vehicle Liability
(4) Subcontractors' Public Liability, Property Damage and Vehicle Liability
(5) Builder's Risk (Fire and Extended Coverage)

(c) **Scope of Insurance and Special Hazards:** The insurance obtained, which is described above, shall provide adequate protection for the Contractor and his/her subcontractors, respectively, against damage claims that may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him/her and also against any of the special hazards that may be encountered in the performance of this Contract.

(d) **Proof of Carriage of Insurance:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of applicable insurance policies.

14. CONTRACT SECURITY BONDS

(a) If the amount of this Contract exceeds $150,000, the Contractor shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and also a payment bond in an amount equal to one hundred percent (100%) of the Contract price or in a penal sum not less than that prescribed by State, Territorial, or local law, as security for the payment of all persons performing labor on the Work under this Contract and furnishing materials in connection with this Contract. The performance bond and the payment bond may be in one or in separate instruments in accordance with local law. Before final acceptance, each bond must be approved by EDA. If the amount of this Contract does not exceed $150,000, the Owner shall specify the amount of the payment and performance bonds.

(b) All bonds shall be in the form prescribed by the Contract Documents except as otherwise provided in applicable laws or regulations, and shall be executed by such sureties as are named in the current list of *Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies* as published in Treasury Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's

authority to act. Surety companies executing the bonds must also be authorized to transact business in the state where the Work is located.

15. **LABOR STANDARDS - DAVIS-BACON AND RELATED ACTS**
(as required by section 602 of PWEDA)

(a) **Minimum Wages**

(1) All laborers and mechanics employed or working upon the site of the Work in the construction or development of the Project will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act at 29 C.F.R. part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor, which is attached hereto and made a part hereof, regardless of any contractual relationship that may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 C.F.R. § 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 C.F.R. § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates determined under 29 C.F.R. § 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(2) (i) Any class of laborers or mechanics to be employed under the Contract, but not listed in the wage determination, shall be classified in conformance with the wage determination. EDA shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(A) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(B) The classification is utilized in the area by the construction industry; and

(C) The proposed wage rate, including any bona fide fringe benefits, bears a

reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and EDA or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by EDA or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and EDA or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), EDA or its designee shall refer the questions, including the views of all interested parties and the recommendation of EDA or its designee, to the Administrator for determination.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(2)(ii) or (iii) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) **Withholding**

EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper employed or working on the site of the Work in the construction or development of the Project, all or part of the wages required by the Contract, EDA or its designee may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations

have ceased. EDA or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(c) **Payrolls and basic records**

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the Work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the Work in the construction or development of the Project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R. § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, the plan or program is financially responsible, and the plan or program has been communicated in writing to the laborers or mechanics affected, and provide records that show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) For each week in which Contract work is performed, the Contractor shall submit a copy of all payrolls to the Owner for transmission to EDA or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 C.F.R. part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose. It may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402; or downloaded from the U.S. Department of Labor's website at https://www.dol.gov/whd/forms/wh347.pdf. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under 29 C.F.R. § 5.5(a)(3)(i) and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 C.F.R. part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 15(c)(2)(ii) of this section.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of Title 18 and section 3729 of Title 31 of the U.S. Code.

(3) The Contractor or subcontractor shall make the records required under paragraph 15(c)(1) of this section available for inspection, copying, or transcription by authorized representatives of EDA or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, EDA or its designee may, after written notice to the Contractor or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. § 5.12.

(d) **Apprentices and Trainees**.

(1) **Apprentices**. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training (Bureau), or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any

apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a Project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) **Trainees**. Except as provided in 29 C.F.R. § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program that has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) **Equal employment opportunity**. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity

requirements of Executive Order 11246, *Equal Employment Opportunity*, as amended, and 29 C.F.R. part 30.

(e) **Compliance with Copeland Anti-Kickback Act Requirements**. The Contractor shall comply with the Copeland Anti-Kickback Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations (29 C.F.R. part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States"). The Act provides that the Contractor and any subcontractors shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The Owner shall report all suspected or reported violations to EDA.

(f) **Subcontracts**. The Contractor and any subcontractors will insert in any subcontracts the clauses contained in 29 C.F.R. §§ 5.5(a)(1) through (10) and such other clauses as EDA or its designee may require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. § 5.5.

(g) **Contract termination; debarment**. The breach of the contract clauses in 29 C.F.R. § 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a subcontractor as provided in 29 C.F.R. § 5.12.

(h) **Compliance with Davis-Bacon and Related Act Requirements**. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference in this contract.

(i) **Disputes concerning labor standards**. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EDA or its designee, the U.S. Department of Labor, or the employees or their representatives.

(j) **Certification of Eligibility**.

(1)By entering into this Contract, the Contractor certifies that neither it nor any person or firm that has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(2) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

16. LABOR STANDARDS - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(a) **Overtime requirements**. No Contractor or subcontractor contracting for any part of the Contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which that person is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(b) **Violation; liability for unpaid wages, liquidated damages**. In the event of any violation of the clause set forth in paragraph (a) of this section, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a) of this section.

(c) **Withholding for unpaid wages and liquidated damages**. EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) of this section.

(d) **Subcontracts**. The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (a) through (c) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a) through (c) of this section.

17. EQUAL EMPLOYMENT OPPORTUNITY

(a) The Recipient hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. chapter 60, which is paid for in whole or in part with funds obtained from EDA, the following equal opportunity clause:

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

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action 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 setting forth the provisions of this nondiscrimination clause.

(2) The Contractor 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 race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by EDA and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of

this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph 17(a)(1) and the provisions of paragraphs 17(a)(1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as EDA or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by EDA or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(9) The Recipient further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally-assisted construction work. Provided, however, that if the Recipient so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government that does not participate in work on or under the Contract.

(10)The Recipient agrees that it will assist and cooperate actively with EDA and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish EDA and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist EDA in the discharge of the EDA's primary responsibility for securing compliance.

(11) The Recipient further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by EDA or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Recipient agrees that if it fails or refuses to comply with these undertakings, EDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this EDA financial assistance; refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case

to the Department of Justice for appropriate legal proceedings.

(b) Exemptions to Above Equal Opportunity Clause (41 C.F.R. chapter 60):

(1) Contracts and subcontracts not exceeding $10,000 (other than Government bills of lading, and other than contracts and subcontracts with depositories of Federal funds in any amount and with financial institutions which are issuing and paying agents for U.S. savings bonds and savings notes) are exempt. The amount of the Contract, rather than the amount of the federal financial assistance, shall govern in determining the applicability of this exemption.

(2) Except in the case of subcontractors for the performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

(3) Contracts and subcontracts not exceeding $10,000 for standard commercial supplies or raw materials are exempt.

18. **CONTRACTING WITH SMALL, MINORITY AND WOMEN'S BUSINESSES**

(a) If the Contractor intends to let any subcontracts for a portion of the work, the Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services.

(b) Affirmative steps shall consist of:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(4) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises;

(5) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies;

(6) Requiring each party to a subcontract to take the affirmative steps of this section; and

(7) The Contractor is encouraged to procure goods and services from labor surplus area firms.

19. **HEALTH, SAFETY, AND ACCIDENT PREVENTION**

(a) In performing this contract, the Contractor shall:

(1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to their health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;

(2) Protect the lives, health, and safety of other persons;

(3) Prevent damage to property, materials, supplies, and equipment; and

(4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

(1) Comply with regulations and standards issued by the Secretary of Labor at 29 C.F.R. part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701 – 3708); and

(2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 C.F.R. part 1904.

(d) The Owner shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the Work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Owner may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as EDA, or the Secretary of Labor shall direct as a means of enforcing such provisions.

20. CONFLICT OF INTEREST AND OTHER PROHIBITED INTERESTS

(a) No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof.

(b) No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

(c) The Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the Contract Documents has a corporate or financial affiliation with the supplier or manufacturer.

(d) The Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, may be involved. Such a conflict may arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in the Contractor. The Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors, or anything of monetary value from the Contractor or subcontractors.

(e) If the Owner finds after a notice and hearing that the Contractor, or any of the Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of the Owner or EDA in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, the Owner may, by written notice to the Contractor, terminate this Contract. The Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which the Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

(f) In the event this Contract is terminated as provided in paragraph (e) of this section, the Owner may pursue the same remedies against the Contractor as it could pursue in the event of a breach of this Contract by the Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, the Owner may pursue exemplary damages in an amount (as determined by the Owner) which shall not be less than three nor more than ten times the costs the Contractor incurs in providing any such gratuities to any such officer or employee.

21. RESTRICTIONS ON LOBBYING

(a) This Contract, or subcontract is subject to 31 U.S.C. § 1352, regarding lobbying restrictions. The section is explained in the common rule, 15 C.F.R. part 28 (55 FR 6736-6748, February 26, 1990). Each bidder under this Contract or subcontract is generally prohibited from using federal funds for lobbying the Executive or Legislative Branches of the Federal Government in connection with this EDA Award.

(b) **Contract Clause Threshold**: This Contract Clause regarding lobbying must be included in each bid for a contract or subcontract exceeding $100,000 of federal funds at any tier under the EDA Award.

(c) **Certification and Disclosure**: Each bidder of a contract or subcontract exceeding $100,000 of federal funds at any tier under the federal Award must file Form CD-512, *Certification Regarding Lobbying – Lower Tier Covered Transactions*, and, if applicable, Standard Form-LLL, *Disclosure of Lobbying Activities*, regarding the use of any nonfederal funds for lobbying. Certifications shall be retained by the Contractor or subcontractor at the next higher tier. All disclosure forms, however, shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(d) **Continuing Disclosure Requirement**: Each Contractor or subcontractor that is subject to the Certification and Disclosure provision of this Contract Clause is required to file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person. Disclosure forms shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(e) **Indian Tribes, Tribal Organizations, or Other Indian Organizations**: Indian tribes, tribal organizations, or any other Indian organizations, including Alaskan Native organizations, are excluded from the above lobbying restrictions and reporting requirements, but only with respect to expenditures that are by such tribes or organizations for lobbying activities permitted by other federal law. An Indian tribe or organization that is seeking an exclusion from Certification and Disclosure requirements must provide EDA with the citation of the provision or provisions of federal law upon which it relies to conduct lobbying activities that would otherwise be subject to the prohibitions in and to the Certification and Disclosure requirements of 31 U.S.C. § 1352, preferably through an attorney's opinion. Note, also, that a non-Indian subrecipient, contractor, or subcontractor under an award to an Indian tribe, for example, is subject to the restrictions and reporting requirements.

22. HISTORICAL AND ARCHAEOLOGICAL DATA PRESERVATION

The Contractor agrees to facilitate the preservation and enhancement of structures and objects of historical, architectural or archaeological significance and when such items are found and/or unearthed during the course of project construction. Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the State Historic

Preservation Officer (SHPO) for recovery of the items. *See* the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 *et seq.*, formerly at 16 U.S.C. § 470 *et seq.*) and Executive Order No. 11593 of May 31, 1971.

23. **CLEAN AIR AND WATER**

Applicable to Contracts in Excess of $150,000

(a) **Definition**. "Facility" means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by the Contractor or any subcontractor, used in the performance of the Contract or any subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the United States Environmental Protection Agency (EPA) determines that independent facilities are collocated in one geographical area.

(b) In compliance with regulations issued by the EPA, 2 C.F.R. part 1532, pursuant to the Clean Air Act, as amended (42 U.S.C. § 7401 *et seq.*); the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 *et seq.*); and Executive Order 11738, the Contractor agrees to:

(1) Not utilize any facility in the performance of this contract or any subcontract which is listed on the Excluded Parties List System, part of the System for Award Management (SAM), pursuant to 2 C.F.R. part 1532 for the duration of time that the facility remains on the list;

(2) Promptly notify the Owner if a facility the Contractor intends to use in the performance of this contract is on the Excluded Parties List System or the Contractor knows that it has been recommended to be placed on the List;

(3) Comply with all requirements of the Clean Air Act and the Federal Water Pollution Control Act, including the requirements of section 114 of the Clean Air Act and section 308 of the Federal Water Pollution Control Act, and all applicable clean air and clean water standards; and

(4) Include or cause to be included the provisions of this clause in every subcontract and take such action as EDA may direct as a means of enforcing such provisions.

24. **USE OF LEAD-BASED PAINTS ON RESIDENTIAL STRUCTURES**

(a) If the work under this Contract involves construction or rehabilitation of residential structures over $5,000, the Contractor shall comply with the Lead-based Paint Poisoning Prevention Act (42 U.S.C. § 4831). The Contractor shall assure that paint or other surface coatings used in a residential property does not contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight or 5,000 parts per million (ppm) by weight. For purposes of this section, "residential property" means a dwelling unit, common areas, building exterior surfaces, and any surrounding land, including outbuildings, fences and play equipment affixed to the land, belonging to an owner and available for use by residents, but not

including land used for agricultural, commercial, industrial or other non-residential purposes, and not including paint on the pavement of parking lots, garages, or roadways.

(b) As a condition to receiving assistance under PWEDA, recipients shall assure that the restriction against the use of lead-based paint is included in all contracts and subcontracts involving the use of federal funds.

25. ENERGY EFFICIENCY

The Contractor shall comply with all standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201) for the State in which the Work under the Contract is performed.

26. ENVIRONMENTAL REQUIREMENTS

When constructing a Project involving trenching and/or other related earth excavations, the Contractor shall comply with the following environmental constraints:

(1) **Wetlands**. When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert wetlands.

(2) **Floodplains**. When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency (FEMA) Floodplain Maps, or other appropriate maps, i.e., alluvial soils on Natural Resource Conservation Service (NRCS) Soil Survey Maps.

(3) **Endangered Species**. The Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the Contractor, the Contractor will immediately report this evidence to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the U.S. Fish and Wildlife Service.

27. DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSIONS

As required by Executive Orders 12549 and 12689, *Debarment and Suspension*, 2 C.F.R. Part 180 and implemented by the Department of Commerce at 2 C.F.R. part 1326, for prospective participants in lower tier covered transactions (except subcontracts for goods or services under the $25,000 small purchase threshold unless the subrecipient will have a critical influence on or substantive control over the award), the Contractor agrees that:

(1) By entering into this Contract, the Contractor and subcontractors certify, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared

ineligible, or voluntarily excluded from participation in this Contract by any federal department or agency.

(2) Where the Contractor or subcontractors are unable to certify to any of the statements in this certification, the Contractor or subcontractors shall attach an explanation to this bid.

See also 2 C.F.R. part 180 and 2 C.F.R. § 200.342.

28. **EDA PROJECT SIGN**

The Contractor shall supply, erect, and maintain in good condition a Project sign according to the specifications provided by EDA. To the extent practical, the sign should be a free standing sign. Project signs shall not be located on public highway rights-of-way. Location and height of signs will be coordinated with the local agency responsible for highway or street safety in the Project area, if any possibility exists for obstructing vehicular traffic line of sight. Whenever the EDA site sign specifications conflict with State law or local ordinances, the EDA Regional Director will permit such conflicting specifications to be modified so as to comply with State law or local ordinance.

29. **BUY AMERICA**

To the greatest extent practicable, contractors are encouraged to purchase American-made equipment and products with funding provided under EDA financial assistance awards.

OMB Number: 0610-0096
Expiration Date: 11/30/2021

EDA PROJECT SIGN

The Contractor shall supply, erect, and maintain in good condition a project sign according to the specifications set forth below:

EDA SITE SIGN SPECIFICATIONS

Size: 4' x 8' x ¾"

Materials: Exterior grade/MDO plywood (APA rating A-B)

Supports: 4" x 4" x 12' posts with 2" x 4" cross branching

Erection: Posts shall be set a minimum of three feet deep in concrete footings that are at least 12" in diameter.

Paint: Outdoor enamel

Colors: Jet Black, Blue (PMS300), and Gold (PMS7406). Specifically, on white background the following will be placed:

The U. S. Department of Commerce seal in blue, black, and gold;

"EDA" in blue;

"U. S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION" in black;

"In partnership with" in blue;

(Actual name of the) "EDA Grant Recipient" in black;

"Donald J. Trump, President of the United States" in black.

Lettering: Specific fonts are named below; positioning will be as shown on the attached illustration.

"U. S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION" use Bank Gothic Medium - BANK GOTHIC MED

"In partnership with" use Univers™ 55 Oblique - *Univers 55*

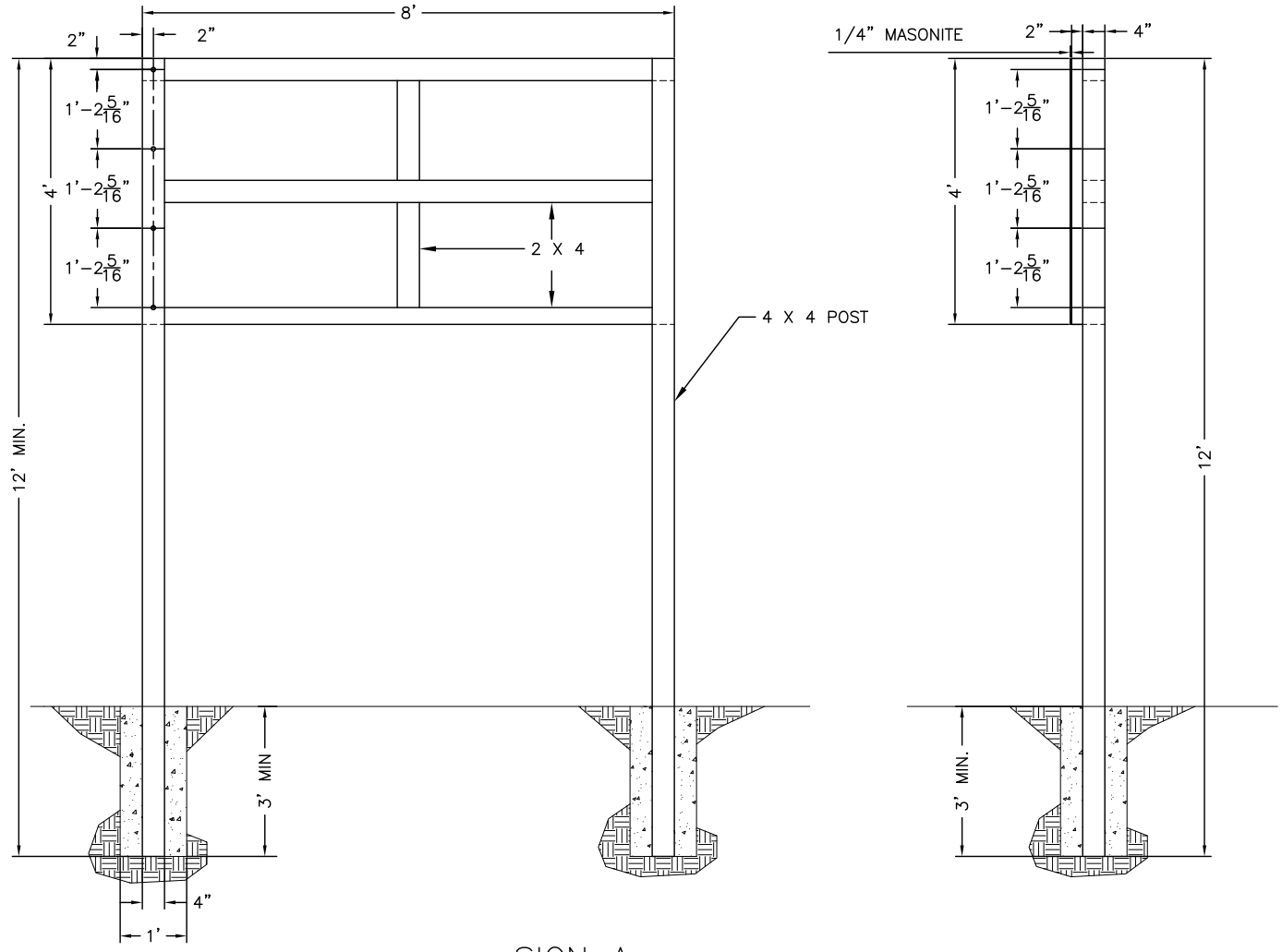
(Name of) "EDA Grant Recipient" use Univers™ Extra Black 85 **Univers 85**

"Donald J. Trump, President of the United States" use Univers™ 55 Oblique - *Univers 55*

Project signs will not be erected on public highway rights-of-way. If any possibility exists for obstruction to traffic line of sight, the location and height of the sign will be coordinated with the agency responsible for highway or street safety in the area.

The EDA Regional Director may permit modifications to these specifications if they conflict with state law or local ordinances.

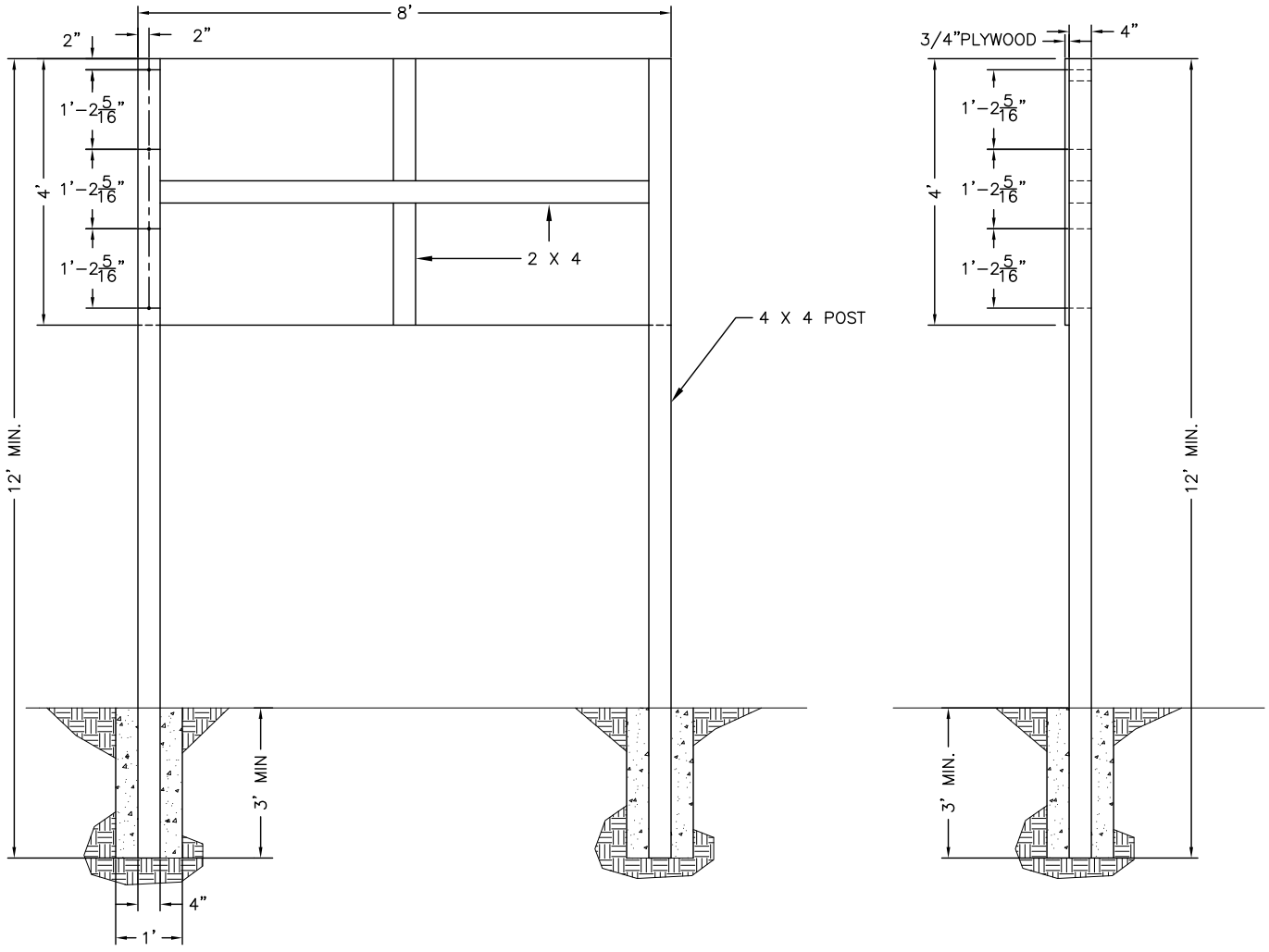
OMB Number: 0610-0096
Expiration Date: 11/30/2021



SIGN A
MASONITE SIGN

SCALE: 3/8" = 1'

PROJECT - SIGN A
ECONOMIC DEVELOPMENT ADMINISTRATION



SIGN B
PLYWOOD SIGN
SCALE: 3/8" = 1'

PROJECT - SIGN B

ECONOMIC DEVELOPMENT ADMINISTRATION

EDA

U.S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION

In partnership with

<EDA Grant Recipient Name>

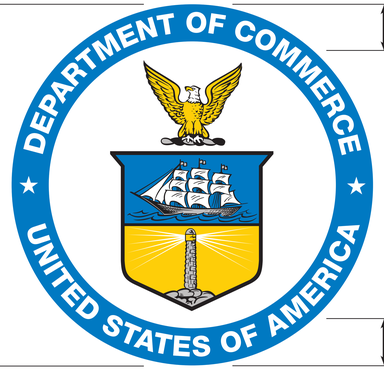
Donald J. Trump, President of the United States

2.25”

13.5”

1.75”

1.75”



EDA

10”

Black
Blue= PMS300
Gold= PMS7406

2.0”

1.5”

4.0”

3.0”

3.0”

3.75”

3.0”

4.25”

3.75”

4.0”

U.S. DEPARTMENT OF COMMERCE ECONOMIC DEVELOPMENT ADMINISTRATION

48”

In partnership with

<EDA Grant Recipient Name>

Donald J. Trump, President of the United States

NOTE: To find the Goals for minority participation (%), click "What to use?" and search for the project's County.

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NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246 AND 41 CFR PART 60-4)

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of $10,000.

The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation for each trade
What % to use?	0.8 %	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non federally involved construction.
The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.
As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is:

State of VERMONT

County of CALEDONIA

City of LYNDON

Back

FORM **CD-512**
(REV 12-04)

U.S. DEPARTMENT OF COMMERCE

CERTIFICATION REGARDING LOBBYING
LOWER TIER COVERED TRANSACTIONS

Applicants should review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, "New Restrictions on Lobbying."

LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over $100,000 or a loan or loan guarantee over $150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

In any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, ''Disclosure Form to Report Lobbying,'' in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure occurring on or before October 23, 1996, and of not less than $11,000 and not more than $110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

NAME OF APPLICANT	AWARD NUMBER AND/OR PROJECT NAME
PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE	
SIGNATURE	DATE

SAMPLE AGREEMENT
VSC-18-004

----------PROJECT

AGREEMENT

AGREEMENT made this ----------of ----------,-------, by and between Vermont State Colleges, a public corporation formed under 16 V.S.A. § 2171, with its principal place of business in Montpelier, Vermont, one of the constituent educational institutions of which is ---------- with a campus located in----------, Vermont (hereinafter referred to as "VSC") and ---------- with its principal place of business at ---------- (hereinafter referred to as "Contractor").

1. **Purpose:** The Contractor is being engaged to ---------- campus in----------, Vermont, as specified in the Project Manual dated ----------,--,------- and specifically shown on ---------- Drawings ----------, a copy of which is attached hereto (the "Work"). The Work is also more thoroughly described in Addendum I, the "Contractor's Scope of Work, Schedule & Budget", attached and incorporated by reference into this Agreement.

2. **Representations and Warranties**: Contractor represents and warrants that it has the requisite employees or contract labor, materials, and all necessary skills, knowledge, experience and abilities to undertake and complete the Work on time and within the budget set out in Addendum I.

3. **Contractor Is Independent Contractor**: The Contractor is and will, for the purposes hereof, remain at all times an independent contractor. Neither Contractor nor any of its officers, employees or agents is or shall be considered to be officers or employees of VSC. VSC will not provide any individual retirement benefits, group life insurance, group health and dental insurance, vacation or sick leave, workers compensation or other benefits or services available to VSC employees to Contractor or any of its officers, employee or agents.

   Contractor shall be responsible for filing all necessary tax returns required by the federal Internal Revenue Code and the Vermont Statutes Annotated, including but not limited to income, withholding, sales and use, and rooms and meals.

4. **Contractor's Certification of Tax Currency:** Pursuant to 32 V.S.A. § 3113, the Contractor certifies, under the pains and penalties of perjury, that it is in good standing with respect to, or in full compliance with a plan to pay, any and all taxes due the State of Vermont as of the date the Contractor signs the Agreement.

5. **Fair Employment Practices and Americans with Disabilities Act**: Contractor agrees to comply with the requirement of Title 21 V.S.A. Chapter 5, Subchapter

6, relating to fair employment practices, to the full extent applicable. The Contractor shall also ensure, to the full extent required by the Americans with Disabilities Act of 1990 that qualified individuals with disabilities receive equitable access to the services, programs, and activities provided by the Contractor under this Agreement. The Contractor further agrees to include this provision in all subcontracts it may enter into with respect to this Agreement.

6. Payment: In consideration of the services to be performed by Contractor, VSC agrees to pay Contractor, in accordance with the following provisions, a sum not to exceed $000000.00

The schedule of payments by VSC, and the milestones for the delivery by Contractor of its services are defined in Addendum I.

Invoices are to be submitted no later than the 10th day of the month. Payments will be made on approved invoices within thirty (30) days of the receipt of the invoice. The parties shall work cooperatively to resolve any differences or disagreements.

All invoices submitted by the Contractor to VSC will make reference to the **Agreement Number** appearing in the upper right corner of Page 1 of this Agreement. Invoices may be emailed.

Submit invoices to: Vermont State Colleges
c/o Office of the Chancellor
P.O. Box 7
Montpelier, VT 05601

7. Indemnification: Contractor shall defend and indemnify VSC and its officers and employees against all claims, demands or suits arising in whole or in part from any act or omission of the Contractor, its officers, employees or agents. VSC shall promptly notify Contractor in the event of any such claim, demand or suit, and Contractor shall retain counsel and provide a complete defense and indemnity against the entire claim, demand or suit.

VSC shall be kept fully apprised in a timely manner of all pleadings, filings, actions, claims or other developments in such proceeding. VSC has a right to retain separate counsel, to seek to intervene or participate in any claims, demand or suit to defend its interests independently, and doing so shall not and shall not be construed to be a waiver or relinquishment by VSC of the Contractor's obligations of defense and indemnity. Contractor shall have no authority for and on behalf of VSC to enter into or effect any concession, settlement, compromise, or other resolution (partial or total) of any such claim, demand or suit.

The Contractor's indemnification obligation specifically includes but is not limited to reasonable attorneys' fees incurred by VSC, it officers or employees, to defend against or respond to claims, demands or suits in connection with the Contractor's performance of the Work.

8. Insurance: Prior to initiating its performance, Contractor will provide VSC with certificates of insurance evidencing that it has the following minimum coverage and limits in effect. It is the responsibility of the Contractor to maintain current certificates of insurance on file with VSC through the term of the Agreement. No warranty is made that the coverage and limits listed herein are adequate to cover and protect the interests of the Contractor for the Contractor's operations. These are solely minimums that have been established to protect the interests of VSC.

   Workers Compensation: With respect to all operations performed, the Contractor shall carry workers' compensation insurance in accordance with the laws of the State of Vermont.

   General Liability and Property Damage: With respect to all operations performed under the contract, the Contractor shall carry general liability insurance having all major divisions of coverage including, but not limited to:

   Premises – Operations
   Products & Completed Operations
   Personal Injury Liability
   Contractual Liability

   This policy shall be on an occurrence form and limits shall not be less than:

   $1,000,000 per Occurrence
   $1,000,000 General Aggregate
   $1,000,000 Products/Completed Operations Aggregate
   $50,000 Fire/Legal/Liability

   Automotive Liability: The Contractor shall carry automotive liability insurance covering all motor vehicles, including hired and non-owned coverage, used in connection with the Agreement. Limits of coverage shall not be less than: $1,000,000 combined single limit.

9. Contacts: All notices, requests, demands and other communications hereunder shall be deemed to have been duly given if delivered, mailed by certified mail or sent by facsimile to the following addresses:

SAMPLE AGREEMENT
VSC-18-004

To VSC:	To Contractor:
Vermont State Colleges	----------
C/o Office of the Chancellor	----------
P.O. Box 7	----------
Montpelier, VT 05601	Phone:
Phone: 802-224-3023	
Email: ----------	

10. Agreement Term: The Contractor's performance of its services shall begin on ----,--,---- and end on -------,--,----, unless sooner terminated pursuant to the terms hereof.

11. Entire Agreement; Modification or Amendment: This Agreement represents the entire agreement between the parties on the subject matter. All prior agreements, representations, statements, negotiations, and understandings shall have no effect. No changes, modifications, or amendments in the terms and conditions of this Agreement shall be effective unless reduced to writing, numbered, and signed by duly authorized representatives of both VSC and the Contractor.

12. No Assignment or Subcontracting without VSC Consent: Contractor shall not assign or subcontract the performance of this Agreement or any portion thereof without the prior written approval of VSC.

13. Applicable Law: This Agreement will be governed by the laws of the State of Vermont.

WE THE UNDERSIGNED PARTIES AGREE TO AND INTEND TO BE BOUND BY THIS AGREEMENT.

By VSC:	By Contractor:
Signature: _____	Signature: _____
Name:	Name:
Title:	Title:
Date:	Date:

ADDENDUM I
Contractor's Scope of Work, Schedule & Budget

Scope of Work: Insert Scope of Work

Schedule:

Project Start Date:
Substantial Completion:
Final Completion:

Budget:

$-------

SECTION 010000 - GENERAL REQUIREMENTS

1.1 COOPERATION WITH UTILITIES

1. Coordinate the work with all utilities affecting the project. Include verification of existing utilities, location, size, scheduling and any other actions required to complete the Work in a proper and timely manner.

2. Contract with a utilities locating service as required.

1.2 PERMITS, FEES, INSPECTIONS

1. Local Zoning Permits/Impact Fees - Secured and paid for by Owner.

2. State Permits - Secured and paid for by Owner.

3. Building Permits (Local or State Division of Fire Safety) - The Owner will apply and pay for Local or State Building Permits. The Contractor is responsible for securing the local building permit including meeting with the building inspector, confirming the dollar value and presenting the payment to be supplied by Owner. The Architect will submit the plans and permit application in advance.

4. Other Permits Related to Construction - The Contractor is responsible to apply for, obtain and pay for all other necessary permits, fees, excavation fees, inspections, etc. As may be required by these drawings, specifications, building code or any other laws and requirements applicable to this project.

5. Specific Scopes of Work Permits - Subcontractors are responsible to secure and pay for any permits specifically related to their work including but not limited to plumbing, mechanical, sprinkler, fire alarms.

6. Certificate of Occupancy - The Contractor is responsible for scheduling all rough in and final inspections required, securing the certificates and transmitting to Owner.

7. Electric Power Charges for the cost of bringing power to the site by the utility company are paid for by Owner. All other power company charges, including for temporary power, are the responsibility of the contractor.

8. Permit Conditions - Contractor is required to comply with all local and state permit conditions, including becoming a party to the General Permit if applicable. These permits are included in the project manual or, if not, are available at request of bidder.

1.3 INSURANCE

1. Provide adequate insurance, meeting or exceeding the specific coverages and limits as contained herein and file copies with the Owner before executing the Contract.

2. Workman's Compensation Insurance, Public Liability Insurance, and Builder's Risk Insurance is

to be maintained by the contractor and all subcontractors.

3. Commercial General Liability. The Construction Manager shall carry adequate General Liability insurance not less than $1M for each occurrence and $2M in aggregate and $3M umbrella.

4. Automobile liability and Workers Compensation in Statutory amount. Owner will be named as additional insured.

1.4 BONDS

1. 5% Bid Bond is required.
2. 100% Performance and Payment Bond is required.

3. The Contractor is responsible for printing or purchasing all reproductions that they need for construction and is responsible for verifying that they have complete sets.

1.5 DAVIS BACON WAGE RATES

This project is subject to the requirements of the Davis - Bacon Act. Refer to Davis Bacon attachments in Project Manual for compliance information.

END SECTION

SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Work by Owner.
4. Work under Owner's separate contracts.
5. Owner-furnished products.
6. Access to site.
7. Coordination with Neighbors.
8. Work restrictions.
9. Specification and Drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Simulation Lab Renovation

1. Project Location: Vail Building, NVU, Lyndon, Vermont

B. Owner: Vermont State Colleges
1. Simulation Program Direction: Michelle Stearns
2. Facilities Director: Anthony Baraw

C. Design Team:

1. Architect: gbA Architecture & Planning: 85 Granite Shed Lane, Montpelier, VT 05602

2. Mechanical Engineer: Slade Engineering: 1727 Loop Road, Northfield, VT 05663

3. Electrical Engineer: Pearson and Associates: PO Box 119, Waterbury, VT 05676

4.

1.3 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.4 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes receiving, unloading, handling, storing, protecting, and installing Owner-furnished products.

B. Owner-Furnished Products: (Furnished by Owner and installed by Contractor)
1. The following appliances will be furnished by the owner installed by contractor:
a. Monitors
b. Head Wall Units

1.6 ACCESS TO SITE

A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project. Staging will take place within the Project Area. No separate storage space is available.

B. Limits on Use of Site: Access shall be coordinated with Anthony Baraw. Do not disturb portions of Project site beyond areas in which the Work is indicated. Do not disturb portions of Project Site beyond project limits.

1. Limits on Use of Site: Parking to be coordinated with Owner.
2. Driveways, Walkways, and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

C. Condition of Existing Building: Maintain portions of existing building affected by construction operations throughout construction period. Repair damage caused by construction operations.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

E. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

2. Set up a meeting with the appropriate town officials prior to construction to discuss staging.

F. On-Site Work Hours: Limit work in the existing building to normal business working hours of 7 a.m. to 6p.m., Monday through Friday, unless otherwise indicated.

G. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner written permission before proceeding with utility interruptions.

H. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

I. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site is not permitted.

1.7 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000

SECTION 01 2300 – ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Alternates Section Content:
1. Bid Alternates.

1.2 DEFINITIONS

A. (Bid) Alternate: An amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.

B. Amount: The cost or credit for each alternate is the net deletion from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project. Include as part of each alternate miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of alternate.

B. Notification: Immediately following the award of the Contract, prepare and distribute to each entity involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.

C. Alternates Not Accepted: Refer to the Agreement for deferment of alternates not accepted.

D. Schedule of Alternates: Specifications and Drawings referenced in following Schedule of Alternates contain requirements for materials and methods necessary to achieve the Work described under each Alternate.

PART 2 - PRODUCTS (NOT USED).

PART 3 - EXECUTION .

3.1 SCHEDULE OF ALTERNATES – SIMULATION LAB RENOVATION *(IN ORDER OF PREFERENCE)*

Number	Title	Reference
DEDUCT ALT. #1	WIDEN NEW DOOR OPENING TO ACCOMMODATE 48” DOOR LEAF	A1.2
DEDUCT ALT #2	NEW HAND SINK (STAINLESS STEEL, WALL HUNG)	A1.2

END OF SECTION 01 2300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

Retain subparagraph below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

1. Document 002600 "Procurement Substitution Procedures" for requirements for substitution requests prior to award of Contract.
2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit an electronic version (pdf) of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use form acceptable to Architect.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 10 days of receipt of a request for substitution. Architect will notify Contractor acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.6 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.

g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

END OF SECTION 012500

SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections:
1. Division 01 Section "Product Requirements" & “Substitution Procedures” for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions." Email or memo format with similar language will also be used.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 10 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship as related to the Critical Path.
    e. Quotation Form: Use forms acceptable to Architect.
    f. Contractor mark-up cannot exceed 12%
    g. Proposal requesting log shall be maintained by Contractor and updates issued at weekly job meetings.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship as related to the Critical Path.
6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: Refer to Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit Price Adjustment: Refer to Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

END OF SECTION 01 2600

SECTION 01 2900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Payment Procedures Contents:
- Application for Payment
  - a. Procedures
    - 1) Payment application period
    - 2) Draft application
    - 3) Certified application
    - 4) Certificate for Payment
  - b. Schedule of Values
  - c. Lien waivers
  - d. Retainage
- Initial Application for Payment
- Substantial Completion
  - e. Certificate of Substantial Completion
    - 1) Punch List
  - f. Payment application
- Final Completion
  - g. Final Payment

B. Related Work:
- Agreement
  - a. Retainage
- Summary
- Alternates (deduct)
- Contract Modification Procedures
- Product Requirements
- Execution Requirements
  - b. Final Cleaning
- Facility Operation Contents:
  - c. Record Documents
  - d. Warranties, executed
  - e. Operation and maintenance manuals

1.3 DEFINITIONS

A. Punch List: a comprehensive list of items to be completed or corrected prior to Final Payment as required by 9.8.2 of the General Conditions and this Section.

B. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SUBMITTALS

A. Schedule of Values: 2 copies directly to Owner, 1 copy to Architect. Submit the Schedule of Values to Architect and owner no later than 24 hours (business day) following the bid opening. No payments will be approved until Schedule of Values is completed by Contractor and approved by Architect.

B. Bonds for Increase in Contract Sum: When required by Sub-paragraph 11.5.3 of the Supplementary Conditions, submit 2 certified Performance and Payment Bonds directly to Owner, and 1 copy to Architect. Include current status of bonding coverage, name of entity covered by bond, limits of coverage and term of the coverage.

C. Permits: 1 original and 1 copy directly to Owner, 1 copy to Architect, Include for Owner's records, permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with regulations bearing on the Work obtained by or required to be obtained by Contractor. Submit at or before preconstruction conference and before commencement of Work requiring authorization.

D. Draft Applications for Payment: 2 copies to Architect, 2 copies directly to Owners. Architect and Owners will review an electronic copy if presented in lieu of paper.

E. Certified Applications for Payment: 1 certified original and 3 copies to Architect. Architect will deliver original and 1 copy to Owner and return 1 copy to Contractor.

F. Lien Waivers: 1 copy directly to Owner is adequate.

G. Payroll Report and Certification: 2 copies of each Payroll Form and Statement of Compliance directly to Owner.

H. Punch List: 2 copies directly to Owner, 1 hardcopy and 1 copy in computer data format acceptable to Architect.

I. Certified Punch List: 2 certified originals to Owner, 1 copy to Architect.

J. Substantial Completion Payment Application: number as for Certified Applications for Payment. Include other documents accompanying Application for Payment at Substantial Completion as required in this Section.

K. Final Payment Application: number as for Certified Applications for Payment. Include other documents accompanying Application for Final Payment as required in this Section.

L. Other: 2 certified originals to Owner, 1 copy to Architect,
Contractor’s Substantial Completion Certification.
Consents of Surety at Substantial and Final Completion
Contractor's Affidavit of Payment of Debts and Claims

M. Final Statement and Utility Readings Statements: 2 copies directly to Owner, 1 copy to Architect.

1.5 APPLICATIONS FOR PAYMENT, GENERAL

A. General: Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner. Application for payment at the following events involve additional requirements specified in this Section.
Substantial Completion
Final Payment

B. Periods: The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

C. Additional Documents: With each Application for Payment submit the following documents:

Lien Waivers as required in this Section.
Payment and Performance Bonds for increase in Contract Sum
Information pertaining to off-site stored materials.
Waste Management plan
S.3 Monthly reports and employee verification information for any new hires by Contractor or Subcontractors.

D. Stored Materials: The contractor shall avoid requisitioning materials to be delivered in advance of the time scheduled for their installation in the work. Provide a separate line item for each part of the Work where Applications for Payment include materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

For Materials stored Off-Site, Owner will require General and/or Subcontractors to:

a. Procure a certificate of insurance for the value of the stored materials and name Owner and Lender as Insured.
b. Provide a Legal Right of Entry to the Owner. Any materials in storage will be physically separated from other stored materials and/or marked with the project and Owner's name.
c. Arrange for inspection of materials by Owner and/or Architect and photographs of materials (if requested).
d. Provide invoice of stored materials including cost and quantity. Evidence of transfer of title to Owner. Do not include overhead and profit on stored materials, Match amount invoiced on Application for payment.

E. Procedures: Comply with the following payment application procedures for all payment applications throughout duration of Work:

Draft Application: Submit Draft Application for Payment no earlier than 4 days before end of Payment Application Period.

a. Other Documents: Include with Draft Application for Payment, all other documents required with Application for Payment including Payroll Report and Certification, S.3 Monthly Reports and Lien Waivers. Payment will not be made until fully complete, correct and executed documents required with Application for Payment are submitted.

Architect's Review: Within 2 days of receipt of Draft Application for Payment, Architect and Owner will review and tentatively approve application including corrections required for Architect to certify Application for Payment in whole.

Certified Application: Contractor shall submit Certified Application for Payment on the last day of Payment Application Period.

b. Approval in Whole: Withstanding circumstances which occur after Architect's tentative approval of Draft Application for Payment and which effect the amount to be certified for payment, if Certified Application for Payment exactly corresponds with Draft Application for Payment tentatively approved by Architect, Architect will issue to the Owner a Certificate for Payment, with a copy to the Contractor, for the whole amount due as established on the Certified Application for Payment.
c. Approval in Part: Draft Application for Payment was provided or Draft Application for Payment approved or if Certified Application for Payment does not exactly correspond with Draft Application for Payment tentatively approved by Architect, Architect will either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 9.5.1 of the General Conditions

F. Owner's Payment Time: After the Architect has issued to the Owner a Certificate for Payment, Owner will make payment to Contractor within 20 days.

G. Preparation: Use AIA Document G702 and AIA Document G703 Continuation Sheets or complete approved equivalent as form for Applications for Payment. Complete every entry on form.

Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.

Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

Draft Application: Prepare Draft Applications for Payment showing anticipated percentage completion of each portion of the Work at the end of the period covered by Application for Payment.

a. Signature: Submit initialed copies of each Draft Application for Payment.
b. Transmittal: Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

Certified Application: Prepare, notarize and execute Certified Applications for Payment by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

c. Signature: Submit signed and notarized original and copies of each Certified Application for Payment to Architect by a method ensuring receipt.
d. Transmittal: Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

1.6 LIEN WAIVERS

A. Waivers of Mechanic's Lien Required: With each Application for Payment, submit waivers of mechanic's lien from all entities lawfully entitled to file a mechanic's lien arising out of the Contract related to the Work covered by the previous application including Subcontractors, Sub-subcontractors, suppliers, distributors, vendors, labor, materials and services. Such Lien Waivers shall be provided in such form as to constitute an effective waiver and release of all such liens and claims under the laws of the State of Vermont. Payment will not be made until fully complete, correct and executed Lien Waivers are provided.

B. Form of Lien Waivers:
Notarized: All Lien Waivers shall be duly notarized and executed by an authorized officer of the entity.
Contingent: Lien Waivers may be conditional upon receipt of amounts due. Required form makes this provision.
Partial: Submit partial Lien Waivers for the amount requested, after to deduction for retainage, on each item.
Full: When an entity has completed performance of its portion of the Work, submit final or full Lien Waivers from that entity.
Required Form: Submit Lien Waivers on “Contractor’s Partial Release and Waiver of Lien” and “Contractor’s Final Release and Waiver of Lien” form included in the Project Manual after this Section

C. Final Payment: Submit Final Application for Payment with or preceded by final Lien Waivers from every entity involved with performance of Work who could lawfully be entitled to a lien.

1.7 RETAINAGE

A. 5% retainage will be held until substantial completion or at the discretion of the Owner. Retainage will be released at Substantial Completion with 200% of the value of punch list and outstanding items withheld until Final Completion.

1.8 INITIAL APPLICATION FOR PAYMENT: ADMINISTRATIVE ACTIONS AND SUBMITTALS THAT MUST PRECEDE OR COINCIDE WITH SUBMITTAL OF FIRST APPLICATION FOR PAYMENT INCLUDE THE FOLLOWING:
List of subcontractors.
Schedule of values.
Contractor's construction schedule (preliminary if not final).
Submittal schedule (preliminary if not final).
List of Contractor's staff assignments.
List of Contractor's principal consultants.

1.9 SUBSTANTIAL COMPLETION

A. Substantial Completion: Before requesting inspection for determining date of Substantial Completion, complete the following which are required for Substantial Completion:
Contractor’s Substantial Completion Certification: Provide Contractor’s certification that all remaining Work will be completed within thirty (30) consecutive days after the Date of Substantial Completion or as agreed with the Owner.

Occupancy Work: All remaining Work shall be minor in nature and not materially interfere or hamper the Owner or Owner's tenants, and shall not infringe on the tenant's legally protected rights to occupy, access, privacy and security.

Permits: Obtain, post, and submit Contractor required releases or required governmental inspections permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, similar releases

Extra Materials: Deliver attic stock, tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable. Provide log of extra materials for inclusion in Operating and Maintenance Manual.

Security: Complete changeover of permanent security facilities to Owner. Deliver keys to Owner with keying schedule. Advise Owner's personnel of changeover in security provisions.

Temporary Facilities: Terminate and remove temporary facilities, controls, and services from Project site, along with mockups, construction tools, and similar elements.

Final Cleaning: Complete, final finishes, correction of Work and final cleaning requirements indicated elsewhere, including touchup painting.

Notification: Inform Owner of the pending changeover responsibilities:

a. Utilities including fuel and electricity.
b. Owner's occupancy, use, operation, and maintenance.
c. Insurance.

Commissioning: N/A

Facility Operation:

d. Demonstration and Training: Complete instruction of Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
e. Record Information: Prepare and submit Project Record Documents, as-built drawings, operation and maintenance manuals, damage or settlement surveys, property surveys (if required), and similar final record information.
f. O&M manuals : Prepare and submit complete operation and maintenance manuals.
g. Warranties: Submit executed warranties, workmanship bonds, maintenance service agreements, final certifications, warranty inspections and similar documents.

Punch List: Prepare Punch List as required in Part 2.

Other: The Contractor shall show evidence of compliance with all other requirements of the Contract Documents including:

h. notices,
i. certificates,
j. affidavits,
k. insurance certificates for products and completed operations where required,
l. proof that taxes, fees, and similar obligations were paid, and
m. other requirements to complete obligations under the Contract Documents.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

Results of completed inspection will form the basis of requirements for Final Completion.

C. Application for Payment at Substantial Completion: After issuance of a Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete. Prepare Application to withhold value of retainage after Substantial Completion as established in the Agreement.

Final Statement: Include documentation supporting claim that the Work is substantially complete and a draft final statement showing an accounting of changes to the Contract Sum.

a. Liquidated Damages: N/A

Consent of Surety: Complete and certify consent of surety for reduction of retainage on AIA Document G707A – Consent of Surety to Final Reduction in or Partial Release of Retainage.
Liens Waivers: Submit full lien wavers for entities which have completed assigned portion of Work and partial Lien Waivers for outstanding Work as indicated in this Section.
Utility Readings: Provide final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

5. Other documents including payroll reports and certifications required in this Section to be submitted with each Application for Payment.
6. Retainage will be released at Substantial Completion and 200% of the value of punch list and outstanding items will be withheld until Final Completion. All punch list and outstanding items will be valued and the itemized list included with the Application for Payment.

1.10 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following which are required for Final Completion:
Certified Punch List: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
Commissioning: Complete the commissioning and other requirements indicated to be completed before Final Completion as required elsewhere for equipment and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect and will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a Certificate for Final Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

C. Final Payment Application: Submit Application for Final Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
Final Statement: Updated final statement, accounting for final changes to the Contract Sum.
Contractor's Affidavit: Submit notarized AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
Contractor’s Affidavit of Release of liens: AIA Document G706A.
Consent of Surety: Complete and certify consent of surety for Final Payment on AIA Document G707, "Consent of Surety to Final Payment."
Liens Waivers: Submit full lien waivers from every entity involved with performance of Work who could lawfully be entitled to a lien or verify that Owner has records of previously approved full lien waivers from these entities.
Other documents including payroll reports and certifications required in this Section to be submitted with each Application for Payment.

PART 2 - PRODUCTS

2.1 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

a. Application for Payment forms with Continuation Sheets
b. Submittals Schedule
c. List of Subcontracts
d. Schedule of Alternates

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

Identification: Include date and Project identification information on the Schedule of Values:

Organization: Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

a. Related Specification Section or Division.
b. Description of the Work.
c. Name of subcontractor(s).
d. Name of supplier(s).
e. Change Orders (numbers) that affect value.
f. Dollar value.
1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

Provide original backup material to Architect, if requested, for approval of Schedule of Values.

Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

g. Include separate line items under Contractor and principal subcontracts for National Green Building Standard (NGBS) documentation and other Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.

Round amounts to nearest whole dollar; total shall equal the Contract Sum.

Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.

h. Differentiate between items stored on-site and items stored off-site.

Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

i. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.

Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

2.2 PUNCH LIST

A. Primary Organization: Organize punch list by each space or area affected by construction operations including, if necessary, areas disturbed by Contractor that are outside the limits of construction in the following order:

General Conditions and Requirements
Sitework
Building exterior
Systems involving more than one room
Interior by room number and include name

B. Secondary Organization: Organize items applying to each space or area by Specification Division number.

C. Reasons Incomplete: For each item, include a statement of why the Work is not complete

D. Preparation: Include at the top of each page:

a. Title, “List of Incomplete Items (Punch List)”
b. Project name
c. Date
d. Version number or revision identification
e. Page number
f. Value of item

END OF SECTION 01 2900

SECTION 01 2910 - CONTRACTOR'S AND SUBCONTRACTOR'S PARTIAL RELEASE AND WAIVER OF LIEN

CONTRACTOR'S PARTIAL RELEASE AND WAIVER OF LIEN

Contractor/Subcontractor Name:_____
Address:_____
Phone:_____ E-mail:_____

For and in consideration of the anticipated receipt of $_____, in payment of labor and/or materials furnished, the sufficiency and anticipated receipt of which is hereby acknowledged, the undersigned does hereby waive, release, and relinquish any and all claims, demands, and rights of lien for all work, labor, materials, machinery or other goods, equipment or services done, performed or furnished for the construction located at the site hereinafter described, to wit:

(Vermont State Colleges, Simulation Lab Renovation)
as of: _____ (Date)

The undersigned further warrants and represents that any and all valid labor and/or material and equipment described on behalf of the undersigned have been paid in full to the date of this waiver, or will be paid from these funds. . This release becomes effective only upon receipt of the above amount.

Amount of Contract (including all approved change orders)	$_____
Total Paid to Date	$_____
Amount Currently Requested	$_____
Remaining Funds in Contract (after payment of this requisition)	$_____

By: _____
Contractor Name

_____
Its Duly Authorized Agent

STATE OF VERMONT
_____COUNTY, SS.

At _____, in said County, this_____ day of _____, 20__, personally appeared _____, [duly authorized signatory of _____, Inc.,] who acknowledged the above instrument, by him/her sealed and subscribed, to be his/her free act [and deed and the free acts and deeds of _____, Inc].

Before me,

_____
Notary Name:_____
Notary Public
Notary Commission Number:_____
My commission expires.
Note: This lien waiver must be notarized by a Vermont notary.

SECTION 01 3000– ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Administrative Requirements Contents:
1. Project Management and Coordination
a. Coordination
1) Conservation of resources and energy
b. Project Meetings
1) Preconstruction Conference
2) Preinstallation Conferences
3) Progress Meetings
c. Interpretation of the Contract Documents
1) Requests for Interpretation
2. Construction Progress Documentation
a. Preliminary Construction Schedule.
b. Contractor's Construction Schedule.
c. Contractor's reports
1) Subcontracts list

B. Related Work:
1. Summary
a. Owner-furnished products
2. Submittal Procedures
a. Submittals Schedule
3. Temporary Facilities
a. Implementation and termination schedule

1.2 SUBMITTALS

A. Coordination Drawings: 4 copies (Electronic copy is acceptable)

B. Preliminary Construction Schedule: 3 copies directly to Owner, 1 copy to Architect, at or before preconstruction conference. (Electronic copies are acceptable)

C. Contractor's Construction Schedule: 3 copies directly to Owner, 1 copy directly to each testing and inspection agency, 4 copies and 1 copy in computer data format acceptable to Architect within 60 days of Contract execution and updated as required. (Electronic copies are acceptable)

D. Contractor's Reports and Lists:
1. Subcontract List: 3 copies directly to Owner, 1 copy to Architect at or before preconstruction conference and as updated (Electronic copies are acceptable)

E. Requests for Interpretation (RFI): 3 copies and 1 additional copy when information from Architect's Consultant is required. (Electronic copies are acceptable)

F. Project Meetings Minutes: as required in this Section.

1.3 COORDINATION

A. Construction Coordination: Coordinate construction operations included in various Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in

different Sections, that depend on each other for proper installation, connection, and operation. Coordinate each construction activity with other activities and schedule them in proper sequence.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

B. Administrative Coordination: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors (if any) to avoid conflicts and to ensure orderly progress of the Work. Secure time commitments for performing critical elements of the Work from entities involved. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Payment requests.
4. Installation and removal of temporary facilities and controls.
5. Delivery and processing of submittals.
6. Progress meetings.
7. Preinstallation conferences.
8. Project closeout activities.
9. Subcontracts List.
10. Submittals Schedule.
11. Other required schedules and reports.

C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

PART 2 - PRODUCTS .

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Schedule Quality Standard: Comply with procedures contained in AGC's "Construction Planning & Scheduling."

1. Establish procedures for monitoring and updating schedule and for reporting progress.
2. Coordinate procedures with progress meeting and payment request dates.

B. Preliminary Construction Schedule: Submit preliminary horizontal bar-chart-type construction schedule.

1. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. Contractor's Construction Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram schedule and using a computer program that has been developed specifically to manage schedules.

1. Time Frame: Extend schedule from date established for commencement of the Work to date of Final Completion.
2. Unit of Time: one workday.
3. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to Substantial Completion and.
    a. Delivery of Owner furnished products
    b. Implementation and termination of temporary utilities
    c. Inspections required of authorities having jurisdiction including rough-in and final inspection.
    d. Final cleaning.
    e. Preparation of punch list

f. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
g. Final Completion: Indicate Final Completion no more than 30 days after Substantial Completion unless approved otherwise by Owner.

4. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities.
   a. Activity Duration: Define activities so no activity is longer than 60 days, unless specifically allowed by Architect.
   b. Owner-Furnished Products: Include a separate activity for each Owner-Furnished product.
   c. Include estimated time frames for the following with each activity:
      1) Submittals.
      2) Mockups.
      3) Conditioning.
      4) Installation.
      5) Tests and inspections.
      6) Adjusting and cleaning.
      7) Startup and placement into final use and operation.
5. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
6. Critical Path Indication: Indicate the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Sub-networks on separate sheets are permissible for activities clearly off the critical path.
7. Contract Modifications: When requested, for each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.
8. Updating: At regular monthly intervals, update Contractor's Construction Schedule to reflect actual construction progress and activities and indicate Actual Completion percentage for each activity.
   a. Update Report: Include a report with updated schedule that indicates every change from previously approved schedule.
   b. Review updated schedule at next regularly scheduled progress meeting. When necessary to expedite review, issue updated schedule and report prior to meeting.
   c. Update and distribute schedule more frequently as required to coordinate the Work.
9. Adherence to Schedule: If any schedule submitted sets forth a date for Substantial Completion for the Work or any phase of the Work beyond the Date of Substantial Completion established in the Contract, then Contractor shall submit to Architect and Owner for their review and approval a narrative description of the means and methods which Contractor intends to employ to expedite the progress of the Work to ensure timely completion of the various phases of the Work as well as the totality of the Work.
   a. To ensure such timely completion, Contractor shall take all necessary action including, without limitation, increasing the number of personnel and labor on the Project and implementing overtime and double shifts. In that event, Contractor shall not be entitled to an adjustment in the Contract Sum or the schedule.
10. Distribution: Post copies of approved Contractor's Construction Schedule in Project meeting rooms and temporary field offices and issue to Architect, Owner, separate contractors (if any), testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.

2.2 CONTRACTOR'S LISTS AND REPORTS

A. Subcontract List: Submit a written summary identifying entities proposed for each portion of the Work. When such an entity has not yet been selected or proposed, submit information 7 days before entering into an agreement with such an entity to perform Work.
   1. Entities: Include the following entities.
      a. Subcontractors
      b. Suppliers

c. Contractor's consultants, including testing agencies and professional engineers.
d. Installers
e. Fabricators: Entities custom fabricating materials into finished products to a special design and specifically for the Work

2. Content: Include the following information in tabular form.
   a. Name, address, and telephone number of each entity.
   b. Description of portion of Work proposed for each entity to perform.
3. Architect's Reply: Architect's reply regarding objections to proposed entities will be within 7 days.

PART 3 - EXECUTION

3.1 INTERPRETATION OF THE CONTRACT DOCUMENTS

A. Requests for Interpretation (RFI): Upon discovery of the need for clarification, decision, information, explanation or interpretation of the Contract Documents due to field conditions, perceived conflicts or other uncertainties, submit a Request for Interpretation to Architect. Include the following.
   1. Project Name
   2. Contractor's RFI Number and Date
   3. Subject: complete and concise summary of matter concerning performance under, or requirements of, the Contract Documents.
   4. Reference: identify specific portion of Specifications, Drawings or other Contract Documents relating to subject.
   5. Description: detailed description of request for interpretation. Include the following.
      a. Reason Contract Documents require clarification.
      b. Contractor's understanding of, or recommendations for, interpretation of the Contract Documents.
      c. Contractor's recommendation (if any) for resolution.
      d. List of attachments (if any) required for additional description of request.
   6. Name of Contractor and name and contact information for other entities furnishing or installing Work pertaining to subject of request.
   7. Signature of Contractor's representative affirming Contractor has carefully studied available information before making request.
   8. Response Space: include space on request for Architect's response including the following.
      a. Architect's response; 3 inches high by full page width
      b. List of response attachments
      c. Response date
      d. Architect's signature

B. Architect's Response to RFI: Where information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation, and where such information would resolve subject of request, Architect may reject or discard RFI or respond verbally or by other informal means; otherwise, Architect will make response as required in the General Conditions.

C. Architect's Interpretation: Architect may issue interpretations of the Contract Documents in the form of Sketch Drawings (SK), Project Drawings (PD) or Job Drawings (JD) which are not Drawings as defined in the General Conditions.

3.2 PROJECT MEETINGS

A. General:
   1. Location: Schedule and conduct meetings and conferences at Project Site, unless otherwise indicated.
   2. Notification: Inform Owner, Architect, participants, other involved entities, and individuals whose presence is required, of date and time of each meeting.
   3. Attendees: Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

4. Agenda: When requested by Architect or at Contractor's option, prepare the meeting agenda. Distribute the agenda to all invited attendees.
5. Minutes and Reporting: The Architect, or if not in attendance, the Contractor shall for each project meeting perform the following:
    a. Record significant conference discussions, agreements, disagreements and agreements achieved.
    b. Distribute the meeting minutes within 2 days of the meeting to:
        1) Owner, Architect, Contractor, Attendees, Other involved entities, and Individuals who should have been present

B. Preconstruction Conference: Schedule a preconstruction conference before starting actual demolition or construction activities at the Project Site, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Location: Hold the conference at Project site or another convenient agreed upon location.
2. Attendees:
    a. Owner, Architect, Architect's consultants (if required), Contractor, Contractor's superintendent, Major subcontractors, manufacturers and suppliers, and Other concerned parties
3. Agenda: Discuss items of significance that could affect progress, including the following:
    a. Review assignment of personnel responsibilities.
    b. Procedures for processing field decisions and Change Orders.
    c. Procedures for processing Applications for Payment.
    d. Distribution of the Contract Documents.
    e. Submittal procedures.
    f. Preparation of Record Documents, including As-Built Drawings and Operating and Maintenance Manuals and Warranties.
    g. Use of the premises.
    h. Responsibility for temporary facilities and controls.
    i. Parking availability.
    j. Office, work, and storage areas.
    k. Equipment deliveries and priorities.
    l. First aid.
    m. Security.
    n. Progress cleaning.
    o. Construction waste management
    p. Working hours.
    q. Tentative construction schedule.
    r. Critical work sequencing.
    s. S.3 reporting requirements and pre construction conference.
    t. Lien Waiver requirements
    u. Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:
        1) Discuss constraints, including major area separations.
        2) Review delivery dates for Owner-furnished products.
        3) Review schedule for work of Owner's separate contracts or Owner-installed products (if any).
        4) Review time required for review of submittals and re-submittals.
        5) Review requirements for tests and inspections by independent testing and inspecting agencies.
        6) Review time required for completion and startup procedures.
        7) Review and finalize list of construction activities to be included in schedule.
        8) Review submittal requirements and procedures.
        9) Review procedures for updating schedule.

C. Pre-installation Conferences: Conduct a pre-installation conference before each construction activity that requires coordination with other construction and where indicated in individual Specification Sections. Advise Architect no less than 15 days in advance of scheduled meeting dates.

1. Attendees: Attendees shall include authorized representatives of entities explicitly indicated in individual Specification Sections and the following.
   a. Contractor
   b. Contractor's superintendent
   c. Entities involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Submittals.
   g. Review of mockups.
   h. Compatibility problems.
   i. Time schedules.
   j. Weather limitations.
   k. Manufacturer's instructions and recommendations.
   l. Warranty requirements.
   m. Acceptability of substrates.
   n. Temporary facilities and controls.
   o. Space and access limitations.
   p. Regulations of authorities having jurisdiction.
   q. Testing and inspecting requirements.
   r. Required performance results.
   s. Protection of construction and personnel.
   t. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   u. Installation procedures
   v. Insurance requirements, if applicable.
   w. Examine project conditions, if at appropriate stage of completion
   x. Cleaning requirements
   y. Correction of Work procedures.
3. Resolution: Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.
   1. Attendees:
      a. Owner, Architect, Contractor, Contractor's superintendent, and Each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities.
   2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      b. Review present and future needs of each entity present, including the following:
         1) Interface requirements.
         2) Sequence of operations.
         3) Status of submittals.

4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Change Orders.
14) Documentation of information for payment requests.

END OF SECTION 01 3000

SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
1. General project coordination procedures.
2. Administrative and supervisory personnel.
3. Coordination drawings.
4. Requests for Information (RFIs).
5. Project meetings.

B. Related Sections:
1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following: (NOTE: Administrative procedures are included in Overhead & Profit, unless communicated otherwise)
1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.
10. Process Supplemental information, RFIs, Change Directives, and Proposal requests.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste. Comply with Division 1 Section “Waste management Plan”.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings in accordance with requirements in individual Sections, where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
f. Indicate required installation sequences.
g. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire protection, fire alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire protection, fire alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Mechanical and Plumbing Work: Show the following:
    a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
    b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
    c. Fire-rated enclosures around ductwork.
7. Electrical Work: Show the following:
    a. Runs of vertical and horizontal conduit 1-1/4 inch diameter and larger.
    b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire alarm locations.
    c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
    d. Location of pull boxes and junction boxes, dimensioned from column center lines.
8. Fire Protection System: Show the following:
    a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
9. Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are the Contractor's responsibility. If the Architect determines that the coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, the Architect will so inform the Contractor, who shall make changes as directed and resubmit.
10. Coordination Drawing Prints: Prepare coordination drawing prints in accordance with requirements of Division 01 Section "Submittal Procedures."

C. Coordination Digital Data Files: Prepare coordination digital data files in accordance with the following requirements:
1. File Preparation Format: Same digital data software program, version, and operating system as the original Drawings.
2. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
3. Architect will furnish Contractor one set of digital data files of the Drawings for use in preparing coordination digital data files.
    a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to the Drawings.

1.6 KEY PERSONNEL

A. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments for general contractor, subcontractors and major suppliers, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and email addresses. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.7 REQUESTS FOR INFORMATION (RFIs)

A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
   1. Project name.
   2. Project number.
   3. Date.
   4. Name of Contractor.
   5. Name of Architect.
   6. RFI number, numbered sequentially.
   7. RFI subject.
   8. Specification Section number and title and related paragraphs, as appropriate.
   9. Drawing number and detail references, as appropriate.
   10. Field dimensions and conditions, as appropriate.
   11. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
   12. Contractor's signature.
   13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
      a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Software-generated form with substantially the same content as indicated above, acceptable to Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow ten working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
   1. The following RFIs will be returned without action:
      a. Requests for approval of submittals.
      b. Requests for approval of substitutions.
      c. Requests for coordination information already indicated in the Contract Documents.
      d. Requests for adjustments in the Contract Time or the Contract Sum.
      e. Requests for interpretation of Architect's actions on submittals.
      f. Incomplete RFIs or inaccurately prepared RFIs.
   2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
   3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
      a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.

E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
   1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
   2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Software log with not less than the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Architect.
   4. RFI number including RFIs that were dropped and not submitted.
   5. RFI description.
   6. Date the RFI was submitted.

7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.8 PROJECT MEETINGS

A. General: Meetings and conferences at Project site will be held on a weekly basis.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
2. Agenda: The Architect will prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: The Architect will prepare the meeting minutes. Record significant discussions and agreements achieved. The Architect will distribute the meeting minutes to everyone concerned, including Owner, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Contractor, but no later than 15 days after execution of the Agreement.
1. Conduct the conference to review responsibilities and personnel assignments.
2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Discuss items of significance that could affect progress, including the following:
    a. Tentative construction schedule.
        1) Schedule for Owner Blower Door Testing & Required Inspections. Related sequencing of work & mock ups.
        2) Schedule for subsequent preconstruction meetings & those involved.
    b. Schedule of other Contracts & Adjacent properties
    c. Critical work sequencing and long-lead items.
    d. Designation of key personnel and their duties.
    e. Lines of communications.
    f. Procedures for processing field decisions and Change Orders.
    g. Procedures for RFIs.
    h. Procedures for testing and inspecting.
    i. Procedures for processing Applications for Payment.
    j. Distribution of the Contract Documents.
    k. Submittal procedures.
    l. Preparation of record documents.
    m. Use of the premises and existing building.
    n. Work restrictions.
    o. Working hours.
    p. Owner's occupancy requirements.
    q. Responsibility for temporary facilities and controls.
    r. Procedures for disruptions and shutdowns.
    s. Construction waste management and recycling.
    t. Parking availability.
    u. Office, work, and storage areas.
    v. Equipment deliveries and priorities.
    w. First aid.
    x. Security.
    y. Progress cleaning.
    z. Davis-Bacon
    aa. Lead, Asbestos, and suspicious material handling.
4. Minutes: The Architect will record and distribute meeting minutes.

C. Project Closeout Conference: Schedule and conduct a Project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
   1. Conduct the conference to review requirements and responsibilities related to Project closeout.
   2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
      a. Preparation of record documents.
      b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
      c. Submittal of written warranties.
      d. Requirements for preparing operations and maintenance data.
      e. Requirements for demonstration and training.
      f. Preparation of Contractor's punch list.
      g. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
      h. Submittal procedures.
      i. Coordination of separate contracts.
      j. Owner's partial occupancy requirements.
      k. Installation of Owner's furniture, fixtures, and equipment.
      l. Responsibility for removing temporary facilities and controls.
   4. Minutes: Architect will record and distribute meeting minutes.

D. Progress Meetings: Conduct progress meetings at weekly intervals.
   1. Coordinate dates of meetings with preparation of payment requests.
   2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
   3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
         1) Review schedule for next period.
      b. Review present and future needs of each entity present, including the following:
         1) Interface requirements.
         2) Sequence of operations.
         3) Status of submittals.
         4) Deliveries.
         5) Off-site fabrication.
         6) Access.
         7) Site utilization.
         8) Temporary facilities and controls.
         9) Progress cleaning.
         10) Quality and work standards.
         11) Status of correction of deficient items.
         12) Field observations.
         13) Status of RFIs.
         14) Status of proposal requests.
         15) Pending changes.
         16) Status of Change Orders.
         17) Pending claims and disputes.

18) Documentation of information for payment requests.

4. Minutes: The Architect will record and distribute the meeting minutes to each party present and to parties requiring information at least 2 business days prior to following job meeting.
   a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Coordination Meetings: The Contractor is to schedule and conduct project coordination meetings at intervals determined by the Owner, Architect and Contractor's Project Manager. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
   1. Attendees: In addition to representatives of Owner, Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
   2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
      a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
      c. Review present and future needs of each contractor present, including the following:
         1) Interface requirements.
         2) Sequence of operations.
         3) Status of submittals.
         4) Deliveries.
         5) Off-site fabrication.
         6) Access.
         7) Site utilization.
         8) Temporary facilities and controls.
         9) Work hours.
         10) Hazards and risks.
         11) Progress cleaning.
         12) Quality and work standards.
         13) Change Orders.
   3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 3100

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections:
1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
5. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as action submittals.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as informational submittals.

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and additional time for handling and reviewing submittals required by those corrections.
1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with start-up construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:
    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal category: Action, informational.
    d. Name of subcontractor.
    e. Description of the Work covered.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
    a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    b. Digital Drawing Software Program: The Contract Drawings are available in Revit files.
    c. At the Contractor's request, copies of the design team's CADD files will be provided to the Contractor for Contractor's use in connection with project, subject to the following conditions: Files provided will be limited to files that already exist, without modifications, in the CADD format already created with no changes in drawing attributes and layering. The design team assumes no responsibility for any omissions and inconsistencies in the CADD files provided. CADD files are restricted for the use on the Red Clover Commons Project only.
    d. Contractor to reimburse the Architect for time spent on providing the files and transmittal costs if any. Allow one week for file transference from the time of the request.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
    a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

D. Identification and Information: Place a permanent label or title block on each paper copy submittal item for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
3. Include the following information for processing and recording action taken:
    a. Project name.
    b. Date.
    c. Name of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of subcontractor.
    g. Name of supplier.
    h. Name of manufacturer.
    i. Submittal number or other unique identifier, including revision identifier.
        1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
    j. Number and title of appropriate Specification Section.
    k. Drawing number and detail references, as appropriate.
    l. Location(s) where product is to be installed, as appropriate.
    m. Other necessary identification.

E. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:
1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
    a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Include the following information on an inserted cover sheet:
    a. Project name.
    b. Date.
    c. Name and address of Architect.
    d. Name of Construction Manager.
    e. Name of Contractor.
    f. Name of firm or entity that prepared submittal.
    g. Name of subcontractor.
    h. Name of supplier.
    i. Name of manufacturer.
    j. Number and title of appropriate Specification Section.
    k. Drawing number and detail references, as appropriate.
    l. Location(s) where product is to be installed, as appropriate.
    m. Related physical samples submitted directly.
    n. Other necessary identification.
5. Include the following information as keywords in the electronic file metadata:
    a. Project name.
    b. Number and title of appropriate Specification Section.
    c. Manufacturer name.
    d. Product name.

F. Options: Identify options requiring selection by the Architect.

G. Deviations: Identify deviations from the Contract Documents on submittals.

H. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to the Owners in addition to specified number of copies to Architect.

I. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will discard submittals received from sources other than Contractor.
   1. Transmittal Form: Use AIA Document G810.
   2. Transmittal Form: Provide locations on form for the following information:
      a. Project name.
      b. Date.
      c. Destination (To:).
      d. Source (From:).
      e. Names of subcontractor, manufacturer, and supplier.
      f. Category and type of submittal.
      g. Submittal purpose and description.
      h. Specification Section number and title.
      i. Indication of full or partial submittal.
      j. Drawing number and detail references, as appropriate.
      k. Transmittal number, numbered consecutively.
      l. Submittal and transmittal distribution record.
      m. Remarks.
      n. Signature of transmitter.
   3. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

L. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
   1. Submit electronic submittals via email as PDF electronic files.
      a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
   2. Action Submittals if not submitted electronically: Submit three paper copies of each submittal, unless otherwise indicated. Architect will return two copies.
   3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
   4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
      a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.

5. Test and Inspection Reports Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
   a. PDF electronic file.
   b. If not submitted electronically, submit three paper copies of Product Data, unless otherwise indicated. Architect will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data**,** unless submittal based upon Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.
3. Submit Shop Drawings in the following format:
   a. PDF electronic file.
   b. If not submitted electronically, submit three opaque copies of each submittal. Architect will retain two copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.

d. Number and title of applicable Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."

F. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."

G. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."

H. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

I. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

J. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

K. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

L. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

M. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

N. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

O. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

P. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

Q. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

R. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "Quality Requirements."

S. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

T. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

U. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

V. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Division 01 Section "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

E. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

F. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 3300

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections:
1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
2. Divisions 02 through 49 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
1. Integrated Exterior Mockups: Mockups of the exterior envelope erected separately from the building but on the project site, consisting of multiple products, assemblies and subassemblies.

D. Preconstruction Testing: Tests and inspections performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade or trades.

J. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Shop Drawings: For integrated exterior mockups, provide plans, sections, and elevations, indicating materials and size of mockup construction.
   1. Indicate manufacturer and model number of individual components.
   2. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility sent to authorities having jurisdiction before starting work on the following systems.
   1. Seismic-force resisting system, designated seismic system, or component listed in the designated seismic system quality assurance plan prepared by the Architect.
   2. Main wind-force resisting system or a wind-resisting component listed in the wind-force-resisting system quality assurance plan prepared by the Architect.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
   1. Specification Section number and title.
   2. Entity responsible for performing tests and inspections.
   3. Description of test and inspection.
   4. Identification of applicable standards.
   5. Identification of test and inspection methods.

6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

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

1.8 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 329 and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

G. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
   1. Contractor responsibilities include the following:
      a. Provide test specimens representative of proposed products and construction.
      b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
      c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
      d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
      e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
      f. When testing is complete, remove test specimens, assemblies, mockups do not reuse products on Project.
   2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
   2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
   3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

K. Integrated Exterior Mockups: Construct integrated exterior mockup in accordance with approved Shop Drawings. Coordinate installation of exterior envelope materials and products for which mockups are required in individual specification sections, along with supporting materials.

1.9 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor**,** and the Contract Sum will be adjusted by Change Order.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

E. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

F. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities, including special tests and inspections by Owner's engaged testing agencies.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's construction schedule. Update as the Work progresses. .
1. Distribution: Distribute schedule to Owner, Architect testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

PART 2 - EXECUTION

2.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

2.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 4000

SECTION 01 4200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
   1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
USPS	Postal Service www.usps.com	(202) 268-2000

C. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

ADAAG	Americans with Disabilities Act (ADA) Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities Available from U.S. Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080
UFAS	Uniform Federal Accessibility Standards Available from Access Board www.access-board.gov	(800) 872-2253 (202) 272-0080

END OF SECTION 01 4200

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, construction indoor air quality plan and security and protection facilities.

B. Related Sections:
1. Division 01 Section "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner's construction forces, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage by all entities for construction operations. Provide connections and extensions of services as required for construction operations.

C. Water Service: Pay for temporary water service and usage. Provide connections and extensions of services as required for construction operations.

D. Electric Power Service: Pay electric power service use charges for electricity used by all entities for construction operations. Provide connections and extensions of services as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: It is assumed that a Field Office will be set up within the Project Work area.

B. Of sufficient size to accommodate needs of Owner, Architect, General Contractor, and construction personnel office activities and to accommodate project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
1. Furniture required for Project-site documents including file cabinets, plan tables, plan racks, and bookcases.
2. Conference room of sufficient size to accommodate meetings of [10] individuals. Provide electrical power service and 120-V ac duplex receptacles, with not less than 1 receptacle on each wall. Furnish room with conference table, chairs, and 4-foot- square tack and marker boards.
3. Drinking water.
4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction and clean HVAC system as required in Division 01 Section "Closeout Procedures".

C. Air Filtration Units: HEPA primary and secondary filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.
1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: N/A

C. Water Service: Connect to municipal water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
1. Provide dehumidification systems when required to reduce substrate moisture levels to level required to allow installation or application of finishes.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
1. Install electric power service overhead, unless otherwise indicated.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

I. Telephone Service: Not required. Assumed mobile phone service will be adequate. Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line(s) for each field office.
1. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: N/A

C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

D. Parking: Provide temporary parking areas for construction personnel.

E. Project Signs: See EDA requirements.

F. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management."

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. None anticipated.

I. Temporary Elevator Use: Use permitted after coordination with Owner.

J. Temporary Stairs: N/A.

3.4 CONSTRUCTION IAQ MANAGEMENT PLAN

A. HVAC Protection
1. Store HVAC equipment in a clean, dry location. Until HVAC equipment (ducting, registers, air handler components, fans, motors, etc.) has been installed, keep it covered with plastic or in a location where it will not be exposed to moisture, dust, or other contaminants.
2. Seal all HVAC inlets and outlets. If use of the HVAC system can be avoided during construction (preferable), seal all air inlets and outlets during construction. These include outside air inlets, grills, diffusers, supply ducts, return ducts, ceiling plenums, VAV (variable-air volume) plenum intakes, and window ventilator / air conditioning units. Seal openings with plastic and tape that can be removed cleanly.
3. Seal HVAC components during installation. For ducting runs that require several days to install, seal off sections as they are completed, then remove those seals prior to continuing the ducting run. The same applies to other components of the HVAC system - do not wait until the system is completed to protect it from contamination.
4. Use a temporary ventilation system during construction. When possible, avoid use of the building HVAC system altogether during construction and rely instead on a temporary ventilation system that introduces outside air and ventilates contaminated air directly. Window-mounted fan units can serve this purpose in

small projects. This will apply when tank-sealing epoxy is used, and when fiberglass resin is used for exhibit assembly.

5. HVAC System will not be used during construction. This will prevent construction dust from contaminating ductwork and HVAC equipment.
6. Prevent contaminated air entry into occupied parts of building. When outdoor construction activities will generate dust, combustion emissions, or other contaminants, close operable windows and outside air supplies to occupied portions of the building. All openings to the occupied portion of the building will be tightly sealed.

B. Source Control

1. Protect against moisture exposure. Keep building materials dry to avoid the introduction of moisture into the building interior. This is especially important with porous or absorptive materials, such as insulation, drywall, and wood.
2. Avoid the use of moisture-damaged materials. Any porous materials that have been damaged by moisture should be discarded or dried thoroughly before installation. Some materials, such as drywall, can be irreparably damaged by water exposure. Others, such as carpet, must be dried out very quickly to prevent risk of mold contamination.
3. Ensure that construction detailing will not result in moisture intrusion. While construction detailing is the responsibility of the architect or designer, contractors should be alert for design flaws that will result in water entry into the building - for example, leakage at roof intersections, poor rain screen details, failure to provide adequate drainage at exterior cladding, foundation details that will permit water entry, and failure to install proper defenses against capillary moisture entry through floor slabs and basement walls. Bring obvious problems to the attention of the architect, and if problems are not resolved, keep a written record of correspondence regarding those problems.
4. Use low-emitting products. While product specification is generally done during design, substitutions are sometimes made at the job site. When choices can be made, choose products that are low-emitting and odor-free.
5. Avoid tracking pollutants into work area. Control access to the construction site to minimize the tracking in of contaminants. Material deliveries and construction waste removal, for example, might be routed around the exterior of the building rather than through the space. Smoking by construction workers will not be allowed inside the building once the first window is installed.
6. Avoid tracking pollutants into occupied portion of building. When an occupied building is begin worked on, it may be necessary for people to pass from the construction area into the occupied portion of the building. They should instead walk around and use a standard main entrance to the building where special measures should be taken to track pollutants off shoes (see below under “Pathway Interruption
7. Allow high-VOC materials to offgas prior to installation. New high-VOC materials that arrive packaged or rolled up, such as carpeting and certain wall coverings, should be opened up and ventilated for several days in an area other than the building where they will be installed. This ventilation space should be dry, secure, well ventilated, and between 60° and 90°F (16-32°C). There are no high VOC materials on this project.
8. Keep construction equipment exhaust away from building. Minimize the use of construction equipment and vehicles near occupied portions of a building under construction or renovation. When use of equipment near an occupied building is unavoidable, seal outside air inlets and operable windows. On this project, air intake for the occupied portion of building is on the roof, a good distance from ground-based equipment.

C. Housekeeping

1. Minimize accumulation of dust and other contaminants. Use construction practices that minimize the production of dust and other contaminants from construction activities - e.g., use integral dust-collection systems or drywall sanders, cut-off saws, and routers.
2. Confine dust-generating activities. Centralize indoor cutting or other dust-generating activities to areas where clean-up can be carried out easily and any contaminants will not be tracked into other areas. Spray painting of water-based latex paints generates dust – temporary ventilation will be used during this time, with fans blowing directly out through window openings..

3. Suppress dust. Use wetting agents or sweeping compounds to keep dust from becoming airborne.
4. Clean up dust. Use wet rags, damp mops, and vacuum cleaners with high-efficiency particulate (HEPA) filters to clean up dust generated by construction activities. These practices are much more effective than sweeping and conventional vacuuming. Increase cleaning frequency when dust accumulation is noted.
5. Clean up spills. All spills and excess applications of solvent-containing products should be cleaned up as soon as possible. Water spills should also be mopped up.
6. Keep work area dry. Keep the entire work area as dry as possible by fixing any leaks that allow rainwater entry, mopping up any water accumulation. Dehumidify if necessary.
7. Seal containers of volatile liquids. Containers of fuel, paint, finishes, and solvents should be kept tightly sealed and stored outside the building when not is use. (Water-based materials storage inside OK in tightly sealed containers)
8. Keep construction materials out of occupied spaces. Do not allow construction materials, demolition debris, supplies, or tools to be stored in, or transported through, occupied portions of the building unless absolutely necessary.

D. Scheduling
1. Install porous materials only after closing-in building. Porous materials, such as insulation, fireproofing, and drywall, should not be installed until the building envelope is fully weathertight.
2. Account for curing time and offgassing when scheduling construction activities. It is important to understand which materials will offgas VOCs or release moisture as they cure and how long that curing will take. Incorporate this information into the scheduling of various construction activities. See specific recommendations below.
3. Provide adequate ventilation during curing period. To aid in curing of interior finishes and other products used during construction and to remove pollutants, provide proper filtration and adequate ventilation with 100% outside air. In humid climates or when very high moisture materials are present, significant dehumidification may be required during this curing period, and care should be taken not to overtax the HVAC system's dehumidification capacity. Dedicated ventilation will be used for fiberglass and epoxy curing periods.
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SECURITY AND PROTECTION FACILITIES INSTALLATION

E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
1. Comply with work restrictions specified in Division 01 Section "Summary."

F. Temporary Erosion and Sedimentation Control: N/A

G. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

H. Tree and Plant Protection: N/A

I. Site Enclosure Fence: N/A

J. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each work day.

K. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

L. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.

M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Prohibit smoking in construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 01 5000

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Sections:
1. Division 01 Section "Alternates" for products selected under an alternate.
2. Division 01 Section "Substitution Procedures" for requests for substitutions.
3. Division 01 Section "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 ACTION SUBMITTALS

A. Comparable Product Requests: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 > days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
   1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
   2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
   1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
   1. Store products to allow for inspection and measurement of quantity or counting of units.
   2. Store materials in a manner that will not endanger Project structure.
   3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
   4. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
   5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
   6. Protect stored products from damage and liquids from freezing.
   7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
   1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
   2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
   1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
   2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

3. Refer to Divisions 02 through 49. Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
3. Products:
   a. Nonrestricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
4. Manufacturers:
   a. Nonrestricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

C. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
   1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
   2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   3. Evidence that proposed product provides specified warranty.
   4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
   5. Samples, if requested.

END OF SECTION 01 6000

SECTION 01 7300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout..
   2. Installation of the Work.
   3. Cutting and patching.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.4 INFORMATIONAL SUBMITTALS

A. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.

B. Cutting and Patching Plan: Submit plan describing procedures at least 10 > days prior to the time cutting and patching will be performed. Include the following information:
   1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
   3. Products: List products to be used for patching and firms or entities that will perform patching work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utilities: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate how long services and systems will be disrupted.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of construction affecting the Work.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.
2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

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

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.

C. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Temporary Support: Provide temporary support of work to be cut.

C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.

3.6 OWNER-INSTALLED PRODUCTS

A. Site Access: Provide access to Project site for Owner's construction personnel.

B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
   1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
   2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Utilize containers intended for holding waste materials of type to be stored.
   4. Coordinate progress cleaning for joint-use areas where more than one installer has worked.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Division 01 Section "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section "General Commissioning Requirements.

B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Manufacturer's Field Service: Comply with qualification requirements in Division 01 Section "Quality Requirements."

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 7300

SECTION 01 7419 - CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Salvaging non-hazardous construction waste.
   2. Recycling non-hazardous construction waste.
   3. Disposing of non-hazardous construction waste.

1.2 DESCRIPTION

A. The Owner desires that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials which may include any of the following materials, but are not limited to those listed below. The Owner's goal is to recycle or salvage 75% by weight of the non-hazardous construction materials generated during the construction process.

B. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled.

C. With these goals the Contractor shall review, suggest changes and adopt, for the Architect and Engineer's review, the attached Draft Construction Waste Management Plan for this Project.

1.3 CONSTRUCTION WASTE MANAGEMENT PLAN

A. Develop plan consisting of waste identification, waste reduction work plan. Include separate sections in plan for demolition and construction waste.

B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include a list of their names, addresses and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organization, include names, addresses and telephone numbers.
   4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address and telephone number of each landfill and incinerator facility.
   5. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separated will be located.

D. The Owner's goal is to salvage and recycle 75% by weight of non-hazardous demolition and construction waste as possible including the following materials:
   1. Construction Waste
      a. Bottles and Cans.
      b. Lumber.

c. Insulation.
d. Vinyl flooring.
e. Wood trim.
f. Metals.
g. Carpet and carpet pad.
h. Gypsum board.
i. Piping.
j. Electrical conduit.
k. Packaging – Salvage or recycle 100% of the following uncontaminated packaging materials:
1. Paper.
2. Cardboard.
3. Boxes.
4. Plastic and sheet film.
5. Polystyrene packaging.
6. Wood crates.
7. Plastic pails.

2. Separation and storage requirements for each waste type: A description of the means by which any waste materials identified in item (3) above will be protected from contamination, and a description of the means employed in recycling the above materials consistent with requirements for acceptance by designated facilities.
3. Recycling Vendor: Name of the recycling processor for each material.
4. Receiving Facilities: The name of the Receiving Facilities intended for receipt of non-recycled recycled materials.
5. Meetings: A description of information to be addressed at Project meetings regarding training and updates on waste management requirements.

E. The following resources are available. These materials may be used for development of the Final Construction Waste Management Plan by the contractor.
1. "Construction Recycling Directory" published by the Vermont Agency of Natural Resources Solid Waste Division lists area haulers and processors available for recycling materials. Up-to-date information regarding salvage and recycling markets in VT, MA and NH and other useful information can be found on the ANR website at the following address:
2. http://www.anr.state.vt.us/dec/wastediv/recycling/CandD.htm
3. "Planning for Waste Reduction" found on the above ANR website.
4. Case Studies that exemplify how job site recycling has been successful on other projects.
5. The District Materials Recycling Facility will accept at no charge, cardboard, waste paper and other items. The Contractor should contact the District at (802) 229-9383, for assistance in preparing this Plan.

1.4 SUBMITTALS

A. Submit 3 copies of Management Plan.

B. Recycling and Processing Facility Records: Indicated receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts and invoices.

C. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.5 MANAGEMENT PLAN IMPLEMENTATION

A. Manager: The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Construction Waste Management Plan for the Project. This person may be the general contractor's site superintendent.

B. Distribution: The Contractor shall distribute copies of the Construction Waste Management Plan to the Job Site Foremen, each Subcontractor, the Owner and the Architect.

C. Preconstruction Meeting: The Contractor shall schedule and conduct a meeting at Project site prior to commencement of construction activities. The Contractor shall inform the following individuals, whose presence is required, of date and time of meeting: owner, architect, engineer, contractor's superintendent, major subcontractors, representative of WSWMD, and other concerned parties. Agenda items shall include: review and discussion of the waste management plan including responsibilities of Waste Management Coordinator; review and finalization of procedures for materials separation; verification of availability and locations of bins and containers; review of procedures for periodic waste collection and transportation; review of waste management requirements for each trade; review and distribution of WSWMD policies; and review and distribution of the document "Planning for Waste Reduction" found on the above ANR website.

D. Monthly Project Meetings: The Contractor shall review recycling and material re-uses protocol at the beginning of each monthly project meeting.

E. Deliveries: The Contractor shall inspect deliveries to ensure that the correct amount of each material has been delivered at the appropriate time, and will ask suppliers to take back substandard, rejected, or unused materials.

F. Storage: The Contractor shall properly store construction materials to avoid deterioration due to exposure to sun, rain or moisture.

G. Wood Cutting: The Contractor shall designate a central location for all woodcutting related to the project.

H. The Contractor shall provide on-site instruction of appropriate separation, handling separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at the appropriate stages of the Project.

I. Separation facilities: The Contractor shall lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse and return. Recycling and waste bin areas are to be kept clean and clearly marked in order to avoid contamination of materials.

J. Hazardous wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

K. Submission of Monthly Progress Reports: The Contractor shall submit with each Monthly Progress Report a summary of waste generated and recycled at the Project. The Summary shall be submitted on a form acceptable to the Owner and shall contain the following information:
   1. For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling the material. Attached manifests, weight tickets, receipts, or invoices.
   2. The amount (in tons or cubic yard of material) of material landfilled from the Project and the location of the Receiving Facility. Include manifests, weight tickets, receipts, and invoices to verify disposal location and quantities.

1.6 OTHER REQUIREMENTS

A. Subcontractor will be responsible for separating materials for recycling.

B. Subcontractor's bid price will be based on an "all in rate" to include all fuel charges, taxes, hauling prices and disposal costs for wood, concrete, metal and mixed construction and demolition debris.

END OF SECTION 01 5050

SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Substantial Completion procedures.
   2. Final completion procedures.
   3. Warranties.
   4. Final cleaning.

B. Related Sections:
   1. Division 01 Section "Execution" for progress cleaning of Project site.
   2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
   5. Divisions 02 through 49 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete with request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, as-built drawings and similar final record information in electronic format either via drop box file or flash drive.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
   15. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
   2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit pest-control final inspection report and warranty.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first and [proceeding from lowest floor to highest floor.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Include the following information at the top of each page:
      a. Project name.
      b. Date.
      c. Name of Architect.
      d. Name of Contractor.
      e. Page number.
   4. Submit list of incomplete items in the following format:
      a. PDF electronic file.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated. Warranty period is one year from date of issuance of Certificate of Substantial Completion.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Provide all documents electronically – either by drop box file or on a flash drive.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that meet Green Seal GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
h. Sweep concrete floors broom clean in unoccupied spaces.
i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
k. Remove labels that are not permanent.
l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
1) Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates.
m. Wipe surfaces of mechanical and electrical equipment, elevator equipment**,** and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter upon inspection.
    1) Clean HVAC system in compliance with NADCA Standard 2013. Provide written report upon completion of cleaning.
r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
s. Leave Project clean and ready for occupancy.

END OF SECTION 01 7700

SECTION 01 7839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Sections:
   1. Division 01 Section "Execution" for final property survey.
   2. Division 01 Section "Closeout Procedures" for general closeout procedures.
   3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   a. Final Submittal: Submit all documents electronically via drop box file or flash drive.

B. Record Specifications: Submit all documents electronically via drop box file or flash drive.

C. Record Product Data: Submit all data electronically via drop box file or flash drive.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit all data electronically via drop box file or flash drive.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit all data electronically via drop box file or flash drive.

E. Reports: Submit written report indicating items incorporated in Project record documents concurrent with progress of the Work, including modifications, concealed conditions, field changes, product selections, and other notations incorporated.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints:
   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an acceptable drawing technique.
      c. Record data as soon as possible after obtaining it.
      d. Record and check the markup before enclosing concealed installations.

e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets in red-color. Use other colors if needed to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Architect.
   e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders and record Drawings where applicable.

B. Format: Submit record Product Data electronically via drop box file or flash drive.

1. Include record Product Data directory organized by specification section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals electronically via drop box file or flash drive.
1. Include miscellaneous record submittals directory organized by specification section number and title, electronically linked to each item of miscellaneous record submittals.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 01 7839

SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions and division 01 specification sections, apply to this section

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

C. DISMANTLE: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surface; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

a. Carefully salvage in a manner to prevent damage and promptly return to Owner. This includes the historic sign, 'Welcome to Bellows Falls' sign on the northern façade.

1.5 PREINSTALLATION MEETINGS

A. Pre-demolition Conference: Conduct conference at Project site.
1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
2. Ensure Owner's building manager's on-site operations are uninterrupted.
3. Interruption of utility services. Indicate how long utility services will be interrupted.
4. Coordination for shutoff, capping, and continuation of utility services.

1.7 CLOSEOUT SUBMITTALS

A. Inventory of items that have been removed and salvaged.

1.8 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

1. Items to be salvaged by the Contractor:

a. Fan Coil Units.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: Hazardous materials abatement will occur through the Contractor’s contract for lead based paint. Asbestos abatement was performed under a separate contract with the owner, and will be complete before the start of construction.
1. Lead Based Paint: Some of the paint in this building contains lead, a known toxin. Contractors shall comply with all federal, state and local regulations, including but not limited to HUD, EPA, OSHA, and VOSHA regulations regarding the removal and disposal of lead-based paint. The Contractor is responsible for protecting work, occupants, neighbors and the environment from the hazards related to working with, or exposure to lead based paint. A room-by-room inspection report outlining the lead containing materials was prepared by the Owner and is included in the Project Manual.
2. Asbestos containing material (ACM): The asbestos report is available upon request or for review at Windham & Windsor Housing. The asbestos abatement contractor will remove ACM from the existing building prior to start of demolition under a separate contract.
3. Contractor to refer to Corrective Action Plan (CAP) (Included in Project Manual and Drawings) before doing any demo work. Contractor is responsible for this work.
4. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

F. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
1. Comply with requirements specified in Section 013233 "Photographic Documentation."

2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
4. Cover and protect furniture, furnishings, and equipment that have not been removed.
5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower leve

      Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
   2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
   4. Maintain fire watch after flame-cutting operations.
   5. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   6. Dispose of demolished items and materials promptly.

B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

D. Wood Flooring/Raised Floors at former Radio Station.

E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to manufacturer's written recommendations.
2. See structural demolition drawings and specifications for further requirements.

C. Finishes: Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

D. Floors and Walls: Where walls or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
1. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
2. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 CLEANING

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn demolished materials.

3.9 SELECTIVE DEMOLITION SCHEDULE

A. Remove: As indicated on Drawings.

B. Existing to Remain: As indicated on Drawings.

END OF SECTION 024119

SECTION 092216 - NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Non-load-bearing steel framing systems for interior partitions.
2. Suspension systems for interior ceilings and soffits.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of code-compliance certification for studs and tracks.

B. Evaluation reports for embossed, high-strength steel studs and tracks, firestop tracks, post-installed anchors, and, power-actuated fasteners.

1.4 QUALITY ASSURANCE

A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, orthe Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.

2. Protective Coating: ASTM A653/A653M, G60 hot-dip galvanized unless otherwise indicated.

B. Studs and Tracks: ASTM C645.

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. CEMCO; California Expanded Metal Products Co.
b. ClarkDietrich.
c. Custom Stud.
d. Jaimes Industries.
e. MarinoWARE.
f. MBA Building Supplies.
g. MRI Steel Framing, LLC.
h. Phillips Manufacturing Co.
i. SCAFCO Steel Stud Company.
j. Steel Construction Systems.
k. Telling Industries.
l. The Steel Network, Inc.

2. Minimum Base-Steel Thickness: As required by performance requirements for horizontal deflection

3. Depth: As indicated on Drawings

C. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

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. CEMCO; California Expanded Metal Products Co.
b. ClarkDietrich.
c. Fire Trak Corp.
d. MarinoWARE.
e. Metal-Lite.
f. Perfect Wall, Inc.
g. SCAFCO Steel Stud Company.
h. Steel Construction Systems.
i. The Steel Network, Inc.

D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width 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. ClarkDietrich.
b. MarinoWARE.
c. MBA Building Supplies.
d. MRI Steel Framing, LLC.
e. SCAFCO Steel Stud Company.
f. Steel Construction Systems.

2. Minimum Base-Steel Thickness: As indicated on Drawings.

E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch wide flanges.

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. ClarkDietrich.
b. MarinoWARE.
c. MBA Building Supplies.
d. MRI Steel Framing, LLC.
e. SCAFCO Steel Stud Company.
f. Steel Construction Systems.

2. Depth: As indicated on Drawings.

3. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch thick, galvanized steel.

F. Hat-Shaped, Rigid Furring Channels: ASTM C645.

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. ClarkDietrich.
b. Jaimes Industries.
c. MarinoWARE.
d. MBA Building Supplies.
e. MRI Steel Framing, LLC.
f. SCAFCO Steel Stud Company.
g. Steel Construction Systems.

2. Minimum Base-Steel Thickness: As indicated on Drawings.

3. Depth: As indicated on Drawings.

G. Resilient Furring Channels: 1/2-inch- (13-mm-) deep, steel sheet members designed to reduce sound transmission.

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. ClarkDietrich.
b. MarinoWARE.
c. MBA Building Supplies.
d. MRI Steel Framing, LLC.
e. SCAFCO Steel Stud Company.
f. Steel Construction Systems.

2. Configuration: Asymmetrical

H. Cold-Rolled Furring Channels: 0.053-inch (1.34-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: As indicated on Drawings
2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch (0.8 mm).

3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

I. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 7/8 inch (22 mm), minimum uncoated-steel thickness of 0.0179 inch (0.455 mm), and depth required to fit insulation thickness 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. ClarkDietrich.
b. MarinoWARE.
c. MBA Building Supplies.
d. MRI Steel Framing, LLC.
e. SCAFCO Steel Stud Company.
f. Steel Construction Systems.

2.3 SUSPENSION SYSTEMS

A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- (1.59-mm-) diameter wire, or double strand of 0.048-inch- (1.21-mm-) diameter wire.

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES [AC01] [AC193] [AC58] [or] [AC308] as appropriate for the substrate.

a. Uses: Securing hangers to structure.
b. Type: [Torque-controlled, expansion anchor] [torque-controlled, adhesive anchor] [or] [adhesive anchor].
c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, unless otherwise indicated.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch (4.12 mm) in diameter.

D. Flat Hangers: Steel sheet, in size indicated on Drawings

E. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch (1.367 mm) and minimum 1/2-inch- (13-mm-) wide flanges.

1. Depth: As indicated on Drawings

F. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch (1.367-mm) uncoated-steel thickness, with minimum 1/2-inch- (13-mm-) wide flanges, 3/4 inch (19 mm) deep.
2. Steel Studs and Tracks: ASTM C645. [Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.]

a. Minimum Base-Steel Thickness: As indicated on Drawings.
b. Depth: As indicated on Drawings

3. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch (22 mm) deep.

a. Minimum Base-Steel Thickness: As indicated on Drawings

4. Resilient Furring Channels: 1/2-inch- (13-mm-) deep members designed to reduce sound transmission.

a. Configuration: **Asymmetrical**

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

B. Isolation Strip at Exterior Walls: Provide[one of] the following:

1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.
2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch (3.2 mm) thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Installation Standard: ASTM C754.

1. Gypsum Plaster Assemblies: Also comply with requirements in ASTM C841 that apply to framing installation.
2. Portland Cement Plaster Assemblies: Also comply with requirements in ASTM C1063 that apply to framing installation.
3. Gypsum Veneer Plaster Assemblies: Also comply with requirements in ASTM C844 that apply to framing installation.
4. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.

B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.

C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.

D. Install bracing at terminations in assemblies.

E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.2 INSTALLING FRAMED ASSEMBLIES

A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.

C. Install studs so flanges within framing system point in same direction.

D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.

1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.

    a. Install two studs at each jamb unless otherwise indicated.
    b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
    c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.

    a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.

5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
6. Curved Partitions:

    a. Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
    b. Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 6 inches (150 mm) o.c.

E. Direct Furring:

1. Screw to wood framing.
2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.

F. Z-Shaped Furring Members:

1. Erect insulation, specified in Section 072100 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced [24 inches (610 mm)] <Insert dimension> o.c.
2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches (610 mm) o.c.
3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 12 inches (305 mm) from corner and cut insulation to fit.

G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch (3 mm) from the plane formed by faces of adjacent framing.

3.3 INSTALLING CEILING SUSPENSION SYSTEMS

A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.

B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

C. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.

    a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.

    a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards

3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.

E. Seismic Bracing: Sway-brace suspension systems with hangers used for support

F. Installation Tolerances: Install suspension systems that are level to within [1/8 inch in 12 feet (3 mm in 3.6 m)] measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900 - GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior gypsum board.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

1. Gypsum wallboard.
2. Sound-attenuation blankets.
3. Acoustical sealant.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C1396/C1396M.

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 Gypsum.
b. CertainTeed Corporation; Saint-Gobain North America.
c. Continental Building Products, LLC.
d. Georgia-Pacific Gypsum LLC.
e. National Gypsum Company.
f. PABCO Gypsum.

g. USG Corporation.

2. Thickness: 5/8”
3. Long Edges: Tapered

B. Gypsum Board, Type X: ASTM C1396/C1396M.

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 Gypsum.
b. CertainTeed Corporation; Saint-Gobain North America.
c. Continental Building Products, LLC.
d. Georgia-Pacific Gypsum LLC.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Panel Rey SA.
h. USG Corporation.

2. Thickness: 5/8 inch

3. Long Edges: Tapered

2.4 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet
2. Shapes:

a. Cornerbead.
b. Bullnose bead.
c. LC-Bead: J-shaped; exposed long flange receives joint compound.
d. L-Bead: L-shaped; exposed long flange receives joint compound.
e. U-Bead: J-shaped; exposed short flange does not receive joint compound.
f. Expansion (control) joint.
g. Curved-Edge Cornerbead: With notched or flexible flanges.
h. Shadow Bead: Taped in bead to create a 1/2' reveal affect.
i. Super Seal Tear Away "L" Bead: Located at gypsum board returns at windows and doors. Bead with integral 5/16" semi-round gasket that compresses upon installation to form a permanent seal.

B. Exterior Trim: ASTM C1047.

1. Material: **Hot-dip galvanized-steel sheet, plastic, or rolled zinc**
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.5 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Exterior Gypsum Soffit Board: Paper.
3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping or drying-type, all-purpose compound.

    a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use compound recommended by manufacturer.
4. Finish Coat: For third coat, use compound recommended by manufacturer.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

2.6 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Verify adhesives have a VOC content of **50**g/L or less.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
2. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustic Sound Isolation Clips: Provide RSIC 1 type clips.

Clips - 16 ga. Galvanized or aluminum-zinc coated steel.

Isolator - Natural organic rubber, blended with fire-inhibiting compounds.

Projection - 1 5/8" from supporting structure when 7/8" drywall furring channels are used.

Drywall Furring Channels - Cold formed galvanized steel, hat track type, 25 ga. 0.0179 inch thick, 7/8 inch height, 2 11/16 inch width, hemmed edges.

F. Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

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. Accumetric LLC; BOSS 824 Acoustical Sound Sealant.
b. Grabber Construction Products; Acoustical Sealant GSC.
c. Specified Technologies, Inc.; Smoke N Sound Acoustical Sealant.
d. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical joint sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

G. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

H. Vapor Retarder: As specified in Section 072600 "Vapor Retarders."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and/or mold damaged.

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

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: Vertical surfaces unless otherwise indicated.
2. Type X: As indicated on Drawings and where required for fire-resistance-rated assembly.
3. Ceiling Type: Ceiling surfaces.
4. Moisture- and Mold-Resistant Type: In all bathrooms.
5. Type C: Where required for specific fire-resistance-rated assembly indicated.
6. Paper-Less Glass-Mat Interior Type: Behind FRP panels, inside tub enclosures above tub unit, as indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

    b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

C. Multilayer Application:

1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 APPLYING EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

A. Apply panels perpendicular to supports, with end joints staggered and located over supports.
1. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.
2. Fasten with corrosion-resistant screws.

3.5 GYPSUM SHEATHING INSTALLATION

A. Comply with GA-253 and with manufacturer's written instructions.
1. Fasten gypsum sheathing to wood framing with nails or screws.
2. Fasten gypsum sheathing to cold-formed metal framing with screws.
3. Install panels with a 3/8-inch (9.5-mm) gap where non-load-bearing construction abuts structural elements.
4. Install panels with a 1/4-inch (6.4-mm) gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.

B. Apply fasteners so heads bear tightly against face of sheathing, but do not cut into facing.

C. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of panels.

D. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches (200 mm) o.c. and set back a minimum of 3/8 inch (9.5 mm) from edges and ends of panels.

E. Seal sheathing joints according to sheathing manufacturer's written instructions.
1. Apply elastomeric sealant to joints and fasteners and trowel flat. Apply sufficient amount of sealant to completely cover joints and fasteners after troweling. Seal other penetrations and openings.
2. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.
3.

3.6 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.
3. L-Bead: Use where indicated.
4. U-Bead: Use at exposed panel edges where both sides are exposed and where indicated.

D. Exterior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
2. LC-Bead: Use at exposed panel edges.

3.7 INSTALLING ACOUSTIC SOUND ISOLATION CLIPS

A. General: Install resilient sound isolation clips and drywall furring channels in accordance with manufacturers' instructions.

B. Mechanically fasten clips to structure with screws, bolt or expansion anchors dependent on structure.

C. Install as specified in UL Fire Resistance Directory where required.

D. Space resilient sound isolation clips at maximum 24 inches by 48 inches on center for walls and ceilings.

E. Do not exceed design load (pull and shear) of 36 pounds per isolation clip.

F. Stagger isolation clips so dead load is supported by all support members.

G. Splicing Drywall Furring Channels: Splice channels with minimum 6 inch laps. Secure laps with 2 framing screws or 18ga. Tie wire double lapped. Locate splices between resilient sound isolation clips. Do not locate splices on clips.

H. Install clips on one side of assembly unless noted otherwise.

I. Do not allow drywall furring channels to contact surrounding surfaces.

J. On walls: install drywall furring channels perpendicular to framing members.

K. On ceilings: install drywall furring channels perpendicular, parallel or angular to framing members.

L. On walls: locate first drywall furring channel parallel to the floor and max. 3 inches above floor and first channel at top of wall max. 6 inches from ceiling.

M. On ceilings: locate resilient sound isolation clips max. 8 inches from ends of drywall furring channels.

N. On ceilings: locate drywall furring channels max. 3 inches from parallel wall assemblies.

3.8 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated

    a. Primer and its application to surfaces are specified in other Division 09 Sections.

E. Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.

3.9 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and/or mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

3.10 Gypsum Installation Schedule

1. Interior ceilings & walls & other- As specified on drawings and in accordance with UL assemblies listed there.
    a. Use Moisture Resistant type in Bathrooms and Kitchens (on vertical & horizontal surfaces)
    b. Use Moisture Resistant type in Laundry room, Janitor closets, and mechanical and Sprinkler rooms
2. Gypsum on Exterior side of vertical framed construction (walls)- Exterior Gypsum Wall Sheathing
3. Gypsum on Exterior (weather exposed, but generally protected from rain) in ceiling and soffit applications: Gypsum for Exterior Soffit application

END OF SECTION 09 2900

SECTION 09 5123 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes acoustical tiles for ceilings and the following:

1. Suspended acoustic tile for interior ceilings

2. Fully concealed, direct hung, suspension systems

B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete at ceilings.

1.3 DEFINITIONS

A. AC: Articulation Class.

B. CAC: Ceiling Attenuation Class.

C. LR: Light-Reflectance coefficient.

D. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS

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

B. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.

1. Acoustical Tile: Set of Samples of each type, color, pattern, and texture.
2. Concealed Suspension System Members: 12-inch- (300-mm-) long Sample of each type.
3. Exposed Moldings and Trim: Set of 12-inch- (300-mm-) long Samples of each type and color.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each acoustical tile ceiling.

D. Research/Evaluation Reports: For acoustical tile ceiling and components.

E. Maintenance Data: For finishes to include in maintenance manuals.

F. Layout: Installer to provide layout prior to installation; no tiles less than 6” installed.

1.5 QUALITY ASSURANCE

A. Source Limitations:

1. Acoustical Ceiling Tile: Obtain each type through one source from a single manufacturer.
2. Suspension System: Obtain each type through one source from a single manufacturer.

B. Source Limitations: Obtain each type of acoustical ceiling tile and supporting suspension system through one source from a single manufacturer.

C. Fire-Test-Response Characteristics: Provide acoustical tile ceilings that comply with the following requirements:

1. Fire-Resistance Characteristics: Where indicated, provide acoustical tile ceilings identical to those of assemblies tested for fire resistance per ASTM E 119 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

2. Surface-Burning Characteristics: Provide acoustical tiles with the following surface-burning characteristics complying with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84:

a. Smoke-Developed Index: 450 or less.

D. Seismic Standard: Provide acoustical tile ceilings designed and installed to withstand the effects of earthquake motions according to the following:

1. Standard for Ceiling Suspension Systems Requiring Seismic Restraint: Comply with ASTM E 580.
2. CISCA's Recommendations for Acoustical Ceilings: Comply with CISCA's "Recommendations for Direct-Hung Acoustical Tile and Lay-in Panel Ceilings--Seismic Zones 0-2."
3. CISCA's Guidelines for Systems Requiring Seismic Restraint: Comply with CISCA's "Guidelines for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies--Seismic Zones 3 & 4."
4. UBC Standard 25-2, "Metal Suspension Systems for Acoustical Tile and for Lay-in Panel Ceilings."
5. ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 9, "Earthquake Loads."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical tiles, suspension system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical tiles, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical tiles carefully to avoid chipping edges or damaging units in any way.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install acoustical tile ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.8 COORDINATION

A. Coordinate layout and installation of acoustical tiles and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

1.9 WARRANTY

A. Manufacturer's Acoustic Tile Warranty: Manufacturer's standard limited warranty for defective acoustic tile materials: Warranty period 10 years.

1.10 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Units: Full-size tiles equal to 2 percent of quantity installed.

PART 2 - PRODUCTS

2.1 ACOUSTICAL TILES, GENERAL

A. Acoustical Tile Standard: Provide manufacturer's standard tiles of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances, unless otherwise indicated.

1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches (400 mm) away from test surface per ASTM E 795.

B. Acoustical Tile Colors and Patterns: Match appearance characteristics indicated for each product type.

1. Where appearance characteristics of acoustical tiles are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical tiles treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.

2.2 ACOUSTICAL TILES FOR ACOUSTICAL TILE CEILING

A. **Acoustic Tile #1: (Called out ACP-1)**

B. Basis-of-Design Product: Subject to compliance with requirements, provide Certainteed, Symphony M, Type iV or equal.

1. Size: 2' x 2' x 3/4 inch thick.

2. Composition: Mineral fiber.

3. Edge Profile: Lay-in.

4. Surface Texture: Fine.

5. Grid: 15/16" standard Prelude.

6. Color: White.

C. Antimicrobial Treatment for All ceiling Types: Broad spectrum fungicide and bactericide based.

2.3 METAL SUSPENSION SYSTEMS, GENERAL

A. Metal Suspension System Standard: Provide manufacturer's standard metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

B. Finishes and Colors, General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes. Provide manufacturer's standard factory-applied finish for type of system indicated.

C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

D. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:

1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
2. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than **0.106-inch** diameter wire.

E. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

F. Angle Hangers: Angles with legs not less than 7/8 inch (22 mm) wide; formed with 0.04-inch- (1-mm-) thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation; with bolted connections and 5/16-inch- (8-mm-) diameter bolts.

G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate lateral forces.

H. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical tiles in-place.

I. Direct-Hung, Double-Web Suspension System: Main and cross runners roll formed from and capped with cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 (Z90) coating designation.

1. Structural Classification: Intermediate -duty system.
2. Access: Upward with initial access openings of size indicated below and located throughout ceiling within each module formed by main and cross runners, with additional access available by progressively removing remaining acoustical tiles.

J. Indirect-Hung Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, G30 (Z90) coating designation.

1. Structural Classification: Intermediate duty system.

2. Carrying Channels: Cold-rolled steel, 0.059850-inch- (1.52-mm-) minimum base (uncoated) metal thickness, not less than 3/16-inch- (4.7-mm-) wide flanges by 1-1/2-inch- (38-mm-) deep steel channels, 475 lb/1000 feet (0.707 kg/m),with rust-inhibitive paint finish or hot-dip galvanized according to ASTM A 653/A 653M, G60 (Z180) coating designation.
3. Access: Where access is indicated, provide special cross runners or split splines to allow for removal of acoustical units in indicated access areas. Identify access tile with manufacturer's standard unobtrusive markers for each access unit.

2.4 METAL EDGE MOLDINGS AND TRIM

A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners. Equal to Axiom Classic Trim.

1. Provide manufacturer's standard edge moldings that fit acoustical tile edge details and suspension systems indicated and that match width and configuration of exposed runners, unless otherwise indicated.
2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.5 ACOUSTICAL SEALANT

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

1. Acoustical Sealant for Exposed and Concealed Joints:

    a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
    b. USG Corporation; SHEETROCK Acoustical Sealant.

2. Acoustical Sealant for Concealed Joints:

    a. OSI Sealants, Inc.; Pro-Series SC-175 Rubber Base Sound Sealant.
    b. Pecora Corporation; BA-98.
    c. Tremco, Inc.; Tremco Acoustical Sealant.

B. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant**,** with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24), complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.

2.6 MISCELLANEOUS MATERIALS

A. Tile Adhesive: Type recommended by tile manufacturer, bearing UL label for Class 0-25 flame spread.

1. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Staples: 5/16-inch- (8-mm-) long, divergent-point staples.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing and substrates to which acoustical tile ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical tile ceilings.

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

3.2 PREPARATION

A. Testing Substrates: Before installing adhesively applied tiles on wet-placed substrates such as cast-in-place concrete or plaster, test and verify that moisture level is below tile manufacturer's recommended limits.

B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION, SUSPENDED ACOUSTICAL TILE CEILINGS

A. General: Install acoustical tile ceilings to comply with ASTM C 636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Suspend ceiling hangers from building's structural members and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
4. Secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both structure to which hangers are attached and type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
8. Do not attach hangers to steel deck tabs.
9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
10. Space hangers not more than 48 inches (1200 mm) o.c. along each member supported directly from hangers, unless otherwise indicated; provide hangers not more than 8 inches (200 mm) from ends of each member.

11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

C. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical tiles.
   1. Do not use exposed fasteners, including pop rivets, on moldings and trim.

D. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

E. Arrange directionally patterned acoustical tiles as follows:

   1. As indicated on reflected ceiling plans.

F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material.

   1. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile.
   2. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches (305 mm) o.c.
   3. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 CLEANING

A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 5123

SECTION 096513 – RESILIENT/ RUBBER BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rubber base.
2. Rubber stair/landing material.
3. Rubber molding accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples and Initial selection: For each exposed product and for each color and texture specified.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

PART 2 - PRODUCTS

2.1 RUBBER BASE

A. 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:

1. Johnsonite; a Tarkett company.
2. Roppe Corporation, USA.

B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset)
1. Material Requirement: Rubber.
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Straight (flat or toeless**)**

C. Thickness: 0.125 inch

D. Height: 4 inches

E. Outside Corners: Job formed or preformed.

F. Inside Corners: Job formed or preformed.

G. Colors: As selected by architect from full range of industry colors.

2.2 RESILIENT MOLDING ACCESSORY

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

a. Burke Mercer Flooring Products; Division of Burke Industries, Inc.
b. Flexco, Inc.
c. Johnsonite.
d. R.C.A. Rubber Company (The).
e. Roppe Corporation, USA.
f. VPI, LLC; Floor Products Division.

B. Description: Reducer strip for resilient floor covering and transition strips.

C. Material: Rubber.

D. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 INSTALLATION MATERIALS

A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.

1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.

C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

D. Do not install resilient products until materials are the same temperature as space where they are to be installed.

E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.2 RESILIENT/ RUBBER BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

    a. Form without producing discoloration (whitening) at bends.

2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

    a. Miter or cope corners to minimize open joints.

3.3 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Stair Accessories:

1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
2. Tightly adhere to substrates throughout length of each piece.

C. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.4 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 26 0500: ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section covers the general provisions that are applicable to all electrical work and the testing of the completed electrical systems. The requirements of other Sections shall take precedence over the requirements of this Section.

B. Equipment, pumps, plumbing items, HVAC equipment and other related work are specified in other Sections which are not a part of Division 26. The electrical connections to these devices, and the requirements for motors, motor starters, panelboards and other related work are specified in the appropriate Sections of Division 26. Certain electrical equipment is specified in other Divisions and is required to be furnished by equipment manufacturers. Drawings and general provisions of the Contract, including general conditions and supplemental conditions of other specification sections, apply to work in this section.

C. This division covers, in broad detail, the extent of the electrical work and the equipment to be provided and shall not be construed as a complete description of all of the details of design and construction required.

D. Drawings
   1. Contract Drawings are, in part, diagrammatic and are intended to convey the scope of the work and indicate in general arrangement of the equipment and do not indicate every required offset, fitting, box, etc. Follow these Drawings in laying out the work. Consult all Drawings to become familiar with all conditions affecting the work and to verify spaces in which the work will be installed. Verify all dimensions with architectural plans.

   2. Reasonable changes required by job conditions (including offsetting of conduit and light fixtures, etc.) shall be made at no additional cost to the owner.

   3. Locations of equipment are to be as:
      a. Shown on Drawings;
      b. Directed in the field;
      c. Required for proper connection of equipment to be served;
      d. Required for proper symmetry in the space involved;
      e. With deviations made only with the specific written approval of Architect and/or owner’s representative.

E. Definitions - The term "provide" shall have the same meaning as "furnish and install". All material so implied either on the Drawings or in these specifications shall be furnished and installed unless specifically noted otherwise.

F. Provide all labor, materials, equipment, appliances and tools and perform all work necessary for the complete execution of the electrical work as shown on the Drawings, required by the Specifications and work not specifically shown or specified, yet required to insure proper and

complete operation of all systems and to satisfy the design intent inherent in the Work and to comply with all applicable codes, regulations, and Electric Utility Co. requirements.

1.2 QUALITY ASSURANCE

A. All materials, equipment, sizes, capacities and installation of electrical work shall conform to the latest requirements of the National Electrical Code, National Electrical Safety Code, the National Electrical Manufacturers Association, the Board of Fire Underwriters, the Underwriter's Laboratories, Inc., the Institute of Electrical and Electronics Engineers, the prevailing State and Local Electrical Codes and to applicable requirements, rules and regulations of the Electric Utility Co. serving the Project.

B. Secure and pay for all permits and inspections required by any of the foregoing authorities. The electrical inspection shall be made and approved by the State Of Vermont Department of Public Safety and/or other State and/or local authority having jurisdiction. All certificates shall be in duplicate and shall be delivered to Engineer and become the property of Owner.

C. Before commencing work, review the Project with the local and State inspectors and the Electric Utility Co. Conform, in every respect, with their separate recommendations, unless the recommendations are inferior to, or in direct conflict with, the Contract Documents, then Engineer's acceptance will be required before proceeding with the Work.

D. Nothing in the Specifications, or shown on the Drawings, shall be construed as requiring a violation of any law, code or regulation. Any work or device which fails to receive the approval of any agency shall be promptly changed so as to fully comply.

E. All electrical work shall be performed by a duly licensed electrician who is qualified to do such work and who is normally engaged in this type of work. Because of the complexity of the electrical work, unskilled labor is not permitted.

F. Division 26 shall review the Drawings of other divisions, exchange shop Drawings with them, cooperate in the preparation or prepare space layouts as required, to avoid conflicts and interferences with the installation of other trades in the advanced stages of construction.

G. If, in the interpretation of contract documents, it appears that the Drawings and specifications are not in agreement, the one requiring the greater quantity or superior quality shall prevail, as decided by the Engineer.

1.3 SUBMITTALS

A. Submit electronic copies of all submittal data and/or complete shop drawings as specified in each section for review.

B. See other Divisions for Administrative Provisions. Submit submittals as specified therein.

C. Submittals shall be complete by specification article. All items specified under the same article as the major item shall be included in the submittals. No partial or incomplete submittal will be

accepted or reviewed. Submittals for equipment requiring electrical service shall include wiring diagrams.

D. Submittals and/or shop drawings are to be edited to show specific data for the equipment that the Contractor intends to provide.

E. Submittals and/or shop drawings are to be identified with numbers and letters identical to those listed on the Drawings and/or specifications.

F. Submit electronic copies of installation instructions and operation and maintenance manuals for all equipment.

G. Submit electronic copies of all required permits.

H. Submit electronic copies of electrical inspection certificates.

I. Submit complete listing of all tests performed and copies of the certified test results.

J. Submit as-built wiring diagrams and a copy of all circuit directories.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver equipment in crates or cartons and do not uncrate until ready for installation. Protect equipment against weather, damage, and vandalism.

B. Properly store all materials and equipment in accordance with the manufacturers' recommendations and as required to protect them from damage and corrosion. Check and properly receipt material “furnished by others”, and assume full responsibility for all above materials while in receipt of Contractor and/or in storage with full visible identification and information.

C. Temporarily close all openings to prevent obstruction, damage or the intrusion of foreign materials.

1.5 POWER CHARACTERISTICS

A. Incoming Power - 120/208V, three phase, 60Hz., 4 wire

PART 2 - PRODUCTS

2.1 GENERAL

A. All materials and equipment shall be new and shall conform to UL Standards and carry the UL Label in every case where UL Standards have been established for the materials or equipment.

B. To the maximum extent possible, all electrical equipment for any one system shall be the product of a single manufacturer. Engineer reserves the right to disapprove and reject

equipment from various manufacturers when acceptable components can be secured from fewer manufacturers and to require that source of materials be unified to the maximum extent possible.

C. Permission to substitute equal or superior items may be requested. Completion date will not be extended because of any time lost due to consideration or installation of substitutions. All coordination of substituted equipment shall be the Contractor's responsibility.

2.2 NAMEPLATES

A. Provide nameplates for all items of equipment on all panelboards, controllers, selector switches, starters, safety switches, push button stations, and relay and equipment enclosures.

B. Nameplates shall be black laminated plastic or bakelite, with four edges neatly beveled. Lettering shall be engraved, white, with a height of approximately 3/16" to 1/4".

C. Provide two holes in nameplate and secure to equipment with non-ferrous screws. If adequate space is not available on item to which nameplate is to be affixed, nameplate may be installed adjacent to and as close to the item as possible, and in a position where it is readily visible.

D. Notations on nameplates shall be exactly the same as the corresponding notations that appear on the Drawings.

2.3 EQUIPMENT SUPPORTS

A. Provide all structural supports required for proper attachment of all equipment. Wall mounted equipment may be directly secured to walls with approved anchors.

B. Maintain air space between equipment and supporting walls. Groups or arrays of equipment may be mounted on adequately sized steel or aluminum channels, angles or bars. Prefabricated steel channels equal to those manufactured by Unistrut or Kindorf are acceptable.

C. Equipment suspended from ceilings shall be supported by adjustable threaded steel rods of adequate strength. No hangers may be secured to furred or suspended ceilings or attached to or carried through ductwork.

D. Provide all necessary anchoring devices and supports.
   1. Use structural supports suitable for equipment.
   2. Check electrical loads and dimensions of equipment with shop drawings.
   3. Do not cut or weld to building structural members.
   4. Unless otherwise noted herein or on Drawings, supports, anchors, anchoring devices and procedures shall conform to the requirements of Division 5.

2.4 MATERIAL AND CONSTRUCTION REQUIREMENTS

A. Unless otherwise shown on Drawings or specified, all enclosures, motors, wiring and other materials and all construction methods shall conform to the following:

1. Indoor, Above Ground, Dry Areas - NEMA 1, General Purpose, with gasketing for general purpose applications where atmospheric conditions are normal. Enclosures shall be sheet steel, treated to resist corrosion, prime painted and finished with a gray baked-on enamel. Control stations shall have NEMA 12, oil-tight and dust-tight enclosures.
2. Outdoors, Moist Areas and Indoor Below Grade Areas - NEMA 3R, rain-tight.

2.5 OTHER MATERIALS

A. All other materials, equipment, accessories, hardware, and appurtenant items, not specifically described but required for a complete and operable electrical installation, shall be new, of respective kinds, and as selected by Contractor subject to the acceptance of Engineer.

2.6 SPECIAL TOOLS/SPARE PARTS

A. Provide all special tools that are necessary for the proper operation and maintenance of the electrical systems.

B. Provide all spare parts that are necessary to insure the proper operation of the electrical systems for the first year of normal operations. Required spare parts are listed in other sections of this division.

C. Furnish two extra sets of fuses for each fuse type and rating incorporated in the Work.

PART 3 - EXECUTION

3.1 INSPECTION

A. Prior to performing work required under Division 16, carefully inspect all existing conditions and the installed work of all other trades and verify that all conditions and all such work is complete to the point where the electrical work may properly commence.

B. Verify that electrical work may be done in complete accordance with all pertinent laws, codes, regulations and the design.

C. In the event of discrepancy, immediately notify Engineer.

D. Do not proceed with the work in areas of discrepancy until all such discrepancies have been fully resolved.

E. Notify proper authorities for inspections of Work required by applicable codes, rules or regulations.

3.2 PREPARATION

A. Layout all work at the site by consultation with other trades before installing work to eliminate any conflict between this work and work of other trades.

B. Coordinate electrical work, in advance, with other work. The installation of chases, openings, sleeves, etc., required for panels, boxes, outlets, receptacles, conduit, supports, wireways, etc., shall be done at such time as to minimize the need for subsequent cutting and patching. Prior to the ordering of any equipment, verify the location, type and characteristics of service to be furnished.

C. Contractor is cautioned that the power requirements and sizes of various equipment and machinery are subject to change and will be based on the accepted product or substitution actually provided. The actual equipment and machinery installed could result in the need to provide different sized wires, cables, conduits, boxes, starters, overload protection, fuses, and other electrical equipment, controls and materials. As such, the ordering and installation of work is not recommended nor encouraged until all shop drawings and other submissions have been made and have been accepted by Engineer, and all setting and power requirements determined, and then only after Contractor has coordinated all submissions and verified compatibility and determined the sizes required for each individual component. Any such work ordered or installed by Contractor shall be his responsibility and any modifications necessary shall be made to provide electrical systems in complete compliance with the Contract Documents, and to accommodate final installed equipment requirements.

3.3 PERFORMANCE

A. Perform all work that is both requisite and essential in completing the intended installation in the proper manner.

B. The Drawings indicate the general arrangement of circuits and outlets, locations of switches, panelboards, conduits and other work. Field verification of all dimensions is required. Specifications and Drawings are for assistance and guidance, but exact locations, distances and levels shall be governed by actual field conditions. Conduit runs and grounding are shown diagrammatically only, and the layout does not necessarily show the total number of conduits for the circuit required, nor is the location of indicated runs intended to show the actual routing of conduits. Furnish, install and place in satisfactory condition, ready for operation, all conduits, cables and all other materials needed for the complete lighting, power and other electrical systems as shown or indicated on the Drawings. Install additional conduits and required wiring whenever needed to complete the installation of the specific equipment.

C. If any departures from the Drawings are deemed necessary by Contractor in order to furnish an efficient, complete and satisfactory installation, details of such departures and the reasons therefore shall be brought to the attention of Engineer. Layout all work at the site by consultation with the various trades before installing work to eliminate any conflict between this work and work of other trades.

D. Wherever obstructions are encountered in the path or course of the Work that are not shown nor anticipated in the Contract Documents, do not proceed with the installation of the Work before advising Engineer and receiving detailed information or Drawings or both. Failure to follow this precaution will obligate Contractor to the full extent of all necessary changes and adjustments to conform to the requirements of Engineer.

3.4 INSTALLATION

A. Install all work at the locations shown on the Drawings. Install all work plumb, level and square.

B. Where concealed work is designated, conceal the work within walls, floors, ceilings or underground. Panelboards, switches, receptacles, control stations and other control and wiring devices shall be "flush mounted", complete with cover plates or doors, as applicable. Unless otherwise shown or specified, all other work may be "surface mounted".

3.5 PENETRATIONS

A. Except where absolutely necessary, do not penetrate roofs and waterproofed surfaces. Where required, make penetrations prior to the application of roofing and waterproofing materials and provide all sleeves, pitch-pockets and other acceptable items. Advise Engineer in advance before making such penetrations, even where such penetrations are shown on the Drawings.

B. Seal all work and penetrations that enter or leave a room or structure that may contain a corrosive or potentially lethal atmosphere. Install seals in a manner to stop vapors and gases from escaping or from being communicated from such areas, through conduits and wireways, as well as around conduits or wireways.

C. Thoroughly seal all work and penetrations entering or leaving hazardous areas in accordance with NEC requirements.

D. Sleeves through fire rates walls, shafts, floors and partitions shall be packed full length with UL listed fill to maintain the rating of the separation.

3.6 BALANCING LOADS

A. Circuit numbering on the Drawings is indicated for clarification only. Because substitutions may produce different electrical loads, balance all light, power and heat loads so that a phase-to-phase difference of 5% is not exceeded.

3.7 FIELD QUALITY CONTROL

A. Check for proper phase sequence and test all parts of the electrical systems before placing them in service.

B. Provide all labor, materials, testing equipment, electricity, fuel, lights, lubricants, equipment, instruments and all other materials required for conducting all tests.

C. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show insulation resistance between phase conductors and ground of not less than that required by NEC, or as specified herein.

D. All systems shall show proper neutral connections.

E. Insulation test of equipment, motors, cables, etc. shall pass the Standard Insulation Test established by the IEEE and shall be made before and after all required high potential tests. All insulation testers shall be of the motor driven, direct reading type, unless otherwise noted.

F. Check nameplate data on each piece of equipment and furnish copy of list to Engineer.

G. Check all motors for proper rotation and speed and all starters for proper overload protective elements. Correct all incorrect conditions.

H. Conduct a ground test on each and every circuit with conductors #2AWG and larger. The test results shall not be less than those required by the NEC or Underwriters Laboratories. Furnish a detailed record of these tests.

I. Test all electrical devices for proper control of motors and equipment.

J. Lamp all fixtures with lamps of designated rating, color and pattern and check operation.

K. Check amperage in all circuits and compare to nameplate data.

L. Conduct all other tests required to secure approval of the Work from all agencies having jurisdiction.

3.8 ADJUST AND CLEAN

A. Replace any portion of the Work that does not conform to established standards and requirements.

B. During tests, make all adjustments and changes until the equipment and systems are operating satisfactorily.

C. Should any defects be suspected or found after tests have been completed, make all required adjustments, repairs, and replacements, and retest to the satisfaction of Engineer.

D. Clean all exposed electrical work and remove all unnecessary labels, soil, markings, and foreign material. Do not remove labels required by the Specifications, laws, regulations and codes (e.g. UL Labels) or special labels warning of hazards, denoting special operating and maintenance procedures or labels with other important or meaningful messages, directions or warnings.

E. Thoroughly clean the interior of panelboards and the like and remove all dust, dirt, and other foreign materials which may adversely affect the operation of equipment, damage equipment, or which may create a potential hazard or unsafe condition.

F. Replace or thoroughly dry all electrical appliances or equipment that have been subjected to injury by water. Dielectric test, as directed, all appliances or equipment that is dried.

3.9 PROTECTION

A. Contractor shall be responsible for proper protective and safety measures when working overhead, under power lines, underground and in finished areas and shall provide all safety equipment and devices and make all repairs, replacements and touch-ups of all work and materials which may become damaged.

B. Where touch-ups do not unnoticeably blend in with adjacent surfaces, as determined by Engineer, replace or completely repaint the entire piece in question.

3.10 INSTRUCTION SERVICES

A. Provide a competent instructor, when requested by Engineer, to instruct Owner and his representatives in the proper operation and maintenance of the electrical systems.

B. Include in the Contract Price, the cost of the instructor on-site time, which may be broken down into several days during the period commencing near the date of final installations and extending through the one-year guarantee period. The instructor's time is totally independent of any time necessarily required of Contractor to return to the Project during the guarantee period for repairs, corrective work or for any other reasons.

END OF SECTION 26 05 00

SECTION 26 0519: WIRES AND CABLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes the furnishing and installation of wires and cables and connections to all equipment, motors, meters, lighting fixtures, motor control centers and electrical signal devices.

B. Related work specified elsewhere includes:
Excavating, Trenching and Backfilling
Other Electrical Work

C. Definitions: AWG - American Wire Gauge

1.2 QUALITY ASSURANCE

A. Acceptable manufacturers of wire and cable are Anaconda, General Electric, Senator or an approved equal.

B. Acceptable manufacturers of solderless pressure type terminals and lugs are O.Z. Manufacturing Co., Burndy Manufacturing Co., Thomas & Betts (T & B), or an approved equal.

1.3 SUBMITTALS

A. Cut-sheets of wires, cables and connectors proposed for use.

B. Description indicating where each type of wire and cable will be used.

C. Manufacturers' descriptive literature.

1.4 DELIVERY - HANDLING

A. Deliver all wires and cables in full coils or reels and protect against injury. UL "Approved Tags" giving grade of insulation, size and length of wire in each coil or reel and the manufacturer's name and date of manufacture shall be securely attached to each carton or reel.

PART 2 - PRODUCTS

2.1 WIRES AND CABLES

A. Conductors shall be hard drawn copper wire having a conductivity of 98% of that of pure copper (Matthiessen's Standard) throughout their lengths.

B. All wire and cable insulation and all outer covering shall be designed for the conditions under which the wire or cable is to be used.

C. Wire for lighting branch circuits shall be no smaller than No. 12 AWG. Wires of greater size, as indicated or required, shall be used to minimize voltage drops. Use no wire smaller than No. 10 AWG in runs exceeding 50' from the lighting panel to the first outlet or lighting fixture and between fixtures. Conductors of No. 12 AWG may be solid, and conductors of sizes greater than No. 12 AWG shall be stranded.

D. Wire and cable for power circuits shall be insulated for not less than 600 volts with moisture and heat resistant insulation, Type XHHW or THWN.

E. Cable for lighting circuits shall be 600-volt moisture and heat resistant wire, Type THHN or THWN. Where wire is used for direct burial or in conduits that are installed underground, in damp locations and/or exposed to moisture, use Type RHW or XHHW.

F. Cable for 120-volt control circuits shall be No. 14 AWG, multi-conductor flame resistant, jacketed, cable. Each single wire shall consist of 7 strand bare copper, insulated with Type XHHW. Where control circuits are installed in conduits, single conductor cable maybe used in lieu of multi-conductor assembled cable.

G. All conductors for power control, alarm, and indication shall be stranded or as specifically shown on the drawings and other specific areas of the Specification.

H. Cable without conduit may be provided for communication and sound systems only where concealed above ceilings and protected. Cable must be UL listed for the application per NEC. Cable exposed in open ceilings shall be installed in EMT conduit.

I. Metal clad cable (Type MC) may be provided for concealed branch circuit wiring per NEC. All other wiring within the facility shall be installed in metallic conduit that is rated for the space unless otherwise noted.

2.2 WIRE AND CABLE IDENTIFICATION

A. Conductors shall be color coded as follows:

Phase	120/208V
A	Black
B	Red
C	Blue
Neutral	White or Grey
Equipment Ground Wire	Green

B. Tag cables and wires in pull boxes, panelboards, motor control centers, at equipment, and at electrical devices. Tags shall be printed, stamped or engraved to indicate the circuit number, the voltage, the phase and a one-word description of its use or an equipment number designation. (e.g. - For Blower B-1, tag would read "B-1, 208V, 3Ø" --- For lighting, tag would read "LIGHT, CKT 18, 120 V., 1Ø"). Tags shall be wrap-around self-laminating, adhesive backed

tags equal to Brady B-191, or phenolic cable marker tags equal to those manufactured by Seton Nameplate Corp.

2.3 SOLDERLESS PRESSURE CONNECTORS

A. No. 10AWG and smaller - T & B "Sta-Kon".

B. No. 8AWG and larger - T & B Series 54100.

2.04 UNDERGROUND MARKERS

A. All underground wires, cables and conduits, which are not encased in concrete, shall have a plastic ribbon marker installed in the backfill, located directly over the line and approximately 9" below finished grade, unless otherwise noted.

B. Markers shall be "Terra Tape" as manufactured by Griffolyn Co., Inc., or equivalent by Seton Nameplate Corp., or equal.

C. Tape shall be imprinted with appropriate warning words similar to, "CAUTION - BURIED ELECTRIC LINE BELOW".

PART 3 - EXECUTION

3.1 INSPECTION

A. Do not pull wires and cables until conduits have been installed and cleaned and cleared of obstructions.

B. Check all nameplate data of equipment actually furnished to determine wire sizes required.

3.2 INSTALLATION

A. All circuits shall be made up of single conductor wire or cables, unless otherwise noted.

B. Carefully install conductors to prevent damage to insulation and do not apply excessive strain on the wires.

C. If lubrication is necessary, install conductors using powdered soapstone or other UL labeled electrical lubricant. Oils, greases or other compounds are not permitted for use as lubricants.

D. Conductor splices in raceways or fittings are not permitted.

E. Where enclosure size of terminals at control devices make 7 strand No. 12 AWG wire termination impractical, termination of external circuits may be made in adjacent junction boxes with terminal strips, with No. 14 AWG stranded wires provided between terminal strips at control device and junction box.

F. Provide all wire connectors, terminal lugs and other items required and necessary to complete all wiring.

G. Connection of conductors to terminal posts or other conductors shall insure a thorough and tight connection without damaging the conductor. Make connections by means of solderless pressure type terminals or lugs. Connectors shall be for proper cable size and shall have a conductivity not less than that of the wire or cable to which they are attached. Carefully finish and fit to provide a low resistance connection without reducing cable copper.

H. Installations requiring special tools for proper application shall be installed only with those tools and in accordance with the established practice and the recommendations of the manufacturer.

I. Remove and replace any wire, cable, insulation, connector or other item of work, which has been pinched, scraped, broken, impaired or damaged.

J. All circuits shall have full size neutral conductors. All neutral conductors shall be the same size as the phase conductors. No circuits shall share neutral conductors.

3.3 PERFORMANCE

A. The number of wires indicated on the Drawings for all electrical, control, indication, metering, telephone and signal circuits have been determined for the general schemes based upon the requirements of the particular type and size of equipment shown or specified. The actual number of wires needed to complete each system shall in no case be fewer than the number indicated and additional wires shall be provided where necessary and required by the actual equipment finally installed.

B. Prior to energization, test cable and wire for continuity of circuitry, and for short circuits. Correct all malfunctions when detected.

C. After wire and cable hook-ups, energize circuitry and demonstrate functioning in accordance with requirements.

END OF SECTION 26 0519

SECTION 26 0526: GROUNDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes the furnishing and installation of A/C System, Equipment, Appliance, and Motor, device and lighting grounds.

PART 2 - PRODUCTS

2.1 GROUND SYSTEMS

A. Except as otherwise indicated, provide electrical grounding and bonding systems indicated; with assembly of materials, including, but not limited to, cables/wires, connectors, terminals (compression lug), grounding rods/electrodes and plate electrodes, bonding jumper braid, surge arresters, and additional accessories needed for a complete installation. Where more than one type component product meets indicated requirements, selection is Installer's option. Where materials or components are not indicated, provide products which comply with NEC, UL, and IEEE requirements and with the industry standards for applications indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. The A/C system shall be grounded in the main distribution panels.

B. All conduits entering metal enclosures shall have double locknuts or, if enclosure does not have provision for connecting by locknuts, provide a ground busing, wire jumper, and solderless lug to bond enclosure. All conduits leaving the main distribution panel and main switchboard shall be grounded to the ground bus by means of a grounding busing, wire jumper, and solderless lug.

C. A separate ground conductor (green wire) shall be installed in all raceways for feeders, lighting power, and receptacle branch circuits, all cables, and where called for on drawings.

D. All Distribution and branch circuit panels shall have a separate ground bar, "ILSCO" or approved equal.

E. All metallic conduits 1-1/4" or larger shall have grounding bushings.

F. All SO-type cords, or equivalent, shall have a separate ground wire (green) of equal size to circuit conductor.

G. Equipment ground conductor shall be copper with type THHN insulation, green only, up to and including #4 AWG; larger sizes may be black and identified with green tape.

H. Paint, grease or other contaminants shall be sanded clean before bonding ground conductor.

I. All exposed metal pipes such as gas lines, air lines, oil lines, etc. shall be bonded per NEC.

END OF SECTION 26 0526

SECTION 26 0533: CONDUITS AND BOXES

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes the furnishing and installation of conduits and boxes.

B. Related work specified elsewhere includes:
Excavating, Trenching and Backfilling
Other Electrical Work

1.2 QUALITY ASSURANCE

A. Set all conduits and boxes plumb and level.

B. All conduits and boxes shall be straight, free from blisters and defects, and shall bear the Underwriters' Label.

C. All conduits, boxes, raceways, etc. installed in finished areas shall be concealed from view.

1.3 SUBMITTALS

A. Submit manufacturer’s catalog information sheets of all conduits, wall boxes and floor boxes proposed for use.

B. Description indicating where each type of conduit and box will be used.

C. Manufacturers' descriptive literature.

1.4 PENETRATIONS

A. Waterproofed Surfaces - Except where absolutely necessary, do not penetrate roofs and waterproofed surfaces. Where required, make penetrations prior to the application of roofing and waterproofing materials and furnish all sleeves, pitch pockets and other approved items.

PART 2 - PRODUCTS

2.1 RIGID CONDUITS

A. Only where noted, all conduits shall be rigid steel conduit or intermediate metal conduit, high grade, mild steel electrical pipe conforming to ANSI C80.1 and NEC Article 345 and Article 346.

B. Rigid conduit shall be galvanized and threaded and delivered with conduit couplings or tightly fitted plastic or fibre thread protectors.

2.2 THINWALL CONDUITS

A. Thinwall (EMT) conduit shall be used for all branch circuit and feeder work in dry locations inside buildings.

B. Fittings for thinwall conduits shall be compression type. Installation shall be in accordance with N.E.C. Article 348. Thinwall conduits shall be as manufactured by Republic, Triangle, Allied or approved equal. Steel set screw fittings may be installed where allowed by NEC and a grounding conductor is provided.

2.3 RIGID NON-METALLIC CONDUIT

A. Rigid non-metallic conduit schedule 40 PVC may be used for service entrance ductbank, underground branch circuits and in concrete slabs. Rigid non-metallic conduit for service entrance shall be concrete encased under roads and driveways.

B. Installation and fittings shall be in accordance with N.E.C. Article 347. Rigid non-metallic conduits shall be as manufactured by Carlon or approved equal.

2.4 FLEXIBLE GALVANIZED METAL CONDUIT

A. Flexible galvanized metal conduit shall be used between outlet boxes in hung or furred ceilings and flood type lighting fixtures.

B. Installation shall be in accordance with N.E.C. Article 350. Materials shall be as manufactured by Republic, Allied, Triangle, or approved equal.

2.5 LIQUID-TIGHT FLEXIBLE CONDUITS

A. Make terminal connections to all motors and equipment with liquid-tight, flexible conduit of the same size as the conduit run.

B. Maximum length of liquid-tight flexible conduit - 18".

C. Conduit shall be single strip, continuous, flexible, interlocked, durable wrapped steel, galvanized inside and outside, and provided with a tough, inert and watertight plastic jacket, conforming to NEC Article 351.

D. Conduits shall be Seal-Tite, type V.A. (American Brass Co.), Flex-Seal, Type XI (Columbia Cable & Electric Corporation), or equal.

2.6 CONDUIT FITTINGS

A. Fittings shall be malleable or cast iron with threaded hubs and full body design conforming to NSI C80.4.

B. Covers shall be of stamped metal.heavy cast metal with composition gaskets (weatherproof type or vaportight type, as applicable).

C. Fittings and covers shall be galvanized or cadmium plated, inside and outside.

D. For liquid-tight flexible conduits, fittings shall have body and gland nut of cast malleable iron, cadmium plated, a one-piece brass grounding bushing which threads to interior of conduit spiral and a molded vinyl sealing ring between gland nut and bushing.

E. Couplings and elbows shall be threaded, same as conduit.

F. Fittings shall be the "Condulet" type.

2.7 SURFACE RACEWAY

A. Except as otherwise noted, all branch circuit wiring in finished areas shall be concealed. Surface raceway may be used only by permission of architect in existing areas deemed too difficult to conceal wiring.

B. All areas of work shall be prepared so that no surface raceway is required.

C. Provide all surface metal raceways and all couplings, elbows, boxes, support clips and other appropriate fittings to provide a safe and complete installation in the basement level only.

D. Size to accommodate required number of conductors.

E. The surface metal raceway shall be Wiremold, Walker, or approved equal. Color shall be determined by architect. Multiple service raceway shall be Wiremold Co. ALDS4000 series, Walker, or approved equal.

2.8 GENERAL

A. Conduits shall be sized per ANSI C1 (National Electrical Code). Unless otherwise noted, minimum size shall be 1/2".

B. Each length of conduit shall bear the UL label and the manufacturer's name or trademark.

C. Provide No. 12 galvanized pulling wire in each empty conduit and duct, continuous.

D. Provide all unions, reducers, conduit caps and all other fittings and hardware required to complete all conduit runs.

E. Use lock nuts and proper insulating type bushings, as required.

F. Fasten all metallic conduits and armored cable to each adjacent section and to all boxes, fittings and equipment with firm, clean metallic contact to provide a well and continuous grounded system.

G. Provide conduit expansion fittings, complete with bonding jumpers, at all concrete expansion joints, between concrete structures and where conduits are firmly attached to two independent structures.

2.9 JUNCTION, PULL AND OUTLET BOXES

A. Size and gauge of boxes shall be in accordance with ANSI C1 and as required by the construction.

B. Boxes and covers shall be of sheet steel and shall be hot dipped galvanized after fabrication. Secure covers to boxes with brass or galvanized machine screws.

C. Provide cut or punched conduit holes. Torch cutting is not permitted.

D. All boxes exposed to the weather, moisture or vapor shall be cast aluminum with threaded hub. Covers shall be gasketed to make boxes vaportight and waterproof.

E. All boxes shall be provided with suitable ground lug.

F. Where more than two switches or other similar wiring devices are indicated at a single location and at the same elevation, they shall be installed in gang boxes with one cover plate.

2.10 UNDERGROUND CONDUIT

A. Unless otherwise specified or shown on the Drawings, all underground conduits shall be coated with an approved asphaltum paint and encased in sand.

B. Encasements, all around conduit, shall be a minimum of 6" of sand or concrete, unless otherwise specified or shown on the Drawings.

PART 3 EXECUTION

3.1 INSPECTIONS - VERIFICATIONS

A. The Drawings indicate the general locations of outlets, fixtures, equipment, wiring and other electrical devices and the general details for the complete electrical and telephone installations.

B. Conduit locations are diagrammatic only and do not necessarily indicate the exact location or routing.

C. Prior to locating and installing conduits and boxes, check the Contract Drawings and the Work to be sure that the locations of all conduits and boxes will not interfere with or be covered by doors, casework, heating and process equipment, or the like, and that conduit stubs for motors and equipment will be placed in the proper locations.

3.2 INSTALLATION OF CONDUIT

A. Unless otherwise directed by Engineer or shown on the Drawings, all conduits shall be concealed in floors, walls, ceilings or underground. Conduits and boxes shall be concealed and recessed in masonry walls.

B. For exposed work, support conduit every eight (8) feet with galvanized malleable iron one-hole straps and "clampbacks." Secure tightly with screws, bolts or other approved means. Size of bolts shall be commensurate with supported weight.

C. For parallel groups of exposed conduits, provide trapeze hangers or other approved method of installation.

D. All exposed conduits shall be neat and symmetrical and run parallel with adjacent walls, partitions and ceilings. Diagonal runs are not permitted.

E. Perforated straphangers are not permitted.

F. "Running thread" type conduit connections are not permitted.

G. In fill or slabs, run conduits as straight and direct as possible. Where required, use long radius bends. In structural slabs less than 4" thick, conduits having "D" over 1" are prohibited, where "D" is the maximum outside diameter or dimension of the conduit. In structural slabs 4" and thicker, "D" shall not exceed 1-½ inches. Where conduits are permitted in the slab, the center-to-center spacing shall not be closer than 3 "D" and in no case, less than 2 inches clear.

H. Conduit runs, through or below equipment foundations, are not permitted.

I. Unless otherwise specified or directed by Engineer, the minimum depth of cover over underground concrete encasements shall be 30", except under roads, parking lots and other traveled areas where it shall be 48".

J. Underground conduit runs shall be pitched for drainage, away from the level of entry to buildings or equipment.

K. In concrete walls below grade provide O. Z. Gedney type "FSK", or approved equal sleeves for all conduits.

L. The use of wooden plugs inserted into concrete or masonry as a base to fasten conduits is not permitted.

M. Avoid bends and offsets where possible. Where necessary, use a conduit-bending machine. No bends greater than 90° are permitted in any one run of conduit. Provide pull boxes where more bends are necessary.

N. Deformed or crushed conduit is not permitted.

O. Cut conduit with powered hacksaw. Cut ends square. Cut threads, clean and ream.

P. Maintain six (6) inch minimum separation between all conduits and water lines.

Q. All couplings shall be pulled up tight to provide electrical bond. Ends of conduits terminating in a pressed steel box shall be provided with a galvanized locknut and bushing inside and a locknut outside. Fiber or hardwood bushings are not permitted at termination of feeder conduits.

R. Plug and cap all conduits until ready to pull wires and make connections.

3.3 INSTALLATION OF BOXES

A. Locate special function outlets where shown on the Drawings.

B. Make dimension between door openings and wall switches uniform throughout the work.

C. Boxes shall be supported independently of all conduits and shall be rigidly secured in place.

D. Provide all adapters, jacks, terminals, terminations, trim rings, plates, covers, jacks and devices for complete and operable installations.

E. On concrete, brick or other masonry surfaces, secure surface mounted boxes with machine screws or bolts and expansive type shield.

F. On building steel, secure boxes by means of clamp type supports and provide rigid vibration-proof installation.

G. Surface mounted junction boxes shall be “FS” style cast boxes with threaded hubs in all maintenance and garage areas. Steel junction boxes with knock-outs are not allowed in surface applications. The FS cast boxes shall be used from the floor to the height of 10’ above the floor.

H. Surface mounted pull and junction boxes, one-foot square or more in area, shall be installed to provide a minimum air space between box and mounted surface of one (1) inch.

3.4 ADJUST AND CLEAN

A. Adjust all work to provide a rigid, neat, and clean conduit system.

B. Clear conduits of all obstructions and dirt prior to pulling wires or cables. Use ball mandrel, with a diameter equal to approximately 85% of the inside diameter of the conduit, followed by a close fitting wire brush and wad of felt or similar material. This assembly may be pulled together with, but ahead of, the cable being installed.

C. Clean empty conduits, as specified above.

END OF SECTION 26 0533

SECTION 26 0700: ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide electrical demolition work required for removal / abandonment of systems, equipment and devices, etc. made obsolete by this Project, and as required for demolition and remodeling by other trades.

B. Related work specified elsewhere includes:
All drawings and General Provisions of this Contract.
Mechanical demolition Division 250000
Other Electrical Work Division 260000

1.2 EXISTING CONDITIONS

A. In general, existing electrical systems, equipment and devices are not shown on the Drawings unless pertinent to the remodeling work. Existing electrical conditions, where indicated, are based on casual field observations and must be field verified by the Contractor. Report any discrepancies to the Architect before disturbing the existing installation.

B. Before bidding, the Contractor shall thoroughly examine the site to determine all actual observable conditions. No additional compensation will be granted for extra work made necessary by the Contractor's failure to investigate such existing conditions.

1.3 COORDINATION

A. The Contactor shall bear in mind that adjoining areas of the site must remain in operation, and electrical systems and services must remain in operation at all times, unless specifically approved otherwise.

B. Scheduling of all demolition Work shall be performed by the Contractor. Coordination and cooperation of all contractors shall be expected in all conditions at all times. Phasing of demolition shall be determined by the Owner / Architect with the input of the Contractor.

C. All utilities, services, equipment, alarms, etc. shall remain in service during the demolition process. Temporary provisions must be made to keep all services operable during the entire construction period.

D. Construction traffic and removal of debris will be limited to specific areas and routes. Confirm with the Owner / Architect.

E. The Contractor shall perform all electrical work that is necessary for the demolition and remodeling work performed by all other trades. Field verification of all demolition and remodeling of all trades shall be performed by contractor before bid date. Contractor shall coordinate all work made necessary by other trades remodeling/demolition.

1.4 ADJACENT MATERIALS

A. During execution of the demolition work, primary consideration shall be given to protecting from damage, the building structure, furnishings, finishes, and the like, which are not specifically indicated to be removed.

B. Existing items or surfaces to remain, which are damaged as a result of this work, shall be refinished, repaired or replaced to the satisfaction of the Architect / Owner, at no cost to the Owner.

C. Locate and identify all electrical conduit and wiring passing through the site and serving areas outside the work limits. Maintain electrical circuit continuity to all areas outside the work limits unless specifically authorized otherwise in writing by the Architect / Owner. When through-circuits must be interrupted, provide temporary wiring for affected areas outside the work limits to minimize or eliminate the outage.

D. All security, camera, tel/data, and similar wiring shall be kept in service during renovation until no longer required. At that time all abandoned wiring shall be removed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials used for patching shall be in conformance with the applicable sections of the Project Manual. Where materials are not specifically described, but required for proper completion of the Work, they shall be selected by the Contractor, subject to approval of the Architect / Engineer.

PART 3 - EXECUTION

3.1 INSPECTIONS – VERIFICATIONS

A. Before commencing work of this section, carefully inspect the project areas and become familiar with existing systems and conditions.

B. Verify with the Owner, all systems, materials and equipment which are to be salvaged and those which must be removed. The Owner reserves the right to salvage any or all existing electrical materials and equipment at the project site.

3.2 COORDINATION

A. Coordinate all demolition work through the Architect and with all other trades and utilities.

3.3 PERFORMANCE

A. Remove pertinent existing electrical equipment, devices raceway, wiring and related materials within the project work limits as indicated on the contract documents and as required for the completion of all work in other divisions.
   1. Remove all abandoned devices and all dead wiring back to source.
   2. Remove all abandoned conduit, boxes, supports, etc. where exposed, including items above suspended ceilings. Cut conduits flush with walls and ceilings and plug opening with like material.
   3. All shutdowns of systems and electrical services shall be scheduled and approved in writing by the Architect / Owner.
   4. All material removed, including light fixtures, ballasts, and tubes are to be disposed of by the electrical contractor in a legal manner that complies with all rules and regulations. This includes electrical material that may be considered hazardous.

B. Where existing structures, equipment, walls, and/or ceilings are to be removed, disconnect and remove all electrical, communication and alarm items. Install conduit, wire, etc. as necessary to maintain system continuity after removal of walls and/or ceilings. Refer to Demolition Drawings.

3.4 EXISTING WORK TO REMAIN

A. Existing lighting and power branch circuits and devices that are not removed shall be rewired and reconnected to new panels if the panel feeding the branch circuit and/or device is removed.

B. Where electrical systems in adjoining areas, or electrical systems indicated to remain become disconnected or affected by demolition work, reconnect circuits, etc. as required to restore original operation. Restoration work to comply with requirements of new Work.

3.5 CLEANING

A. Clean and repair all devices and light fixtures that are to be salvaged and reused. This includes re-lamping all re-located lighting fixtures unless otherwise noted. All lenses shall be cleaned prior to reinstallation. All electrical devices shall be cleaned and checked for flaws prior to re-installation.

B. Remove form the Project site, on a daily basis, all dirt, dust, debris, and equipment deemed unwanted by Owner, resulting from demolition operations. Refuse should not be allowed to block or otherwise impair access in corridors, stairs, sidewalks, or other traffic areas.

END OF SECTION 26 0700

SECTION 26 2726: SWITCHES AND RECEPTACLES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section covers the requirements for switches, receptacles and plates.

B. Related work, specified in other Sections of Division 16, includes conduits, boxes, wires, cables, motor starters, disconnect switches, circuit breakers and similar devices.

1.2 QUALITY ASSURANCE

A. All wiring devices and plates shall conform to the requirements of NEC and shall be specification grade and UL listed.

1.3 SUBMITTALS

A. See General Requirements.

B. Submit catalog cuts of all switches, receptacles and plates, clearly indicating ratings and materials.

1.4 MOUNTING HEIGHTS

A. Lighting circuit switches shall be mounted at 42" AFF to the bottom of the switchbox, unless otherwise noted on drawings.

B. Receptacles in offices and customer areas shall be mounted at 18" AFF to the bottom of the outlet box, unless otherwise noted on drawings.

PART 2 - PRODUCTS

2.1 SWITCHES

A. GENERAL
1. Flush switches shall be heavy-duty toggle type "AC" rated unless otherwise shown on the Drawings or specified. Switch mechanisms shall be completely enclosed. Terminal screws or connectors shall be designed to accommodate and firmly terminate up to No. 10 solid conductors.
2. Where two or more switches or other similar wiring devices are indicated at a single location and at the same elevation, they shall be installed in gang boxes with one cover plate, in an order appropriate to the location of the devices being controlled.

B. Lighting (Indoor - Dry Areas)
1. Specification Grade rated 20 amp; Leviton CS120-2 Series, Hubbel 1120 Series or approved equal.
2. Occupancy sensors; as scheduled on the drawings.

2.2 RECEPTACLES

A. General

1. Receptacles, unless indicated as special purpose or otherwise noted, shall be flush side wired and designed to accommodate and firmly terminate up to No. 10 solid conductors.
2. Special purpose receptacles shall be specification grade of NEMA Number and rating as noted on plans.

B. Duplex (Indoor - Dry Areas)
1. Duplex "T" slot, "U" ground slot, NEMA 5-20R, 20 amp, 125 volts, 3 wire grounding, Specification Grade, Leviton CR20-I or approved equal.

C. Ground Fault Interrupter
1. Ground Fault Interrupter duplex receptacles Leviton 6598-I or approved equal.
2. No receptacles shall feed through the load side of a GFI protected receptacle. Each receptacle indicated on the drawings as GFI protected shall be rated for 20-amps.

2.3 PLATES

A. General
1. Provide plates on all boxes. Boxes recessed in walls shall have plates with the required number of gangs and designed for the material involved.
B. Indoor - Dry Areas
1. All switch and receptacles located indoors shall have satin finish, nylon plate.
C. Outdoor and Moist Areas
1. Cast aluminum, weatherproof, with spring loaded, hinged cover plate.

PART 3 - EXECUTION

3.1 WIRING DEVICES

A. Install receptacles with grounding pole on top.

B. Connect wiring device grounding terminal to outlet box with bonding jumper as well as the branch circuit equipment grounding conductor.

C. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

D. Connect wiring devices by wrapping conductor around screw terminal.

E. Label all receptacles, switches, and electrical equipment with the panel name and circuit number that the circuit originates.

F. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

G. Install protective rings on active flush cover service fittings.

H. Occupancy sensor manufacturer shall certify, test, and commission all lighting controls. A factory representative shall field verify and ensure the correct operation of all devices and submit a commissioning report.

END OF SECTION 26 2726

SECTION 26 2800: CIRCUIT AND MOTOR DISCONNECTS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work covered by this Section includes the furnishing and installation of Equipment, Appliance, and Motor Disconnect Switches and Safety Switches.

1.2 ACCEPTABLE MANUFACTURERS

A. Siemens, Westinghouse, Square D, General Electric, or approved equal.

1.3 SUBMITTALS

A. Manufacturer's catalog cuts and layout drawings, clearly indicating all voltage and ampere ratings, sizes, contactors, buswork and other features including indicator lights, lock-out devices, and other ancillary equipment.

PART 2 - PRODUCTS

2.1 HEAVY DUTY SAFETY SWITCHES

A. Provide surface-mounted, heavy-duty type, sheet-steel enclosed fusible safety switches, of types, sizes and electrical characteristics indicated; rated 250 volts, 60 Hz; incorporating quick-make, quick-break type switches; so constructed that switch blades are visible in OFF position with door open. Each switch shall be equipped with an operating handle which is an integral part of the enclosure base and whose position is easily recognizable, and is pad-lockable in OFF position. Provide NEMA type 1A enclosure for dry locations indoors, NEMA 3R for wet locations, or as specified on Drawings.

B. Fusible switches shall have all of the above features. Fusible switches shall have positive pressure-type reinforced fuse clips and a short-circuit rating of 200,000 RMS amperes with class R rejection feature installed in the fuseholders.

C. All switches shall have neutral kits installed where required.

D. Sentinel motor starting switches may be used at all equipment rated at 20A or less, 208v or 120v. Provide the correct number of poles required for each piece of equipment, 1-pole, 2-pole, or 3-pole switches.

2.2 FUSES

A. Except as otherwise indicated, provide fuses of types, sizes, ratings, and average time/current and peak let-through current characteristics indicated on Drawings, which comply with manufacturer’s instructions, applicable requirements of the NEC, and in accordance with recognized industry practices to ensure that products fulfill requirements.

B. Provide UL Class RK5 time-delay fuses rated 250 V, 60 Hz, 1 to 600 amperes, with 200,000 RMS symmetrical interrupting current rating for protecting motors and circuit breakers. Use Class J fuses where needed for series-protection of circuit beakers.

C. Provide UL Class KLU time-delay fuses rated 600 V, 60 Hz, 800 amperes, with 200,000 RMS symmetrical interrupting current rating for protecting the service entrance at the main disconnect.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide and install disconnects and safety switches at the locations shown on the Drawings, complying with manufacturer's instructions, applicable requirements of the NEC, and in accordance with recognized industry practices to ensure that products fulfill requirements.

B. Install disconnect switches used with motor-driven appliances, motors, and controllers within sight of equipment served unless otherwise indicated.

C. Provide all coordination required with all other trades to insure the proper size of all equipment is supplied.

D. Mechanical equipment supplier shall provide all motor starters and VFD's. The electrical contractor shall install and wire all electrical items supplied by the MC.

END OF SECTION 26 2800

SECTION 26 5000: LIGHTING

PART 1 GENERAL

1.1 DESCRIPTION

A. General:
1. Furnish all labor, materials, tools, equipment, and services for all interior lighting, as indicated, in accord with provisions of Contract Documents.
2. Completely coordinate with work of all other trades.
3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
4. See Section 260000 for general electrical requirements.
5. See Division 1 for General Requirements.

1.2 SUBMITTALS

A. Prior approval data: See General Requirements.

B. All lighting fixtures have been chosen and approved by the Architect. Any substitutions shall be approved by Engineer and Architect before the bid date. It is the contractor's responsibility to obtain this approval or risk any substituted fixture package to be rejected.

C. Shop drawings.
1. Names of manufacturers, cuts, and photometric performance curves of all lighting fixtures to be used on project.
2. Identify fixtures by Fixture Schedule number, including special notations for finishes, colors, and mountings.
3. Names of manufacturers, specification sheets, color, and color rendering index of all lamps to be used on the Project.
4. Samples of metal finish of fixtures as indicated on Lighting Schedule.
5. Fixtures have been chosen by the owner. If substitutions are submitted, a complete photometric study and layout of the entire building must be presented to the engineer to insure that the required light levels and efficiencies are met, in addition to other requirements noted above.

D. Certificate of compliance for radio frequency interference free fixtures.

E. Operating and maintenance data.

PART 2 - PRODUCTS

2.1 LIGHTING FIXTURES – GENERAL

A. Acceptable manufacturers:
1. Lighting fixtures: As indicated on Fixture Schedule or equal.
2. Lamps: Philips; General Electric; and Sylvania.
3. Lenses: As indicated on Fixture Schedule.

B. All lighting fixtures and electrical components: UL labeled, complete with lamps.

C. Provide all recessed fixtures with gaskets of rubber, fiberglass, or equivalent material to prevent light leaks around flush trim.

D. Provide standard plaster frame for all recessed lighting fixtures installed in plaster walls or ceilings.
   1. Design, finish and fabricate material to preclude possibility of rust stain in plaster.

E. LED color - 4000°K, CRI 85 for interior

2.2 LED FIXTURES

A. As specified on the drawings, or equal.

   1. DLC listed or Energy Star Listed.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fasten lighting fixtures supported by suspended ceiling systems to building structure. Fasten fixtures to ceiling framing system with clips.

B. Coordinate with acoustical ceiling installer so that all lay-in and recessed type fixtures are located in accord with architectural reflected ceiling plans.

C. Locate in exact center of tile when indicated. Remove and replace misplaced fixtures.

D. Install fixtures at the heights shown on the Drawings. Where specific heights are not shown, mount fixtures at a height to provide the most uniform illumination possible at a plane 3' above the finished floor line, except that in no case shall the bottom of the glassware or metal reflector be less then 8' above the floor line, unless the ceiling height will not permit the above mounting heights.

3.2 PROTECTION/CLEANING

A. Cover all fixtures to protect against dirt, water, chemicals and mechanical injury.

B. All work that becomes physically damaged shall be repaired or replaced when Engineer determines that repairs will not maintain the aesthetic appearance or will adversely affect performance.

C. Replace all broken, scratched or cracked glassware, lenses, reflectors, and lamps.

D. Clean all fixtures of dirt and foreign materials and wash all glassware, lamps, reflectors and lenses.

END OF SECTION 26 5000

SECTION 26 9500: FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide new fire alarm system components throughout the renovated space including modules, initiating devices, alarms, and necessary equipment to allow installation of:

1. New pull stations.
2. New audio/visual alarms.
3. Detectors as required by codes.
4. New Detectors as shown on drawings.
5. Magnetic door hold open devices.
6. Connections to door controls
7. All State of VT Department of Fire Safety Requirements

B. Actuation of any manual fire alarm station, fire sprinkler alarm switch, automatic detector or similar devices will sound all alarm buzzers, light the annunciator lamps, de-energize magnetic door holders, and activate the dialer to notify a Monitoring Co. of the Owner's choosing.

C. The fire alarm work shall include all wiring, conduit, pull boxes, terminal cabinets, outlet and mounting boxes, annunciating devices, fire alarm stations, and all other accessories and miscellaneous items required.

D. The stations, buzzers, annunciators and other major parts shall comply with the applicable NFPA standards and shall constitute a unified system for the satisfactory operation of which one manufacturer shall be responsible.

E. Provide smoke detectors with manual reset and remote test at each mechanical unit of 2,000 CFM or larger.

F. The fire protection system shall be in conformance with the requirements of the following regulatory agencies whenever the requirements of such agencies are applicable.
1. Industrial Risk Insurers (IRI)
2. Insurance Services Office (ISO)
3. Factory Mutual Engineering Division (FM)
4. Local Building Department
5. Local Fire Department
6. Local Water Department
7. State of Vermont Department of Fire Safety Requirements.

G. All materials and equipment used in the installation of the fire protection system shall be as approved in the Underwriters' Laboratories list of inspected fire protection equipment and materials, or the Factory Mutual Laboratories list of approved equipment and fire protection devises involving fire hazard, and shall be the latest product of the manufacturer.

1.2 RELATED WORK IN OTHER SECTIONS

A. General Requirements, Division 1.
Mechanical Requirements, Division 250000
Electrical General Provisions, Section 260010

1.3 SUBMITTALS

A. See Section 260010.

B. Submit complete shop drawings, wiring diagrams, catalog cuts, installation instructions and drawings, and descriptive literature. Sufficient information shall be supplied so that the exact function of each installed device is known.

NOTE: DOCUMENTATION
Submittal of shop drawings shall contain at least one (1) booklet of original manufacturer specification and installation instruction sheets. Subsequent booklets may be copies. All equipment and devices on the shop drawings to be furnished under this contract shall be clearly marked in the specification sheets.

C. Submit electronic copies of complete operating and maintenance manuals of the devices, assemblies, and the complete system. These manuals shall include complete one-line diagrams showing all stations, detectors, etc.

D. Battery calculations shall be submitted showing adequate emergency power for all appliances and devices in an alarm evacuation condition.

E. Connect to the basement and first floor existing detection zones, SLC loops, and existing NAC panels.

1.4 QUALITY ASSURANCE

A. Provide at least one person who shall be present during the execution of this portion of the Work, is thoroughly familiar with the types of materials being installed and the best methods for their installation, and who shall direct the work performed under this Section.

B. The complete system shall comply with NFPA 70, Article 760 and NFPA 72. All equipment shall be UL listed and meet all State and local codes.

C. Supplier's qualifications shall indicate years in business, service policies, warranty definitions, and a list of similar installations. Contractor qualifications shall be supplied indicating years in business and prior experience with installations that include the type of equipment that is to be supplied. All pertinent information shall be supplied regarding the reliability and operation of the equipment to be supplied. Delivery dates of the equipment to be supplied shall be furnished.

D. Installation and final test/acceptance dates of the equipment shall be supplied.

1.5 OPERATION

A. The system alarm operation subsequent to the alarm activation of any manual station, automatic detection device, or sprinkler flow switch shall sound alarm.

B. All visual alarm indicating appliances shall display a pattern until:
   1 Extinguished by the Alarm Silence Switch
   2 System is reset

PART 2 - PRODUCTS

2.1 MANUAL FIRE ALARM STATIONS

A. Double action, high impact, red aluminum body with epoxy finish with raised white lettering and a smooth high gloss finish. The station shall have a hinged front with key lock. Stations that use screwdrivers, allen wrenches, or other commonly available tools shall not be accepted. Stations shall be keyed alike with the fire alarm control panel. When the station is operated, the handle shall lock in a protruding manner to facilitate quick visual identification of the activated station.

B. Pull stations shall not require or use a “break rod” or “break glass” or equivalent. Optional use of the “break rod” or “break glass” or equivalent is unacceptable.

2.2 SMOKE DETECTORS

A. Listed to U.L. Standard 268 and documented compatible with the control equipment. Detectors shall be listed for this purpose by Underwriters Laboratories, Inc. The detectors shall obtain their operating power from the fire alarm panel supervised detection loop. Removal of the detector head shall interrupt the supervisory circuit of the fire alarm detection loop and cause a trouble signal to be generated at the control panel. Unless otherwise noted, all smoke detectors shall be photoelectric.

B. Each detector shall have a flashing status indicating LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady and at full brilliance. The detector may be reset by actuating the control panel reset switch.

C. To minimize nuisance alarms, voltage and RF transient suppression techniques shall be employed as well as a smoke verification circuit and insect screen. The detector design shall provide full solid-state construction and compatibility with other normally open fire alarm detection loop devices (heat detectors, pull stations, etc.). The detector head shall be easily disassembled to facilitate cleaning.

D. Smoke detectors for air handling units shall be photoelectric type with sampling tube and remote test switch the housing shall have an auxiliary relay.

2.3 AUDIO/VISUAL ALARMS

A. HORN / STROBE: Provide a common enclosure for the fire alarm audible and visual alarm devices. The unit shall be complete with a tamper resistant, Pyramidal shaped lexan lens with "Fire" lettering visible from a 180-degree field of view. Integral Xenon strobe shall provide peak candlepower to meet ADA requirements. Xenon strobe shall provide 4-wire connection to insure properly supervised in/out system connection. Unit shall be complete with all mounting hardware including backbox. Audio/visual unit shall be UL listed for its intended purpose. Match the existing devices.

B. STROBE: Provide a common enclosure for the fire alarm visual alarm devices. The unit shall be complete with a tamper resistant, Pyramidal shaped lexan lens with "Fire" lettering visible from a 180-degree field of view. Integral Xenon strobe shall provide peak candlepower to meet ADA requirements. Xenon strobe shall provide 4-wire connection to insure properly supervised in/out system connection. Unit shall be complete with all mounting hardware including backbox. Audio/visual unit shall be UL listed for its intended purpose. Match the existing devices.

PART 3 - EXECUTION

3.1 WIRING

A. Conduit, wiring, boxes, cabinets, etc., shall conform to the requirements for branch circuit wiring and shall be installed in accordance with NEC, NFPA, and manufacturer's approved shop drawings. Minimum size conduit 1/2 inch. Minimum wire size NO. 14 for signal circuits, No. 12 for power supply. Wiring to be color-coded.

B. All fire alarm wiring shall be installed in EMT conduit, colored red, or fire alarm MC cable.

C. All junction boxes shall be sprayed red and labeled "Fire Alarm". Wiring color code shall be maintained throughout the installation.

D. The electrical contractor shall coordinate the installation of the fire alarm equipment with the manufacturer or his authorized distributor.

E. It shall be the electrical contractor’s responsibility to coordinate with the supplier, regarding the correct wiring procedures before installing any conduits or conductors.

F. Label all annunciation devices and initiation devices with address, NAC panel circuit, and device.

3.2 TERMINAL STRIPS

A. Provide terminal strips in accessible locked terminal cabinets for connections to external wiring between control panel and stations, alarm signals, and annunciators. Provide approved pressure type terminal blocks or spade lugs on conductors.

3.3 PROGRAMMING AND TESTS

A. The entire fire alarm system shall be programmed, tested and adjusted under the supervision of a factory-trained representative of the manufacturer. At the completion of the installation, the system shall be tested to show that the complete system is free from grounded or open circuits; the central control equipment will indicate when a ground or open circuit occurs; and that the alarm initiating devices and supervisory devices are operating normally. Any defects shall be corrected at once and the test reconducted.

3.4 Include in the Contract Price, the cost of the instructor on-site time, which may be broken down into several days during the period commencing near the date of final installations and extending through the one-year guarantee period. The instructor's time is totally independent of any time necessarily required of Contractor to return to the Project during the guarantee period for repairs, corrective work or for any other reasons.

END OF DOCUMENT 26 9500

SECTION 27 1500: TELECOMMUNICATIONS/DATA SYSTEM

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section covers the requirements for telecommunications and data wiring within the Project, as shown on the Drawings.

B. Electrical contractor will provide the following for the installation of the telephone and data system:

1. 1" EMT conduit from each location shown on the Drawings to accessible point above the ceiling. (4) Cat. 6 cables from the jack locations shown on the drawings shall be run to the telephone/data termination area.

2. All locations shown on Drawings shall have four runs of twisted, 4-pair, cat. 6 cables run from the data termination area and telephone termination areas at the locations shown. All cable runs shall be continuous with no splices.

3. Cat. 6 cables homerun from each location as shown on the drawings to a existing patch panel.

4. 4-port RJ-45 wall jacks at all areas shown on the drawings.

5. two cat. 6 cables to each WIFI location from the data rack.

6. Cable-tray and J-hooks as required to install a complete cat. 6 data and phone system.

7. All cables shall be terminated, labelled, and tested.

C. Electrical Contractor shall provide all items for complete installation of telephone/data system.

D. Telecommunications/Data System installation shall comply with EIA/TIA - 568, EIA/TIA – 569, EIA/TIA – 606, NEC Art. 800, and all local and state codes.

E. Drawings

1. Contract drawings are, in part, diagrammatic and are intended to convey the scope of the work and indicate in general arrangement of the equipment and do not indicate every required offset, fitting, box, etc. Follow these drawings in laying out the work. Consult all Drawings to become familiar with all conditions affecting the work and to verify spaces in which the work will be installed. Verify all dimensions with architectural plans.

F. Definitions - The term "provide" shall have the same meaning as "furnish and install." All material so implied either on the drawings or in these specifications shall be furnished and installed unless specifically noted otherwise.

G. Insure proper and complete operation of telecommunications and data systems to satisfy the design intent inherent in the Work and to comply with all applicable codes, regulations, and requirements.

1.2 QUALITY ASSURANCE

A. All materials, equipment, sizes, capacities and installation of telecommunication work shall conform to the latest requirements of the National Electrical Code, the Underwriter's Laboratories, Inc., the Institute of Electrical and Electronics Engineers, and the prevailing State and Local Electrical Codes.

B. Nothing in the Specifications, or shown on the Drawings, shall be construed as requiring a violation of any law, code or regulation. Any work or device, which fails to receive the approval of any agency, shall be promptly changed to fully comply.

C. All telecommunications/data work shall be performed by those who are qualified to do such work and who are normally engaged in this type of work. Because of the complexity of the telecommunications work, unskilled labor is not permitted.

PART 2 - PRODUCTS

2.1 TELECOMMUNICATIONS/DATA CABLE

A. Cable system shall consist of four, twisted, 4-pair, cat. 6 cable for each telephone/data location. Quantity of cables per jack as indicated on drawings.

B. Cat. 6 cable shall be color-coded per owners standard.

2.2 CABLE SUPPORT

A. Data and communication wiring shall be run separate from all other electrical wiring. Use Caddy # CAT-21 J-hooks cat. 6 for all cable support.

B. A cable-tray system may be installed in the office areas to the tel/data rooms.

C. Cable tray may be Snake-Tray™, Wiremaid ME2™, or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide all outlet boxes, cable, terminations, plates, labeling, and accessory equipment for complete operable system. Switches by others. Provide 5' loop of wire at termination area for each run of cable.

B. The scheduling of all cable installation, boxes and devices to be coordinated with General Contractor.

C. Provide sleeves for all penetrations of rated walls and floors. Sleeves through fire rated walls, shafts, floor and partitions shall be packed full length with UL listed fill to maintain the rating of the separation. Comply with NFPA requirements.

D. Data and communication cabling shall maintain a minimum of 4" clearance from all other exposed wiring and electrical devices.

3.2 TESTING

A. All cables and jacks shall be tested by a qualified technician at a speed of 1000 mbits/second. All cables not passing this test shall be replaced.

3.3 PROTECTION

A. Telecommunications/Data Contractor shall be responsible for proper protective and safety measures when working overhead, under power lines, underground and in finished areas and shall provide all safety equipment and devices and make all repairs, replacements and touch-ups of all work and materials which may become damaged.

END OF SECTION 27 1500